TOWARDS ZERO WASTE
A Solid Industrial Waste Management Plan for Victoria

Draft for Consultation

March 2003
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Draft Solid Industrial Waste Management Plan

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Chapter 1: Introduction

Development of this plan

This document is a draft of Victoria’s first statewide plan for the management of solid industrial waste (SIW). The draft plan has been developed by EcoRecycle Victoria in accordance with Section 49L of the *Environment Protection Act* 1970.

The draft plan sets the agenda for the management of SIW for the next five years and is binding on all individuals and organisations involved in the generation, management or transport of SIW in Victoria. Once finalised and approved by EPA, EcoRecycle is required to revise the plan within five years or within six months of being requested to do so by EPA.

The plan been developed to:-

- reflect the principles for environmental protection established in the *Environment Protection Act* 1970;
- reflect the goals, targets and priorities for SIW established in the draft strategy, *Towards Zero Waste – A Materials Efficiency Strategy for Victoria* (released concurrently with this draft plan);
- respond to issues identified during public consultation with the Victorian community and discussions with regional waste management groups in the latter half of 2002 and early 2003.

Input from the public consultation process, along with written submissions received and discussions with key stakeholders have been considered in framing this draft plan. EcoRecycle also commissioned several studies to gather data and assess options for the reduction, recycling and disposal of SIW. These include a data analysis of SIW streams; a life cycle assessment of waste and resource recovery options; economic, environmental and social impact modelling of options (ie ‘triple bottom line’ assessment); and market research of public attitudes. Further input has also been provided through an external, specialist advisory committee.

From these inputs, detailed analysis has been undertaken and a report of this analysis and its conclusions is contained at appendix A. A glossary of terms and references utilised in the preparation of this plan is contained at appendix B.

The targets and actions outlined in this draft have not been endorsed by the state government and do not represent government policy. The purpose of this draft plan is to seek feedback prior to submission to the government.

What is solid industrial waste?

SIW includes commercial and industrial waste (C&I) and construction and demolition (C&D) waste. This includes waste generated by factories, offices, shops, schools, universities, state and federal government departments and agencies (C&I waste), and wastes generated by residential and commercial construction and demolition

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1 Solid industrial waste comprises the categories of waste commonly referred to as C&I (commercial and industrial) waste and C&D (construction and demolition) waste.
activities (C&D waste). Waste from households and council activities are classified as municipal waste\(^2\) and are not addressed in this plan\(^3\).

The plan also excludes:

- prescribed industrial wastes\(^4\) - EPA Victoria closely regulates these wastes because of their potential adverse impacts on human health and the environment.
- quarantine wastes, since these are controlled by the commonwealth Quarantine Act; and
- liquid wastes.

**Trends, sources and composition of solid industrial waste**

The past two decades have seen a growing recognition of the environmental implications of waste, and increasing community demand for change. Over that time, how we manage our wastes has changed from a focus on health issues (ie through regular collection and landfilling), to a focus on separation for recycling and disposal of residual waste into landfills operating to a high standard of environmental protection.

Throughout the 1990s, total waste generation in Victoria generally grew in line with economic activity and population growth to 8.3 million tonnes in 2000/01. However, an increase in the recovery of materials for recycling has resulted in landfilled waste remaining fairly constant at around 4.3 million tonnes per year. Landfilled municipal solid waste (MSW) has declined despite population growth, but appears to have stabilised at about 1.6 million tonnes per year. Landfilled SIW has remained at about 2.7 million tonnes per year.

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\(^2\) Exception is made for household waste delivered to a disposal site by a commercial operator and for waste from Council construction or demolition activities. Both of these are classified as solid industrial waste.

\(^3\) Planning for the management of municipal solid waste (MSW) in Victoria is the responsibility of the 16 Regional Waste Management Groups established under the Environment Protection Act.

\(^4\) These wastes are listed in the Environment Protection (Prescribed Waste) Regulations 1998 and are subject to requirements under the Industrial Waste Management Policy (Prescribed Industrial Waste) 2000.
Figure 1: Trends in solid waste generation and management - Victoria 1993/94-2000/01

Table 1: Estimated solid industrial waste (SIW) disposal and recovery by material - Victoria 2000/01

<table>
<thead>
<tr>
<th>Material</th>
<th>Total SIW Disposed (kt/yr)</th>
<th>SIW Landfilled Rate by Material (%)</th>
<th>Total SIW Recovered (kt/yr)</th>
<th>SIW Recovery Rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metals</td>
<td>110</td>
<td>4%</td>
<td>870</td>
<td>89%</td>
</tr>
<tr>
<td>Paper/cardboard</td>
<td>140</td>
<td>5%</td>
<td>500</td>
<td>77%</td>
</tr>
<tr>
<td>Concrete/bricks/asphalt</td>
<td>550</td>
<td>20%</td>
<td>1,210</td>
<td>69%</td>
</tr>
<tr>
<td>Food</td>
<td>140</td>
<td>5%</td>
<td>200</td>
<td>62%</td>
</tr>
<tr>
<td>Textiles</td>
<td>48</td>
<td>2%</td>
<td>69</td>
<td>59%</td>
</tr>
<tr>
<td>Plastics</td>
<td>66</td>
<td>2%</td>
<td>53</td>
<td>45%</td>
</tr>
<tr>
<td>Glass</td>
<td>36</td>
<td>1%</td>
<td>26</td>
<td>42%</td>
</tr>
<tr>
<td>Garden</td>
<td>130</td>
<td>5%</td>
<td>78</td>
<td>38%</td>
</tr>
<tr>
<td>Timber</td>
<td>370</td>
<td>14%</td>
<td>150</td>
<td>28%</td>
</tr>
<tr>
<td>Fill material</td>
<td>970</td>
<td>35%</td>
<td>&gt; 0&lt;sup&gt;6&lt;/sup&gt;</td>
<td>n/a</td>
</tr>
<tr>
<td>Other</td>
<td>190</td>
<td>7%</td>
<td>200</td>
<td>51%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>2,700</strong></td>
<td><strong>100%</strong></td>
<td><strong>3,400</strong></td>
<td><strong>&gt; 55%</strong></td>
</tr>
</tbody>
</table>

Approximately 6.1 million tonnes of SIW was generated during 2000/01, 55% of which was recovered for recycling. Of the balance sent to landfill, 55% was comprised of

<sup>5</sup> Chart derived from landfill levy data, EcoRecycle survey data and Solid Industrial Waste Plan Data Report 2002. Note that landfill figures prior to 1997/98 are extrapolated from metropolitan and provincial city landfills (assumed to represent 80% of the waste stream).

<sup>6</sup> The quantity of fill material reused is significant but not recorded.
concrete, bricks, rubble, asphalt and fill materials predominantly from construction and demolition (C&D) activities. Considerable quantities of garden waste, paper, metals, timber and food make up a further 33% of industry waste sent to landfill.

Nearly two thirds of all waste sent to landfill is classified as SIW, comprising wastes from the C&I and C&D sectors.

**Figure 2: Disposal based estimate of sources of solid waste to landfill – Victoria (% of total tonnes)**

![Pie Chart]

Source: *Solid Industrial Waste Plan Data Report 2002*

Over 90% of these industry wastes are generated in metropolitan Melbourne and provincial city regions.
Wastes deposited at landfill represent considerable economic, environmental and social costs to the Victorian community, both from disposal impacts and unnecessary use of raw materials in production processes.

Industries that are proactive in waste and environmental management have found that waste reduction and recycling can lead to significant benefits, including financial savings. Research indicates that the cost of waste management shown on industry accounts (ie waste disposal costs) commonly represents only 10% of the total when the cost of purchasing the material and processing it are considered.

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7 Metropolitan regions = Eastern, Northern, Mornington Peninsula, South Eastern, Western; Provincial city regions = Barwon, Calder, Highlands, Goulburn Valley; Rural regions = Central Murray, Desert Fringe, Gippsland, Grampians, Mildura, North East, South West
Chapter 2: Goals and targets

Goals and targets
Victoria’s draft strategy, Towards Zero Waste – A Materials Efficiency Strategy for Victoria, has established the following goals for solid waste management over the next decade:-

- To increase materials-use efficiency and reduce waste generation
- To increase the sustainable recovery of materials for recycling and reprocessing
- To reduce the environmentally damaging impacts of waste (i.e. life cycle impacts, greenhouse emissions, toxicity, litter, etc.)

The draft strategy has also established a number of targets for municipal and industrial waste management. Key targets for SIW management are:

- **Reduce the quantity of waste generated by 1.5 million tonnes by 2013**
  (Note: This represents a 15% reduction in the waste that would have been produced by July 2013 if the economy grew at 3.5% pa, and no new programs were undertaken.)

- **65% recovery rate in SIW by July 2008** (towards an 80% rate by 2013 - current rate 55%)

- **Reducing greenhouse emissions, litter and toxic materials in the waste stream.**
  Initiatives identified in the strategy are estimated to generate greenhouse gas savings in 2013 equivalent to 3 million tonnes of carbon dioxide.

To achieve these targets, the systems and infrastructure will need to be established to ensure that:-

- **By July 2006** all construction and demolition waste in metropolitan and provincial city regions is processed for resource recovery prior to disposal to landfill

- **By July 2009** all commercial and industrial waste in metropolitan regions is processed for resource recovery prior to disposal to landfill

- **By July 2011** all commercial and industrial waste in provincial city regions is processed for resource recovery prior to disposal to landfill

This plan has been developed to reflect these goals and targets and provide additional direction in relation to the management of solid industrial waste, particularly regarding disposal planning requirements.
Chapter 3: Key agencies and roles

Figure 4 illustrates the statutory framework, roles and relationships of key agencies charged with the management of solid wastes in Victoria.

Victoria’s environment protection system is set out in the *Environment Protection Act* 1970. The Act establishes the Environment Protection Authority Victoria (EPA), EcoRecycle Victoria and regional waste management groups and defines the powers, duties and functions of each statutory body. The Act also provides for a range of instruments to prevent pollution and minimise waste and risks to the environment.

EPA’s role is to administer the Act and the range of instruments provided for in the Act. These include state environment protection policies, waste management policies, works approvals, licences and environment improvement plans.

EcoRecycle’s role is to minimise the creation of waste and litter, promote the sustainable use of resources and better manage the disposal of residuals. Since its inception in December 1996, some 16.5 million tonne of resources have been successfully diverted from Victorian landfills and approximately $13 million invested in over 220 infrastructure projects throughout Victoria. Recent amendments to the Act have increased EcoRecycle’s responsibilities to include planning for the management of solid industrial waste throughout Victoria.

Planning for the management of municipal solid waste (MSW) in Victoria is the responsibility of the 16 regional waste management groups established under the Act. Each group produces a regional plan to coordinate and direct the waste management...
activities of its member Councils. Implementation of regional plans occurs through an annual business planning process undertaken by each group.

As wastes from municipal and industrial sources are often managed by the same facilities, planning for the management of SIW and MSW requires close coordination. EcoRecycle Victoria and regional waste management groups are required to give effect to this plan through their own business plans and regional waste management plans. All approved regional waste management plans were reviewed in the formulation of this document.
Chapter 4: Priorities and infrastructure needs

Priorities and infrastructure needs have been determined through analysis of the SIW stream and strategic goals. This analysis is contained in Appendix A.

The most strategically important areas of focus are outlined below. It should be noted that improvements are possible across the spectrum: exclusion of a material, product, sector or region from the list of priorities does not imply that nothing may be done in these areas. The priorities also reflect the current situation and knowledge. Changing circumstances or broadened knowledge may justify some reconsideration in the future.

Priority materials

Priority waste materials have been selected through reference to quantities generated, adequacy of existing systems for recovery for recycling and environmental impact or risks (including risk in landfill and lifecycle impacts), as well as costs and opportunities for improved management. Priority materials over the period of the plan will be:

- garden organics
- food waste
- paper and cardboard
- timber
- concrete, bricks and asphalt
- fill material

Priority products

Priority products have been identified similarly to materials. Reference was also made to best practice overseas.

At the end of their useful life, many of the following products flow into the waste stream from both industrial and municipal sources, often through municipal transfer stations or hard rubbish collections. The inclusion of these products in this plan reflects an increased focus on the development of product stewardship agreements with relevant industry sectors to achieve greater materials efficiency and recovery. Priority products over the period of the plan will be:

- electronic appliances (including whitegoods and consumer electronics)
- computers and peripheral IT equipment
- consumer packaging (via National Packaging Covenant)
- industrial / transport packaging
- tyres
- paint
- fluorescent lamps and mercury street lamps.
PRODUCT STEWARDSHIP

There is a global trend for businesses to take greater responsibility for their products throughout the whole life cycle, from design, to production, consumption and disposal. This is product stewardship, a concept now embedded in Victorian legislation and already implemented nationally for products such as mobile phones, lubricant oils and consumer packaging.

A number of products have been identified by the national Environment Protection and Heritage Council (EPHC)\(^8\) as waste issues where national collaboration is appropriate. These include:

- electronics
- tyres
- end of life vehicles
- plastic bags

The government will continue to work through the EPHC to identify areas where national collaboration is appropriate and to implement actions arising from the Council’s decisions.

**Priority sectors**

Priority sectors that will be targeted for reduction and recovery of these materials will be the:

- construction and demolition sector, which accounts for some 40% of waste to landfill
- food services, food retail and food manufacturing sectors
- timber products and furniture manufacturing sectors
- machinery, equipment, automotive and metal product manufacturing sectors
- CBD office sector
- small to medium enterprise (SME) sector, which accounts for well over 90% of Victorian businesses and collectively accounts for a large and dispersed quantity of the SIW stream.

**Regional priorities**

Priority will be given to those areas of Victoria with the greatest need and potential to achieve enhanced recovery of SIW materials over the 5 year life of the plan. While metropolitan Melbourne and provincial city regions (generating 90% of Victoria’s SIW waste) present the most cost effective opportunities for materials recovery, ongoing support for services and facilities to enhance the viability of waste management services, including the recovery of materials, will be required in rural Victoria.

**Metropolitan regions**

Key priorities in the Metropolitan regions are:

- Development of waste reduction and resource recovery initiatives that will largely replace the need for new landfills in the South Eastern/Eastern and Mornington Peninsula regions of Melbourne.

• Development of food and other industry organics processing capacity to service all regions.
• Improved drop-off and processing capacity for C&D waste to service the South Eastern, Northern, Eastern and Mornington Peninsula regions.
• Improved processing capacity for timber waste in the Western, Eastern and Mornington regions and development of drop-off facilities to ‘feed’ timber processing capacity facilities.
• Investigation and development of soil banks to stockpile suitable fill materials for reuse.
• Facilities for sorting of mixed C&I streams that have not been separated at source.
• Upgrade of transfer stations to receive a wider range of materials, particularly C&D waste, timber, metals, garden organics and cardboard/paper.
• Establishment of transfer stations facilities with capacity to receive large-vehicle loads of materials for resource recovery.

**Provincial City regions**

Key priorities for the provincial regions are:

• Development of waste reduction and resource recovery initiatives that will extend the life of existing landfills in the Calder region (particularly to service the Bendigo area) and Goulburn Valley region (particularly to service the Seymour area).
• Establishment and upgrade of transfer stations and material recovery facilities to increase materials recovery and load consolidation.
• Upgrade and establishment of regional organics reprocessing infrastructure for organics and timber.
• Establishment of processing capacity for the recovery of C&D waste.
• Soil banks, where viable, for stockpiling uncontaminated fill materials for reuse.
• Improved systems for cost-effective recovery of paper, cardboard, metals, plastic and glass recycling from C&I and C&D sources.

**Rural Regions**

Key priorities are:

• Development of waste reduction and resource recovery initiatives that will extend the life of existing landfills particularly in the Gippsland Region to service the Latrobe City Council area, and the South West Region to service Southern Grampians, Moyne and Glenelg shires.
• Establishment and upgrade of recycling centres at all landfills and transfer stations to increase materials recovery and improve the effectiveness of load consolidation.
• Landfills and transfer station facilities serving populations of greater than 5000 to have provision for drop off of a range of materials including SIW metals, timber, C&D waste, cardboard and paper, commingled containers, oil and chemical containers, silage wrap and plastic mulches, etc.
• Development of SIW organics, timber and C&D processing capacity.
• Investigation, and where viable, development of soil banks for stockpiling fill materials for appropriate reuse.
**Waste disposal needs**

The government supports the adoption of the waste management hierarchy and minimisation of the development and use of landfills. Assessment of landfill needs under a ‘worst-case’ scenario has found that in most areas of Victoria there is sufficient airspace for SIW at existing landfills for the 5 year life of the plan (see Appendix A, Table 15).

There is no need for new landfills for SIW over the **5 years to July 2008** in the following regions:

- Barwon
- Central Murray
- Desert Fringe
- Grampians
- Highlands
- Mornington Peninsula
- Mildura
- Northern
- North Eastern
- South Eastern
- Western

Regions with a **potential** need for new landfills for SIW within the **5 years to June 2008** are:-

- Calder (around Bendigo area)
- Eastern
- Gippsland (to serve City of Latrobe area)
- Goulburn Valley (around Seymour area)
- South West (around Hamilton area)

Regions with a **potential** need for new landfills for SIW between **July 2008 and July 2013** are:

- South Eastern
- Mornington Peninsula

**Regions identified as potentially needing new landfills** will be high priorities for SIW reduction and resource recovery initiatives, including infrastructure development, over the 5 years of the plan. This should minimise the need for further landfill development by extending the life of current sites.

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9 The draft waste management policy (Siting, Management and Rehabilitation of Landfills), currently being developed by EPA Victoria, will reinforce this support.

10 ‘Worst case’ scenario assumes annual growth in SIW to landfill of 3.5%
Chapter 5: Preferred approaches

Preferred approaches have been established through consideration of the plan’s goals, targets and priorities. Preferred approaches are detailed below in relation to reducing SIW; recovering SIW materials for reuse, recycling and energy recovery; and managing residual waste streams.

Reducing solid industrial waste

The preferred approach to waste reduction is to employ assertive tools to increase the uptake of cleaner production and product stewardship throughout industry.

This approach will focus on materials efficiency and waste avoidance through the establishment of voluntary product stewardship agreements, including the use of Sustainability Covenants where appropriate, with:

- priority waste generating sectors and manufacturers; and
- supply chain partners marketing priority products (for priorities refer Chapter 4).

Supporting government assistance programs will be established to build industry capacity to develop practical solutions for avoiding and recycling waste and to measure performance.

What are sustainability covenants?

Sustainability covenants were introduced through amendments to the Victorian Environment Protection Act 1970 in June 2002. The covenants are flexible, voluntary agreements between EPA and a covenant partner (which could be a company, industry association, supply chain or other organisation) that provide a framework for proactive commitment to increase resource efficiency and reduce the ecological impacts of products and services. However there is a legislative safety net, ensuring responsibilities are carried equitably among industry waste generators.

Other approaches include:

- Developing environmental management systems (EMS) and environmental purchasing policies to drive waste reduction across all state government departments.
- Ongoing development of waste reduction and environmental purchasing policies within local government.
- Closer co-ordination of state government environmental assistance programs for industry, focussing on waste avoidance and recovery.
- Developing environmental accounting tools and systems to enable industry to measure waste performance and materials efficiency.

Recovering solid industrial waste

Management of the recycling system

An assertive approach to managing the recycling system is preferred, using potential landfill prohibitions to drive infrastructure investment and ensure viable yields, and working closely with major waste generators to implement product stewardship through their supply chains. This approach will also require ongoing engagement with
the waste management industry to enhance the provision of appropriate collection and handling systems.

Other approaches include:

- Supporting advisory and assistance programs to industry to improve recovery rates
- Ongoing funding assistance for recycling infrastructure for SIW using landfill levy funds.
- Improving recovery rates from government departments and agencies.
- Reviewing local planning guidelines to ensure built infrastructure is capable of minimising waste and supporting recycling.
- Expanding kerbside recycling services to industry, particularly to the SME sector (through extension of local government contracts where appropriate).
- Market development for processed organics, timber, construction and demolition rubble and fill material. In non-metropolitan areas, market development initiatives may also be required to develop local markets for lower grades of recyclables such as low-grade cardboard/paper and glass fines.
- Increasing emphasis on environmental purchasing and use of recycled content product through state government departments and agencies and local government.

**Materials processing technologies**

The preferred approaches to collection and processing systems are:

- C&D wastes - sorting facilities capable of handling mixed loads
- C&I wastes - separation of recyclables (e.g. timber, steel, paper/cardboard) and potentially some organics, with residuals sent to further processing rather than landfill.

Processing technologies may be combined with bin systems providing different degrees of source separation. These technologies and configurations deliver differing economic, environmental and social benefits and costs.

Processing technologies are the subject of two studies commissioned by EcoRecycle to support the Strategy. One is a life cycle assessment (LCA) of a range of kerbside systems; the other a triple bottom line (TBL) study. The approaches outlined above are consistent with results from these studies.

Energy from waste technologies such as pyrolysis and gasification offer potentially viable and environmentally beneficial alternatives to landfill for the management of some residual waste streams. Potential opportunities for these technologies over the period of the strategy include the diversion of homogenous wastes from industry waste streams (i.e. timber, garden and food organics), particularly if combined with other sources of prescribed industry wastes (e.g. sludges, biosolids), and as landfill fees progressively increase through the landfill levy and implementation of best practice in landfill management.

The technical and financial viability of these and other technologies needs to be evaluated on a case-by-case basis. The nature and quantity of the organic stream, collection and separation costs, the value of energy produced and Renewable Energy
Certificates will have a significant impact on the technical and financial performance of a facility.

**Residual waste management**
Enhanced government engagement with the waste collection and transport industry is preferred, including development of best practice environmental management standards. The government, through EPA and EcoRecycle, will work to assist the waste management industry to focus its activities on resource recovery and best practice in landfill management.

Existing government policy sets out a preferred approach to waste management according to the waste hierarchy, with disposal the least preferred option. The preferred approach for residual waste management involves:

- Reducing waste and diverting materials to higher uses where practicable.
- User-pays landfill pricing that reflect whole life cycle costs.
- High standards of landfill siting, design, operation, rehabilitation and aftercare including provision for salvage and recycling of suitable materials.
- Minimising the use and development of landfills. This plan and regional waste management plans will provide for landfill development to the extent that it is needed to service predicted demand.

**Waste collection and transport**
The private waste collection industry is in a unique position to influence the waste management practices of clients, adding value by alerting them to opportunities to reduce and recycle, and providing feedback on quantities and costs.

Data and information from the industry would also support programs for assisting waste generators and encouraging appropriate infrastructure development.

The industry’s knowledge of its clients’ needs will play an important role in developing logistical solutions. Industry sectors have vastly differing waste profiles and collection needs. The challenge to waste collectors is to develop a range of efficient, tailormade solutions and facilities to assist industry in reducing waste and improving resource recovery.

Technologies are becoming available for sorting mixed waste streams using manual and/or automated systems to separate materials that can be recycled or further reprocessed (either on the same premises or elsewhere). Some facilities can accept both mixed wastes and clean material streams, so that waste generators can choose between on-site separation or simple single-bin systems that cost more to process.

Enhanced government engagement with the waste collection and transport industry is a preferred approach, to assist the industry to focus its activities on waste reduction and resource recovery.

**Triple bottom line impact of the plan**
Options considered in the development of the plan have been modelled to determine their economic, environmental and social impacts, ie triple bottom line (TBL) impact.
Preliminary TBL results indicate:

- Positive net benefits to the Victorian community from waste avoidance. Benefits were found to be significantly higher under an assertive approach, ie through increased uptake of product stewardship by industry.
- Significant net benefits to the Victorian community through an assertive approach to recovery of materials for recycling, including landfill prohibitions. This suggests that any increase in costs is more than offset by improvements to environmental quality and social well-being.

The costs of implementing the plan will depend on a range of factors, including:

- Costs of the required materials recovery technologies and systems, including sorting, transport, reprocessing and residual management;
- Prices received for processed product; and
- Changes to landfill disposal costs, which are anticipated to rise by $18 to $38 per tonne of SIW over the next 10 years through the adoption of best practice standards and legislated increases in the landfill levy. Average landfill costs of between $38 and $68 per tonne in 2013 were modelled in the TBL study.

For C&D wastes, the model suggests cost changes of between -$10 and +$20 per tonne by 2013. This indicates that diversion of nearly all C&D waste for reprocessing may be achievable without affecting net industry costs, since additional costs for processing mixed C&D waste sorting are similar to projected landfill cost increases.

In the case of C&I wastes, costs are more likely to increase by between $40 and $70 per tonne. The costs for a particular industry will depend on the waste streams they generate. For example, sorting and processing wastes from offices should be considerably less given the bulk of waste generated are relatively generic, and predominantly paper/cardboard. Sectors such as food retail and hospitality, producing more waste per employee and generating mixed waste streams, would be likely to incur high range costs.
Chapter 6: Programs

1. REDUCING SOLID WASTE

<table>
<thead>
<tr>
<th>Program</th>
<th>Milestone and Timelines</th>
<th>Responsible Partners (lead agency in bold)</th>
<th>Target sectors</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1 Strategic partnerships with industry</td>
<td>1.1.1 Reduce waste from major waste generating industry sectors (see also Resource Recovery 2.1.1).</td>
<td>By end 2006/07: Waste reduction/product stewardship agreements, focusing on waste avoidance and recovery, established with major waste generating industries.</td>
<td>EcoRecycle/EPA</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Commercial and government sectors: Food services, food retail and food manufacturing</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Manufacturing sectors: Machinery, equipment, automotive and metal product manufacturing</td>
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<td>Timber products and furniture manufacturing</td>
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<td>Construction and Demolition sector: Residential construction and demolition</td>
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<td></td>
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<td></td>
<td>Commercial construction and demolition</td>
</tr>
<tr>
<td>1.1.2 Reduce end of life waste from priority products (see also Resource Recovery 2.1.2).</td>
<td>Product stewardship agreements, focusing on waste avoidance and recovery, established for:-</td>
<td>By end 2005/06:</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>• electronic appliances* (including white goods and consumer electronics)</td>
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<td></td>
<td>• computers and peripheral IT equipment*</td>
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<td>• tyres*</td>
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<td></td>
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<td>• consumer packaging*</td>
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<td></td>
<td></td>
<td></td>
<td>• paint</td>
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<td></td>
<td></td>
<td></td>
<td>• mercury containing lamps including fluorescent lamps</td>
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<td></td>
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<td>By end 2009/10:</td>
<td>EcoRecycle/EPA</td>
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<td>• EPHC</td>
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<td></td>
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<td></td>
<td>• Waste management industry</td>
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<td></td>
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<td></td>
<td>• Priority industry sectors</td>
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<td></td>
<td></td>
<td></td>
<td>Commercial and government sectors:</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>• Brand owners</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Retailers, wholesalers and other supply chain partners</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Manufacturing sectors:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Electronic appliances</td>
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<tr>
<td></td>
<td></td>
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<td>• Computers and IT equipment</td>
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<td>• Paint</td>
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<td></td>
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<td></td>
<td>• Transport packaging</td>
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<td>• Automotive</td>
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<td>• Tyre</td>
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<td>• Consumer packaging</td>
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<td></td>
<td>• Office paper</td>
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<td></td>
<td></td>
<td></td>
<td>• Batteries</td>
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<td></td>
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<td>• Treated timber</td>
</tr>
</tbody>
</table>
## Chapter 6: Programs

### 1. REDUCING SOLID WASTE

<table>
<thead>
<tr>
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<tr>
<td>1.2 Industry Engagement and Advocacy</td>
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<td></td>
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<tr>
<td>1.2.1 Develop closer co-ordination of state government environmental assistance programs for industry, including focus on waste avoidance and recovery (see also Resource Recovery 2.2.1).</td>
<td>By end 2003/04: inventory of programs and plan for integrating/coordinating/rationalising programs. <strong>By end 2004/05:</strong> Program co-ordination completed and promoted across business, community and government.</td>
<td>EcoRecycle • EPA – Business sustainability program</td>
<td>All industry sectors</td>
</tr>
<tr>
<td>1.2.2 Build capacity within priority industry sectors to measure and improve materials efficiency, avoid waste and enhance recovery (see also Resource Recovery 2.2.2).</td>
<td>By end 2003: Capacity building program development completed. <strong>From 2004:</strong> Program rollout <strong>By end 2003/4:</strong> Development of statewide information systems linking waste generators with avoidance and recycling opportunities</td>
<td>EcoRecycle • Priority Industry sectors • Waste management industry • RWMGs</td>
<td>Commercial and government sectors: • Food services and food retail • CBD office sector • SMEs (RWMGs) Manufacturing Industry sectors: • Food manufacturing • Machinery, equipment, automotive and metal product manufacturing • Timber products and furniture manufacturing Construction and Demolition sector: • Residential construction and demolition • Commercial construction and demolition</td>
</tr>
<tr>
<td>1.2.3 Build capacity regarding <strong>sustainable consumption</strong>, waste reduction and recovery, customised to reach audiences in the TAFE sector and universities (see also Resource Recovery 2.2.3).</td>
<td>By end 2003/04: Capacity building program development completed. <strong>2004/05 - 2012/13</strong> Program rollout</td>
<td>EcoRecycle • EPA • Water Authorities • Local government • Environmental Groups • Environmental educators • Business leaders • Education sector</td>
<td>All sectors</td>
</tr>
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</table>
## Chapter 6: Programs
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<tbody>
<tr>
<td><strong>1.3 Government leading by example</strong></td>
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</tr>
<tr>
<td><strong>1.3.1 Reduce waste generated from state government Departments and Agencies through waste reduction and environmental purchasing.</strong></td>
<td><strong>By August 2003:</strong> All Departments with Environmental Management Systems (EMS) established, including benchmarks for waste reduction and recycling.</td>
<td>DSE</td>
<td>State government departments</td>
</tr>
<tr>
<td></td>
<td><strong>By end 2004/05:</strong> Development of purchasing, waste reduction and recycling targets within EMS frameworks (in consultation with DSE and government departments).</td>
<td>EcoRecycle</td>
<td>State government departments and agencies</td>
</tr>
<tr>
<td></td>
<td><strong>By end 2007/08:</strong> All government agencies with EMS and/or Waste Wise government agency status.</td>
<td>Public Record Office Victoria (PROV)</td>
<td>State government departments and agencies</td>
</tr>
<tr>
<td><strong>1.3.2 Reduce waste generated from state government departments and Agencies through electronic records management to deliver synergies in information management and materials efficiency.</strong></td>
<td><strong>By 2003/04:</strong> Implementation plan for Victorian Electronic Records Strategy (VER) established across Victorian Government Departments and agencies.</td>
<td><strong>2004/05 – 2012/13:</strong> Implementation of VERS</td>
<td>Public Record Office Victoria (PROV)</td>
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<td><strong>By end 2005/06:</strong></td>
<td>EcoRecycle</td>
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<td>- All councils members of Eco-Buy Program</td>
<td>Local government</td>
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<td></td>
<td></td>
<td>- Targets established for waste reduction and recycled-content purchasing for main materials (in consultation with local government, MAV, VLGA)</td>
<td>RWMGs</td>
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<td></td>
<td>MAV</td>
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<td>VLGA</td>
</tr>
<tr>
<td><strong>1.3.3 Reduce waste generated from local government through waste reduction and environmental purchasing.</strong></td>
<td></td>
<td>EcoRecycle</td>
<td>Local government</td>
</tr>
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Chapter 6: Programs

1. REDUCING SOLID WASTE

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<tbody>
<tr>
<td>1.4 Measuring materials efficiency</td>
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<tr>
<td>1.4.1 Develop environmental accounting tools and systems for uptake by commerce and industry.</td>
<td>By end 2004/05: Research and pilot trials completed, promotion of pilot outcomes, implementation plan developed to drive broad uptake of tool.</td>
<td>EPA</td>
<td>All industry sectors</td>
</tr>
<tr>
<td></td>
<td>2004/05 – 2012/13: Broad uptake of environmental management accounting systems by commerce and industry, revisions to appropriate standards achieved and training in environmental management accounting provided throughout accounting curricula.</td>
<td></td>
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</tr>
<tr>
<td>1.4.2 Use of broad sustainability indicators (such as the Ecological Footprint) to measure resource efficiency.</td>
<td>By end 2003/04: EPA Ecological Footprint pilot project completed</td>
<td>EPA</td>
<td>State government, Community, Local government, Industry</td>
</tr>
<tr>
<td></td>
<td>By end 2005/06: Broader evaluations of other sustainability indicators conducted; implementation of selected appropriate measures across state government (within EMS framework) and other targeted areas within industry, local government and the community.</td>
<td>• EcoRecycle</td>
<td></td>
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<tr>
<td></td>
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<td>• DSE</td>
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<td>• SEAV</td>
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<td>• Water Authorities</td>
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<tr>
<td>1.4.3 Improve the quality of data collection, management and reporting, including the use of materials efficiency measures and GIS modelling</td>
<td>By end 2004/05: • Methodology and project plan for materials efficiency measurement established • GIS system completed and accessible</td>
<td>EcoRecycle</td>
<td>All sectors</td>
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<tr>
<td></td>
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<td>• RWMGs</td>
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<td>• EPA</td>
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Chapter 6: Programs

2. RECOVERING SOLID WASTE

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<th>Target sectors</th>
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</thead>
<tbody>
<tr>
<td>2.1 Strategic partnerships with industry</td>
<td>2.1.1 Reduce waste from major waste generating industry sectors (see also Reducing Solid Waste 1.1.1)</td>
<td>By end 2006/07: Waste reduction/product stewardship agreements, focussing on waste avoidance and recovery, established with major waste generating industries.</td>
<td>EcoRecycle • EPA • Priority industry sectors • Waste management industry</td>
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<tr>
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<td></td>
<td>By end 2005/06: • electronic appliances* (including white goods and consumer electronics) • computers and peripheral IT equipment* • tyres* • consumer packaging* • paint • mercury containing lamps including fluorescent lamps</td>
<td>EcoRecycle/EPA • EPHC • Waste management industry • Priority industry sectors</td>
</tr>
<tr>
<td></td>
<td></td>
<td>By end 2009/10: • batteries* • end of life vehicles* • transport packaging • office paper • treated timber</td>
<td></td>
</tr>
<tr>
<td>2.1.2 Reduce end of life waste from priority products (see also Reducing Solid Waste 1.1.2).</td>
<td>Product stewardship agreements established, focussing on waste avoidance and recovery, established for:-</td>
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</table>
## Chapter 6: Programs

### 2. RECOVERING SOLID WASTE

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</thead>
</table>
| 2.1.3 Work with the waste collection and disposal industry to encourage practical and commercially driven services to foster waste avoidance and resource recovery. | **By end 2004/05:** Development and implementation of voluntary agreement with waste collection and disposal industry encompassing:  
- assistance to clients regarding waste avoidance and resource recovery  
- standards for recycling systems  
- pricing systems that encourage clients to reduce waste and to recycle (e.g., pay by weight)  
- collection and reporting of waste data | EcoRecycle  
Waste collection and disposal industry | All sectors |
| 2.1.4 Build partnerships with industry to:  
- Improve quality, performance and market penetration of recycled content products  
- Facilitate product development and eco-design. | **2003/04 to 2012/13:** Linked to market development assistance for priority materials and products identified through product stewardship/waste reduction agreements with industry. | EcoRecycle  
- Reprocessors of priority materials (i.e., C&D, garden organics, timber)  
- Businesses marketing products identified for product stewardship initiatives  
- Agricultural/Horticultural/Landscape industries | Purchasers in industry and government |
| 2.1.5 Enhance building design and construction for waste avoidance and resource recovery (including litter management). | **By end 2003:** Establishment of model standard for waste management and resource recovery targeting developers and assessment authorities  
**By end 2005/06:** Adoption of model standards by all metropolitan and provincial city councils. | EcoRecycle  
- Developers and property managers  
- Relevant industry associations  
- Waste collection industry  
- RWMGs  
- Local government | Developers and investors  
Property managers |
## Chapter 6: Programs

### 2. RECOVERING SOLID WASTE

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<tr>
<td><strong>2.2 Industry Engagement and Advocacy</strong></td>
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</tbody>
</table>
| 2.2.1 Develop closer co-ordination of state government environmental assistance programs for industry, including focus on waste avoidance and recovery (see also Reducing Solid Waste 1.2.1). | **By end 2003/04:** inventory of programs and plan for integrating/coordinating/rationalising programs. **By end 2004/05:** Program coordination completed and promoted across business, community and government. | EcoRecycle  
- EPA – Business sustainability program  
- Other relevant agencies | All sectors |
| 2.2.2 Build capacity within priority industry sectors to measure and improve materials efficiency, waste avoidance and recovery (see also Reducing Solid Waste 1.2.2). | **By end 2003:** Capacity building program development completed  
**From 2004:** Program rollout  
**By end 2003/4:** Development of statewide information systems linking waste generators with avoidance and recycling opportunities | EcoRecycle  
- Priority Industry sectors  
- Waste management industry  
- RWMGs | Commercial and government sectors:  
- Food services and food retail  
- CBD office sector  
- SMEs (RWMGs)  
Manufacturing Industry sectors:  
- Food manufacturing  
- Machinery, equipment, automotive and metal product manufacturing  
- Timber products and furniture manufacturing  
Construction and Demolition sector:  
- Residential construction and demolition  
- Commercial construction and demolition |
## Chapter 6: Programs

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</table>
| 2.2.3 Build capacity regarding **sustainable consumption**, waste reduction and recovery, customised to reach audiences in schools, the TAFE sector and universities (see also Reducing Solid Waste 1.2.3). | **By end 2003/04:** Capacity building program development completed.  
**2004/05 - 2012/13** Program rollout | EcoRecycle  
- Education sector  
- Local government  
- Environmental Groups  
- Environmental educators  
- Business leaders | All sectors |
| **2.3 Infrastructure and systems** | | | |
| 2.3.1 Stimulate investment in infrastructure to divert waste for reuse, recycling and energy recovery. | **2003/04 to 2012/13:** Infrastructure investment programs established for:-  
- C&D waste sorting facilities  
- residual waste processing facilities for municipal and C&I wastes  
- organics processing facilities  
- landfills and transfer stations with resource recovery facilities | EcoRecycle  
- Sorting and reprocessing industry  
- Local government  
- RWMGs | Industry sectors |
| 2.3.2 Improve recovery of wider range of kerbside materials (including organics and expanded range of plastics). | **By end 2004/05:** Market development issues identified through National Packaging Covenant for expanded range of plastics.  
**By end 2004/05:** Incentive program for local government established | EcoRecycle  
- RWMGs  
- Local government  
- Waste management industry | Industry sectors (SMEs) |
## 2. RECOVERING SOLID WASTE

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<tr>
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</thead>
</table>
| 2.3.3 Improve recovery of kerbside materials from SME sector, schools and not-for-profit organisations through existing local government contracts. | **By end 2004/05:** Incentive program for local government established | EcoRecycle  
- RWMGs  
- Local government  
- Waste management industry | Industry sectors (SMEs) |
### Chapter 6: Programs

#### 3. RESIDUAL DISPOSAL

<table>
<thead>
<tr>
<th>Program</th>
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<th>Target sectors</th>
</tr>
</thead>
</table>
| 3.1 Continue enforcement of landfill policy, upgrading/closing landfills that do not meet best practice. | EPA to continue working towards implementation of financial assurances for all licenced landfills. EPA to work with RWMGs and local government towards the prioritised closure and rehabilitation of those unlicenced landfill sites posing an unacceptable environmental risk. | EPA  
  - RWMGs  
  - Local government  
  - Private landfill operators | All sectors |
| 3.2 Ensure local government owned landfill management is consistent with the principles of sustainable waste management. | **By end 2005/6:** All local government owned landfills pricing services on a user-pays basis reflecting the full lifecycle costs of landfilling (including closure, rehabilitation and aftercare). | RWMGs  
  Local government | All sectors |
| 3.3 Review landfill levy. | **By end 2006/07:** Review landfill levy arrangements post 2007/08. | EPA | All sectors |
| 3.4 Investigate landfill prohibitions for priority materials and products to support Strategy targets. | **2003/04 to 2012/13:** Potential bans on priority materials and products:-  
  - where viable markets are identified and there is an environmental hazard from their disposal to landfill  
  - to underpin product stewardship arrangements. | EPA | All sectors |
4. REDUCING LITTER

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>4.1 Reducing litter from construction and demolition sites.</td>
<td>By end 2003/04: Review the effectiveness of state legislation versus model local laws for consistent building and construction design for resource recovery and waste management (including litter management).</td>
<td>EPA and EcoRecycle • Local government • VLAA</td>
<td>Construction and demolitions sector</td>
</tr>
<tr>
<td>4.2 Ensure litter penalties reflect environmental impact.</td>
<td>2003/04 to 2012/13: Monitor legislative framework for litter to ensure that the penalties continue to reflect the environmental impact of littering</td>
<td>EPA</td>
<td>All sectors</td>
</tr>
</tbody>
</table>
Chapter 7: Next Steps

Finalising this document
EcoRecycle invites written submissions in response to the draft plan. Contributions will be accepted up to 30 April 2003 and should be sent to mailbox@ecorecycle.vic.gov.au or in hard copy to EcoRecycle. A further opportunity to participate will be provided through a series of forums to be held during March and April 2003. Comments will be considered and responded to in the final draft, which will be submitted to the EPA in mid 2003.

Implementation and future program development
Following EPA approval of the final draft plan, all parties allocated responsibilities will be required to develop implementation plans, via their Annual Business Plans or Regional Waste Management Plans.

Future EcoRecycle programs and activities in relation to SIW will be developed with reference to the plan’s programs.

Measuring progress
EcoRecycle will prepare an annual assessment of progress in implementing this plan and Victoria's Strategy, Towards Zero Waste – A Materials Efficiency Strategy for Victoria. The assessment will draw on annual surveys of the recycling industry and local government, landfill data collected by EPA and data collected from the waste collection industry and other sources.

Plan revision
EcoRecycle must revise this plan within five years or within six months of being requested to do so by EPA.