2017–18 MINISTER'S ANNUAL REPORT

UNDER THE CLIMATE CHANGE AND GREENHOUSE GAS REDUCTION ACT 2010

ACT Government

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The ACT Legislative Assembly passed the *Climate Change and Greenhouse Gas Reduction Act 2010* (the Act) on 26 October 2010 and the Act was enacted on 5 November 2010.
The Act requires the Minister to present a report to the Legislative Assembly within six months of the end of the financial year for which the report is made.

This report outlines the Government's actions against the requirements of the Act for the 2017–18 financial year.

1. ACTIONS TAKEN IN 2017–18 UNDER THE CLIMATE CHANGE AND GREENHOUSE GAS REDUCTION ACT 2010

The ACT Government continued to show strong leadership in environmental management and sustainability by responding to climate change through a range of programs, initiatives and nation-leading reforms.

The combined impact of actions and projects initiated during the reporting period will strengthen the foundations already established for a sustainable Canberra that leads by example in addressing climate change.[1] The range of actions taken in 2017–18 under the Act are detailed below. Headings in this section correspond to the Functions of the Minister, as outlined in the Act.

A. REVIEW ISSUES RELATING TO CLIMATE CHANGE

National and regional climate projections

The NSW and ACT Regional Climate Model (NARCliM) provides high resolution climate data projections for the ACT and region.[2] By 2070 the ACT and region's climate is projected to be hotter and drier with average daytime temperatures over 2 degrees Celsius (°C) higher than in 1990. The greatest risk to life and property will come from the increased frequency, duration and severity of the 'big four' extreme weather events —heatwaves, drought, bushfires and storms. Key projected changes in the ACT are listed below.

- An average of 20 extra days above 35°C each year.
- An increase in the number of severe fire weather days with the bushfire season starting earlier in spring and continuing later into autumn.
- Increased variability in rainfall with a decrease in winter and spring rain and an increase in summer and autumn rain, but annual average precipitation remaining much the same.
- Summer storm season lasting for more months of the year, with an increase in the number of intense storms and rainfall events bringing increased risk of flash flooding.

The CSIRO's Climate Change in Australia website[3] provides a suite of information on national and regional climate projections. This includes projections for the ACT[4] as part of the Murray Basin cluster of natural resource management regions.

International

In December 2015 countries from around the world agreed to support the Paris Agreement, a global pact to reduce the world's emissions of greenhouse gases quickly and substantially in order to keep global warming below 2°C and aiming for a goal of 1.5°C above pre-industrial levels. As of 23 October 2018, the Paris Agreement has been ratified by 181 of the 197 Parties to the Convention, including Australia.

The Paris Agreement recognises that reducing global greenhouse gas emissions is urgent. Global average temperatures are already more than 1°C above pre-industrial levels and the 2013–17 period was the hottest five-year period for global temperatures on record[5].

1 Note the total greenhouse gas emissions savings in this report use projected ACT emission factors for electricity for the 2017–18 financial year taking into account the ACT's transition to 100% renewable electricity by 2020.

2 www.environment.act.gov.au/cc/regional-climate-projections. In 2014 the ACT Government partnered with the NSW Office of Environment and Heritage to develop fine-scale (10 square kilometre) climate projections for NSW and the ACT.

3 www.climatechangeinaustralia.gov.au/en/

4 www.climatechangeinaustralia.gov.au/en/climate-projections/future-climate/regional-climate-change-explorer/clusters/?current=MBC&tooltip=true&popup=true

5 https://www.climatecouncil.org.au/resources/2017-heat-report/

The latest Intergovernmental Panel on Climate Change (IPCC) report[6], released in 2018, reveals that global warming is likely to reach 1.5°C between 2030 and 2052 if it continues to increase at the current rate. In this special report the impacts of global warming of 1.5°C compared to 2°C above pre-industrial levels are examined. Of note is that:

- Climate-related risks to health, food security, water supply and economic growth are expected to increase with global warming of 1.5°C and worsen further for 2°C of warming.
- Adaptation is likely to be more challenging for ecosystems, food and health systems for 2°C of warming compared to 1.5°C.

The report also outlines potential greenhouse gas emission pathways in order to strengthen global efforts to respond to the threat of climate change. To stay within the 1.5°C Paris target for warming, global carbon dioxide emissions would need to decrease by about 45% from 2010 levels by 2030, reaching net zero by around 2050.

B. PROMOTE ACTION TO MEET TARGETS

The ACT Government released AP2: A new Climate Change Strategy and Action Plan for the Australian Capital Territory (AP2)[7] in October 2012.

AP2 is the Government's primary mechanism for meeting its 2020 greenhouse gas reduction target and establishing a strong foundation for the achievement of the overall target of zero net emissions.

The development of a new climate strategy for the ACT

In December 2017, the ACT Government released the ACT's Climate Strategy to a Net Zero Emissions Territory discussion paper. The discussion paper provided information to the community and other stakeholder groups on key topics for consideration as the ACT transitions to net zero emissions. This included information on the ACT's emissions profile, a proposal based on advice from the ACT's Climate Change Council to amend the ACT's emissions reduction target dates (including a 2045 net zero emissions target date and interim emissions reduction targets to provide a pathway to 2045), information on the key sectors where emissions reductions will be required to reach these targets (e.g. transport, energy and waste), and the importance of community action in reducing emissions (e.g. choosing public transport or active travel rather than driving).

The discussion paper also marked the commencement of a comprehensive community consultation process seeking feedback on the development of the ACT's next climate strategy. The next climate strategy will (i) provide a pathway for achieving the ACT's (now legislated) 2025 interim emissions reduction target of 50-60% below 1990 level emissions, and (ii) put the territory on track to achieve net zero emissions by 2045. Engagement activities during the consultation period included stakeholder roundtables, community drop-in sessions at local libraries, stalls at major events such as the Canberra Show, Multicultural Festival and university open days, and presentations at local community council meetings. A climate change photo competition, with prizes worth $2000, attracted 116 entries and raised awareness for the new climate strategy. Written submissions were also invited online, with more than 100 being received.

Over 2000 individual suggestions were received during the consultation period. These suggestions were developed into the Register of Ideas, which contains over 900 distinct ideas, and are now being considered by the ACT Government for potential inclusion in the new climate strategy. The Register of Ideas and a community engagement report were released to the community through the ACT Government's Yoursay webpage.

Measuring progress

In February 2017, the Minister for Climate Change and Sustainability directed the Commissioner for Sustainability and the Environment to prepare an Implementation Status Report on the progress of ACT Government climate change actions, as required under Action 18 of AP2. This report, published in September 2017, highlighted the substantive progress in delivering on AP2 actions. It found that despite the rapid growth in renewable energy, further action is required to increase energy efficiency and continue to support vulnerable households. Transport was also recognised as the next major sector for reducing emissions.

6 http://www.ipcc.ch/report/sr15/

7 www.environment.act.gov.au/cc

The report acknowledged that community engagement would be vital to ensuring effective climate mitigation and adaptation actions.

In response, the ACT Government acknowledged the findings of the audit and supported the continual improvement of policy development and implementation to ensure climate adaptation and mitigation work continues effectively. The ACT Government agreed to all recommendations and noted one. Recommendations from the report are being actively considered in the development of the new ACT Climate Change Strategy.

Adoption of the ACT's new emissions reduction targets

In May 2018, the ACT Government committed to adopting a new, nation-leading target of achieving net zero emissions by 30 June 2045 (previously 30 June 2050).[8] This target is the most ambitious of any Australian state or territory, and is among the most ambitious climate change targets internationally. The ACT Government also committed to adopting a series of interim targets to set a pathway to achieving net zero emissions by 2045.

8 These targets were formally adopted in September 2018. The 2045 net zero emissions target date is contained in the Climate Change and Greenhouse Gas Reduction Act 2010. The interim emissions reduction targets are contained in the Climate Change and Greenhouse Gas Reduction (Interim Targets) Determination 2018.

C. DEVELOP, ADOPT OR PROMOTE POLICIES AND PROGRAMS

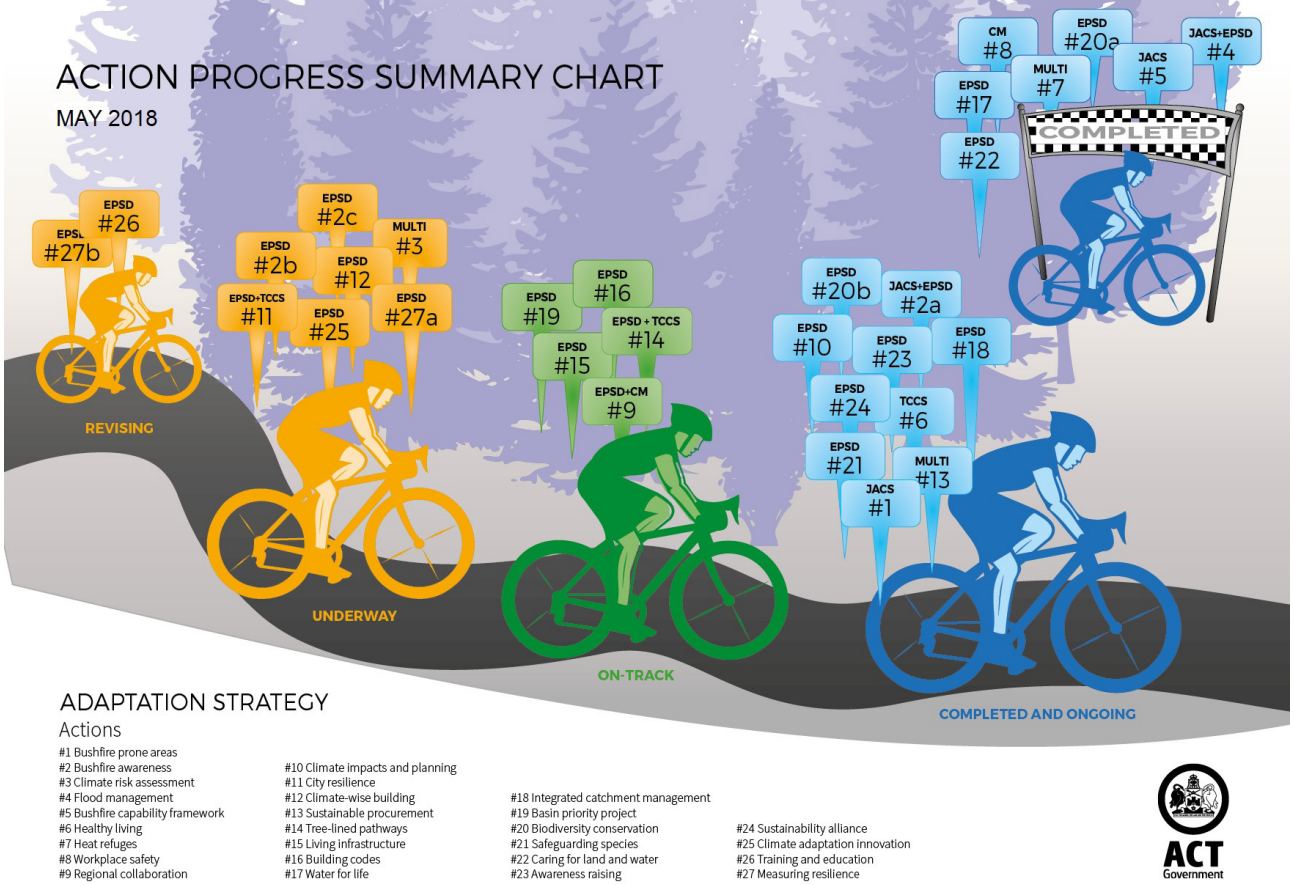
Zero Emissions Vehicles

The ACT's Transition to Zero Emissions Vehicles Action Plan 2018–21 (Action Plan), launched in April 2018 outlines the immediate actions Government will take to encourage the rapid uptake of zero emissions vehicles in the ACT. This plan complements a broader suite of work to promote active travel, increase use of public transport and reduce emissions from public transport and private vehicles. This work will help Canberra remain a highly sustainable and liveable city and encourage the transition to zero emissions vehicles such as electric cars and electric bikes.

Transport is expected to account for over 60% of the ACT's greenhouse gas emissions by 2020, with the majority of these resulting from the use of private cars. Reducing emissions from transport presents one of the biggest challenges in achieving net zero emissions, but also presents opportunities. Making the shift to clean, zero emissions vehicles will offer many benefits for the ACT including generating new economic opportunities, reducing emissions, and reducing noise and air pollution.

The Action Plan includes targets for shifting to a zero emissions Government passenger vehicle fleet from 2019–20, introducing incentives and facilitating installation of infrastructure to encourage the broader uptake of electric cars and electric bikes. The Action Plan is available at www.environment.act.gov.au.

ELECTRIC VEHICLES ACTION PLAN LAUNCH



Adapting to climate change

The ACT is already 1°C hotter than the long-term average. Further global warming is already 'locked-in'. The actions in the ACT Climate Change Adaptation Strategy: Living With a Warmer Climate 2016 (available at www.environment.act.gov.au), are focussed on what the government can do in the short term (to 2020) to start the transition to become less vulnerable and more resilient to impacts. The risks from climate impacts are from extremes like hotter, longer heatwaves; more frequent droughts; more severe bushfires; more intense storms and consequent flash flooding. The Adaptation Strategy actions are in sectors that reflect different government services such as emergencies and disasters, health and wellbeing, settlements and infrastructure, nature conservation and water.

Highlights for the 2017–18 reporting period include:

- Two-thirds of the 27 Adaptation Strategy actions have been fully or substantially completed within 18 months, with remaining actions to be completed by 2020.
- CSIRO Land and Water's study[9] of areas of high urban heat (and cold) and most vulnerable people was publicly released in February 2018, along with the Living Infrastructure Information Paper[10].
- ANU Fenner School began a review of the current trees species list for Canberra (Municipal Infrastructure Standard (MIS) 25) to ensure future plantings will be fit-for-purpose for the warming climate.
- Engagement with the Sustainability Alliance—a ministerially invited independent group of peak bodies, knowledge brokers and business—captured views to inform the development of a Living Infrastructure Plan.
- The first longitudinal Benchmarking Resilience survey of the ACT community by the University of Canberra attracted more than 2700 participants. Early results showed almost all Canberrans want government action on climate change, and building improvements through increased regulation.
- The scope of the whole-of-government Director-General level Steering Committee and Senior Officer level Climate Change Working Group expanded to cover all climate related matters rather than just adaptation.

Progress in implementing the 27 actions as of 30 May 2018 is shown in the infographic above. The ability of Directorates to undertake these actions in line with nominated timelines has varied due to prioritisation and allocation of resources. Adaptation priorities and actions are being incorporated into the new climate strategy, which will encompass both mitigation and adaptation from 2020.

9 https://www.environment.act.gov.au/__data/assets/pdf_file/0004/912478/ACT-Climate-Change-Adaptation-Strategy.pdf

10 http://www.environment.act.gov.au/__data/assets/pdf_file/0011/1170965/Canberra-Living-Infrastructure-Information-paper-2018.pdf

Energy Efficiency Improvement Scheme (EEIS)

The Energy Efficiency (Cost of Living) Improvement Act 2012 established the EEIS, requiring electricity retailers to achieve energy savings in households and small-to-medium enterprises through a non-certificate based retailer obligation scheme. The EEIS is currently legislated until December 2020 and provides targeted assistance for lower income priority households. An independent review of the scheme was undertaken in 2018, which showed it had been effective in reducing household and business emissions and energy costs. It has been cost-efficiently delivered with an overall positive benefit–cost-ratio of around 4:1.

Since the EEIS started in January 2013, nearly 72,000 households and businesses have participated in the Scheme, including more than 18,000 priority low income households and over 15,500 rental properties. During its first four and a half years of implementation, the scheme had successfully installed more than 1.2 million energy saving items, saving emissions of more than 390,000 tonnes of carbon dioxide equivalent (t CO_2 -e).

The claimed abatement for all activities from 1 July 2017 to 30 June 2018 was 89,479 t CO_2-e. There were 17,799 t CO_2-e claimed for priority (low income) households, towards the annual EEIS Priority Household Target of 20%.

The EEIS expanded into the business sector in January 2017, with ActewAGL offering efficient lighting upgrades for eligible businesses. This initiative allows businesses to reduce their energy consumption, reduce lighting energy bills by up to 60% and improve the quality and lifespan of their light globes. In the 2017–18 financial year, 1,285 Canberra businesses received lighting upgrades with more than 120,800 lights installed and avoided emissions of over 32,000 t CO_2-e. The installed items have the potential to save around $69 million over ten years.

As part of the ongoing process of strengthening the EEIS, in January 2018, commercial lighting and building sealing activities were amended to streamline reporting requirements, reduce duplication and achieve greater harmonisation across schemes such as the NSW Energy Saving Scheme (ESS), South Australian Retailer Energy Efficiency Scheme (REES) and Victorian Energy Efficiency Target (VEET).

EEIS stakeholder consultations confirmed business heating and cooling and residential insulation activities as the two highest priority for EEIS to develop. Targeted consultation is underway on proposed new residential insulation, business heating and cooling and demand response activities. Initial analysis suggests these activities will achieve higher abatement in the ACT compared to similar schemes in other jurisdictions as they help reduce the Territory's natural gas consumption.

Actsmart Community Garden Grants

The ACT Government continued to provide funding to support the development and expansion of community gardens across Canberra. The third round of the Actsmart Community Gardens Grants funding was launched in August 2017, with $40,000 of funding available. Program eligibility was expanded to include owners corporations of multi-unit developments to cater for the growing numbers of Canberrans living in units and townhouses.

Funding priorities were the benefit to the wider community, social inclusion, promotion of healthy living and community support. Nine projects were successful, including the establishment of community gardens within two apartment complexes and self-watering garden beds within a shopping precinct.

Actsmart Community Zero Emissions Grants

The ACT Government launched the first round of the Actsmart Community Zero Emissions Grants program which will provide a total of $550,000 of funding over four dedicated rounds. Funding is available to eligible community groups and sponsored individuals to lead initiatives which support the ACT's transition to net zero emissions by 2045.

Round one of the program targeted innovative projects across the energy, transport, building, land use and waste sectors that focus on improved sustainability and environmental outcomes, along with effective engagement with the community. Six projects received $140,000 in funding, including an interactive smartphone app and website to encourage sustainable living and a solar powered community composter.

Actsmart Community Partnerships

The ACT Government provides funding to three community organisations: SEE-Change Society, Canberra Environment Centre and Conservation Council ACT Region. The funding supports the three organisations to help ACT residents become more sustainable and environmentally aware through the delivery of events, workshops and other community engagement activities. The organisations' activities complement the Government's climate change, sustainability and environmental priorities, policies and programs. The organisations also promote and distribute information on current sustainability initiatives of the Government.

Actsmart Business Energy and Water Program

The Actsmart Business Energy and Water program provides advice and financial assistance for efficiency upgrades to small businesses to help reduce energy and water consumption. The program commenced on 1 July 2012.

The program is open to ACT businesses, community groups and owners corporations with electricity bills up to $20,000 per annum and/or up to 10 full-time equivalent staff. An Actsmart assessor conducts an energy and water assessment of the participant's premises, resulting in a tailored energy and water action report. The report recommends upgrade opportunities as well as no-cost and behaviour change recommendations to reduce energy and water consumption and greenhouse gas emissions. Businesses, community groups and owners corporations are able to claim a rebate of 50% of costs of approved upgrades up to a value of $5,000.

	2017–18 participation	Total program participation (since July 2012)
Number of businesses assessed	130	808
Number of businesses claiming a rebate	78	433

In 2017–18 the program assessed 130 small businesses, community groups and owners corporations, with 78 claiming a rebate to upgrade to more efficient fittings or fixtures. Estimated savings per year from the upgrades installed in 2017–18 are:

- energy – 653 megawatt hours (MWh)
- greenhouse gas emissions – 294 t CO_2-e
- energy bills – $147,900 for the year, an average of $1,900 per business.

Estimated lifetime energy savings from the upgrades installed since the program began are 46,620 MWh. In 2017–18, the program continued to complement the efficiency upgrades offered through the ACT Government's Energy Efficiency Improvement Scheme. Eligible businesses were able to receive free or subsidised lighting upgrades through electricity retailers participating in the EEIS. The Actsmart program offered complementary advice, action plans and rebates to businesses wanting to improve the efficiency of other energy and water fixtures, resulting in a holistic package of energy and water efficiency support. Further details on the achievements of these organisations can be found at www.actsmart.act.gov.

Actsmart Low-Income Household Program

The Actsmart Low Income Household Program commenced in October 2015. The Program, which is delivered by St Vincent de Paul, helps low income households improve the energy efficiency of their homes and contribute to reducing greenhouse gas emissions. It offers in-home energy assessments and education to improve participants' understanding of energy and water use and provides energy saving kits, a heated throw rug and extensive draught proofing to the house. Participants receive support to access eligible energy concessions and are referred to other services such as retailer hardship programs or the No Interest Loan Scheme (NILS). The program also replaces old, inefficient refrigerators and room heaters to a limited number of prioritised low income households.

No Interest Loan Scheme

In January 2015, a partnership was developed with Care Financial Services Inc. and The Salvation Army to offer subsidies for energy and water efficient appliances purchased using the existing NILS. This cost effective approach reduces greenhouse gas emissions by providing the financial means for low income households to access energy efficient technology where there may otherwise be a cost barrier. The following subsidies apply:

- $300 for refrigerators
- $200 for freezers and washing machines and
- $500 for reverse-cycle air conditioners.

Actsmart Curtain Project

The Actsmart Curtain Project, originally launched in 2014 as a trial between St Vincent de Paul, SEE-Change and the Directorate, continued. This project supports vulnerable households through improving the energy efficiency and thermal comfort installing curtains into their homes and improving participants' sense of privacy and security.

Eligible households are identified through the Low Income Household Program and supported by volunteers through the St Vincent de Paul network.

Actsmart Low Income Program participation

Activity	Program commenced	2017–18 Participation	Total participation from start of program
Low income households assisted	01 Oct 2015	1,496	3,671
Home energy assessment and education (first visit only)	01 Oct 2015	573	1,619
Information sessions	01 Oct 2015	923	2,052
Energy efficient refrigerators and freezers installed	01 Oct 2015	113	390
Energy saving kits, heated throw rugs and other energy and water efficient items provided.	01 Oct 2015	553	1,515
Draught proofing	01 Oct 2015	350	1,181
Energy efficient heaters installed	01 Apr 2016	101	272
Appliances provided through NILS subsidies	Jan 2015	29 refrigerators	144
		3 freezers	9
		32 washing machines	148
		1 reverse cycle air conditioners	11
Curtain Program	2014	158	381 households

Outcomes of the Actsmart Low Income Programs

Estimated savings from the energy-efficient appliances and retrofits (refrigerators, freezers, draught sealing, window treatments, efficient heating and No Interest Loans Scheme subsidies) installed in 2017–18 are:

- energy – 1,271 MWh (from both electricity and gas)
- greenhouse gas emissions – 440 t CO_2-e.

These figures do not include the energy and greenhouse gas emission savings that may be achieved from behaviour change of program participants as a result of the home energy assessment, education and information sessions.

The estimated minimum lifetime energy savings achieved from the energy-efficient appliances and retrofits installed during 2017–18 is 11,821 MWh (from both electricity and gas).

Total energy savings are calculated using the methodology employed by the EEIS. Not all activities offered through the Low Income Household Program (such as education and heated throw rugs) are included in the EEIS, so the reported savings are likely to be an underestimate.

Actsmart Solar for Low Income Program

The Actsmart Solar for Low Income program was launched by the Minister for Climate Change and Sustainability in December 2017. The program provides eligible households with a partial subsidy of up to 60% (capped at $3,000) for the supply and installation of rooftop solar panels. Participants can also access a three-year interest free loan to pay off the remaining costs.

The estimated benefit to participants is in the order of $300 to $900 per year, with the actual benefit varying depending on household usage patterns and property factors such as available roof space and orientation.

221 low income households received solar panels through the program in 2017–18.

Actsmart Sustainable Home Advice (formerly Actsmart Home Energy Advice Program)

The Actsmart Sustainable Home Advice service was launched on 1 July 2016 after an ACT Government decision to provide a cost-effective in-house energy efficiency service for households. There is no rebate or discount associated with the service, which offers residents independent advice, information and resources to reduce household energy use including:

- free home energy advice by phone, email and website
- free in-home energy assessments
- free workshops on household energy efficiency and rooftop solar
- a suite of online accessible factsheets.

The service also provides residents with details of other programs that may assist them such as the EEIS, the Low Income Household Program and other ACT and Australian Government initiatives.

In 2017–18, 1513 people attended 45 workshops and other events, and an additional 354 people received advice by phone, email and in-home energy assessments.

Actsmart Carbon Challenge

The Actsmart Carbon Challenge, launched in February 2015, is an online tool that assists households to reduce energy use and greenhouse gas emissions. Initially developed in 2012 by the Canberra Environment Centre as part of an ACT Government Climate Change Grant, the Directorate worked closely with the Canberra Environment Centre to launch the revised Carbon Challenge on the Actsmart website.

Participants can accept a range of challenges on energy, water, waste, transport, gardening and community. The Carbon Challenge had 3217 registered participants in 2017–18. Three new challenges, Straws Suck!, Food Forensics and Travel Tracker, were created and published on the site in June 2018. The Straws Suck! challenge aims to support the Actsmart Business 'Straws Suck' campaign, the Food Forensics challenge assists householders to audit their food consumption and waste, and the Travel Tracker assists householders to audit their transport habits. In July 2018 all three challenges were promoted in a month-long campaign that engages ACT secondary schools and their students' households.

Actsmart Wood Heater Replacement Program

The Actsmart Wood Heater Replacement program aims to reduce the level of air pollution from the use of wood heaters by helping residents replace their wood heater with a more efficient heater. In January 2013, the Sustainability Programs branch of the Directorate took over the administration of this program, which has been operating since 2004. Approximately 1,155 wood heaters have been removed from service and replaced with cleaner, mains-supplied natural gas heating options or electric reverse-cycle heating systems since the program started, with 25 removed in the past year.

In 2017–18, the program provided a:

- $1,100 subsidy for removal or decommission of a wood heater and installation of a new electric ducted reverse cycle system installation
- $600 subsidy for removal or decommission of a wood heater and installation of an electric reverse-cycle split system (minimum 3 star) or upgrade to an existing reverse cycle system to a minimum 3 star system
- $100 subsidy for the removal or decommission of a wood heater.

From 1 July 2017 gas subsidies were no longer offered through the program. Applicants for gas subsidies approved prior to 1 July 2017 were able to claim rebates until 31 December 2017. ActewAGL Pty Ltd provided the funding for the gas subsides.

The $100 subsidy for removal of wood heaters was introduced in July 2015 to encourage correct disposal of removed wood heaters. It is included within the subsidies for the replacement of both gas and electric heating systems and as a standalone subsidy where just the wood heater is removed.

In November 2015 the Wood Heater Replacement Program introduced a 12-month trial for subsidised electric heating, funded by ACT Government and this rebate has been incorporated into the program.

Actsmart Schools

The Actsmart Schools program implements a whole-of-school, action learning and behavioural change approach to sustainability. The program supports schools to introduce sustainable management practices into school operations and create a school culture committed to minimising its impact on the environment. All ACT schools have registered with the program, representing over 77,142 students.

Curtin Primary School, Palmerston District Primary School and Arawang Primary School gained five-star accreditation, taking the total of five star accredited schools to 17 schools. The five-star accreditation scheme rewards schools for their achievements.

Professional development workshops for students, teachers and school business and facilities managers attracted 300 participants. Workshop topics included engaging students through food gardens, energy and water, integrating sustainability into the curriculum and educating school sustainability coordinators. Two eco-bus tours were conducted for teachers and students to promote best practice in sustainability in schools.

The Actsmart team gives advice, conducts energy assessments, delivers best practice guides, addresses school meetings and helps establish student teams. Staff visited 42 schools to assist with waste and recycling and a further 23 schools received the Student Energy Action kit and an energy presentation.

Actsmart Schools facilitates visits by a qualified horticulturist, with 28 schools receiving advice on irrigation, plant selection and garden design (to reduce water and energy consumption), keeping chickens, composting and establishing food gardens.

Resources provided by the Actsmart Schools program included best practice guides (energy, water, waste and recycling, school grounds and biodiversity), curriculum units (P–Y10), case studies and educational games such as Trash and Treasure and Talking Points. 44 schools borrowed the two interactive waste displays and a composting display.

Actsmart Schools continued to work with the ACT Education Directorate to help schools move towards carbon neutrality, providing environmental data, workshops and ongoing education, resources and advice. The comparison of consumption levels for 2017–18 between accredited and non-accredited schools is illustrated below. Note that water and energy results are based on data for public schools only.

Data from audits undertaken for 2017–18 show that schools with Actsmart Schools waste accreditation send 25% less waste to landfill (on a per student basis) than schools that are not accredited. This table shows that schools with an Actsmart Schools accreditation (in the focus area measured) consistently perform better than schools who have not achieved accreditation.

Summary of School Savings for 2017–18

Schools	Usage
Water use per student (kilolitres /student/annum)	
All schools	7.59
Actsmart accredited schools	7.54
Non-accredited schools	7.62
Energy use per square metre (megajoules/ square metre/annum)	
All schools	348
Actsmart accredited schools	326
Non-accredited schools	431
Waste sent to landfill (cubic metres/student/annum)	
All schools	0.48
Actsmart accredited schools	0.41
Non-accredited schools	0.55

Actsmart Business Recycling Program

The Directorate launched the ACT Government's commercial recycling programs: Actsmart Business and Actsmart Office, in 2009. Now known as the Actsmart Business Recycling program, this program provides assistance and accreditation to businesses to encourage and support the adoption of efficient waste management and recycling. The program focuses on encouraging participants to improve the way they deal with their waste, to redirect waste away from landfill, and to strive to improve sustainability and reduce the ACT's carbon footprint.

The 1004 sites across the ACT participating in these programs include major shopping centres, fast food outlets, GIO Stadium (Canberra Stadium), UNSW Canberra Oval (Manuka Oval), Canberra Museum and Gallery, Australian Institute of Sport, Calvary Public Hospital, Calvary John James Hospital, National Arboretum and National Zoo & Aquarium. Including the Directorate, 563 sites were accredited in 2017–18, meeting the recycling standard set by the program.

More than 70,000 staff have access to the program. In 2017–18, the 563 accredited sites recycled approximately 17,240 cubic metres (m^3) of mixed recyclables, representing around 1,390 t CO_2-e avoided, 22,216 m^3 of paper and cardboard, representing 5555 t CO_2-e avoided and 1,999 m^3 of organic material, which is equivalent to 1097 t CO_2-e avoided. In addition:

- many businesses signed up to the program, are working towards accreditation, and are achieving substantial reductions in waste to landfill that are not captured in the above statistics of accredited sites
- the program helps businesses avoid over-servicing caused when bins are collected when not full, resulting in further cost savings for business owners
- the program offers a tour of the Materials Recovery Facility to educate staff from signed sites about the recycling process, including advice on best practice recycling.

The Actsmart Business Recycling program continued to be delivered to Queanbeyan businesses by Actsmart staff through a cross-border agreement with Queanbeyan–Palerang Regional Council. As waste generated in Queanbeyan is diverted to ACT landfills, encouraging Queanbeyan businesses and offices to improve recycling results in less waste going to landfill in the ACT.

Actsmart Public Event program

The Directorate continued delivery of the Actsmart Public Event program, which helps event organisers implement recycling facilities at public events. The program has been extended to include advice and support on energy, water and transport opportunities available to event holders. Any community-based event is eligible including school fetes, festivals, fairs, shows or sporting events.

A Public Event Sustainable Events Guide, created during 2015–16, includes a section specifically on 'Energy, Water and Transport' to encourage reduced water and energy consumption and use of alternative transport to events. Additionally, the program offers free energy and water assessments for events.

As at 30 June 2018, 201 events had participated in the program including Floriade, National Multicultural Festival, ActewAGL Royal Canberra Show, National Folk Festival, sporting events, fetes and fairs.

Diversion of waste into recycling streams from these events included around 78,974 kilograms of mixed recycling, equivalent to emissions of about 101 t CO_2-e avoided and 2,367 kilograms of organic waste, equivalent to emissions of 3 t CO_2-e avoided. More than 1.5 million patrons had the opportunity to recycle at these events.

Communication and awareness

A communication and education program to increase awareness of water and energy efficiency issues and sustainable waste management was provided through a range of public events and presentations.

The Actsmart website is the Government's central sustainability information portal. The website facilitates an ongoing dialogue with the community on climate change and sustainability issues and makes sustainability information and web tools readily available to the community, households, schools and businesses. It provides extensive and up-to-date online information, news, links and a variety of interactive tools and opportunities to develop personal plans of action which helps ACT residents, businesses, schools and community organisations better manage their energy, water and waste and live more sustainably.

Social media channels (Facebook and Twitter) increase awareness of Actsmart information and assistance and direct people back to the Actsmart website to access more detailed information. These channels are measured through digital analytics. Reports indicate a growing number of followers by local and national audiences and strong engagement on sustainability initiatives.

Large-scale Renewable Electricity Generation

2017–18 was a significant year in terms of the ACT's progress towards its 100% by 2020 renewable electricity target. Several large wind and solar projects began, or advanced towards, large FiT-supported generation. These included the 270 megawatt (MW) Sapphire wind farm in north Eastern New South Wales, of which the ACT is supporting 100 MW. The wind farm began large-scale feed-in tariff supported generation in May 2018, and, once completed, will be the largest in the state.

Carbon Neutral ACT Government Framework

The Carbon Neutral Government (CNG) program aims to reduce greenhouse gas emissions from the ACT Government's own operations and demonstrate leadership in emissions reductions with a target of net zero emissions by 2020.

The ACT Government is responsible for about 4% of all ACT greenhouse gas emissions. In 2017–18, emissions from Government operations totalled 132.6 kilotonnes (kt) CO_2-e. This represents a decrease in emissions of 19% from the previous financial year and an overall reduction of 27% since 2012–13. Savings have been achieved by improving energy efficiency and increasing the proportion of renewable electricity used by the Government. The savings achieved by reducing electricity consumption have balanced the increases in natural gas and transport emissions that occur due to increasing service delivery in areas such as health, schools and bus services.

Carbon Neutral Government Fund

The Carbon Neutral Government Fund (CNGF) was established in July 2012 to provide a funding mechanism for agencies to implement energy efficiency and emission reduction projects. Projects repay the loan through the cost savings generated, with additional savings to remain with agencies once loans are repaid.

29 projects have been supported under the CNGF, to a value of approximately $14.9 million. A diverse range of projects have been supported, including: lighting upgrades, heating, ventilation and cooling (HVAC) upgrades, smart building management systems, and an off grid solar photovoltaic system connected to battery storage.

These projects make ongoing annual cost and energy savings. Savings from projects are currently estimated to be more than $2 million per year. In addition, projects are estimated to save more than 9,000 t CO_2-e per year.

In 2017–18, the CNGF supported four projects, with approximately $1.8 million allocated towards renewable energy and energy efficiency projects. Projects supported in 2017–18 are listed below:

Directorate/ Agency	Description of Project
TCCS	Installation of a 24.3 kilowatt (kW) solar photovoltaic (PV) system at Belconnen Bus Depot.
TCCS	Replacement of two fixed speed air compressors at Capital Linen Services with two variable speed compressors and heat recovery.
CIT	Installation of on-site power generation and energy storage in the form of a Micro-grid on building K at the Bruce campus.
CIT	Installation of a Solar PV system and LED (light-emitting diode) lighting upgrade at Fyshwick campus and LED lighting upgrade at Bruce campus.

Enterprise Sustainability Platform

In June 2014, the Government commenced operation of an Enterprise Sustainability Platform (ESP), which is a database that provides accurate and comprehensive whole-of-government data on its energy and water use and greenhouse gas emissions. The ESP underpins implementation of the CNG Framework, administration of the CNGF, greenhouse gas inventory reporting, carbon budgets and sustainability data reporting in agency annual reports, and supports facility managers across government to identify opportunities to make savings.

In 2017–18, fleet fuel and cost data were added to the ESP allowing fuel consumption and emissions from fleet to be tracked by agencies from a single platform.

D. CONSULT BUSINESS AND COMMUNITY

ACT Climate Change Council

The ACT Climate Change Council (Council) is an advisory body to the Minister for Climate Change and Sustainability, responsible for providing advice on reducing greenhouse gas emissions and adapting to climate change. The Council also plays a pivotal role in informing climate change policies in the ACT and providing leadership in the community, working to raise awareness of climate change risks and community benefits from effective climate action, influencing community views and attitudes, and encouraging everyone to take action towards a decarbonised economy and a more resilient Territory.

Members in 2017–18 were:

- Professor Barbara Norman (Chair)
- Professor Penny Sackett (Deputy Chair)
- Professor Will Steffen
- Professor Frank Jotzo
- Mr Toby Roxburgh
- Ms Karen Jesson and
- Mr Ben Ponton.

The Council advised the Minister on several key issues during the reporting period, including:

- interim greenhouse gas reduction targets
- technical, policy and economic advice on development towards zero net emissions by 2045, at the latest and
- community engagement on climate change.

Climate Change Ministerial Advisory Group

The Climate Change Ministerial Advisory Group (CCMAG) was formed in October 2017. The main function of CCMAG is to advise the Minister for Climate Change and Sustainability on matters relating to
(i) the development of the ACT's next climate strategy and net zero emissions goals, and
(ii) addressing and adapting to climate change.
CCMAG has met with the Minister for Climate Change and Sustainability three times in 2018.

Members of CCMAG are representatives of community, industry and business groups. Current members are:

- Larry O'Loughlin (Conservation Council ACT)
- Mark Spain (SEE-Change)
- Susan Helyar (ACT Council of Social Service)
- Alex White (Unions ACT)
- Robyn Hendry (Canberra Business Chamber)
- Andrea Simmons (community member)
- Glenys Patulny (combined community councils)
- Adina Cirson (Property Council of Australia – ACT Branch).

E. PROMOTE ACTIONS OR STRATEGIES BY BUSINESS ENTITIES

The Actsmart Business Recycling program provides assistance and accreditation to businesses to encourage and support the adoption of efficient waste management and recycling. The program focuses on encouraging participants to improve the way they deal with their waste, to redirect waste away from landfill and to strive to improve sustainability and reduce the ACT's carbon footprint.

The Actsmart Business Energy and Water program, which provides advice and financial assistance for efficiency upgrades to small businesses to help reduce energy and water consumption, commenced on 1 July 2012. The program is open to ACT businesses, community groups and owners corporations with electricity bills up to $20,000 per annum and/or up to 10 full-time equivalent staff.

In addition to the Actsmart programs, the ACT's successful, innovative and award winning reverse auction process for large-scale renewable electricity production, has secured an estimated $500 million in local investment benefits over 20 years and an international reputation as a centre for renewable energy innovation and investment. The ACT Government has been using this investment to expand opportunities for companies already in the ACT, develop new research and trades training programs, and create opportunities for new and emerging companies.

The most recent Next Generation Renewables Auction secured $25 million in industry funding to support the roll-out of 'smart' battery storage to up to 5,000 ACT homes and businesses. The Next Generation Energy Storage Program is one of the largest programs of its type in the world. Next Gen Program funding is being awarded to installers through a competitive grants process that ensures the best value for money for the ACT and that batteries are only installed by skilled and accredited tradespeople with recognised experience and commitment to the local renewable energy industry.

F. PROMOTE INVOLVEMENT IN CLIMATE CHANGE FORUMS

The Government participates in a range of national forums on energy and climate change matters. Forums include Meetings of Environment Ministers and Council of Australian Governments (COAG) Energy Council (previously the Standing Council on Energy and Resources); the Climate Action Roundtable (CAR) and the Cities Power Partnership.

The Cities Power Partnership was launched in Canberra in July 2017. The partnership is a network of local governments across Australia including the ACT, which is focussed on reducing greenhouse gas emissions. More than 100 councils representing almost 11 million Australians are part of this network. The ACT has made five action pledges as part of this partnership including promoting renewable energy, energy efficiency measures, setting renewable energy benchmarks for new developments, supporting the uptake of electric vehicles, and setting emissions reduction targets.

Throughout the 2017–18 reporting period, the Minister for Climate Change and Sustainability continued to engage with the international community on a range of climate change issues through a number of alliances and groups, including:

- The Under 2 Coalition, a global coalition of ambitious state and regional governments committed to keeping global temperature rises to well below 2°C.
- Compact of States and Regions, an initiative to provide a transparent, global picture of efforts to tackle climate change by governments, encouraging governments to set emissions reduction goals and measure progress.
- The Global Covenant of Mayors for Climate and Energy, an international alliance of cities and local governments with a shared long-term vision of promoting action to address climate change and move to a low-emissions, climate resilient society.
- RegionsAdapt, a global framework to inspire and support regional governments to take strong action, collaborate, and report efforts on climate change adaptation.
- International Council for Local Environmental Initiatives (ICLEI), a leading global network of over 1,500 cities, towns and regions committed to building a sustainable future.

Benefits of these groups for the ACT include information sharing, networking, ensuring accurate data analysis and reporting, engaging with sub-national governments, and aiding benchmarks for ACT climate change policies and actions. The ACT also has the opportunity to demonstrate leading best practice in addressing climate change so that other jurisdictions and cities can follow.

G. PROMOTE THE COMMERCIALISATION, GENERATION AND USE OF RENEWABLE ENERGY

As an outcome of the ACT's renewables reverse auctions, around 2 GW of renewable energy is managed from Canberra's renewable energy precinct, which includes leading renewable energy companies such as Neoen, Global Power Generation, CWP Renewables and Windlab. This figure is estimated to grow to around 8 GW by 2020.

The Renewable Energy Skills Centre of Excellence at the Canberra Institute of Technology (CIT) is now offering Global Wind Organisation accredited wind safety and technical training. Siemens and its subcontractors provided the first intake of students and in subsequent intakes demand is anticipated from Australia and the region. Later in 2018 the Centre of Excellence will also run solar PV and battery courses that will allow licensed electricians to apply for Clean Energy Council PV Accreditation and battery storage endorsement. The ANU's successful partnership with Windlab to offer Australia's only masters course in wind development is now in its third year and has already been delivered to more than 100 students.

The $12 million industry funded Renewable Energy Innovation Fund (REIF) is continuing to support the Renewables Innovation Hub, a collaborative co-working space located in Canberra's wider renewable energy precinct. In 2017–18, the Hub helped more than 25 businesses, and held close to 100 targeted industry events. Canberra's leading co-working community, Entry 29, manages the Hub and is supporting the Hub's transition to increased self sufficiency over time. The REIF also provided $1.2 million in commercialisation seed funding to innovative cleantech start-ups, many now based, at the Hub.

H. PROMOTE THE COMMERCIALISATION AND USE OF OTHER TECHNOLOGIES

Next Generation Energy Storage Grants

Energy storage technology allows consumers to use more of the electricity they produce from their rooftop solar installation and provides significant benefits and potential savings for the operation of the electricity grid.

The Next Generation (Next Gen) Energy Storage program aims to install up to 5,000 batteries, or 36 MW of storage, in ACT homes and businesses to 2020. By the end of 2017–18, over 800 systems had been supported under the program with the rate of installation expected to increase throughout 2018–19.

The program currently provides a subsidy of $825 per kW of Sustained Peak Output of the battery, which equates to a saving of around $4,000 for an average household system. Each system installed is collecting critical data to inform industry research and development, and further position Canberra as a world leader in this 'sunrise industry'. To further this, the ACT Government will shortly launch the Next Generation Energy Storage Data Management System that will capture the data from the battery systems installed under the program.

Each system installed is required to transmit critical data to a central data platform that will be used to inform research, development and deployment initiatives. The Virtual Power Plant recently trialled by Reposit Power, Evoenergy and Evergen demonstrated how the mandated 'smart' requirements of the program are stimulating innovation in the local renewable energy industry.

There are eight battery installers currently operating under the program. They are ActewAGL Retail, SolarHub, Evergen, Power Saving Centre, EPC Solar, IT Power Renewables, Harvey Norman Commercial Division and Solargain.

Zero Emissions Vehicle Strategy

To support and accelerate the transition to zero emission vehicles, the ACT Government has committed to working with local and state governments to facilitate the installation of charging stations on major routes to and from Canberra including routes to Sydney and coastal areas.

I. PROMOTE RESEARCH AND DEVELOPMENT

ANU Battery Storage and Integration Program

The ANU's $8 million battery research program, which is supported by up to $5 million in REIF funding over five years, will establish the ACT as a centre for world-class battery storage research, commercialisation and business development. Recently, local entrepreneur and former Chief Technology Officer at Canberra start-up Reposit Power, Dr Lachlan Blackhall, was appointed as research leader for the program.

The program will include research into energy storage and power conversion; data analytics; device optimisation and control; and regulation. It will complement the Government's roll-out of up to 5,000 residential smart batteries by 2020.

J. SUPPORT THE DEVELOPMENT OF APPROACHES TO ADDRESS CLIMATE CHANGE

The ACT Government continued to support the Climate Action Roundtable initiative. In 2016, the ACT Government initiated a Climate Action Roundtable: a forum where Australian jurisdictions and cities can come together to identify opportunities in addressing climate change cooperatively towards meeting the Paris Climate Agreement target of zero net emissions by 2050. There is a significant opportunity for Australian sub-national governments to share knowledge, address common challenges and work together on climate change mitigation and adaptation through this network.

At the last meeting in Adelaide in December 2017, the ACT, along with South Australia, Western Australia, and the cities of Adelaide and Hobart signed a memorandum of understanding (MoU) agreeing to develop a plan to increase the number of electric vehicles in government fleets and promote the public uptake of electric vehicles.

K. CONSIDER AND RECOMMEND AMENDING TERRITORY LAW, GOVERNMENT POLICY OR PRACTICE

The ACT's Climate Change Council (see section D) wrote to the Minister for Climate Change and Sustainability on 19 October 2017, on the importance of setting interim greenhouse gas emission targets for the ACT, and to recommend particular targets for the years 2025, 2030 and 2040. In this letter, the Council also proposed that the ACT should achieve carbon neutrality by 2045 or earlier.

The government considered this advice and in May 2018 committed to a nation-leading target of achieving net zero emissions by 2045 (previously 2050), with a series of interim targets to provide a pathway to that date:

- 50–60% below 1990 levels by 2025
- 65–75% below 1990 levels by 2030
- 90–95% below 1990 levels by 2040.

L. ASSESS THE IMPACT OF CLIMATE CHANGE

ACT greenhouse gas inventory

The Directorate is responsible for monitoring the greenhouse gas emissions from the ACT community as a whole. The emissions are calculated and published in an annual ACT Greenhouse Gas Inventory, using methodologies consistent with national requirements but specific to the unique energy requirements of the ACT. The inventory includes both emissions produced within the ACT (Scope 1) and indirect emissions (Scope 2), which relate to the generation of electricity used in the ACT. The inventory provides an assessment of both total greenhouse gas emissions and the amount of emissions per person in the ACT.

In October 2017, the Minister for Climate Change and Sustainability released the 2016–17 ACT Greenhouse Gas Inventory. The estimate of total greenhouse gas emissions for the ACT in 2016–17 is 3,916.2 kt CO_2-e. This total includes the net impact of both emissions and removals of CO_2-e in the land use, land use changes and forestry sector.

Per capita emissions rose between 2013–14 and 2014–15 but fell slightly in both 2015–16 and 2016–17. The 2016–17 ACT Greenhouse Gas Inventory also makes some minor revisions to the estimate of total greenhouse gas emissions for 2013–14, 2014–15 and 2015–16.

Greenhouse gas emission methodologies

From time to time, amendments are made to the methodology for preparing the ACT's Greenhouse Gas Inventories. Minor methodology amendments were made in 2017 to include emissions from biological processing of waste, and to calculate below-baseline electricity generation on a 5 year rolling average.

The ACT uses its own unique electricity emissions factor that takes into account the renewable energy target (RET) implementation of the transition to 100% renewable electricity by 2020. The methodology used to calculate this emissions intensity factor is consistent with the approaches and methods set out in the major recognised national and international greenhouse gas emissions inventory methodology documents. The full electricity emissions factor report can be found on the Directorate website at www.environment.act.gov.au/cc/acts-greenhouse-gas-emissions/measuring-act-electricity-emissions.

M. SUPPORT PUBLIC EDUCATION

At the heart of AP2 is the principle that everyone in the ACT has a role to play, every action counts and together we can make a difference. The focus of AP2 is on establishing the policy environment to meet our emissions reduction targets and providing the tools and incentives to make it easier for everyone in the ACT to play a role. Education and community dialogue is important. Understanding precedes concerted action, and an informed and engaged Canberra community is better placed to act for its own benefit and the benefit of future generations.

The Actsmart website is Government's central sustainability information portal (www.actsmart.act.gov.au). The website facilitates an ongoing dialogue with the community on climate change and sustainability issues and makes sustainability information and web tools readily available to the community, households, schools and businesses. It provides extensive and up-to-date online information, news, links and a variety of interactive tools and opportunities to develop personal plans of action which helps ACT residents, businesses, schools and community organisations better manage their energy, water and waste and live more sustainably.

N. ANY OTHER FUNCTIONS

AP2 commits the ACT Government to undertake an annual Cost of Living Review with a specific focus on social equity. The Cost of Living Review for 2017–18 is at Part 4 and shows that the Energy Efficiency Improvement Scheme and the large-scale feed in tariff schemes contributed approximately $71.95 to an average household electricity bill in 2017–18. This is approximately 2% of the total cost of energy to a representative ACT household during the year.

No other functions have been given to the Minister under the Act as at 30 June 2018.


Yarralumla Nursery
Farley
Yarralumla Nursery
Belinda

2. GREENHOUSE GAS EMISSIONS FOR 2017–18 FROM ACT GOVERNMENT OPERATIONS

In 2017–18, emissions from Government operations totalled 132.6 kt CO_2-e. This represents a decrease of 19% from 2016–17 to 2017–18. Overall, emissions have reduced by 27% since 2012–13. Savings have been achieved by improving energy efficiency and increasing the proportion of renewable electricity used by the Government. The savings achieved by reducing electricity consumption have balanced the increases in natural gas and transport emissions that occur due to increasing service delivery in areas such as health, schools and bus services.

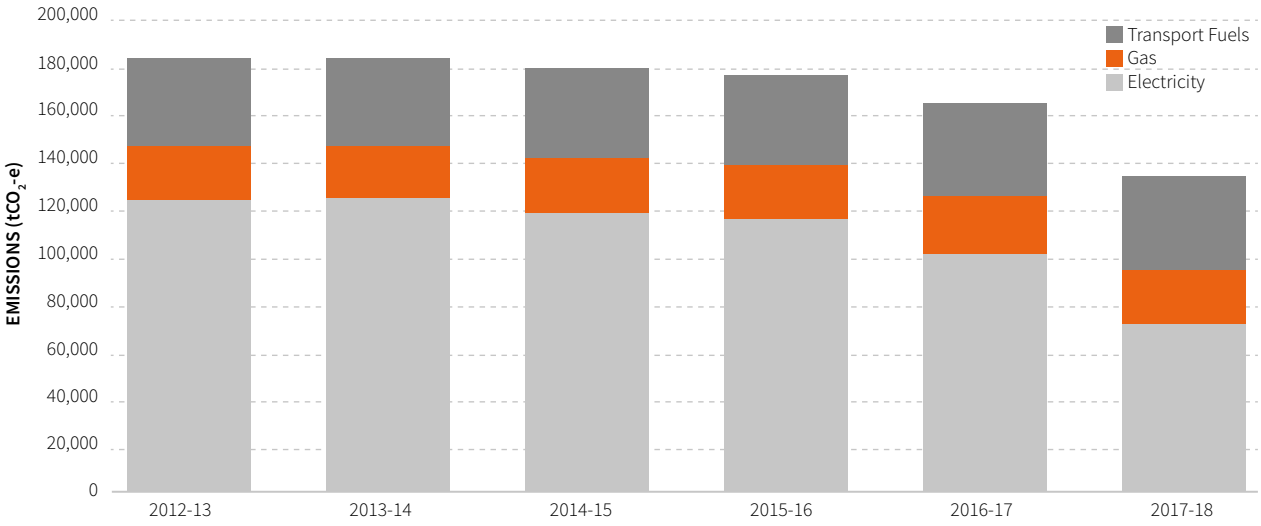
In 2017–18, 70% of the Government's greenhouse gas (GHG) emissions came from electricity and natural gas used in Government facilities, while 30% of emissions came from transport fuels used by the corporate fleet, Transport Canberra buses and other vehicles. The proportion of Government emissions associated with electricity consumption is now decreasing sharply as the Territory moves towards 100% renewable electricity.

In addition to the GHG emissions associated with electricity and natural gas used in ACT Government facilities and transport fuels associated with the fleet (known as scope 1 and 2 emissions), other indirect emissions (known as scope 3 emissions) may be accounted for in future inventories (for example refrigerants).

In 2018, the ACT Government engaged an external party to independently calculate the ACT Government's greenhouse gas emissions inventory (GGI). The ACT Government GGI is consistent with the requirements of the CNG Framework and uses the same methodology used to calculate the ACT GGI.

An annual report on implementation of the CNG Framework is made available on the Directorate's website.

Figure 1: ACT Government greenhouse gas emissions by source from baseline year to 2017–18.
(Note that previous years have been recalculated to reflect improved data availability and methodology.)



3. EFFECTIVENESS OF GOVERNMENT ACTIONS TAKEN TO REDUCE GREENHOUSE GAS EMISSIONS DURING 2017–18

The Minister has received information on actions undertaken by each ACT Government Directorate to reduce greenhouse gas emissions. All directorates report their GHG emissions in their annual reports. Directorates have also developed Resource Management Plans to address their environmental resource use.

CHIEF MINISTER, TREASURY AND ECONOMIC DEVELOPMENT DIRECTORATE (CMTEDD)

Policy/ Program title	Description of work in 2017–18	Resulting milestones/emissions reductions (if applicable and quantifiable)
Resource Management Plan (RMP)	The CMTEDD RMP 2017-20 was endorsed by the Director-General. The RMP provides key resource management strategies that the Directorate will apply to manage environmental resources more efficiently and reduce greenhouse gas emissions.	
Carbon Budget	As part of the CNG Framework, CMTEDD has set a 2017–18 Carbon Budget (i.e. energy target against the 2016 consumption level), with Chief Minister stream (electricity -25%, gas –1%) and Treasury stream (electricity –1%, gas +15% to reflect temporary accommodation of Procurement within Macarthur House, and uncertainties around weather and the impact of major events at CMTEDD venues on gas usage. The energy targets were set in consideration of anticipated office relocation, energy efficiency projects, and service growth in selected business areas.	All areas have achieved their Carbon Budget energy targets for 2017–18, with full year results for Chief Minister stream (electricity -35%, gas -21%) and Treasury stream (electricity -4%, gas +0.2%). CMTEDD Carbon Budget quarterly reports are published on the EPSDD website.
ICT Sustainability	Shared Services launched its new website and has converted over 120 previously paper based forms to an online self-service solution, resulting in the reduction of paper and streamlining of processes.	Over the past year 144,748 digital forms have been submitted, which has resulted in an estimated reduction of 361,870 sheets of paper weighing approximately 1.8 tonnes (this equates to the equivalent of 43.4 trees saved).
	Shared Services introduced the Whole of Government Accounts Payable Invoice Automation Solution (APIAS). The new system enables most supplier invoices to be received, approved for payment, and paid electronically.	In 12 months Shared Services has processed 233,000 invoices with almost 70% of the invoices now processed through the APIAS system.
	PaperCut software program has been installed which only prints when staff access the printer using their ACT Government pass. Many business areas within the directorate have moved to electronic document records management and storage.	CMTEDD has reduced the reams of paper purchased by 14.6% in 2017–18.

Policy/ Program title	Description of work in 2017–18	Resulting milestones/emissions reductions (if applicable and quantifiable)
Data Centre	Following the successful completion of the Macarthur House Decommissioning Project, government data has been relocated to two sites operated by the Canberra Data Centre (CDC), DC1 located in Hume and DC2 located in Fyshwick.	By relocating to DC2, Shared Services Information Communication Technology (ICT) has reduced its energy footprint by an estimated 30%.
	The CDC has the ability to operate in 'island mode' – by using self-generated power and recycled water to transfer to fully independent 'off the grid' operations if needed. The CDC utilises efficient closed water-cooling system.	The CDC cooling system has enabled significant reductions in the amount of water consumed by a minimum of 50,000 litres of clean drinking water per day through clean, air-cooled, ultra-high efficient 'chiller' technology.
ICT Recycling	The method in which the Territory disposes of ICT devices and associated consumables is crucial in minimising our environmental waste footprint. In 2009 Shared Services ICT engaged a vendor (Capital Easy, now trading as Reuse RecycleIT) to manage the resale and disposal of ICT Assets on behalf of the Territory.	Since Reuse Recycle has been engaged, no disposed assets processed through CMTEDD have been sent to landfill.
Solar Power	National Arboretum Canberra: a new off-grid solar photovoltaic (PV) and battery storage system was installed in February 2018 to replace a large diesel generator operated at the Horticulture Works Depot. For CMTEDD office facilities, Winyu House was built with a 74 kW solar PV system which feeds into the base building, and uses an energy efficient BMS with zone controls, motion sensors, and timers. Canberra Nara Centre had solar hot water systems installed. ACT Property Group (ACTPG) has commenced a feasibility study at 255 Canberra Ave to investigate the potential for large scale solar PV system. ACTPG has provided support to other directorates to apply for CNG funding and investigate the installation of solar PV systems in facilities under the custodianship of ACTPG.	The new solar system at the Arboretum is estimated to reduce greenhouse gas emissions by around 28.5 tonnes per annum.

Policy/ Program title	Description of work in 2017–18	Resulting milestones/emissions reductions (if applicable and quantifiable)
Building Management	ACTPG provides effective management of Government leased office spaces through Green Lease Schedules and Building Management Committee (BMC) in line with the National Green Lease Policy (NGLP).	In 2017–18, there was a reduction in emissions at ACTPG leased office facilities by 28.2% (928 t CO_2-e).
	CMTEDD has a BMC established in major offices to discuss facility matters including sustainability and energy efficiency.	Canberra Nara Centre, Winyu House, Nature Conservation House have achieved base building energy National Australian Built Environment Rating System (NABERS) ratings of 4.5, 5 and 5 stars, respectively.
	ACTPG has continued to promote best practice facility management, and has implemented ongoing building facility upgrades to HVAC systems in various buildings including: 255 Canberra Ave, Albert Hall, Maitland House, Mount Rogers Community Centre, Mitchell Depot, and Woden Library. ACTPG maintenance contracts such as Building Management System (BMS), water treatment, chiller and boiler service contracts have energy efficiency service schedules and provisions included, and are proactively managed to provide best practice outcomes in sustainability.	
Facilities and lighting upgrades	CMTEDD has continued to upgrade existing inefficient light fixtures to LED, including Manuka Oval, GIO Stadium, and the Tuggeranong Access Canberra Service Centre.	The Access Canberra Tuggeranong Service Centre had a reduction of electricity use by 9% in 2017–18.
	In November 2017, ACTPG upgraded the BMS at the Shared Services Mail and Record Office to improve HVAC controls and occupancy comfort. ACTPG completed facilities upgrades in selected Government owned facilities, including: North Building: The North Building (Canberra Museum and Gallery) HVAC upgrade was completed in early 2017–18, replacing an existing gas fired heating system with a high efficiency electric heating and cooling system, with some residual gas utilised for domestic hot water and gallery humidity control. Energy efficient lighting with movement sensors and daylight harvesting was also installed as part of the project. 255 Canberra Avenue: ACTPG completed a new Activity Based Working (ABW) office fit-out at 255 Canberra Ave Fyshwick, including an upgrade to energy efficient LED lighting. LED Lighting Upgrades: As part of ongoing property maintenance, various facilities have been upgraded to LED in conjunction with other works. These include external eave lighting at Capital Linen Service while asbestos eave remediation was taking place.	The North Building HVAC upgrade project will reduce gas consumption at site by over 90% with a full year's operation. From the results of part year operation, CO_2 emissions from natural gas has already reduced by 146 tonnes. The ABW fitout allows a more agile working area while also promoting a reduction in emissions and energy per FTE due to better utilisation of space.

Policy/ Program title	Description of work in 2017–18	Resulting milestones/emissions reductions (if applicable and quantifiable)
GreenPower	Goods and Services Procurement within CMTEDD purchased 7,600 MWh of Green Power on behalf of the ACT Government, representing an indicative 5% of the ACT Government's energy consumption for 2017–18.	7,600 MWh (5%) Green Power
Energy efficiency advisory services	In 2017–18, Energy Project Officers embedded in ACTPG assisted agencies to identify priority Government sites for energy efficiency projects, energy audits, feasibility studies, provide ad-hoc energy efficiency advice, and assist to apply for CNGF. Locations with commenced/completed energy audits or feasibility studies to reduce or eliminate natural gas consumption include: 255 Canberra Ave Fyshwick; Alexander Maconochie Centre; Belconnen Bus Depot; Belconnen Police Station; Bimberi Youth Justice Centre; Canberra Theatre Centre; CIT Fyshwick; Holder Child Development Service; National Arboretum Canberra; Tuggeranong Bus Depot. ACTPG Energy Project Officers also coordinated the reuse of energy efficient gas boiler controls from Macarthur House and The Canberra Hospital for use at CIT Bruce and Capital Linen Service, providing both environmental, operational and capital cost savings while reducing waste.	There were 4 successfully approved CNGF projects in 2017–18, totalling an approximate $1.79M, including: > Installation of a 24.3 kW solar PV at TCCS Belconnen Parks Depot > Upgrade of two fixed speed air compressors to high efficiency variable speed compressors with heat recovery at TCCS Capital Linen Service > Installation of on-site power generation and battery storage at CIT Bruce > Installation of solar PV and LED lighting upgrade at CIT Fyshwick
Whole of Government contractual support	Procurement ACT manages the SMS Procurement Water Projects in the form of: provision of utility data sets to inform scope of works; provision of advice to SMS and Directorates on interval/ sub-metering on priority sites; development of a Memorandum of Understanding (MOU) between Icon and ACT Government; and ability for water meters to be accessed through the Energy Performance Contract. ACTPG Energy Project Officers have been involved in the SMS Water Project via: improving the management of ACT Government water accounts; reducing consumption through better provision of real time data; and delivering financial savings to government.	
Sustainable Procurement	Infrastructure Finance and Capital Works (IFCW) administers a Climate Change Adaptation Strategy Implementation Plan to introduce minimum sustainable requirements for capital works. IFCW also works in collaboration with directorates to develop construction project briefs that include sustainability criteria. CMTEDD considers the Sustainable Procurement Policy principles in the procurement of office goods. CMTEDD mandates the purchase of 100% recycled content paper unless there is technical requirement not to do so.	CMTEDD has reduced the reams of paper purchased by 16% in 2017–18.
Actsmart Public Events	Events ACT participates in the Actmart Public Event Recycling Program via a MoU, working closely with key stakeholders to reduce the generated waste to landfill for all events delivered by the business unit.	In 2017–18, 51% of the waste (by volume) collected in Events ACT major events was sent to recycling.

Policy/ Program title	Description of work in 2017–18	Resulting milestones/emissions reductions (if applicable and quantifiable)
Sustainable transport	CMTEDD reviews the fleet utilisation in a bid to reduce the overall number of vehicles or replace vehicles with more fuel efficient or electric/hybrid vehicles when lease expires. In 2017–18, CMTEDD: > leased 5 electric vehicles and 12 hybrid vehicles > continued to rollout electronic logbooks to monitor distance travelled > introduced a shared e-bike fleet across major office locations > purchased two additional e-bikes to put at The Canberra Hospital (TCH) and share with ACT Health and encouraged staff to use e-bikes to commute between TCH and Woden > encourage staff to use sustainable transport options such as e-bikes, buses, walk, and carpool. CMTEDD is also working with EPSDD to implement the Zero Emission Vehicles Action Plan by identifying suitable vehicles to be replaced with electric or hybrid models, and identifying suitable locations for installing EV charge points.	CMTEDD has reduced transport emissions by 18.9% in 2017–18.
Actsmart Business (Recycling) Program	The majority of ongoing CMTEDD offices locations are accredited under the Actsmart Business Program. All new staff are required to undertake Actsmart recycling training following the CMTEDD Induction Program. All major venues are accredited Actsmart Recyclers and encourage public patrons to recycle.	
Supporting sustainable and innovative trade and investment	The ACT Government's Innovation Connect program supports Canberra-based start-ups to develop innovative products and services. Under the program, a dedicated funding stream supports commercial opportunities within the renewable energy and clean technology sectors. In 2017–18, the Directorate provided matched-funding support to five renewable energy companies to a total of $117,000 as follows: > Inez Estelle P Harker-Schuch trading as Serious Futures – a climate science game, Co2peration, that incorporates a world-first pedagogy for 3D gaming to educate students about climate change > Fillearth Pty Ltd – development of a light weight, portable and compact innovative solar cooker that incorporates a sun tracking mechanism and temperature monitoring through a smartphone app > Solar Blox Pty Ltd –portable and rugged solar energy blocks that can be clicked together to power equipment in a wide array of industries from disaster relief to developing communities > Restart Charging Services Pty Ltd – an on-demand mobile electric vehicle charging service; and > Energy Storage Rights Pty Ltd – a hydro energy storage lake pump application powered by a floating solar generator.	

EDUCATION DIRECTORATE (EDU)

Policy/ Program title	Description of work in 2017–18	Resulting milestones/emissions reductions (if applicable and quantifiable)
EDU Carbon Budget 2017–18	EDU set a carbon emission reduction target of 3% across the school portfolio and Education Support Office (ESO).	The emission reduction target was achieved. While performance includes the decrease in the ACT specific electricity emissions, all energy consumption performance indicators were met or exceeded.
Capital Works – New Schools	The Margaret Hendry School in the suburb of Taylor commenced construction.	The school is the first to be built to the EDU Sustainable Development of Public School Facilities: Output Specification. 100% of energy for the operation of the school is being sourced from electricity.
Energy and Heating Ventilation and Cooling (HVAC) Audits	The audits identify detailed mechanical and building energy conservation measures for integration into the capital upgrade and repairs and maintenance works programs.	Audits were completed at 16 schools. Audits were completed at the four school-based hydrotherapy pools.
Energy and Sustainability Program	This is an annual works plan designed to deliver the carbon emission reduction target and progress the CNG Framework.	The building fabric at 11 schools was upgraded. The works include insulation, double glazing and draught proofing. The tuning of electrical and mechanical building systems at three schools was completed. The building control systems were designed for one high school site and one hydrotherapy pool. Expert advice was provided to 26 schools to facilitate school-initiated projects.
Whole of Government CNGF	Installation of new building controls to allow efficient building operation at Erindale Education and Recreation College.	Annual performance against 2016–17 has seen a 34% reduction in electricity consumption and a 22% reduction in gas consumption.
Climate Change Adaptation (EDU Heat Mitigation Program)	A targeted program to reduce the impact of extreme temperatures in summer and improve student learning conditions.	Mechanical cooling was installed at 24 schools. Passive cooling including improved ventilation, energy efficient ceiling fans, external shade structures and heat rejecting glazing treatments were installed at 27 schools. Advanced tree planting program implemented at five schools to increase playground shade and provide shading to buildings.

Policy/ Program title	Description of work in 2017–18	Resulting milestones/emissions reductions (if applicable and quantifiable)
Active Transport Program	The program is a rolling annual program to provide new and secure bicycle parking for student bicycles as well as purpose-built storage facilities for school owned 'learn to ride' bicycles. > Secure bicycle parking was provided at two schools. > Weather proof covers were provided to existing enclosures at two schools. > Bicycle repair stations/commercial pumps were installed at four schools. > Installation of purpose-built storage for school 'learn to ride' bicycles at one school. > The EDU has two electric bicycles for use by staff during office hours.	
Heating system replacement	Heating systems at two schools were upgraded to high efficiency gas condensing boilers.	Reduced gas usage.
Roof replacement at Mount Stromlo High School	Replacement of end of life roof with structured insulated panels to increase thermal performance and resilience to temperature extremes.	
Capacity Building	Draught proofing workshops for Building Service Officers were held at four schools. Practical skill development was provided to officers at 16 schools sites.	
ActSmart Business and Office Recycling Program	The ESO sites at 220 Northbourne Ave and Hedley Beare Centre for Teaching and Learning were accredited under the program. Battery recycling is undertaken at 220 Northbourne Avenue and Hedley Beare Centre for Teaching and Learning. A trial of coffee pod recycling was implemented at 220 Northbourne Ave. The trial supports a local social enterprise.	

HEALTH DIRECTORATE (ACT HEALTH)

Policy/ Program title	Description of work in 2017–18	Resulting milestones/emissions reductions (if applicable and quantifiable)
ACT Health Sustainability Strategy 2016 - 2020	This Strategy informs the Business Planning and Performance Management processes for corporate and clinical business areas within ACT Health. The last time the Strategy was reviewed (during the 2016–17 financial year) alignment with the CNG Framework 2014 and the ACT Health RMP was undertaken. The Strategy covers the following areas: > Resource Management > Buildings and Infrastructure > The Digital Health Environment > Our People > Partnerships and External Service Delivery for climate change adaptation > Procurement	The Strategy contains a Roadmap that consists of the following actions: > Commitment: Leadership on reducing ACT Health's impact on the environment. > Actioning: Employee engagement to achieve efficiencies resulting in reduced costs and environmental impacts. > Embedding: Sustainable approaches and continuous improvement are Business as Usual, part of our culture and extended to the supply chain. External benchmarks driving performance. > Influencing: The environmental impacts of our products and services are minimised over their lifecycle. Triple bottom line reporting is used. > Sustainable enterprise: ACT Health is a leader in sustainability and inspires others.
ACT Health Resource Management Plan 2016-2020 (RMP)	The ACT Health RMP, a key element of the CNG Framework, supports ACT Health to achieve carbon neutrality in its operations by 2020. The RMP supports ACT Health to manage the requirement to set an emissions reduction target and quarterly reporting to EPSDD on activities being undertaken to reduce water, electricity and gas consumption, waste production and recycling initiatives, and transport emissions.	ACT Health continues to monitor all actions within the RMP to report on any reduction in greenhouse gas emissions. The RMP includes Key Performance Indicators and emissions reduction target information to inform management on ACT Health's performance.
ACT Health Sustainability Environmental Principles and Guidelines – Building and Infrastructure Projects	These Guidelines were originally developed to provide the Health Infrastructure Program with guidance and principles on incorporating sustainability elements into building design. The guidelines are used in conjunction with the NSW Health Engineering Services Guidelines (which contain a requirement to consider sustainable elements) and the Building Code of Australia.	ACT Health uses these Guidelines to inform basic sustainable elements to be included in any new building or capital upgrade project. The Guidelines are provided to consultants as a prompt to consider sustainable initiatives and alternatives for each project, including but not limited to: whole of life payback, sustainable technologies and building fabrics. This approach aims to guide and direct infrastructure projects towards achieving and attaining carbon neutrality by having current sustainable elements incorporated into the buildings and premises that ACT Health owns or occupies.

Policy/ Program title	Description of work in 2017–18	Resulting milestones/emissions reductions (if applicable and quantifiable)
Continuity of Services Essential Infrastructure (COSEI)	Relocation and upgrade of gas utility meter.	Utility meter is now fit for purpose, with the previous utility meter not accurately reflecting gas consumption due to load growth on the Canberra Hospital (CH) campus. Approximately 50% increase in measured annual gas consumption.
Upgrading and Maintaining ACT Health Assets (UMAHA)	Upgrade of Building 1 boilers and optimisation of related control strategies.	Building 1 boilers are the largest on the CH campus. The new boilers are more efficient, however improvement is currently unquantifiable due to the lack of accurate gas consumption history due to the previously inaccurate utility meter.
	Upgrade of building 1 chillers. Significant improvement in chiller performance is expected with additional improvements in how chilled water resources are used within the main cooling loop.	Engaged contractor in GC21 contract form. Currently implementing preliminary works to ensure replacement chillers can adequately service thermal load. A significant reduction in electricity consumption is expected, particularly in peak cooling periods.
	The CH steam upgrades have involved transitioning Building 10 steam consumption away from Building 1 gas powered steam plant to electric based steam generation, some of which is integrated into the steam consuming appliances. Works in 2017–18 have reduced dependence on Building 1 steam plant, with works in 2018–19 to enable decommissioning of building 1 steam plant.	Reduced gas consumption through transitioning to electricity as the energy source. Emissions reductions unquantifiable due to inaccurate historical gas data.
	Building 10 HVAC in the morgue area was refreshed, replacing controllers and condensers and evaporators where required as part of broader scope of works.	Reduced electricity consumption due to improved HVAC efficiency and control. Emission reductions unquantified due to lack of direct sub metering of HVAC circuits.
	Relevant works were on the domestic hot water (DHW) system, replacing leaking and end of life pipes, removing dead legs and upgrading DHW supply units.	Reduced gas consumption through improved system efficiency. Emissions reductions unquantifiable due to the incremental nature of works and inaccurate historical gas data.
CNGF	The installation of energy efficient LED lighting was ongoing at the CH campus.	310 kVA demand reduction in the CH campus electrical system achieved by works to date, estimated to reduce annual electricity load by 1.8 GWh.

Policy/ Program title	Description of work in 2017–18	Resulting milestones/emissions reductions (if applicable and quantifiable)
ESP Database	Relevant ACT Health business units utilise the ESP to manage energy and water usage, reporting and monitoring.	ACT Health utilises the ESP database on a monthly basis to analyse energy and water bills (-/+ variances). The ESP continues to be utilised to gather data for the ACT Health Annual Report and RMP reporting. ACT Health continues to work with the Whole of Government Senior Energy Officers and the CNG Team who provide support and administrative assistance to ACT Health.
Actsmart Office Waste/ Recycling Program	ACT Health continues to liaise with the EPSDD to have staff trained in waste management. ACT Health continues to work with the Domestic Services contractor to ensure: > Contractor cleaning staff undertake Actsmart training. > ACT Health sites/wards/office areas staff are provided with Actsmart training. > ACT Health sites have options for waste segregation in place. > Waste bins have appropriate Actsmart signage for better waste segregation.	During the 2017–18 financial year, ACT Health won the award for Biggest Recycler.
Actsmart government Energy and Water Audits	ACT Health utilises the Green Team Kit to undertake energy audits of its infrastructure to identify potential efficiencies.	Infrastructure is assessed to identify potential savings (lighting, HVAC etc) and modifications are made as part of the audit recommendations. Alignment with initiatives contained in the ACT Health RMP.
Waste Management Plan (WMP)	ACT Health continues to utilise and refer to the WMP as part of usual business operations.	WMP provides for governance by a Waste Management Committee. The contractor has carriage of implementing ACT Health measures and outputs and has an obligation to provide reports as defined in the contract.

Policy/ Program title	Description of work in 2017–18	Resulting milestones/emissions reductions (if applicable and quantifiable)
Transport for Canberra and ACT's Transition to Zero Emissions Vehicles Strategy.	ACT Health has five electric vehicles (EV) in its fleet and will undertake an assessment of vehicles as they become due to expire in order to procure more energy efficient vehicles (where fit for purpose and subject to the availability of EVs). ACT Health procured 2 e-bikes for use by staff when travelling during their work day.	The EV are utilised on a regular basis. ACT Health has collaborated with the EPSDD and continues to seek guidance from EPSDD on a whole-of-government approach to the management of corporate vehicles.
ACT Health Summer Plan	The Summer Plan has been developed as a specialised appendix to the ACT Health Emergency Plan (HEP) to assist ACT Health and the ACT health sector ensure appropriate preparedness and response mechanisms are in place to effectively mitigate the risks and manage the consequences of: > extreme heat events; and > elevated fire danger conditions (bushfire season) in the ACT. ACT Health implemented a comprehensive communications strategy at the beginning of the 2017–18 summer season, and during periods of hot weather throughout the summer. ACT Health facilitates the ACT Health Emergency Management Sub-Committee (HEMSC). HEMSC provides a forum for discussion and collaboration across the ACT health sector in the area of emergency management, including the impact of climate change on natural disasters. HEMSC comprises representatives from all ACT hospitals, Capital Health Network and other ACT Government stakeholders. ACT Health has collaborated with the Bureau of Meteorology (BOM) in developing forecast modelling for various weather conditions. ACT Health has also developed protocols and communications strategies for the natural phenomenon of Thunderstorm Asthma. ACT Health rolled out AirRater in August 2017, a free app that provides real-time, geographically-specific data on pollen, air quality and temperature.	

TRANSPORT CANBERRA AND CITY SERVICES (TCCS)

Policy/ Program title	Description of work in 2017–18	Resulting milestones/emissions reductions (if applicable and quantifiable)
TCCS Resource Management Plan (RMP)	TCCS RMP 2016–18 contains 16 actions to increase efficiency and management of energy, water, waste and sustainable procurement.	As at 30 June 2018: > 14 actions on track > 2 actions experiencing delays.
TCCS Sustainability, Facilities and Fleet Unit	TCCS Sustainability Program forms Action 1 of the RMP with a dedicated officer to deliver the CNG Framework across the Directorate.	The TCCS Sustainability Program, TCCS Facilities Unit and TCCS Fleet Services merged in 2018 to strengthen delivery of the CNG Framework across the Directorate. TCCS held representation on CNG Implementation Committee; Climate Change Working Group; SMS Water Project Working Group; and Environmentally Sustainable Procurement Working Group. TCCS were nominated for the Corporate Award for efforts in building sustainability into everyday business practices at the 2018 Actsmart Business Sustainability Awards. Two meetings were held with the Sustainability Working Group. Three ESP training sessions were attended by TCCS staff.
	TCCS Fleet program operates a fleet of vehicles consisting of passenger and light commercial vehicles, agricultural equipment (e.g. mowers, tractors), trucks, buses, plant and equipment (e.g. skid steers, loaders, pavers, elevated work platforms).	41% passenger fleet vehicles classified as low emission vehicles in 2017–18 (where fit for purpose). All mowers now equipped with Global Navigation Satellite System (GNSS) to improve productivity, mowing fleet optimisation and budget savings.
	TCCS Facilities managed two electric assisted bicycles (e-bikes) located at 496 Northbourne Avenue for staff to use for work purposes.	E-bike fleet recorded 917 kilometres as at June 2018 with 101 staff members inducted.
TCCS Carbon/ Energy Budget 2017–18	TCCS 2017–18 Carbon/Energy Budget set a 1% reduction in stationary energy for 2017–18 compared with calendar year 2016.	TCCS achieved a 2.8%reduction in stationary energy, compared with 2016–17. TCCS achieved a 4.2% reduction in stationary energy compared with calendar year 2016.
Actsmart Business and Office Recycling Program	Under Action 12 of the TCCS RMP, all relevant TCCS sites have signed up to the Actsmart Recycling Program.	As at June 2018: > 90% of TCCS sites assessed > 26% accredited.

Policy/ Program title	Description of work in 2017–18	Resulting milestones/emissions reductions (if applicable and quantifiable)
Operational Energy Conservation Measures	TCCS 2017–18 Carbon/Energy Budget identified key priority sites for LED lighting upgrade.	LED lighting upgrades implemented at Belconnen Bus Depot and Belconnen and Tuggeranong Libraries. LED lighting upgrades implemented on 1598 streetlights with total estimated annual savings of 0.489 MWh and 48.9 t CO_2-e.
	Action 3 of TCCS RMP 2016–18 identifies investigation of renewable energy at key TCCS sites.	Feasibility study into solar PV across numerous TCCS sites.
Methane harvesting	Harvesting landfill methane continued from the landfills at Mugga Lane and West Belconnen.	Methane capture at Mugga Lane and West Belconnen landfills generated enough electricity to supply over 5,600 homes for one year.
ACT Waste Feasibility Study	The ACT Waste Feasibility Study was established in 2015–16 and a solid baseline of opportunities has been created to improve waste services and recycling within our community and support achievement of our Waste Strategy 2011-2025.	The ACT Waste Feasibility Study submitted its findings and recommendations to the Government in 2017. The recommendations include a Roadmap, which if successfully implemented, is designed to divert over 170,000 tonnes of waste from landfill and increased the ACT's resource recovery rate to 87% by 2025. As the final deliverable of the ACT Waste Feasibility Study, ACT NoWaste in May 2018 released a discussion paper for public consultation through to early July 2018.
Organic garden waste collection service	The roll out of the organic garden waste ('Green Bins') collection service is an election commitment announced on 28 May 2016, to divert garden organics from landfill and provide households a convenient way to dispose garden waste.	Green bins pilot that commenced in Weston Creek and Kambah in April 2017, was extended to Tuggeranong in January 2018. A total of 22,418 households have opted to receive the service which represent 48% of all residents. Over 3,135 tonnes of green waste has been collected with low level of contamination, which amounts to 0.01% of the total garden waste collected. The full rollout commenced in Belconnen in September 2018, and roll out to rest of Canberra was brought forward by one year to mid-2019.

Policy/ Program title	Description of work in 2017–18	Resulting milestones/emissions reductions (if applicable and quantifiable)
Public Transport Network	Transport Canberra commenced a trial into alternate energy buses. Information gathered from this trial of new technology buses will inform broader fleet replacement options into the future.	Alternative energy bus trial commenced in August 2017 with an electric bus and a hybrid diesel bus. A further electric bus was added to the trial in June 2018.
	Development of a Public Transport Service Plan to increase efficiencies of the bus network and plan for integration with light rail in 2018.	Planned introduction of new bus network early in 2019 to coincide with the introduction of Stage 1 of the light rail network.
	Fleet replacement program.	58% of in-service fleet at the end of 2017–18 were Euro 5 or better emission standard compliant.
Roads – Streetlights	Ongoing program to replace older/high wattage streetlight luminaries with energy efficient equivalents.	As at 30 June 2018, 5,577 LED's have been installed on the street light network. This includes new green field developments and maintenance retrofits.
	Energy Performance Contract (EPC) for ongoing operations and maintenance of the Territory's streetlights.	TCCS entered into a seven year Streetlight Energy Performance contract in 2018. The replacement program will commence in August 2018 and is estimated to produce 111,175,905 kWh energy savings over the seven year contract term.

Policy/ Program title	Description of work in 2017–18	Resulting milestones/emissions reductions (if applicable and quantifiable)
Active Travel	The Active Travel Office (ATO) serves as the single point of contact within Government on active travel policy and implementation, including coordination and engagement with the community on active travel matters.	The ATO was expanded to increase promotional opportunities and deliver additional initiatives, which included Canberra Walk & Ride Week, Women's Health Week, ride or walk to work days and to investigate a trial bike share scheme. School environments were made safer and more conducive for active travel by commencing a School Crossing Supervisor program and delivering of a number of infrastructure improvements through the Active Streets for Schools program. Canberra's first Bike Barometer was installed on the Sullivans Creek Trail at the end of 2017. Over the first six months of 2018, the barometer counted 248,943 bicycle trips. These trips represent an annual savings of 404 t CO_2-e compared to driving. ATO completed a business case for $21.7 million in active travel infrastructure investment with a focus on Belconnen, Woden and Tuggeranong Town Centres beginning in 2018–19. The Bike Stop program was launched in October 2017. The program identifies and promotes local businesses who participate in the scheme by providing end of trip facilities for short term users and interim step to establishing a bike hub.
Stormwater Value Capture project	The Stormwater Value Capture project looks at how government can reuse material from the stormwater network such as street sweeping material and gross pollutant trap material for organic reuse. The project also looks at optimising the street sweeping program.	Since September 2018, Roads ACT has run a trial of the street sweeping program which involves two shifts, an early morning shift to afternoon and an afternoon to evening shift. The six operators with six trucks has reported up to an extra hour of sweeping time due to commencing earlier and finishing later.
WEED IT Unit	The WEED IT unit has made significant improvements to the efficiency, effectiveness and safety in the delivery of the arterial roads weed control program.	A second WEED IT unit was added to the TCCS fleet further reducing the time taken to deliver the kerb and gutter weed control program while also improving operator safety.

Policy/ Program title	Description of work in 2017–18	Resulting milestones/emissions reductions (if applicable and quantifiable)
Capital Works	Capital works projects aimed to apply ecologically sustainable development principles where possible including an increase in green infrastructure such as trees and plantings to help reduce urban heat effect; greater areas of permeable paving that allows for absorption of stormwater on site; and new or upgraded lighting installations to lower energy use luminaires. Projects also sought to retain/reuse/recycle items where feasible and to find suppliers of furniture or other landscape materials as close to site as possible to reduce transport emissions.	TCCS held representation on the whole of Government Environmentally Sustainable Procurement Working Group.
Light Rail Project	Project Delivery: development of plans to guide project sustainability through design and construction and planning for operations. The Canberra Light Rail Project is set for achieving zero net carbon emissions such that the Project activities are demonstrated to be carbon neutral for the Delivery and Operation Phases. Planning and design for the City to Woden light rail extension continued as part of developing an integrated transport network.	Construction has continued in 2017–18 on the first stage of Canberra's Light Rail with a significant scale of activity along the twelve kilometre alignment. The project has continued a focus on minimising material use and reuse of waste material within the construction, in line with the project Sustainability Policy. Infrastructure Sustainability Council of Australia (ISCA) has awarded an Excellent Infrastructure Sustainability (IS) Design Rating for the Canberra Light Rail project Stage One. This Rating has been awarded on the project's score of 73.7 out of 100. The City to Woden light rail extension will result in emissions reductions.

ENVIRONMENT, PLANNING AND SUSTAINABLE DEVELOPMENT DIRECTORATE (EPSDD)

Policy/Program title	Description of work in 2017–18	Resulting milestones/emissions reductions (if applicable and quantifiable)
Action 12 - Design and Construction of New Buildings	The Public Housing Renewal Taskforce is building new public housing to Housing ACT's standards with modern designs that take advantage of natural sunlight and ventilation, delivering minimum six star energy ratings.	
Introduce energy efficient LED lighting to all ACT Government-owned locations managed by EPSDD	LED lighting has been installed at Dame Pattie Menzies House, Canberra Nara Centre and Stromlo Depot. Other sites will be assessed in 2018–19 and lighting upgraded as required.	
Improve metering at EPSDD sites to monitor energy use	Metering at all sites managed by EPSDD is now suitable for monitoring energy use.	
Review out of hours office use at EPSDD sites, particularly at Dame Pattie Menzies House	Action was taken in 2017–18 reducing staff access to Dame Pattie Menzies House outside of normal business hours.	
Communicate energy efficiency programs to staff and contractors new to EPSDD, as well as to EPSDD's stakeholders and wider community	EPSDD energy efficiency programs were mentioned at staff induction sessions, all staff emails and associated communications, and to the wider community by the ActSmart team.	
Actively manage heating and cooling systems at all EPSDD sites to minimise energy	HVAC systems were reviewed at Athllon Depot, Tidbinbilla Visitors Centre, Tidbinbilla Depot and Namadgi Visitor Centre in mid-2017. HVAC systems at DPMH and Transact House/ 470 Northbourne Avenue were reviewed on an ongoing basis to improve efficiency and the comfort and welfare of employees.	
Improve energy efficiency of the EPSDD fleet	One petrol passenger vehicle was retired from the Asbestos Response Taskforce fleet.	Overall petrol consumption decreased by 2% across the EPSDD fleet in 2017–18.
ACT 100%-by-2020 renewable electricity target	The ACT Government continued to progress its legislated renewable electricity target of 100% by 2020. The Next Generation Energy Storage program continued supporting the rollout of up to 5,000 battery storage systems across the ACT by 2020.	In 2017–18 the Sapphire 1 Wind Farm began large feed-in tariff supported generation. By June 2018, the number of installed battery storage systems was around 800. The reverse auctions have also secured more than $500 million over 20 years in local industry investment and development benefits.

Policy/Program title	Description of work in 2017–18	Resulting milestones/emissions reductions (if applicable and quantifiable)
Energy Efficiency Improvement Scheme (EEIS)	From 1 July 2017 to 30 June 2018, 3,179 energy saving items were installed in 2,231 households under the EEIS. Of these, 658 households were priority (low-income) households. During this period, 1,290 businesses received EEIS activities.	The claimed abatement for all activities from 1 July 2017 to 30 June 2018 was 89,479 t CO_2-e. There were 17,799 t CO_2-e claimed for priority (low income) households, towards the annual EEIS Priority Household Target of 20%.
Actsmart Business Recycling Program	EPSDD sites continue to liaise with Actsmart to have staff trained in waste management.	As at June 2018: > 46% of EPSDD sites have been assessed > 15% of EPSDD sites are accredited to Actsmart Business Recycling Program.
Wood heater emissions reduction	The ACT Government passed amendments to the Environment Protection Act 1997 and Environment Protection Regulations (the Regulations) on 11 May 2016 to give effect to revised Australian standards. From 1 September 2019 only heaters that have a minimum overall efficiency of 60% (currently 55%) and a maximum particulate emission factor of 1.5 grams (currently 2.5 g) per kilogram of fuel burnt (0.8 g/kg (currently 1.4 g/kg) for a heater with a catalytic combustor) will be able to be legally sold in the ACT. The ACT Government has also restricted the use of domestic wood heaters through the strategic planning process for greenfield development where adverse impacts due from their use are likely. These restrictions exist in Dunlop, East O'Malley and the Molonglo Valley (except the suburb of Wright).	The annual ACT Air Quality Report details the ambient air quality in the ACT. The primary source of particulate emissions are from domestic wood heaters. The ACT initiatives to reduce emissions from wood heaters has seen significant reduction in particulate pollution emissions over the past decade, however results from the 2017 report indicate the levels of these pollutants which contribute to climate change are increasing. The report also indicates an increasing trend in ground level ozone, an indicator of climate change.

JUSTICE AND COMMUNITY SAFETY (JACS)

Policy/ Program title	Description of work in 2017–18	Resulting milestones/emissions reductions (if applicable and quantifiable)
Sustainability Management Plan (SMP) 2018-20	The SMP replaces the former Resource Management Plan 2015–17. The SMP is aligned to the CNG Framework, and provides a roadmap for JACS to transition to zero greenhouse gas emissions. The SMP outlines a shift in strategy to focus on reducing gas consumption at the highest emitting sites in the directorate's portfolio. The SMP will: > drive value for money energy efficiency upgrades with a return on investment over the life of the infrastructure at high usage and greenhouse emitting sites > embed sustainability principles into all aspects of the directorate's business, including new build/expansion of sites > harness the CNGF to deliver energy efficiency opportunities > commence coordinated planning for electric vehicles and charging infrastructure.	The SMP was developed in 2017–18. To develop and facilitate implementation of the SMP, JACS recruited a dedicated Sustainability Manager providing guidance to the directorate. Milestones reached under the SMP include: > Analyses of the directorate's greenhouse emissions were completed and show ACT Corrective Services (ACTCS) and ACT Policing (ACTP) facilities have the highest greenhouse emitting sites across the directorate's portfolio. > ACTP sites were agreed by EPSDD to be within the CNG Greenhouse Gas Emission Boundary Guidelines. This policy position makes ACTP sites eligible for energy efficiency measures through applications to the CNGF. > Baseline energy audits for priority ACTCS and ACTP sites were approved by the CNGF and commenced to identify energy efficiency works for 2018–19 and beyond.
JACS 2018–19 Carbon Budget	The directorate's carbon budget is a target set under the CNG Framework The JACS 2018–19 Carbon Budget was approved by the Director-General in May 2018. Work commenced concurrently in quarter four of 2017–18 to plan and deliver on the 2018–19 carbon budget target, in line with activities under the SMP. This target is cognisant of operational growth and is intentionally ambitious given the lead times to deliver gas consumption reductions.	The target aims to cap emissions at the 2017 level, subject to climate variation between the two periods.
JACS Sustainability Committee	The Sustainability Committee within the directorate has been operational since 2011. The Sustainability Committee represents business units within the directorate and is responsible for delivering greenhouse emissions and energy objectives.	A review of the Sustainability Committee purpose, operation and terms of reference commenced to support the shift in strategy and implementation of the SMP.

Policy/ Program title	Description of work in 2017–18	Resulting milestones/emissions reductions (if applicable and quantifiable)
Energy efficiency - Better Infrastructure Fund (BIF)	The directorate allocates a portion of the BIF annually to energy efficiency measures across selected sites within the property portfolio of the directorate.	Energy efficiency BIF works were completed as follows: > Gungahlin, Joint Emergency Services Centre (JESC) installation of LEDs, lighting controls and light sensing technology > Gungahlin JESC upgrade of the building management system > ACT Emergency Services Agency (ESA) Training Centre heating and ventilation improvements and building management system upgrade > ACT Rural Fire Service (RFS), Jerrabomberra external lighting upgrades.
ACT transition to zero emissions vehicles action plan 2018–21	The directorate has adopted the ACT transition to zero emissions vehicles action plan 2018–21. It also maintains efficient performance of emergency operation vehicles and monitors developments in low emissions vehicle technologies for future adoption.	In 2017–18, the directorate commenced liaison with EPSDD and CMTEDD in relation to the ACT transition to zero emissions vehicles action plan 2018–21. Specifically, in relation to the transition of light passenger vehicles to electric vehicles.

COMMUNITY SERVICES DIRECTORATE (CSD)

Policy/ Program title	Description of work in 2017–18	Resulting milestones/emissions reductions (if applicable and quantifiable)
Carbon Neutral ACT Government	The Community Services Directorate is committed to reducing greenhouse gas emissions through its own operations. In 2017–18, the Directorate implemented solar photovoltaic rooftop installations at Gungahlin and Tuggeranong Child and Family Centres, as well as energy efficiency lighting, heating, ventilation and cooling upgrades at a number of its sites.	Total emissions in 2017–18 were 1,701 t CO_2-e. In 2017–18, the Directorate achieved greenhouse gas emissions reductions of 684 t CO_2-e, representing a 28.7% decrease compared with its 2016–17 emissions. FY2016–17 emissions: 2,385 t CO_2-e FY2017–18 emissions: 1,701 t CO_2-e
ACT Government Waste Management Strategy	The Directorate is committed to reducing its waste footprint, in particular reducing waste generation and waste to landfill, and encouraging staff and stakeholder behaviour change as part of its resource management planning. The National Multicultural Festival is registered with the Actsmart Public Event Recycling Program.	The National Multicultural Festival 2018 was the winner of the Biggest Recycler – Large Event category in the Actsmart Business Sustainability Awards 2018. The 2018 festival attracted more than 200,000 patrons, who recycled an outstanding 8,829 kg that would have otherwise gone to landfill.

4. COST OF LIVING STATEMENT 2017–18

Section 15 of the Climate Change and Greenhouse Gas Reduction Act 2010 requires the Government to report on the findings of a cost-benefit analysis of government policies and programs implemented to meet the climate change targets in the Act. This document represents the statement under this commitment for 2017–18.

TOTAL ENERGY CONSUMPTION

The Australian Energy Market Commission identifies a representative ACT household as one with two inhabitants using electric water heating, with no gas heating or cooking and with no swimming pool that consumes 7,151 kilowatt hours (kWh) of electricity per year. This equates to an annual electricity GST exclusive bill of $1,600 in 2017–18, based on the default standing tariffs offered by the major energy retailer in the ACT during the year. Note this does not include any discounts that may lower these bills further. The combined cost represents approximately 2% of the annual median gross household income of ACT households after accounting for GST.

Retail electricity prices paid by ACT households compare favourably with other jurisdictions. The ACT has among the lowest electricity prices nationally. However, electricity consumption tends to be higher in the ACT due to a combination of a colder climate and significantly higher average incomes. This means that ACT households, on average, have relatively high electricity spend.

AP2 COST IMPACT

Currently, there are two AP2 policies that had a cost of living impact in 2017–18. These were the Energy Efficiency Improvement Scheme and the large-scale feed in tariff schemes. Together, these schemes contributed approximately $71.95 to an average household electricity bill in 2017–18. This is approximately 2% of the total cost of energy to a representative ACT household during the year.

AP2 Policy Cost Impact per household per year

2017–18	Average large-scale feed in tariff pass through AP2 cost	Average EEIS pass through AP2 cost	Average Cost of Electricity
Electricity	$42.20	$29.75	$1,600
Gas	$0	$0	$1,312
Total	$42.20	$29.75	$2,912

Cost	%
Energy Costs (% of Median HH Income)	2.01
AP2 Policy Costs (% of Electricity and Gas Costs)	2.47

ENERGY EFFICIENCY IMPROVEMENT SCHEME (EEIS)

The scheme commenced on 1 January 2013. The compliance cost of the scheme is passed through to customers in the form of higher electricity tariffs. In 2017–18, the average pass-through cost for a two person household was $29.75, compared to $36.68 in 2016–17. This is due to a small decline in the costs of the scheme.

The estimated lifetime energy bill savings associated with energy saving items received by participating households under the EEIS in 2017–18 is approximately $29 million. Priority households will save approximately $10 million over the lifetime of items installed. In 2017–18 this equates to average savings of approximately $1,300 for participating households and nearly $1,500 for participating priority households. It is important to note that savings for participating households will continue for a number of years according to the lifetime of the products installed.

LARGE-SCALE FEED IN TARIFF (FIT) SCHEMES

The ACT Large scale FiT scheme supports the operation of large renewable energy generation capacity to help achieve the ACT Government's 100% by 2020 renewable electricity target. Under the scheme, generators are provided a FiT for the eligible electricity generated. This FiT cost is passed through to customers in the form of higher electricity tariffs.

The ACT small-scale FiT scheme supports the generation of electricity by solar schemes with less than 200 kW capacity. Under the scheme, between 2009 and 2011, FiT entitlements were granted to 10,394 solar systems that had a combined capacity of 32.5 MW. Like the large-scale FiT scheme, the small-scale FiT scheme contributes to the ACT's 100%-by-2020 renewable electricity target.

2017–18 saw the commencement of FiT supported generation by the 100 MW Sapphire Wind Farm in north-eastern New South Wales. The 91 MW Crookwell 2 Wind Farm commenced Fit supported generation in September 2018, the 100 MW Hornsdale 2 Wind Farm will follow in December 2018 and the 109 MW Hornsdale 3 Wind Farm will be the final large FiT supported generator to begin FiT output in October 2019.

The average large FiT schemes pass-through costs for a typical two person household was $42.20 in 2017–18, compared to $25.75 in 2016–17. The increase reflects the increase in large FiT supported output as more wind and solar farms have begun FiT supported output.

The contract mechanism the Government has used to secure large-scale renewable electricity is helping offset the impact of rising wholesale costs. The ACT pays the difference between the feed-in tariff price and the wholesale market price. If wholesale prices rise, then ACT consumers pay a proportionally smaller feed-in tariff support payment.

Decreases in feed-in tariff support payment costs currently make up for about 60% of the household cost impact of higher wholesale prices.

SOCIAL EQUITY

The release of AP2 recognised that the cost of the proposed measures, while being marginal on the community as a whole, may impact differently for those on different incomes. To combat this, a number of Government policies are in place to help vulnerable households suffering financial stress due to energy bills. These include energy outreach programs, increase in concessions and requirements on energy retailers to assist consumers suffering financial hardship.

This was also recognised in the design and implementation of the Government's EEIS under AP2 which includes a low income priority household target. Retailers are required to deliver at least 20% of their energy saving obligations under the scheme in low income households. As the number of households in this category is estimated at 20%, the priority household target ensures that the lowest income groups are well represented among those participating in the scheme. From 1 July 2017 to 30 June 2018, 3,521 households and businesses participated in the EEIS. Of these, 667 households were priority (low-income) households. Priority households represented 30% of all residential premises that received EEIS activities and contributed around 35% of all the lifetime bill savings delivered by the scheme during 2017–18 financial year.

FUTURE CLIMATE CHANGE POLICY COSTS

From 2017–18 onwards there will be a significant ramp up of generation capacity required to achieve the ACT's 100% by 2020 renewable energy target. Three more wind farms are expected to start generating in 2018–19 and 2019–20. The Next Generation Renewables Auction is supporting the rollout of energy storage systems to up to 5,000 Canberra homes and businesses by 2020. The cost of supporting large scale renewables and the battery storage program is expected to be less than $4.90 per household per week in 2020. The Government remains confident that the costs of achieving 100% renewable electricity will be less than originally modelled in 2012.

GLOSSARY

°C	degrees Celsius
ACTCS	ACT Corrective Services
ACT Health	Health Directorate
ACTP	ACT Policing
ACTPG	ACT Property Group
ActewAGL	ActewAGL Retail electricity provider
ANU	Australian National University
AP2	AP2: A new Climate Change Strategy and Action Plan for the Australian Capital Territory
APIAS	Accounts Payable Invoice Automation Solution
ATO	Active Travel Office
BIF	Better Infrastructure Fund
BMC	Building Management Committee
BMS	building management system
BoM	Bureau of Meteorology
CAR	Climate Action Roundtable
CCMAG	Climate Change Ministerial Advisory Group
CDC	Canberra Data Centre
CIT	Canberra Institute of Technology
cleantech	an industry term used to describe products or services that improve operational performance, productivity, or efficiency while reducing costs, inputs, energy consumption, waste, or environmental pollution.
CMTEDD	Chief Minister, Treasury and Economic Development Directorate
CNG	Carbon Neutral ACT Government
CNGF	Carbon Neutral Government Fund
CO2-e	carbon dioxide equivalent
COAG	Council of Australian Governments
COP22	The 2016 United Nations Climate Change Conference
CSD	Community Services Directorate
CSIRO	Commonwealth Scientific and Industrial Research Organisation
e-bikes	electric bikes
EDU	Education Directorate
EEIS	Energy Efficiency Improvement Scheme
EES	Energy Saving Scheme
EPC	Energy Performance Contract
EPSDD	Environment, Planning and Sustainable Development Directorate
ESA	Emergency Services Agency
ESO	Education Support Office
ESP	Enterprise Sustainability Platform
EV	electric vehicle
FiT	feed-in tariff
g	grams
GGI	greenhouse gas inventory
GHG	greenhouse gases
GNSS	Global Navigation Satellite System
HVAC	heating, ventilation and cooling
ICLEI	International Council for Local Environmental Initiatives

ICT	Information Communication Technology
IFCW	Infrastructure Finance and Capital Works (IFCW)
IPCC	Intergovernmental Panel on Climate Change
ISCA	Infrastructure Sustainability Council of Australia
IS	Infrastructure Sustainability
JACS	Justice and Community Safety
JESC	Joint Emergency Services Centre
kg	kilograms
kt	kilotonnes
kW	kilowatt
kWh	kilowatt hours
LED	low emitting diode
m3	cubic metres
MIS	Municipal Infrastructure Standard
MWh	megawatt hours
NABERS	National Australian Built Environment Rating System
NARCliM	NSW and ACT Regional Climate Model
NGLP	National Green Lease Policy
NILS	No Interest Loans Scheme
PV	photo voltaic system
REES	South Australian Retailer Energy Efficiency Scheme
REIF	Renewable Energy Innovation Fund
RET	renewable energy target
RFS	Rural Fire Service
RMP	Resource Management Plan
SMP	Sustainability Management Plan
SMS	Smart Modern Strategic Procurement
t	tonnes
TCCS	Transport Canberra and City Services Directorate
VEET	Victorian Energy Efficiency Target
WMP	Waste Management Plan