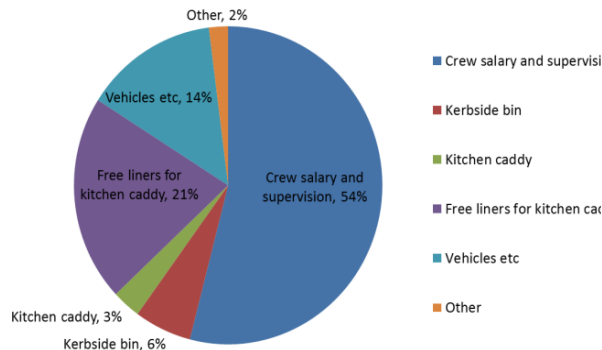


Understanding the costs and savings

The cost of introducing a kerbside organics collection system will be a key factor for any council considering establishment of a scheme. This factsheet describes the costs that should be considered when planning and budgeting for an organics collection scheme.

The cost of setting up and running a scheme will vary from one council to another, depending on a range of factors such as the type of material collected (garden only versus mixed garden and food), the kind of collection equipment provided, the collection frequency and the amount of community engagement, promotion and education required.

The following pie chart shows an indicative cost structure, based on the proportion of money allocated to different areas of the service for a council-run organics collection scheme. It excludes processing costs, which are addressed under Processing Options (Factsheet 5).



The highest costs are usually associated with salaries for collection crews and their supervision. Other significant costs include equipment (bins and bin liners) and vehicle running costs.

Indicative costs

The following factors will affect the overall cost of a collection scheme and need to be considered during planning and budgeting phases. The list below includes both initial investment costs, which have to be funded when establishing a new collection scheme, and on-going operating costs.

- ✓ Number of additional staff (operational and administration), and local wage levels
- ✓ Purchase / lease of additional collection vehicles
- ✓ Requirement for any modifications of existing or new vehicle fleet
- ✓ Vehicle running costs, including fuel, maintenance and overheads (such as insurance)
- ✓ Type and size of collection bins and kitchen containers provided to residents
- ✓ Type and number of liners for kitchen containers, if provided to residents
- ✓ Intensity and duration of public education and motivation campaign
- ✓ Performance monitoring, including audits and contamination management
- ✓ Additional management and administration.

Organics collection and composting trials rarely provide a direct indication of future roll-out and collection costs, because trials are intensively managed and are primarily conducted for gathering data. It is rare that a collection vehicle would be purchased specifically for a trial. The obtained data (for example take-up and set-out rates, collection yield, and problem areas) should, however, allow council staff to make more accurate predictions of future investment and operating costs.

Many councils already provide a kerbside collection service for garden organics, and are now considering co-collection of garden and food organics. In cases where households already have an organics bin (and associated collection vehicles) initial investment costs to expand the service will be much lower compared to establishing a service from scratch.

Costs for educating and motivating householders should also be lower when community members are already used to the concept of source segregating garden organics.

On-going operating costs, however, should be similar regardless of whether collection of food organics is added to an existing garden organics collection service, or if collection of both materials is introduced simultaneously.

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In areas where councils provide collection services, it might be possible for neighbouring local authorities to share the use of a new organics collection vehicle that would not be fully utilised by either of the two councils. This is only feasible if the distance between collection areas is not excessive. The joint establishment and operation of processing facilities is more common, usually managed through regional incorporated bodies that include several local authorities. It is feasible that such regional bodies also take on the responsibility for collecting organics in order to gain greater efficiencies and reduce collection costs.

Some state government agencies (for example Zero Waste South Australia, and the NSW EPA) provide standardised signage and logos for education material, the usage of which might provide some savings for councils.

Based on Australian and international studies, the following table shows indicative costs (in dollar per household per year) associated with organics collection and composting services. These indicative costs represent broad based averages, and councils should seek specialist advice for their specific circumstances.

Item	Indicative costs
Promotions and campaigns	\$15,000 per year
On-going management and logistics	\$50 / hhld / year
Initial education materials (such as collection calendar, brochures, stickers for bin and caddy)	\$3 – \$5 / hhld
On-going education	\$5 / hhld / year
Kitchen caddy	\$3 – \$13 / hhld
Kitchen caddy liners, assuming 3-4 per week	\$8 – \$12 / hhld / year
Kerbside bin (240L)	\$40-\$50 / hhld
Collections	\$0.70 – \$3.00 / lift
Composting ¹	\$25 – \$130 / tonne

¹ Costs vary greatly, depending on the type of materials processed, throughput, type of technology, location of the facility, and products generated.

Unit collection costs per household or per tonne of collected material are affected by:

- ✓ Participation and set out rates
- ✓ Level of capture or diversion achieved
- ✓ Collection round efficiencies, governed by distance between pick-up points and crew productivity.

Processing costs are generally governed by:

- ✓ The kind and quantities of organic residues processed
- ✓ The location of the processing facility
- ✓ The selected processing technology
- ✓ The level of contaminants that have to be removed from the delivered material
- ✓ The designated use of generated recycled organic products.

Financial savings

Collecting source segregated organics reduces the amount of waste sent to landfill, resulting in significant financial savings from avoided disposal costs. The level of savings depend on the pricing differential between landfill disposal and resource recovery processing, as well as the quantity and quality of organic materials available for beneficial reuse and sale following processing.

Landfill facilities that emit 25,000 tonnes or more of carbon dioxide equivalent greenhouse gas emissions each year are liable under the carbon pricing mechanism. The carbon price will not apply to emissions from waste deposited prior to 1 July 2012 (known as legacy waste emissions), but legacy waste emissions do count towards determining whether a facility meets the participation threshold. For councils operating larger landfill sites, this could result in liabilities under the scheme. The carbon price will be fixed at \$23 per tonne of CO₂-e in the first year, but beyond 2015 the price will be determined by market forces under a market trading scheme.

Australian councils collecting food and garden organics report an average capture rate of 8 kg per participating household per week, or more than 400 kg per year. This can be a significant portion of total waste generated and diversion of such quantities may significantly reduce landfill disposal fees and levies.

When introducing an organics collection service, most councils seek to modify existing waste and recycling collection services in order to offset at least some of the additional costs. Full integration of organic residues collection into a council's waste and recycling collection services offers opportunities for savings such as:

- ✓ Reducing collection frequency of residual waste from weekly to fortnightly
- ✓ Reducing residual waste bin size to 120L (purchase of new bins) and converting old 240L residual waste bins for collecting organics by fitting new green lids.

If a new organics collection service is not integrated with other services, it might still be possible to reduce the costs of services by rearranging collection routes and reducing the number of vehicles employed for collecting household garbage. This is possible because source separating organics from the waste stream will significantly reduce the volume and weight of this stream and offset the additional routes and vehicles needed for organics collection.

Triple bottom line assessment

The concept of triple bottom line (TBL) assessment refers to the evaluation of economic, environmental and social information in an integrated manner. It is recognised that financial cost is a primary consideration in assessing performance and suitability of waste and recycling services, however considering environmental and social impacts/benefits will provide a broader understanding of different options to help inform council decision making processes. A **TBL** assessment:

- ✓ Provides broader scope and focus – decision making is wider than financial as it considers social and environmental assessment criteria
- ✓ Is transparent – councils have an obligation to disclose their decisions and activities and their impacts to the community
- ✓ Provides integrated planning – in order to achieve economic prosperity, environmental sustainability and social wellbeing, recognition of multidimensional impacts of council's decisions and activities is required.

It is important to quantify the overall **environmental** impacts and benefits resulting from the activities relating to a waste service. Environmental assessments usually build upon the Life Cycle Analysis (LCA) approach, which involves attempting to evaluate all impacts over the full life cycle from creation to final disposal. Environmental performance indicators associated with evaluating environmental impacts include:

- ✓ **Climate impacts** – savings in greenhouse emissions through diversion of organics from landfill and soil carbon sequestration through application of compost, and impacts associated with the composting process and additional collection vehicles
- ✓ **Energy** – potential for beneficial reuse such as energy generation
- ✓ **Resource recovery and diversion** of waste materials from landfill
- ✓ **Conservation of valuable resources** – water usage, replacement of nutrients and materials through the use of compost.



Triple Bottom Line (Hyder)

Social impacts and benefits are complex to analyse and there are many possible measures, which are prone to subjectivity. An organics collection service is inherently reliant on participation of the community to operate successfully. In assessing the suitability of a service, it is recommended to consider social impacts on the community through a qualitative assessment against performance indicators such as:

- ✓ **Equitable** and convenient access to recycling and waste services
- ✓ **Positive behavioural change** – encouragement of sustainable waste practices in the community
- ✓ **Nuisance impacts** (disamenity) such as traffic, noise and odour
- ✓ **Creation of employment opportunities**
- ✓ **Council reputation** and the way council is perceived by its community in terms of its commitment to sustainable and equitable recycling and waste management.

A cost benefit analysis can be difficult to undertake due to the high number of possible variables, and issues with developing the scope of the assessment in terms of what is included and excluded from the analysis. It can also be difficult to establish accurate estimates of various costs and savings during the planning phases of a project, as actual costs will often only be established through a competitive tender process.

Councils may wish to consider seeking advice from an appropriate consultant in undertaking such a cost benefit analysis, as many consultancies have experience in this style of analysis and will have access to a range of benchmark figures that can be used to provide an estimate of likely costs and benefits.

Case studies

Lismore Council Organics Collection Service

Lismore Council in northern NSW was one of the first Australian councils to introduce a domestic collection of food organics. The service was rolled out in 1999–2000 and has been operated within an extremely cost-effective budget since this time, owing to factors such as good contamination management procedures, wide acceptance of materials, and established social norms in using the service.

The collection of food organics is available to all properties with a kerbside garden organics service. The council now services 11,000 households in the Lismore urban zone, and about 4,000 caddies (with liners) have been distributed. Paper and cardboard was initially co-collected in the organics bin until a three bin system was introduced in 2006. Although residents are still encouraged to wrap food in newspaper for collection and disposal, ventilated kitchen caddies started to be introduced free of charge on a voluntary basis after 2009, in order to improve the convenience of the service and reduce plastic bag contamination issues. In 2012, the council began to accept compostable nappies in the organics service.

Residents that wish to use a ventilated kitchen caddy and compostable bags can pick up these resources in person at a council facility, but must also register their contact details and pick up a special bin sticker. The use of compostable liners requires the resident to place the relevant sticker on their bin which alerts the truck driver to expect compostable caddy liners in that bin. The use of the stickers reduces contamination, assists in promotion and the registration process, and allows council to have direct contact with residents who are using the organics service.

In order to be cost-efficient, a one-off kitchen caddy and a limit of 4 rolls of liners per household per year are provided for free. All additional products are supplied at a charge. The ongoing education budget for the service is modest, and consists primarily of local media advertising, use of the council website, a schools program, site tours and displays at events.

Lismore Council currently runs its own processing facility and sells the high-quality recycled organic product.

Lessons Learnt: The urban food and organics collection service offers a cost-effective solution to resource recovery in the Lismore region. The presentation of organics bins is about 91% and average yields are 14 kg/hhld/week of combined food and garden organics. Audits of the residual waste bin suggest a 92% capture rate of food and garden organics is achieved through the organics service, with a contamination rate in the organics bin maintained at about 1%.

The Groundswell Project

The Groundswell project conducted in southern NSW during 2008, 2009 and 2010 built upon an approach called “City to Soil,” which was first trialled in Queanbeyan and is predicated on encouraging the community to ‘close the loop’ by returning source-separated household organics, to help strengthen local food production.



Graphics used in 'City to Soil' education resources

Funded by the NSW Environmental Trust and involving Goulburn-Mulwaree City, Lachlan Shire, Queanbeyan City and Palerang Shire Councils, the objectives of the project were for the whole community to be engaged in the recovery process, and for councils and farmers to work together in diverting urban organics from the waste stream back into agricultural soils as high-quality compost. ‘City to Soil’ encompasses branding, a set of tools and a philosophical approach to kerbside collection used by councils involved in the Groundswell project to introduce a combined food and garden organics collection. The Groundswell project combined this collection approach with a simple but innovative small-scale composting process, which has now been adopted by a range of councils in regional NSW and Victoria.

Successful pilot collection services were introduced in both Lachlan Shire and Goulburn-Mulwaree councils during the project, while service implementation was delayed in the other two council areas involved. In the established collections, contamination was consistently low (averaging 0.2%) and the average yield of organics was 9.77 kg/hhld/week, although food comprised only 0.44 kg of this amount. Overall results suggest a high capture rate of about 93% was achieved for garden organics, although only about 16% of food organics was recovered.

As part of the grant-funded project, an economic analysis was undertaken to assess the costs associated with councils adopting the Groundswell process on a per-household basis. This project component also provided an overview of other benefits and costs of adopting this type of system.

The current costs associated with the collection, management and disposal of organics to landfill by the four councils in the study ranged from \$80 per tonne to over \$130 per tonne annually, and the economic analysis calculated this represents an average cost of \$68 per household annually. In comparison, the on-going cost of conducting the Groundswell processing was estimated to be \$46 per household annually.



Application site of finished compost trials

The total annual value of the service to a council was calculated at \$113/hhld/year, comprising a saving in landfilling costs (\$68/hhld) and potential compost revenue (\$45/hhld). The analysis suggests the program, on average, can provide councils with a payback on investment in approximately three years. The Net Present Value after five years (at a 15% discount rate) was calculated as \$109/hhld.

The following tables, from the economic analysis report, provide a guide to the costs of implementing the Groundswell approach for collecting and processing organics into high value compost, based on data available from the participating councils.

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Council costs to establish a Groundswell collection per household (Year 1) (from Reynolds, 2011)

Equipment and processes	Cost per household
Max Air Bins	\$3.00
240 Litre City to Soil Bin	\$40.00
Bio-bags	\$10.00
Compost Tarps	\$3.50
VRM Inoculants	\$2.00
Compost Testing for Certification	\$5.00
Communications	\$5.00
Total (A)	\$68.50

Council Costs to maintain Groundswell Processes (Annually) (from Reynolds, 2011)

Equipment and processes	Cost per household
Max Air Bins: replacements	\$0.20
240 litre City to Soil Bin: replacements	\$1.20
Bio-bags	\$10.00
Compost Tarps	\$0.40
VRM Inoculants	\$2.00
Compost Testing for Certification	\$1.00
Communications	\$0.80
Compost screening	\$0.60
Total (B)	\$16.20

Total Council Costs for Collection, Plant & Salaries (from Reynolds, 2011)

Plant and salaries	Cost per household
Monthly kerbside collection @ \$1.60 lift ²	\$19.20
Plant & Equipment (composting) ³	\$2.20
Salaries (composting) ⁴	\$8.30
Total (C)	\$29.70
Total First Year (A+B+C)	\$114.40
Total Annual Ongoing (B+C)	\$45.90

Lessons Learnt: Economic analysis of this three-year project clearly suggests the 'City to Soil' collection and simple 'Groundswell' processing of household organics is a cost-effective way for the participating regional councils to handle their organic waste streams. Although the price of compost on the market can be variable, the results indicate this has little impact overall on service viability, with this model of collection and processing providing a financial advantages for councils even at a lower compost price of \$15/m³.

NB: Information in this factsheet is taken from the *Food and Garden Organics Best Practice Collection Manual* (2012) published by the Department of Sustainability, Environment, Water, Population and Communities. The full document is available on the department's website www.environment.gov.au/wastepolicy/publications/organics-collection-manual

² Based on average annual cost per lift between Lachlan council (contractor rates) and Goulburn-Mulwaree council (trucks purchased and depreciated, 20% residual value)

³ Plant and equipment includes average price of purchase of both small and medium front end loaders, spray plant and associated equipment

⁴ Salaries based on averages between the two councils and compared to composting rates. All rates are averages and based on 25% diversions. As diversion rates increase constant economies of scale occur, hence figures listed will decrease with increased production leading to decreasing total costs.