



Energy Efficiency in the Built Environment

Green Building Council of Australia

Prepared for the Climate Action Roundtable (CAR) report

Commissioned by the ACT Government Environment, Planning and Sustainable Development Directorate, August 2017 and updated in November 2017.

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CONTENTS

BACKGROUND	1
METHODOLOGY	1
REPORTING	1
DISCLAIMER	1
SOURCES	3
APPENDIX 1	4
Table 1. COAG and/or the Commonwealth	4
Table 2. NSW	6
Table 3. Victoria	8
Table 4. Queensland	12
Table 5. South Australia	15
Table 6. Western Australia	16
Table 7. Australian Capital Territory	18
Table 8. Tasmania	20
Table 9. Northern Territory	21

BACKGROUND

The Green Building Council of Australia (GBCA) was commissioned by the ACT Government Environment, Planning and Sustainable Development Directorate to undertake a desktop review of state and territory building policies for the Climate Action Roundtable (CAR).

There were three components to the project:

1. Collating publicly available information across jurisdictions on energy efficiency in the built environment including regulation, initiatives and/or programs as per the table provided in the pro-forma.
2. Preparing a brief report containing this information and a summary table by jurisdiction (which was shared with the CAR jurisdictions by the Directorate).
3. Incorporating feedback from the CAR jurisdictions.

METHODOLOGY

The work considered and referenced the Low Carbon Living CRC's report "Best Practice Policy and Regulation for Low Carbon Outcomes in the Built Environment 2017". In addition to the publicly available information, during the project the Directorate became aware that states, territories and the Commonwealth were assembling a stocktake of current programs that relate to improving the energy efficiency of existing public and private buildings. Two draft documents "Jurisdiction EE and EP Program Stocktake" and "Jurisdictional Building Policy reforms" were provided to the consultant by the Directorate.

Jurisdictions provided feedback on the draft report in August 2017 and again in October-November 2017. The majority of jurisdictions provided feedback which was incorporated into the final report.

REPORTING

The research is summarised in this report which synthesises work underway across all jurisdictions. Detailed tables outlining the activities underway in each jurisdiction are at Appendix 1.

DISCLAIMER

While every effort has been made to seek out current policies for each jurisdiction, the GBCA takes no responsibility for errors or omissions. Feedback was sought from each jurisdiction and the GBCA would like to thank all governments for reviewing the research and providing feedback.

Summary of initiatives per jurisdiction

Initiative	Are States and Territories already taking action?									
	COAG &/or Commonwealth	ACT	NSW	QLD	NT	SA	TAS	VIC	WA	
1 Maximising energy efficiency for residential, commercial and government buildings.	✓	✓	✓	✓		✓	✓	✓	✓	
2 Establishing a long term policy for improving the fabric of new and existing buildings and interim sustainability criteria for major developments.	✓	✓	✓	✓		✓		✓	✓	
3 Better utilising financing, incentives and subsidies to help transform the market for an energy efficient built environment.	✓	✓	✓	✓		✓	✓	✓		
4 Transitioning away from fossil fuels (i.e. natural gas) for building services.	✗	✓	✓	✓		✓		✓		
5 Increasing the energy efficiency of public housing.	✗	✓	✓	✗		✓	✓	✓		
6 Disclosure of energy efficiency of rental properties	✓	✓	✗	✗		✗	✗	✓		
7 Encouraging climate-appropriate living infrastructure within the built environment	✓	✓	✓	✗		✓	✓	✓		
8 Improving the education, training, skills and knowledge of practitioners and community members.	✓	✓	✓	✓		✓	✓	✓		

SOURCES

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APPENDIX 1

Detailed tables of state and territory initiatives

Table 1. COAG and/or the Commonwealth		
Initiative	What is COAG already doing?	What actions/programs is COAG interested in the future?
1 Maximising energy efficiency for residential, commercial and government buildings.	<p>National Energy Productivity Plan Work Program Building related elements include Refrigeration and Ventilation Fans (purchasing efficient fans and upgrading small fans) and Industrial Electricity and Fuel Efficiency .</p> <p>Emissions Reduction Fund: crediting, purchasing and safeguarding emissions reductions. Methods available to support energy efficiency activities in buildings:</p> <ul style="list-style-type: none"> • Commercial Buildings credits emissions reductions associated with improvements in whole of building energy consumption (as measured by the National Australian Built Environment Rating System—NABERS) • Commercial and Public Lighting credits emissions reductions from commercial and industrial building lighting system performance upgrades, as well as public lighting efficiency improvements, including for pedestrian, street and traffic lighting • High Efficiency Commercial Appliances credits emissions reductions from projects that choose to install high efficiency commercial appliances rather than appliances with market average performance <p>National Construction Code</p>	
2 Establishing a long term policy for improving the fabric of new and existing buildings and interim sustainability criteria for major developments.	Committed to the National Energy Productivity Plan (NEPP) , specifically NEPP Measure 5 (Improve residential building energy ratings and disclosure), 31 (Advance the National Construction Code) and 32 (Improve compliance with building energy efficiency regulation) (7)	Climate change policies review is currently underway. ISCA's IS rating tool is being mandated for major infrastructure projects.
3 Better utilising financing, incentives and subsidies to help transform the market for an energy efficient built environment.	National Energy Productivity Plan Work Program The Clean Energy Finance Corporation (CEFC) invests commercially to increase the flow of funds into renewable energy, energy efficiency and low emissions technologies	The Smart Cities Plan aims to accelerate the deployment of clean energy, renewable energy and energy efficiency technology in cities. This will be partially driven through negotiation of initial City Deals. The Townsville City Deal, Australia's first, was signed on 9 December 2016. Potential measures include upgrades to commercial buildings, smart water solutions and a cooling district within the CBD.
4 Transitioning away from fossil fuels (i.e. natural gas) for building services.		

Table 1. COAG and/or the Commonwealth

Initiative	What is COAG already doing?	What actions/programs is COAG interested in the future?
5 Increasing the energy efficiency of public housing.		
6 Disclosure of energy efficiency of rental properties	<p>Commercial Building Disclosure program (CBD) requires energy efficiency information to be provided in most cases when commercial office space of 1000 square metres or more is offered for sale or lease. The aim is to improve the energy efficiency of Australia’s large office buildings and to ensure prospective buyers and tenants are informed. The CBD Program is an initiative of the Council of Australian Governments (COAG). It was established by the Building Energy Efficiency Disclosure Act 2010 and is managed by the Australian Government Department of the Environment and Energy.</p>	
7 Encouraging climate-appropriate living infrastructure within the built environment	<p>Federal Government’s Creating Places for People - An Urban Design Protocol for Australian Cities</p>	<p>Horticulture Innovation Australia is working with Edge Environment to aggregate the research in this space and will use it to drive performance in the built environment.</p>
8 Improving the education, training, skills and knowledge of practitioners and community members.	<p>The E3 program is a cross-jurisdictional program through which the Australian Government, states and territories and the New Zealand Government collaborate to deliver a single, integrated program on energy efficiency standards and energy labelling for equipment and appliances. It is one of a number of programs implemented by the Council of Australian Governments (COAG) Energy Council. An Inter-Governmental Agreement provides the framework for national cooperation on the E3 Program. A similar arrangement has also been developed to ensure alignment with New Zealand.</p> <p>The Energy Exchange (EEX) website (eex.gov.au) helps Australia’s small, medium and large businesses to make informed investment decisions relating to energy efficiency.</p> <p>YourEnergySavings.gov.au provides easy-to-read, practical information on how to save energy, cut power bills and water use, reduce waste and travel smarter and available government assistance.</p> <p>YourHome.gov.au provides information for designers, builders and householders about how to design, build and live in an energy efficient home.</p> <p>Energyrating.gov.au has an Energy Rating App to help consumers compare the energy efficiency and running costs of domestic appliances and a Lighting App identifying the best light bulbs to replace incandescent and halogen bulbs, and how much consumers could save by transitioning to LED or CFL.</p> <p>Calculating Cool – a national self-assessment tool for HVAC systems - developed in collaboration with industry bodies including the Australian Institute of Refrigeration, Air-conditioning and Heating (AIRAH), the Property Council of Australia (PCA), the Facilities Management Association of Australia (FMAA), and the Air-conditioning and Mechanical Contractors’ Association (AMCA).</p>	

Table 2. NSW

Initiative	What are States and Territories already doing?	What actions/programs are States and Territories interested in the future?
<p>1 Maximising energy efficiency for residential, commercial and government buildings.</p>	<p>NCC variation: NSW applies BASIX in the place of 6 star requirements for Class 1 and 2 buildings adding requirements for thermal breaks between the framing and external cladding of buildings (1)</p> <p>Smart Blocks: initially funded by the Australian Government Department of Industry, Smart Blocks is now a partnership between Ecostrata, the City of Melbourne and City of Sydney. Smart Blocks offers recommendations for products and suppliers, a community web portals to help support decision-making, data management to track how buildings are performing. Initially focused on energy efficiency, the program is being expanded to include waste management, water saving, transport and gardening.</p> <p>NSW require all residential energy assessors to be accredited. (2)</p> <p>Better Buildings Partnership - a leading collaboration of property owners, managers and key influencers that plays a key role in improving the performance and sustainability of existing buildings within City of Sydney.</p>	<p>The NSW Government's Draft Plan to Save Energy and Money notes that increasing BASIX targets for new homes, and also lifting standards for commercial buildings, are options it could use to meet its energy savings targets (3). In July 2017, the NSW Government increased minimum energy savings targets for all new homes by around 10% for houses and low-rise units, and by 5% for mid and high-rises units. The stringency for the thermal comfort heating and cooling caps were also increased to be equivalent to the NCC's minimum 6 star rating.</p> <p>NSW applies BASIX in the place of 6 star requirements for new Class 1 and 2 buildings with several additional requirements including thermal breaks between the framing and external cladding of buildings and whole-of-house minimum energy savings targets that cover thermal comfort, fixtures and some major fittings</p> <p>Energy Efficiency: in September 2017, the NSW Government announced \$112.5 million of funding for energy efficiency programs to help households and small businesses save energy and money.</p> <p>For households - the \$80 million household programs will:</p> <ul style="list-style-type: none"> • provide households with discounts to upgrade their homes through partnering tradespeople and suppliers • help concession card holders by offering discounts on new energy efficient fridges and TVs so they can replace old inefficient models • provide grants to cover up to half the cost of upgrading community, public and Aboriginal housing to help tenants save energy and money • partner with energy retailers to help their energy hardship customers go solar <p>For small businesses – \$30 million in small business energy efficiency programs will:</p> <ul style="list-style-type: none"> • provide discounts to upgrade equipment through partnering tradespeople and suppliers • provide energy management training and follow up support so businesses know how they can save energy and money
<p>2 Establishing a long term policy for improving the fabric of new and existing buildings and interim sustainability criteria for major developments.</p>	<p>Energy Efficiency Action Plan Deliver building retrofit programs so 50% of NSW commercial floor space achieves a 4-star NABERS energy and water rating by 2020.</p> <p>Urban Growth NSW have embedded Green Star – Communities as part of their draft sustainability strategy.</p> <p>Sydney Olympic Park Authority have mandated Green Star for all buildings within the precinct.</p>	<p>NSW Climate Change Policy Framework and the Climate Change Fund Strategic Plan - Action plans will be develop in 2017 for advanced energy, energy efficiency and climate adaptation.</p>

Table 2. NSW

Initiative	What are States and Territories already doing?	What actions/programs are States and Territories interested in the future?
3 Better utilising financing, incentives and subsidies to help transform the market for an energy efficient built environment.	<p>The Energy Savings Scheme (ESS) reduces electricity consumption in NSW by creating financial incentives for organisations to invest in energy savings projects. Energy savings are achieved by installing, improving or replacing energy savings equipment. The Energy Savings Scheme is governed by NSW legislation. It places a mandatory obligation on Scheme Participants to obtain and surrender energy savings certificates, which represent energy savings. The development of the policy framework is the responsibility of the Office of Environment and Heritage and the Department of Industry.</p> <p>Appliance Replacement Offer Discounts on new energy efficient fridges and TVs for those who are replacing eligible old appliances and hold a Pensioner Concession Card, Health Care Card or Low Income Health Care Card from Centrelink, or Veterans' Affairs Gold Card.</p>	
4 Transitioning away from fossil fuels (i.e. natural gas) for building services.	Emissions Target – Net zero emissions by 2050 (4)	
5 Increasing the energy efficiency of public housing.	<p>Home Energy Action Program \$26.8 million for an energy efficiency assistance program targeted to vulnerable, low-income households, including low-income renters.</p> <p>Provides grants for high return energy efficiency improvements including hot water upgrades, improvements to building fabric, solar power, and upgrading old fridges and TVs.</p>	
6 Disclosure of energy efficiency of rental properties		Draft Plan to Save NSW Energy and Money – Aims to introduce disclosure at point of sale, increase standards for rental properties and social housing, and increase BASIX outcomes. (4)
7 Encouraging climate-appropriate living infrastructure within the built environment	In 2014 The City of Sydney adopted the Green Roof and Walls Policy. Under the policy, the City of Sydney will encourage installation of quality green roofs and walls by supporting, promoting, researching and monitoring green roof installation and addressing key barriers to their uptake. Sydney City Council has a Green Roof Resource Manual that provides guidance on roofs and walls.(5)	City of Sydney has made recommendations for possible funding models (5). In NSW, both residential and non-residential applicants are eligible for rebates for rainwater tanks. Under the Climate Change Fund (CCF), successful applicants are entitled to a rebate of up to \$1500 for rainwater tanks.
8 Improving the education, training, skills and knowledge of practitioners and community members.	The Smarter Choice program is designed to help households make more informed purchasing decisions on appliances. As well as helping choose energy-efficient appliances, the Smarter Choice program also gives guidance on disposing of your old whitegoods and TVs and computers.	Working with GBCA on increasing efficiency of homes.

(1) ABCB, Consolidated Performance Requirements – 2016, pp 102 – 195.

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(3) <http://www.environment.nsw.gov.au/research-and-publications/publications-search/climate-change-fact-sheet-achieving-net-zero-emissions-by-2050>

(4) <https://engage.environment.nsw.gov.au/Environmental-Future-Consultation-Plan-to-Save-NSW-Energy-and-Money>

(5) Sydney City Council Green Roof Resource Manual http://www.cityofsydney.nsw.gov.au/_data/assets/pdf_file/0006/109383/Green-roof-resource-manual-full-version.pdf

Table 3. Victoria

Initiative	What are States and Territories already doing?	What actions/programs are States and Territories interested in the future?
<p>1 Maximising energy efficiency for residential, commercial and government buildings.</p>	<p>NCC variation: thermal performance levels to reflect: the effects of nearby permanent features such as topography, structures and buildings; solar passive features and envelope sealing. (1) Victoria also requires the installation of a solar water heater or rainwater tank on all new Class 1 dwellings.</p> <p>FirstRate5 – a NatHERS accredited residential ratings tool (2)</p> <p>Smart Blocks: initially funded by the Australian Government Department of Industry, Smart Blocks is now a partnership between Ecostrata, the City of Melbourne and City of Sydney. Smart Blocks offers recommendations for products and suppliers, a community web portals to help support decision-making, data management to track how buildings are performing. Initially focused on energy efficiency, the program is being expanded to include waste management, water saving, transport and gardening. NOTE: This is not a State Government Program</p> <p>Better Commercial Buildings - supports owners of commercial buildings (including offices, hotels, retail, and data centres) in Victoria to identify and implement energy efficiency upgrades that lead to an improvement in building performance.</p> <p>Boosting Business Productivity is a grants initiative comprised of four components: 1. small grants for businesses to commission an energy or materials efficiency assessments, 2. capital funding grants of up to \$50,000 for businesses to improve gas efficiency, 3. grants awarded to six industry associations, business networks and registered training organisations to build energy efficiency knowledge and skills of businesses and 4. a sustainable finance service.</p> <p>Home Energy Assist Program is a package of retrofit programs to assist 3,330 low income households to minimise energy bills. Includes: Victorian Healthy Homes Program; EnergySmart Public Housing Program; and the Affordable Retrofits Program.</p> <p>Latrobe Valley Upgrade program will deliver solar installations and energy upgrades to up to 1,000 concession card and vulnerable households in the Latrobe Valley. The program will reduce energy bills for households, while boosting jobs in the region by engaging local businesses to deliver energy efficiency assessments and upgrades using local products and services.</p> <p>Local Government Energy Saver program aims to work with a minimum of 22 resource constrained, regional councils across Victoria. It will offer three streams of services to support councils to implement of practical actions to save and generate energy use.</p> <p>Volume Home Builders program: supports the construction of affordable, high-efficiency homes by volume builders of new homes in growth suburbs.</p>	

Table 3. Victoria

Initiative	What are States and Territories already doing?	What actions/programs are States and Territories interested in the future?
<p>1 Maximising energy efficiency for residential, commercial and government buildings. (continued)</p>	<p>Victorian Energy Upgrade program (established under the Victorian Energy Efficiency Target Act) is a market-based certificate scheme designed to make energy efficiency improvements more affordable, contribute to the reduction of greenhouse gases, and encourage investment, employment and innovation in industries that supply energy efficiency goods and services. Under the scheme, accredited businesses can offer discounts and special offers on selected energy saving products and appliances installed at homes, businesses or other non-residential premises. The scheme has been operating since 2009 and has supported upgrades that are saving households and businesses over \$400 million on their energy bills in 2017. It has also saved over 42 million tonnes of greenhouse gas emissions since it commenced in 2009.</p> <p>The Residential Efficiency Scorecard program is a home rating tool delivered by accredited assessors. Scorecard assessments provide a star rating for homes and guide home owners to make home improvements efficiently and cost effectively. Accredited assessors can be engaged to deliver a Scorecard assessment for a fee. The two page rating certificate also recommends upgrade options to improve the home’s star rating.</p> <p>Greener Government Buildings improves the energy efficiency of existing government buildings to reduce operating costs and greenhouse gas (GHG) emissions. Energy Performance Contracts are being used to ensure the best and most efficient solutions are identified, and savings are guaranteed, measured and verified.</p>	
<p>2 Establishing a long term policy for improving the fabric of new and existing buildings and interim sustainability criteria for major developments.</p>	<p>Sector Energy Productivity Plans - development of energy productivity plans for five priority high energy using business sectors.</p> <p>Research and activities to establish the foundations of energy efficiency standards for existing residential properties and the disclosure of energy performance when homes are sold.</p> <p>Beyond Six-star: Improving the energy efficiency requirements for new homes, including a review of the Victorian variation to the energy efficiency requirements of the NCC</p> <p>Improving as-built compliance: Improve building industry compliance with the energy efficiency provisions in the National Construction Code</p>	

Table 3. Victoria

Initiative	What are States and Territories already doing?	What actions/programs are States and Territories interested in the future?
<p>3 Better utilising financing, incentives and subsidies to help transform the market for an energy efficient built environment.</p>	<p>Environmental Upgrade Finance – in 2015 the Victorian Government amended the Local Government Action (1989) to give the option of all local governments in Victoria offering Environmental Upgrade Agreements (also known as Environment Upgrade Finance - EUF). These enable lenders to provide finance to a building owner for environmental upgrades, with the local council then collecting the repayments through its rates system and passing them on to the lender. (2) 14 councils are now offering EUFs. This builds on the City of Melbourne’s program to provide financial assistance for signatories to the 1200 Buildings Program, available to commercial buildings for retrofitting to improve energy and water efficiency. (5).</p> <p>The Victorian Energy Upgrade program helps Victorian households and businesses save energy with a range of discounts and special offers on selected energy saving products and services including fridges, freezers, heaters and hot water systems.</p> <p>Sustainable Finance Service is a free finance facilitation service available to all businesses, property owners, councils and community groups seeking to invest in energy efficiency and renewable energy. This service is available now [5 July 2017].</p> <p>Finance leadership - program to help companies and building owners’ access innovative loan and finance options for investments in energy efficiency.</p>	
<p>4 Transitioning away from fossil fuels (i.e. natural gas) for building services.</p>	<p>Emissions Target – Net zero emissions by 2050 (3)</p>	
<p>5 Increasing the energy efficiency of public housing.</p>	<p>Home Energy Assist Program - EnergySmart Public Housing Program has \$4.3 million to replace inefficient electric water heaters and electric heaters in 1,300 public housing properties and delivering tailored upgrades to a further 200 from 1 July 2017.</p> <p>Home Energy Assist Program - Victorian Healthy Homes Program \$6.5 million home energy efficiency program that provides free home energy upgrades to up to 1,000 vulnerable Victorians who live with complex healthcare needs, and have low incomes (note that this program is also open to non-public housing tenants).</p>	
<p>6 Disclosure of energy efficiency of rental properties</p>	<p>Establish the foundations of energy efficiency standards for existing residential properties. The government will continue to work with the community and industry to move to cost-effective standards to lift the energy performance and improve the comfort of Victoria’s least efficient residential properties.</p>	
<p>7 Encouraging climate-appropriate living infrastructure within the built environment</p>	<p>The Growing Green Guide: A guide to green roofs, walls and facades in Melbourne and Victoria was released in 2014. The Guide and website aggregates research into green infrastructure and provide advice. (4) Note: Not a State Government initiative</p> <p>Residential Efficiency Scorecard also rates a home’s performance during hot weather. This feature will help householders understand and improve the comfort of their home in summer.</p>	

Table 3. Victoria

Initiative	What are States and Territories already doing?	What actions/programs are States and Territories interested in the future?
<p>8 Improving the education, training, skills and knowledge of practitioners and community members.</p>	<p>Smarter Choice Retail Program helps households make better choices when buying new appliances, hardware and lighting. The program has information available in over 400 partnering stores to help consumers compare the running costs and environmental performance of the products.</p> <p>Victorian Energy Compare is an independent Victorian Government price comparator, which enables users to quickly compare electricity, gas and solar offers.</p> <p>Victorian Energy Saver Website is a website that provides information on how to reduce energy consumption and save money at the same time. Calculating Cool – a self-assessment tool for HVAC systems - note this a national tool developed in collaboration with industry bodies including the Australian Institute of Refrigeration, Air-conditioning and Heating (AIRAH), the Property Council of Australia (PCA), the Facilities Management Association of Australia (FMAA), and the Air-conditioning and Mechanical Contractors’ Association (AMCA). (2).</p> <p>Energy Skills and Training - a \$2 million program to strengthen skills in the energy efficiency workforce. Work has commenced to identify opportunities to improve skills the residential sector.</p>	
<p>(1) ABCB, Consolidated Performance Requirements – 2016, pp 102 – 195. (2) CRC LCL Best Practice Policy and Regulation for Low Carbon Outcomes in the Built Environment 2017 (3) https://284532a540b00726ab7e-ff7c063c60e1f1cafc9413f00ac5293c.ssl.cf4.rackcdn.com/wp-content/uploads/2017/01/170129-Emissions-Target-Kicks-Off-More-Climate-Change-Action.pdf (4) City of Melbourne http://www.melbourne.vic.gov.au/community/parks-open-spaces/greening-the-city/Pages/growing-green-guide.aspx (5) http://www.melbourne.vic.gov.au/SiteCollectionDocuments/1200-buildings-advice.PDF</p>		

Table 4. Queensland

Initiative	What are States and Territories already doing?	What actions/programs are States and Territories interested in the future?
<p>1 Maximising energy efficiency for residential, commercial and government buildings.</p>	<p>The ecoBiz program - delivered in partnership with the Chamber of Commerce and Industry Queensland - helps Queensland companies measure their current energy, water and waste use, identify opportunities, and plan and implement efficient business practices. ecoBiz incorporates a number of programs including ecoBiz webinars, face to face coaching sessions, tools and resources.</p> <p>Watt Savers aims to assist small to medium enterprise and community organisations in South East Queensland to save money and greenhouse emissions. The program includes fact sheets, telephone advisory services, workshops and information on accessing finance and funding options.</p> <p>The Queensland Climate Transition Strategy commits to three actions relevant to energy efficiency for buildings: 1.2 Develop a Demand Management and Energy Efficiency Policy; 1.5 Reduce carbon emissions in the built environment; and 2.2 Demonstrate leadership by reducing emissions from Queensland Government operations. Queensland is supporting the ASBEC Building Code Energy Efficiency Trajectory project to provide an evidence base (through energy modelling and cost-benefit analysis) to support the adoption of long-term targets and trajectories for minimum energy efficiency standards for new building work.</p> <p>Electricity retailers are now offering digital meters to Queensland customers on a voluntary basis. New national metering rules are expected to come into effect on 1 December 2017, making digital meters the standard meter for all customers as part of the National Energy Productivity Plan (NEPP).</p> <p>The Queensland Government’s Energy Savers program works with farmers to reduce energy costs in on-farm energy use such as irrigation.</p> <p>Advancing Clean Energy Schools Program has undertaken a market-led proposal to look at how to reduce state school energy costs using solar and energy efficiency measures.</p> <p>As part of the National Energy Productivity Plan (NEPP) measures, Queensland will work to improve residential building energy ratings and disclosure. Two pilots are taking place in Cairns and Brisbane.</p>	<p>The Queensland Building Plan will set out Queensland’s priorities for Sustainable Buildings and will aim to improve the sustainability performance of homes and buildings. (1)</p> <p>Additional actions will be considered as part of the implementation of building-related commitments under the Queensland Climate Transition Strategy: 1.2 Develop a Demand Management and Energy Efficiency Policy; 1.5 Reduce carbon emissions in the built environment; and 2.2 Demonstrate leadership by reducing emissions from Queensland Government operations. Further work will be undertaken to explore the role of the built environment in achieving Queensland’s climate targets - zero net emissions by 2050 and 30% below 2005 levels by 2030.</p>
<p>2 Establishing a long term policy for improving the fabric of new and existing buildings and interim sustainability criteria for major developments.</p>	<p>As part of the State Infrastructure Plan, all state government projects of greater than \$100 million in value will undertake a sustainability assessment, including climate change considerations. (4)</p>	<p>Action 2.3 of the Queensland Climate Transition Strategy will investigate how to integrate zero net emissions goals into state infrastructure planning, and action 2.4 will explore how to use the land use planning system to support delivery of zero net emissions. Subject to potential climate action at the national level, action 2.6 will explore options to regulate greenhouse gas emissions through the Environmental Protection Act framework. The Strategy commits to the deployment of a suite of substantive policy measures from 2020, representing the state’s pathway to zero net emissions by 2050. (4)</p>

Table 4. Queensland

Initiative	What are States and Territories already doing?	What actions/programs are States and Territories interested in the future?
<p>3 Better utilising financing, incentives and subsidies to help transform the market for an energy efficient built environment.</p>	<p>The Queensland Government will support investment in environmentally responsible projects through Green Bonds issued by the Queensland Treasury Corporation (QTC). Working with Climate Bonds, the QTC has developed a list of projects that are eligible, including low carbon buildings (4) Projects and assets include: Gold Coast Light Rail stage 1 and 2, Moreton Bay Rail Link, New Generation Rolling Stock, Various cycle ways and Sunshine Coast Solar Farm.</p> <p>Public housing tenants face multiple barriers to accessing solar due to high upfront costs and short-term tenancies. From mid-2017, a first-of-its kind trial will be conducted to overcome these barriers and deliver electricity savings to some of the community's most vulnerable electricity customers. The solar for public housing trial will deliver up to 6 megawatts of solar, on up to 4,000 government-owned, detached houses.</p> <p>\$20 million has been committed under the Affordable Energy Plan for rebates on approved energy efficient appliances.</p>	<p>Implementation of action 1.5 under the Queensland Climate Transition Strategy will consider financing, incentives and subsidies</p>
<p>4 Transitioning away from fossil fuels (i.e. natural gas) for building services.</p>	<p>Generate 50% of Queensland's energy from renewable sources by 2030 and zero net emissions by 2050 (4), including Solar150 to provide long-term income certainty to support the development of up to 150 megawatts of large-scale solar power generation in Queensland, supporting an additional 400 megawatts of large-scale renewables (including 100 megawatts of energy storage), and setting a target of 1 million rooftops or 3000 megawatts of solar photovoltaics in Queensland by 2020.</p>	<p>Additional actions will be considered as part of the implementation of building-related commitments under the Queensland Climate Transition Strategy: 1.2 Develop a Demand Management and Energy Efficiency Policy; 1.5 Reduce carbon emissions in the built environment; and 2.2 Demonstrate leadership by reducing emissions from Queensland Government operations.</p>
<p>5 Increasing the energy efficiency of public housing.</p>	<p>Public housing tenants face multiple barriers to accessing solar due to high upfront costs and short-term tenancies. From mid-2017, a first-of-its kind trial will be conducted to overcome these barriers and deliver electricity savings to some of the community's most vulnerable electricity customers. The solar for public housing trial will deliver up to 6 megawatts of solar, on up to 4,000 government-owned, detached houses.</p>	
<p>6 Disclosure of energy efficiency of rental properties</p>	<p>As part of the National Energy Productivity Plan (NEPP) measures, Queensland will work to improve residential building energy ratings and disclosure. Two pilots are taking place in Cairns and Brisbane.</p>	
<p>7 Encouraging climate-appropriate living infrastructure within the built environment</p>	<p>Economic Development Queensland's Total Energy Planning policy initiative seeks to reduce energy costs of 30-40% and sustained lower peak demand of 50% and lower infrastructure requirements for developers and utilities. Trials are taking place in Townsville and Tannum Sands. EDQ is also trialling 11 Smart Energy Homes as part of the Smart Climate System project - looking at Energy efficient dwellings with SMART thermal mass; Smaller energy efficient air conditioners and micro grids.</p>	<p>The Queensland Building Plan will set out Queensland's priorities for Sustainable Buildings and will aim to improve the sustainability performance of homes and buildings. (1)</p> <p>The Queensland Government will support the implementation of the industry-led Built Environment and Infrastructure Sector Adaptation Plan, which identified seven priority actions for the sector to work collaborative to address and minimise climate risk.</p>

Table 4. Queensland

Initiative	What are States and Territories already doing?	What actions/programs are States and Territories interested in the future?
<p>8 Improving the education, training, skills and knowledge of practitioners and community members.</p>	<p>The Energy Savers Plus Program is designed to help farmers identify where they can make significant savings for their on-farm energy usage. The program provides farmers with personalised audits that identify opportunities to cut costs in areas such as on-farm heating, pumping, cooling, lighting, processing and household energy use. The program also provides helpful information on financing options to help with energy efficiency upgrades. Participating farms are selected by Ergon Energy in consultation with the Queensland Farmers Federation and other relevant agricultural industry bodies.</p> <p>The ecoBiz program - delivered in partnership with the Chamber of Commerce and Industry Queensland - helps Queensland companies measure their current energy, water and waste use, identify opportunities, and plan and implement efficient business practices. ecoBiz incorporates a number of programs including ecoBiz webinars, face to face coaching sessions, tools and resources.</p> <p>Watt Savers aims to assist small to medium enterprise and community organisations in South East Queensland to save money and greenhouse emissions. The program includes fact sheets, telephone advisory services, workshops and information on accessing finance and funding options.</p>	<p>Under the Queensland Climate Transition Strategy, the government will work with Queensland industries and communities to develop a Workforce Development and Skills Plan for low and zero emissions jobs.</p>

(1) <http://queenslandbuildingplan.engagemthq.com/Sustainable-building>

(2) CRC LCL Best Practice Policy and Regulation for Low Carbon Outcomes in the Built Environment 2017

(3) <http://www.ehp.qld.gov.au/assets/documents/climate/advancing-climate-action.pdf>

(4) <http://www.ehp.qld.gov.au/assets/documents/climate/qld-climate-transition-strategy.pdf>

Table 5. South Australia

Initiative	What are States and Territories already doing?	What actions/programs are States and Territories interested in the future?
1 Maximising energy efficiency for residential, commercial and government buildings.	<p>The South Australia Government has mandated Green Star outcomes for all newly constructed office buildings leased or owned by the state government. The Department of Environment, Water and Natural Resources achieved 6 Star Green Star – Interiors certification for their new office fit-out.</p> <p>Carbon Neutral Adelaide includes investigating increases to minimum standards for class 2 dwellings, improve compliance and consider incentives schemes to encourage upgrades, collaboration with industry. (1)</p> <p>Green Industries SA: Business Sustainability</p>	South Australia is investigating the case for lifting Class 2 building standards in the NCC.
2 Establishing a long term policy for improving the fabric of new and existing buildings and interim sustainability criteria for major developments.	<p>National Energy Efficiency Building Project (NEEBP) aims to support consumers, government and industry to achieve better energy efficiency in new buildings, renovations and additions. The NEEBP is led by the Government of South Australia's Department of S</p>	The SA Strategic Plan and 30 Year Plan for Greater Adelaide covers broader policy direction (4) South Australia's Strategic Plan includes a target of improving energy efficiency of government buildings by 30% by 2020 and of dwellings by 15%.
3 Better utilising financing, incentives and subsidies to help transform the market for an energy efficient built environment.	<p>The Building Upgrade Finance mechanism is designed to tackle market barriers that often impede commercial building upgrades from going ahead. These barriers include access to the capital to fund upgrade projects, and the split incentive between landlords</p>	
4 Transitioning away from fossil fuels (i.e. natural gas) for building services.	<p>Emissions Target – Net zero emissions by 2050 (3)</p>	
5 Increasing the energy efficiency of public housing.	<p>Carbon Neutral Adelaide includes social housing upgrades (1). The design guidelines for new public housing in South Australia includes the requirement to meet a minimum 6 star energy efficiency rating.</p>	
6 Disclosure of energy efficiency of rental properties		
7 Encouraging climate-appropriate living infrastructure within the built environment	<p>General support for the climate-appropriate living infrastructure as a part of other policy initiatives</p>	State planning reform led by the passage <i>Planning, Development and Infrastructure Act 2016</i> , will consider climate-appropriate living infrastructure within the built environment.
8 Improving the education, training, skills and knowledge of practitioners and community members.	<p>Free energy advice for the community – a website featuring, among other things, information on: using and saving energy; energy efficient home design; energy advice and education; energy retailers and contracts; energy bills, help and rebates.</p>	

(1) <https://s3-ap-southeast-2.amazonaws.com/cna-public-assets/general-downloads/Carbon-Neutral-Adelaide-Action-Plan-2016-2021.pdf>
(2) CRC LCL Best Practice Policy and Regulation for Low Carbon Outcomes in the Built Environment 2017
(3) <http://www.climatechange.sa.gov.au/target-zero>
(4) http://saplan.org.au/media/BAhbBlsHOgZmSSlhMjAxMS8xMS8wNC8wMV8wMl8xNF8yMjNfZmlsZQY6BkVU/01_02_14_223_file
http://livingadelaide.sa.gov.au/_data/assets/pdf_file/0003/319809/The_30-Year_Plan_for_Greater_Adelaide.pdf

Table 6. Western Australia

Initiative	What are States and Territories already doing?	What actions/programs are States and Territories interested in the future?
<p>1 Maximising energy efficiency for residential, commercial and government buildings.</p>	<p>The Metropolitan Redevelopment Authority has mandated Green Star within a number of their development policies. The policies detail the requirements for the delivery of sustainable buildings that contribute towards a reduction in emissions, waste and operational costs, and provides performance standards for assessment of development applications for new buildings.</p> <p>The Western Australia Government have mandated Green Star target ratings for government buildings over 1000²m and for fit-outs over 1000²m.</p> <p>NCC variation: WA adds water and hot water efficiency measures to the NCC (1)</p> <p>Land Corp uses Design Guideline criteria, modelling using PRECINX and sustainability rating tools such as Green Star and EnviroDevelopment to help drive improved energy efficiency outcomes.</p>	
<p>2 Establishing a long term policy for improving the fabric of new and existing buildings and interim sustainability criteria for major developments.</p>	<p>Committed to the National Energy Productivity Plan (NEPP), specifically NEPP Measure 5 (Improve residential building energy ratings and disclosure), 31 (Advance the National Construction Code), 32 (Improve compliance with building energy efficiency regulation) and measure 19 (Integrating new renewable and storage technologies into the electricity system and market).</p> <p>Non-residential sustainable building policy requiring all buildings over \$1m to be procured to level required by GBCA 4 star (targeted) rating tool.</p>	<p>Improvements to subdivisions and precincts through design codes to achieve better building performance.</p> <p>Improvements to building design through R-Codes or other policy documents to achieve climate responsive design in all buildings as minimum requirements</p>
<p>3 Better utilising financing, incentives and subsidies to help transform the market for an energy efficient built environment.</p>	<p>LandCorp provides incentives and rebates for renewable energy systems to residents in development projects such as Alkimos Beach, Allara (Eglington) and White Gum Valley.</p>	
<p>4 Transitioning away from fossil fuels (i.e. natural gas) for building services.</p>	<p>No emissions target.</p> <p>LandCorp Demonstration through Innovation Projects highlight new technologies and initiatives to transition development to a low carbon future e.g. Cool Earth Geoexchange Demonstration , Alkimos Beach Community Battery , White Gum Valley Solar PV/ Battery storage on strata, CRC Low Carbon Living Laboratory, Micro grid trial, peer to peer energy trading.</p>	
<p>5 Increasing the energy efficiency of public housing.</p>		
<p>6 Disclosure of energy efficiency of rental properties</p>		
<p>7 Encouraging climate-appropriate living infrastructure within the built environment</p>	<p>LandCorp’s Climate Responsive Design Policy including trial investigations and Design Guidelines for the Kimberly (Broome North) and Pilbara Vernacular.</p>	

Table 6. Western Australia

Initiative	What are States and Territories already doing?	What actions/programs are States and Territories interested in the future?
<p>8 Improving the education, training, skills and knowledge of practitioners and community members.</p>	<p>Resident Guides are developed for various residential projects including Alkimos Beach, White Gum Valley Living Laboratories, Park Side Walk which typically cover Climate Responsive Design, energy efficiency and behaviour change.</p>	
<p>(1) ABCB, Consolidated Performance Requirements – 2016, pp 102 – 195. (2) CRC LCL Best Practice Policy and Regulation for Low Carbon Outcomes in the Built Environment 2017 (3) http://www.coagenergycouncil.gov.au/sites/prod.energycouncil/files/publications/documents/National%20Energy%20Productivity%20Plan%20release%20version%20FINAL_0.pdf</p>		

Table 7. Australian Capital Territory

Initiative	What are States and Territories already doing?	What actions/programs are States and Territories interested in the future?
<p>1 Maximising energy efficiency for residential, commercial and government buildings.</p>	<p>The Actsmart Business Energy and Water Program aims to assist eligible small businesses in the ACT to reduce energy and water use, while lowering operating costs and reducing greenhouse gas emissions. The program offers a subsidised energy and water assessment conducted by a qualified assessor which will result in a tailored energy and water action report for the business. Businesses can claim 50% of costs of upgrades recommended in the report, up to a maximum of \$5,000.</p>	
<p>2 Establishing a long term policy for improving the fabric of new and existing buildings and interim sustainability criteria for major developments.</p>	<p>Building Policy Reform – ACT Climate Change Adaption Strategy sits under the ACT Climate Change Strategy and Action Plan and aims to develop climate wise guides for buildings and estate planning, and consider whether current requirements in building codes adequately reflect projected climate change impacts on residential and commercial buildings.</p>	<p>The Carbon Neutral Program is a voluntary scheme which certifies products, business operations or events as carbon neutral against the Australian Government’s National Carbon Offset Standard (the Standard) is being expanded to include buildings and precincts and will be released in 2017. The Standard provides guidance on voluntary offsets and minimum requirements for calculating, auditing and offsetting a carbon footprint to achieve carbon neutrality.</p>
<p>3 Better utilising financing, incentives and subsidies to help transform the market for an energy efficient built environment.</p>	<p>Energy Efficiency Improvement Scheme (EEIS) is a compulsory scheme for electricity retailers. It works by placing a requirement on electricity retailers to achieve energy savings in households and small-to-medium businesses. A Priority Household Target ensures that a proportion of the savings are delivered in low income households.</p>	
<p>4 Transitioning away from fossil fuels (i.e. natural gas) for building services.</p>	<p>Emissions Target – Net zero emissions by 2050. 40% reduction in greenhouse gas emissions by 2020 over 1990 levels 100% renewable energy by 2020</p>	
<p>5 Increasing the energy efficiency of public housing.</p>	<p>Actsmart Home Energy Efficiency program offers practical ways for low-income households in the ACT to reduce energy and water bills. An energy efficiency assessor visits homes to talk about how to:</p> <ul style="list-style-type: none"> • reduce energy and water consumption • save money • improve the comfort of your home 	

Table 7. Australian Capital Territory

Initiative	What are States and Territories already doing?	What actions/programs are States and Territories interested in the future?
6 Disclosure of energy efficiency of rental properties	Home energy ratings All homes being sold in the ACT must have an energy rating. If a rating has been done it must be disclosed when advertising a home for rent.	Options are being developed by the ACT Government to provide prospective and current tenants with information they need to determine the energy efficiency of homes, fixed appliances and major energy uses (Action 3 of the Government's Climate Change Strategy, AP2). After stakeholder consultation a report with detailed analysis was submitted to Government. Recommendations included that: <ul style="list-style-type: none"> energy efficiency information disclosure for rental properties is most useful if it allows tenants to confidently compare energy use and trade off higher ratings against higher weekly rental costs there is limited expected benefit from extending current requirements to disclose existing energy efficiency ratings (EER) from those with an existing EER to all rental properties, as it provides limited useful information to prospective and current tenants current EER ratings tools don't meet the needs of tenants for energy performance information any program should seek to minimise potential increases in costs for low-income tenants. Building on work undertaken to date, the Environment and Planning Directorate is consulting with industry on developing a pilot to trial innovative ways to provide useful energy efficiency information to prospective and current tenants.
7 Encouraging climate-appropriate living infrastructure within the built environment	The ACT Climate Change Adaptation Strategy includes actions to encourage climate-appropriate living infrastructure in the built environment including: <ol style="list-style-type: none"> Introduce mandatory requirements to planning for new estates in Territory Plan and Sub-division guidelines and design standards that reflect leading practice with regard to future climate change scenarios. Increase built environment resilience and amenity by: <ol style="list-style-type: none"> reviewing design standards for public infrastructure to ensure climate change adaptation is considered introducing requirements to reduce heat absorption of building surfaces and pedestrian pavements. Develop ACT region specific climate wise guides for buildings and estate planning. Introduce mandatory minimum sustainability requirements for ACT Government capital works and asset upgrade projects to ensure assets and services are climate wise. Add to the Strategic Cycle Network Plan a program of shade tree planting for walking and cycling routes. Develop and implement a strategy to enhance living infrastructure in the Territory, including targets for urban tree canopy cover. 	Living infrastructure actions and strategic direction will be incorporated in the next climate change strategy and action plan which will include both adaptation and mitigation actions.
8 Improving the education, training, skills and knowledge of practitioners and community members.	ACTsmart Sustainable Home Advice offer free independent advice and information available to all ACT residents to help them save greenhouse gas emissions and save money.	

Table 8. Tasmania

Initiative	What are States and Territories already doing?	What actions/programs are States and Territories interested in the future?
<p>1 Maximising energy efficiency for residential, commercial and government buildings.</p>	<p>Climate Action 21: Tasmania’s Climate Change Action Plan 2017-2021 was released in June 2017 and sets the Tasmanian Government’s agenda for action on climate change adaptation and mitigation through to 2021.</p>	<p>Climate Action 21 includes new initiatives to improve the energy efficiency for low income households, small to medium sized businesses and government buildings that will be implemented from 2018 through to 2021.</p>
<p>2 Establishing a long term policy for improving the fabric of new and existing buildings and interim sustainability criteria for major developments.</p>	<p>Committed to the national agenda through the ABCB NCC update process and the National Energy Productivity Plan, specifically NEPP Measure 5, 31.2 and 32. (1)</p>	
<p>3 Better utilising financing, incentives and subsidies to help transform the market for an energy efficient built environment.</p>	<p>Climate Action 21 includes an initiative to undertake a feasibility study into the viability of introducing financial mechanisms including Environmental Upgrade Agreements in Tasmania to support building energy upgrades.</p> <p>The Tasmanian Energy Efficiency Loan Scheme provides no interest loans for the purchase of energy efficient appliances and equipment. Households can apply for loans for purchases up to \$10,000 and small businesses for purchases up to \$40,000. TEELS is a partnership between the Tasmanian Government, Westpac and Aurora Energy.</p>	
<p>4 Transitioning away from fossil fuels (i.e. natural gas) for building services.</p>	<p>Climate Action 21 includes a commitment for the Tasmanian Government to legislate for a 2050 zero net emissions target.</p>	
<p>5 Increasing the energy efficiency of public housing.</p>	<p>Over the last 5 years Housing Tasmania has upgraded over 2,350 public housing properties with air sourced heat pumps for hot water heating or high efficiency reverse cycle air conditioners for space heating and cooling and over 650 properties with wall and ceiling insulation.</p> <p>The Hopkins Street Affordable Housing project achieved 5 star Green Star certification, demonstrating that sustainable, affordable, housing doesn’t have to be expensive.</p>	
<p>6 Disclosure of energy efficiency of rental properties</p>		
<p>7 Encouraging climate-appropriate living infrastructure within the built environment</p>	<p>Climate Action 21 includes an initiative to understand and manage the impacts of coastal hazards to existing settlements.</p> <p>The Tasmanian Department of Justice’s Consumer, Building and Occupational Services (CBOS) in collaboration with the University of Tasmania has undertaken research into the condensation impacts of energy efficient buildings in cool to cold climates.</p>	
<p>8 Improving the education, training, skills and knowledge of practitioners and community members.</p>	<p>Climate Action 21 includes an initiative to develop resource materials for householders to understand the impacts from natural hazards.</p> <p>CBOS has prepared resource materials to assist Tasmanian building practitioners design and build energy efficient dwellings that minimise condensation impacts.</p>	

(1) CRC LCL Best Practice Policy and Regulation for Low Carbon Outcomes in the Built Environment 2017

Table 9. Northern Territory

Initiative	What are States and Territories already doing?	What actions/programs are States and Territories interested in the future?
1 Maximising energy efficiency for residential, commercial and government buildings.		
2 Establishing a long term policy for improving the fabric of new and existing buildings and interim sustainability criteria for major developments.	Committed to the national agenda through the ABCB NCC update process and the National Energy Productivity Plan, specifically NEPP Measure 5, 31.2 and 32. (1)	
3 Better utilising financing, incentives and subsidies to help transform the market for an energy efficient built environment.	No emissions target	
4 Transitioning away from fossil fuels (i.e. natural gas) for building services.		
5 Increasing the energy efficiency of public housing.		
6 Disclosure of energy efficiency of rental properties.		
7 Encouraging climate-appropriate living infrastructure within the built environment.		
8 Improving the education, training, skills and knowledge of practitioners and community members.		
(1) CRC LCL Best Practice Policy and Regulation for Low Carbon Outcomes in the Built Environment 2017		

