

# NSW Waste Avoidance and Resource Recovery Strategy 2007

## Overview



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## NSW Waste Avoidance and Resource Recovery Strategy 2007

The *Waste Avoidance and Resource Recovery Strategy 2007 (Waste Strategy 2007)* continues to provide a framework for maximising conservation of our natural resources and minimising environmental harm from waste management and disposal of solid waste. These drivers are very important against a backdrop of a growing population in NSW and a healthy economy that is producing more goods and services.

### Waste and other environmental issues

Reducing waste is also important because it contributes to solving other environmental problems. We are all becoming more knowledgeable about the threats and limitations to our basic resources such as water, energy, raw materials, habitats and atmospheric gases that previous generations have taken for granted. Waste reduction and recycling can avoid greenhouse gas, save water and energy, conserve virgin resources and improve the health of our soils. For example:

#### *Reducing waste and recycling avoids greenhouse gas*

- Putting organic materials such as food, garden, wood and paper waste in landfill means that eventually they break down and create methane, a powerful greenhouse gas, at least 21 times stronger than CO<sub>2</sub>. Currently, only some landfill gas is captured but if we recycle instead, this means we can reduce the amount created.
- When virgin materials are transformed into materials to make into products, this uses energy (e.g., electricity made from coal) which creates greenhouse gases. By recycling materials and using these in products instead of virgin materials we avoid greenhouse gases because using recycled materials generally uses less energy. Recycled paper, metals and plastics provide particularly good savings.

If we consider the 6 million tonnes of waste that was recycled in NSW in 2004-5 and calculate the savings from both not landfilling materials as well as using recycled material instead of virgin, this amounts to a saving of over 3.3 million tonnes of CO<sub>2</sub> equivalent.<sup>1</sup> Continuing to work towards our 2014 recycling targets will increase this contribution even more.

A typical household that is recycling 3.76 kilograms per week (net) is avoiding the equivalent of greenhouse gas emissions from 50% of the electricity used for lighting their home, or 40% of the electricity used for their cooking. On a state wide basis this is equivalent to taking 55,000 cars off the road permanently.<sup>2</sup>

#### *Reducing waste can save water and energy*

A typical recycling household can also save 3,075 litres of water per year. This is equivalent to the average water consumption of one person for 12 days or flushing a toilet 615 times. On the energy side, a typical recycling household saves 928 kilo-Watt hours (kWh) of electricity per year. This is equivalent to 15% of a typical household's total electricity consumption for a whole year, or 8 weeks worth of electricity consumption. High recycling households can 'save' the equivalent of a third of their total electricity consumption.

#### *Waste and the NSW State Plan*

The NSW Government has recently adopted the *State Plan, A New Direction for NSW*. One of the five focus areas within the Plan is Environment for Living. Reducing waste, conserving resources and recycling contributes to the following priorities listed under Environment for Living:

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<sup>1</sup> Based on 2004-5 data and GHG conversion factors provided to DEC by Hyder Consulting

<sup>2</sup> Benefits of Recycling (DEC 2005).

- Priority E1: A secure and sustainable water supply for all users
- Priority E2: A reliable electricity supply with increased use of renewable energy
- Priority E3: Cleaner air and progress on greenhouse gas reductions
- Priority E4: Better outcomes for native vegetation, biodiversity, land, rivers and coastal waterways.

## 2007 Strategy targets and result areas

*Waste Strategy 2003* identified waste avoidance and resource recovery goals and targets in four key result areas. These are retained in the 2007 Strategy and are:

1. preventing and avoiding waste
2. increasing recovery and use of secondary materials
3. reducing toxicity in products and materials and
4. reducing litter and illegal dumping.

The 2014 targets are also retained in *Waste Strategy 2007*. These are: an increase in recycling of municipal waste from baseline 26% to 66% in 2014; increased recycling of commercial and industrial waste from baseline 28% to 63% in 2014 and increased recycling of construction and demolition waste from baseline 65% to 76% in 2014.

## Progress in reducing waste and recycling

Since preparing the 2003 Strategy, the measurement of waste disposal tonnages has been greatly improved through a new electronic reporting system introduced by the NSW Department of Environment and Climate Change (DECC). Our waste reduction and recycling performance is gradually improving (see below). The new waste data system has also been able to capture more waste which has increased the total reported tonnages disposed of by around 250,000 tonnes per annum – primarily in Sydney region tonnages in construction & demolition (C&D) and commercial & industrial (C&I) waste streams. Using the new data, disposal tonnages have been re-calculated back to 2000.

However, a range of external factors can also influence the amount of waste and recycling that is reported. For example:

- There have been big changes in recent years in the tonnages of organic waste disposed of and recycled due to recent and ongoing drought conditions across NSW.
- Growing occupational health and safety concerns relating to asbestos appear to be resulting in less source separation and increased disposal of some demolition wastes, including illegal dumping.
- The amount of construction and major infrastructure work occurring in different areas in any year affects both recycling and disposal performance.

It also takes time for the impacts of new recycling infrastructure to flow through into the data. For example, the tonnes being recycled at the UR3R Alternative Waste Technology facility at Eastern Creek and several other major investments are not yet reflected in our recycling data.

## Performance at a glance

Detailed performance data is provided in *Waste Strategy 2007* but a summary is provided in this section.

In a nutshell, we are producing more waste but we are recycling a greater proportion of it. Sydney is performing better than the Hunter, Central Coast and Illawarra regions. Data for regional and rural NSW is still limited.

Sydney is making sound progress towards the 2014 targets:

- Municipal – started at 26% recycled; 37% in 2004-05; needs to get to 66% recycled.
- Commercial and industrial – started at 28% recycled; 35% in 2004-05; needs to get to 63% recycled.
- Construction waste – started at 65% recycled; 66% in 2004-05; needs to get to 76% recycled.

Table 1 shows the changes in recycling performance across our three main waste streams – municipal, commercial and industrial and construction and demolition waste - for the whole of NSW, Sydney and Hunter, Central Coast and Illawarra between 2002-03 and 2004-05.

For NSW as whole, 46% of all waste created was recycled in 2004-5 compared with 45% in 2002-03. The greatest changes have occurred in the amount of C&I waste recycled in NSW. There were also increases in construction and municipal waste recycled.

The Hunter, Central Coast and Illawarra regions have also improved. In 2004–05 these regions recycled 50% of the total waste that they generated – an improvement on the 47% recycled in 2002–03. Data for regional and rural NSW is limited and should be regarded as indicative only. Based on available data for 2004-05, regional and rural NSW recycled in the order of 23% of the municipal waste it generated, 37% of its commercial and industrial waste and 36% of its construction waste.

**Table 1:** Changes in recycling performance across the three waste streams for the whole of NSW, Sydney and Hunter, Central Coast and Illawarra (ERA) 2002-03 to 2004-05.<sup>3</sup>

| <b>Municipal</b>                   |                         |                         |                           |            |
|------------------------------------|-------------------------|-------------------------|---------------------------|------------|
|                                    | Total Disposed (tonnes) | Total Recycled (tonnes) | Total Generation (tonnes) | % Recycled |
| NSW 2004-05                        | 2,143,500               | 1,037,000               | 3,180,500                 | 33%        |
| NSW 2002-03                        | 2,155,000               | 945,000                 | 3,100,000                 | 31%        |
|                                    |                         |                         |                           |            |
| Sydney 2004-05                     | 1,021,000               | 605,000                 | 1,626,000                 | 37%        |
| Sydney 2002-03                     | 1,185,000               | 595,000                 | 1,780,000                 | 33%        |
|                                    |                         |                         |                           |            |
| ERA* 2004-05                       | 485,000                 | 239,000                 | 724,000                   | 33%        |
| ERA* 2002-03                       | 479,500                 | 189,500                 | 669,000                   | 28%        |
|                                    |                         |                         |                           |            |
| <b>Commercial and Industrial</b>   |                         |                         |                           |            |
|                                    | Total Disposed (tonnes) | Total Recycled (tonnes) | Total Generation (tonnes) | % Recycled |
| NSW 2004-05                        | 2,984,500               | 1,835,000               | 4,819,500                 | 38%        |
| NSW 2002-03                        | 2,643,500               | 1,371,500               | 4,015,000                 | 34%        |
|                                    |                         |                         |                           |            |
| Sydney 2004-05                     | 2,246,500               | 1,214,500               | 3,461,000                 | 35%        |
| Sydney 2002-03                     | 2,029,500               | 1,022,000               | 3,051,500                 | 33%        |
|                                    |                         |                         |                           |            |
| ERA* 2004-05                       | 362,000                 | 401,000                 | 763,000                   | 53%        |
| ERA* 2002-03                       | 325,000                 | 269,500                 | 594,500                   | 45%        |
|                                    |                         |                         |                           |            |
| <b>Construction and Demolition</b> |                         |                         |                           |            |
|                                    | Total Disposed (tonnes) | Total Recycled (tonnes) | Total Generation (tonnes) | % Recycled |
| NSW 2004-05                        | 1,971,500               | 3,146,500               | 5,118,000                 | 62%        |
| NSW 2002-03                        | 1,708,000               | 2,980,500               | 4,689,000                 | 64%        |
|                                    |                         |                         |                           |            |
| Sydney 2004-05                     | 1,306,500               | 2,508,000               | 3,814,500                 | 66%        |
| Sydney 2002-03                     | 1,177,000               | 2,505,000               | 3,682,000                 | 68%        |
|                                    |                         |                         |                           |            |
| ERA* 2004-05                       | 277,000                 | 504,000                 | 781,000                   | 65%        |
| ERA* 2002-03                       | 232,000                 | 473,000                 | 705,000                   | 67%        |
|                                    |                         |                         |                           |            |
| <b>Total NSW</b>                   |                         |                         |                           |            |
|                                    | Total Disposed (tonnes) | Total Recycled (tonnes) | Total Generation (tonnes) | % Recycled |
| NSW 2004-05                        | 7,099,500               | 6,018,500               | 13,118,000                | 46%        |
| NSW 2002-03                        | 6,506,500               | 5,297,000               | 11,804,000                | 45%        |
|                                    |                         |                         |                           |            |
| Sydney 2004-05                     | 4,574,000               | 4,327,500               | 8,901,500                 | 49%        |
| Sydney 2002-03                     | 4,391,500               | 4,122,000               | 8,513,500                 | 48%        |
|                                    |                         |                         |                           |            |
| ERA* 2004-05                       | 1,124,000               | 1,144,000               | 2,268,000                 | 50%        |
| ERA* 2002-03                       | 1,036,500               | 932,000                 | 1,968,500                 | 47%        |

<sup>3</sup> All figures are rounded

*Waste Disposal*

Overall tonnages of waste disposed to landfill in Sydney across all three waste streams dropped 3.4%, or 159,176 tonnes, between 2000 and 2004–05. By contrast, waste disposed of in the Hunter, Central Coast and Illawarra regions increased 6.5%, or 68,871 tonnes, between 2000 and 2004–05.

*Per capita waste disposal*

When the total amount of waste is divided by the total population, each person in Sydney is producing less waste (94 kg or 7 % less) in 2004-05 compared with 2000. In contrast, each person in the Hunter, Central Coast and Illawarra regions is producing more waste (12kg or 1.3%) since 2000.

**Table 2:** Changes in Waste Disposal per capita in Sydney, Hunter, Central Coast and Illawarra regions (ERA) for all waste streams 2000 to 2004-5

| Year    | Total disposal<br>Sydney | % change<br>since 2000<br>Sydney | Total<br>Disposed<br>ERA | % change<br>since 2000<br>ERA |
|---------|--------------------------|----------------------------------|--------------------------|-------------------------------|
|         | <i>kgs/person</i>        | %                                | <i>kgs/person</i>        | %                             |
| 2000    | 1,315                    |                                  | 864                      |                               |
| 2000-01 | 1,156                    | -12.1%                           | 772                      | -10.7%                        |
| 2001-02 | 1,158                    | -11.9%                           | 762                      | -11.8%                        |
| 2002-03 | 1,190                    | -9.5%                            | 819                      | -5.3%                         |
| 2003-04 | 1,237                    | -5.9%                            | 899                      | 4.0%                          |
| 2004-05 | 1,221                    | -7.2%                            | 876                      | 1.3%                          |

*Kerbside recycling (dry recyclables)*

There has been a big increase in systems using mobile garbage bins between 2000-01 and 2004-05 (up from 50% of councils to 68%). Overall tonnages of recyclables are growing and an increasing number of Councils have adopted best practice systems as their contracts have been reviewed. 593,000 tonnes of dry recyclables (e.g. paper, glass, plastic) were collected state wide in 2004-05, compared to 450,000 tonnes in 2000–01. It is likely that recycling performance will continue to improve, driven by the annual Council performance payments system introduced by DECC in 2006. In Sydney, each person set aside 101.5kg of material for recycling in 2004–05 compared with 88kg in 2000, and recovery per household now amounts to an average of 283kg per year. The average householder's annual contribution to recycling in 2004-05 by material type was:

- 64.1kg of paper and paper products
- 27.7kg of glass
- 6.7kg of plastic
- 2.3kg of steel cans and
- less than 1kg of aluminium cans<sup>3</sup>.

*Organics*

As shown below, since 1998, the proportion of garden organics being recycled has grown from 40% to 56% of the total amount created in Greater Sydney (Sydney, Hunter, Central Coast and Illawarra) in 2004-05. The majority (80%) of the State's garden waste disposal is in Sydney.

<sup>3</sup> Survey of Councils' domestic recycling performance for the National Environment Protection Measure (NEPM) 2004-2005

**Table 3:** Tonnage of garden organics recycled 1998, 2002-03 and 2004-05 and as a percentage of total garden waste generated

| <b>Garden Organics – Greater Sydney Region</b> |                          |                         |            |
|--|--------------------------|-------------------------|------------|
|  | Total generated (tonnes) | Total recycled (tonnes) | % recycled |
| 1998   | 680,000                  | 269,000                 | 40         |
| 2002-03  | 1,140,000                | 550,000                 | 48         |
| 2004-05  | 866,000                  | 482,000                 | 56         |

### *Litter*

A litter survey of 100 sites was carried out in 2006. Seven categories were used: Paper, Beverage litter (containers, lids etc), Cigarette litter (butts, packets), Plastic, Confectionery, Organics and Other.

In 2006, by volume beverage container, cigarette, and paper litter made up 80% of litter, by weight, beverage containers and cigarettes were the major contributors making up 54% of litter. By count, cigarette litter made up 59% of all items, followed by beverage containers at 13%.

## **Continuing our progress in reducing waste**

Waste will continue to be tackled across the whole life cycle of goods and materials including extraction, manufacturing, distribution, consumption and recovery for reprocessing or disposal. Action to avoid and prevent waste will be considered at every step in this cycle with a focus on those points in the chain where the impact and results will be most effective.

Waste Strategy 2007 continues to recognise the importance of the waste hierarchy to guide effective resource management. It acknowledges, however, that different materials require different approaches. The choice of approach, including re-use, recycling and energy from waste, will depend on a balance of factors including economic and environmental considerations. Other factors that will influence the approach adopted for specific materials include: availability of supply; markets for recycled materials; economic; environmental and social impacts; community responses to different collection, reprocessing and disposal options; and emergence of new technologies.

Mounting scientific research is quantifying the benefits and impacts of waste-related actions to other parts of the environment. This is helping to involve and motivate people who might not be so focussed on waste and resource issues per se but will take action because of its related environmental benefits. Social research is also demonstrating that waste actions can naturally lead to actions on other environmental issues such as reduction in energy and water consumption.

There is also an increasing preference to address overall environmental performance rather than focus on single issues, especially by industry. Organisations are working to incorporate waste related actions into programs that build broad based environmental responsibility. These include environmental policy and planning, supply chain management, internal (staff and contractor) and external stakeholder engagement, as well as regional or sector wide sustainability leadership.

To fulfil its role in leading and coordinating programs that are contributing to Strategy targets and outcomes, DECC has initiated or facilitated a wide range of waste reduction and resource recovery programs. Key areas for action include:

- better data
- improving understanding of community attitudes and motivations
- supporting markets for recycled materials
- better recovery systems and waste management
- decision making and guidance tools
- government agency initiatives
- identifying partnership opportunities
- better Industry practices and
- producer responsibility.

In many cases, programs run by DECC or other stakeholders will contribute to results in more than one of the key result areas identified in the Strategy.

DECC will continue to provide the lead in implementing *Waste Strategy 2007*, but it is also clear that continued support and collaboration will be needed from other groups, including local government, industry and community. Local Councils in particular play a pivotal role in many areas relating to waste and recycling. Programs are run by individual Councils, in partnership with the NSW government or as part of a regional approach with other Councils and sometimes local businesses.

Key NSW Government-Council collaborative projects include illegal dumping squads and education, sustainable purchasing, using recycled content materials, household chemical collections, community education and work with small and medium businesses to improve waste management.

Key actions and programs that will be implemented by DECC in collaboration with its key partners to support further waste reduction in NSW include:

- Helping all sectors understand the **links between waste and other environmental issues** and helping people to make positive changes in their lives
- **Supporting regulation under POEO Act** to enable exemptions for wastes or waste derived materials used as fuel or applied to land
- Increased awareness activities coupled with consistent **regulatory action to encourage better waste management practices**
- Sustainability Advantage **partnerships** with geographic and sectoral clusters of industry to tackle waste and other sustainability issues
- **Sustainability Compacts** with sector leaders to change their own practices as well as their supply chains
- **Joint compliance** and cleaner production work with licensed companies
- Better **market support and system changes** through priority materials flow modelling
- **Partnerships with commercial and industrial businesses**, including waste transporters, to improve source separation and recyclables sorting systems
- **Business planning and financial modelling tools** to assist Councils to expand recycling services to small and medium businesses
- Research to **solve system and contamination problems** at key points
- **New audit** to measure composition of commercial and industrial waste being disposed
- Streamlined **electronic reporting system** for agencies including calculator to convert waste contributions to greenhouse, energy and water savings
- Increased **use of government contracts** to support recycled content products and reward responsible supplier recycling services
- **Performance payments for Councils** that improve their waste and recycling practices and results.
- **Tools for Councils** to support decisions on systems and technologies, plus education, resources and training
- Continued support to **Regional Illegal Dumping Squads** to deliver stronger compliance and enforcement programs
- Support for Councils to tackle illegal dumping in **multi unit dwellings**
- Continued **program funding for 8 voluntary regional waste groups** covering 90% of rural and regional NSW
- More **'greenspecs'** for major materials to increase re-use

- Guidance to ensure **removal of asbestos** from other useable construction materials
- Continued **market development programs** to encourage use of glass finds in a range of applications and use of recycled organics by Councils, Catchment Management Authorities, Government Agencies, mines, agriculture and sports and recreation facilities.
- Development of strategies to tackle **municipal and commercial food waste**
- Continued funding of **Household Chemical Cleanup** program
- **Continued work with sectors identified as 'wastes of concern'** in the NSW EPR Priority Statements
- **Improved criteria and processes** for identifying priority wastes
- Continue to **support waste and sustainability educators** throughout the community to promote positive environmental actions through training, resources, capacity building, research and partnerships.
- Continued **focussed support for initiatives by ethnic communities, aboriginal communities and young people** to promote action on waste and sustainability

Waste avoidance is not included as a discreet program area. This is because, consistent with the growing desire for a more integrated approach to environmental issues, action to avoid waste is being built into broader programs that tackle either waste related or sustainability issues.

## Big contributors to future waste reduction in NSW

In addition to the programs listed above, a number of important initiatives by industry, other government agencies, Councils and other organisations will make a growing contribution to waste reduction and resource recovery in NSW. Key initiatives that will have a substantial impact over the next 3 years include:

### *New Infrastructure or systems – commenced or currently being implemented*

- The UR3R-WSN/GRL joint partnership at Eastern Creek
- Macarthur councils-(Camden , Campbelltown, Wollondilly and Wingecarribee) Regional contract to build an AWT (ArrowBio); starts January 08
- Southern Councils Group (Bega Valley, Eurobodalla, Kiama, Shellharbour, Shoalhaven, Wingecarribee and Wollongong ) - Regional Contract
- New Visy MRF at Smithfield
- Coffs Harbour - new AWT Biomass. Regional facility (Coffs Harbour, Nambucca, Bellingen Councils) mid 2007
- New garden waste recycling services for households in Penrith, Liverpool, Baulkham Hills and Ryde
- New C&I MRF at West Gosford.

### *In Planning stage*

- Hunter Integrated Resources (Cessnock, Lake Macquarie, Maitland and Newcastle) – developing a regional AWT facility
- Visy (Tumut) – Plant upgrade announced; increase in paper recycling capacity
- AMCOR (Botany) Plant upgrade; increase of paper recycling capacity
- Benedict Sand and Gravel - proposed wood waste co-generation project
- Blue Circle Southern Cement – non standard fuel investigations (including wood waste)
- New municipal MRF at Somersby
- Visy Smithfield - packaging and recycling facility upgrade; increase in recycling capacity.
- Orange Reprocessing centre

### *Policies/Planning*

- New Infrastructure SEPP (Department of Planning)



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