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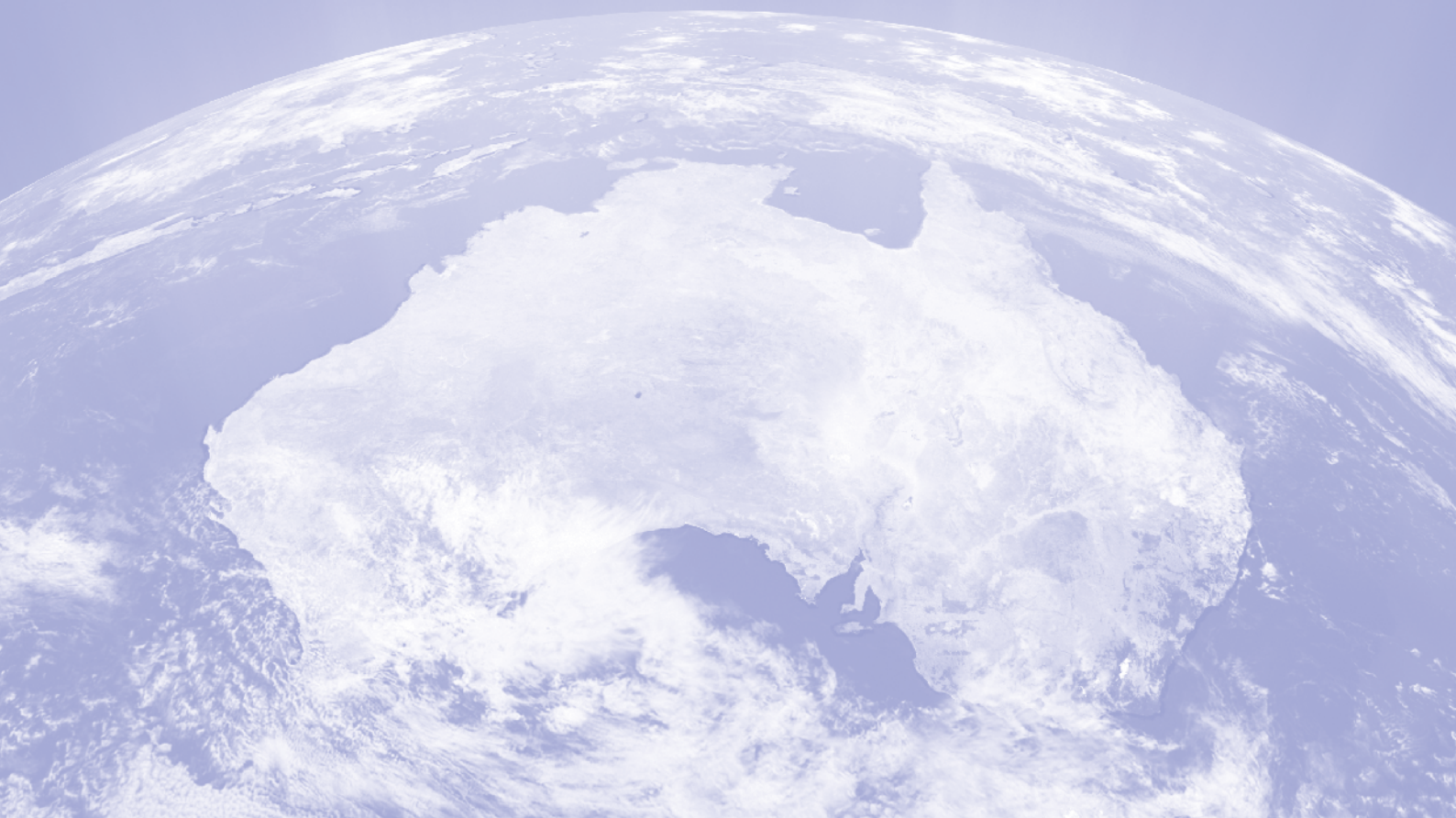
Yearbook 2018

Progress in Australian Regions



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Director — Publishing and Communications Section
Department of Infrastructure and Regional Development
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Email: publishing@infrastructure.gov.au

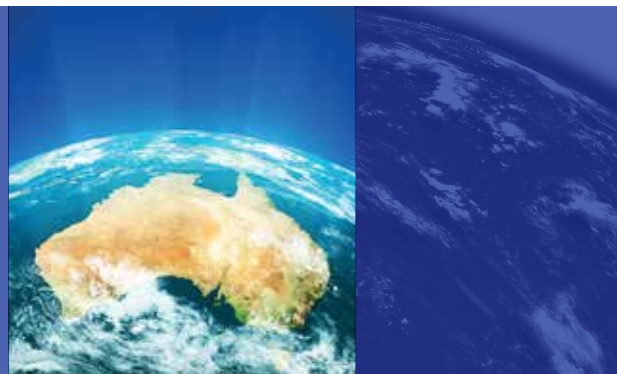
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Progress 3: Environment



The environment, both natural and built, is fundamental to the quality of life and sense of wellbeing of Australians, as well as providing key inputs to the economy. Australians have always valued the benefits provided by our environment, such as clean air, water and natural attractions such as the Great Barrier Reef, and most people would like to be able to pass on a healthy environment to future generations. Over recent times, people have become even more interested in monitoring the state of our environment.⁴⁸

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⁴⁸ Adapted from ABS 2013, *Measures of Australia's Progress* (cat. no. 1370.0), Canberra.

P 3.1 Healthy natural environment

P 3.1.1 Air pollution

Poor air quality can have a range of negative impacts on the community, causing health problems, damage to infrastructure, reducing crop yields and harming flora, fauna and wildlife.

The air quality index summarises the average level of several pollutants across major city 'airsheds' relative to their recommended levels. Airsheds can be impacted by several factors such as a lack of wind (to blow pollutants away), high levels of vehicle activity, industrial activity or natural causes such as bush fires.

Lower numbers in this index represent better air quality.

Air pollution across major airsheds

- The largest improvement in air quality between 2006 and 2016 was seen in Adelaide, with a decrease of 3 points in the air quality index, followed by Melbourne, which was down 2 points in the air quality index.
- The largest increase in air pollutants between 2006 and 2016 was in the Lower Hunter, where the air quality index increased by 2 points, followed by South East Queensland, where the air quality index increased by 1 point.

Table P 3.1.1.a Air pollution

Airshed	2006 air quality index	2011 air quality index	2016 air quality index	2006 - 2016 change air quality index
Sydney	26	21	25	-1
Illawarra	23	18	23	0
Lower Hunter	24	20	25	2
Melbourne	24	20	22	-2
South East Queensland	20	20	21	1
Townsville	n.p	n.p	n.p	n.p
Adelaide	25	23	22	-3
Perth	25	24	24	-1
Hobart	n.p	n.p	n.p	n.p
Darwin	n.p	n.p	n.p	n.p
Canberra	n.p	n.p	n.p	n.p

Source: National Sustainability Council 2013, Sustainable Australia Report 2013, Conversations with the Future; and BITRE 2018, Analysis of State and Territory Government annual reports (averages and indexing) under the National Environment Protection Measure for Ambient Air Quality (Air NEPM)

The figures presented in this table are the averaged Air Quality Indices of median concentrations for all measured pollutants (mean values are used for NO₂ (nitrogen dioxide) and SO₂ (sulfur dioxide) where no median is available). Excludes lead pollution.

The air quality index is calculated by dividing pollutant concentrations reported by the standard of maximum allowable concentrations set in the National Environment Protection (Ambient Air Quality) Measure (NEPM) and multiplying by 100. Full NEPM standards can be obtained from <http://www.environment.gov.au/protection/air-quality>; or <https://www.legislation.gov.au/Details/F2016C00215>

n.p. Not published as not all pollutants measured in these regions.

P 3.2 Appreciating the environment

P 3.2.1 Domestic trips involving nature activities

Australia's national landscapes include places of great cultural, natural and spiritual significance and many include World Heritage-listed sites. These natural assets provide unique opportunities for enjoyment, reflection and inspiration.⁴⁹

The number of domestic trips involving nature activities indicates how often Australians are taking up opportunities to appreciate the environment. However, this indicator does have some limitations. For example, it only includes trips (both overnight and day trips), so nature activities enjoyed closer to home are excluded.

- Between 2007 and 2017, the rate at which Australians engaged in domestic nature trips increased slightly from 3.1 to 3.5 visits per person per year.

Domestic trips involving nature activities across sub-state regions

- There is very little variation between Australia's capital cities and the total rest of state areas for people taking trips involving nature activities. In 2017, both the combined Australian capital cities and the rest of state areas recorded 3.5 trips per person per year.
- The majority of sub-state regions recorded an increase in the number of domestic nature trips taken per resident between 2007 and 2017.
- The largest increase was in the Southern Highlands and Shoalhaven, with an additional 2.2 trips per resident in 2017 compared to 2007. The largest decline was recorded in Queensland - Outback⁵⁰, with a decline of 1.9 trips per resident.

⁴⁹ Adapted from ABS 2013, *Measures of Australia's Progress* (cat. no. 1370.0), Canberra.

⁵⁰ The estimates for Queensland - Outback have relative standard errors between 25 per cent and 50 per cent and should be used with caution.

Table P 3.2.1.a Domestic visits involving nature activities by sub-state region

Sub-State Region	2007 visits per person	2012 visits per person	2017 visits per person	2007 - 2017 change visits per person
New South Wales	2.8	2.4	3.1	0.3
Greater Sydney	2.8	2.2	3.1	0.3
Central Coast	2.8	2.1	3.1	0.3
Sydney - Baulkham Hills and Hawkesbury	3.6	2.8	3.7	0.0
Sydney - Blacktown	2.4	2.4	2.7	0.2
Sydney - City and Inner South	2.5	1.4	3.9	1.3
Sydney - Eastern Suburbs	2.3	1.5	3.7	1.4
Sydney - Inner South West	1.8	1.5	2.1	0.3
Sydney - Inner West	3.6	2.1	3.4	-0.1
Sydney - North Sydney and Hornsby	3.7	2.7	3.7	0.0
Sydney - Northern Beaches	2.8	2.0	3.6	0.8
Sydney - Outer South West	3.6	3.0	3.7	0.1
Sydney - Outer West and Blue Mountains	3.5	3.3	3.7	0.3
Sydney - Parramatta	2.3	2.1	2.3	0.0
Sydney - Ryde	2.6	2.3	3.8	1.2
Sydney - South West	2.0	1.5	1.8	-0.2
Sydney - Sutherland	3.5	2.7	3.2	-0.3
Rest of New South Wales	2.8	2.8	3.1	0.3
Capital Region	2.7	3.0	3.3	0.6
Central West	2.3	2.0	3.2	0.9
Coffs Harbour - Grafton	3.9	4.0	3.2	-0.8
Far West and Orana	*2.1	*1.7	*1.9	-0.2
Hunter Valley exc Newcastle	3.0	3.5	3.4	0.3
Illawarra	3.0	2.9	2.8	-0.2
Mid North Coast	3.1	3.2	2.9	-0.2
Murray	*2.0	*1.9	*2.2	0.2
New England and North West	2.8	1.9	2.3	-0.5
Newcastle and Lake Macquarie	2.7	2.4	3.4	0.7
Richmond - Tweed	3.7	3.7	3.7	0.0
Riverina	*2.2	*2.0	*2.3	0.1
Southern Highlands and Shoalhaven	2.4	2.7	4.6	2.2
Victoria	2.9	2.7	3.5	0.6
Greater Melbourne	3.0	2.7	3.5	0.5
Melbourne - Inner	3.2	2.2	5.1	1.9
Melbourne - Inner East	4.1	3.9	4.1	0.0
Melbourne - Inner South	3.3	2.8	3.4	0.1
Melbourne - North East	2.8	2.7	3.2	0.4
Melbourne - North West	2.1	2.8	2.7	0.6
Melbourne - Outer East	3.3	3.6	4.4	1.0
Melbourne - South East	2.5	2.3	2.6	0.1
Melbourne - West	2.5	2.0	2.7	0.2
Mornington Peninsula	3.2	2.8	3.3	0.1
Rest of Victoria	2.8	2.9	3.8	1.0
Ballarat	3.6	2.6	4.0	0.4
Bendigo	2.9	3.2	4.1	1.2

(continued)

Domestic visits involving nature activities by sub-state region (continued)

Sub-State Region	2007 visits per person	2012 visits per person	2017 visits per person	2007 - 2017 change visits per person
Geelong	3.5	2.3	3.7	0.3
Hume	2.3	*3.3	3.3	1.0
Latrobe - Gippsland	2.9	3.8	4.1	1.2
North West	*2.6	*2.3	*3.0	0.4
Shepparton	*1.3	*2.0	*3.4	2.1
Warrnambool and South West	*2.2	*3.1	*4.1	1.9
Queensland	3.7	3.5	4.1	0.3
Greater Brisbane	4.4	4.0	4.7	0.3
Brisbane - East	3.7	4.3	5.2	1.5
Brisbane - North	5.0	5.0	4.5	-0.5
Brisbane - South	4.4	4.9	4.5	0.0
Brisbane - West	5.3	5.0	5.9	0.6
Brisbane Inner City	6.8	3.5	8.1	1.3
Ipswich	3.1	3.5	3.3	0.2
Logan - Beaudesert	3.5	2.7	3.5	0.0
Moreton Bay - North	3.7	3.6	3.5	-0.2
Moreton Bay - South	4.7	4.2	4.5	-0.2
Rest of Queensland	3.2	3.0	3.5	0.4
Cairns	3.4	3.9	4.5	1.1
Darling Downs - Maranoa	*3.8	*2.5	*2.7	-1.0
Central Queensland	5.3	3.5	4.4	-0.9
Gold Coast	2.1	1.9	3.2	1.1
Mackay - Isaac - Whitsunday	2.4	3.3	2.7	0.4
Queensland - Outback	*4.5	*1.2	*2.6	-1.9
Sunshine Coast	2.6	3.5	4.0	1.4
Toowoomba	3.8	4.3	3.9	0.2
Townsville	3.1	2.5	3.4	0.2
Wide Bay	3.5	3.8	3.1	-0.4
South Australia	2.8	2.6	3.1	0.3
Greater Adelaide	2.9	2.5	3.0	0.1
Adelaide - Central and Hills	3.7	3.3	3.9	0.2
Adelaide - North	2.6	2.0	2.8	0.2
Adelaide - South	2.9	3.0	2.8	-0.1
Adelaide - West	2.3	1.5	2.7	0.4
Rest of South Australia	2.7	2.9	3.5	0.8
Barossa - Yorke - Mid North	*2.7	*2.9	*3.3	0.6
South Australia - Outback	*2.7	*3.2	*3.8	1.0
South Australia - South East	2.7	2.8	3.4	0.8
Western Australia	2.7	2.2	3.5	0.7
Greater Perth	2.7	2.1	3.3	0.6
Mandurah	*3.3	*2.0	*2.6	-0.7
Perth - Inner	3.4	2.5	4.9	1.5
Perth - North East	2.3	2.2	2.6	0.3
Perth - North West	2.5	2.0	3.2	0.7
Perth - South East	2.6	2.0	3.5	0.9

(continued)

Domestic visits involving nature activities by sub-state region (continued)

<i>Sub-State Region</i>	<i>2007 visits per person</i>	<i>2012 visits per person</i>	<i>2017 visits per person</i>	<i>2007 - 2017 change visits per person</i>
Perth - South West	2.9	2.1	3.1	0.2
Rest of Western Australia	2.9	2.6	4.3	1.3
Bunbury	3.7	2.9	4.2	0.5
Western Australia - Wheat Belt	*2.7	*3.0	*4.4	1.6
Western Australia - Outback (North)	*2.2	*1.5	*4.1	1.9
Western Australia - Outback (South)	*2.7	*2.6	*4.3	1.6
Tasmania	3.8	3.2	4.3	0.5
Greater Hobart	4.3	3.7	4.5	0.2
Rest of Tasmania	3.4	2.9	4.1	0.7
Launceston and North East	3.7	3.5	4.2	0.5
South East	**2.8	**3.0	**4.4	
West and North West	*3.2	*2.2	*3.8	0.6
Northern Territory	3.3	2.8	4.5	1.2
Greater Darwin	4.2	3.5	5.1	0.8
Rest of Northern Territory	*2.2	*1.9	*3.7	1.5
Northern Territory - Outback	*2.2	*1.9	*3.7	1.5
Australian Capital Territory	2.9	2.6	3.2	0.3
Australian Capital Cities	3.1	2.7	3.5	0.4
Australian Rest of States	2.9	2.8	3.5	0.6
AUSTRALIA	3.1	2.7	3.5	0.4

Source: BITRE 2018, estimates based on Tourism Research Australia 2018, Unit record file custom report, National Visitor Survey; and ABS 2018, Regional Population Growth, Australia, 2016-17 (cat. no. 3218.0)

Sub-state regions are SA4 (2016 ASGS).

Australian rest of states does not include Other Territories.

Domestic visits involving nature activities estimates are defined at the 2016 ASGS SA2 scale (based on day and overnight stays) which contains the respondent's home region. This geographical allocation is not relative to the destination of the visit. These visit counts have then been aggregated to produce estimates at broader ASGS geographic scales.

Change may vary from annual figures due to rounding.

* Estimate has a relative standard error between 25% and 50% and should be used with caution.

** Estimate has a relative standard error greater than 50% and is considered too unreliable for general use.

P 3.3 Protecting the environment

P 3.3.1 Protected areas of land

The amount of land that is classed as a protected area, for example national parks or reserves, provides a measure of the direct protection of the natural environment. This indicator shows changes in the area protected, without showing how well these protected areas are managed to achieve their conservation/protection objectives.

Protecting the natural environment through the creation of protected areas is an important part of efforts to protect native flora, fauna, and wilderness areas and support the management and restoration of natural habitat.⁵¹

- As of 2016, 19.7 per cent of land in Australia was protected, reflecting an increase of 6.8 percentage points since 2008.

Protected areas of land across remoteness classes

- The proportion of land area that is protected is larger in the more remote areas of Australia. For example, 22.0 per cent of the land in very remote Australia is currently protected.
- The very remote areas of Australia also had the largest increase in the proportion of protected land area between 2008 and 2016, up by 9.1 percentage points.

Table P 3.3.1.a Protected areas of land by remoteness classes

Remoteness Class	2008 per cent	2012 per cent	2016 per cent	2008–2016 change percentage points
Major Cities	5.2	5.5	5.6	0.5
Inner Regional	10.5	11.0	11.0	0.5
Outer Regional	13.3	13.9	13.2	0.0
Remote	13.1	13.1	13.4	0.2
Very Remote	13.0	16.5	22.0	9.1
AUSTRALIA	12.9	15.6	19.7	6.8

Source: Department of the Environment and Energy 2016, Collaborative Australian Protected Area Databases, 2008, 2012 and 2016 Protected areas outlined in the Collaborative Australian Protected Area Database have been allocated to the 2016 ASGS remoteness area geographical classification.

Overlapping areas have been filtered from the original data source.

Figures published may differ from those published in Yearbook 2017 due to change in methodology.

Percentage point change may vary from annual figures due to rounding.

⁵¹ Adapted from ABS 2013, *Measures of Australia's Progress* (cat. no. 1370.0).

Protected areas of land across major urban areas

- The largest increase in the proportion of protected land area across the major urban areas was in Cairns which had an increase of 2.9 percentage points between 2008 and 2016. Other large increases occurred in Newcastle - Maitland (2.0 percentage points) and the Sunshine Coast (1.7 percentage points).
- Compared to other urban areas, Greater Sydney has a very high proportion of protected land, at 49.9 per cent as of 2016.

Table P 3.3.1.b Protected areas of land by major urban area

Major Urban Area	2008 per cent	2012 per cent	2016 per cent	2008–2016 change percentage points
Greater Sydney	48.9	49.7	49.9	1.0
Greater Melbourne	9.7	9.8	9.1	-0.6
Greater Brisbane	9.4	10.5	11.0	1.6
Greater Perth	8.5	8.6	9.3	0.8
Greater Adelaide	4.6	4.7	4.7	0.1
Gold Coast - Tweed Heads	6.0	6.4	6.5	0.5
Newcastle - Maitland	7.0	8.4	9.0	2.0
Canberra - Queanbeyan	9.9	10.0	10.3	0.3
Sunshine Coast	15.9	17.5	17.6	1.7
Wollongong	12.8	13.1	12.9	0.1
Geelong	4.9	5.8	5.8	0.9
Greater Hobart	11.1	12.2	12.6	1.5
Townsville	4.9	4.9	4.9	0.0
Cairns	12.4	15.0	15.3	2.9
Greater Darwin	11.0	11.0	11.3	0.3
Toowoomba	0.0	0.0	0.0	0.0
Ballarat	0.6	0.6	0.6	0.0
Bendigo	10.6	10.6	10.6	0.0
Albury - Wodonga	1.2	1.2	1.2	0.0
Launceston	2.7	2.9	3.1	0.4

Source: Department of the Environment and Energy 2016, Collaborative Australian Protected Area Databases, 2008, 2012 and 2016

Protected areas outlined in the Collaborative Australian Protected Area Database and have been allocated to 2016 ASGS geographical classifications.

The major urban areas of Sydney, Melbourne, Brisbane, Adelaide, Perth, Hobart and Darwin are based on the ASGS Greater Capital City Statistical Area (GCCSA) classification. All other major urban areas are based on the 2016 ASGS Significant Urban Area (SUA) classification. Overlapping areas have been filtered from the original data source.

Figures published may differ from those published in Yearbook 2017 due to change in methodology.

Percentage point change may vary from annual figures due to rounding.

Protected areas of land across sub-state regions

- In 2016, the sub-state region with the highest proportion of protected land area was Sydney - Outer West and Blue Mountains, at 75.0 per cent.
- Between 2006 and 2016, the majority of sub-state regions recorded an increase in protected land areas. The largest increase was in Brisbane - East, with an increase of 19.9 percentage points, while the largest decline was in Latrobe - Gippsland, with a decline of 11.4 percentage points.

Table P 3.3.1.c Protected areas of land by sub-state region

Sub-State Region	2008 per cent	2012 per cent	2016 per cent	2008–2016 change percentage points
New South Wales	8.7	9.3	9.7	1.0
Greater Sydney	48.9	49.7	49.9	1.0
Central Coast	27.5	30.8	31.8	4.3
Sydney - Baulkham Hills and Hawkesbury	62.0	62.9	62.9	0.9
Sydney - Blacktown	1.9	1.8	2.8	0.8
Sydney - City and Inner South	0.1	0.1	0.1	0.0
Sydney - Eastern Suburbs	2.5	2.8	3.7	1.3
Sydney - Inner South West	1.4	1.5	1.5	0.1
Sydney - Inner West	0.0	0.0	0.0	0.0
Sydney - North Sydney and Hornsby	38.3	38.3	38.3	0.0
Sydney - Northern Beaches	44.7	44.7	45.0	0.2
Sydney - Outer South West	15.6	15.7	15.7	0.1
Sydney - Outer West and Blue Mountains	74.4	75.0	75.0	0.6
Sydney - Parramatta	0.3	0.3	0.3	0.0
Sydney - Ryde	7.6	8.3	8.3	0.6
Sydney - South West	1.8	0.9	0.9	-0.9
Sydney - Sutherland	57.8	57.8	57.8	0.0
Rest of New South Wales	8.0	8.7	9.1	1.0
Capital Region	18.9	19.7	19.9	1.0
Central West	7.0	7.5	7.6	0.6
Coffs Harbour - Grafton	22.1	25.2	28.9	6.9
Far West and Orana	4.4	4.8	5.0	0.6
Hunter Valley exc Newcastle	20.4	21.3	21.9	1.6
Illawarra	23.1	23.9	23.9	0.7
Mid North Coast	21.9	23.9	25.7	3.8
Murray	4.4	4.7	5.7	1.3
New England and North West	8.2	8.7	9.4	1.2
Newcastle and Lake Macquarie	12.5	14.5	15.7	3.2
Richmond - Tweed	14.1	15.2	16.2	2.1
Riverina	9.2	10.4	10.4	1.2
Southern Highlands and Shoalhaven	40.7	41.7	41.7	1.1
Victoria	22.2	22.6	17.2	-4.9
Greater Melbourne	9.7	9.8	9.1	-0.6
Melbourne - Inner	0.0	0.0	0.0	0.0
Melbourne - Inner East	0.0	0.0	0.0	0.0
Melbourne - Inner South	0.0	0.0	0.0	0.0
Melbourne - North East	13.9	13.9	12.9	-1.0
Melbourne - North West	3.0	3.0	2.9	-0.1
Melbourne - Outer East	22.2	22.2	19.5	-2.7
Melbourne - South East	8.3	8.4	8.1	-0.1
Melbourne - West	3.2	3.3	3.1	-0.1
Mornington Peninsula	5.1	5.2	6.3	1.3
Rest of Victoria	22.7	23.2	17.6	-5.1
Ballarat	5.3	5.3	4.8	-0.5
Bendigo	5.5	5.6	5.5	0.0

(continued)

Protected areas of land by sub-state region (continued)

Sub-State Region	2008 per cent	2012 per cent	2016 per cent	2008-2016 change percentage points
Geelong	10.3	10.5	10.4	0.1
Hume	19.8	19.9	16.7	-3.1
Latrobe - Gippsland	35.4	35.6	24.0	-11.4
North West	29.7	30.4	22.9	-6.9
Shepparton	3.6	6.9	5.8	2.2
Warrnambool and South West	10.4	10.5	9.5	-0.9
Queensland	6.0	7.5	8.4	2.5
Greater Brisbane	9.4	10.5	11.0	1.6
Brisbane - East	3.8	24.2	23.6	19.9
Brisbane - North	0.0	0.0	0.0	0.0
Brisbane - South	0.1	1.0	1.2	1.1
Brisbane - West	15.0	14.8	15.2	0.2
Brisbane Inner City	0.0	0.0	0.0	0.0
Ipswich	8.4	8.6	9.0	0.6
Logan - Beaudesert	4.9	5.1	5.1	0.2
Moreton Bay - North	14.1	14.2	15.5	1.4
Moreton Bay - South	16.8	17.3	18.0	1.1
Rest of Queensland	5.9	7.5	8.4	2.5
Cairns	37.6	41.1	43.1	5.5
Darling Downs - Maranoa	1.6	1.7	1.7	0.1
Central Queensland	6.2	7.2	7.2	0.9
Gold Coast	18.3	18.9	19.5	1.2
Mackay - Isaac - Whitsunday	3.0	3.5	3.8	0.8
Queensland - Outback	6.0	8.0	9.3	3.3
Sunshine Coast	18.9	19.9	20.1	1.2
Toowoomba	8.2	8.2	8.2	0.0
Townsville	5.3	5.8	5.9	0.6
Wide Bay	9.3	9.4	9.5	0.2
South Australia	26.3	29.8	30.0	3.8
Greater Adelaide	4.6	4.7	4.7	0.1
Adelaide - Central and Hills	5.0	5.1	5.1	0.1
Adelaide - North	2.6	2.7	2.7	0.1
Adelaide - South	6.8	6.7	6.8	-0.1
Adelaide - West	3.6	3.6	3.7	0.1
Rest of South Australia	26.4	29.9	30.1	3.8
Barossa - Yorke - Mid North	1.8	1.9	2.0	0.2
South Australia - Outback	28.4	32.3	32.6	4.2
South Australia - South East	13.2	13.5	13.7	0.5
Western Australia	14.4	14.5	23.2	8.8
Greater Perth	8.5	8.6	9.3	0.8
Mandurah	8.1	8.2	8.4	0.3
Perth - Inner	0.2	0.3	0.3	0.0
Perth - North East	9.6	10.0	11.5	1.9
Perth - North West	6.9	6.8	6.8	0.0
Perth - South East	10.0	10.1	10.8	0.8

(continued)

Protected areas of land by sub-state region (continued)

Sub-State Region	2008 per cent	2012 per cent	2016 per cent	2008-2016 change percentage points
Perth - South West	4.3	4.3	4.3	0.0
Rest of Western Australia	14.4	14.5	23.3	8.9
Bunbury	25.7	26.1	26.1	0.5
Western Australia - Wheat Belt	11.1	10.3	10.7	-0.4
Western Australia - Outback (North)	9.1	9.4	25.5	16.4
Western Australia - Outback (South)	18.3	18.3	23.5	5.3
Tasmania	38.6	40.2	41.8	3.2
Greater Hobart	11.1	12.2	12.6	1.5
Rest of Tasmania	39.3	40.9	42.5	3.2
Launceston and North East	20.2	22.3	22.1	1.9
South East	42.3	43.4	48.0	5.7
West and North West	53.1	54.7	54.8	1.7
Northern Territory	9.0	18.9	25.2	16.2
Greater Darwin	11.0	11.0	11.3	0.3
Rest of Northern Territory	9.0	18.9	25.2	16.2
Northern Territory - Outback	9.0	18.9	25.2	16.2
Australian Capital Territory	54.9	55.0	55.5	0.6
Australian Capital Cities	20.0	20.6	20.8	0.7
Australian Rest of States	12.9	15.6	19.7	6.8

Source: Department of the Environment and Energy 2016, Collaborative Australian Protected Area Databases, 2008, 2012 and 2016

Protected areas outlined in the Collaborative Australian Protected Area Database and have been allocated to 2016 ASGS geographical classifications.

Based on 2016 ASGS geographical classification.

Overlapping areas have been filtered from the original data source.

Figures published may differ from those published in Yearbook 2017 due to change in methodology.

Percentage point change may vary from annual figures due to rounding.

P 3.4 Sustaining the environment

P 3.4.1 Greenhouse gas emissions from road transport

Changes in greenhouse gas emissions from road transport can be linked to changes in vehicle use or fuel efficiency. As some areas have relatively high through traffic or visitor traffic, this is not a direct indicator of greenhouse gas emissions attributable to residents of each region.

Reductions in greenhouse emissions are likely to reflect increased efforts to combat the human impact that Australia is contributing towards climate change. Greenhouse gas emissions from road transport are a significant component of total emissions and reducing them is an important part of managing the environment sustainably.⁵²

Due to limits in the availability of data at the small geographic scale, the information on greenhouse gas emissions from road transport has been derived using modelling and estimation techniques. The resulting values are only approximate and should be used with caution.

Greenhouse gas emissions from road transport across capital cities

- Between 2006 and 2016, greenhouse gas emissions from road transport in Sydney, Melbourne, Brisbane, Perth and Darwin increased by over 10 per cent. Emissions in Adelaide and Canberra increased by less than 10 per cent.
- The net result across all capitals was an increase of 5,408 gigagrams of CO₂-equivalent (carbon dioxide equivalent) emissions, representing a rise of roughly 12.5 per cent over a 10 year period. The largest increase in emissions occurred in Melbourne followed by Sydney.

Table P 3.4.1.a Greenhouse gas emissions (CO₂-e) from road transport by capital city

Capital Cities	2006 gigagrams CO ₂ equivalent	2011 gigagrams CO ₂ equivalent	2016 gigagrams CO ₂ equivalent	2006 - 2016 change gigagrams CO ₂ equivalent
Sydney	12,871	13,616	14,272	1,401
Melbourne	12,281	13,134	13,943	1,662
Brisbane	7,147	7,854	8,433	1,286
Adelaide	3,373	3,366	3,428	55
Perth	5,346	5,783	6,214	868
Hobart	662	664	654	-8
Darwin	335	372	392	57
Canberra	1,135	1,181	1,222	87
Australian Capital Cities	43,151	45,970	48,559	5,408

Source: BITRE 2017, Unpublished estimates of gigagrams of full fuel cycle (FFC) CO₂-equivalent emissions (for direct gases CO₂, CH₄ and N₂O) from road vehicles operating within each capital city

Gigagrams of full fuel cycle CO₂ (carbon dioxide), CH₄ (methane) and N₂O (nitrous oxide) emitted by road vehicles operating within each capital city. Full fuel cycle (FFC) includes upstream emissions (e.g. petrol refining) as well as emissions from direct fuel combustion (in vehicle).

For the calculation of city-based emissions, basic source data (such as on-road fuel consumption) are rarely available at smaller geographic scales than state or territory level. These estimates have been derived using modelling and/or rough estimation techniques sourced from late 2016. The resulting values are only approximate.

⁵² Adapted from ABS 2013, *Measures of Australia's Progress* (cat. no. 1370.0), Canberra.

P 3.5 Healthy built environments

P 3.5.1 Average commuting time

Changes in average commuting times for a city or region can indicate how well a transport network is enabling residents to travel to their jobs. Changes in this commuting time indicator, together with changes in the subjective indicator of road network quality, provide a guide as to whether the transport network is enabling people to more efficiently move around their city or region.

Travel times illustrate the impact of transport infrastructure on individuals. More time spent commuting can impact negatively on the health and wellbeing of people who live in cities, as longer commutes are associated with higher stress levels, less time spent with family and reduced life satisfaction.⁵³

Average commuting time across remoteness classes

- Major cities continue to have higher average commuting times than inner or outer regional areas, with an average commute time of 32.9 minutes.
- Outer regional areas saw the largest increase in average commuting times between 2006 and 2016 (by 3.3 minutes from 19.8 minutes to 23.1 minutes).

Table P 3.5.1.a Average commuting time by remoteness class

Remoteness Class	2006 minutes	2011 minutes	2016 minutes	2006–2016 change minutes
Major Cities	29.9	31.5	32.9	3.0
Inner Regional	21.7	24.0	24.2	2.5
Outer Regional	19.8	19.7	23.1	3.3
Remote	n.p.	10.7	n.p.	0.0
Very Remote	n.p.	n.p.	n.p.	0.0

Source: BITRE 2018, Analysis of Melbourne Institute 2017, Unit record data, *Household, Income and Labour Dynamics in Australia (HILDA) Survey*, Melbourne.

Remoteness Area classification is based on the 2016 ASGS.

The HILDA survey sample stratification of its reference population excludes people living in remote and sparsely populated areas. Data is not available for remote and very remote areas. http://melbourneinstitute.unimelb.edu.au/__data/assets/pdf_file/0007/2194342/HILDA_User_Manual_Release_15.0.pdf

Average commuting trip duration is calculated for each employed individual by dividing the time spent commuting to and from work in a typical week by the estimated number of commuting trips in a typical week (which is estimated based on reported work schedules and days of work).

This is an average one-way commuting time for all employed persons who reported a non-zero commuting time. Commuting trip durations of more than 240 minutes were top-coded to 240 minutes. Data has been weighted so as to be representative of total in-scope population.

n.p. Not published.

The HILDA Project was initiated and is funded by the Australian Government Department of Social Services (DSS) and is managed by the Melbourne Institute of Applied Economic and Social Research (Melbourne Institute).

Percentage point change may vary from annual figures due to rounding.

⁵³ Victoria Health Promotion Foundation 2012, *Commute time, Indicator Overview*, VicHealth Indicators Survey.

Average commuting time across capital cities and balance of state

- Across most of Australia average commuting times were higher in capital cities compared with the rest of the state.
- The largest difference between a capital city and the other areas of the state was in New South Wales, where average commuting times in the capital were 13.6 minutes longer in 2016.
- The largest improvement in average commuting times between 2006 and 2016 was seen in the rest of Western Australia (down 3.8 minutes). By contrast, the largest increase in average commute times was in the Greater Brisbane (up by 4.8 minutes).
- The lowest increase was recorded in the rest of Victoria, with an increase of 1.3 minutes.

Table P 3.5.1.b Average commuting time by capital city/balance of state

Capital City / Balance of State	2006 minutes	2011 minutes	2016 minutes	2006–2016 change minutes
Greater Sydney	35.3	35.4	38.0	2.7
Rest of New South Wales	20.6	24.0	24.4	3.8
Greater Melbourne	30.6	32.9	34.3	3.7
Rest of Victoria	23.8	24.3	25.1	1.3
Greater Brisbane	28.5	31.8	33.4	4.8
Rest of Queensland	22.4	23.2	25.7	3.3
Greater Adelaide	26.6	26.5	26.1	-0.4
Rest of South Australia	19.6	18.3	23.0	3.4
Greater Perth	26.9	29.6	28.7	1.8
Rest of Western Australia	19.7	16.2	15.9	-3.8
Tasmania*	20.8	22.4	22.1	1.4
Northern Territory	n.p.	n.p.	n.p.	n.p.
Australian Capital Territory	21.9	25.7	25.0	3.1
Australian Capital Cities	30.2	31.9	33.3	3.1
Australian Rest of States	21.6	22.8	24.2	2.5

Source: BITRE 2018, Analysis of Melbourne Institute 2017, Unit record data, *Household, Income and Labour Dynamics in Australia (HILDA) Survey*, Melbourne.

Average commute times are based on the 2016 Australian Statistical Geography Standard (ASGS) Greater Capital City Statistical Areas.

Average commuting trip duration is calculated for each employed individual by dividing the time spent commuting to and from work in a typical week by the estimated number of commuting trips in a typical week (which is estimated based on reported work schedules and days of work). This is an average one-way commuting time for all employed persons who reported a non-zero commuting time. Commuting trip durations of more than 240 minutes were top-coded to 240 minutes. Data in table is weighted so as to be representative of total in-scope population.

* Data available only at the state or territory level.

Hobart and Darwin are included in the Australian capital city total, and are based on postcode aggregation to ASGS GCCSAs.

n.p. Not published.

The HILDA Project was initiated and is funded by the Australian Government Department of Social Services (DSS) and is managed by the Melbourne Institute of Applied Economic and Social Research (Melbourne Institute).

Percentage point change may vary from annual figures due to rounding.

P 3.5.2 Active travel

Increasing rates of active travel have health benefits for individuals and positive impacts for the environment and communities. People using active travel for short trips increase their levels of physical activity, while also helping reduce road congestion and transport-related greenhouse gas emissions. For this indicator, active travel has been defined as exclusively walking or cycling as a journey to work mode.

The planning and design of built environments affects the rates of walking and cycling for transport. Specific features of neighbourhoods, towns and cities, such as road networks, footpaths, cycle ways, quality open space, density and land use mix that offers good accessibility to a range of goods and services are associated with an increased rate of walking and cycling for transport.⁵⁴

- Australians are using active travel by walking slightly less in 2016 compared to 2006, with a 0.7 percentage point decline in the proportion of people walking to work (3.9 per cent), while the proportion of people cycling remained unchanged over this period at 1.1 per cent.

Active travel across remoteness classes

- Between 2006 and 2016 active travel by bicycle and walking declined for all remote classes with the exception of major cities, where the proportion of cycling as a journey to work mode increased marginally by 0.1 percentage points.
- The largest declines in walking occurred in very remote Australia, which was down by 9.2 percentage points over the decade. While this decline was large, very remote regions have the highest walking rates in Australia (20.7 per cent in 2016).

Table P 3.5.2.a Active travel by bicycle or walking by remoteness class

Remoteness Class	2006 per cent	2011 per cent	2016 per cent	2006 - 2016 change percentage points
Bicycle Only				
Major Cities	1.1	1.2	1.2	0.1
Inner Regional	1.1	0.9	0.7	-0.4
Outer Regional	1.4	1.2	1.0	-0.4
Remote	1.9	1.6	1.7	-0.2
Very Remote	1.8	1.6	1.5	-0.3
AUSTRALIA	1.1	1.2	1.1	0.0
Walked Only				
Major Cities	3.7	3.6	3.5	-0.2
Inner Regional	5.2	4.5	3.9	-1.3
Outer Regional	6.9	6.0	5.2	-1.7
Remote	11.5	10.1	9.0	-2.5
Very Remote	29.9	24.8	20.7	-9.2
AUSTRALIA	4.6	4.2	3.9	-0.7

Source: ABS 2018, Customised report, Census of Population and Housing, Australia

Geography is based on the 2016 ASGS.

Data based on place of usual residence.

Calculation excludes Not Stated category from the denominator.

Yearbook 2018 and Yearbook 2017 data have been sourced from the ABS Census of Population and Housing, which may impact the comparability between Yearbook 2016 published data, which was sourced from ABS, Waste Management, Transport and Motor Vehicle Survey.

⁵⁴ Giles-Corti B., Ryan K., Foster S. 2012, *Increasing density in Australia: maximising the health benefits and minimising harm*, Report to the National Heart Foundation of Australia, Melbourne.

Active travel across major urban areas

- The Canberra - Queanbeyan region had the highest rate of cycling in 2016 at 2.7 per cent, while Wollongong had the lowest at 0.6 per cent.
- The proportion of people cycling to work increased across five of eight capital city regions between 2006 and 2016, with the largest increase recorded in the Canberra - Queanbeyan urban area. In contrast, almost universal declines for cycling in non-capital major urban areas occurred between 2006 and 2016, with the largest fall occurring in Townsville (1.3 percentage points).
- In 2016, Greater Hobart had the highest rate of travel to work by walking (6.3 per cent). Greater Perth was the least active urban population in terms of walking (2.3 per cent).
- The only increase in the rate of travel to work by walking between 2006 and 2016 occurred in the Canberra - Queanbeyan region (an increase of 0.3 percentage points over the decade). The most pronounced decreases in the rate of walking occurred in Bendigo (1.3 percentage points) and Townsville (1.2 percentage points).

Table P 3.5.2.b Active travel by bicycle or walking by major urban area

Major Urban Area	2006 per cent	2011 per cent	2016 per cent	2006 - 2016 change percentage points
Bicycle Only				
Greater Sydney	0.6	0.8	0.8	0.2
Greater Melbourne	1.3	1.5	1.6	0.3
Greater Brisbane	1.0	1.2	1.2	0.2
Greater Perth	1.1	1.2	1.1	0.0
Greater Adelaide	1.4	1.3	1.3	-0.1
Gold Coast - Tweed Heads	1.1	1.0	0.9	-0.2
Newcastle - Maitland	1.1	1.0	1.0	-0.1
Canberra - Queanbeyan	2.3	2.5	2.7	0.4
Sunshine Coast	1.2	1.0	0.9	-0.3
Wollongong	0.9	0.7	0.6	-0.3
Geelong	1.2	1.1	0.9	-0.3
Greater Hobart	1.1	1.1	1.3	0.2
Townsville	3.0	2.3	1.7	-1.3
Cairns	3.0	2.5	2.2	-0.8
Greater Darwin	3.1	3.0	2.3	-0.8
Toowoomba	1.3	1.0	0.9	-0.4
Ballarat	1.5	1.1	0.8	-0.7
Bendigo	1.7	1.2	1.0	-0.7
Albury - Wodonga	1.7	1.3	1.0	-0.7
Launceston	0.8	0.7	0.8	0.0
Walked Only				
Greater Sydney	4.7	4.6	4.4	-0.3
Greater Melbourne	3.4	3.3	3.3	-0.1
Greater Brisbane	3.5	3.5	3.2	-0.3
Greater Perth	2.5	2.6	2.3	-0.2
Greater Adelaide	3.1	2.8	2.5	-0.6
Gold Coast - Tweed Heads	3.3	3.2	2.9	-0.4
Newcastle - Maitland	3.4	2.9	2.7	-0.7
Canberra - Queanbeyan	4.5	4.5	4.8	0.3
Sunshine Coast	3.8	3.6	2.8	-1.0
Wollongong	3.4	3.2	2.9	-0.5
Geelong	3.8	3.4	2.9	-0.9
Greater Hobart	7.3	6.3	6.3	-1.0
Townsville	4.2	3.2	3.0	-1.2
Cairns	4.0	4.1	3.6	-0.4
Greater Darwin	5.4	5.5	4.3	-1.1
Toowoomba	4.4	4.0	3.4	-1.0
Ballarat	4.4	3.9	3.4	-1.0
Bendigo	4.9	4.0	3.6	-1.3
Albury - Wodonga	5.0	4.4	4.0	-1.0
Launceston	6.2	5.5	5.3	-0.9

Source: ABS 2017, Customised report, Census of Population and Housing, Australia

The major urban areas of Sydney, Melbourne, Brisbane, Adelaide, Perth, Hobart and Darwin are based on the 2016 ASGS Greater Capital City Statistical Area (GCCSA) classification. All other major urban areas are based on the 2016 ASGS Significant Urban Area (SUA) classification. Data based on place of usual residence.

Calculation excludes Not Stated category from the denominator.

Yearbook 2018 and Yearbook 2017 data have been sourced from the ABS Census of Population and Housing, which may impact the comparability between Yearbook 2016 published data, which was sourced from ABS, Waste Management, Transport and Motor Vehicle Survey.

Active travel across sub-state regions

- Across the sub-state regions, the majority of the increases in the cycling rate occurred in a small number of urban areas, particularly in Sydney, Melbourne and Brisbane. Over the 10 years from 2006 and 2016, the largest increase in cycling occurred in Melbourne - Inner (1.7 percentage points), which also recorded the highest proportion of people cycling to work in 2016 (6.2 per cent).
- Regional areas recorded the largest declines in cycling, with the largest drop among Statistical Area Level 4 regions occurring in Shepparton and Townsville (1.0 percentage points). However, several sub-state areas in Greater Sydney recorded the lowest rates of cycling in 2016, with just 0.2 percent of the population cycling to work (Sydney - Baulkham Hills and Hawkesbury; Sydney - Blacktown; Sydney - Outer South West; and Sydney - South West).
- Across the sub-state regions the proportion of people walking to work predominantly declined between 2006 and 2016. The biggest declines among the Statistical Area Level 4 regions were in Western Australia - Outback (North) (down 6.9 percentage points), Queensland - Outback (down 6.1 percentage points), and Northern Territory - Outback (6.1 percentage points).
- Across the sub-state regions, just five regions recorded slight increases in rates of people walking between 2006 and 2016, with increases in Perth - Inner (0.8 percentage points), Melbourne - Inner (0.7 percentage points), Brisbane Inner City (0.5 percentage points), Melbourne - Inner East (0.2 percentage points), and Australian Capital Territory (0.2 percentage points).

Table P 3.5.2.c Active travel by bicycle or walking by sub-state region

<i>Sub-State Region</i>	<i>2006 per cent</i>	<i>2011 per cent</i>	<i>2016 per cent</i>	<i>2006 - 2016 change percentage points</i>
<i>Bicycle Only</i>				
New South Wales	0.8	0.8	0.8	0.0
Greater Sydney	0.6	0.8	0.8	0.2
Central Coast	0.5	0.3	0.3	-0.2
Sydney - Baulkham Hills and Hawkesbury	0.2	0.2	0.2	0.0
Sydney - Blacktown	0.4	0.3	0.2	-0.2
Sydney - City and Inner South	2.0	3.2	3.1	1.1
Sydney - Eastern Suburbs	1.3	2.1	2.2	0.9
Sydney - Inner South West	0.4	0.3	0.3	-0.1
Sydney - Inner West	1.0	1.5	1.4	0.4
Sydney - North Sydney and Hornsby	0.6	1.0	0.8	0.2
Sydney - Northern Beaches	0.8	1.1	1.1	0.3
Sydney - Outer South West	0.3	0.2	0.2	-0.1
Sydney - Outer West and Blue Mountains	0.6	0.4	0.3	-0.3
Sydney - Parramatta	0.5	0.4	0.4	-0.1
Sydney - Ryde	0.5	0.7	0.6	0.1
Sydney - South West	0.4	0.3	0.2	-0.2
Sydney - Sutherland	0.5	0.5	0.4	-0.1
Rest of New South Wales	1.0	0.8	0.7	-0.3
Capital Region	0.6	0.5	0.5	-0.1
Central West	0.8	0.5	0.4	-0.4
Coffs Harbour - Grafton	1.6	1.4	1.0	-0.6
Far West and Orana	0.9	0.7	0.5	-0.4
Hunter Valley exc Newcastle	0.5	0.4	0.3	-0.2
Illawarra	0.9	0.7	0.6	-0.3
Mid North Coast	1.0	0.7	0.6	-0.4
Murray	1.5	1.1	0.8	-0.7
New England and North West	0.8	0.6	0.5	-0.3
Newcastle and Lake Macquarie	1.2	1.2	1.2	0.0
Richmond - Tweed	1.4	1.4	1.2	-0.2
Riverina	0.9	0.8	0.5	-0.4
Southern Highlands and Shoalhaven	0.8	0.7	0.6	-0.2
Victoria	1.3	1.4	1.4	0.1
Greater Melbourne	1.3	1.5	1.6	0.3
Melbourne - Inner	4.5	5.9	6.2	1.7
Melbourne - Inner East	1.1	1.4	1.3	0.2
Melbourne - Inner South	1.3	1.5	1.5	0.2
Melbourne - North East	0.8	0.9	0.9	0.1
Melbourne - North West	0.5	0.5	0.5	0.0
Melbourne - Outer East	0.5	0.4	0.3	-0.2
Melbourne - South East	0.5	0.4	0.3	-0.2
Melbourne - West	0.7	0.8	0.8	0.1
Mornington Peninsula	0.5	0.4	0.4	-0.1
Rest of Victoria	1.3	1.0	0.8	-0.5
Ballarat	1.1	0.9	0.6	-0.5

(continued)

Active travel by bicycle or walking by sub-state region (continued)

<i>Sub-State Region</i>	<i>2006 per cent</i>	<i>2011 per cent</i>	<i>2016 per cent</i>	<i>2006 - 2016 change percentage points</i>
<i>Bicycle Only</i>				
Bendigo	1.3	1.0	0.9	-0.4
Geelong	1.1	1.0	0.9	-0.2
Hume	1.6	1.1	0.9	-0.7
Latrobe - Gippsland	0.9	0.8	0.6	-0.3
North West	1.4	1.0	0.7	-0.7
Shepparton	1.9	1.2	0.9	-1.0
Warrnambool and South West	1.4	1.0	0.8	-0.6
Queensland	1.3	1.2	1.1	-0.2
Greater Brisbane	1.0	1.2	1.2	0.2
Brisbane - East	0.6	0.6	0.6	0.0
Brisbane - North	1.1	1.1	1.0	-0.1
Brisbane - South	1.1	1.5	1.6	0.5
Brisbane - West	1.5	2.1	2.5	1.0
Brisbane Inner City	2.4	3.1	3.5	1.1
Ipswich	0.5	0.4	0.4	-0.1
Logan - Beaudesert	0.5	0.4	0.3	-0.2
Moreton Bay - North	0.8	0.6	0.5	-0.3
Moreton Bay - South	0.5	0.5	0.4	-0.1
Rest of Queensland	1.5	1.2	1.0	-0.5
Cairns	2.5	2.2	1.8	-0.7
Darling Downs - Maranoa	1.2	0.9	0.7	-0.5
Central Queensland	1.5	1.0	0.7	-0.8
Gold Coast	1.1	1.0	0.9	-0.2
Mackay - Isaac - Whitsunday	1.5	1.1	0.9	-0.6
Queensland - Outback	1.9	1.7	1.4	-0.5
<i>Far North</i>	2.1	1.8	1.3	-0.8
<i>Outback - North</i>	1.9	1.6	1.3	-0.6
<i>Outback - South</i>	1.8	1.7	1.7	-0.1
Sunshine Coast	1.1	0.9	0.9	-0.2
Toowoomba	1.2	0.9	0.8	-0.4
Townsville	2.5	2.0	1.5	-1.0
Wide Bay	1.6	1.1	0.8	-0.8
South Australia	1.3	1.2	1.1	-0.2
Greater Adelaide	1.4	1.3	1.3	-0.1
Adelaide - Central and Hills	2.1	2.1	2.4	0.3
Adelaide - North	0.7	0.6	0.5	-0.2
Adelaide - South	1.2	1.1	1.0	-0.2
Adelaide - West	2.2	1.8	1.7	-0.5
Rest of South Australia	1.0	0.7	0.6	-0.4
Barossa - Yorke - Mid North	1.0	0.7	0.5	-0.5
South Australia - Outback	1.2	1.0	0.8	-0.4
<i>Eyre Peninsula and South West</i>	1.5	1.2	0.8	-0.7
<i>Outback - North and East</i>	0.8	0.7	0.7	-0.1
South Australia - South East	1.0	0.6	0.5	-0.5

(continued)

Active travel by bicycle or walking by sub-state region (continued)

<i>Sub-State Region</i>	<i>2006 per cent</i>	<i>2011 per cent</i>	<i>2016 per cent</i>	<i>2006 - 2016 change percentage points</i>
<i>Bicycle Only</i>				
Western Australia	1.1	1.2	1.1	0.0
Greater Perth	1.1	1.2	1.1	0.0
Mandurah	0.7	0.6	0.4	-0.3
Perth - Inner	2.8	3.4	3.6	0.8
Perth - North East	0.9	1.0	1.0	0.1
Perth - North West	0.7	0.8	0.7	0.0
Perth - South East	1.1	1.2	1.0	-0.1
Perth - South West	1.0	1.1	1.1	0.1
Rest of Western Australia	1.3	1.2	1.1	-0.2
Bunbury	1.0	0.9	1.0	0.0
Western Australia - Wheat Belt	0.9	0.7	0.7	-0.2
Western Australia - Outback (North)	2.5	1.8	1.7	-0.8
<i>Kimberley</i>	3.3	3.4	3.2	-0.1
<i>East Pilbara</i>	2.3	1.2	1.1	-1.2
<i>West Pilbara</i>	1.6	1.0	1.0	-0.6
Western Australia - Outback (South)	1.5	1.3	1.2	-0.3
<i>Esperance</i>	1.3	1.1	0.9	-0.4
<i>Gascoyne</i>	3.7	3.2	3.9	0.2
<i>Goldfields</i>	1.3	1.1	0.8	-0.5
<i>Mid West</i>	1.3	1.3	1.2	-0.1
Tasmania	0.8	0.7	0.9	0.1
Greater Hobart	1.1	1.1	1.3	0.2
Rest of Tasmania	0.7	0.5	0.5	-0.2
Launceston and North East	0.7	0.6	0.7	0.0
South East	0.4	0.3	0.3	-0.1
West and North West	0.6	0.4	0.4	-0.2
Northern Territory	3.4	3.1	2.7	-0.7
Greater Darwin	3.1	3.0	2.3	-0.8
Rest of Northern Territory	3.8	3.4	3.7	-0.1
Northern Territory - Outback	3.8	3.4	3.7	-0.1
<i>Alice Springs</i>	4.8	4.4	4.8	0.0
<i>Barkly</i>	2.6	2.9	3.3	0.7
<i>Daly - Tiwi - West Arnhem</i>	2.6	1.8	2.4	-0.2
<i>East Arnhem</i>	2.0	2.5	2.6	0.6
<i>Katherine</i>	3.8	2.9	2.7	-1.1
Australian Capital Territory	2.4	2.7	2.9	0.5
Australian Capital Cities	1.1	1.2	1.2	0.2
Australian Rest of States	1.3	1.0	0.9	-0.4

(continued)

Active travel by bicycle or walking by sub-state region (continued)

<i>Sub-State Region</i>	<i>2006 per cent</i>	<i>2011 per cent</i>	<i>2016 per cent</i>	<i>2006 - 2016 change percentage points</i>
<i>Walked Only</i>				
New South Wales	5.0	4.6	4.3	-0.7
Greater Sydney	4.7	4.6	4.4	-0.3
Central Coast	2.5	2.2	1.9	-0.6
Sydney - Baulkham Hills and Hawkesbury	1.8	1.6	1.4	-0.4
Sydney - Blacktown	1.9	1.5	1.2	-0.7
Sydney - City and Inner South	19.5	20.4	19.3	-0.2
Sydney - Eastern Suburbs	7.7	7.4	7.6	-0.1
Sydney - Inner South West	3.3	2.8	2.7	-0.6
Sydney - Inner West	4.6	4.1	4.2	-0.4
Sydney - North Sydney and Hornsby	6.8	6.4	6.1	-0.7
Sydney - Northern Beaches	4.1	3.8	3.7	-0.4
Sydney - Outer South West	1.9	1.5	1.3	-0.6
Sydney - Outer West and Blue Mountains	2.8	2.3	2.0	-0.8
Sydney - Parramatta	3.9	3.3	3.1	-0.8
Sydney - Ryde	3.7	3.7	3.7	0.0
Sydney - South West	2.5	2.2	2.0	-0.5
Sydney - Sutherland	2.7	2.4	2.4	-0.3
Rest of New South Wales	5.5	4.7	4.0	-1.5
Capital Region	6.1	5.1	4.5	-1.6
Central West	6.9	5.7	4.9	-2.0
Coffs Harbour - Grafton	5.6	5.1	4.1	-1.5
Far West and Orana	9.2	7.7	6.4	-2.8
Hunter Valley exc Newcastle	4.1	3.4	2.8	-1.3
Illawarra	3.4	3.2	2.9	-0.5
Mid North Coast	5.5	4.9	4.1	-1.4
Murray	7.0	5.6	5.1	-1.9
New England and North West	7.4	6.1	5.2	-2.2
Newcastle and Lake Macquarie	3.6	3.0	2.9	-0.7
Richmond - Tweed	4.9	4.5	3.8	-1.1
Riverina	7.4	6.3	5.2	-2.2
Southern Highlands and Shoalhaven	4.7	4.3	3.6	-1.1
Victoria	4.1	3.7	3.6	-0.5
Greater Melbourne	3.4	3.3	3.3	-0.1
Melbourne - Inner	11.2	11.3	11.9	0.7
Melbourne - Inner East	3.0	3.1	3.2	0.2
Melbourne - Inner South	2.8	2.6	2.5	-0.3
Melbourne - North East	2.0	1.9	1.6	-0.4
Melbourne - North West	1.6	1.4	1.2	-0.4
Melbourne - Outer East	1.9	1.6	1.4	-0.5
Melbourne - South East	1.9	1.6	1.4	-0.5
Melbourne - West	1.7	1.5	1.4	-0.3
Mornington Peninsula	2.7	2.5	2.2	-0.5
Rest of Victoria	6.0	5.2	4.5	-1.5
Ballarat	4.5	4.0	3.6	-0.9

(continued)

Active travel by bicycle or walking by sub-state region (continued)

<i>Sub-State Region</i>	<i>2006 per cent</i>	<i>2011 per cent</i>	<i>2016 per cent</i>	<i>2006 - 2016 change percentage points</i>
<i>Walked Only</i>				
Bendigo	5.3	4.5	4.0	-1.3
Geelong	3.8	3.4	3.0	-0.8
Hume	7.2	6.5	5.8	-1.4
Latrobe - Gippsland	5.6	4.8	4.1	-1.5
North West	8.4	7.3	6.3	-2.1
Shepparton	7.0	5.5	4.9	-2.1
Warrnambool and South West	7.6	6.9	6.2	-1.4
Queensland	4.6	4.2	3.7	-0.9
Greater Brisbane	3.5	3.5	3.2	-0.3
Brisbane - East	2.3	1.9	1.7	-0.6
Brisbane - North	2.6	2.6	2.3	-0.3
Brisbane - South	2.6	2.7	2.5	-0.1
Brisbane - West	3.6	3.8	3.5	-0.1
Brisbane Inner City	10.5	11.2	11.0	0.5
Ipswich	2.6	2.2	1.7	-0.9
Logan - Beaudesert	1.8	1.7	1.3	-0.5
Moreton Bay - North	2.8	2.7	2.2	-0.6
Moreton Bay - South	1.7	1.5	1.4	-0.3
Rest of Queensland	5.6	4.8	4.1	-1.5
Cairns	5.9	5.1	4.5	-1.4
Darling Downs - Maranoa	8.2	7.4	6.4	-1.8
Central Queensland	5.6	4.7	4.0	-1.6
Gold Coast	3.3	3.2	2.9	-0.4
Mackay - Isaac - Whitsunday	6.1	5.4	5.1	-1.0
Queensland - Outback	22.1	18.8	16.0	-6.1
<i>Far North</i>	36.9	30.1	23.0	-13.9
<i>Outback - North</i>	13.8	12.7	11.6	-2.2
<i>Outback - South</i>	16.3	15.5	14.2	-2.1
Sunshine Coast	3.9	3.7	2.9	-1.0
Toowoomba	4.3	3.9	3.3	-1.0
Townsville	4.9	4.0	3.7	-1.2
Wide Bay	5.4	4.6	4.0	-1.4
South Australia	4.2	3.7	3.1	-1.1
Greater Adelaide	3.1	2.8	2.5	-0.6
Adelaide - Central and Hills	5.6	5.5	5.0	-0.6
Adelaide - North	1.8	1.6	1.4	-0.4
Adelaide - South	2.4	2.1	1.8	-0.6
Adelaide - West	3.0	2.6	2.2	-0.8
Rest of South Australia	7.8	6.6	5.6	-2.2
Barossa - Yorke - Mid North	7.9	6.6	5.6	-2.3
South Australia - Outback	10.4	8.6	7.6	-2.8
<i>Eyre Peninsula and South West</i>	8.1	6.4	5.8	-2.3
<i>Outback - North and East</i>	15.0	12.8	11.5	-3.5
South Australia - South East	6.6	5.6	4.7	-1.9

(continued)

Active travel by bicycle or walking by sub-state region (continued)

Sub-State Region	2006 per cent	2011 per cent	2016 per cent	2006 - 2016 change percentage points
<i>Walked Only</i>				
Western Australia	3.9	3.7	3.1	-0.8
Greater Perth	2.5	2.6	2.3	-0.2
Mandurah	2.6	2.6	2.1	-0.5
Perth - Inner	7.8	8.8	8.6	0.8
Perth - North East	2.1	2.0	1.7	-0.4
Perth - North West	1.6	1.6	1.4	-0.2
Perth - South East	2.1	2.0	1.7	-0.4
Perth - South West	2.4	2.3	1.9	-0.5
Rest of Western Australia	8.7	7.6	6.1	-2.6
Bunbury	4.1	3.9	3.4	-0.7
Western Australia - Wheat Belt	8.9	7.8	7.0	-1.9
Western Australia - Outback (North)	16.0	12.4	9.1	-6.9
<i>Kimberley</i>	26.0	19.9	14.8	-11.2
<i>East Pilbara</i>	12.9	9.2	7.3	-5.6
<i>West Pilbara</i>	6.6	8.8	6.1	-0.5
Western Australia - Outback (South)	9.3	7.9	6.6	-2.7
<i>Esperance</i>	7.9	6.2	5.8	-2.1
<i>Gascoyne</i>	18.6	15.4	14.9	-3.7
<i>Goldfields</i>	9.6	8.1	6.0	-3.6
<i>Mid West</i>	7.6	7.1	5.8	-1.8
Tasmania	6.7	5.8	5.5	-1.2
Greater Hobart	7.3	6.3	6.3	-1.0
Rest of Tasmania	6.1	5.3	4.8	-1.3
Launceston and North East	6.2	5.5	5.3	-0.9
South East	6.3	5.0	4.6	-1.7
West and North West	6.0	5.2	4.3	-1.7
Northern Territory	13.5	12.3	9.3	-4.2
Greater Darwin	5.4	5.5	4.3	-1.1
Rest of Northern Territory	26.5	24.4	20.4	-6.1
Northern Territory - Outback	26.5	24.4	20.4	-6.1
<i>Alice Springs</i>	16.0	14.3	13.8	-2.2
<i>Barkly</i>	37.6	34.1	31.6	-6.0
<i>Daly - Tiwi - West Arnhem</i>	46.6	42.6	33.5	-13.1
<i>East Arnhem</i>	32.9	32.7	29.2	-3.7
<i>Katherine</i>	30.2	26.2	20.2	-10.0
Australian Capital Territory	4.8	4.7	5.0	0.2
Australian Capital Cities	3.8	3.7	3.5	-0.3
Australian Rest of States	6.2	5.4	4.5	-1.7

Source: ABS 2017, Customised report, Census of Population and Housing, Australia

Sub-state regions are SA4 (2016 ASGS), italicised regions are SA3 (2016 ASGS).

Data based on place of usual residence.

Calculation excludes Not Stated category from the denominator.

Yearbook 2018 and Yearbook 2017 data have been sourced from the ABS Census of Population and Housing, which may impact the comparability between Yearbook 2016 published data, which was sourced from ABS, Waste Management, Transport and Motor Vehicle Survey.

P 3.5.3 Number of solar panel systems

Increased uptake of clean energy sources in Australian households, including solar energy, is likely to reduce Australia's contribution towards environmental degradation and climate change. It reflects efforts to improve environmental sustainability.

This indicator measures the number of small scale solar panel systems and solar water heater installations across regions. It is expressed as the number of solar panel systems up to 100kW and solar water heater installations per 100 dwellings. A number of factors can influence uptake of solar energy systems in households, including household income, regional climate and government schemes designed to subsidise or encourage the installation of solar systems.

- Across Australia, there were 25 solar installations per 100 dwellings by 2016.

Number of small scale solar panel systems and solar water heater installations across remoteness classes

- The uptake of solar technologies was strongest in inner regional Australia both in terms of the number (32 installations per 100 dwellings), and growth.
- Very remote Australia recorded both the lowest levels of installation and growth in solar technology adoption.

Table P 3.5.3.a Number of small scale solar panel systems and solar water heater installations by remoteness class

Remoteness Class	2001 - 2014 installations per 100 dwellings	2001 - 2015 installations per 100 dwellings	2001 - 2016 installations per 100 dwellings	2001-2014 - 2001-2016 change in installations per 100 dwellings
Major Cities	19	21	22	3
Inner Regional	27	30	32	5
Outer Regional	23	25	27	4
Remote	21	22	24	3
Very Remote	14	15	16	2
AUSTRALIA	21	23	25	4

Source: ABS 2017, Customised report, Clean Energy Regulator, Data by Region (cat. no. 1410.0)

Remoteness Area classification is based on the 2011 ASGS.

Based on number of dwellings as at 2016 Census (excluding Migratory, Offshore and Shipping).

Total number of installations can include those installed in non-dwelling buildings e.g. businesses. Note that these are not included in the total number of dwellings used to calculate this indicator.

2016 figures will continue to rise due to the 12 month creation period allowed for registered persons to create their certificates.

Decommissioning of solar installations over time is not reflected in the cumulative totals presented.

Number of small scale solar panel systems and solar heater installations across major urban areas

- As of 2016 the Sunshine Coast recorded the highest number of solar technologies per 100 dwellings, with 41 per 100 dwellings installing small systems.
- In contrast, as of 2016 Greater Sydney and Launceston had the lowest rates of small scale solar technologies (12 and 13 installations per 100 dwellings respectively).
- Major urban areas with the largest increase in small scale solar panels and water heater technologies per 100 dwellings were Greater Darwin and Greater Perth.

Table P 3.5.3.b Number of small scale solar panel systems and solar water heater installations by major urban area

Major Urban Area	2001 - 2014 installations per 100 dwellings	2001 - 2015 installations per 100 dwellings	2001 - 2016 installations per 100 dwellings	2001-2014 - 2001-2016 change in installations per 100 dwellings
Greater Sydney	10	11	12	2
Greater Melbourne	15	17	19	4
Greater Brisbane	32	34	37	5
Greater Perth	29	32	35	6
Greater Adelaide	28	29	31	3
Gold Coast - Tweed Heads	28	30	32	4
Newcastle - Maitland	19	20	21	2
Canberra - Queanbeyan	14	15	16	2
Sunshine Coast	36	38	41	5
Wollongong	16	17	18	2
Geelong	20	23	25	5
Greater Hobart	13	14	15	2
Townsville	25	27	29	4
Cairns	21	23	25	4
Greater Darwin	22	24	28	6
Toowoomba	24	26	27	3
Ballarat	16	18	19	3
Bendigo	23	26	28	5
Albury - Wodonga	18	20	22	4
Launceston	11	12	13	2

Source: ABS 2017, Customised report, Clean Energy Regulator, Data by Region (cat. no. 1410.0)

The major urban areas of Sydney, Melbourne, Brisbane, Adelaide, Perth, Hobart and Darwin are based on the 2016 ASGS Greater Capital City Statistical Area (GCCSA) classification. All other major urban areas are based on the 2016 ASGS Significant Urban Area (SUA) classification.

Based on number of dwellings as at 2016 Census (excluding Migratory, Offshore and Shipping).

Total number of installations can include those installed in non-dwelling buildings e.g. businesses. Note that these are not included in the total number of dwellings used to calculate this indicator.

2016 figures will continue to rise due to the 12 month creation period allowed for registered persons to create their certificates.

Decommissioning of solar installations over time is not reflected in the cumulative totals presented.

Number of small scale solar panel systems and solar water heater installations across sub-state regions

- As at 2016, the sub-state regions with the highest number of small scale solar installations per 100 dwellings were Richmond - Tweed in New South Wales and Mandurah in Western Australia. The lowest rate of solar installations was recorded in Sydney - City and Inner South.
- The sub-state regions with the largest increase in the number of solar panel and water heaters per 100 dwellings were: Moreton Bay - South; Mandurah; Perth - North East; Perth - South West; and Bunbury.
- Ten sub-state regions, largely in Greater Sydney, recorded increases of just one installation per 100 dwellings.

Table P 3.5.3.c Number of small scale solar panel systems and solar water heater installations by sub-state region

Sub-State Region	2001 - 2014 installations per 100 dwellings	2001 - 2015 installations per 100 dwellings	2001 - 2016 installations per 100 dwellings	2001-2016 - change in installations per 100 dwellings
New South Wales	15	17	18	3
Greater Sydney	10	11	12	2
Central Coast	17	18	19	2
Sydney - Baulkham Hills and Hawkesbury	18	20	21	3
Sydney - Blacktown	17	18	19	2
Sydney - City and Inner South	2	3	3	1
Sydney - Eastern Suburbs	3	4	4	1
Sydney - Inner South West	8	8	9	1
Sydney - Inner West	5	5	6	1
Sydney - North Sydney and Hornsby	7	7	8	1
Sydney - Northern Beaches	8	9	9	1
Sydney - Outer South West	20	22	23	3
Sydney - Outer West and Blue Mountains	17	18	20	3
Sydney - Parramatta	9	10	10	1
Sydney - Ryde	8	9	9	1
Sydney - South West	15	16	17	2
Sydney - Sutherland	12	13	13	1
Rest of New South Wales	23	25	27	4
Capital Region	19	21	22	3
Central West	16	18	19	3
Coffs Harbour - Grafton	36	38	40	4
Far West and Orana	26	28	31	5
Hunter Valley exc Newcastle	22	23	25	3
Illawarra	16	17	18	2
Mid North Coast	35	38	40	5
Murray	18	21	23	5
New England and North West	21	23	25	4
Newcastle and Lake Macquarie	19	20	21	2
Richmond - Tweed	42	44	47	5
Riverina	14	16	18	4
Southern Highlands and Shoalhaven	22	23	25	3
Victoria	17	19	21	4
Greater Melbourne	15	17	19	4
Melbourne - Inner	4	5	6	2
Melbourne - Inner East	9	10	11	2
Melbourne - Inner South	9	10	11	2
Melbourne - North East	19	21	24	5
Melbourne - North West	18	20	23	5
Melbourne - Outer East	14	15	17	3
Melbourne - South East	20	23	26	6
Melbourne - West	24	28	30	6
Mornington Peninsula	16	17	19	3
Rest of Victoria	22	25	27	5

(continued)

Number of small scale solar panel systems and solar water heater installations by sub-state region
(continued)

Sub-State Region	2001 - 2014 installations per 100 dwellings	2001 - 2015 installations per 100 dwellings	2001 - 2016 installations per 100 dwellings	2001-2014 - 2001-2016 change in installations per 100 dwellings
Ballarat	19	21	23	4
Bendigo	26	29	32	6
Geelong	21	24	27	6
Hume	25	27	29	4
Latrobe - Gippsland	23	25	27	4
North West	22	24	26	4
Shepparton	27	29	32	5
Warrnambool and South West	16	17	19	3
Queensland	30	32	34	4
Greater Brisbane	32	34	37	5
Brisbane - East	40	43	46	6
Brisbane - North	26	28	30	4
Brisbane - South	30	32	34	4
Brisbane - West	31	34	36	5
Brisbane Inner City	10	11	12	2
Ipswich	36	39	41	5
Logan - Beaudesert	40	43	46	6
Moreton Bay - North	40	43	45	5
Moreton Bay - South	38	42	45	7
Rest of Queensland	28	30	33	5
Cairns	22	24	26	4
Darling Downs - Maranoa	26	29	31	5
Central Queensland	28	30	32	4
Gold Coast	27	30	32	5
Mackay - Isaac - Whitsunday	20	22	24	4
Queensland - Outback	15	16	18	3
<i>Far North</i>	12	13	14	2
<i>Outback - North</i>	16	17	19	3
<i>Outback - South</i>	16	18	20	4
Sunshine Coast	37	40	43	6
Toowoomba	26	28	30	4
Townsville	25	27	29	4
Wide Bay	37	40	42	5
South Australia	29	31	32	3
Greater Adelaide	28	29	31	3
Adelaide - Central and Hills	24	26	27	3
Adelaide - North	30	32	34	4
Adelaide - South	31	33	34	3
Adelaide - West	22	23	25	3
Rest of South Australia	32	34	36	4
Barossa - Yorke - Mid North	36	38	40	4
South Australia - Outback	29	31	33	4
<i>Eyre Peninsula and South West</i>	31	33	35	4

(continued)

Number of small scale solar panel systems and solar water heater installations by sub-state region
(continued)

Sub-State Region	2001 - 2014 installations per 100 dwellings	2001 - 2015 installations per 100 dwellings	2001 - 2016 installations per 100 dwellings	2001-2014 - 2001-2016 change in installations per 100 dwellings
<i>Outback - North and East</i>	25	27	29	4
South Australia - South East	31	33	35	4
Western Australia	28	31	34	6
Greater Perth	29	32	35	6
Mandurah	40	43	47	7
Perth - Inner	12	13	14	2
Perth - North East	32	35	39	7
Perth - North West	28	31	34	6
Perth - South East	31	34	37	6
Perth - South West	31	34	38	7
Rest of Western Australia	26	28	30	4
Bunbury	31	35	38	7
Western Australia - Wheat Belt	29	32	35	6
Western Australia - Outback (North)	13	14	14	1
<i>Kimberley</i>	18	18	18	0
<i>East Pilbara</i>	15	15	15	0
<i>West Pilbara</i>	7	7	7	0
Western Australia - Outback (South)	23	24	26	3
<i>Esperance</i>	18	18	18	0
<i>Gascoyne</i>	21	22	23	2
<i>Goldfields</i>	11	13	14	3
<i>Mid West</i>	32	34	37	5
Tasmania	13	14	15	2
Greater Hobart	13	14	15	2
Rest of Tasmania	12	13	15	3
Launceston and North East	13	14	16	3
South East	14	15	16	2
West and North West	10	12	13	3
Northern Territory	19	22	24	5
Greater Darwin	22	24	28	6
Rest of Northern Territory	15	17	19	4
Northern Territory - Outback	15	17	19	4
<i>Alice Springs</i>	23	25	27	4
<i>Barkly</i>	8	9	10	2
<i>Daly - Tiwi - West Arnhem</i>	7	9	11	4
<i>East Arnhem</i>	10	11	13	3
<i>Katherine</i>	11	13	16	5
Australian Capital Territory	14	15	16	2
Australian Capital Cities	19	21	23	4
Australian Rest of States	25	27	29	4

Source: ABS 2017, Customised report, Clean Energy Regulator, Data by Region (cat. no. 1410.0)

Sub-state regions are SA4 (2016 ASGS), italicised regions are SA3 (2016 ASGS).

Based on number of dwellings as at 2016 Census (excluding Migratory, Offshore and Shipping).

Total number of installations can include those installed in non-dwelling buildings e.g. businesses. Note that these are not included in the total number of dwellings used to calculate this indicator.

2016 figures will continue to rise due to the 12 month creation period allowed for registered persons to create their certificates.

Decommissioning of solar installations over time is not reflected in the cumulative totals presented.

