ACT Government

2018-19 MINISTER'S ANNUAL REPORT

UNDER THE CLIMATE CHANGE AND GREENHOUSE GAS REDUCTION ACT 2010

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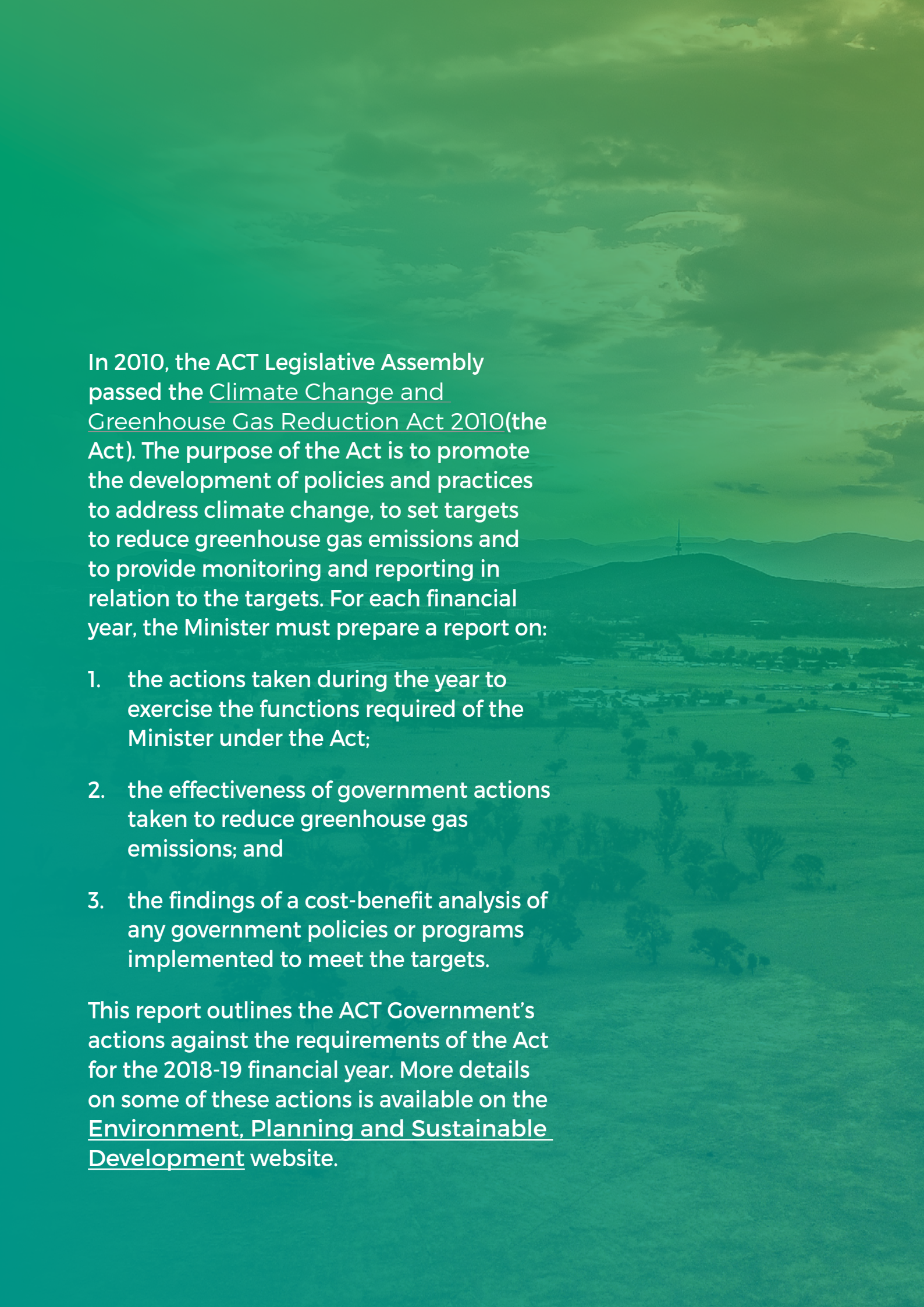


In 2010, the ACT Legislative Assembly passed the Climate Change and Greenhouse Gas Reduction Act 2010(the Act). The purpose of the Act is to promote the development of policies and practices to address climate change, to set targets to reduce greenhouse gas emissions and to provide monitoring and reporting in relation to the targets. For each financial year, the Minister must prepare a report on:

1. the actions taken during the year to exercise the functions required of the Minister under the Act;

2. the effectiveness of government actions taken to reduce greenhouse gas emissions; and

3. the findings of a cost-benefit analysis of any government policies or programs implemented to meet the targets.

This report outlines the ACT Government's actions against the requirements of the Act for the 2018-19 financial year. More details on some of these actions is available on the Environment, Planning and Sustainable Development website.

1. ACTIONS TAKEN IN 2018-19 UNDER THE CLIMATE CHANGE AND GREENHOUSE GAS REDUCTION ACT 2010

The ACT is a leader on climate change action. The ACT was recognised both nationally and internationally for its climate leadership in 2018-19. In October 2018, the ACT Government won the Sustainable Transport Award from the Cities Power Partnership for its development of the ACT's Transition to Zero Emissions Vehicles Action Plan 2018-21. In May 2019, the internationally leading Carbon Disclosure Project awarded the ACT its highest 'A' rating for climate leadership.

In July 2018 the ACT Legislative Assembly passed the *Climate Change and Greenhouse Gas Reduction (Interim Targets) Determination 2018* which set interim greenhouse gas reduction targets to guide progress towards achieving net zero emissions by 2045. The interim targets are to reduce emissions to:

i. 50-60% less than 1990 emissions by 30 June 2025;

ii. 65-75% less than 1990 emissions by 30 June 2030; and

iii. 90-95% less than 1990 emissions by 30 June 2040.

The ACT Climate Change Strategy 2019-2025 (Strategy) was released after this reporting period but builds on achievements to date and identifies new measures to further reduce emissions and increase our resilience to unavoidable climate change impacts.

The Strategy was developed in coordination with the ACT Planning Strategy 2018, the ACT Housing Strategy (2018) and the draft Moving Canberra: Integrated Transport Strategy. Together, these strategies provide a comprehensive approach to building a smart, healthy net zero emissions city.

The Strategy is also complemented by Canberra's Living Infrastructure Plan: Cooling the City, which sets the direction for maintaining and enhancing trees, soils and waterways to keep our city cool, healthy and liveable in a changing climate.

CLIMATE CHANGE POLICY AND PROGRAMS

Climate Emergency

In May 2019, the ACT Legislative Assembly joined many other cities, states and territories around the world in declaring a state of climate emergency, acknowledging the need for urgent action. The text of the ACT declaration is available on the Environment, Planning and Sustainable Development Directorate website.

The ACT Government is committed to doing everything it can to solve the global challenge of climate change, in the interests of securing a liveable and healthy future for our community, the environment and for future generations.

Energy

In 2018-19 the ACT Government remained on track to achieve its 100% renewable electricity target by 2020, supported the uptake of batteries by households and small businesses through the $25 million Next Generation Energy Storage program, implemented a range of initiatives to support renewable energy businesses, and contributed to local and national energy policy development. The ACT Government also supported local industry and research organisations to ensure we remain a centre of renewable energy industry and research.

Energy highlights for 2018-19:

- The Crookwell 2 wind farm commenced generating ACT-supported renewable electricity in September 2018. The second stage of the Hornsdale wind farm commenced electricity generation in December 2018. The third stage of the Hornsdale wind farm commenced generation in October 2019. This puts the ACT on track for 100% renewable electricity in 2020.
- Planning requirements were implemented to allow the first two stages of the new Ginninderry development in Belconnen to be the first all-electric precinct and assist in testing the costs and other effects of living without gas. Incentives will be provided to install highly energy efficient appliances and energy demand management systems. All homes will have solar panels.
- The ACT Government agreed to provide a feed-in tariff to the SolarShare community solar farm, to be located north of the existing 2.3 megawatt Mount Majura Solar Farm on Canberra's Solar Highway. Once complete, it will be capable of generating enough energy to power 250 ACT homes and be the largest in Australia.
- The Next Generation Energy Storage program continued to expand and is now supporting around 1300 smart battery systems, or 6 MW. The program won the 'Renewable Energy Achievement Award' from the Cities Power Partnership in August 2019, in recognition of its innovative approach to delivering new technology to the community, while reducing energy prices.
- The Renewable Energy Innovation Fund continued to invest $5 million as part of an $8 million research program on battery storage at the Australian National University. This world-leading program, led by Dr Lachlan Blackall, is researching energy storage and power conversion, data analytics, device optimisation and control, and markets and regulation. This will result in improved ways to store and integrate renewable energy into the electricity grid. This is strengthening Canberra's role as a hub of research excellence in renewable energy.

Energy Efficiency (Cost of Living) Improvement Scheme

The Energy Efficiency Improvement Scheme (EEIS) continued to deliver energy efficiency upgrades to households and small-to-medium enterprises in the ACT. The EEIS requires electricity retailers to achieve energy savings through a non-certificate-based retailer obligation scheme.

During the 2018-19 financial year, over 88,000 energy saving items were installed in more than 3600 households and businesses, including household activities such as replacement of inefficient heaters with high-efficiency systems, decommissioning of refrigerators and freezers, and lighting upgrades to help ACT businesses reduce their energy consumption and save money on electricity bills. New water heating activities were introduced in 2018. ActewAGL is now offering upgrades from gas and electric-resistance water heaters to high-efficiency hot water heat pumps.

The EEIS has been working on the development of new residential insulation activities, business heating and cooling, demand response activities and updates to appliances activities. Stakeholder consultation was undertaken in late 2018 and early 2019 to finalise the codes of practice for these new activities and updates.

Zero Emissions Vehicles

In April 2019, the City to Gungahlin light rail line opened to the public, introducing a new era in Canberra's public transport system. As well as introducing a new type of public transport to the community, with the move to 100% renewable electricity, light rail will provide a zero emissions source of transport. Planning for future extensions to the light rail system is continuing.

The ACT's Transition to Zero Emissions Vehicles Action Plan 2018-21 (Action Plan), launched in April 2018, outlines the immediate actions the ACT 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.

The Action Plan includes targets for shifting to a zero emissions ACT 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.

Zero emissions vehicle highlights from 2018-19:

- Began work on the installation of a network of 47 electric vehicle charging stations for the ACT Government fleet, with more stations set to be installed in 2020;
- Continued to increase the number of zero emission vehicles in the ACT Government fleet (currently 16 battery electric vehicles and 15 plug-in hybrid electric vehicles); and
- commenced changes to road and parking regulations to encourage electric vehicles.

Climate Change Adaptation

The ACT Government has implemented the *ACT Climate Change Adaptation Strategy – Living with a Warming Climate* (Adaptation Strategy) to improve climate change risk identification and management in Government operations, and increase community understanding of climate change risks and impacts and encourage preparedness. The few remaining actions from the Adaptation Strategy have been incorporated into the new climate change strategy and living infrastructure plan, including climate-wise homes, resilient plants that will help the ACT adapt to climate change, and demonstration projects showcasing climate-wise activities that can be undertaken by developers, builders and homeowners.

Climate change adaptation highlights for 2018-19:

- Completed a first comprehensive survey of climate change resilience to understand risks and preparedness for the impacts of climate change. This showed that while two thirds of adults in the ACT region had a high level of preparedness, those born overseas, with low formal education and/or younger women are highly vulnerable to negative impacts from the effects of climate change;
- Developed the Climate Ready webtool and launched it with a quiz to increase community understanding of climate change exposure and response. There were 1825 valid entries to the quiz;
- Delivered the Climate Risk Health Check interactive online tool for ACT Government infrastructure managers to assess risks to long-term assets;
- Partnered with the National Environmental Science Program Hub and Australian Government Department of Energy and Environment to host the Canberra: A Perfect Storm Climate Challenge for Young Professionals;
- Reviewed and updated the trees species list for Canberra, Municipal Infrastructure Standard (MIS) 25, to ensure tree planting will be fit-for-purpose in the future climate; and
- Published a series of Adaptation Innovation factsheets on innovative ACT Government projects to combat climate change.

Supporting low income households

The Actsmart Low Income Household program is delivered by St Vincent de Paul and helps low income households to improve the energy efficiency of their homes and reduce greenhouse gas emissions. It offers in-home energy assessments and education to improve participants' understanding of energy and water use. Participants are provided energy saving kits, a heated throw rug, draught proofing of their home and, where needed, access to appliance upgrades. A limited number of prioritised low-income households also received a split system as an upgrade to their household heating. As required, participants are referred to other services such as retailer hardship programs or the No Interest Loan Scheme where they can access eligible energy concessions and financial assistance.

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 No Interest Loans Scheme. This cost-effective approach reduces emissions by providing the financial means for low income households to access energy efficient technology where there may otherwise be a cost barrier. In 2018-2019 the following subsidies applied:

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

The Actsmart Curtain Project supported 200 low income households identified through the Actsmart Low Income Household Program with the installation in their homes of curtains produced by volunteers. Households benefited through improved thermal comfort, reduced energy bills and enhanced privacy and security.

The Actsmart Solar for Low Income program provides eligible households with a partial subsidy of up to 50% (capped at $2500) 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 $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. In 2018-19, 220 low income households received solar panels through the program.

TABLE 1 **Actsmart low income households program participation**

Activity	Program commenced	2018-19 participation	Total program participation
Low income households assisted	01 Oct 2015	962	4,633
Home energy assessment and education (first visit only)	01 Oct 2015	728	2,347
Information sessions	01 Oct 2015	234	2,286
Energy efficient refrigerators and freezers installed	01 Oct 2015	157	547
Energy saving kits, heated throw rugs and other energy and water efficient items provided	01 Oct 2015	670	2,185
Draught proofing	01 Oct 2015	442	1,623
Energy efficient heaters installed	01 Apr 2016	100	372
Appliances provided through No Interest Loans Scheme subsidies	January 2015	27 refrigerators	182
		2 freezers	11
		34 washing machines	191
		5 reverse cycle air conditioners	16
Curtain Program	2014	200	581 households

The Energy Efficiency Improvement Scheme (EEIS) provides targeted assistance to priority households by obligating Tier 1 electricity retailers to deliver a proportion of their energy savings in priority low-income households. From 1 July 2018 to 30 June 2019, 1197 priority low-income households received activities through the EEIS.

The Priority Household Target (PHT) was set at 20% from 2017 to 2019. After extensive consultation with stakeholders in 2018-19, the 2020 Priority Household Target was increased from 20% to 30% by disallowable instrument.

After the delivery of a successful pilot program in 2017-18, the ACT Government has initiated the implementation of the Energy Efficiency Improvements in Public Housing initiative in partnership with ActewAGL. This initiative consists of a $7 million investment to improve the energy efficiency of 2,200 public houses, from 1 July 2018 to 30 June 2021. In 2018-19 this initiative replaced approximately 470 heaters and hot water systems with highly efficient systems.

Actsmart energy audits and education programs have helped 85 tenants to better manage energy consumption and reduce their energy bills throughout this financial year. In addition to maximising benefits to low income households through bill savings and reducing greenhouse gas emissions, the program delivered additional co-benefits such as improved health, wellbeing and comfort of residents, as well as helping vulnerable households adapt to a changing climate.

Supporting business

The Actsmart Business Energy and Water program provides advice and financial assistance for energy and water efficiency upgrades to ACT businesses, community groups and owners corporations with electricity bills up to $25,000 per annum and/or up to 20 employees. An Actsmart technical assessor conducts an energy and water assessment of each participant's premises, resulting in a tailored energy and water action report. The report recommends upgrade opportunities and no-cost and behaviour-change recommendations that may reduce energy and water consumption and emissions. Participants can claim a rebate of 50% of costs of approved upgrades up to $5000.

The program complements efficiency upgrades available through the EEIS. The EEIS installed 83,400 energy efficient lights in 963 businesses during 2018-19, saving lifetime emissions of 16,477 tCO_2-e and $59 million of lifetime bill savings.

TABLE 2 **Actsmart business program participation**

	2018-19 participation	Total program participation since July 2012
Number of businesses assessed	143	950
Number of businesses claiming a rebate	56	489

The Actsmart Solar for Business trial, an initiative helping ACT businesses and community organisations adopt solar energy, was launched in February 2019. The trial offers eligible businesses free, independent, tailored advice and rebates up to $5000 for the installation of rooftop solar systems. In 2018-19, 81 businesses received advice and the installation of 28 solar systems has commenced within these businesses.

The Actsmart Business Recycling program assists and accredits businesses to improve the way they deal with their waste, to redirect waste away from landfill and to strive to improve sustainability and reduce the Territory's carbon footprint.

The 976 ACT sites participating in these programs include major shopping centres, fast food outlets, childcare centres, GIO Stadium, Manuka Oval, Australian Institute of Sport, Calvary Public Hospital, Calvary John James Hospital, National Arboretum and National Zoo & Aquarium. 660 sites were accredited in 2018-19, meeting the recycling standard set by the program.

More than 70,000 staff at participating businesses have access to the programs. In 2018-19, the 660 accredited sites recycled approximately 22,728 cubic metres of mixed recyclables, representing 1833 tCO_2-e avoided, 24,281 cubic metres of paper and cardboard, representing 6070 tCO_2-e avoided and 2375 cubic metres of organic material, which is equivalent to 1303 tCO_2-e.

The Next Generation Energy Storage program is enabling the virtual power plant (VPP) currently being run by Reposit Power and Evoenergy. This is one of Australia's largest VPPs and a good example of how the mandated 'smart' requirements of the program are stimulating innovation in the local renewable energy industry. The VPP rewards over 700 participating households for exporting their stored electricity that has been generated from a rooftop solar system and can help manage peak electricity demand and improve grid security.

The $12 million Renewable Energy Innovation Fund (REIF) is providing up to $2 million in funding through the Direct Grants program. REIF provides flexible, early-stage funding to support a diversity of new and emerging technologies and ventures with the potential to support the development of the ACT as an export-oriented hub for renewable energy innovation. A new Direct Grants round will be launched in late 2019, together with the new 'Cleantech Co-funding scheme' for applied research and development projects.

The REIF also funds the Renewables Innovation Hub, which is currently supporting around 80 entrepreneurs through 30 businesses and will in 2020 increase its support for new innovation and ecosystem building activities.

COMMUNITY SUPPORT INITIATIVES

Community Zero Emissions Grants

The Community Zero Emissions Grants Program provides funding to eligible community groups and sponsored individuals to lead initiatives that support the ACT's transition to net zero emissions by 2045. The grants are delivered through annual targeted rounds. The grants delivered in 2018-19 are in the table below:

TABLE 3 **Community Zero Emissions Grants**

Recipient	Project purpose/Summary	Amount $ (Ex GST)
Woden SEE Change	Transform an existing shed at the Canberra City Farm into an ultra-low energy building ("Super Shed").	24,000
Australian PV Institute	Provide the ACT community with an engaging, easy to use, free online tool (SunSPoT) to inform and accelerate investment in rooftop solar	23,530
Better Renting Limited	Education and engagement campaign to support renters in making their tenancy more energy efficient.	24,875
Canberra Environment Centre	Targeted resources to encourage sustainable behaviours at an individual and household level for the Canberra Chinese community.	24,680
UnitingCare Kippax	Create a re-locatable administration building for the Mower Shed entirely powered by solar panels and batteries through re-purposing two shipping containers.	24,692
Mental Health Foundation ACT	Education and engagement campaign for people living with mental illnesses and their carers on waste reduction and sustainable living.	20,750
Brindabella Christian College	Develop a pilot Solar Tree to be installed on the school campus, feeding into an existing Solar Grid and Educational Video Learning Display for students.	25,000

IMAGE CREDIT Tom Dears

Community Gardens Grants

The ACT Community Gardens Grants are designed to support community gardens across Canberra that enhance community places and spaces. The grants delivered in 2018-19 are in the table below:

TABLE 4 **Community Gardens Grants**

Recipient	Project purpose/Summary	Amount $ (Ex GST)
Wybelena Grove Owners Corporation	Establishment of Community Garden	5,419
Canberra Organic Growers' Society	Extension of existing garden water reticulation.	5,000
Hudson Square Owners Corporation	Establishment of Community Garden	2,491
Canberra Organic Growers' Society	Replace fencing and gate to existing Community Garden	8,300
Northside Community Services Ltd (auspicing Lyneham Commons)	Soil improvement Lyneham Commons Food Forest	2,800
Canberra City Farm	Expansion of Community Garden	9,314
Evoque Residents Owners Corporation	Establishment of Community Garden	2,250
Nutrition Australia ACT Incorporated	Renovation of kitchen garden	3,400
ELAN Apartments Owners Corporation	Establishment of Community Garden	1,028

Community Partnerships

The ACT Government provides funding to three community organisations—SEE-Change, Canberra Environment Centre and Conservation Council ACT Region—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 ACT Government's sustainable and environmental priorities, policies and programs. They also promote and distribute information on current sustainability initiatives of the ACT Government.

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 2018-19 were:

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

The Council advised the Minister on key issues during 2018-19, including the use of a social cost of carbon and development of the ACT Climate Change Strategy 2019-25 and Canberra's Living Infrastructure Plan. The Council meets at least four times each year and produces an annual report of its activities, including any advice given or recommendations made to the Minister.

The Council also provided information to the community, through development of a fact sheet on carbon budgets, as well as a series of opinion articles published in the Canberra Times exploring how Canberra can transition to carbon neutrality.

COMMUNITY ENGAGEMENT AND SUPPORT

Actsmart Sustainable Home Advice

Actsmart Sustainable Home Advice (ASHA) is a free email, phone and in-home assessment service for ACT residents wanting independent advice on how to reduce utility bills, decrease CO_2 emissions and improve household comfort.

In 2018-19, 1732 people used the service, with 1,311 people attending 45 workshops and other events and 421 people receiving advice by phone, email and in home sustainability assessments.

The free workshops were located around Canberra and held throughout the year. Workshop topics included household draught-proofing, rooftop solar photo-voltaic systems, sustainability considerations before building a house and energy efficient heating and cooling solutions. A total of 1311 residents attended 45 workshops located in Gungahlin, Belconnen, Inner North, Woden and Tuggeranong.

Actsmart Eco Challenge

The Eco Challenge is a free online challenge aimed at helping Canberrans to live more sustainably and comfortably and reduce their CO_2 emissions and utility bills. Activities encourage residents to change their behaviour in relation to transport, household energy and water consumption, sustainable food choices and waste and recycling. In 2018-19 the online tool was renamed the Eco Challenge and had 4,032 registered participants.

Actsmart Events

The Actsmart Public Event program helps event organisers implement recycling, energy, water and transport efficiencies at their event. Any community based event is eligible including school fetes, festivals, fairs, shows or sporting events.

In 2018-19, 278 events participated in the program including Floriade, National Multicultural Festival, ActewAGL Royal Canberra Show, National Folk Festival, Summernats, sporting events, fetes and fairs.
More than 1.5 million patrons had the opportunity to recycle at these events.

Actsmart Schools

All schools in the ACT are registered with the Actsmart Schools program, which has five focus areas—energy, waste, water, school grounds/ biodiversity and curriculum. The program offers a range of resources and services such as expert staff available to advise schools, professional learning workshops and competitions and events. All 145 ACT schools have registered with the program (public, private and independent schools), representing 78,752 students.

Carbon Neutral Government

The ACT Government continued to lead the community by example through implementation of the Carbon Neutral Government (CNG) Framework. The new ACT Climate Change Strategy sets a Zero Emissions Government (ZEG) Framework, that will see the ACT Government achieving its emissions reduction targets and net zero emissions goal by 2040 without the purchase of carbon offsets.

The ZEG Framework enables and coordinates a whole-of government approach to reducing emissions in Government operations in a cost-effective manner.

Highlights for 2018-19:

» The first all-electric school in the ACT was opened that will produce zero emissions when combined with the 100% renewable electricity target of the ACT.

» A zero-emission, all-electric, office building under construction in Dickson will be occupied by ACT Government staff.

» Installation of new high-efficiency heating management systems in several ACT Government schools.

» Trial of an autonomous electric mower at two enclosed ACT Government ovals.

The CNG Fund is a zero-interest fund that allows agencies to manage the cost of reducing emissions. To date, 34 ACT Government projects to the value of around $17.5 million have been supported under the fund. These projects support agencies to reduce emissions as well as demonstrating technologies to the community.

HIGHLIGHTS FROM ACT GOVERNMENT ACTION TO REDUCE GREENHOUSE GAS EMISSIONS DURING 2018-19

The Minister has received information on actions undertaken by each ACT Government Directorate to reduce greenhouse gas emissions. All directorates report their action on climate change and reducing greenhouse gas emissions in their annual reports.

Chief Minister, Treasury and Economic Development Directorate (CMTEDD)

» Facility upgrades within the CMTEDD portfolio:

- Completion of sub-metering and energy efficient HVAC control upgrades at 255 Canberra Avenue Fyshwick to reduce electricity and gas consumption on site.
- Through the National Arboretum Canberra, in partnership with the Carbon Neutral Government Loan Fund and ACT Property Group, management of the completion of a solar panel installation project that allows the horticultural team to charge portable hand-held equipment with clean energy.

» Facility upgrades by ACT Property Group and artsACT:
  - Big data and building analytics were implemented at the North Building/Canberra Museum and Gallery to further optimise the new electric HVAC system operation, providing a case study to consider an expanded deployment across the portfolio in future years.

Community Services Directorate (CSD)

» CSD reduced natural gas-related carbon emissions by implementing another stage of a multi-year program to upgrade natural gas boilers at Bimberi Youth Justice Centre. Once completed, it is expected that this project will reduce carbon emissions from boilers by approximately 15%.

» The directorate also started the first stage of an external lighting upgrade that will significantly reduce electricity usage. This upgrade will see existing lighting upgraded to LED lighting which has a longer lifespan of up to 20 years, more efficient energy usage and lower maintenance requirements. LED lighting was installed at Tuggeranong Child and Family Centre during the 2018-19 financial year.

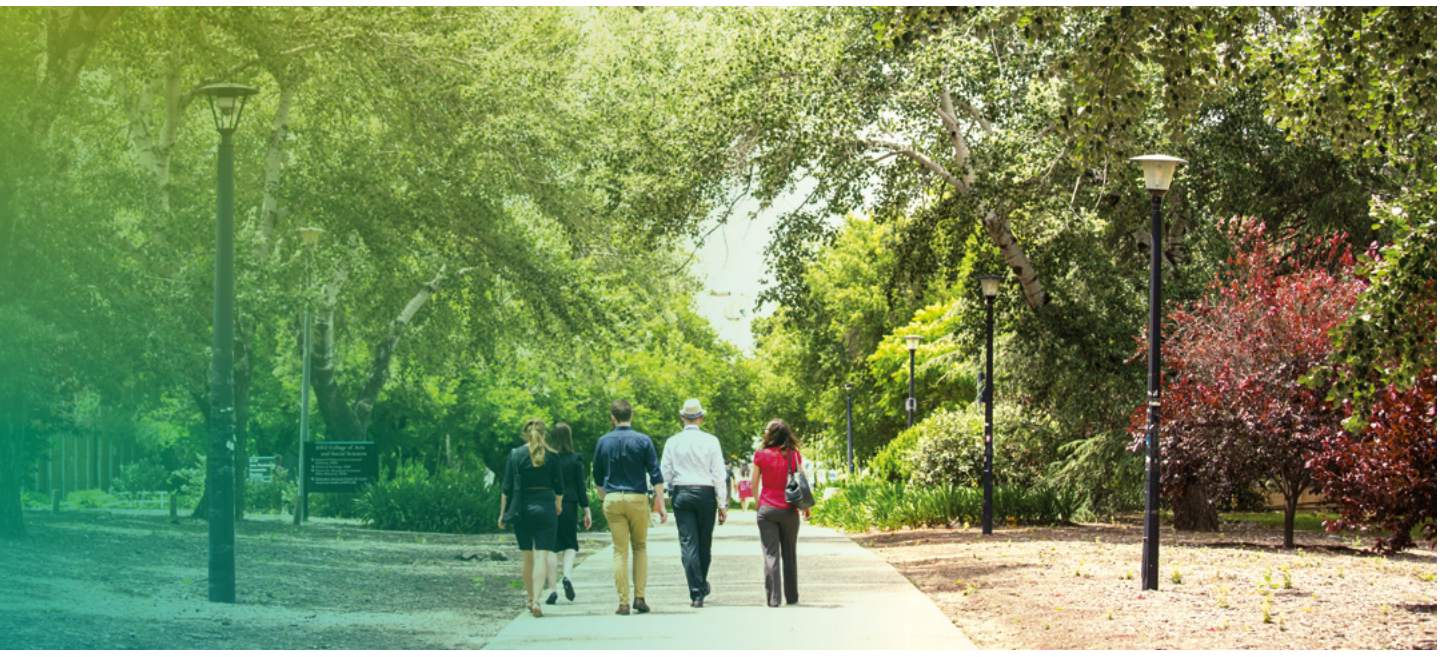
» After the successful trial in 2017-18 that saw 240 existing inefficient gas heaters in public housing replaced through the Energy Efficiency Improvement Scheme, the ACT Government committed further funds to enable the program to continue on a larger scale.

Education Directorate (EDU)

- Building tuning initiatives in 2018-19 targeted gas use efficiency and improved thermal comfort of students and staff. Projects included: building envelope improvements to enable better maintenance of internal temperatures by preventing heat loss in winter and heat gain in summer; improved efficiency of heating and cooling systems; and training to assist school-based staff to monitor and manage gas and electricity use.

- The Directorate commenced an initiative to draught proof all external doors at schools to reduce heat loss during winter and improve building thermal comfort. In 2018-19, draught proofing was completed at 21 schools. The initiative was supported by the schools through co-investment. Significant improvement in student and staff comfort has been recorded.

- Building envelope audits and HVAC system audits were conducted at six school sites. The audits identified energy conservation measures for implementation in 2018-19 and 2019-20. Energy conservation measures implemented in 2018-19 included: the installation of a control system and double glazing at the Turner School hydrotherapy pool; installation of a control system at Calwell High School, mechanical upgrades to the Black Mountain School hydrotherapy pool heating system; and recommissioning of the building management system at Namadgi School.



Environment, Planning and Sustainable Development Directorate (EPSDD)

- The $25 million Next Generation Energy Storage program supported the uptake of batteries by households and small businesses.
- The Energy Efficiency Improvement Scheme (EEIS) continued to support households and businesses to reduce electricity demand and carbon emissions associated with stationary use of energy in the ACT.
- Implementation of a range of initiatives to support renewable energy businesses.
- Providing grants to community groups and sponsored individuals to deliver innovative approaches to reducing emissions and leading community action.
- Legislating to ensure the 100% renewable electricity target is maintained post 2020 with enough renewable electricity to match demand.
- Continued delivery of Actsmart sustainability programs to support households, businesses and schools to reduce energy and emissions.
- Continued reduction in ACT Government emissions in a cost-effective manner through the whole-of Government Carbon Neutral Government (CNG) program.

Health Directorate (ACT Health) and Canberra Health Services (CHS)

- In collaboration with the ACT Government's Infrastructure Finance and Capital Works unit, CHS upgraded a significant amount of electrical infrastructure on campus as part of the Electrical Main Switchboard Replacement project. This project will provide metering of all upgraded infrastructure, in addition to a modern Energy Management System. CHS are upgrading the main chiller plant in Building 1 at the Canberra Hospital to new highly efficient chillers with a best-in-class control system that will provide significant energy savings at low to moderate cooling requirements.
- CHS have also updated gas boilers in Building 1 and Building 3 to optimise gas consumption. Building 1 boilers are the main boilers on the Canberra Hospital campus, supplying space heating and domestic hot water to a significant portion of the campus.

Justice and Community Safety (JACS)

- Dedicated funding for energy efficiency works was made available through the JACS Better Infrastructure Fund (BIF).
- Baseline studies were undertaken at the Alexander Maconochie Centre (AMC), the Winchester Police Centre (WPC), City Police Station (CPS) and Tuggeranong Police Station (TPS), to identify potential opportunities for energy efficiency projects supported by the CNG Fund.
- Upgrading three boilers at the AMC with energy efficient units.
- Replacing the Gungahlin Joint Emergency Services Centre gas hot water services with electric services.

Transport Canberra and City Services (TCCS)

- TCCS Fleet Services has introduced three hybrid trucks and a hybrid commercial grade mower and completed a trial of a fully electric autonomous sportsground mower. Information gathered from this trial of new technology mowers will inform broader fleet replacement options into the future.
- TCCS undertook energy conservation measures including the installation of solar photovoltaic systems (PV) at Belconnen Parks Depot and Gungahlin Cemetery. Planned upgrades resulting from feasibility studies completed in 2018-19 will be undertaken in 2019-20 including installation of solar PV across eleven sites; and works on HVAC systems at Tuggeranong Bus Depot and Capital Linen Services to reduce emissions relating to natural gas.
- Roads ACT have completed the first year of the seven-year Energy Performance contract for the provision of ongoing operations and maintenance of the Territory's streetlights with expected outcomes for energy efficiency replacements to LED luminaires, improved maintenance efficiency and improved data acquisition and control systems with potential smart city applications. In terms of consumption over the 2018-19 year, the result is 5,375 MWh saved (13%) compared to the baseline.

2. EFFECTIVENESS OF GOVERNMENT ACTIONS

ACT GREENHOUSE GAS INVENTORY

The ACT Government reports the Territory's greenhouse gas emissions in the greenhouse gas emissions inventory. The latest report is the ACT GHG Emissions Inventory Report 2017-18.

The table below shows the change in ACT emissions from 1989-90 to 2017-18 and the ACT's 2020 emissions reduction target.

TABLE 5 **Summary of ACT emissions over time and 2020 target (kilotonnes of carbon dioxide equivalent)**

1989-90	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020 Target
3197	3935	4063	4102	3928	3368	Not yet available	Not yet available	1918

The estimate of total greenhouse gas emissions for the ACT in 2017-18 was 3368 kt CO_2-e, 14% lower than in 2016-17.

In 2017-18 the ACT emitted 8.09 tonnes of CO_2-e per person, a reduction from 9.64 tonnes CO_2-e per person in 2016-17.

ACT RENEWABLE ELECTRICITY TARGET COMPLIANCE

Under recent amendments to the *Climate Change and Greenhouse Gas Reduction Act 2010*, the ACT Government has committed to deliver 100% renewable electricity for the Territory from 2020.

These amendments also require the ACT Government to publish a methodology for assessing compliance with this target. This methodology, which is expected to be published by the end of 2019, will detail the sources of renewable electricity and how they are to be counted. The methodology will be consistent with the ACT Government's 'net target', and so will require assessment on an annual basis.

The target will be reported in the Minister's annual report each year from 2020 on a financial year basis, consistent with the treatment of climate change targets. However, as the target is from 1 January 2020, the first report will cover the first six months of the scheme, to 30 June 2020. From 2021, the report will cover full financial years.

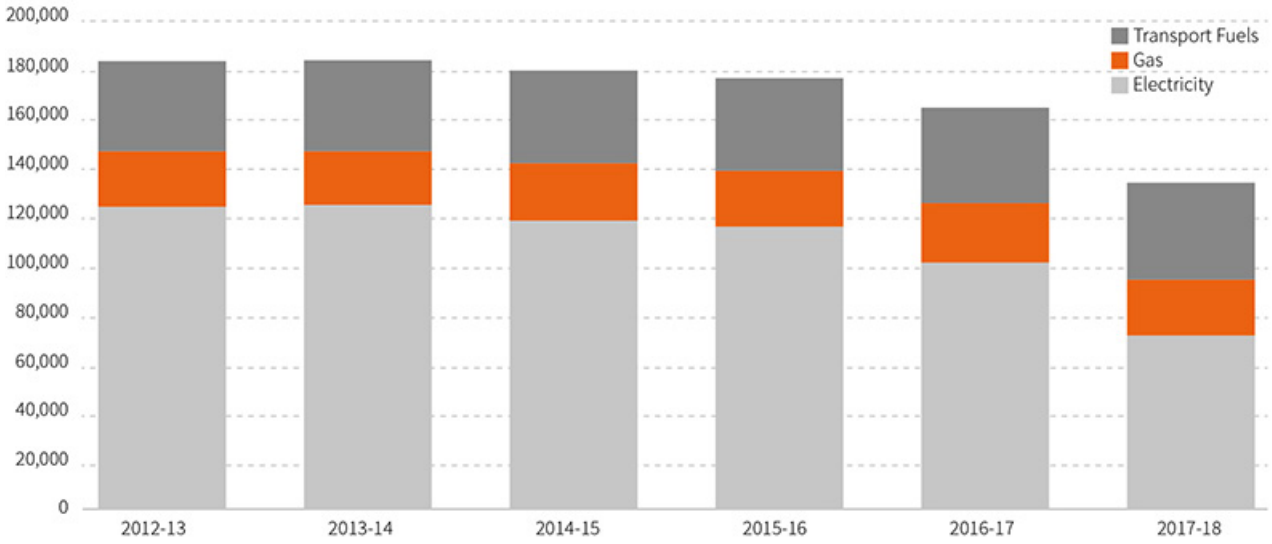
ACT GOVERNMENT GREENHOUSE GAS INVENTORY

Responsible government includes minimising the impact of our activities on the environment and efficient monitoring and reporting of government greenhouse gas emissions. The ACT Government reports emissions from Government operations annually.

In 2017-18, emissions from Government operations were 132.6 kt CO_2-e, 19% lower than the previous year and a 27% decrease from 2012-13.

The ACT Government will maintain its robust monitoring and reporting regime to track progress towards zero emissions by 2040 in operations.

FIGURE 1 **Government emissions from 2012-13 to 2017-18**



3. COST OF LIVING STATEMENT 2018-19

Section 15 of the *Climate Change and Greenhouse Gas Reduction Act 2010* (Act) requires the ACT Government to report on the findings of a cost-benefit analysis of policies and programs implemented to meet the climate change targets in the Act. This document represents the statement under this commitment for 2018-19.

Key ACT Government climate change measures are estimated to have cost a representative ACT household around $164 in 2018-19. The EEIS program alone is estimated to have delivered annual bill savings of around $190 averaged across all ACT households in 2018-19.

Other programs have delivered additional savings for households and businesses, and the ACT's large-scale feed-in tariff system has protected ACT residents from some energy market price volatility.

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. Other assumptions are that the household is not on a "controlled load" tariff, has no mains gas connection and is on a regulated standing offer. This equates to an annual electricity GST exclusive bill of $1,693 in 2018-19, based on the default standing tariffs offered by the major energy retailer in the ACT during the year. In 2017-18, the representative consumer on a market offer had an annual GST exclusive bill of $1,548[1].

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.

CLIMATE CHANGE POLICY COST IMPACT

Currently, there are two climate change policies that had a direct cost of living impact in 2018-19. These were the Energy Efficiency Improvement Scheme and the small-scale and large-scale feed in tariff schemes. Together, these schemes contributed $164.04 to a representative household electricity bill in 2018-19. This is approximately 10% of the total cost of electricity to a representative ACT household during the year.

Climate Change Policy Cost Impact per household per year			
2018-19	Average large and small-scale feed in tariff pass through AP2 cost ($)	Average EEIS pass through AP2 cost ($)	Average Cost of Energy ($)
Cost	$134.65	$29.39	$1,693

1 Appendix D1, 2018 Residential Electricity Price Trends - A report by the Australian Energy Market Commission (December 2017). This figure represents the typical electricity consumption of a two person household with no gas connection and no pool.

ENERGY EFFICIENCY IMPROVEMENT SCHEME (EEIS)

The compliance cost of the EEIS scheme is passed through to customers in the form of higher electricity tariffs. In 2018-19, the average pass-through cost for a two person household was $29.39, compared to $29.75 in 2017-18. This price reduction is due to a small decline in the costs of the scheme.

Activities completed under the EEIS in 2018-19 delivered around $31 million in lifetime energy savings.

LARGE AND SMALL-SCALE FEED IN TARIFF (FIT) SCHEMES

The ACT Largescale 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-medium scale FiT scheme supports the generation of electricity by solar schemes with less than 200 kW capacity. A total of 10,165 solar systems are registered as FiT generators in 2018-19, with a combined capacity of 35 MW. Like the large-scale FiT scheme, the small-scale FiT scheme contributes to the ACT's 100% by 2020 renewable electricity target.

2018-19 saw the commencement of FiT supported generation by the 91 MW Crookwell 2 Wind Farm in September 2018, and the 100 MW Hornsdale 2 Wind Farm in December 2018. The 109 MW Hornsdale 3 Wind Farm was the final large FiT supported generator to begin FiT output in October 2019.

The average small-scale FiT scheme pass-through costs for a typical two-person household in 2018-19 was $44.05 compared to $50.12 in 2017-18. The large FiT scheme pass-through costs for a typical two person household was $90.67 in 2018-19, compared to $86.10 in 2017-18. The increase reflects the increase in large FiT supported output as more wind and solar farms have begun generation.

The contract mechanism the ACT 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.

SOCIAL EQUITY

The impact of climate change measures, while being marginal on the community as a whole, may have disproportionate impacts on lower income households. To address this, a number of Government policies are in place to help vulnerable households suffering financial stress due to energy bills. These include Actsmart programs for households, utility concessions, and requirements on energy retailers to assist consumers suffering financial hardship.

The EEIS also includes a specific focus on vulnerable households. In 2018-19, the EEIS delivered energy savings in over 1,200 low income, priority households, delivering annual bill savings estimated at over $1,000 per household. Participating households also reported improvements in comfort, physical and mental health.

FUTURE CLIMATE CHANGE POLICY COSTS

From 2018-19 there will be an increase in generation capacity required to achieve the ACT's 100% by 2020 renewable energy target. This is because the Hornsdale 3 wind farm will commence generation, and output from several wind farms will increase, as they were not generating for the full 2018-19 financial year.

The ACT Government has announced a new renewable electricity auction, which will close in 2020. This will have a cost impact when the successful bidders commence feed-in tariff supported generation.

The cost of supporting large scale renewables including the new auction, and the battery storage program is expected to be less than $4.90 per household per week in 2020. The ACT Government remains confident that the costs of achieving 100% renewable electricity will be less than originally modelled in 2012.