



# BASIX Annual Snapshot

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**2017/2018**

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## Introduction

The Building Sustainability Index (BASIX) is a State Environmental Planning Policy that aims to conserve the state's precious water resources and reduce carbon emissions. The thermal comfort requirements set by BASIX produces new homes that are comfortable in both summer and winter, and cost-efficient to run. BASIX users have the flexibility to nominate any combination of energy- and water-saving measures to meet targets. BASIX accounts for all energy and water consumption in the home and is one of the strongest sustainable planning measures in Australia.

Climate change is one of humanity's greatest challenges. As such, the NSW Government endorses the United Nations Paris Agreement on climate change and has released its own *Climate Change Policy Framework*.



The Framework sets the aspirational objective for New South Wales to achieve **net zero emissions by 2050.**

BASIX has had a direct impact on reducing carbon emissions,

**preventing 8.8 million tonnes of carbon emissions**

from residential energy use since it started in 2004.

NSW is experiencing one of the worst droughts on record, with BASIX helping to save and extend precious drinking water reserves. Through water-saving fixtures and alternative water sources encouraged by BASIX, NSW households have saved an estimated 281 billion litres of drinking water over the past 15 years.

The system assesses thermal comfort performance, energy and water use, which is carried out via an online assessment. It captures the information provided, including the choices made to meet BASIX requirements, and produces the BASIX certificate. Certificates must be submitted with residential development applications and applications for complying development.

Except where indicated, all figures, charts and analysis in this snapshot relate to BASIX certificates for new dwellings. The data is collected at the planning stage, prior to build. They are indicators of trends in new residential development.

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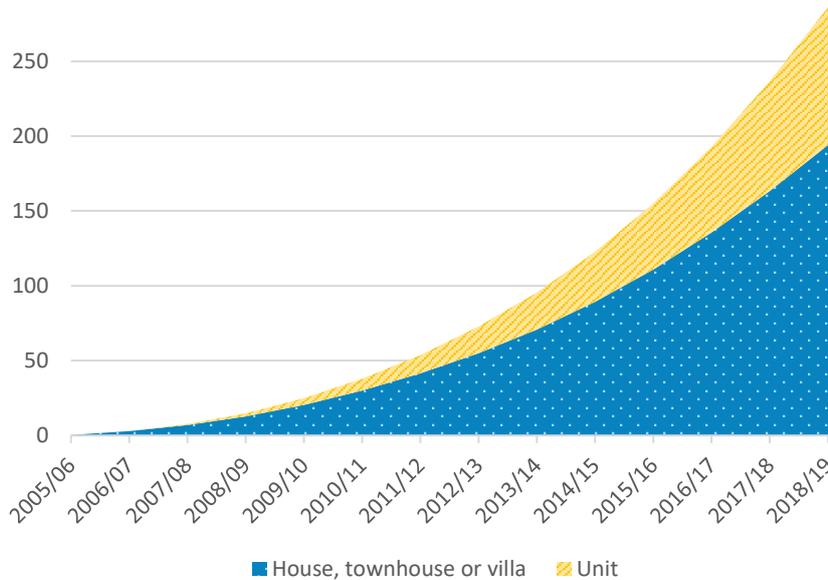
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## Water and energy savings

Since 2004, NSW households are estimated to have saved more than 281 billion litres of drinking water through BASIX. This amount of water is enough to fill the Nepean Reservoir 4 times.

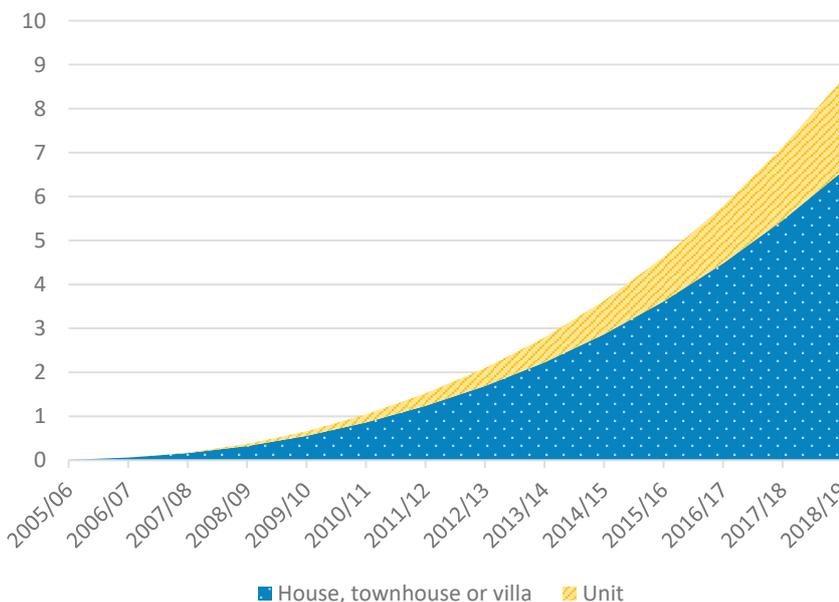
BASIX has had a direct impact on reducing carbon emissions. Since its introduction in 2004, more than half a million BASIX-affected homes are estimated to have saved more than 8.7 million tonnes of carbon emissions. This is equivalent to planting 29 million trees.

**Figure 1: Estimated cumulative savings of drinking water (gigalitres)**



The amount of water saved through BASIX is enough to fill the Nepean Reservoir **4 times**.

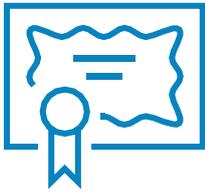
**Figure 2: Estimated cumulative savings of greenhouse gas (CO<sub>2</sub>) emissions (million tonnes)**



The amount of carbon emissions saved through BASIX is the equivalent of planting **29 million trees**.

## BASIX key facts

In 2017/18



**63,165**

**BASIX Certificates were issued.**

Of these, **31%** were a revision of an earlier certificate (earlier certificate versions are excluded from this analysis).



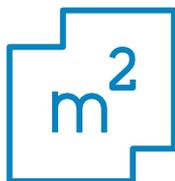
**8,850**

**enquiries were logged with the BASIX help desk, up 60% on the previous year.**

Most of the increase in help desk enquiries was during the six-month transition period for the increase in BASIX minimum requirements (1 July to 31 December 2017).

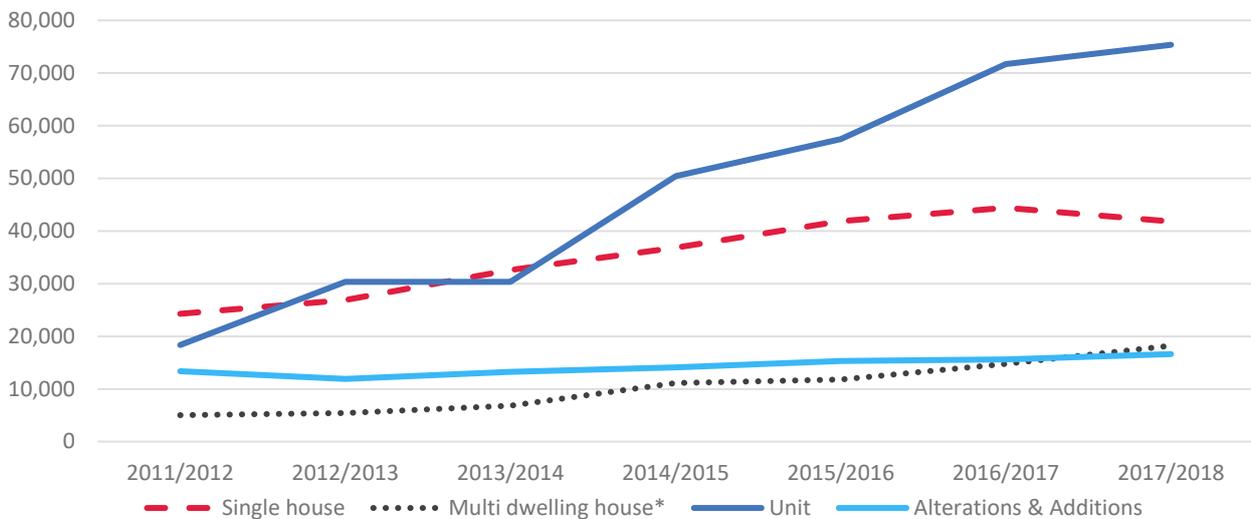


**Residential flat buildings contributed to 56% of new dwellings.**



**The average floor area of new dwellings in metropolitan NSW (greater Sydney, Newcastle and Wollongong) was 106m<sup>2</sup>; the average in regional NSW was 155m<sup>2</sup>.**

Figure 3: Number of dwellings by BASIX certificate type



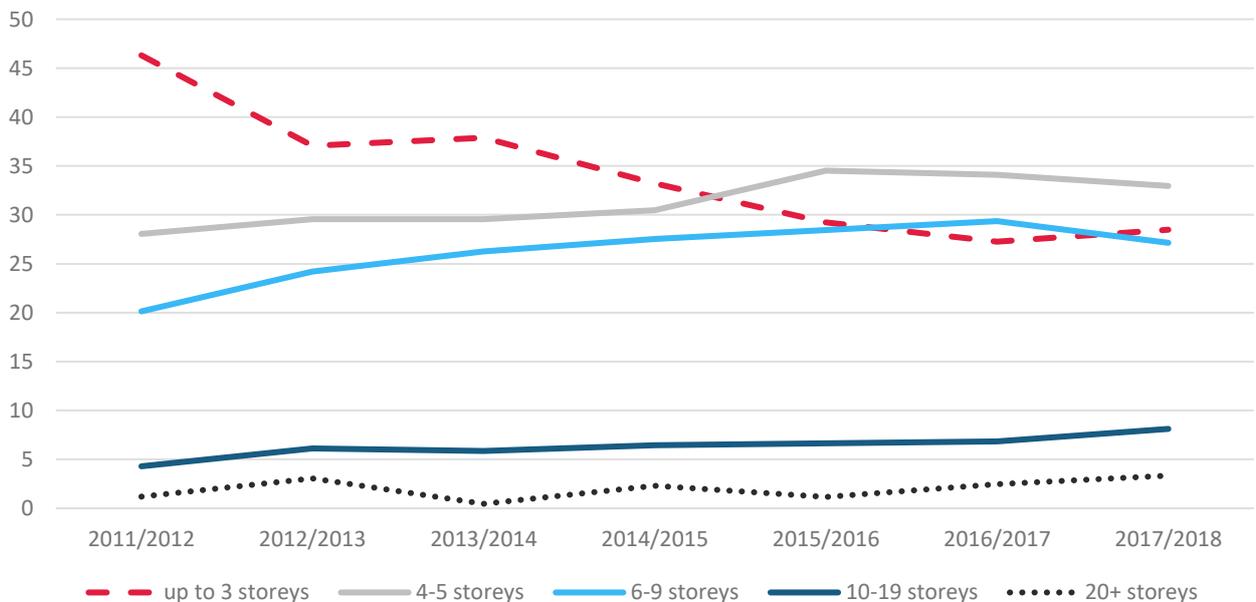
\* Multi dwelling house - multiple dwellings on one lot of land, e.g. townhouses, villas, dual occupancies.

Note: Data for 2017/18, and to a lesser extent, earlier years, will be revised down in future data releases.



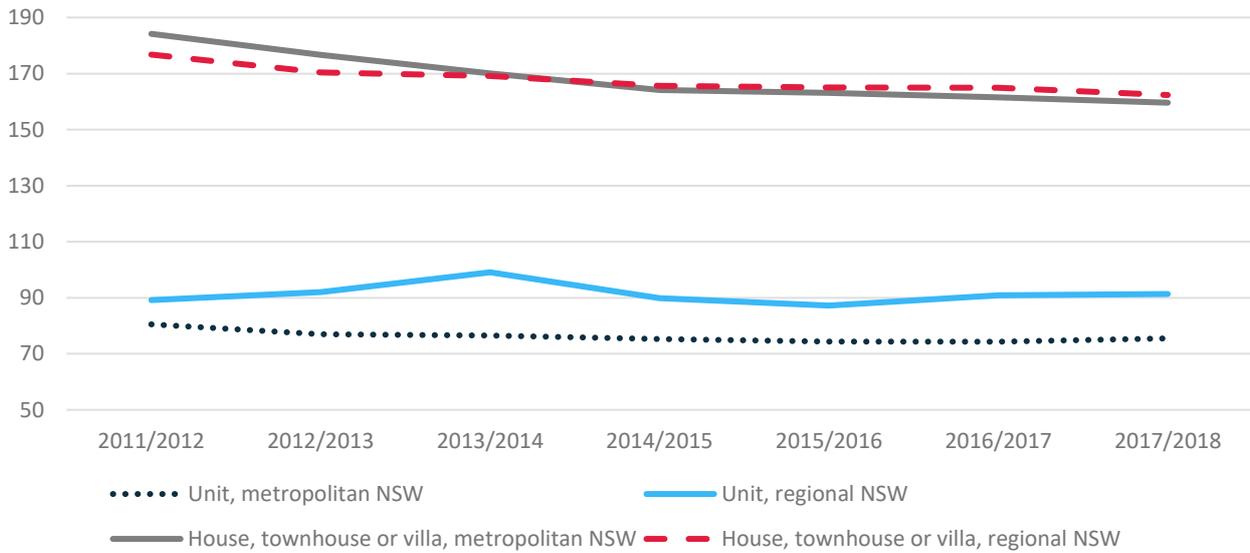
Dwellings of all categories of certificates increased during this period; the number of units increased most, by over 300%. In 2017/18, single houses decreased by 6% compared with the previous year.

Figure 4: Percentage of residential flat buildings by number of storeys



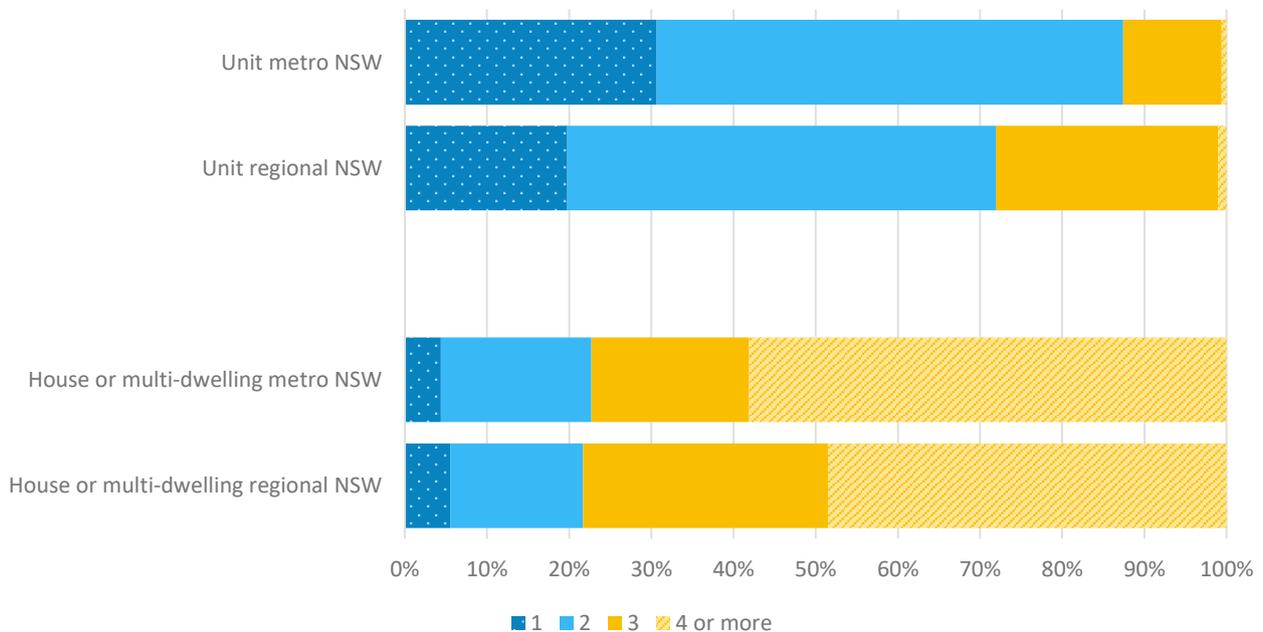
The percentage of low-rise apartment buildings (up to three storeys) has decreased significantly over time, from 46% to 28%, while all other categories increased.

Figure 5: Average floor area (m2) by dwelling type and region



Average floor area has decreased, especially in metropolitan areas. The biggest decrease was for metropolitan houses, townhouses and villas, from 184 square metres in 2011/12 to 160 square metres in 2017/18.

Figure 6: Percentage of dwellings by number of bedrooms, dwelling type and region, 2017/18



In 2017/18 certificates, more than half the units had two bedrooms and more than half the houses and dwellings, other than units, had four or more bedrooms.

# Energy

BASIX reduces the demand on the electricity grid and reduces greenhouse gas emissions through the following strategies:

- Less greenhouse-gas-intensive systems for hot water, heating, cooling, cooking and major appliances.
- Natural and energy efficient lighting.
- Alternative energy use, particularly solar photovoltaic (PV) systems.

## Solar PV systems

Solar PV systems are becoming more common and can reduce energy bills and greenhouse emissions. Electricity generated from solar PV systems can be fed back into the electricity grid.

In 2017/18

- 14% of certificates included a solar PV system, compared with 6% in 2016/17.
- This constituted 11% of certificates in metropolitan NSW and 19% of certificates in rural NSW.

Figure 7: Percentage of dwellings (excluding units) with solar PV, regional view

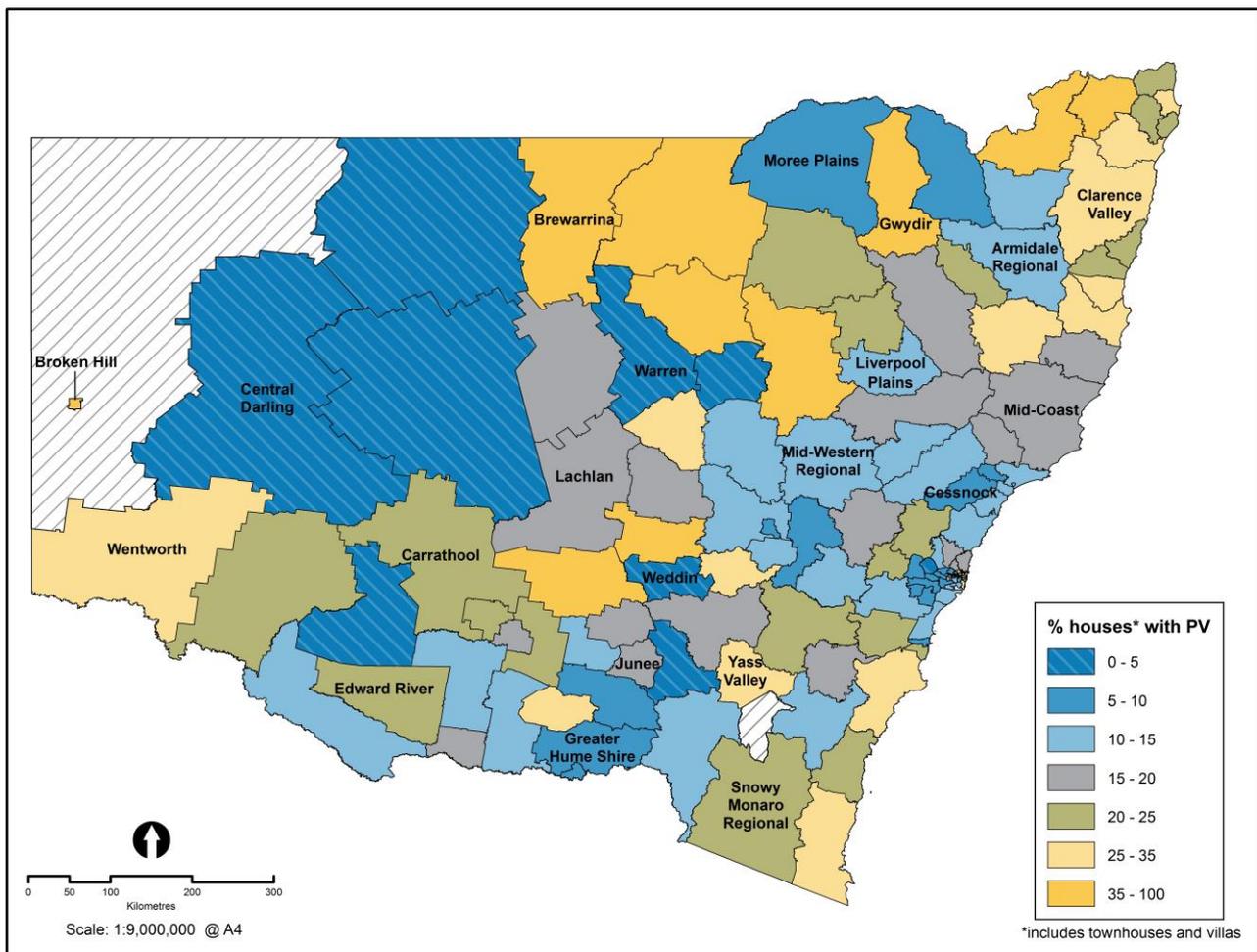
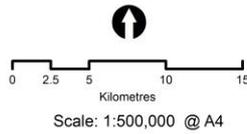
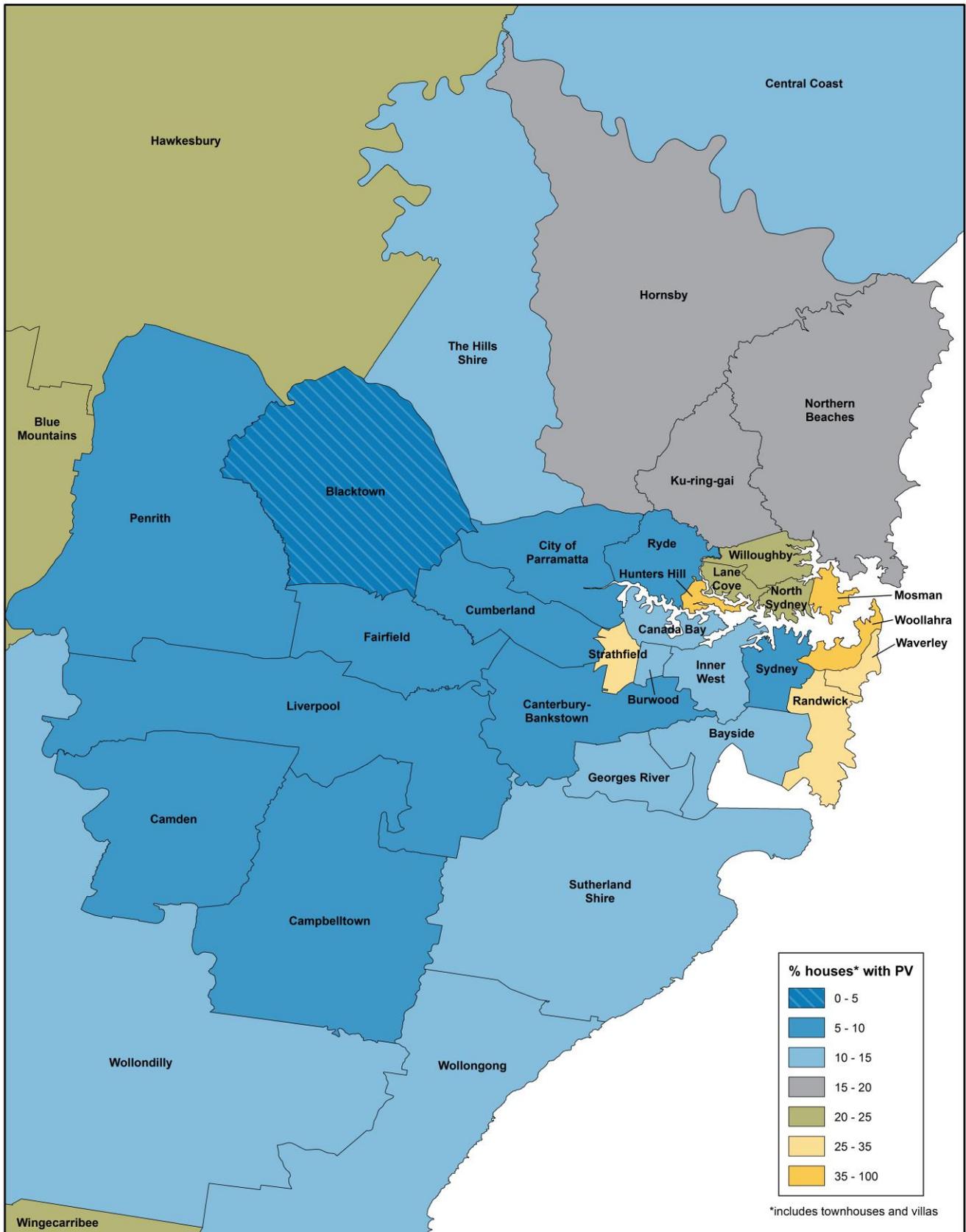
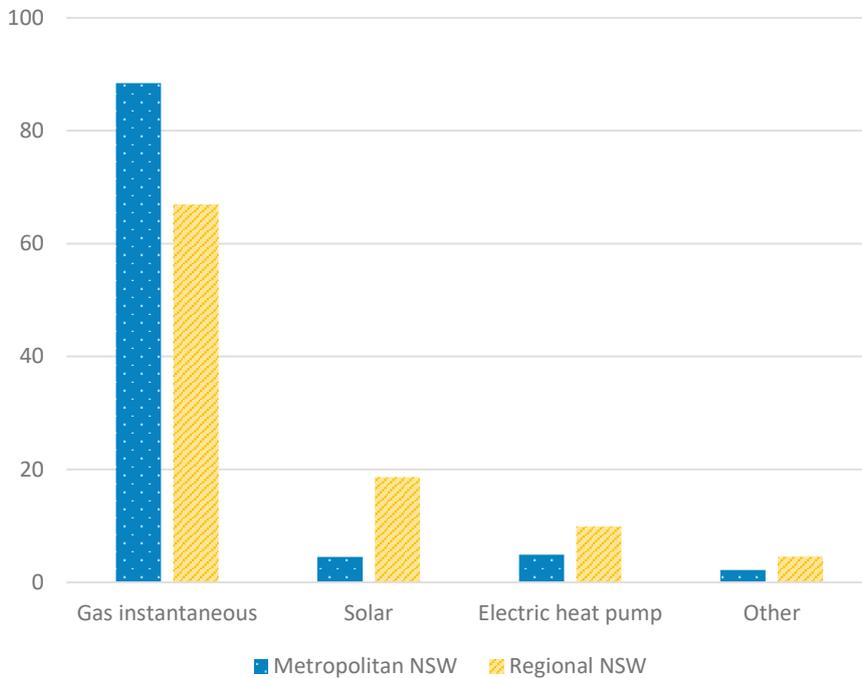


Figure 8: Percentage of dwellings (excluding units) with solar PV, metropolitan view



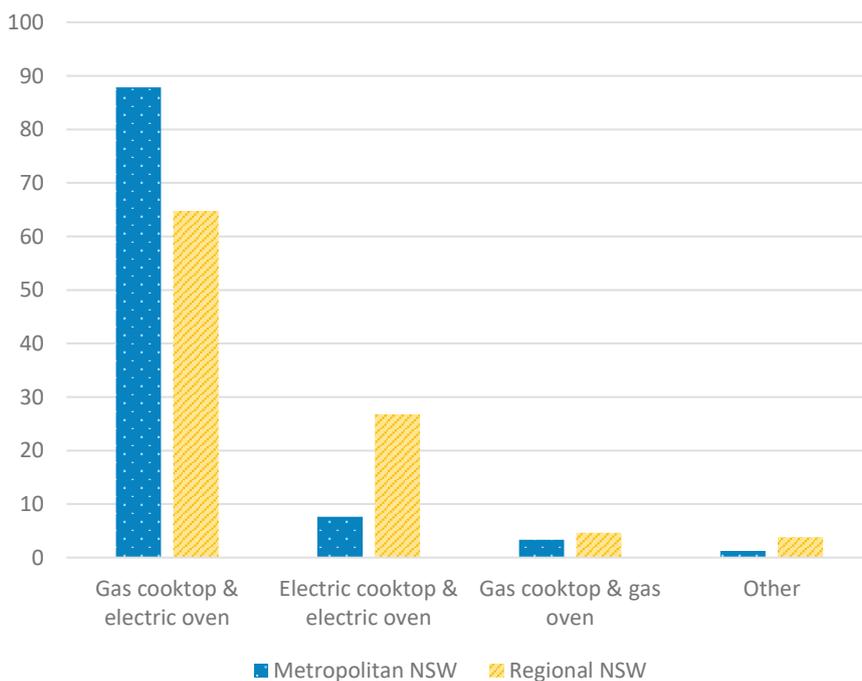
## Appliances

Figure 9: Percentage of dwellings with hot water system type by region, 2017/18



Gas was by far the most common hot water system in NSW, especially in metropolitan areas where it is more readily available.

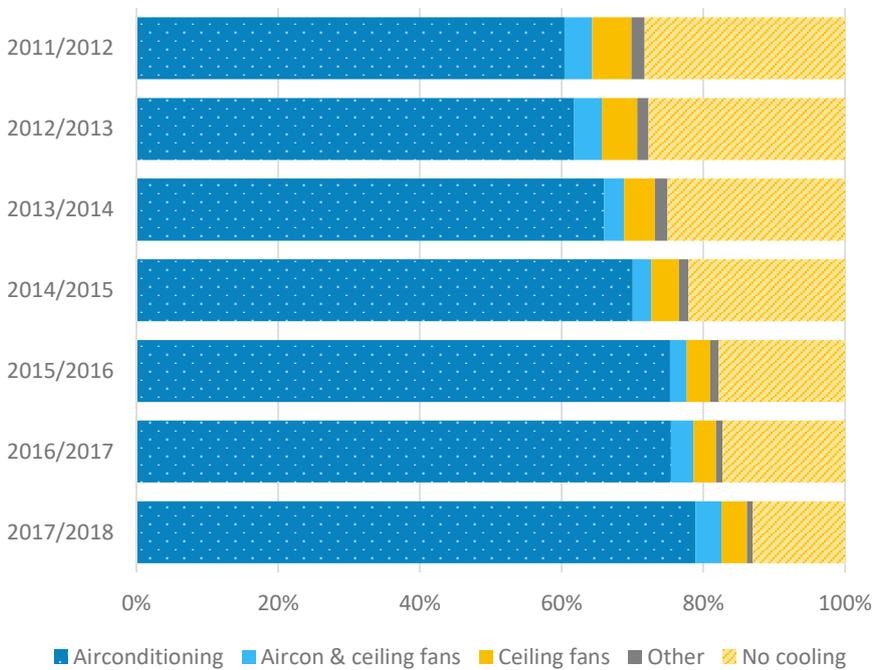
Figure 10: Percentage of dwellings with oven and cooktop type by region, 2017/18



Gas was also most commonly used for cooking in NSW, especially in metropolitan areas.

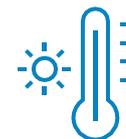
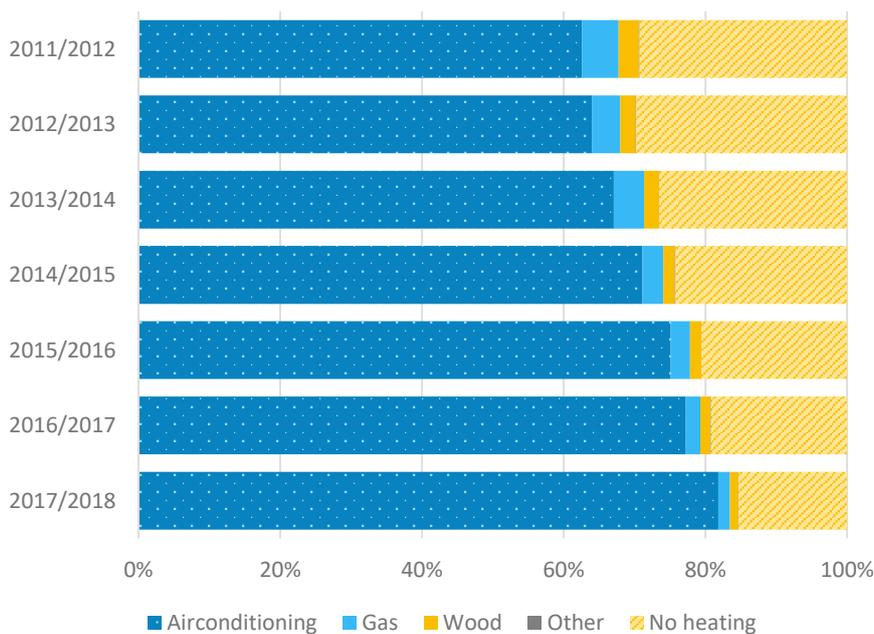
### Heating and cooling in living areas

Figure 11: Percentage of dwellings with cooling system type in living area



Air conditioning was the most common choice to cool living areas. This has become more prevalent over time.

Figure 12: Percentage of dwellings with heating system type in living area



The majority of dwellings opted for air conditioning to heat living areas. This has also become more prevalent over time.

## Thermal Comfort

Thermal comfort assessment examines the design of the building and the materials used to keep the home comfortable. Good thermal comfort will reduce the need for artificial cooling and heating.

There are two methods of thermal comfort assessment available in BASIX.

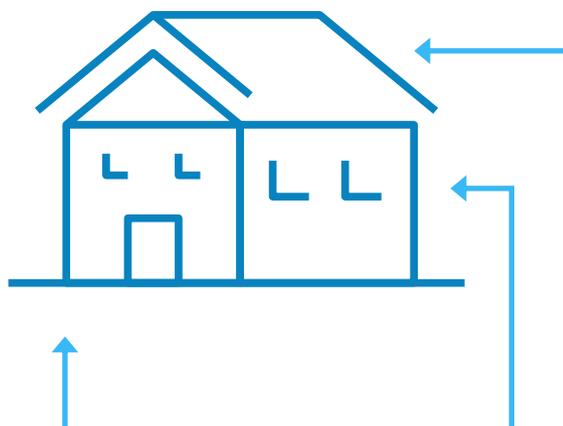
- Do-It-Yourself (DIY) is an online assessment for dwellings that use common construction materials and methods. This choice is only available for single new dwelling certificates.
- Simulation requires detailed assessment by an accredited assessor, using the National House Energy Rating Scheme (NatHERS) accredited software. It can simulate a larger range of construction methods and materials, more complex designs and multi dwelling developments such as townhouses and apartments.

In 2017/18

- 51% of single new dwelling certificates were assessed using the Simulation method for thermal comfort.
- 48% used the Do-It-Yourself (DIY) method.
- 1% used the Rapid method (no longer available for new certificates).

### Dwelling construction (DIY)

The most common floor, wall, ceiling and roof types are represented in the diagram below.



#### **81%** Flat ceiling and pitched roof

Pitched roof spaces can make ceiling insulation simple to fit. In climates with mild to cool winters and hot summers (such as in coastal lower NSW and the high inland ranges), pitched roof spaces can achieve low or zero heating and cooling energy use, by ventilating the roof in summer and sealing it in winter. ([yourhome.gov.au/](http://yourhome.gov.au/) accessed 11/7/19)

#### **90%** Concrete slab on ground floor

Concrete slab on ground floors can improve thermal comfort because they absorb solar radiation and heat from the ground during the day and release some of that heat during the night.

#### **76%** Brick veneer wall

Brick veneer walls are most suited in climatic zones with a humid summer and mild winter, such as on the north coast of NSW. In other climates, brick-veneer construction is likely to need insulation to meet thermal comfort requirements.

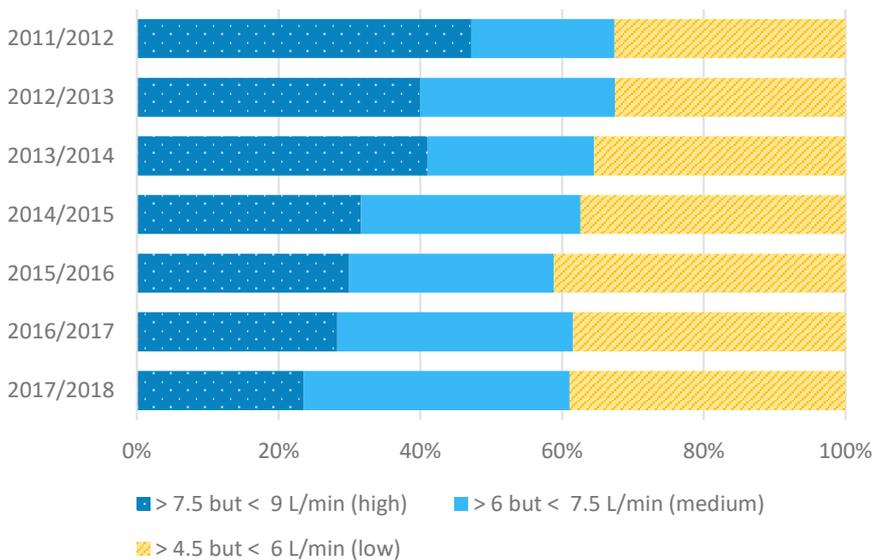
# Water

BASIX reduces the demand for precious drinking water in the following ways:

- Efficiency of fixtures and appliances.
- Use of alternative water sources.
- Landscaping characteristics.

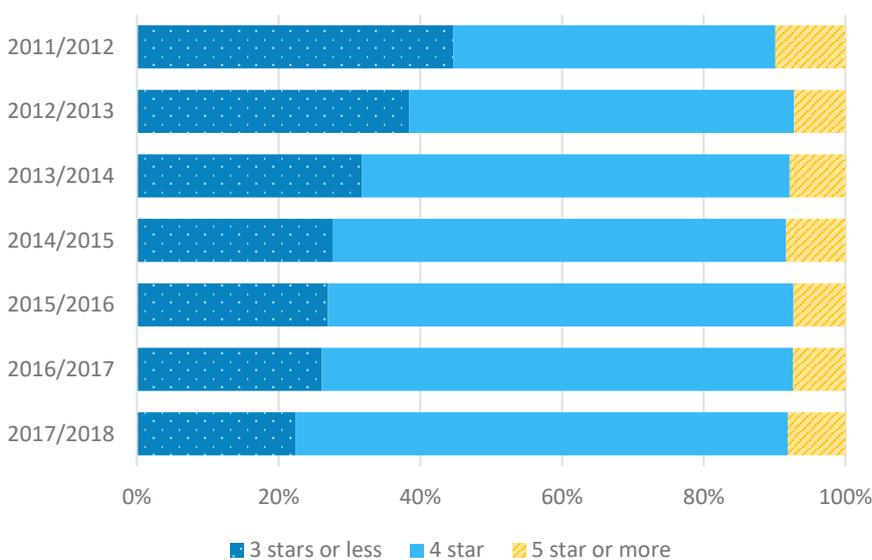
## Water fixtures

**Figure 13: Percentage of dwellings with showerhead flow rate**



In 2017/18, the proportion of new dwellings with high flow rate (low water efficiency) showerheads was half that in 2011/12 (24% down from 47%).

**Figure 14: Percentage of dwellings with toilet star rating**

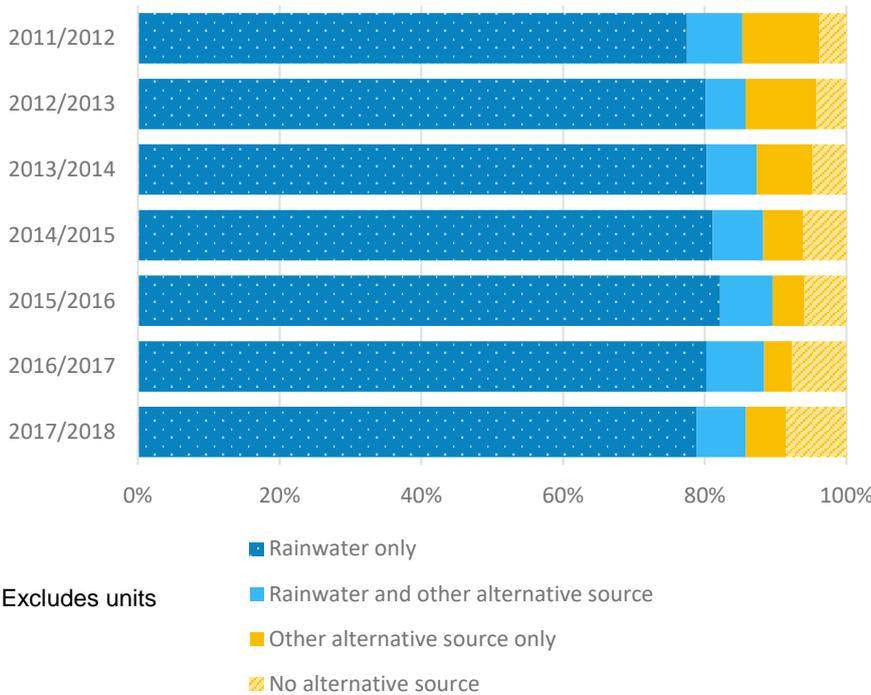


In 2017/18, the proportion of new dwellings with low efficiency (3 stars or less) toilets was also half that in 2011/12 (22% down from 45%).

## Alternative water sources

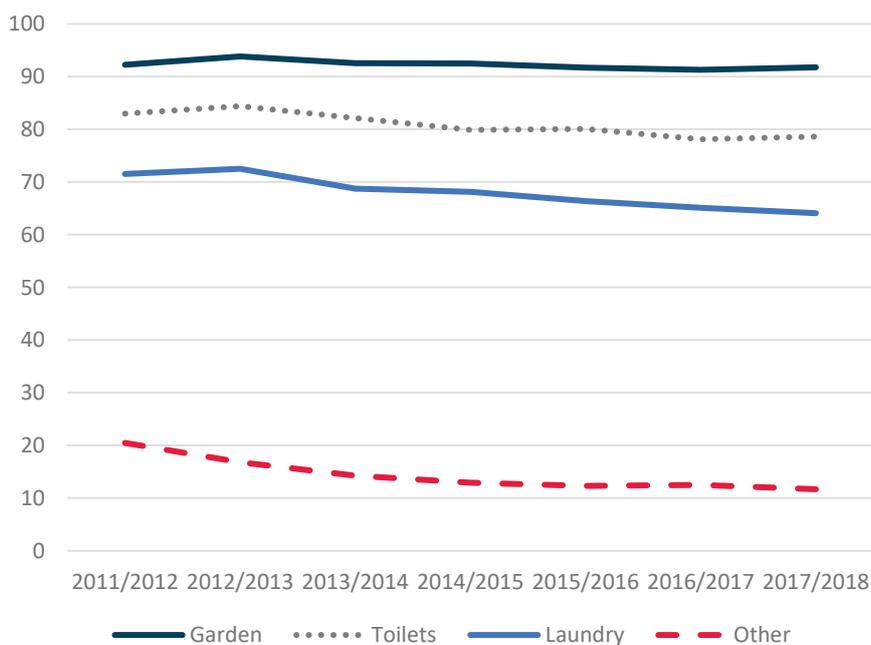
Alternative water sources reduce the demand for mains-supplied drinking water.

**Figure 15: Percentage of dwellings\* by alternative water source**



In 2017/18, 86% of new dwellings, excluding units, opted for a rainwater tank, usually in addition to mains water use.

**Figure 16: Percentage of dwellings\* by rainwater tank use**

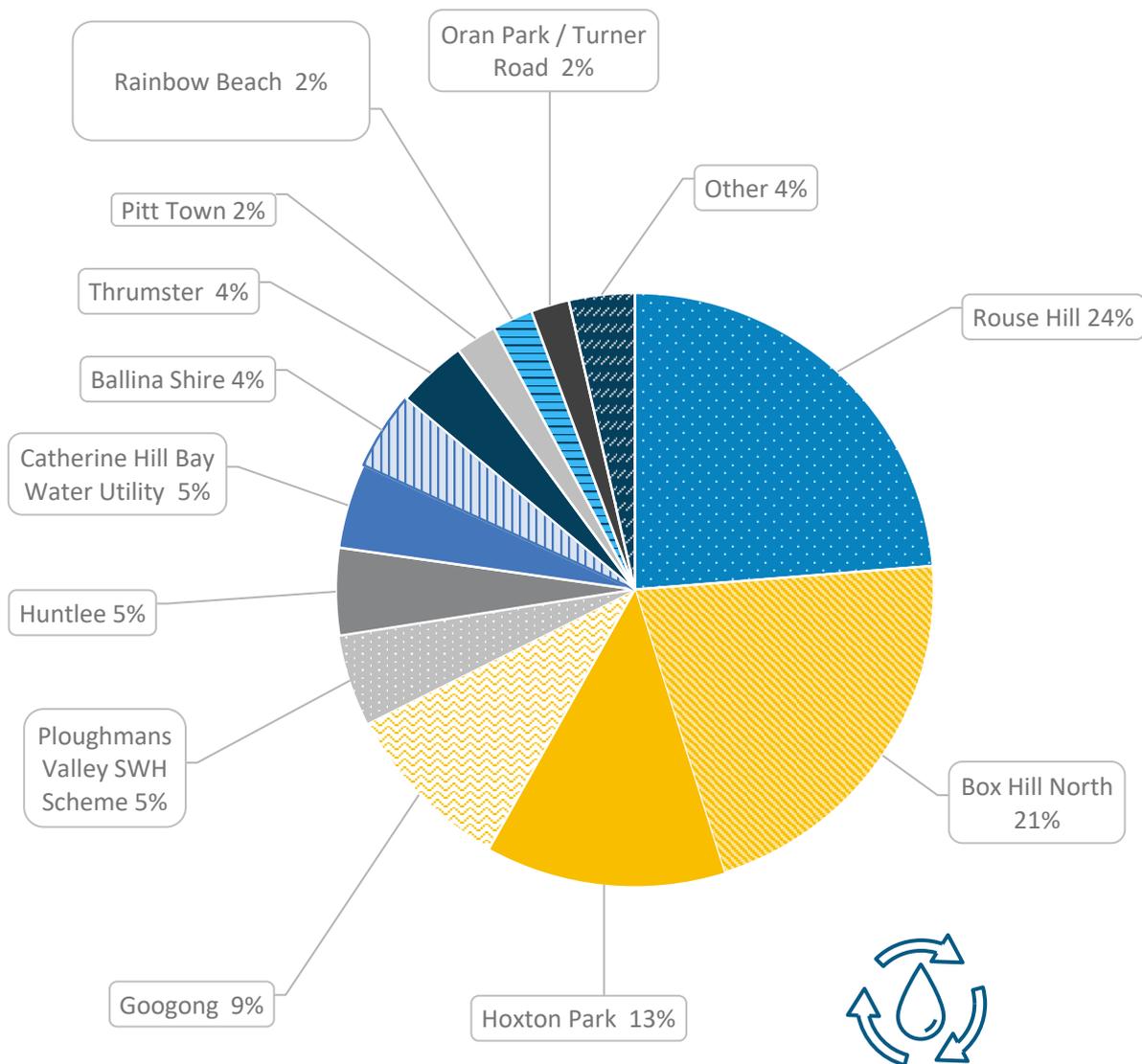


In 2017/18, 92% of rainwater tanks were used for garden and outdoor use; this has been similar since 2011/12.

\*Excludes units, and dwellings without a rainwater tank

In most cases, recycled water schemes treat and re-use sewage effluent, but recycled water can include any type of wastewater that has been captured and treated for reuse, such as greywater or stormwater. Water is piped from the scheme directly to the point of use. The majority of recycled water schemes allow garden and toilet end use only. However, some also allow connection for laundry (cold-water washing machine) use.

Figure 17: Percentage of recycled water scheme connections, 2017/18



7% of new dwellings, excluding units, chose to connect to a reticulated recycled water scheme.

## Target increases

On 1 July 2017, the minimum savings targets for energy were increased, typically by 10% for houses and low-rise units, and by 5% for mid and high-rise units. Standards for thermal comfort performance were also raised. There was a six-month transition period for the new targets, which finished 31 December 2017.

The changes in BASIX certificates below include likely responses to the target increases.

- 7% more windows/glass doors with performance glass (tinted or low e) (20% in 2017/18).
- 10% more windows/glass doors and 6% more skylights with double glazing (17% & 36% respectively in 2017/18).
- Solar PV systems as a percentage of dwellings doubled, to 6%.

For more information,



phone the help desk on  
**1300 305 695**



or email **[info@service.nsw.gov.au](mailto:info@service.nsw.gov.au)**