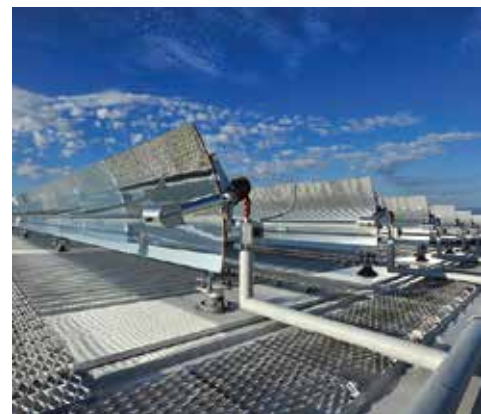




Office of
Environment
& Heritage



NSW Climate Change Fund Annual Report 2012-13

Cover (clockwise from main photo):

Aquatic Centre at Sydney Olympic Park (Hamilton Lund, courtesy of Sydney Olympic Park Authority);

Lighting upgrades at Maitland Station (Government Building Retrofit Program, OEH);

Neville and Nancy enjoying their electric appliances (Home Power Savings Program, OEH);

Solar thermal panels installed on the roof of Charlestown Square (GPT Group)

© 2013 State of NSW and Office of Environment and Heritage

With the exception of photographs, the State of NSW and Office of Environment and Heritage are pleased to allow this material to be reproduced in whole or in part for educational and non-commercial use, provided the meaning is unchanged and its source, publisher and authorship are acknowledged. Specific permission is required for the reproduction of photographs.

Published by:

Office of Environment and Heritage

59 Goulburn Street, Sydney NSW 2000

PO Box A290, Sydney South NSW 1232

Phone: (02) 9995 5000 (switchboard)

Phone: 131 555 (environment information and publications requests)

Phone: 1300 361 967 (national parks, general environmental enquiries, and publications requests)

Fax: (02) 9995 5999

TTY users: phone 133 677, then ask for 131 555

Speak and listen users: phone 1300 555 727, then ask for 131 555

Email: info@environment.nsw.gov.au

Website: www.environment.nsw.gov.au

Report pollution and environmental incidents

Environment Line: 131 555 (NSW only) or info@environment.nsw.gov.au

See also www.environment.nsw.gov.au

ISSN 1836-5310

OEH 2013/0796

December 2013

Contents

Minister's foreword	iv
NSW Climate Change Fund	1
Highlights for 2012–13	2
Achievements for 2012–13	2
Power savings	4
Power savings for households	5
Power savings for businesses	8
Power savings for communities	12
Power savings for government	15
Water savings	20
Water savings for households	20
Water savings for businesses	21
Water savings for communities	24
Water savings for government	26
Clean energy	29
Solar Bonus Scheme	31
Coal Innovation NSW Fund	33
Enhanced Bushfire Management Program	35
Administration and budget	37
Administration and the Australian Energy Market Commission	37
Budget and spending status	38
Appendices	40
Appendix A Legislative requirements	40
Appendix B Tariffs and data sources	42
Appendix C Projects discontinued during 2012–13	44
Glossary	45

Minister's foreword



The NSW Government's Climate Change Fund (the Fund) delivers real actions and value for the environment and our community.

In 2012–13 the Fund supported programs that place downward pressure on the cost of living, increase the competitiveness of doing business in NSW and protect our natural environment.

Projects assisted by the Climate Change Fund achieved some significant milestones this year. The Home Power Savings Program has now assisted more than 85 per cent of its long term target of 220,000 low income households to cut bills and energy use.

The first two Environmental Upgrade Agreements were signed to improve the environmental performance of commercial buildings in Sydney and Parramatta, assisted by seed funding from the Climate Change Fund.

All retrofits have now been completed at the 104 sites that participated in the Government Building Retrofit Program pilot.

The Fund is a cost effective way to support innovation and environmental leadership in NSW.

In total, the Climate Change Fund has helped NSW households save \$206 million a year off their power and water bills and reduce their impact on the environment. On average, every \$1 the Fund invests in power and water saving initiatives delivers more than \$4.50 in utility bill savings.

More than 18,000 NSW businesses have been supported to improve competitiveness and have reduced their operating costs by more than \$68 million a year.

These strategic investments are saving more than 19.8 billion litres of water a year, which is equivalent to more than 7,900 Olympic-size swimming pools, and more than 872,000 megawatt hours of electricity a year, which is enough to power 134,000 households for a year.

In addition the Climate Change Fund is driving a sustainable future for NSW. It's helping to reduce the demand on the grid, improve resource efficiency and create jobs.

I encourage you to read about the innovative and effective Climate Change Fund programs that are achieving these impressive results, as well as inspiring case studies of the transforming effects of these programs.

I am immensely proud of the progress that this report represents towards our goal of building an environmentally and economically sustainable NSW.

A handwritten signature in blue ink, reading "Robyn Parker". The signature is fluid and cursive, with the first name "Robyn" and the last name "Parker" clearly distinguishable.

**The Hon Robyn Parker MP
Minister for the Environment**

NSW Climate Change Fund

The NSW Climate Change Fund (the Fund) was established in 2007 under the *Energy and Utilities Administration Act 1987* (the Act) and is administered by the Office of Environment and Heritage (OEH) within the Department of Premier and Cabinet NSW.

The specific functions of the Fund, as outlined in section 34F of the Act, are to provide funding:

- to reduce greenhouse gas emissions and the impacts of climate change associated with water and energy activities
- to encourage water and energy savings and water recycling
- to reduce the demand for water and energy, including addressing peak demand for energy
- to stimulate investment in innovative water and energy saving measures
- to increase public awareness and acceptance of the importance of climate change, and water and energy saving measures
- for contributions made by the state for the purposes of national energy regulation.

The Fund supports outcomes in two key ways:

- providing direct support to homes, businesses, government, schools and community organisations to implement measures that will save water and power (and related greenhouse gas emissions), and so reduce their water and energy utility bills, and
- stimulating investment in clean energy technologies in NSW through funding for commercialising emerging technologies and additional support for proven technologies such as wind and solar power.

How is it funded?

The main source of funding for the Fund for the financial year was annual contributions from electricity providers, including Ausgrid, Endeavour Energy and Essential Energy, with some funding provided by Gosford and Wyong councils.

Under the Act, the Minister for the Environment requires network service providers and water utilities to make contributions to the Fund via the annual gazettal of Contributions Orders.

Where required, the Minister seeks the concurrence of relevant Ministers when preparing the Contributions Orders. Additional monies added to the Fund come from interest earned on cash balances and funds advanced by the NSW Treasurer for managing the Solar Bonus Scheme.

The 2012–13 Annual Report

This annual report has been prepared in accordance with the requirements of the Act (section 34H). Activities under the Fund are reported for the sixth financial year of operations from 1 July 2012 to 30 June 2013.

As required by the Act, the annual report provides information on fund allocations and anticipated benefits, with reference to the Fund's key performance indicators and purposes.

The performance of the Fund is reported by grouping initiatives for power savings, water savings and clean energy.

Key performance indicators for the Fund are:

- savings in water, energy (consumption and peak demand)
- greenhouse gas emission reduction

- savings in annual energy and water bills for households, businesses, government, community groups and other organisations
- clean energy generated
- cost effectiveness (per funding dollar spent)
- funds allocated.

Highlights for 2012-13

<p>\$302.4 million expended on projects and programs</p> <p>873,000 megawatt hours (MWh) annual electricity savings</p> <p>909,000 tonnes annual greenhouse gas emissions savings</p> <p>19.8 billion litres annual water savings</p> <p>\$205.7 million annual utility bill savings</p> <p>415,000 MWh electricity generated by the Solar Bonus Scheme</p>

The Fund expended \$302.4 million on energy and water savings grants, renewable and clean energy projects, bushfire hazard reduction, and a range of programs to assist households, businesses, communities and government become more water and energy efficient and save money off bills.

On average, every \$1 the Fund has invested in energy and water saving initiatives across all programs is expected to deliver more than \$4.50 in utility bill savings. Funding and savings to date by sector are shown in Table 1 below.

Achievements for 2012-13

Households

Household programs achieved impressive results. More than 77,000 households joined the Home Power Savings Program and received a free home power assessment, Power Savings Kit and personalised action plan. This brings the total number of program participants to 192,860.

The Solar Bonus Scheme generated more than 415,000 megawatt hours of renewable energy during the year from small-scale wind and solar power systems installed across the state.

Businesses

Seventy seven medium-to-large business sites signed up for a subsidised energy audit under the Energy Saver Program, bringing the total number of business audits to 310. More than 1,400 small businesses received an energy assessment, increasing the total to 17,600.

Also, businesses completed 10 water and energy savings grant projects to help save an estimated 7,000 megawatt hours of electricity, 1.7 billion litres of water and more than \$5.5 million off their power and water bills a year. This brings the total of completed business grant projects to 98.

Communities

Not-for-profit community organisations completed 31 grant funded projects estimated to save 266 megawatt hours of electricity, 66 million litres of water and more than \$224,000 off their

power and water bills each year. This brings the total of completed community grant projects to 483.

Thirteen community organisations also signed up for a subsidised energy audit under the Energy Saver Program, bringing the total audits in community organisations to 72.

Over the year, 2 per cent of 84,000 calls made to the Environment Line were in relation to the NSW Climate Change Fund.

Government

Local and state government facilities and schools completed 12 grant funded projects estimated to save 7,900 megawatt hours of electricity, 294 million litres of water and in the order of \$2.1 million off their power and water bills each year. In total 433 government grant projects have been completed.

The Government Building Retrofit Program completed retrofits at all 104 small frontline government service sites to save an estimated 3,800 megawatt hours of electricity, 26 million litres of water and in the order of \$698,000 off power and water bills a year. Procurement efficiencies have meant additional sites and retrofits (such as solar hot water and energy efficient lighting) were completed at no additional cost. This will help essential services, such as ambulance and fire stations, make financial savings that can be redirected into service delivery.

Fourteen government sites also joined the Energy Saver Program.

Regions in focus

There was very strong uptake of water and energy saving projects in regional areas of NSW. More than 45,700 lower income households in regional NSW received a free home power assessment under the Home Power Savings Program. Sixty eight per cent of completed grant projects and 43 per cent of medium to large business, community and government sites supported by the Energy Saver Program were based in regional NSW.

Table 1 NSW Climate Change Fund: overview

Sector	Funding allocated (\$)	Estimated water savings (ML/year)	Estimated electricity savings (MWh/year)	Estimated greenhouse gas savings (tCO ₂ -e/year)	Estimated utility bill savings (\$/year)	Return on investment for every dollar allocated (\$)
Households	241,058,705	5,557	578,225	613,196	110,914,501	3.96
Business	96,585,498	11,230	200,665	194,727	68,020,706	7.04
Community	23,325,610	1,305	26,362	28,552	8,944,982	3.83
Government	61,105,028	1,750	67,449	72,621	17,805,853	2.91
Total	422,074,841	19,842	872,701	909,096	205,686,041	4.51

Table includes the following programs only:

CCF grant projects, Home Saver Rebates Program, Home Power Savings Program, Fridge Buyback Program, public housing retrofits, Energy Saver Program, Government Building Retrofit Program, and the proportion of the Sustainability Advantage – Resource Efficiency module attributed to the CCF. Does not include funding spent on Solar Bonus Scheme, Enhanced Bushfire Management Program, Coal Innovation NSW Fund, Metropolitan Water Education Fund or other CCF administration.

Figures displayed in the highlights at the top of each section have been rounded.
See Appendix B (page 42) for details about figures in tables and data sources for savings estimates.

Power savings

\$281.9 million funding for projects and programs

851,000 MWh annual electricity savings

\$153.6 million annual power bill savings

1.8 years average payback

With \$281.9 million support from the Climate Change Fund, households, businesses, community groups and government save an estimated 851,000 megawatt hours of electricity, 885,000 tonnes of greenhouse gas emissions and \$153.6 million off their power bills a year, as well as 43,000 kilowatts during times of peak demand.

These savings are being delivered through 461 grant funded projects, 215,020 residential rebates and fridge removals, 13,182 public housing retrofits, 192,860 low income household assessments and retrofits, 163 government building retrofits, and more than 18,000 business, community and government sites receiving energy saving advice and implementation support.

Power savings for households

576,000 MWh annual electricity savings
\$98.4 million annual power bill savings
1.9 years average payback

NSW households have embraced a range of initiatives to reduce power bills and make their homes more energy efficient.

To date, \$183.3 million from the Fund has helped NSW households save an estimated 576,000 megawatt hours of electricity, 610,000 tonnes of greenhouse gas emissions and \$98.4 million off their power bills a year, as well as 11,000 kilowatts during times of peak demand.

The Home Power Savings Program is targeted at low income households. Eligible households receive a free in-home energy assessment by an energy expert, a free Power Savings Kit valued around \$200 and installed by the energy assessor, plus a free Power Savings Action Plan advising how much power each area of their home is using, and tailored tips to reduce energy use.

The Power Savings Kit includes a stand-by power board, water efficient showerhead, shower timer, tap aerator, energy efficient light bulbs, door snakes, a set of draught-proofing strips for doors and windows and a thermometer.

At 30 June 2013, 192,860 households across NSW have participated in the Home Power Savings Program saving an estimated 102,000 megawatt hours of electricity, 108,000 tonnes of greenhouse gas emissions and \$31 million off power bills each year. By June 2014, the \$63 million program will target 220,000 low income households across NSW to reduce energy use, including a trial of follow up support for 9,000 participating households, aiming to achieve greater energy savings through changes in behaviour.

NSW households also benefited from 11 grant funded projects, including residential audits, energy efficient appliance refits, and education and awareness campaigns. These projects are estimated to save 50,000 megawatt hours of electricity, 54,000 tonnes of greenhouse gas emissions and \$15.8 million off power bills a year. Ten of these projects were completed by 30 June 2013.

The Save Power Program, which helped teach people to save power at home and work, has concluded. During 2012–13, more than 117,000 people visited the Save Power website to learn more about saving power at home and work. A radio and online advertising campaign highlighted energy efficiency tips over summer, with information in 19 languages. Residents could also access a Save Power Kit in 289 local libraries throughout NSW. The kit provided households with tools and information to help them reduce power and save money on bills. Ninety six per cent of surveyed participants reported that borrowing the kit was a worthwhile experience and helped them understand how to reduce energy use.

Under the Home Saver Rebates Program, 181,310 rebates for climate-friendly hot water systems and ceiling insulation were provided to NSW households. It finished on 30 June 2011 as scheduled. More than 13,000 public housing properties were also fitted with more efficient hot water systems or ceiling insulation.

The Fridge Buyback Program was supported by the Fund until 30 June 2012 and 33,710 households recycled their inefficient second fridge. This program now operates under the NSW Government's Energy Savings Scheme. Visit www.fridgebuyback.com.au for more details.

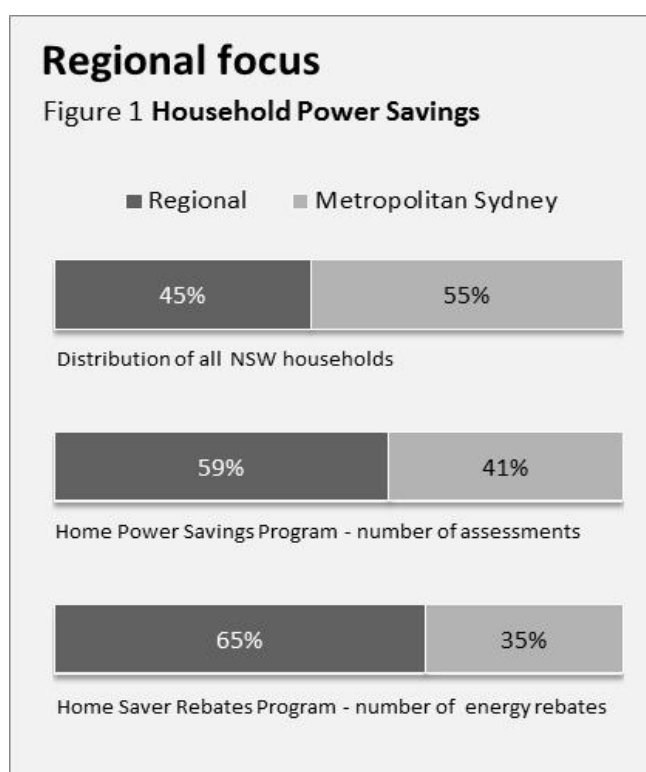
Table 2 Household power saving projects and programs (estimated savings as at 30 June 2013)

Program	Number of projects or participants	Funding allocated (\$)	Estimated electricity savings (MWh/year)	Estimated greenhouse gas savings (tCO ₂ -e/year)	Estimated utility bill savings (\$/year)	Cost effectiveness (\$/MWh)
Home Power Savings Program	192,860	46,747,729	102,413	107,533	30,928,580	91.29
CCF grant projects	11	6,693,030	50,069	54,401	15,826,655	13.37
Home Saver Rebates Program	181,310	105,610,971	378,384	401,087	41,159,200	27.91
Fridge Buyback Program*	33,710	5,045,815	26,631	28,229	8,042,532	18.95
Public Housing Retrofit Program*	13,182	19,202,407	18,126	19,214	\$2,432,370	105.94
Total		183,299,952	575,623	610,464	98,389,336	34.95

For reference, the cost of new electricity supply is \$105 per MWh.

*No Climate Change Fund expenditure in 2012–13

Table does not include power savings from projects designated as water. See Appendix B for tariffs and data sources.



CASE STUDY: Home Power Savings Program



Neville and Nancy enjoying their electric appliances (Home Power Savings Program, OEH)

The Home Power Savings Program has helped in the order of 193,000 lower income households save money on their energy bills. Neville and Nancy from Banora Point recently joined the program after realising their quarterly electricity bill was steadily increasing.

'As pensioners we've always made a point of watching how much power we use, and since joining the program we're even more careful,' said Neville. 'It is often hard to compare one electricity bill to another, but by being mindful of our power usage we've noticed a clear decrease. It was very easy to follow the steps explained by the energy expert, and since our energy assessment in December 2012 we have made savings of 7 per cent off our power bill!'

To effectively engage with eligible households, the Home Power Savings Program has formed strong partnerships with state and locally based government agencies, non-government agencies and community groups such as the Winmalee Neighbourhood Centre.

The Winmalee Neighbourhood Centre is a vital hub for the Blue Mountains, providing a range of programs and services to meet the changing needs of the community, including pensioners, veterans, families and those experiencing disadvantage. A long-time advocate of the Home Power Savings Program, the centre works in partnership with the Blue Mountains City Council and other partners who provide assistance to enhance community service.

According to Morna Colbran, Manager, Winmalee Neighbourhood Centre, feedback from clients who have accessed the Home Power Savings Program has been fantastic.

'They have been shown where their biggest energy usage is and been given advice on how to reduce their energy. The free energy saving products are a bonus, as many did not have the energy saving light bulbs, nor the power board,' she said. 'I recommend this program and do hope it is made available to a wider audience to ensure all who need assistance can access it.'

Power savings for businesses

183,000 MWh annual electricity savings
\$36.4 million annual power bill savings
1.4 years average payback

To date, \$52.7 million from the Climate Change Fund has helped NSW businesses save an estimated 183,000 megawatt hours of electricity, 176,000 tonnes of greenhouse gas emissions, and \$36.4 million off their power bills a year, as well as 25,000 kilowatts during times of peak demand.

The Fund has helped small, medium and large businesses in regional NSW and metropolitan Sydney achieve significant savings by transforming operations and increasing knowledge, skills and capacity.

The Energy Saver Program became a single point of energy efficiency support for small and medium-to-large businesses, offering technical support, resources and training from 1 January 2013.

The program provided subsidised energy audits and support to 251 medium-to-large businesses to identify and implement cost effective energy savings at 310 sites. These audits identified average potential energy and cost savings of 20 per cent of the businesses' baselines. It also assisted 17,600 small businesses through an energy assessment, a tailored action plan and matched funding of up to \$5,000 (where applicable) to make energy improvements.

Overall, businesses participating in the Energy Saver Program are estimated to achieve savings of 93,000 megawatt hours of electricity, 127,000 gigajoules of natural gas, 106,000 tonnes of greenhouse gas emissions and \$26 million off their power bills a year.

Initiatives to boost energy efficiency knowledge and skills have helped 787 key business professionals such as facility managers. Also, 6,671 accountants, builders, electricians, engineers, facilities managers, plumbers and service providers (for example IT professionals and retailers) benefited from targeted, practical training. There were 95 vocational training and university courses developed in a partnership between the OEH and the Department of Education and Communities. Through a training subsidy from the Energy Saver Program, Government Property NSW were able to up-skill their building operations staff to analyse and interpret energy data more effectively at one of Sydney's most historic buildings, Department of Education Building on Bridge Street. This training resulted in staff identifying and implementing actions to achieve a half star National Australian Built Environment Rating System (NABERS) energy improvement.

The Energy Saver Program also developed industry sector guides to help businesses understand common energy saving opportunities and promoting sector benchmarking. Guides for the aged-care and registered clubs sectors are available online, allowing businesses to calculate savings from switching to energy efficient lighting.

More than 40 per cent of program participants are based outside Sydney, due in part to the OEH's work with peak bodies and industry to target specific sectors. The OEH has partnered with the Australian Meat Industry Association, Foodworks, IGA and NSW Farmers to identify other energy saving opportunities in their respective sectors.

From 2009 until 30 June 2012, the Fund provided more than \$1 million to co-fund the Sustainability Advantage Program. This is counted towards the Fund's total. During this time, the Resource Efficiency module of Sustainability Advantage helped 165 businesses save an estimated 37,000 megawatt hours of electricity, 1.8 billion litres of water, 191,000 gigajoules of natural gas and \$16.2 million a year off their bills.

Two councils that received seed funding signed the first Environmental Upgrade Agreements (EUAs) in NSW, for one building in Parramatta and another in downtown Sydney. EUAs help support environmental improvements to existing commercial, industrial, multi-unit residential and strata scheme buildings in NSW. Under a EUA, a finance provider lends funds to a building owner for water,

energy and other environmental upgrades. The loan is repaid through a local council charge on the land. Being channelled through council rates means the loan repayment has statutory priority and a different status to a conventional loan. This additional security enables lenders to offer more competitive, longer term interest rates. In Parramatta, the EUA will cover 43 per cent of the cost of a lighting retrofit, saving tenants around 70 per cent or \$130,000 per year on their lighting bills. The EUA in Sydney made possible a gas-powered trigeneration plant to provide heating and cooling for 3,000 residences and 65,000 square metres of retail and commercial space in 14 buildings.

The Fund provided \$16 million in grants to businesses to implement 42 projects under the Green Business Program, the Public Facilities Program and the former Energy Savings Fund. These projects will help save an estimated 82,000 megawatt hours of electricity, 59,000 tonnes of greenhouse gas emissions and \$8 million off power bills a year. Thirty eight projects were completed by 30 June 2013. These include energy efficiency, education, generation (including cogeneration) and power factor correction initiatives. Technologies comprise absorption chillers and high efficiency compressors in industrial processes, multi-level lighting systems, and installation of utilities management systems and efficient speed drives.

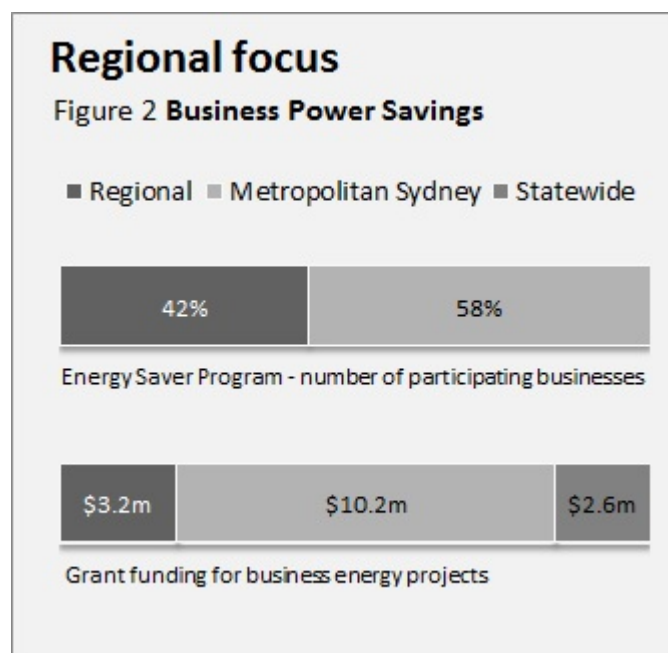
Table 3 Business power saving projects and programs (estimated savings as at 30 June 2013)

Program	Number of projects or participants	Funding allocated (\$)	Estimated electricity savings (MWh/year)	Estimated greenhouse gas savings (tCO ₂ -e/year)	Estimated utility bill savings (\$/year)	Cost effectiveness (\$/MWh)
CCF grant projects	42	15,993,662	82,018	58,779	7,909,367	19.50
Energy Saver Program	17,910	35,716,157	92,726	105,518	25,980,163	38.52
Sustainability Advantage Program – Resource Efficiency module	165	1,035,000	8,209*	11,311*	2,521,969*	12.61
Total		52,744,819	182,953	175,607	36,411,499	28.83

For reference, the cost of new electricity supply is \$105 per MWh.

* This represents 22 per cent of the total water and energy savings achieved by the Sustainability Advantage Program, proportional to the amount of co-funding provided by the Climate Change Fund.

Table does not include power savings from projects designated as water. See Appendix B for tariffs and data sources.



CASE STUDY: Cogeneration at GPT Group, Charlestown Square



Cogeneration equipment (GPT Group)

The GPT Group's \$470 million redevelopment of Charlestown Square incorporated a range of sustainable development initiatives, with the stated aim of reducing the square's impact on the environment by 30 per cent.

With funding of \$1,960,000 from the Climate Change Fund, GPT has installed a large cogeneration plant. Using natural gas, the plant produces electricity and chilled water via absorption chillers to produce up to 60 per cent less greenhouse gas emissions compared with black or brown coal, ensuring a better environmental outcome for the local community.

The cogeneration plant has been operating since May 2011, at an average efficiency of 40 per cent. In the first 12 months of operation the plant has produced 11,021 megawatt hours of electricity and over 1,000 megawatt hours of free cooling, which was 13 per cent higher than the target production, and represented 72 per cent of the redeveloped square's total energy consumption.

In its second year, the cogeneration plant reduced greenhouse gas emissions by 5,452 tonnes.

CASE STUDY: St Andrew's Cathedral School



Front of St Andrews Cathedral School (Energy Saver Program, OEH)

St Andrew's Cathedral School is a coeducational school with more than 1,100 students. Located in two Sydney CBD office towers, it shares many of the same energy challenges of neighbouring businesses, with the bulk of its power consumption from lighting and air conditioning.

A subsidised energy saver audit of the school identified a range of energy saving initiatives, including a lighting upgrade and installation of motion detectors in offices, classrooms, corridors, toilets, storerooms and kitchens, as well as adding an economy cycle to packaged air conditioning units. The implementation of recommendations reduced the school's power consumption by 35 per cent, reducing greenhouse gas emissions by 733 tonnes a year and saving the school an estimated \$124,500 off annual energy bills.

The capital cost of these projects which includes replacing more than 3,500 lights exceeds \$360,000, with an expected payback period of two years in combined electricity and maintenance savings. The lighting upgrade project is eligible for Energy Savings Certificates, which will reduce the payback period to less than a year.

Executive Director of School Services, John Cross, says the school was thrilled when the audit identified improvements that would halve the school's annual energy consumption. He said that with electricity prices predicted to increase by 50 to 60 per cent in the next three years, the savings were very timely.

'The electricity we'll save is equivalent to the power consumption of 100 houses,' he said. 'We're very proud of the potential environmental benefits associated with our '100 Houses Project'.'

CASE STUDY: Airds Country Meats



New lighting on meat display (Energy Saver Program, OEH)

Airds Country Meats butchery in Campbelltown provides meats to budget-conscious customers. Owner Paul Edenborough bought the business six years ago. Recognising some of the equipment was outdated and inefficient, Paul talked to other businesses in the area to find ways to improve efficiency. Through the local Chamber of Commerce he accessed Energy Efficiency for Small Business Program subsidies.

'We installed three refrigeration units which have made a huge difference to the store's upkeep. Previously we would need to do at least three repairs a year. Now we do one maintenance check per year in September before the summer season. All works really well,' he said.

After working with the OEH, Airds Country Meats was able to implement its Energy Action Plan. The store had inefficient belt driven motors for refrigeration running constantly. As a result the action plan focussed on upgrading these to more energy efficient motors.

When he bought the store Paul immediately replaced the old lighting with fluorescent lighting and added shade covers to minimise lighting intensity on the meat. 'Our customers have noticed the meat is fresher and the store's temperature is cooler. Staff noticed a difference too; the in-store noise level has significantly reduced,' he said.

Inspired by the difference the refrigeration upgrades made, Paul replaced the cool room compressor. Next steps will include installing thermal blankets for the fridge display units to keep temperatures down overnight during the summer months.

'You would be crazy not to do the Program. It helps turn around your emissions and energy bills, and saves you money. I would participate in the Program again – it's a great idea.'

Power savings for communities

26,000 MWh annual electricity savings
\$5.5 million annual power bill savings
1.5 years average payback

To date, \$8.5 million from the Climate Change Fund has helped NSW community groups save an estimated 26,000 megawatt hours of electricity, 27,000 tonnes of greenhouse gas emissions and \$5.5 million off their power bills a year, as well as 34 kilowatts during times of peak demand.

The Climate Change Fund allocated \$6 million in grants for community groups to implement 256 projects under the Public Facilities Program and former Energy Savings Fund. These projects are estimated to save 14,000 megawatt hours of electricity, 15,000 tonnes of greenhouse gas emissions and \$3 million off power bills a year. As at 30 June 2013, 252 projects have already been completed.

Under the Community Savers stream of the Public Facilities Program, 250 community organisations received financial support to reduce energy consumption and power bills by implementing simple, low cost initiatives such as lighting upgrades, and installing more efficient hot water systems, ceiling insulation and skylights. Essential community organisations such as not-for-profit preschools, aged care groups, disability and support services, sport and recreation clubs, and religious facilities have all benefitted.

Six large community organisations also received funding for energy upgrades and community education under these initiatives – community halls and education centres received insulation, lighting upgrades, optimal heating, ventilation and air conditioning systems, and chillers. The projects also support education initiatives such as events and workshops, signage, education brochures and websites to engage the community and encourage more savings.

Fifty six community organisations have joined the Energy Saver program, resulting in 72 site audits. These organisations are estimated to save 11,000 megawatt hours of electricity, 5,000 gigajoules of natural gas, 12,000 tonnes of greenhouse gas emissions and \$2.5 million off power bills a year.

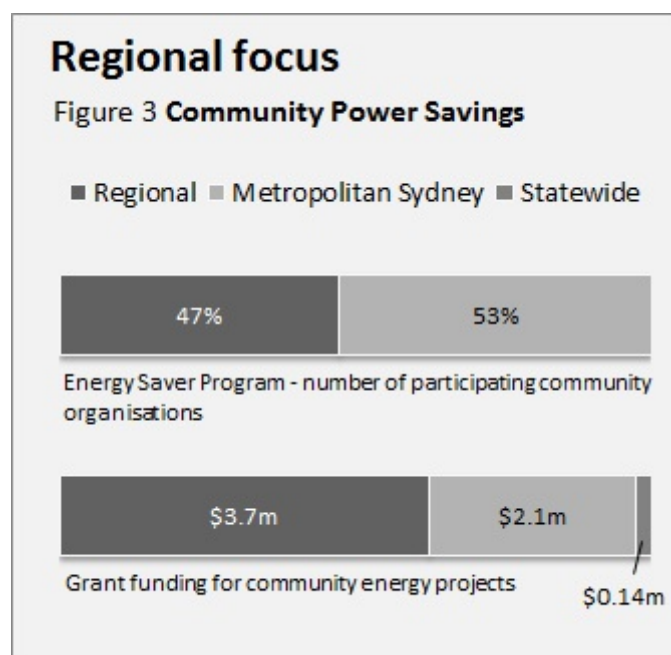


Table 4 Community power saving projects and programs (estimated savings as at 30 June 2013)

Program	Number of projects	Funding allocated (\$)	Estimated electricity savings (MWh/year)	Estimated greenhouse gas savings (tCO ₂ -e/year)	Estimated utility bill savings (\$/year)	Cost effectiveness (\$/MWh)
CCF grant projects	256	5,955,948	14,394	15,401	2,962,647	41.38
Energy Saver Program	72	2,551,196	11,154	12,006	2,489,219	22.87
Total		8,507,145	25,548	27,407	5,451,866	33.30

For reference, the cost of new electricity supply is \$105 per MWh.

Table does not include power savings from projects designated as water. See Appendix B for tariffs and data sources.

CASE STUDY: Warilla Bowls and Recreation Club – Sustainability Matters Project

Warilla Bowls and Recreation Club on the South Coast reduced both its water and energy consumption by around 15 per cent with \$34,285 support from the Climate Change Fund.

The installation of energy efficient lighting, and upgrading to waterless woks within the Club's Seaview Restaurant saved 183 megawatt hours of electricity and 2.6 million litres of water in the 12 months since the project was completed.

The club engaged sustainability consultants Rana Environmental to identify savings opportunities and provide a clear set of directives to reduce the club's bottom line.

'Not only has the club improved its environmental performance, we are also saving money on utility bills,' General Manager Phillip Kipp said.



Waterless woks (Warilla Bowls and Recreation Club)

Of particular note, 450 feature lights within the gaming area were retrofitted with LED lighting technology without compromising ambience and effect. These lights are approximately 90 per cent more efficient and have, on average, a 75 per cent longer life expectancy.

The project is benefitting the wider community by reducing greenhouse gas emissions and reducing pressure on the potable water supply, as well as demonstrating the sustainability initiatives that businesses can undertake.

Power savings for government

67,000 MWh annual electricity savings
\$13.3 million annual power bill savings
2.8 years average payback

The Climate Change Fund has provided \$37.4 million to help local and state government facilities and schools save an estimated 67,000 megawatt hours of electricity, 72,000 tonnes of greenhouse gas emissions and \$13.3 million off their power bills a year, as well as 7,000 kilowatts during times of peak demand.

The \$6.3 million Government Building Retrofit Program assisted 104 small government service sites and 59 large government service sites to improve energy efficiency and achieve financial savings which can be redirected into service delivery.

A pilot program to improve water and energy efficiency in the Illawarra, Lower Hunter and Circular Quay assisted 104 sites, including ambulances stations, fire stations, courts, disability care residences, train stations and national park offices. Each site received an energy audit and action plan that identified small-scale retrofit opportunities such as energy efficient lights and other energy saving devices, and water efficient showerheads and other water saving devices which result in power savings. This is estimated to save \$639,000 off power bills annually, which can be reinvested into frontline service delivery.

The Fund also assisted 59 of the NSW Government's largest energy-using services to make energy savings. Services such as hospitals received funding and access to technical expertise to develop a strong business case to implement energy saving measures through a Treasury Loan Fund. These initiatives are projected to save the NSW Government an estimated \$6.3 million a year off power bills and operating costs.

The Fund also helped develop a Panel for Energy Performance Contracts (EPC). This will allow large energy-using government sites easy access to cost effective energy saving solutions. The Panel is anticipated to be ready in November 2013.

Forty six local councils and state government agencies have joined the Energy Saver Program and committed to 93 site audits to help save 8,000 megawatt hours of electricity, 17,000 gigajoules of natural gas, 10,000 tonnes of greenhouse gas emissions and \$1.8 million off power bills a year.

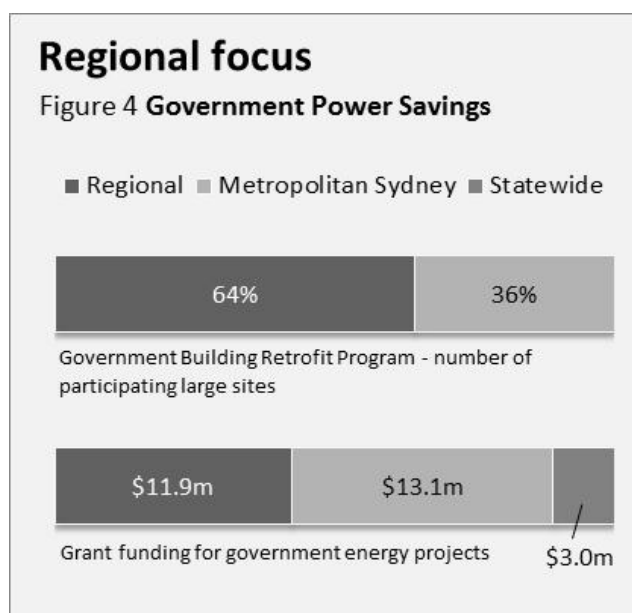
Under the Public Facilities Program, the Schools Energy Efficiency Program and the former Energy Savings Fund, 152 projects are being implemented in schools and local and state government sites, saving an estimated 23,000 megawatt hours of electricity, 24,000 tonnes of greenhouse gas emissions and \$4.5 million off power bills a year. As at 30 June 2013, 149 projects have already been completed.

Table 5 Government power saving projects and programs (estimated savings as at 30 June 2013)

Program	Number of projects or participants	Funding allocated (\$)	Estimated electricity savings (MWh/year)	Estimated greenhouse gas savings (tCO ₂ -e/year)	Estimated utility bill savings (\$/year)	Cost effectiveness (\$/MWh)
CCF grant projects – local government	13	1,245,820	2,864	2,747	465,397	43.49
CCF grant projects – state government	11	6,520,720	11,928	12,636	2,144,118	54.67
CCF grant projects – schools	128	20,247,712	8,280	8,694	1,937,561	244.53
Government Building Retrofit Program – small sites	104	5,048,462	3,818	4,108	609,878	132.22
Government Building Retrofit Program – large sites	59	1,084,394	31,941	34,185	6,342,164	3.39
Energy Saver Program	93	3,213,352	8,091	9,593	1,808,305	39.71
Total		37,360,459	66,923	71,962	13,307,423	\$55.83

For reference, the cost of new electricity supply is \$105 per MWh.

Table does not include power savings from projects designated as water. See Appendix B for tariffs and data sources.



CASE STUDY: Hospital fine-tunes for healthy savings



Heating, ventilation and air-conditioning equipment at Queanbeyan Hospital (Energy Saver Program, OEH)

Queanbeyan Hospital is housed in a modern, well-designed three-storey building. However a recent audit revealed the hospital's Building Management System (BMS), which controls the heating, ventilation and air-conditioning system accounting for more than 70 per cent of the hospital's energy use, had been poorly programmed.

Recommended changes to the BMS included turning off boilers in summer and chillers in winter, recalibrating the set points of the heating and cooling systems in each area to avoid conflicts and altering the operating hours of air handling and fan coil units to better reflect the needs of the occupied areas. The hospital is now saving more than \$146,915 a year at a cost of \$3,000. The audit also identified other cost effective energy efficiency opportunities, such as replacing halogen downlights with LEDs.

- Annual bill savings of more than 32 per cent
- Annual cut in electricity use of 350 megawatt hours and gas use of 2,840 gigajoules
- Annual cut in carbon emissions of 560 tonnes
- Payback period of less than three months for all projects combined.

CASE STUDY: Operating on energy bills



Lighting upgrade in nurse's station at Westmead Hospital (Western Sydney Local Health District)

Westmead Hospital has upgraded buildings and saved on electricity costs without diverting funds away from patient care.

As the most energy intensive site operated by the NSW Government, Western Sydney Local Health District (WSLHD) needed a way to reduce electricity use and the impact of rising electricity prices.

WSLHD provides health care for around 830,000 people through five major hospitals and seven community centres, including Westmead Hospital. It understood there were significant savings to be made by improving ageing plant and equipment. However, with competing demands for limited capital, extra funding was needed.

Westmead Hospital received \$325,000 from the Climate Change Fund Public Facilities Program to help fund a \$3.6 million lighting and control upgrade. The remaining funding was sought from the NSW Treasury Loan Fund. The savings are used to repay the loan and ongoing savings invested in patient care.

The upgrade is currently saving more than 3,200 megawatt hours of electricity per year and reducing energy bills by \$450,000 a year. The project has improved lighting at the Hospital and reduced the need for maintenance.

CASE STUDY: Coffs Harbour City Council: Integrating energy efficiency and renewable energy generation



Solar photovoltaic panels (Coffs Harbour City Council)

Rigby House is a public building occupied by Coffs Harbour City Library and the Regional Gallery. Coffs Harbour City Council has implemented a combination of energy efficiency measures and solar photovoltaic (PV) energy generation at Rigby House, to cut grid electricity use by almost 30 per cent.

This building was chosen by the council both for its energy saving potential and its high profile in the community, providing excellent opportunities for community education on energy efficiency and renewable energy. The Climate Change Fund committed \$715,000 towards this project.

The energy efficiency measures were implemented based on recommendations provided in an audit. A large number of 36 watt twin light fittings were de-lamped and retrofitted with energy efficient lights. Motion sensors were installed in amenities and low occupancy level areas to reduce the number of lighting hours. In addition, conventional hand dryers were replaced with energy efficient air blade dryers.

A 137 kilowatt grid connected PV system was installed on a roof area of 1,200 square meters. The system includes 650 high quality panels (210 watts each) and 22 inverters. It is producing 189 megawatt hours of electricity a year, most of which is used onsite.

With energy saving measures and PV system in place, the annual electricity consumption of Rigby House has been reduced to 601 megawatt hours a year, with electricity savings of 235 megawatt hours a year and greenhouse gas emissions reduced by 249 tonnes a year. This site has proven to be a good educational facility for local schools and the wider community.

Water savings

\$124.5 million funding for projects and programs
19.2 billion litres annual water savings
\$46.3 million annual water bill savings
2.6 years average payback

With \$124.5 million support from the Climate Change Fund, households, businesses, community groups and government save an estimated 19.2 billion litres of water and \$46.3 million off water bills a year through 602 grant funded projects, 150,933 residential rebates, 18,855 public housing retrofits and retrofits at 48 frontline government services.

Water savings for households

5.4 billion litres annual water savings
\$11.5 million annual water bill savings
4.7 years average payback

To date, \$57.8 million from the Climate Change Fund has helped NSW households save an estimated 5.4 billion litres of water and \$11.5 million off their water bills a year.

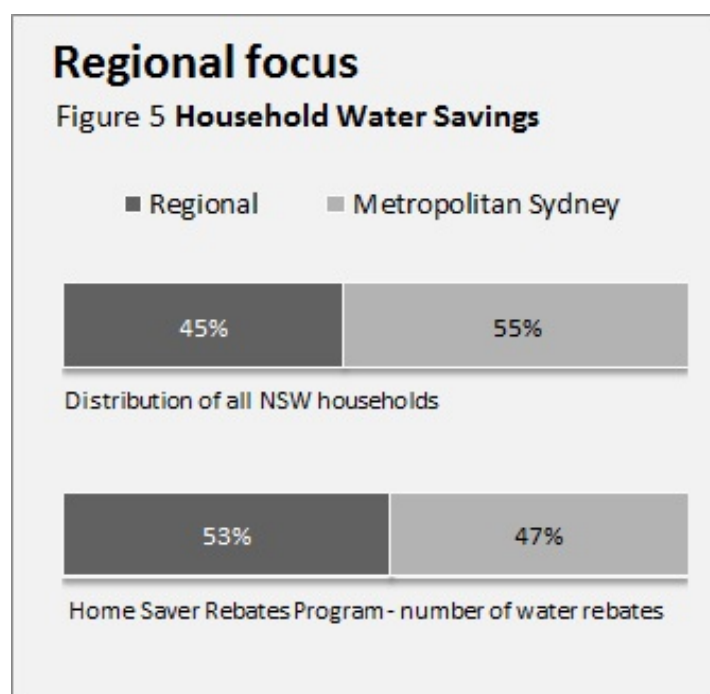
Households have benefited from a range of projects to make their homes more water efficient. These include installing water efficient fixtures, harvesting rainwater with rainwater tanks, and using alternative water sources for laundries, gardens and toilets. Using \$3.9 million from the Fund, these 12 projects are estimated to save 295 million litres of water and \$633,000 off water bills each year. Nine of these projects had been completed at 30 June 2013.

By participating in the now-finished Home Saver Rebates Program, 150,933 households across regional NSW and Sydney took action to make their homes more water efficient. This program provided rebates for rainwater tanks, water efficient washing machines, dual flush toilets and hot water circulators. In the order of 19,000 public housing properties were also fitted with water saving tap valves and showerheads.

Table 6 Household water saving projects and programs (estimated savings as at 30 June 2013)

Program	Number of projects or participants	Funding allocated (\$)	Estimated savings (ML/year)	Estimated bill savings (\$/year)	Cost effectiveness (\$/kL)
CCF grant projects	12	3,909,177	295	632,941	1.33
Home Saver Rebates Program	150,933	49,394,183	4,753	10,076,621	1.04
Public housing retrofits*	18,855	4,455,393	394	806,805	1.13
Total		57,758,753	5,442	11,516,367	1.06

* No CCF expenditure in 2012–13. Table does not include water savings from projects designated as power. See Appendix B for tariffs and data sources.



Water savings for businesses

10.8 billion litres annual water savings
\$27.5 million annual water bill savings
1 year average payback

To date, \$29 million from the Climate Change Fund has helped NSW businesses save an estimated 10.8 billion litres of water and \$27.5 million off their water bills a year.

The Fund has helped businesses in a variety of sectors become more water efficient through programs that support diverse technologies.

Sixty three stormwater and rainwater harvesting, water recycling, groundwater use and water efficiency projects are being funded under the Green Business Program, the Central Coast Water Savings Fund and the former Water Savings Fund. Fifty six projects were completed by 30 June 2013. These include water recovery and reuse from industrial processes and equipment and water efficient devices and equipment.

The Fund provided \$697,715 to the Metropolitan Water Directorate for a Recycling and Stormwater Harvesting Program. The program, administered by the Directorate, concluded on 30 June 2013. The program provided funding support to recycled water suppliers, and distributors to help them develop localised recycling and stormwater harvesting schemes. The Program helped fund a range of recycling projects at various locations including, Ku-ring-gai, Pennant Hills, Bondi Beach, Wollongong, Woollahra, Randwick and the Blue Mountains.

Table 7 Business water saving projects and programs (estimated savings as at 30 June 2013)

Program	Number of projects	Funding allocated (\$)	Estimated savings (ML/year)	Estimated bill savings (\$/year)	Cost effectiveness (\$/kL)
CCF grant projects	63	28,986,279	10,823	27,522,597	0.27

Table does not include water savings from projects designated as power. See Appendix B for tariffs and data sources.

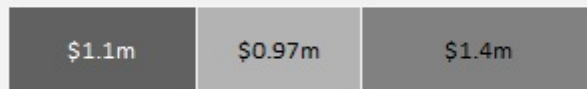
Regional focus

Figure 6 **Business Water Savings - Central Coast Water Savings Fund**

- Efficiency projects
- Recycling projects
- Harvesting projects



Water savings (annual)



Grant funding for business water projects

CASE STUDY: Mogo Zoo



Feed trees for the animals (Mogo Zoo)

Mogo Zoo is one of Australia's premier private zoos, providing world-standard facilities and breeding programs for more than 40 rare and exotic species. However, it was identified by the Eurobodalla Shire Council as one of the largest water users in the shire, using more than 7.5 million litres of potable water a year.

The zoo received \$499,000 from the Climate Change Fund to install a rainwater harvesting and storage system and a wastewater treatment plant. The treated water is used for watering the animals, cleaning enclosures, flushing toilets and landscape irrigation around the zoo. It is also used to water a large stand of feed trees for the animals.

The site has achieved massive water savings of more than 80 per cent, reducing its consumption to less than 1.4 million litres in 2012, while maintaining constant visitor numbers and increasing exhibits by some 40 animals.

'Our water savings have enabled us to invest in additional exhibits and improve the zoo experience for both the animals and our visitors,' General Manager John Appleby said. 'We're proud of our achievements and are happy to let everyone know what we've done and how we've done it.'

Water savings for communities

1.2 billion litres annual water savings
\$3 million annual water bill savings
4.4 years average payback

Communities across NSW are implementing a range of simple, low cost water upgrades.

To date, \$14.8 million from the Climate Change Fund has helped NSW community groups save an estimated 1.2 billion litres of water and \$3 million off their water bills a year.

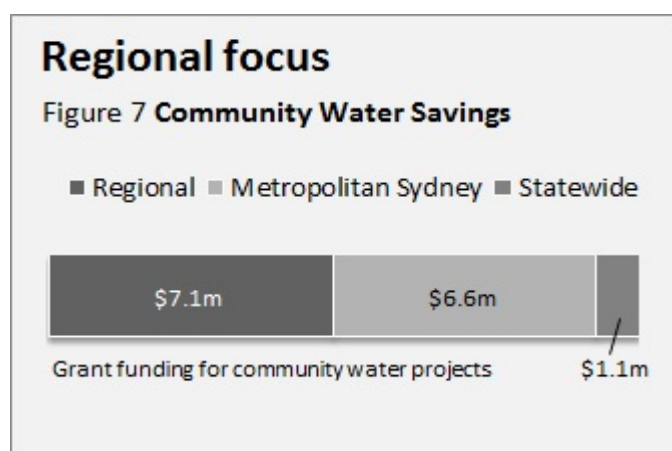
A total of 241 water saving projects for community groups are being implemented with grants from the Public Facilities Program, the Central Coast Water Savings Fund and the Water Savings Fund (within Sydney). At 30 June 2013, 230 of these projects have been completed.

Funded water saving projects include upgrading and retrofitting bathroom amenities, installing rainwater tanks and recycling water for irrigation. Organisations undertaking these projects comprise aged care groups, disability and support services, early childhood services, and sport and recreation clubs. Larger public facilities such as community halls and leisure centres are implementing demonstration projects. Funded projects include education, groundwater harvesting, irrigation system improvements and upgrades, laundry monitoring, ozone generation, rainwater harvesting, stormwater harvesting and wastewater recycling.

Table 8 Community water saving projects and programs (estimated savings as at 30 June 2013)

Program	Number of projects	Funding allocated (\$)	Estimated savings (ML/year)	Estimated bill savings (\$/year)	Cost effectiveness (\$/kL)
CCF grant projects	241	14,770,056	1,238	3,047,751	\$1.19

Table does not include water savings from projects designated as power. See Appendix B for tariffs and data sources.



CASE STUDY: Toukley Golf Club



Water-efficient sprinklers (Toukley Golf Club)

Toukley Golf Club has a long history of implementing water saving initiatives, using recycled effluent and stormwater to irrigate its fairways. With \$69,000 funding from the Central Coast Water Savings Fund (part of the Climate Change Fund), the golf club added stormwater harvesting to its water reuse program to provide high quality water for its tees and greens, saving more than 33 million litres of water a year.

Most recently, Laurie Nicholson, a club board member, noticed that the sprinklers used for watering the greens also watered the adjacent fairways, wasting around 10 megalitres of precious water every year.

Using \$37,185 provided by the Central Coast Water Savings Fund, the golf club has installed adjustable-arc sprinklers using harvested water alone to irrigate the 18-hole championship course's greens but not the surrounding fairways.

The club also worked with Wyong Shire Council on another water saving initiative to harvest, store and re-use stormwater from local streets on the course. This project received \$98,000 funding from the Central Coast Water Savings Fund and is saving a further 6 megalitres of water per year.

This means the club can now irrigate its greens and fairways with 100 per cent recycled water. With the support of the Climate Change Fund, the golf club is estimated to save a total of 49 megalitres of potable water annually, resulting in a reduction of \$116,000 in water bills every year.

Water savings for government

1.7 billion litres annual water savings

\$4.2 million annual water bill savings

5.4 years average payback

To date, \$23 million from the Climate Change Fund has helped local and state government facilities and schools save an estimated 1.7 billion litres of water and \$4.2 million off their water bills a year.

Across NSW, 286 water projects were allocated grants under the Public Facilities Program, the Central Coast Water Savings Fund, the Water Savings Fund (within Sydney) and the Rainwater Tanks in Schools Program. At 30 June 2013, 281 of these projects have been completed.

The Rainwater Tanks in Schools Program provided 218 schools with funding to purchase and install rainwater tanks. Additional funding was provided for water audits and monitoring, and to install water efficient taps, bubblers, bubbler cages and dual flush toilets. These projects also supported education activities to increase awareness about water conservation.

Forty eight frontline government services also received help to reduce their water use and save money as part of the \$6.3 million Government Building Retrofit Program. Ambulance services, disability care residences, fire stations and other small government service sites in the Lower Hunter and Illawarra regions, and Circular Quay in Sydney had water saving devices installed following an audit and action plan. Items typically installed included dual flush toilets, low-flow showerheads and flow restrictors. These services are estimated to save \$35,000 off water bills annually, which can be reinvested into frontline service delivery.

Water for Life is an engagement and education program coordinated by the Metropolitan Water Directorate, part of the NSW Department of Finance and Services. It delivers community engagement and social research in support of the Metropolitan Water Plan and targeted capacity building and education projects. It also coordinates a whole-of-government approach to engagement and education around water planning across greater Sydney.

Water for Life delivered a comprehensive community engagement and social research program to support the review of the Metropolitan Water Plan. This involved running community and stakeholder workshops across greater Sydney, surveying 950 greater Sydney residents to identify values, attitudes and behaviours around water planning issues and establishing an online engagement hub on the NSW Government's 'Have Your Say' website (<http://engage.haveyoursay.nsw.gov.au/metropolitan-water-plan-review>).

Water for Life also delivered a range of key capacity building and educational outcomes. These included Advancing Sustainability Leaders, a program to support sustainability and leadership capacity across local councils undertaking water projects in greater Sydney and the catchments; and Community Engagement Training for Water Engineers, an initiative to enhance the ability of water engineers in local government to integrate education and engagement into their stormwater and water recycling infrastructure projects.

Showcase 2012 was Water for Life's major one-day water education event. More than 60 water educators and water industry professionals attended a mix of workshops, presentations and group activities.

**Table 9 Government water saving projects and programs
(estimated savings as at 30 June 2013)**

Program	Number of projects or participants	Funding allocated (\$)	Estimated savings (ML/year)	Estimated bill savings (\$/year)	Cost effectiveness (\$/kL)
CCF grant projects – local government	51	13,568,521	1,187	2,934,358	1.14
CCF grant projects – state government	5	1,179,959	95	239,904	1.24
CCF grant projects – schools	230	8,092,989	399	1,006,493	2.03
Government Building Retrofit Program	48	159,501	14	34,527	1.13
Total		23,000,970	1,695	4,215,282	1.36

Table does not include water savings from projects designated as power. See Appendix B for tariffs and data sources.

CASE STUDY: Saving Water in the Heart of Gosford



Gosford City Council (Gosford City Council)

Gosford City Council is saving more than three million litres of water a year with the completion of a water savings project at its main administration building.

The project received \$37,000 from the Central Coast Water Savings Fund, part of the Climate Change Fund, and is saving more than 50 per cent of the building's total water use.

The council replaced 30 single flush toilets with water efficient dual flush toilets and installed a condensation reuse tank and pump. The new system involves collecting the condensate created by the building's air cooling system, pumping it to a large tank on the roof of the building, and using it to flush the newly installed dual flush toilets.

Gosford City Council Director of Water and Sewer Rod Williams said this innovative project is an example of council's ongoing efforts to become more sustainable.

'With a workforce of over 200 in the building it is one of council's top 10 water using sites and this project has helped reduce our demand on the town water supply. This project demonstrates how simple actions like upgrading toilets can make a major difference to a building's water usage,' he said.

The 12 months following installation saw a significant reduction in water use. It was initially estimated that up to a quarter of the building's annual water consumption could be saved, however recent data has shown that water use has been cut by more than 50 per cent.

Clean energy

\$15.6 million funding for renewable technology projects
18,000 MWh renewable energy generation
\$3.1 million annual power bill savings
5.0 years average payback

The Climate Change Fund provided \$15.6 million for eight clean energy projects under the Public Facilities Program, the former Energy Savings Fund and the Renewable Energy Development Fund. These projects will help generate an estimated 18,000 megawatt hours of electricity a year, and save 19,000 tonnes of greenhouse gas emissions and \$3.1 million off power bills annually. Three of these projects were completed in 2012–13, adding to the five already completed.

The Fund has supported significant projects that will enable new ways of using the state's renewable energy resources to power economic development for NSW.

Some of the projects include harnessing methane gas from animal effluent and sewage, solar thermal technologies and installing mini hydro-generators and photovoltaic panels. These technologies are not yet deemed cost effective. The Fund is helping overcome a major barrier to investment by bridging the gap between the upfront cost of investment in these technologies and savings on energy bills.

The Fund also allocated \$3.1 million to projects that are installing photovoltaic panels and power and water saving technologies. These projects include 'greening' community centres, schools and public buildings.

Another of the Fund's contributions to renewable energy is the Regional Clean Energy Program. This initiative supports community engagement in renewable energy projects – large and small-scale – across a variety of renewable technologies including wind, solar, geothermal and bioenergy.

Initiatives under the Regional Clean Energy Program include feasibility studies for nine community owned renewable energy projects and supporting the uptake of energy efficiency initiatives across regional NSW through regionally-based coordinators who provide a face-to-face link to state and federal energy efficiency programs.

Under the program a guide for landholders on hosting wind turbines (in partnership with the NSW Farmers Association), and a study of low-frequency noise and infrasound on wind farm noise (in partnership with Environment Protection Authority Noise Policy section) are being developed.

**Table 10 Clean energy projects and programs
(estimated savings as at 30 June 2013)**

Program	Number of projects	Funding allocated (\$)	Estimated electricity savings (MWh/year)	Estimated greenhouse gas savings (tCO ₂ -e/year)	Estimated utility bill savings (\$/year)	Cost-effectiveness (\$/MWh)
CCF grant projects – clean energy	8	15,646,408	17,992	18,892	3,099,923	86.96

See Appendix B for tariffs and data sources.

CASE STUDY: Solar Flagships Broken Hill and Nyngan solar plants

In 2012–13 the NSW Government made a commitment of \$64.9 million to develop two large-scale solar projects in western NSW. AGL will construct solar power plants in Broken Hill and Nyngan, which will produce approximately 360,000 megawatt hours of electricity and meet the needs of more than 50,000 average homes. The benefits from the projects are:

- The creation of over 150 regional jobs during construction in Broken Hill as well as 300 jobs in Nyngan, providing ongoing economic benefits to western NSW
- Fulfilment of a NSW Government promise to create regional jobs, drive economic benefits to western NSW and build our renewable energy sector.

Construction of the Nyngan project is expected to commence in January 2014, with completion scheduled by mid-2015. Construction of the Broken Hill project will start in July 2014 and is scheduled for completion around late 2015.

As part of the Solar Flagships program, the University of New South Wales and University of Queensland will use the plant for cutting-edge research, including a power system interface laboratory at the University of New South Wales.

Solar Bonus Scheme

\$548 million reimbursed to date
1,044,107 MWh renewable energy generated to date

The Solar Bonus Scheme provides eligible households and small businesses with a premium rate for the electricity they generate from small-scale solar or wind systems.

The Scheme is administered by the Department of Trade and Investment Regional Infrastructure and Services and funded by the Climate Change Fund. Under the Scheme, participants receive a feed-in tariff for the electricity they export to the grid between 1 January 2010 and 31 December 2016. The Scheme closed to new applicants in April 2011 and no new connections were made after 30 June 2012.

The OEH is responsible for verifying and paying claims for reimbursement from the Fund to the distribution network service providers for payments made to energy customers under the Scheme.

At 30 June 2013, there were 146,456 small-scale systems connected to the scheme. In 2012–13, these systems generated more than 415,000 megawatt hours of renewable electricity, and the Fund provided \$197.9 million in reimbursement payments.

Visit www.trade.nsw.gov.au/energy/sustainable/renewable/solar/solar-scheme for more information on the Solar Bonus Scheme.

Table 11 Solar Bonus Scheme (estimated electricity generation)

Program	Year	Number of new systems	Total reimbursement (\$)	Estimated electricity generation (MWh)	Cost effectiveness (\$/MWh)
Solar Bonus Scheme	Jan 2010-June 2011	120,378	138,253,239	184,686	
Solar Bonus Scheme	2011–12	24,235	211,841,253	443,821	
Solar Bonus Scheme	2012–13	1,843*	197,934,670	415,600	
Total		146,456	548,029,162	1,044,107	525

* These are not new connections in 2012–13. Systems were connected before 30 June 2012 but the first reimbursement appeared in 2012–13.

Regional focus

Figure 8 **Solar Bonus Scheme**

■ Regional ■ Metropolitan Sydney



Number of connected systems



Average system size



Electricity generation in 2012-13

Coal Innovation NSW Fund

The Coal Innovation NSW Fund is administered by the Department of Trade and Investment, Regional Infrastructure and Services (DTIRIS), with advice from Coal Innovation NSW.

The NSW Government committed \$100 million over four years (concluding in 2012–13) to the Coal Innovation NSW Fund:

- for research into, and development of, low-emissions coal technologies
- to demonstrate low-emissions coal technologies
- to increase public awareness and acceptance of the importance of reducing greenhouse gas emissions through the use of low-emissions coal technologies
- for the commercialisation of low-emissions coal technologies.

Payments from the Climate Change Fund to the Coal Innovation NSW Fund totalled \$31.5 million in 2012–13. The Coal Innovation NSW Fund provides a separate report to Parliament on its activities and expenditure each year.

Visit www.resources.nsw.gov.au/resources/low-emissions-coal for more information about the Coal Innovation NSW Fund.

Key projects funded

Delta Carbon Capture and Storage Project

The goal of this project is to demonstrate post-combustion capture, transport and permanent geological storage of carbon dioxide from a power station, storing up to 100,000 tonnes of CO₂ per year. The Coal Innovation NSW Fund allocated \$9.43 million to co-fund the \$28.3 million Stage one of this project, with the Commonwealth Department of Resources, Energy and Tourism and ACA Low Emissions Technology Limited matching the funding. Stage one involves planning and securing approvals, developing a storage site for CO₂ and developing front-end engineering and design. The project will be hosted at Delta Electricity's Vales Point Power Station. The project has reduced spending significantly as suitable storage sites are currently under investigation. During year the Coal Innovation NSW Fund contributed \$120,000 to the project.

NSW CO₂ Storage Assessment Program

The Coal Innovation NSW Fund has allocated \$18.1 million to co-fund a \$54.3 million NSW CO₂ Storage Assessment Program, with Geoscience Australia and Australian Coal Association Low Emissions Technologies Limited matching the funding.

This project has two aims: to undertake a short-term storage assessment for the Delta Carbon Capture and Storage Project and to assess medium to longer term storage opportunities in NSW.

The next stage of drilling works is in the Darling Basin, which will provide quantitative data on the sealing potential and reservoir qualities. These will be analysed and modelled. The year involved planning and procurement of service providers for the drilling program. It has a budget of \$20 million and will commence drilling in December 2013, with final reports by June 2014. The Coal Innovation NSW Fund contributed \$734,000 to this project during the year.

Research and development projects

Eight research and development projects were awarded \$11.8 million through a contestable funding process conducted by the Coal Innovation NSW Fund in 2010.

These projects include reducing fugitive methane emissions from coal mines, making efficiency improvements to the coal combustion process – including developing a prototype direct carbon fuel

cell system with much higher thermal efficiency than engines or turbines – and developing techniques for the post-combustion capture and secure long-term storage of CO₂. Projects also include social research on public acceptance of low-emission coal technologies. Coal Innovation NSW spent \$1.6 million on these projects during the year. Several projects will be completed and findings handed down within the next financial year.

Enhanced Bushfire Management Program

The Enhanced Bushfire Management Program was developed to help the NSW National Parks and Wildlife Service (NPWS) address worsening fire weather conditions, bolster hazard reduction operations and improve bushfire response capabilities to help minimise the risk to the community from extreme bushfire events.

The Climate Change Fund is providing \$62.5 million over the five years from 2011 to 2016 to increase hazard reduction operations and improve bushfire response capabilities in NSW parks and reserves.

Current climate change modelling for NSW indicates changes in rainfall patterns across the state. It is also likely that drought conditions will prevail for longer periods and will occur more often. This means more of the landscape will be bushfire-conducive more often. Climatic conditions that contribute to large and intense bushfires, such as prolonged drought, low humidity, the number of days with high temperature and high wind speeds are expected to increase.

A total of \$12.4 million from the CCF was used to enhance NPWS fire operations, including \$9 million for hazard reduction activities, \$2.4 million for rapid bushfire response and \$1 million in capital expenditure to purchase fire-related equipment and other capital items.

Hazard Reduction

NPWS took full advantage of extended weather conditions ideally suited to controlled burning in spring and autumn, treating a record 208,588 hectares in 337 prescribed burning operations and undertaking 1,339 mechanical hazard reduction activities. It aims to treat 135,000 hectares annually as a five year rolling average and in year two of the program, 95 per cent of the 270,000 hectare target has been delivered.

Rapid Response Program

Six dedicated rapid response firefighting teams and two additional helicopters are deployed on standby at pre-determined helibases. These specialist firefighting crews were activated 77 times during the 2012–13 bushfire season ready to respond to new bushfires at short notice.

There were 18 responses, 17 resulted in fires being controlled before reaching 10 hectares in size.

CASE STUDY: Rapid Aerial Response Teams Operations in the North Coast Region



Remote area fire crew returning to base at the Kedumba Walls, Blue Mountains National Park (NPWS).

The North Coast Region Rapid Aerial Response Team was activated at the Dorrigo Gun Club Helibase on 5 December 2012. The team responded to three fires that day, each of which was detected at or below one hectare in size. A fire surveillance flight detected two fires in the mid-afternoon, 200 metres from Guy Fawkes National Park on private land. These fires and another fire later in the day were successfully suppressed. Similar ignitions have turned into large wildfires, as occurred in 1997, 2000 and again in 2003.

In contrast, the only response that was not successful resulted in a fire that affected more than 1,000 hectares of private property and national park and entailed significant costs to suppress. Although, in this case, the distance of the fire from the helibase was too far to mount an effective rapid response, it does demonstrate the return on investment that the Rapid Response Program, established under the Climate Change Fund, is realising.

Administration and Budget

Administration and the Australian Energy Market Commission

Governance arrangements

Under the *Energy and Utilities Administration Act 1987* (the Act), the Minister approves payments from the Climate Change Fund if satisfied that projects promote a purpose outlined in the Act.

The Fund is administered by the OEH. An evaluation panel with an independent chair and members with relevant industry and technical expertise assesses grant applications. The OEH conducts technical assessments of all applications to assist the evaluation panel. Applications are assessed according to selection criteria given in the publicly available *Guide for Applicants*.

The evaluation panel makes recommendations on funding to the Minister.

Principles for administering the Fund

The OEH applies the following key principles in administering the Fund:

- funding allocations and expenditure will ensure responsible financial management
- a strategic approach will be used in setting priorities for expenditure
- the detailed priority setting process and fund allocations will closely follow strategic Government policy (including the election commitment of the NSW Climate Change Fund and NSW 2021).

The OEH will:

- regularly assess and review outcomes achieved through expenditure
- conduct regular reporting to provide oversight of the Fund
- establish strong accountability and adhere to clear corporate governance principles.

Evaluation and reporting

Funding recipients must report on the progress of projects and their success in achieving anticipated outcomes (e.g. water and/or energy and greenhouse gas savings).

The Fund is committed to keeping the NSW community fully informed about its progress in achieving its climate change goals, and its expenditure and achievements under the Fund. The OEH reports regularly on its progress in meeting its NSW 2021 goals, and publishes information on the range of funding available, as well as projects that have been awarded funding.

National energy regulation initiatives

The Fund provides NSW's contribution to national energy regulation initiatives, as provided for under section 34H of the Act. During the year NSW paid \$7,276,086 as its share of the Australian Energy Market Commission's (AEMC's) annual operating budget. Under established funding arrangements agreed between relevant jurisdictions, NSW is responsible for 37.2 per cent of the AEMC's budget.

Budget and spending status

Revenue

Electricity distributors and Gosford City and Wyong Shire Councils were required to make contributions to the Fund through the gazettal of annual Contributions Orders. A breakdown of the Fund's 2012–13 revenue is shown in Table 12.

Expenditure

The Fund's expenditure in 2012–13 was \$302,372,703. The proportion of program administration was 1.2 per cent. Expenditure for each of the Fund's components is presented in Table 13.

Table 12 NSW Climate Change Fund revenue 2012–13

Source	Amount (\$)
Ausgrid	\$118,000,000
Endeavour Energy	\$74,250,000
Essential Energy	\$57,750,000
Gosford City & Wyong Shire Councils	\$2,000,000
Interest	\$3,183,743
Miscellaneous revenue	\$1,424,137
Total funds	\$256,607,880

Table 13 NSW Climate Change Fund advance 2012–13

Source	Amount (\$)
Treasurer's advance for the Solar Bonus Scheme	\$116,202,000

Table 14 NSW Climate Change Fund expenditure 2012–13

Program/component	Recipient	Expenditure (\$, GST excluded)
Australian Energy Market Commission	Australian Energy Market Commission	\$7,276,086
Bushfire funding – capital	National Parks and Wildlife Service	\$1,023,912
Bushfire funding – recurrent	National Parks and Wildlife Service	\$11,395,986
Central Coast Water Savings Fund	Various	\$2,502,657
Climate Change Fund program administration	Office of Environment and Heritage	\$3,594,007
Coal Innovation NSW Fund	Department Trade & Investment Regional Infrastructure & Services	\$31,500,000
Energy Efficiency Strategy		
· Energy Efficiency Community Awareness Program	Various	\$4,015
· Energy Efficiency Data Collection and Monitoring Program	Office of Environment and Heritage	\$693,985
· Energy Efficiency for Small Business Program	Businesses	\$6,761,470
· Energy Saver Program	Businesses	\$5,726,707
· Government Building Retrofit Program	Businesses	\$446,503
· Government Energy Efficiency Team Program	Office of Environment and Heritage	\$331,453
· Home Power Savings Program	Households	\$17,317,876
· Skills Development Program	Various	\$4,430,940
Green Business Program	Various	\$990,246
Home Saver Rebates Program	Households	–\$24,353*
Metropolitan Water Education Fund	Metropolitan Water Directorate	\$2,000,000
Public Facilities Program	Various	\$769,172
Recycling and Stormwater Harvesting Program	Metropolitan Water Directorate	\$697,715
Renewable Energy Development Program	Various	\$2,936,050
Solar Bonus Scheme	Distribution Network Service Providers	\$197,934,670
Water and Energy Savings projects	Various	\$4,063,606
Total		\$302,372,703

* uncashed cheques

Appendices

Appendix A Legislative requirements

The Climate Change Fund was established in 2007 under the *Energy and Utilities Administration Act 1987*. The Act describes the purposes of the Fund and a number of other requirements.

Relevant provisions in the legislation are provided below.

Division 2 – Climate Change Fund

34F Purposes of Climate Change Fund

The purposes of the Fund are as follows:

- (a) to provide funding to reduce greenhouse gas emissions and the impacts of climate change associated with water and energy activities
- (b) to provide funding to encourage water and energy savings and the recycling of water
- (c) to provide funding to reduce the demand for water and energy, including addressing peak demand for energy
- (d) to provide funding to stimulate investment in innovative water and energy savings measures
- (e) to provide funding to increase public awareness and acceptance of the importance of climate change and water and energy savings measures
- (f) to provide funding for contributions made by the State for the purposes of national energy regulation.

34G Payments into Climate Change Fund

- (1) There is payable into the Fund:
 - (a) all money received from contributions required to be made to the Fund under Division 3, and
 - (b) all money advanced by the Treasurer for the Fund, and
 - (c) all money appropriated by Parliament for the purposes of the Fund, and
 - (d) the proceeds of the investment of money in the Fund, and
 - (e) all money directed or authorised to be paid into the Fund by or under this or any other Act or law, and
 - (f) all money received from voluntary contributions to the Fund made by any other person or body.
- (2) Without limiting subsection (1) (f), state agencies are authorised by this section to make voluntary contributions to the Fund.
- (3) Subsection (2) does not authorise a state water agency or a distribution network service provider to refuse to pay a contribution to the Fund that is payable under Division 3.

34H Payments out of Climate Change Fund

- (1) There is payable from the Fund:
 - (a) any money approved by the Minister to fund all or any part of the cost of any measure that the Minister is satisfied promotes a purpose referred to in section 34F, and
 - (b) any money approved by the Minister to fund all or any part of the contributions that the State is required to make for the purposes of national energy regulation, and
 - (c) any money required to meet administrative expenses related to the Fund, and
 - (d) any money required to meet administrative expenses of the Minister in connection with the Minister's functions under this Act in relation to savings action plans, and
 - (e) any money directed or authorised to be paid from the Fund by or under this or any other Act or law.
- (2) In exercising the Minister's functions under subsection (1) (a) (but without limiting the generality of that paragraph), the Minister may:
 - (a) approve selection criteria from time to time to be applied to determine the kinds of water or energy savings measures that will be eligible for funding, and
 - (b) approve the funding of community grants from the Fund, being grants awarded on the basis of their merit in advancing one or more of the purposes referred to in section 34F, established through a competitive selection process, and
 - (c) require a person or body seeking funding for a water or energy savings measure to do either or both of the following as a precondition to applying for or obtaining funding:
 - (i) to submit a water savings action plan or energy savings action plan (as the case requires) that includes details about the measure, and
 - (ii) to provide any other information requested by the Minister about the measure, and
 - (d) obtain and have regard to any advice, recommendations or other information provided to the Minister by a committee established by the Minister under Division 5, or by any other person or body, that the Minister considers relevant.
- (3) The Minister is to produce an annual report detailing Fund allocations and programs and anticipated benefits, by reference to key performance indicators, to be achieved in advancing any one or more of the purposes referred to in section 34F.
- (4) The annual report is to include an evaluation of the effectiveness of each program as it is completed under the Fund.
- (5) The annual report is to be tabled in each House of Parliament within six months after the end of the financial year to which it relates.
- (6) The Minister is to publish each annual report so as to promote, to the NSW public, schemes, technologies and processes that address climate change, and to inform the NSW public about consumer choices and procurement decisions.

Appendix B Tariffs and data sources

Tariffs

This annual report uses standard tariffs to calculate this year's cost savings for grant projects and business and household programs. These tariffs and their sources are listed below.

Table B1 Energy and water tariffs 2013–14

Utility	Year	Sector	Tariffs	Units	Source notes
Electricity	2013–14	Residential Business ¹ Government ² Community ³	30.2 17.2–29.6 16.8–23.4 17.2–29.6	c/kWh	Residential tariffs include GST. Business, community and government tariffs are ex-GST. All electricity and natural gas tariffs exclude fixed charges.
Natural gas	2013–14	Residential Business ¹ Government ² Community ³	24.75 18.43 17.26 24.75	\$/GJ	Data sources include price guides from suppliers/retailers (Energy Australia, Integral Energy, Country Energy, AGL, ActewAGL, Origin), government electricity and gas contracts, and reports and consumption data from various government agencies, including the Independent Pricing and Regulatory Tribunal (IPART).
Water ⁴	2013–14	Residential Non-residential	1.95–2.17 1.77–2.56	\$/kL	Residential standard rates (Sydney, Hunter, Central Coast and Rous Water utilities) Non-residential standard rates + 0.5 wastewater charges (Sydney, Hunter, Central Coast and Rous Water utilities) All water tariffs exclude fixed charges.

1 Calculated tariffs for small, medium, large and very large businesses, based on threshold baseline consumption.

2 Calculated tariffs for education (DET, schools, TAFEs, non-education (health) and other government organisations).

3 Calculated tariffs for non-government schools and non-government (small, medium and large) not-for-profit organisations.

4 Calculated tariffs for projects/programs covered by the major water utility areas: Sydney, Hunter and Central Coast. Rous Water tariffs apply to the remainder of the state.

Savings estimates

All program savings are conservatively estimated from the available information.

Any apparent discrepancy in the totals shown is due to rounding.

The tCO₂-e/MWh conversion factor is 1.05, from the National Greenhouse Accounts July 2013.

Power savings tables include savings (MWh, tCO₂-e and dollar bill savings) from designated power savings projects. Power bill savings may also include savings attributed from natural gas and operating and maintenance costs.

Water savings tables include savings (ML and dollar bill savings) from designated water savings projects.

The cost effectiveness of funding for all programs is calculated by dividing the funding allocated or expended by 10 years of savings (five years for the Home Power Savings Program). Cost effectiveness does not take into account the water savings from power projects or power savings from water projects.

The return on investment for all sectors is calculated by dividing the funding allocated or expended by 10 years of bill savings (five years for the Home Power Savings Program).

Fridge Buyback Program figures do not include the number of fridge collections or savings from the pilot phases, which were funded under Energy Savings Fund rounds 1 and 2.

Regions

Sydney Metropolitan is defined as those local government areas within the following regional council organisations:

- Northern Sydney Organisation of Councils
- Macarthur Regional Organisation of Councils
- Shore Regional Organisation of Councils
- Southern Sydney Regional Organisation of Councils
- Sydney Coastal Councils Group
- Western Sydney Regional Organisation of Councils.

All other local government areas are designated as regional.

Appendix C Projects discontinued 2012-13

Table C1 Projects where no payments were made

Applicant name – project title	Funding approved	Funding paid to applicant based on milestone met
Geodynamics Limited - Hunter Valley Geothermal Power Project	\$10,000,000	-
Gosford City Council - Liquid Ring Vacuum Pump Replacement Project	\$385,000	-

Table C2 Projects with partial payments, based on milestones met

Applicant name – project title	Funding approved	Funding paid to applicant based on milestone met
Aerogenesis Australia Pty Limited - The Aerogenesis Urban Wind Farm	\$750,884	\$180,176
Burrangong Meat Processors Pty Ltd - Gas recovery from effluent ponds to generate electricity	\$700,000	\$650,000
City of Botany Bay Council - Water Saving Initiatives for Botany Aquatic Centre.	\$97,000	\$69,863
GPT Group - Retailer Energy Efficiency Education Program	\$256,000	\$196,000
Museum of Applied Arts and Sciences - Returning Power to the Powerhouse	\$461,000	\$133,500
Southern Sydney Regional Organisation of Councils - Street Lighting Improvement Program Energy Efficiency Implementation Project	\$4,175,978	\$167,000
The Legislature - Parliament House water recycling, alternative supply and harvesting initiative	\$110,000	\$70,000

Glossary

the Act	<i>Energy and Utilities Administration Act 1987</i> , under which the NSW Climate Change Fund is established.
CCF	NSW Climate Change Fund.
CO₂	The chemical formula for carbon dioxide.
tCO₂-e	An abbreviation of ‘tonnes of carbon dioxide equivalent’, the internationally recognised measure of greenhouse gas emissions.
cogeneration	The simultaneous generation of electrical and thermal energy, where both forms of energy are put to productive use. Cogeneration is typically possible when facilities produce large amounts of waste heat (usually in the form of steam or hot water) that can be used efficiently for space or water heating or cooling, industrial use, agriculture or conversion into electricity.
cost effectiveness	A cost per megawatt hour or cost per kilolitre metric that is calculated by dividing the funding allocated by 10 years of electricity or water savings. Five years for the Home Power Savings Program.
efficiency (energy and water)	Reducing the amount of energy or water required to provide a given level of service (e.g. for lighting, air conditioning or toilet flushing).
feed-in tariff	A premium rate paid for electricity fed back into the electricity grid from a designated renewable electricity generation source.
the Fund	The NSW Climate Change Fund.
gigajoule (GJ)	A joule is a unit of energy, equivalent to a power of one watt for one second. A gigajoule is 1,000 million joules.
groundwater	Water that has been collected in an aquifer or the water table that is below ground level.
harvesting	Collecting rain or stormwater for reuse.
heat pump	A device that pumps heat energy used in both heating and cooling systems. As heating units, heat pumps are able to extract heat from extremely cold outdoor air to heat the inside of a structure. When used as cooling units they can extract heat from indoor air, even if the outdoor air is much hotter.
IPART	The Independent Pricing and Regulatory Tribunal; the independent economic regulator for NSW.
kilolitre (kL)	A volumetric measurement equivalent to 1,000 litres, or one cubic metre.
kilowatt hour (kWh)	A quantitative measure of electric current flow equivalent to 1,000 watts being used continuously for a period of one hour; the unit most commonly used to measure electrical energy. A kilowatt is 1,000 watts (see definition under watt).

megalitres (ML)	A volumetric measurement equivalent to 1 million litres.
megawatt hour (MWh)	A unit of electricity equivalent to 1,000 kilowatt hours or 1 million watts.
milestone	A milestone is a planned and measurable event that indicates the completion of a major deliverable of a project.
OEH	The Office of Environment and Heritage (a division of the NSW Department of Premier and Cabinet).
payback period	The time taken for savings or profit from an investment to pay for the initial capital expenditure. Payback period = capital cost divided by total annual savings. For example, a new lighting system costing \$400 with \$200 bill savings per year has a payback period of \$400/\$200 = two years.
peak demand	The maximum power demand on a system at a given time, or the maximum power required to supply customers at any time. This may be at a particular time of the day or a specific hour of the day.
photovoltaic (PV)	A form of solar energy that directly converts light into energy.
potable water	Water that is suitable for drinking.
power factor correction (PFC)	The demand for electricity a site places on the electricity network is expressed in kVA (1,000s of volt amps) and is a measure of the customer's load on the power supply network. The power factor is the ratio of the actual power in kW divided by the kVA. The ratio is between 0 and 1, where 1 means that a site is making the most effective use of its electricity supply. Power factor correction reduces peak demand on the electricity supply network by bringing the ratio closer to 1.
recycled water	Water taken from a non-potable source and treated to a level suitable for its intended use.
renewable energy	Energy generated from renewable sources, including the sun, waves, waste, water (hydroelectricity) and wind, as opposed to fossil fuels that emit greenhouse gases.
retrofitting	Upgrading an existing system or building, typically to make it more energy or water efficient.
solar energy	Solar power refers to the sun's potential to produce energy. Solar energy can be generated using a wide variety of methods, ranging from simple water recirculating systems used to heat homes and commercial offices, to sophisticated networks of solar cells that produce enough energy to supply small cities.
stormwater harvesting	The collection and reuse of rainwater that would otherwise end up in the stormwater channels that lead to a river or the ocean. Harvesting stormwater generally involves two stages: storage and treatment. Stormwater usually comes in large volumes during heavy rain and, as such, must be stored to allow for reuse. Because stormwater is typically low quality with a high level of pollutants, it must be sufficiently treated. Stormwater is most commonly reused for irrigation.

**wastewater (and
wastewater
recycling)**

Wastewater is water that has been contaminated by some activity, and includes greywater and sewage. It can be collected from a variety of sources, then stored and treated so it can be used as an alternative to the potable water supply.

watt (W)

The unit for measuring electrical power. The rate of energy consumption by an electrical device when it is in use is measured in watts.