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## Leading the Way - Low Carbon Policies and Measures in Australia's Capital Cities





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Title	Leading the Way – Low Carbon Policies and Measures in Australia’s Capital Cities
ISBN	978-0-9923878-3-9
Format	
Keywords	
Editor	N/A
Publisher	Cooperative Research Centre for Low Carbon Living
Series	N/A
ISSN	N/A
Preferred citation	



Australian Government  
Department of Industry,  
Innovation and Science

**Business**  
Cooperative Research  
Centres Programme



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The information in this paper has primarily been gleaned from City websites and other public domain sources. In some cases, websites can contain information that is outdated. The author has taken steps to ensure that the paper contains the latest and most accurate information possible, but cannot warrant that all information reported is fully accurate and up-to-date. Corrections and additional information from the cities named would be welcome.

## Peer Review Statement



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## Abstract

In Australia, capital cities are increasingly stepping forward to offer leadership on greenhouse gas abatement to a degree not evident at the national level nor in many states and territories.

In 2016, over 82% of all Australian local governments had zero emissions targets for their operations, while 18% had similar targets for their communities.

Major cities such as Melbourne and Adelaide are committed to achieving zero carbon cities by or before 2020, while Canberra and Sydney are targeting zero emissions by 2050 at the latest. Many Victorian councils are setting above-national-minimum standards for buildings, compensating for standards frozen at the national level since 2010. Smaller as well as large councils are targeting 100% renewable electricity, as well as adopting best practices such as electrifying vehicle fleets and adopting LED street- and traffic-lighting. Some councils are making direct investment in large-scale renewable energy generation projects, while others are choosing to procure it via power purchase agreements or other mechanisms.

The phenomenon of city-level leadership is not at all confined to Australia. Internationally, the Carbon Neutral Cities Alliance, the C40, the Compact of Mayors, Climate Mayors, Energy Cities and other forums provide learning and benchmarking opportunities for cities, branding benefits, and some competitive/reputational pressure as well, for cities that are committed to taking action on climate change.

At the Climate Summit for Local Leaders in Paris, 1,000 mayors, including several from Australia, signed a declaration supporting a transition to 100% Renewable Energy.<sup>1</sup>

In the US, following the Trump Administration's decision to pull out of the Paris Climate Agreement, 372 US Mayors representing 67 million citizens publicly committed to '...adopt, honour, and uphold the commitments to the goals enshrined in the Paris Agreement...to meet each of our cities climate goals,

[and to] push for new action to meet the 1.5 degree Celsius target...'.<sup>2</sup>

However, Australian cities have limited legislative powers and limited resources. The extent to which they have, and are able to, put in place substantive measures to achieve their low carbon aspirations varies.

Canberra, as a 'city state', is able to benefit from jurisdictional scheme provisions in the National Energy Law, that have enabled it to be on-track to achieving 100% renewable electricity by 2020. Other cities have no access to such provisions under present law.

The case of South Australia/Adelaide shows that strong collaboration between Australian cities and their host states is possible in the quest for emissions abatement and a shared vision of sustainable economic development.

At the same time, half of Australia's capital cities are not strongly engaged in abatement, at least outside their own operations, while others have aspirations not yet matched by effective policy frameworks.

Overall, we cannot expect cities to do the heavy lifting on carbon abatement for the whole of Australia: they lack the powers for this role, even if they have the will. Eventually, national leadership to implement a comprehensive suite of least-cost and effective policies will be necessary.

In the meantime, the leadership that some Australian cities are showing is creating community engagement, role models, demonstrations and case studies that are inspiring and germinating new initiatives elsewhere, even without national support.

The CRCLCL's extensive body of research into low carbon opportunities and strategies in the built environment provides a remarkable resource for cities, *inter alia*, to draw on to enhance the reach and effectiveness of their abatement efforts in future. With more and more cities fully integrating low or zero carbon futures into their strategic as well as operational plans, there is a significant opportunity to build upon the base created by CRC LCL, to help accelerate the growth of vibrant, productive and sustainable cities in Australia.

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<sup>1</sup> Climate Council (2017), p. 29.

<sup>2</sup>

<https://medium.com/@ClimateMayors/climate>

-mayors-commit-to-adopt-honor-and-uphold-paris-climate-agreement-goals-ba566e260097, viewed 31/8/2017.

## Introduction

The members of the Paris Climate Agreement are national and supra-national governments,<sup>3</sup> yet over 1000 city and regional officials gathered in Paris in 2015 for a major side event called the *Climate Summit of Local Leaders*.<sup>4</sup>

The Summit led to the *Paris City Hall Declaration*, in which mayors from over 1,000 cities and regions around the world pledged *inter alia* to 'advance and exceed' the Paris Climate Agreement goals, to transition to 100% renewable energy and to reduce emissions by at least 80% by 2050.<sup>5</sup>

Michael R. Bloomberg, UN Secretary-General's Special Envoy for Cities and Climate Change, has noted that:

*COP21 gave cities a voice in international climate talks for the first time, and that was a big reason for the summit's success... Cities must play a key role for the world to meet the goals set in Paris.*<sup>6</sup>

C40 Cities, in conjunction with the Compact of Mayors, notes that approximately 70% of global greenhouse gas emissions are attributable to cities. Of these, three-quarters are generated by buildings.<sup>7</sup>

The C40 is a network of the world's megacities committed to addressing climate change. It brings together over 90 major cities around the world, including Sydney, Melbourne and Adelaide. Its *Sustainia 100* report showcases a remarkable collection of abatement initiatives being implemented by cities.

All C40 members – which represent more than 650 million people around the world – must have plans in place to limit global temperature rise to no more than 1.5° C above pre-industrial levels. Members include Sydney and Melbourne in Australia, while Adelaide is a member of a counterpart body, the Carbon Neutral Cities Alliance. Around the world, other city-level climate initiatives EnergyCities and Cities for Climate.

In Australia, the vast majority of the population resides in and around just a handful of major cities that are spatially remote from each other. With the continuing perception that there is no national plan for carbon

abatement, cities – and some states and territories – are exercising their ability and will to determine their own climate targets and policies.

In 2016, Beyond Zero Emissions found that over 82% of all local governments in Australia had zero emissions targets for their operations and 18% had similar targets for their communities.

Between 1997 and 2009, 233 councils across Australia (representing 84% of the population) joined the Cities for Climate Protection campaign, an initiative of the International Council for Local Environmental Initiatives (ICLEI). This program reduced carbon dioxide emissions in Australia by 18 million tonnes and saved councils and communities \$95 million through reduced energy costs.<sup>8</sup>

At the same time, the extent of cities' power, and the propensity of city governments to use it, varies widely around Australia. This paper shows that there are widely differing degrees of carbon ambition between Australian capital cities.

The sovereignty and influence of cities over emissions within their borders is limited – by law, primarily, but often by resource availability as well. In Australia, the legal powers of local governments are determined primarily by state legislation.

Internationally, the C40 and Compact of Mayors find similarly that the propensity of cities to take strong action on climate change is directly related to their power to do so.<sup>9</sup>

Further, setting targets and making plans for low and zero carbon outcomes is one matter, but successfully delivering on policies and measures to attain these outcome is another.

It is also the case that all of Australia's cities – as with the Australian economy – are experiencing economic and population growth, and growth in their footprint and floor area, and this places upward pressure on emissions.

The Co-operative Research Centre for Low Carbon Living has since 2012 promoted low-carbon education and research, and strengthened scientific and technological capabilities, across the full span of emissions and economic sectors. While some Australian cities were already on the pathway to low

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<sup>3</sup> In the case of the European Union.

<sup>4</sup>

<http://citiscopescope.org/habitatIII/news/2015/12/paris-city-hall-declaration-world-mayors-throw-down-gauntlet-climate>. Viewed 30/10/2017.

<sup>5</sup> Cities for Climate Climate Summit for Local Leaders, *Paris City Hall Declaration: a decisive contribution to COP21*, 4 December 2015, p. 1.

<sup>6</sup>

<https://www.compactofmayors.org/press/global-covenant-mayors-climate-energy-announces-collective-impact-cities-move-paris-agreement-commitment-action/>, viewed 30 October 2017.

<sup>7</sup> C40 Cities and Compact of Mayors, *The Power Behind the Paris Climate Agreement*, undated, but released 16/5/2016, p. 1.

<sup>8</sup> Climate Council (2017), p. 30.

<sup>9</sup> C40 Cities and Compact of Mayors, *The Power Behind the Paris Climate Agreement*, undated, but released 16/5/2016, p. 3.

emissions in 2012, there has been a distinct shift over the period since then towards cities fully recognising the importance of reducing greenhouse gas emissions, and integrating abatement (and adaptation) actions into their overall strategic plans.

A key opportunity for cities to shape greenhouse gas emissions is through the influence of their planning schemes on the development and renewal over time of the built environment.

Buildings in Australia are responsible for at least 50% of national greenhouse gas emissions.<sup>10</sup> This immediately suggests that the built environment must be a major focus for the national abatement effort. Indeed, while there is much focus at present on emissions from the electricity sector, these arise in large measure as from the 'derived demand' of economic activity in buildings, and particularly in cities.

This highlights that there are two important opportunities to reduce energy-related emissions: on the supply side, by changing the generation fuel and technology mix; and on the demand side, by improving the efficiency of buildings and by embedding renewables and storage technologies into the built environment.

The demand side approach has the additional value of reducing the need for extensive investment in transmission and distribution infrastructure, which has for many years been the major driver of rising electricity prices in Australia. This distributed approach also minimises electrical losses and associated emissions, while enhancing system security and reliability. From a business and consumer perspective, the demand side approach also provides greater control over rising energy costs and a critical counterfoil to the market power of the electricity market majors.

Further, cities are increasingly becoming the powerhouses of the Australian economy. In 2015-16, just three districts in Sydney contributed nearly one quarter of the growth in Australia's GDP, while the City of Melbourne contributed a further 11%.<sup>11</sup>

These trends reflect the continuing rise of high-value, knowledge-intensive sectors – such as finance, insurance, IT, professional services, engineering, research, medical, market and media – as economic drivers for the nation, with the majority of that economic activity centred in cities. They confirm that the ability of cities to influence *national* greenhouse gas emissions – through their targets, policies and strategies – is growing.

\*

This paper analyses in turn the carbon targets, strategies, outcomes, and policies and measures that

are being used by each of Australia's capital cities. We identify the apparent drivers of and some impediments to effective carbon abatement in each city. Then in the final section, we draw out the overall conclusions, including our observations about the key drivers and challenges.

While some Australia capital cities are offering genuine leadership on carbon abatement, this only accounts for around half of our total count of capital cities.

Most cities – with the sole exception of Canberra – have limited legislative powers to affect emissions, and all face resource constraints to varying degrees.

While some are making excellent use of the opportunity to partner with their host state or territory governments, the majority are not apparently doing so to great effect at this point in time. This remains a key opportunity for cities to extend their reach and leverage over emissions.

We note, as a key example, that Canberra is able to benefit from 'jurisdictional scheme' status under the National Energy Law, and this has been the key to its success in powering towards 100% renewable electricity by 2020. Yet other cities could potentially do likewise, provided their host states or territories passed suitable enabling legislation.

<sup>10</sup> CRCLCL, *Best Practice Policy and Regulation for Low Carbon Outcomes in the Built Environment*, April 2017, p. 18.

<sup>11</sup> [http://www.smh.com.au/business/the-economy/three-innersydney-districts-](http://www.smh.com.au/business/the-economy/three-innersydney-districts-contributed-a-quarter-of-australias-gdp-growth-in-201516-20170228-gumztb.html)

[contributed-a-quarter-of-australias-gdp-growth-in-201516-20170228-gumztb.html](http://www.smh.com.au/business/the-economy/three-innersydney-districts-contributed-a-quarter-of-australias-gdp-growth-in-201516-20170228-gumztb.html), viewed 31/10/2017.

## Cities in Action

### Sydney

#### Targets

The City of Sydney has targets of achieving a 70% reduction in the community's emissions within the local government area (LGA) by 2030, and of net zero emissions in the LGA by 2050. The base year for calculations is 2006-07.

The City is also targeting 50% renewable energy by 2030 in both its own operations and for the LGA. Under its current 5-year plan (see below), it has set interim targets for its own operations of reducing emissions by 44% by 2021 and of moving to 50% renewable energy by the same date. Its own emissions have been fully offset since 2007.

#### Context and Strategies

In 2007-08, the City consulted with the community about the key priorities for the City's future development. This led to the strategy known as *Sustainable Sydney 2030*, which is described as a '...comprehensive plan for creating a green, global and connected city.'<sup>12</sup>

One element of this strategy was the 70% abatement target for 2030. The additional target of 100% reduction by 2050 was added in the latest strategy document, *Environmental Action 2016 – 2021: strategy and action plan*, March 2017.<sup>13</sup> Significantly this document references the C40 Mayors' Summit in Mexico in late 2016, and also the Paris Climate Agreement, as key contextual and motivating factors. It notes,

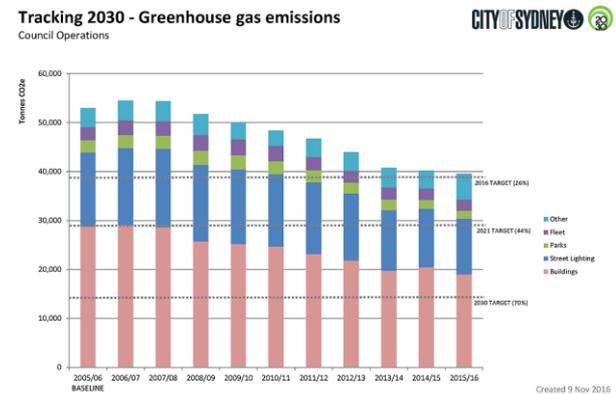
*...the next four years are crucial and will determine whether the world meets the ambition of the Paris Agreement to limit global temperature rise to less than 2°C, and to drive efforts to limit the temperature increase even further to 1.5°C. Incremental steps are no longer adequate – we need to dramatically increase action. It is incumbent on wealthy cities like ours, which have the resources and capabilities to accelerate action, to do twice as much in half the time.*

#### Outcomes

The City's operational emissions have reduced by some 27 per cent since 2006 (see

Figure 1). They also have been fully offset since 2007, and the City has been certified as carbon neutral such under the National Carbon Offset Standard since 2011.

Figure 1 - City of Sydney Operational GHG Emissions, 2007 - 2016



Source: City of Sydney<sup>14</sup>

Key steps taken to reduce operational emissions include improving energy efficiency in its own buildings; upgrading to LED streetlighting; and improving fleet operation (which includes operating biofuel-powered heavy vehicles).

The City's LED lighting project led to over 6,500 LED street lights being installed across the LGA since March 2012, resulting in a reduction of more than 48% in carbon emissions. This is noted to generate a saving to the City of up to \$800,000 each year in electricity bills.<sup>15</sup>

The City notes that it previously used 100% GreenPower, but now has instead committed to spend \$2 million per year to install renewable energy systems on its own facilities.

<sup>12</sup>

<http://www.cityofsydney.nsw.gov.au/vision/sustainable-sydney-2030>, viewed 19/9/2017.

<sup>13</sup>

<http://www.cityofsydney.nsw.gov.au/vision/wards-2030/sustainability#page-element-dload>, viewed 19/9/2017.

<sup>14</sup>

<http://www.cityofsydney.nsw.gov.au/vision/wards-2030/sustainability/carbon-reduction/carbon-neutral>, viewed 19/9/2017.

<sup>15</sup>

<http://www.cityofsydney.nsw.gov.au/vision/wards-2030/sustainability/carbon-reduction>, viewed 19/9/2017.

A major part of helping the City meet its renewable energy targets is installing solar panels on around 30 sites including Sydney Park Pavilion, Paddington and Glebe Town Hall, as well as a range of libraries, community centres, depots and other public facilities, with a total installed capacity of 1.7 GW, equivalent to 5.3% of current electricity demand when fully installed.<sup>16</sup>

The City has installed solar hot water and/or photovoltaic systems on 18 sites, with an installed (PV) capacity of 48 kW – although this information dates from 2016 and is understood to be outdated.<sup>17</sup>

The City installed a trigeneration system to power, heat and cool Sydney Town Hall and its staff offices in Town Hall House. This plant started full operations in October 2016 and supplies the City's civic buildings on working weekdays from 7am to 10pm. The 1.4 MW system is expected to save carbon emissions by more than 40,000 tonnes over its 30-year lifetime; to reduce the City's operational emissions by 3% per year; and to reduce energy bills for Town Hall and Town Hall House by an average of \$140,000 per year over the life of the project.<sup>18</sup>

Many additional current and planned actions to reduce operational emissions are set out in the Action Plan.

Importantly, however, the City of Sydney is not content to focus only on its own emissions, but is committed to moving the entire city (LGA) to zero emissions by 2050 – in line with Australia's Paris Climate Agreement commitments.

LGA emissions have fallen by 17 per cent between 2006-07 and mid-2015, despite strong growth in population and worker numbers. This equates to a 36% reduction in carbon intensity.

We note that the reduction in the greenhouse intensity of electricity consumption in NSW has made only a minor contribution to this outcome, as it has fallen by just 5.7% since 2006-07, reflecting very little focus in NSW on increasing the uptake of renewable energy, and a continuing dominance of coal-fired power generation.

#### Policies and Measures

The Action Plan includes a realistic assessment of the 'reach' of the City in shaping LGA emissions:

*Within our own operations, where we have control, we aim to lead by example...*

*We have also set ambitious environmental targets for our local government area. Our influential role as a city government helps us shape our local area's*

*environmental performance, but our control is limited. To achieve our local area targets, we continue to call on strong collaboration from all levels of government, the private sector and the community.*

The broad strategies that the City perceives as open to them, to influence community emissions, include:

- *Encouraging private sector action*, via programs, standards, planning controls and incentives
- *Galvanising community action*, via grants for innovation, education, consultation and community infrastructure
- *Advocating for change*, through research, partnerships, submissions and information sharing
- *Acting as thought leaders*, by connecting Sydney with leading thinkers, global collaborations such as C40 Cities and 100 Resilient Cities, and many local partnerships including the Cooperative Research Centre for Low Carbon Living.

The City notes that key contributors to the community emissions reduction have included some 4.2 MW of PV installed in the LGA (no doubt increased since the Actin Plan was published), and the efforts of the Better Buildings Partnership (owners of more than half of the commercial floorspace in Sydney) to reduce their emissions by 45% since 2006-07.

The City has championed initiatives such as the CitySwitch program, which encourages seeks voluntary abatement action from office tenants – not only in Sydney, but the City is also the implementing agent for the national CitySwitch program.

It has created a series of Master Plans – first for trigeneration, then renewables, then energy efficiency – which inform Council strategy, and also provide an indication to the private sector of future policy and planning directions.

The City is also developing and implementing a series of Sector Sustainability Plans, commencing with multi-unit dwellings (MUDs) and moving on to offices and accommodation/entertainment. These primarily draw attention to economically-attractive abatement opportunities and encourage voluntary action by the private sector. However, they also highlight opportunities for state or national advocacy.

In the Action Plan, a series of new initiatives is anticipated:

<sup>16</sup>

<http://www.cityofsydney.nsw.gov.au/vision/towards-2030/sustainability/carbon-reduction/renewable-energy>, viewed 19/9/2017

<sup>17</sup> Personal correspondence with City of Sydney staff – its website will be updated in the near future.

<sup>18</sup>

<http://www.cityofsydney.nsw.gov.au/vision/towards-2030/sustainability/carbon-reduction/trigeneration>, viewed 19/9/2017.

- Create a net zero challenge to facilitate Sydney's first net zero buildings
- Deliver an energy retrofit program for residential apartment buildings
- Advocate for changes to state and federal policy and regulation
- Continue delivery of energy efficiency programs and grants that support residents and businesses
- Encourage energy efficiency, low-carbon and renewable energy through our planning controls
- Invest up to \$10 million to accelerate the uptake of renewable energy by our local businesses and residents, with preference for local sources where feasible
- Investigate the introduction of NABERS Energy Commitment Agreements for new commercial office buildings and major commercial office refurbishments over 500 sqm or 1000 sqm
- Encourage energy efficiency and renewable energy through design excellence competitions, voluntary planning agreements and other planning instruments such as Development Control Plans (DCP) and Local Environmental Plans (LEP)
- Identify ways to support improved compliance with environmental conditions during design and construction.

Within the important area of advocacy, Sydney notes the following priorities:

- Rewarding local generators for reducing the future costs for electricity networks
- Allowing local electricity consumers to directly purchase power from local generators
- Increasing minimum environmental standards in building codes
- Introducing mandatory ratings disclosure for residential apartment building energy performance
- Extending the Commercial Building Disclosure program to more building types and to a lower threshold
- Establishing a price on carbon and a higher national renewable energy target.

#### Analysis

While other cities have early targets for reaching either 100% renewable energy or zero net emissions, Sydney stands out for the quality and integrity of the approach it is taking to emissions abatement.

This includes combining leadership at the highest levels (driven personally by the Mayor) with concrete action and investment, and community and stakeholder engagement, but also a realistic appreciation of the limitations of its powers and, therefore, of the need for advocacy as a major focus of its efforts.

Sydney is also a very active member of both the C40 and the Carbon Neutral Cities Alliance, and has sought and obtained funding from these sources for local projects.

It is also noteworthy that Sydney's abatement program emerged from a community consultation process, rather than being imposed top-down. It forms a key element of an integrated and shared vision for a sustainable city from multiple perspectives, and not only carbon.

Sydney should also be commended on the very high level of transparency it displays in the documentation and reporting on strategies, measures and progress.

While it is still using carbon offsets for its own operations, it is also seeking to reduce actual emissions, and not merely offset them. As the world strives to comply with the Paris Climate Agreement, which essentially requires global emissions to fall to near zero by mid-Century, then the utility and additionality of trading offsets between one place or emitter and another is increasingly questionable.

It is also noteworthy that Sydney has moved away from purchasing Green Power in favour of direct investment in PV (and one trigeneration unit – see below). This is likely to reflect a) high (and, in our view, poorly justified) Green Power premiums, b) the rapidly falling cost of solar equipment, and c) rapidly rising prices for grid-based power, which all combine to make direct investment the least-cost choice. It is also the case that such direct investments are more visible to the community and stakeholders than are either Green Power or offsets, and therefore may be both more politically palatable and more likely to inspire replication by others.

The City's website continues to say that it is seeking to produce 70% of its own electricity needs (for Council operations) from trigeneration (and 30% from renewable energy). However, we understand that trigeneration has been found (through its Trigeneration Master Plan) not to offer a cost-competitive solution, with limited exceptions. Further, most trigeneration systems use fossil methane ('natural gas'), and therefore produce greenhouse gas emissions, despite their relatively high energy efficiency. The City has also explored the availability of bio- or renewable-gas (via its Renewable Energy Master Plan), but is understood to have concluded that such gases are not currently procurable in their location at the volumes required, even setting aside the question of cost.

## Canberra

#### Targets

Canberra's key targets include achieving:

- 100% renewable electricity use in the ACT by 2020
- 40% reduction in ghg emissions by 2020 over 1990 levels
- Net zero emissions by '2050 at the latest'.

The latter target was brought forward from 2060, and the ACT has recently commissioned work<sup>19</sup> to help it assess whether the zero net emissions target could be brought forward and, if so, to which date.

### Context and Strategies

The ACT's emissions targets are enshrined in the *Climate Change and Greenhouse Gas Reduction Act 2010*. The current targets have emerged from two Climate Change Action Plans (2007 and 2012), which involved both extensive analysis and community consultation.

The ACT's current climate change strategy - *Action Plan 2 (AP2)* – was released in October 2012 and sets out a strategic pathway to guide the Territory to meet its 2020 greenhouse gas reduction targets and adapt to climatic changes. 15 of the 18 Actions are completed or ongoing, as reported in the six-monthly implementation status updates. The three outstanding actions (Actions 3, 4 and 10) may form the basis for the next iteration of the ACT's climate action strategy. These actions focus on low emissions transport, low emission buildings, and information sharing.

The ACT's review of AP2 also covered the ACT's greenhouse gas accounting method, and noted that any future policy development should be compliant with the IPCC GHG Accounting Global Protocol for Communities. The method was formally amended in 2015 and is compliant with international account best practice.<sup>20</sup>

The next iteration of the ACT's climate change strategy is expected to involve a longer term view out to 2050, and will develop a blueprint for how the transition to net zero emissions can occur over that timeframe across all sectors.

### Outcomes

The ACT has achieved its first legislated ghg target, which was to see per-capita emissions peak by June 2013. Per-capita emissions in fact peaking 2006 at 12.72 t CO<sub>2</sub>-e/capita, and during 2015-16 this averaged 10.27 t CO<sub>2</sub>-e/capita.<sup>21</sup>

The ACT is on-track to meet its 2020 target of 100% renewable electricity, thanks primarily to its innovative and highly successful approach to renewable energy procurement. As discussed in the Analysis section below, the fact that the ACT is a 'jurisdiction' (ie, a territory and not a local government) means that it has

been able to access 'jurisdictional scheme' provisions within the National Energy Law (NEL), to facilitate this outcome. These provisions are not (automatically) available to the other cities covered in this paper, as they are not jurisdictions for the purposes of the NEL.

In terms of total ACT emissions, these peaked in 2010-11, and fell by 9% over the period to 2015-16. While there was some rebound in primarily waste-related emissions over the last two years, and also transport, the downward trend is set to resume strongly due to the programmed increase in the renewable energy share in electricity supply. The ACT's population increased by nearly 6000 persons between 2014-15 and 2015-16. Electricity related emissions fell despite this, including due to a rise the renewable share from 18.8% to 20.2%.<sup>22</sup>

Figure 2 – ACT Emissions, Population and Per-Capita Emissions, Selected Years

Year	1989–90	2012–13	2013–14	2014–15	2015–16
Population (at 31 December)	279,219	377,927	383,310	387,866	393,107
Emissions (kt CO <sub>2</sub> -e)	3196.8	3,949.0	3,839.8	3,997.7	4,039.7
Emissions per capita (t CO <sub>2</sub> -e)	11.45	10.45	10.00	10.31	10.27

Source: *pitt&sherry (2016)*

### Policies and Measures

The ACT has many abatement measures in place. Perhaps best known nationally – due to its unquestioned success – is its renewable energy procurement policies. In summary, this has involved progressive release of 'blocks' of feed-in tariff entitlements. These commenced with conventional small-scale rooftop PV, but have increasingly moved to procuring large (200 MW) blocks of wind or solar, using a reverse auction methodology to ensure the lowest possible prices. The ACT set a new low-price record for Australian wind at \$73/MWh (7.7 c/kWh) during its second auction round. This program is also credited with creating significant spillover investment and employment creation in the ACT.<sup>23</sup>

Other key policies include:

- The Energy Efficiency Improvement Scheme, which is a retailer obligation scheme that provides financial incentives for households and

<sup>19</sup> From Strategy. Policy. Research. in association with Beyond Zero Emissions, and also from Point Advisory

<sup>20</sup> ACT Government, Environment & Planning, *2015 Review of AP2: a new climate change strategy and action plan for the ACT*, November 2015.

<sup>21</sup> <https://www.environment.act.gov.au/cc/acts-greenhouse-gas-emissions>, viewed 20/9/2017.

<sup>22</sup> *pitt&sherry, ACT Greenhouse Inventory for 2015-16: with revisions for 2014-16*, December 2016.

<sup>23</sup> [http://www.cmd.act.gov.au/open\\_government/inform/act\\_government\\_media\\_releases/corb-ell/2016/wind-farms-final-piece-in-100-by-2020-plan](http://www.cmd.act.gov.au/open_government/inform/act_government_media_releases/corb-ell/2016/wind-farms-final-piece-in-100-by-2020-plan), viewed 21/9/2017

businesses that undertake specific energy efficiency investments

- Actsmart business and government energy/water efficiency programs that provide advice and small grants, or audits in the case of government facilities
- Low-income household program, which provides low-cost energy assessments, education and financial assistance
- Direct investment in light rail
- A low emission vehicle strategy, which includes a feebate to incentivise the purchase of low-emissions vehicles.

The ACT Government is also reducing its own operational emissions via a Carbon Neutral Government Fund, which makes direct investments in efficiency upgrades or on-site renewables on government facilities, and offsets residual emissions. It also runs significant public awareness and schools' programs on climate change.

The ACT also promotes active transport, including extensive bike lanes and public transport. It is also providing grants for the update of around 200 battery storage systems in homes and businesses, which will be monitored as a pilot program to help inform future policy in this area. A Renewable Energy Industry Development Strategy provides financial support for new renewables-based enterprises in the ACT, and a \$5.9m Renewable Energy Skills Centre of Excellence has been established at the Canberra Institute for Technology.

### Analysis

Canberra has the key advantage, over other Australian cities, of also being a Territory – a city-state, in effect – which means that it has considerably greater legislative powers and financial and human resources, similar to those of states rather than cities. However, it also performs city functions such as planning, as per local governments. Its control over new land releases for housing or commercial purposes means that the ACT government has unparalleled control over the nature and location of economic development within its borders.

Canberra's signature renewable energy policies would most likely not be possible – under the current National Energy Law – if it were a local government rather than a territory. Its status as a 'jurisdiction' means that it has been able to establish its feed-in tariffs as a 'jurisdictional scheme' for the purposes of s. 6.18.7A(e) and s. 6.18.7A(l). In practice this means that the Australian Energy Regulator is empowered to allow the local electricity distributor, ActewAGL, to recover any (justified) net costs associated with the scheme's administration via network charges.

Of course, with power comes responsibility. The ACT has traditionally been developed as a highly decentralised, energy-intensive city, almost completely dependent upon car travel. The task of increasing density and improving public transit – including via a new light rail system on key routes – is a long term but

important venture. The ACT is now actively promoting higher-density apartment-style living/working areas around the light rail corridors, in an excellent example of 'transit-oriented development'.

As with other cities, Canberra is seeking and achieving international recognition for its leadership in the climate change and renewable energy fields. The 2015-16 Minister's Annual Report, under the *Climate Change and GHG Reduction Act 2010*, notes (p. 4) that:

*In the lead-up to COP21, more than 1300 non-State stakeholders signed the Paris Pledge for Action, pledging their support for the new climate agreement and promising to take personal, concrete action to ensure the level of ambition set in the Paris deal is met or exceeded. Three Australian states and territories—the ACT, South Australia and Victoria—are among the Paris Pledge signatories.*

*The ACT was recognised internationally in a report of The Climate Group "Unlocking Ambition: Top Corporate and Sub-national Corporate Commitments Report" which states that the ACT has amongst the most ambitious GHG reduction target of all states and regions (100% reduction by 2050) and renewable energy target (100% renewable electricity by 2020).*

It is noteworthy that the ACT is seeking and achieving economic and employment benefits from its emissions reductions activities. It is able to leverage the large investments that are being induced by its renewable energy procurement activities, and also its world-class tertiary education and research facilities, to promote new business ventures and renewable energy/low carbon research and development. South Australia (not so much Adelaide) is also actively promoting these economic benefits associated with its abatement strategies.

Finally, and as with Sydney, the ACT should be commended for its high degree of transparency and due process in its administration of its abatement program. The Minister is required (under the Act above) to make an annual report, and these are thorough and detailed documents. The Government calculates and declares the cost of its policies per household, enabling the community to easily assess the value for money they are achieving. The ACT takes a highly-consultative approach to policy development, while at the same time procuring and acting upon expert advice.

For the future, key challenges for the ACT, once the 100% renewable electricity milestone is reached, will be the need to transition away from the use of fossil methane. The high price of gas and the relatively greater rate of technological development and cost reduction of electrical technologies (PV, heat pumps, batteries, etc) mean that this challenge will be most significant for larger commercial users, where the technical and economic feasibility of switching can be highly contingent upon the particular end-use requirements. Also, the ACT may be the first jurisdiction to venture explicitly down this path, and this will inevitably mean solving unanticipated and novel

problems, while also managing complex stakeholder politics.

Second, the transport sector looms increasingly large in the ACT's emissions inventory. While we have noted some measures in this sector – including a major investment in light rail – more will need to be done to encourage zero emissions transport. Electric vehicles may be a critical opportunity for the ACT, particularly given its expected emissions-free electricity.

## Melbourne

### Targets

Melbourne's headline target of zero net emissions for the community by 2020 (which was set in 2003) was for many years the most ambitious of all Australian cities, and the earliest example of a net zero, community-wide target being set for a major city in Australia.

The 2002 Strategy anticipated a 50% reduction in energy use in the City's residential and commercial buildings. It also aimed to promote combined cycle coal gasification, fuel cells and cogeneration, and to increase the use of renewable energy to 45% of 2020 demand, and a 50% reduction in emissions from non-renewable resources.<sup>24</sup>

The City's 2014 *Update* sets out a target of achieving 25% of electricity from renewable sources by 2018, and notes it must 'ultimately' use 100% renewable energy within the municipality.<sup>25</sup>

The City's own operations have been certified as carbon neutral each year since 2011-12. It also aims to reduce its emissions by 10% by 2020.

In its more recent, 2015 *Future Melbourne 2016* Strategy document, 49 key priorities are identified. Of these, only two relate to climate change. Priority 1.2 focuses on adaptation to climate change, while Priority 1.3 states that "Melbourne will become a zero net emitter of greenhouse gases by reducing its emissions and sourcing all of its energy from renewable sources".<sup>26</sup> It is not clear whether this refers to the community's emissions or only to those of the Council.

### Context and Strategies

Interestingly, given its time, Melbourne's the *Net Zero Emissions* Strategy (2003) begins with an observation that remains valid today: "Deeper goals need to be set if we are to stabilise global climate change". It expresses to ambition of "...ending the City's contribution to global warming within 20 years".

The Strategy emphasises the opportunity to "...turn what seems a serious threat to Melbourne's economy and way of life into an opportunity for economic growth, environmental improvements and social cohesion – a triple bottom line equation".

As with Sydney, Melbourne positioned its strategy into a wider context of sustainability and also globalisation and rapid Asian urbanisation.

*The City of Melbourne wants to lead the way in creating a sustainable future for its residents. It wants to anticipate the changes and forces of globalisation – economic, environmental and social – and use the tools of the knowledge age to turn these trends to its advantage.*

### Outcomes

The most recent reporting of outcomes, and indeed of Melbourne's climate mitigation strategy, dates from 2014. The *Update 2014* document acknowledges that:

*...collective progress in certain areas has been slow, such as reducing Victoria's reliance on brown coal, our most emissions-intensive electricity source.<sup>27</sup>*

Further it notes that:

*If the municipality of Melbourne continues on its current trajectory, forecasts reveal annual greenhouse gas emissions will grow to around 7.7 million tonnes by 2020 – a 60 per cent increase on 2010 emissions.<sup>28</sup>*

### Policies and Measures

The 2003 *Net Zero Emissions* Strategy expressed an intention to:

*...use market mechanisms and appropriate regulations to influence the billions of dollars of mainstream business investment that will take place in buildings, plant and power generation over the next two decades. It envisages commercial, industrial and residential investment in superior energy efficient design. Rather than add to the costs of doing business in Melbourne, the net result of such investment is to reduce operating costs and enhance Melbourne's business competitiveness.*

It would also "...gain leverage from aligning the City of Melbourne's activities with State and Federal Government Greenhouse programs.

The three core strategies identified were:

1. Leading edge design
2. Greening the power supply

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<sup>24</sup> City of Melbourne, *Zero Net Emissions by 2020: a roadmap to a climate neutral city*, 2002, p. 4.

<sup>25</sup> City of Melbourne, *Zero Net Emissions by 2020: update 2014*, 2014, p. 23.

<sup>26</sup> City of Melbourne, *Future Melbourne 2020*, 2015, p. 14.

<sup>27</sup> City of Melbourne, *Zero Net Emissions by 2020: update 2014*, 2014, p. 2.

<sup>28</sup> Ibid.

### 3. Carbon sequestration.

For its own operations, and in addition to offsetting emissions, Melbourne continues to investment in abatement activities such as LED street lighting, 300kW of rooftop solar on its own facilities and improving the energy efficiency of its buildings. In its *Emissions Reduction Plan for Our Operations: 2016-2021*, Melbourne outlines key planned initiatives including moving to zero carbon buildings in its own portfolio, promoting zero carbon transport for staff and reducing waste.

In its *2014 Update*, Melbourne notes many opportunities to reduce emissions. However, policies and measures to reduce community emissions appear to be confined to:

**1200 Buildings:** The 1200 Buildings program was launched in 2010 and aims to harness the retrofitting of commercial, non-residential buildings in order to reduce their CO2 emissions by an estimated 383,00 tonnes per annum.

Building owners and managers are encouraged to improve their buildings via the **Environmental Upgrade Finance Scheme**. This scheme is based on State Government legislation that enables Victorian councils to deliver Environmental Upgrade Agreements that provide access to finance for building retrofits.<sup>29</sup> Loan capital is recouped by the city via a charge linked rates collection system, which is in turn paid to the financier.

**City Switch:** The City Switch Program began in 2006, and is specifically designed to assist office based Businesses in reducing their energy efficiency, waste and more recently implementing renewable energy measures. As of 03/10/2017, The City-Switch program currently works with 831 tenancies.

**Planning policies.** The City of Melbourne was the first in Australia to use its planning scheme to encourage developers to over-achievement mandatory minimum energy (and other environmental performance) standards. Its *Energy, Water and Waste Efficiency Planning Policy* calls for an additional star (for new residential developments) or an additional 10% improvement for non-residential buildings, relative to the requirements of the National Construction Code (which have not been amended nationally since 2010).

**Information and partnerships.** Melbourne offers a number of programs to assist specific sectors to take action on climate change. Examples include:

- Smart blocks – a national program helping apartment owners and their managers to improve the energy efficiency of common property in apartment buildings

- Positive Charge, a not-for-profit service which partners with local councils to provide expert advice to help both residents and businesses save energy. The service also offers access to discounted energy saving products, such as solar, LED lighting and insulation.

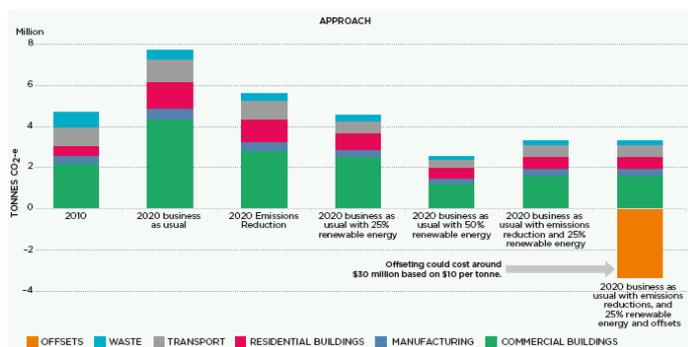
The 2014 Update also notes a range of measures to reduce waste, transport and freight-related emissions.

A more recent initiative is the **Melbourne Renewable Energy Project**. The City of Melbourne, together with other local governments, cultural and educational institutions, and private-sector corporations launched a competitive tender in April 2016 to purchase large volumes of renewable energy through a group purchasing model. It set out the ambition of purchasing 110 GWh of energy from new large-scale renewable energy facilities. This resulted in a group tender process through Procurement Australia, and it was indicated that a successful tenderer would be announced in late 2016.<sup>30</sup> We can find no evidence that this has occurred.

#### Analysis

As at 2014, at least, it is clear that Melbourne was not on-track to achieve its emissions targets, except via the purchase of offsets – see Figure 3 below. This figure also anticipates an increase in renewable energy consumption by 2020. It is not clear with the renewable energy procurement process noted above will be completed and, if so, enable the City's target of 25% renewable energy by 2018 to be met.

Figure 3: Melbourne's 2010 Emissions Profile and Possible Future Emissions Scenarios



Source: 2014 Update, p. 3.

The 2014 Update clearly distinguishes what the City will do, what others will (or are expected to) do, and 'what else needs to happen'. This is an implicit acknowledgment that the City cannot achieve zero net

<sup>29</sup> Ibid, p. 20.

<sup>30</sup>

<http://www.melbourne.vic.gov.au/business/su>

[sustainable-business/Pages/melbourne-renewable-energy-project.aspx](http://www.melbourne.vic.gov.au/business/sustainable-business/Pages/melbourne-renewable-energy-project.aspx), viewed 11/10/2017.

(community) emissions without supportive policies at the state and national levels. For example:

*If Melbourne were to implement all currently viable emissions reduction opportunities by 2020, our emissions profile will still exceed that of our 2010 emissions profile. For Melbourne to achieve zero net emissions by 2020, the actions outlined in this strategy need to be accompanied by fundamental changes to our energy supply which is subject to Australian and Victorian Government policy.<sup>31</sup>*

It also notes that the:

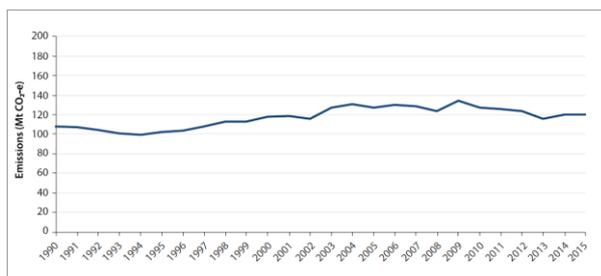
*Zero Net Emissions – Update 2008 was written with the assumption that Australia would put a price on carbon and international policy would be in place to drive significant emissions reductions.<sup>32</sup>*

Melbourne's community climate strategy documentation appears dated, and it is not clear, from documents in the public domain, exactly what progress it has made since 2014 in reaching its mitigation targets.

Clearly, its assumption that carbon pricing would remain in place to help drive emissions reductions nationally has not proven robust.

At the state level, the latest national greenhouse gas inventory notes that emissions have generally risen since 2010, although have reduced from a 2009 peak by almost 20 Mt CO<sub>2</sub>-e.

Figure 4: Victoria's Annual GHG Emissions, 1990 - 2015



Source: Department of the Environment and Energy, *State and Territory Greenhouse Gas Inventories 2015*, May 2017, p. 5.

The Melbourne Renewable Energy Project indicates that renewable energy procurement projects have limited

scope for most capital cities who, unlike Canberra, cannot benefit from 'jurisdictional scheme' provisions under the National Energy Law. By comparison, collaborative or bulk purchasing of renewable electricity with other parties suffers high transactions costs and requires a high standard of agreement to achieve voluntary buy-in.

## Adelaide

### Targets

In 2015, the City of Adelaide and the South Australian government committed jointly to make Adelaide Australia's first carbon neutral city.<sup>33</sup> Since Melbourne is targeting this outcome by 2020, the target would need to be met before that date.

### Context and Strategies

At the State level, SA's *Climate Change Strategy 2015 – 2050* includes Carbon Neutral Adelaide as one of six key pillars in achieving its goal of zero net emissions by 2050.<sup>34</sup>

The City of Adelaide signed a sector agreement with the SA Government in November 2015 to give effect to this target. However, this agreement notes that the Council's own target is to be a carbon neutral city 'by 2025 or earlier'.<sup>35</sup> Adelaide supports and endorses the SA Government's target, but its own targets has a longer timeframe. In addition, it has the target of being carbon neutral in its own operations by 2020.<sup>36</sup>

The South Australian Government and Adelaide City Council commissioned pitt&sherry<sup>37</sup> in 2015 to prepare a *Foundation Report* and related analyses to guide their strategy development.<sup>38</sup>

Adelaide's aspirations for carbon neutrality are also aided by the fact that the South Australian Government has recently released a detailed Energy Plan. The plan aims to increase investment in renewable energy, storage and demand management, *inter alia*, while ensuring that the electricity grid delivers reliability and energy security. The plan aligns with South Australia's wider strategy of seeking economic and employment benefits through embracing a low-carbon future.<sup>39</sup>

<sup>31</sup> Ibid, p. 2.

<sup>32</sup> Ibid.

<sup>33</sup> Government of South Australia and City of Adelaide, *Carbon Neutral Adelaide Action Plan 2016 – 2021*, November 2016, p. 2.

<sup>34</sup> Government of South Australia, *South Australia's Climate Change Strategy 2015 – 2050: towards a low carbon economy*, undated, p. 40.

<sup>35</sup> City of Adelaide, *Carbon Neutral Strategy 2015 – 2025*, undated, p. 14.

<sup>36</sup> Ibid, p. 3.

<sup>37</sup> Personnel now with Strategy. Policy. Research. Pty Ltd.

<sup>38</sup>

[https://www.environment.sa.gov.au/Science/Science\\_research/climate-change/climate-change-initiatives-in-south-australia/sa-climate-change-strategy/carbon-neutral-adelaide](https://www.environment.sa.gov.au/Science/Science_research/climate-change/climate-change-initiatives-in-south-australia/sa-climate-change-strategy/carbon-neutral-adelaide), viewed 11/10/2017.

<sup>39</sup> Government of South Australia, *It's Time to Take Charge of our Energy Future*, undated.

## Outcomes

Carbon emissions from the City of Adelaide community declined by 20% between 2007 and 2013 (see Figure 5 below).

The City notes that:

*...the 20% reduction in carbon emissions could largely be attributed to decarbonisation or 'greening' of the city's electricity supply due to large scale wind projects and widespread roof top solar photovoltaic; and significant energy efficiency improvements in new and existing commercial buildings.<sup>40</sup>*

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<sup>40</sup> City of Adelaide, *Carbon Neutral Adelaide Strategy 2015 – 2025*, undated, p. 6.

Figure 5: Adelaide Community Carbon Emissions, 2007, 2010 and 2013



Source: City of Adelaide, *Carbon Neutral Adelaide Strategy 2015 – 2015*, undated, p. 6.

With respect to the City's own operations:

*Council has a long and successful history of reducing carbon emissions from our own operations, and we have a long-standing target to have carbon neutral operations by 2020 (first adopted in 2008). We reduced our carbon emissions by 60% between 1994 and 2009–10.*<sup>41</sup>

Council energy use reduced by 15.5% between 2009–10 and 2014–15, which met the target of a 15% reduction, while carbon emissions were 14,000 tonnes CO<sub>2</sub>-e in 2014–15, which met the target of no net increase in carbon emissions from 2009–10.<sup>42</sup>

#### Policies and Measures

Due to the fact that the carbon neutral Adelaide target is a joint aspiration of the South Australian government and the City of Adelaide, policies and measures that are designed to achieve the target include both state and local measures.

The joint Action Plan 2016 – 2021 identifies 'partnerships and pathways' as the key strategies for achieving outcomes. With respect to partnerships, the Action Plan notes that

*...the State Government and Council will work closely with a wide range of groups and organisations to build capacity, identify and address*

*barriers, provide a competitive advantage, and improve access to resources and expertise.*<sup>43</sup>

Examples include:<sup>44</sup>

- A Zero Carbon Challenge, to promote thought leadership, innovation and entrepreneurialism
- A Climate Knowledge Innovation Community
- Behaviour change programs targeting specific sectors
- Research and development
- Participation in international and collaborative programs
- A carbon neutral schools program
- Develop a 'Low Carbon Economy Plan'.

Beyond these 'softer' measures, the pathways identified include:

- An energy efficient built form
- Zero emissions transport
- Towards 100% renewable energy
- Reduce emissions from water and waste
- Offsets.

In the built environment, the Action Plan notes that

*Most buildings in the City are privately owned and therefore beyond the direct influence of the State Government and Council. Our roles are therefore to provide support and facilitation, and to lead by example through aggressive energy efficiency measures in our own operations.*

However, specific policies referenced include:

- Participation in the City Switch project, designed to assist businesses with improving their energy efficiency and sustainability.
- The introduction of legislation for the Building Upgrade Finance (BUF) Mechanism, which allows business owners to access loans to help improve the energy, water and emissions efficiency for existing commercial buildings.<sup>45</sup>
- The Sustainability Incentives Scheme (SIC), is a program designed to provide reimbursements for installation of water and energy efficiency devices and systems within the Council Boundaries and is

<sup>41</sup> Ibid, p. 9.

<sup>42</sup> Ibid.

<sup>43</sup> Ibid, p. 15

<sup>44</sup> Ibid, p. 17.

<sup>45</sup>

[http://www.environment.sa.gov.au/Science/Science\\_research/climate-change/climate-change-initiatives-in-south-australia/reducing-greenhouse-emissions-to-mitigate-climate-change/building-upgrade-finance](http://www.environment.sa.gov.au/Science/Science_research/climate-change/climate-change-initiatives-in-south-australia/reducing-greenhouse-emissions-to-mitigate-climate-change/building-upgrade-finance) , Accessed 10/10/2017.

eligible to all building types, from education facilities to residential buildings.<sup>46</sup>

In the transport area, measures will include:

*...providing safe, convenient and comfortable streets that incorporate more trees and bike lanes, coupled with community engagement programs that encourage people to walk and cycle. Other opportunities include encouraging the uptake of low and zero emission vehicles, expanding the tram network and completing electrification of the rail network.*<sup>47</sup>

In renewable energy, key measures of success are noted as:

1. Total installed capacity of solar PV in the city is increased to at least 15MW by 2021.
2. By 2019, Carbon Neutral Adelaide partners obtain at least 50GWh per year of electricity from large-scale renewable energy generators.
3. The proportion of electricity generated from renewable sources in South Australia increases to at least 50% by 2025.

While these are suggestive of policies and measures, they do not amount to policies or measures in their own right.

#### Analysis

While the South Australian Government and City of Adelaide must be commended for their joint commitment to making Adelaide the world's first carbon neutral city, it is clear that, for the time being at least, offsets will form a key element of the abatement effort:

*Carbon offsets will also be necessary to achieve carbon neutrality in Adelaide; however, the use of offsets will decrease over time. The preferred strategy will be to identify offset opportunities within South Australia.*<sup>48</sup>

This is because the policies and measures outlined above – while significant – are unlikely to reduce emissions to zero before 2020 in the absence of offsets.

Indeed, the City of Adelaide notes:

*The rate of reduction of emissions has slowed in recent years, with 2014/15 emissions slightly higher than 2012/13 (939,532 tonnes CO<sub>2</sub>-e, an increase of 1%). This is due to the continued growth in residential apartments, and a slowdown in largescale wind farm construction, because of the recent*

*uncertainty surrounding national policy settings, in particular Australia's Renewable Energy Target.*<sup>49</sup>

We note, however, that renewable energy investment activity in South Australia may have rebounded since the Action Plan was published. Indeed, South Australia is already acknowledged as the leader in terms of progress in increasing renewable electricity, and a continuation of this strategy – bolstered through investments in storage – will make key contribution to reducing emissions in SA, and not only in Adelaide, over time. The 2016 – 2021 Action Plan sounds realistic notes when it states that:

*Reducing transport emissions may be the greatest of our emissions reduction challenges, due to the complexity of the transport options available, the high cost of zero carbon vehicles, and the significant influence of affordability and demographics on individuals' transport choices.*<sup>50</sup>

What is clear is that the prospects for Adelaide achieving zero net emissions by 2020 or earlier are substantially bolstered by the fact that this represents a shared aspiration of both state and local governments. No other capital city in Australia benefits from such a strong collaborative approach as exists in South Australia.

Further, the goal of Adelaide becoming the world's first carbon neutral city has been adopted for reasons wider than simply to limit climate change. The *Action Plan* notes that:

*Positioning Adelaide to achieve carbon neutrality will...provide a strong foundation for the city's and the state's economic, environmental and social transformation. Capitalising on our global reputation will help to attract and secure national and overseas investment in local clean technology businesses and encourage international and interstate visitors to experience our state and city.*

*Achieving net zero emissions for the City of Adelaide will make a significant contribution to four of the State Government's economic priorities:*

- *Unlock the full potential of the state's resources, energy and renewable assets*
- *Transform the economy through fostering an environment of innovation*
- *Ensure that small businesses have access to capital and global markets*

<sup>46</sup> <http://www.cityofadelaide.com.au/your-council/funding/sustainable-city-incentives-scheme/>, Accessed 10/10/2017.

<sup>47</sup> City of Adelaide, Carbon Neutral Adelaide Strategy 2015 – 2025, undated, p. 27.

<sup>48</sup> Government of South Australia, *South Australia's Climate Change Strategy 2015 – 2050*, undated, p. 41.

<sup>49</sup> Government of South Australia and Adelaide City Council, *Carbon Neutral Adelaide Action Plan 2016 – 2021*, November 2016, p. 11.

<sup>50</sup> Ibid.

- Promote our international connections and engagement.<sup>51</sup>

Adelaide's and South Australia's sharp focus on creating economic benefit through transforming its economy to low- or zero-carbon stands in stark contrast to the conservative meme that places carbon abatement and economic growth in opposition to each other.

## Hobart

### Targets

The City of Hobart has set a target of reducing its operational energy usage by 35% over the 2010 – 2020 period, and to reduce greenhouse gas emissions by a further 17% in the same time period.

The City has not set abatement targets for the community. It noted, in personal correspondence, that '...the City's approach has been to set targets for what is has responsibility and jurisdiction for, which is our corporate assets.'

### Context and Strategies

The City of Hobart recognises that climate change is a significant issue, and notes that it is '...committed to acting and leading at the organisational/corporate, community, regional and national levels'.<sup>52</sup> However, noting its primary focus on its own operations, Hobart does not have a current community emissions reduction strategy.

It did previously have a Climate Change Plan, entitled *Climate Change an Issue for Everybody 2008 – 2013*, published in 2009, which included measures for the community.<sup>53</sup> The City's website notes that this Plan is under review, but the timeframe and modalities for the review are not stated.<sup>54</sup> Via a personal communication, the City noted that its website will be updated shortly. It supplied the following information, inter alia:

*Through its current review the City is seeking community input into the development of its new strategy. The engagement process is intended to increase community climate understanding and awareness, and provide for input into evidence*

*based actions that have community support, along with recalibrating its strategies with current state, national and international policy settings.*<sup>55</sup>

This engagement process will commence in November 2017. Interestingly, the information provided by the Council notes that the objectives of the engagement program include to:

*Clearly identify and articulate the roles and responsibilities of City of Hobart (and local government) and other key stakeholders (public and private) in addressing climate change...<sup>56</sup>*

For its operations, it has an Energy Savings Action Plan, which sets out a large number of specific energy efficiency measures covering Council transport, buildings and car parks.<sup>57</sup>

The Council also has a strong focus on adaptation to climate change.

### Outcomes

The City of Hobart notes that it has been engaged in action since 1999, and has reduced carbon emissions from its own operations by 75% over the 2000 to 2010 period, primarily by reducing waste emissions at the McRobies Gully Waste Management Centre.<sup>58</sup> Hobart also notes that it is ahead of its 2020 targets reduction in greenhouse gas emissions and energy use.

### Policies and Measures

The City indicates that it '...is committed to helping communities to understand how they can use energy more wisely'.<sup>59</sup> Measures therefore focus on energy savings.

It has developed a Home Energy Audit Toolkit (HEAT) that assists household to understand how they use energy and what they can do reduce their power bills. It has developed a DVD to accompany the kits explaining how to use them, particularly for the benefit of the visually impaired and /or low literacy households.<sup>60</sup>

The City is partnering with the Tasmanian Government to develop a Sustainable Building Program that incorporates Financial Upgrade Agreements targeting commercial buildings, providing financial mechanisms for improvements in energy and resource use via funding arrangement with financial institutions and

<sup>51</sup> Ibid, p. 7.

<sup>52</sup> City of Hobart, *Climate Change and Energy Programs: overview 1999 to current*, April 2016, p. 1.

<sup>53</sup> Hobart City Council, *Hobart's Climate Change Strategies X 5: climate change an issue for everybody 2008 – 2013*, May 2009.

<sup>54</sup>

<https://www.hobartcity.com.au/Council/Strategies-and-plans/Hobarts-Climate-Change-Strategy>, viewed 12/10/2017.

<sup>55</sup> City of Hobart, *Agenda (Open Portion), City Planning Committee Meeting, 11/9/2017*.

<sup>56</sup> Ibid.

<sup>57</sup> City of Hobart, *Energy Savings Action Plan 2014 -17*, undated.

<sup>58</sup> City of Hobart, *Climate Change and Energy Programs: overview 1999 to current*, April 2016, p. 1.

<sup>59</sup> Ibid.

<sup>60</sup> Ibid.

repayment via local government rates. The Project Funding and Deed was signed by the Council on 29 October 2015, however it appears that this program has not yet commenced.<sup>61</sup>

The City notes that it has '...engaged in a range of community energy/emissions awareness activities since 1999', and lists these in its *Climate Change and Energy Programs* document. More generally, this document provides a good summary of past actions and initiatives taken.<sup>62</sup>

The 2009 Strategy document references rebates for solar hot water and insulation which were offered between 2007 and 2013.<sup>63</sup>

### Analysis

Hobart has had a long engagement in reducing its own emissions and energy use, and notable success at least in the former. However, the extent of community engagement on the issue of climate change appears to have varied over time, with no current strategy or targets in place, while incentive measures for the community have been scaled back over time.

The current review of its Climate Change Strategy, and associated community engagement, would appear to provide an excellent opportunity for Hobart to review the standard being set by other cities, and to offer greater community leadership in this area.

## Perth

### Targets

The City of Perth has targets of reducing both operational and community emissions by 30%, relative to business-as-usual, by 2030.

In addition, the City plans to source 25% of its operational energy use from renewable or low carbon sources by 2030.

Finally, the City notes that it will work with the community to achieve 20% of citywide energy use from renewable or low carbon sources by 2030.<sup>64</sup>

### Context and Strategies

The City of Perth has an *Environment Strategy* (undated – but elsewhere noted as dating from March 2016 and intended as a 15-year strategy)<sup>65</sup> that includes the

above targets, objectives and broad strategies. These include objectives of 'Improved energy efficiency with reduced greenhouse gas emissions' and 'High emissions energy sources replaced with low emissions and renewable energy sources'. The phrase 'low emissions' is not defined.<sup>66</sup>

In the *Strategy*, Perth notes that it has signed the World Energy Cities Partnership *Calgary Climate Change Accord*, and also that it has become a member of the Compact of Mayors.<sup>67</sup>

The City also has a Strategic Directions Paper entitled *Towards an Energy Resilient City*, again undated but apparently from around 2015.<sup>68</sup> This document provides a timeline of energy/climate measures over the 2007 to 2014 period. It is framed by an aspiration to '...future proof central Perth in the face of challenges from climate change and rising energy demand'.<sup>69</sup> As such it combines adaptation and mitigation measures under the 'resilience' heading.

The City's latest Annual Report notes:

*In September 2015, the City of Perth became a signatory to the Compact of Mayors and is currently completing its first year requirements. The Compact of Mayors is a global coalition of Mayors and city officials committing to reduce local greenhouse gas emissions, enhance resilience to climate change and track their progress publicly. First year requirements include the development of a community wide greenhouse gas inventory and the identification of local climate hazards.*<sup>70</sup>

### Outcomes

There is limited information about Perth emissions – which may be rectified by the Compact of Mayors initiative, as noted above.

*Towards an Energy Resilient City* notes an expectation that, under business as usual conditions, emissions are expected to rise by more than 20% over the 2006 to 2031 period. In a brief reference, the City's last Annual Report notes that implementation of this strategy is 'behind schedule'.<sup>71</sup>

### Policies and Measures

The strategy documents above note that the City of Perth participates in the City Switch program, and attributes 17,000 tonnes CO<sub>2</sub>-e abatement to this program over the 2008 – 2013 period.<sup>72</sup>

<sup>61</sup> Ibid.

<sup>62</sup> City of Hobart, *Climate Change and Energy Programs: overview 1999 to current*, April 2016, p. 5.

<sup>63</sup> Hobart City Council, *Hobart's Climate Change Strategies X 5: climate change an issue for everybody 2008 – 2013*, May 2009, p. 4.

<sup>64</sup> City of Perth, *Environment Strategy*, undated, p. 10.

<sup>65</sup> City of Perth, *Annual Report 2015-16*, p. 43.

<sup>66</sup> Ibid, p. 24.

<sup>67</sup> Ibid, p. 21.

<sup>68</sup> City of Perth, *Towards an Energy Resilient City*, undated.

<sup>69</sup> Ibid, p. 5.

<sup>70</sup> City of Perth, *Annual Report 2015-16*, p. 44.

<sup>71</sup> Ibid, p. 27.

<sup>72</sup> Ibid, p. 15.

Towards an Energy Resilient City notes that key strategies for reducing community emissions, and achieving the above targets, include:

- *Energy efficiency* can leverage the rapid evolution in lighting and HVAC technology across both residential and commercial uses, as well as financing mechanisms to enable building upgrades.
- *Renewable energy* can provide a significant contribution to the city's future energy systems through community and local renewable energy generation, such as solar photovoltaic and encourage private and public investment.
- *Local Energy Hubs* could provide a mechanism to deliver smart and resilient infrastructure in energy dense locations around the city. For example, connecting energy infrastructure of adjacent buildings to deliver low carbon and locally generated energy, thereby lowering peak demand.
- *Transport strategies* that encourage a shift away from private vehicles to public transport, more efficient vehicles, alternative car ownership options and the management of electricity demand and energy sources for electric vehicles can lower transport associated emissions.<sup>73</sup>

While these statements are suggestive of policies and measures, there is no clear commitment to any particular policies or measures in this document.

The City's Annual Report notes introduction of electric vehicle charging stations at 12 carparks within the city outfitted with 15 amp outlets, 3 of which have dedicated charging bays.<sup>74</sup>

### Analysis

Whilst Perth has set emissions abatement targets both for the community and for its own operations, they are relatively modest when compared to those set in East Coast cities. Also, they are expressed as reductions relative to business as usual growth, and not absolute reductions.

Second, there is a lack of detail as to how these targets will be achieved, what progress is already being made, and – beyond CitySwitch – what policies and measures will be used to deliver the targeted outcomes.

The City's participation in the Compact of Mayors creates an expectation of increased reporting of both community inventories and mitigation strategies in future.

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<sup>73</sup> Ibid, p. 17.

<sup>74</sup> Ibid, p. 44.

<sup>75</sup> City of Darwin, Climate Change Action Plan 2011 to 2020, 2011, p. 2.

## Darwin

### Targets

The city of Darwin has a target of 15% reduction in greenhouse gas emissions from Council operations by June 2016 based on 2008/09 emission levels.

It is also targeting a 25% reduction in grid electricity consumption from Council operations by June 2016 based on 2008/09 levels.

There are no current community based efficiency targets for the City of Darwin.

### Context and Strategies

The City of Darwin has a *Climate Change Action Plan 2011 to 2020*, dating from 2011. It included the statement that:

*Council is committed to delivering a range of mitigation and adaptation measures to meet the adverse impacts of climate change for the organisation, for the community and for environment sustainability.*<sup>75</sup>

It also notes that:

*On-going evaluation of the progress of mitigation and adaptation strategic outcomes will be undertaken by the Climate Change and Environment section of Council.*<sup>76</sup>

Within this plan are relevant measures and approaches to the reduction of the City Councils' Carbon footprint.

### Outcomes

Data from the 2011 Action Plan showed that the Council's own emissions were increasing at that time. However, the City's 2015-16 Annual Report notes that emissions from Council operations had fallen 14.5% by that year relative to a 2008-09 base.

The Annual Report provides no data on community emissions trends, but notes that 95% of planned *Climate Change Action Plan* measures have been implemented – although it is not clear which measures these are.<sup>77</sup>

### Policies and Measures

The 2011 *Action Plan* notes that:

*The first renewable energy project in tropical Australia, the Darwin Renewable Energy Facility, located at the Shoal Bay Waste Disposal Site, is a partnership between Darwin City Council and LMS Generation Pty Ltd. The facility generates approximately 9,000 megawatt hours of base-load renewable electricity each year using gas collected from the site.*

<sup>76</sup> Ibid.

<sup>77</sup> City of Darwin, *Annual Report 2015-16*, p. 117.

Beyond this, strategies mentioned in the *Action Plan* are generally process-oriented and do not include specific policies and measures designed to reduce community emissions.

The *Action Plan* noted:

*The development of a new \$50,000 Climate Change and Environment Community Grant Program for 2011 has further strengthened Council's commitment to reducing the community's environmental footprint.<sup>78</sup>*

The Plan notes that the City will promote energy efficient building design suitable for the tropical climate of Darwin, and advocate for energy efficient design standards for commercial and industrial premises. Notwithstanding, we note that the Northern Territory still applies 5-star housing standards and no energy performance standards at all for non-residential buildings.

The City's latest Annual Report notes that it is investing in solar systems:

*Council continues to invest in photo voltaic systems, with \$300,000 being committed in 2015/16 to install solar panels at the Nightcliff and Casuarina Pools. These were expected to be installed early in the new financial year.*

*Solar Panels were installed at the Bishop Street Operations Centre in October 2015. The system generated 103,489kWh of electricity in the 2015/16 financial year, which equates to 54.85 tonnes of carbon dioxide and financial savings of \$31,292.*

*The Casuarina Library PV system continues to perform well, generating 134,731kWh of electricity in the 2015/16 financial year, which equates to 71.41 tonnes of carbon dioxide and financial savings of \$42,143.<sup>79</sup>*

The City's Annual Report also details funding provided under the Community Grants program, which included a sustainability festival and educational materials.

### Analysis

The City of Darwin's Action Plan appears dated and does not indicate what contemporary measures may be being taken to reduce operational or community emissions. Some summary information is contained in annual reports.

Despite the 2011 commitment to ongoing evaluation of the progress of mitigation strategies, *inter alia*, there appears to be little public domain information on

community emissions or abatement strategies. Darwin also has no community targets for abatement.

## Brisbane

### Targets

The Brisbane City Council has maintained its goal of operating their council services at a carbon neutral status since February 2017. Furthermore, they have set the target of reducing the carbon emissions of average residents to six tonnes annually by 2031.<sup>80</sup>

### Context and Strategies

The City of Brisbane's overarching strategy is known as *Brisbane: Clean, Green, Sustainable*, and has been in implementation since the beginning of 2017. This is a brief document, with few details, however. It contains no specific targets or measures.

The 2016-17 Annual Report indicates that there is no Climate Change Mitigation Plan within the Council's strategic planning framework.<sup>81</sup>

### Outcomes

Brisbane City Council achieved carbon neutral status for its operations in 2016-17. Council also has a long-term goal to help the Brisbane residents reduce the average carbon emissions from Brisbane households to six tonnes by 2031. There appears to be no reporting of progress towards these targets.

### Policies and Measures

The City's website notes the following actions are those being used to achieve carbon neutral operations:

- Energy efficiency (eg, LED streetlights)
- Purchasing renewable energy (100 kW PV system installed at the Brisbane Powerhouse, and a total of 200 kW, and close to 1 million MWh of Green Power purchased since 2003) – equivalent to around 40% of the Council's electricity use
- Public transport
- Low emissions Council fleet
- Waste reduction
- Carbon offsets.

There is no evidence of community-facing targets, strategies, inventories, policies or measures.

<sup>78</sup> City of Darwin, Climate Change Action Plan 2011 to 2020, 2011, p. 11.

<sup>79</sup> City of Darwin, *Annual Report 2015-16*, p. 115.

<sup>80</sup> <https://www.brisbane.qld.gov.au/about-council/governance-strategy/vision->

[strategy/reducing-brisbanes-emissions](#), viewed 12/10/2017.

<sup>81</sup> City of Brisbane, *Brisbane Annual Report: 2016-17*, p. 19.

However, the June 2017 strategy document, *Brisbane. Clean, Green, Sustainable*, claims that household carbon emissions fell by over 30% over the 2005 – 2013 period.<sup>82</sup> It also claims that Brisbane has more Green Star rated buildings than any other Australian city, with 30% of inner city buildings Green Star certified.<sup>83</sup>

The City of Brisbane approved the following emissions related grants to community businesses. As of October, 11 businesses and community buildings received grants to perform Energy Audits and implement the changes recommended, totalling at \$64,448.47.<sup>84</sup>

### Analysis

Brisbane City Council is the largest in Australia, and Brisbane is one of Australia's larger capital cities. Indeed, the Council notes:

*Council is the nation's largest local government authority by far, giving it the power to effect change not only in Brisbane but across the region, state and nation.*<sup>85</sup>

It is therefore remarkable that Brisbane appears to have no community targets, strategies, policies or measures for climate change mitigation.

The *Brisbane. Clean, Green, Sustainable* document is brief and lacks detail, and does not reference climate change at all.<sup>86</sup>

Further, it appears that Brisbane does not participate in any international initiatives, such as the Compact of Mayors.

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<sup>82</sup> City of Brisbane, *Brisbane. Clean, Green, Sustainable*, July 2017, 4<sup>th</sup> page (pages not numbered).

<sup>83</sup> Ibid, 7<sup>th</sup> page.

<sup>84</sup>

[https://www.brisbane.qld.gov.au/community-safety/grants-awards/environment-sustainability/sustainability-grants-2016-17-recipient](https://www.brisbane.qld.gov.au/community-safety/grants-awards/environment-sustainability/sustainability-grants/sustainability-grants-2016-17-recipient)

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<sup>85</sup> City of Brisbane, *Brisbane. Clean, Green, Sustainable*, July 2017, 4<sup>th</sup> page.

<sup>86</sup> The Lord Mayor's introduction says "I want to put ... climate resilience at the heart of all we do..." (2<sup>nd</sup> page).

## Conclusions

### Commitment

Our review of the strategies, policies and measures of Australia's capital cities reveals that there is a wide diversity of situations. Cities like Sydney, Canberra and Adelaide are showing real leadership, setting and achieving targets, and engaging extensively with their communities to help them achieve ambitious climate goals. All three are actively engaged in national and international abatement forums such as the Compact of Mayors, the C40 or the Carbon Neutral Cities Alliance. All three have reached out to their communities with extensive consultation processes, and allowed community views to guide their strategies and actions.

Melbourne and Perth have targets – ambitious ones in Melbourne's case – but they have not (yet) committed to measures that would enable these targets to be met. Both cities are engaged with international processes such as the Compact of Mayors, and the Carbon Neutral Cities Alliance in Melbourne's case. Melbourne's 2014 Update suggests it will rely extensively on offsets to reach its zero net emissions target by 2020.

The other capital cities – Hobart, Darwin and Brisbane – have internal or operational policies, and Hobart and Brisbane offset operational emissions. However, they do not have strategies for engaging with their communities, or policies and measures for influencing the path of community emissions. Some offer low-impact strategies such as support for community events, information or rebates.

Most cities are to be commended for transparent reporting of emissions and abatement strategies, although this falls away in the latter group above.

### Success Strategies

The leading group of Australian capital cities have unique strategies that have contributed to their success, and which reflect their diverse situations.

Sydney does not appear to have strong support from the NSW Government, and yet is large and powerful enough to work change in its own right, working directly with business and other stakeholders. It has an active advocacy program, and seeks to secure change at State and national levels, but is getting on with its own actions in the meantime. Its national leadership of the CitySwitch program is to be commended. Sydney also uses data, evidence and analysis-based strategies to guide its policies and measures, and maintains strong relationships with many partners in the abatement effort.

Canberra – effectively a city state – has powers and resources that other Australian cities do not. This has enabled it to set Australian records for the lowest price renewable energy in Australia, and to be well on-track from moving from close to 0%, a decade ago, to 100% renewable energy by 2020. Critically, it is able to access 'jurisdiction scheme' provisions of the National Energy Law, which have enabled it to contract large scale

renewable energy blocks on behalf of the community. Like Sydney, Canberra has long engaged in deliberative and evidence-based processes to shape successful abatement strategies, while its extensive community engagement, and notable transparency about the cost of abatement measures, appear to keep the community onside.

Adelaide's secret weapon is its partnership with the South Australian government. While Adelaide lacks the jurisdictional powers of the ACT, its jointly administered strategy with the SA Government means that it effectively has access to greater resources and policy leverage than cities like Sydney, for example. That said, we note that Adelaide is yet to announce a full set of policies that would enable it to meet its goal of being the world's first carbon neutral city, and it seems inevitable that it would need to rely on purchasing offsets to achieve this outcome. Still, it and the SA Government have longer term strategies in play – such as the high share of new renewable energy in Australia, and a joint commitment to derive economic as well as environmental value from their zero carbon strategies.

### Challenges

With the exception of Canberra, all of Australia's capital cities have limited legislative powers – with their respective state or territory governments determining the extent of this power. The majority of capital cities recognise this limitation, and call on states and the national government to provide a supportive policy environment.

The phenomenon noted in this paper, that some cities have, or appear to have, determined that they have a limited role or responsibility in helping to reduce their community's emissions footprint, is indicative of the wider lack of consistency and cohesion in Australia's climate policy. Roles and responsibilities are indeed poorly specified, and leadership on climate change mitigation remains optional for cities, despite the scientific evidence and widespread acknowledgement of the threat that climate change poses for cities, *inter alia*.

### Opportunities

Engagement of cities in international processes is likely to bring significant benefits. First, the status attaching to these processes provides an incentive for senior staff and elected officials alike. Second, these processes provide sources of expertise, funding (in some cases) and peer review and networking opportunities. Finally, they require a high standard of transparency with respect to emissions inventories, abatement strategies, and reporting of the impact of measures taken. For those cities not yet deeply engaged in leading community emissions abatement, participation in such forums may provide an effective, if indirect, pathway towards fuller engagement in future.

Second, the case of Adelaide and South Australia demonstrates the potential for capital cities to forge strong and productive alliances with their host states or

territories, thereby effectively extending their leverage over resources and emissions.

Finally, Canberra's winning renewable energy strategy give cause for thought. While other cities – like Melbourne and Sydney – are considering voluntary renewable energy procurement strategies, the voluntary nature of these will inevitably bring high transactions costs and risks of non-participation, when compared to the jurisdictionally-sanctioned ACT scheme. We note that, in principle, it should be possible for states and territories to pass enabling legislation – that would be recognised as a 'jurisdictional scheme' for the purposes of s. 6.18.7A(e) and s. 6.18.7A(l) of the National Energy Law – that would allow local governments to 'opt-in' to a renewable energy scheme. While a lack of alignment between local government boundaries and energy networks could create some additional participation costs – suggesting that state-wide, if not national, policies and measures would be likely to be more efficient – such schemes would be a significant enabler for local governments able to achieve a community mandate for making concrete progress on carbon abatement.



# Reference

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