



Don't Throw Away That Food

Strategies for Record-Setting Waste Reduction



The Waste Reduction Record-Setters Project fosters development of exceptional waste reduction programs by documenting successful ones. These programs can be used as models for others implementing their own programs to reduce garbage. This fact sheet packet is oriented toward commercial and institutional food discard generators, and highlights record-setting food recovery programs.

Food discards: what are they and where do they come from?

Food discards (fūd dis-kārdz): food preparation wastes and uneaten food from households, commercial establishments, institutions, and industries.¹

Major generators: restaurants, supermarkets, produce stands, school cafeterias, hospitals, food processors, farmers, hotels, prisons, employee lunch rooms, and community events.

Examples: leftovers, outdated bread, wilted lettuce, surplus canned goods, vegetable peels, and fruit pits.

Why recover food discards?

According to the U.S. Department of Agriculture Economic Research Service, if 5% of consumer, retail, and food service food discards from 1995 were recovered, savings from landfill costs alone would be about \$50 million dollars annually.² Recovering 5% of losses from these three sources "would represent the equivalent of a day's food for each of 4 million people."³ Food discards comprise 6.7% by weight of the total U.S. municipal solid waste stream. In 1995, 14,000,000 tons of food discards were generated. Of this, only 4.1%, 600,000 tons, was diverted, or recovered, from the traditional disposal destinations of landfills and incinerators.⁴

Almost any business can successfully create fewer discards by buying less, and can divert food discards from landfills. Businesses with record-setting food diversion programs are recovering 50 to 100% of their food discards and reducing their overall solid waste by 33 to 85%. Often, recovery of food and other organics is just one part of a successful overall waste reduction program that realizes both environmental and economic benefits. Your program can allow you to:

- Avoid trash collection and disposal fees;
- Provide food to the needy;
- Recover the nutrient value of the food as compost or animal food;
- Help your community meet local and state waste reduction goals;
- Sustain local industries and jobs; and
- Create an improved public image for your business.

Recovery Options

Your choice of recovery methods will depend on many factors. These include the quantity and type of food discards, availability of space for on-site recovery, existence of haulers and/or end users for off-site recovery, and program costs. Food discard recovery methods include making donations, processing into animal feed, rendering, and composting. Off-site methods involve food discard generators, haulers, and end users.

Food Donations

Non-perishable and unspoiled perishable food can be donated to local food banks, soup kitchens, and shelters. Local and national programs frequently offer free pick-up and provide reusable containers to donors. To encourage food donations, all 50 states and the District of Columbia have enacted “Good Samaritan” laws that protect from liability those donors who take adequate measures to prevent food spoilage or contamination.

Animal Feed

Recovering food discards as animal feed is not new. In many areas hog farmers have traditionally relied on food discards to sustain their livestock. Farmers may provide storage containers and free or low-cost pick-up service. Coffee grounds and foods with high salt content are not usually accepted, as they can be harmful to livestock.



At least one company is using technology to convert food discards into a high-quality, dry, pelletized animal feed. Food discards are also used to make pet food.



Rendering

Liquid fats and solid meat products can be used as raw materials in the rendering industry, which converts them into animal food, cosmetics, soap, and other products. Many companies will provide storage barrels and free pick-up service.

Composting

Composting can be done both on- and off-site. Available land space as well as haulers and end users in your area will help you decide which is better for you. If you compost on-site, you will need to consider carbon/nitrogen ratios. Food scraps provide most of the nitrogen, while bulking agents such as newspaper, cardboard, and wood chips provide carbon. The moisture and carbon content of your food discards will determine how much bulking agent you should add. Temperature and aeration are other important factors that will determine how long it takes materials to compost. Composting can take many forms:

- *Unaerated Static Pile Composting:* Organic discards are piled and mixed with a bulking material. This method is best suited for small operations; it cannot accommodate meat or grease.

- *Aerated Windrow/Pile Composting:* Organics are formed into rows or long piles and aerated either passively or mechanically. This method can accommodate large quantities of organics. It cannot accommodate large amounts of meat or grease without frequent turning and careful temperature and moisture control.

- *In-vessel Composting:* Composting vessels are enclosed, temperature and moisture controlled systems. They come in a variety of sizes, and have some type of mechanical mixing or aerating system. In-vessel composting can process larger quantities in a relatively small area more quickly than windrow composting and can accommodate animal products.



- *Vermicomposting:* Worms (usually red worms) break down organic materials into a high-value compost (worm castings). This method is faster than windrow or in-vessel composting and produces high-quality compost. Animal products or grease cannot be composted using this method.

Model Programs — Diversion Strategies and Rates

Record-Setting Program	Diversion Strategies	Materials Collected	Food Discards and Other Organics Recovered (tons per year)	% Estimated Food Discards and Other Organics Recovered	% Total Waste Stream Recovered*
Del Mar Fairgrounds, California	Off-site composting; on-site vermicomposting; rendering	Discards from fair food vendors, paper plates, cups, napkins, towels; vegetable and fruit scraps and other discards from on-site kitchen; cooking oil	51 (1996)	75%	85%
Fletcher Allen Health Care, Vermont	Off-site composting; rendering; donations	Kitchen food prep discards, leftovers from steam tables; grease; edible produce	90 (1997)	90%, pre-consumer	33%
Frost Valley YMCA, New York	On-site composting	All pre- and post-consumer food scraps and leftovers	80 (1997)	100%	53%
Green Workplace Program, Government of Ontario	Off-site composting; on-site composting	Pre- and post-consumer discards from 27 government restaurants and cafeterias	1,650 (FY96)	70%	60-80%
Larry's Markets, Washington	Off-site composting; rendering; donations	Produce and floral trimmings and spoils, waxed cardboard; meat and fish trimmings; canned goods	870 (1995, est.)	90%	64%
Middlebury College, Vermont	On-site composting	Kitchen food prep discards and post-consumer leftovers from cafeterias and snack bars, waxed corrugated cardboard	288 (1996)	75%	64%
New York State Department of Correctional Facilities	On-site composting at 30 facilities; off-site composting at 17 facilities	Kitchen food prep discards, post-consumer leftovers including chicken bones; some sites accept paper towels and mixed cardboard	6,200 (FY97)	90%	80%
San Francisco Produce Recycling Program, California	Donations; animal feed; off-site composting	Edible, non-salable produce; inedible produce; spoiled produce and trimmings	1,500 (June 1996 - August 1997)	Greater than 50% from participating businesses	NA
Shop Rite Supermarkets, New Jersey	Off-site composting; rendering	Floral and produce trimmings and spoils, out-of-date bakery items, old seafood, soiled paper products, food spills, out-of-date dairy and deli products, waxed corrugated cardboard; meat products	3,000 (1997)	80%	90%
University of Massachusetts, Amherst**	On-site composting	Kitchen food prep scraps, pre-consumer leftovers, post-consumer discards	250 (September 1996 - August 1997)	50%	48%

* Reflects the total waste reduction achieved from comprehensive waste reduction efforts. As such, these recovery rates reflect reductions from all types of waste and are not limited to organics recovery.

** No case study on this program is available at this time.

Running A Food Recovery Program

Some Questions and Answers

Q How can I create a record-setting program?

A There is more than one way to create and measure a successful food recovery program. Successful programs usually have two defining qualities: they greatly reduce the amount of food discards sent to the landfill or incinerator, and they save money in comparison to other disposal methods. Furthermore, most model programs are part of a more comprehensive waste reduction program.

Doing a basic waste audit before beginning your program will help you gain an understanding of what is in your waste stream. This baseline information also serves as a marker for

measuring diversion rate and change in spending.

Depending on the

composition of your waste stream, the best method of

food discard recovery may be a combination of methods.

Involving employees in the beginning and continuation of your program, and training everybody well in how and why to participate have also proven to be key elements in a successful program. As more people are trained and interested in a program, and feel ownership of it, the more likely they will be to collect food discards with little contamination at a high recovery rate. This will ensure you have a high-quality, high-value product. Adding food discard recovery responsibilities to employee job descriptions will help show that you are serious about creating a strong program.

Q Will beginning a food composting program cost much?

A Start-up costs are typically low. For example, Shop Rite Supermarkets in New Jersey had only to pay for the rental of extra dumpsters and for the additional organics pick-up. If you choose to compost on-site with special equipment, costs can be higher. Your current equipment, plans for your composting program, and available space will all determine your start-up costs.

Q How can I run a cost-effective program?

A How cost effective your program is mainly depends on the difference between your current hauling and tipping costs and those of the program you decide to implement. For composting, fees are usually significantly less than trash fees. You may also be able to sell finished compost. Food banks and renderers usually provide free pick-up, allowing programs to avoid 100% of their trash costs.

Q If I collect organics for composting or animal feed, am I destined to live with vectors and foul odors?

A No. Most businesses that collect kitchen and table scraps avoid these problems by keeping organics in covered containers. Many refrigerate containers until pick-up. A Waste Specialist at Fletcher Allen Health Care, where containers are picked up daily, says that they avoid vector and odor problems by keeping their containers clean and their organics “moving.”

Q Are composting and providing animal feed viable options for urban businesses?

A Yes. Commercial composting facilities in or near cities will take your food discards. Farmers are close enough to many urban areas that they will pick up from your business. Wholesalers and retailers throughout San Francisco participate in a food discard recovery program which includes providing food for cattle.



Record-Setters Reap Benefits

► Avoid trash collection and disposal fees

Through composting, Shop Rite supermarkets in New Jersey avoid an average of \$90 per ton in landfill tip fees and spend an average of \$33 per ton to tip compostables off-site. This represents a savings of \$57 per ton.

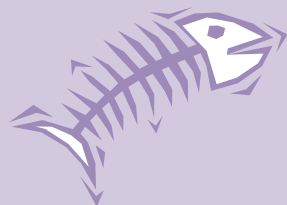
With high recovery rates, you can have your trash dumpsters picked up less frequently, or use smaller dumpsters for the same pick-up frequency.

► Provide food to the needy

The San Francisco Food Bank collects over 37 tons of edible food a month from wholesalers and distributes it to local service agencies.

► Recover the nutrient value of the food as compost or animal food

At New York Department of Correctional Services facilities, compost made from landscape trimmings and cafeteria food scraps adds rich organic matter to farms and horticulture projects. "Closing the loop" can also save money by giving you access to cheap soil amendment or wholesale organic produce.



► Help your community meet local and state waste reduction goals

In 1996 the Del Mar Fairgrounds in Del Mar, California, diverted 85% of its waste stream, including more than 38 tons of food discards. This helped the town of Del Mar meet diversion goals set by the 1989 California Waste Management Law.

► Sustain local industries and jobs

Food discard generators typically do not need to hire anybody new to run food recovery programs. However, by recovering food discards for end users, they can help sustain local industries and jobs. Composting facilities, for example, employ four times more people on a per-ton basis than landfills.⁵

The Intervale Foundation, a non-profit organization in Vermont, employs five people full time at its composting site in Burlington.

► Create an improved public image for your business

Customers at Larry's Markets in Washington are proud to shop at a store with a strong composting program.

Notes

¹ Adapted from the U.S.

Environmental Protection Agency, *Measuring Recycling: A Guide for State and Local Governments*, 1997, page 11.

² Kantor L.S., Lipton K., Manchester A., and Oliveira V., *Estimating and Addressing America's Food Losses*. USDA, 1997, page 8; Advance release of same article in *FoodReview*, Vol. 20, No. 1, Jan.-Apr., 1997.

³ Kantor L.S., Lipton K., Manchester A., and Oliveira V., 1997, page 4.

⁴ U.S. Environmental Protection Agency, *Characterization of Municipal Solid Waste in the United States, 1996 Update*, 1997, pp. 5-6.

⁵ "Jobs Sustained per 100,000 TPY Handled at Various Operations," Institute for Local Self-Reliance, Washington, D.C., 1997.

Food Recovery Tips

Tips from Record-Setters

- Consult with your local and state recycling coordinators.

These solid waste planners may help locate a market for food discards or provide technical advice.

Some agencies award grant money for innovative projects.

If no end users exist locally, request that local agencies such as the department of solid waste or economic development help develop some.

- Network with other business members to learn about their experiences with food recovery programs.
- Research the haulers and end users in your area.
- Anticipate barriers to a successful program and how you will overcome them. Learn from others. Ask employees what potential problems they see. They, after all, will be responsible for running the program.
- Train food service workers well, and well ahead of program implementation.
- Monitor and periodically re-evaluate your program.
- Use composting diversion to reduce your waste hauling and tipping costs.
- Be creative.



The Waste Reduction Record-Setters Project was developed under a U.S. EPA grant by the Institute for Local Self-Reliance (ILSR). For more information on the project, contact ILSR, 2425 18th Street, NW, Washington, DC 20009, phone (202) 232-4108, fax (202) 332-0463, web site (www.ilsr.org). This publication replaces EPA-530-f-98-002, dated January, 1998.

Tips for Solid Waste Planners

- Provide information on:
 - local food discard end users and haulers;
 - local businesses/institutions recovering food discards; and
 - legislation/regulations.
- Lead by example—institute a food discard recovery program in your office.
- Designate a staff person to encourage organics diversion in the area.
- Sponsor tours or demonstrations of successful programs.
- Fund a pilot program.
- Develop a local composting facility or other end user, if none exists.
- Work with local haulers and composters to provide pick-up service for food discards—maybe include food discard pick-ups along with regular trash pick-ups.

Resources



► General Resources

- State composting councils and environmental or agriculture agencies can provide information on composting
- State veterinarians can provide information on diversion to animal feed
- Local Chambers of Commerce can provide information on area rendering companies
- Local charities, social service agencies, and local chapters of national charities can provide information on food donation
- Yellow Pages or Internet headings such as composting, rendering, recycling, and waste reduction facilities

► Specific Resources

- *BioCycle: Journal of Composting & Recycling* published by JG Press, Inc. (610) 967-4135
- Other EPA fact sheets:
 - Managing Food Scraps as Animal Feed*
 - Donating Surplus Food to the Needy*
 - Waste Reduction Tips for Hotels and Gaming Establishments in Indian Country*
 - Reducing Food Waste in Indian Country*
 - Doing What it Takes to be Waste Wi\$e: Food Manufacturing/Processing Industry*Available by calling the RCRA Hotline: 1-800-424-9346 or 1-800-553-7672 for the hearing impaired.
- *Compost: Because a Rind is a Terrible Thing to Waste* by Jean Bonhotal and Karen Rollo. Available from: Cornell University Media Services Resource Center/ 7 Business & Technology Park/ Ithaca, NY 14850, 607-255-2080, FAX 607-255-9946, e-mail: Dist_Center@cce.cornell.edu
- *A Guide to Commercial Food Composting* by Composting Council Research and Education Foundation, 4424 Montgomery Avenue, Suite 102, Bethesda, MD 20814, 301-913-2885
- *A Citizen's Guide to Food Recovery* by the U.S. Department of Agriculture, 1996. Available from the USDA Food Recovery Hotline and National Hunger Clearinghouse by calling 1-800-GLEAN-IT



Del Mar Fairgrounds Del Mar, California

75% Recovery of Food Discards



In 1996 Del Mar Fairgrounds, a 375-acre site, diverted 38 tons, or approximately 75% of its food discards from landfill. The fairgrounds achieved this through a comprehensive waste reduction program which includes: off-site composting of food from its annual 20-day fair (1996 attendance 1,018,659); vermicomposting of food from its Satellite Wagering Facility; and sending used cooking oil to a rendering company.

Program Description

Del Mar Fairgrounds' efforts to get to "zero waste or darn close" were partially spurred by a 1989 California Waste Management Law requiring 50% diversion of solid waste from landfills. Most of the fairgrounds' compostables come from vendors at the annual fair who are contractually required to participate in the waste reduction program. This includes using paper products instead of polystyrene and recycling cardboard and beverage containers. Fairgrounds staff may fine vendors for non-compliance.

For **off-site composting**, Del Mar staff provide food vendors with unlined, covered 90-gallon plastic carts to collect food discards. Staff daily haul the containers on flat-bed trucks to Solana Recyclers, a local composting company with whom the fairgrounds has had a long-term relationship. Solana designates a spot next to a partially completed windrow where Del Mar staff unload compostables. Solana staff then cover new material with partially completed compost. This acts as a biofilter to keep odor to a minimum. Solana operates four sites on three farms; finished compost is used as fertilizer on

the fields. Solana can also accept paper products, so paper contamination is not a problem. Fairgrounds staff pull other contaminants out of the food discard containers; occasionally Solana staff need to remove some additional contaminants.

At the Satellite Wagering Facility, patrons gather to bet on horse races which they watch on satellite television. From mid-September through mid-July, approximately 2,500 people per day, six days a week attend. Attendance can be as high as 5,000 for the Kentucky Derby and other big races.

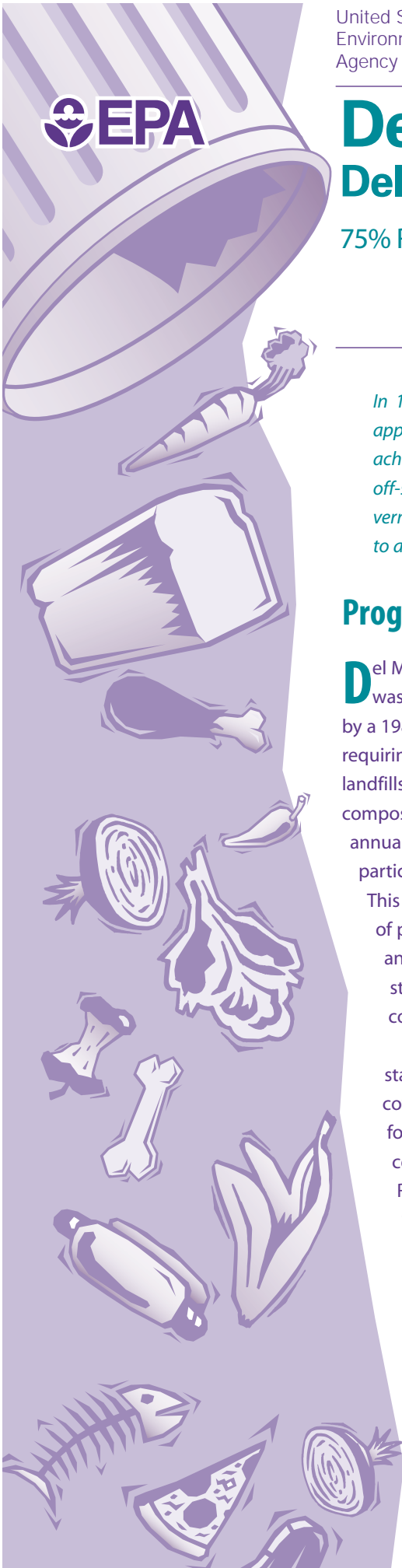
Since 1997, fruit and vegetable scraps from the facility's kitchen have been **vermicomposted** on the racetrack's infield farm. Vermicomposting is done by *eisneola*

Contact:

Concessions Coordinator
Del Mar Fairgrounds
22nd District Agricultural Association
Concessions Department
P.O. Box 2668
Del Mar, CA 92014
(619) 792-4218 fax: (619) 792-4236



Compost Program Manager
Solana Recyclers
137 N. El Camino Real
Encinitas, CA 92024
(760) 436-7986





Organic tomatoes being grown using compost from Del Mar Fairgrounds.

fetida worms in a wood framed box, which sits directly on the ground. Once collected from the waging facility,

which can provide an almost year-round supply of worm food, scraps sit for a few days in a container.

Staff then feed this partially decomposed food to the worms.

Fairgrounds staff feed and water the worms once a day. A water dripline for use during dry periods runs through the box. The box is covered with cardboard and a shade cloth. The finished worm compost, or castings, is used as fertilizer on the fairgrounds. From January through August 1997, over 3 tons of food discards were vermicomposted.

Cooking oil is collected for **rendering**. Darling International, a rendering company, provides covered barrels for the oil and collects them from the grounds, at no cost, as needed. Vendor participation in this effort is also contractually required.

In total in 1996, the fairgrounds recycled, including composted, 5,294 tons of materials; it sent 929 tons of trash to the landfill.



Costs/Benefits

The fairgrounds did not buy any new equipment for the off-site composting program and had no start-up costs.

Start-up costs for vermicomposting were under \$500, including the cost of 25 pounds of worms and collection containers. Soon fairgrounds staff will need to build an additional worm box.

Year-round recycling, including composting, for the fairgrounds and waging facility cost about \$70,000 in labor, excluding labor for horse races. Transportation costs \$540 per year. The fairgrounds currently pays \$40-47 per ton for tipping trash, although costs have been as high as \$70 per ton. Compost site tipping fees are \$17 per

ton. In 1996, total composting costs, including labor and transportation, were approximately \$24 per ton.

In 1996 the fairgrounds saved over \$232,900 in landfill costs through its waste reduction program. It earned over \$15,000 in revenue through aluminum, glass, and cardboard recycling.

Del Mar staff have the satisfaction of running an environmentally responsible fair.

Tips for Replication

- Mandate participation by all vendors and staff.
- Develop good working relationships with an established company.

Program Summary, 1996

Sector	Fairgrounds
Attendance 1996	1,759,659 Fair and Satellite Waging Facility (estimated)
Start date	1992
Dedicated Employees*	2 plus 2 half-time employees during the fair
Method	Off-site windrow composting; on-site vermicomposting; rendering
Materials collected	Pre-consumer discards, paper plates, cups, napkins, paper towels; vegetable and fruit scraps; cooking oil
Part of comprehensive waste reduction program?	Yes
Total waste generated (TPY)	6,223 tons: 5,294 tons recycled, including composted; 929 tons landfilled
Food discards generated (TPY)	51 tons (estimated)
RESULTS:	
Food discards recovered (TPY)	38 tons
Food discards recovered (%)	75% (estimated)
Total waste recovered (%)	85%
COSTS:	
Average composting costs (hauling and tipping fees)	\$24 per ton
Average avoided landfill tipping fee	\$40-47 per ton
Net savings	\$17-23 per ton

* A dedicated employee is one whose primary responsibility is working with the food discard program. TPY = tons per year



Fletcher Allen Health Care Burlington, Vermont

90% Recovery of Preconsumer Food Discards



The Medical Center Hospital of Vermont (MCHV) Campus of Fletcher Allen Health Care delivers approximately 90% of its food preparation scraps and steam table leftovers to an off-site composting facility. The hospital also donates produce to a food bank and sends old grease to a rendering facility. Its food discard recovery program allows Fletcher Allen to save approximately \$1,400 per year in landfill hauling and tipping fees and to support a local farm.

Program Description

Kitchen staff at the MCHV Campus of Fletcher Allen Health Care prepare 4,000 meals a day for patients and cafeteria patrons at the 500-bed facility. Kitchen staff place food preparation discards and leftovers from cafeteria steam tables into 64-gallon totes every Monday through Friday. Leftovers from plates are not collected because separating out post-consumer compostables from individual patient rooms is difficult, and because staff need to be extra careful about keeping sanitary conditions in this hospital setting.

Hospital housekeeping staff bring full totes to an organic farm run by the Intervale Foundation where discards are **windrow composted**. Intervale is a non-profit organization that runs many programs including the Intervale Composting Project, a partnership between Intervale and the Chittenden (VT) Solid Waste District, with Intervale the managing partner. The project accepts food scraps from hundreds of large and small businesses in addition to horse manure from a farm, leaves, and yard trimmings. Because the project is located near residential communities, Intervale staff only

turn windrows when the wind is blowing away from more populated areas. The material takes about 10 months to compost. It is then screened to remove large pieces and used on Intervale farms. It is also sold to area businesses and gardeners and through mail order.

During the year it took Intervale to receive a permit to accept commercial discards, hospital staff were trained in separation of compostable items as well as in proper storage and handling procedures. Staff were already separating out recyclables to send to the hospital's recycling facility located in a nearby town. Separating food discards was not a major change in their daily routine. All new staff are trained in separating

Contacts:

Environmental Health
Coordinator
Office of Community Health Improvement
Fletcher Allen Health Care
Community Health Improvement
UHC Campus, Arnold 4410
Burlington, VT 05401
(802) 656-2399 fax: (802) 656-5985
email: hshaner@aol.com



Waste Team Leader
Fletcher Allen Health Care
111 Colchester Avenue
Burlington, VT 05401
(802) 656-4886 fax: (802) 656-2790





recyclables, including compostables.

The hospital housekeeping staff's waste team makes daily trips to the recycling facility in a 19-foot box truck; trips to the Intervale farm, about 1 mile off the route, were added when Fletcher Allen began composting. The truck is standard dock height, making it easy for staff to wheel heavy toters on and off. After emptying toters, the waste team disinfects them at the recycling facility with a hospital grade disinfectant. Fletcher Allen has had no odor or vector problems. The hospital's Waste Specialist attributes this to "keeping our compost moving," and to cleaning the toters daily.

Kitchen staff collect grease in containers, which are emptied into a 180-gallon tank. Baker Commodities, a rendering company, picks up the tank at no cost to Fletcher Allen, and sends it to one of its facilities for processing.

The hospital donates fruit and vegetables to a local food bank.

Costs/Benefits

Start-up costs were minimal. In 1997, Fletcher Allen paid per-ton tip fees of \$25 at the compost facility plus approximately \$57 per ton in labor,

transportation, and other related costs. Trash hauling and landfill tipping cost the hospital \$98 per ton.

Fletcher Allen buys \$1,000 of produce wholesale per month from the farm, allowing patients to eat locally grown, pesticide-free produce. Once a week, employees can buy organically grown produce from a farm cart brought to the hospital.

The program provides good public relations in the community and fits in with the hospital's waste reduction policy. As one of 6,000 hospitals in the United States, which in total produce one to two percent of the country's solid waste, Fletcher Allen Health Care staff believe composting to be part of the hospital's mission to provide for the health of the community.

Tips for Replication

- Know what's going on at your facility before you begin any program. Calculate your baseline operation in tons and costs. If you don't measure your success, the program will be invisible.
- Look for existing infrastructure or processes within the system on which to piggyback your program. This will make program costs small add-ons rather than whole new costs.
- Train food service workers well, and well ahead of program implementation.
- Place signs on containers.
- Assign program responsibility to somebody. To ensure program success, one person needs to oversee it.

Program Summary, 1997

Sector	Hospital
Average number of meals prepared	4,000 meals per day
Start date	1993
Dedicated employees*	0.5
Methods	Off-site windrow composting; rendering; donations
Materials collected	Kitchen scraps; cooking oil; preconsumer leftovers
Part of comprehensive waste reduction program?	Yes
Total waste generated (TPY)	1,431 tons (estimated)
Food discards generated (TPY)	100 tons (estimated)

RESULTS:

Food discards recovered (TPY)	90 tons
Food discards recovered (%)	90% (estimated)
Total waste recovered (TPY)	468 tons
Total waste recovered (%)	33% (estimated)

COSTS:

Average compost costs	\$82 per ton
Average avoided landfill hauling and tipping fees	\$98 per ton
Net savings	\$16 per ton

* A dedicated employee is one whose primary responsibility is working with the food discard program. TPY = tons per year





Frost Valley YMCA

Claryville, New York

100% Recovery of Food Discards



Using a static aerobic composting system, this 6,000-acre residential educational and recreational facility in the Catskill Mountains composts 100% of the food discards from its kitchen and dining room. From 1990, when Frost Valley began its comprehensive waste reduction program, to 1997, the facility reduced its total solid waste by 53% (by weight). Through food recovery, Frost Valley now realizes a net savings of \$5,200 annually and provides a unique educational opportunity to thousands of visitors per year.

Program Description

Frost Valley runs environmental education programs and a summer camp, as well as hosts conferences throughout the year. About 30,000 people per year stay at this facility for periods of one to seven nights. During the summer when camp is in session, the kitchen serves 800 people a total of approximately 2,400 meals daily.

In the late 1980s, as waste disposal costs steadily rose, Frost Valley sought alternatives to landfilling its waste. When a waste assessment found food to be the greatest contributor to the waste stream, Frost Valley decided to implement a **composting** program.

Kitchen staff put all food preparation scraps, meat, bones, and paper towels in unlined 30-gallon plastic cans in the kitchen. Guests deposit their leftovers in an unlined can in the dining room. Staff stationed in the dining room during meals educate guests and help them with food recovery procedures.

Staff bring filled cans to a refrigerated room adjacent to the dining hall. When they have collected approximately 30 cans, they empty the cans into a

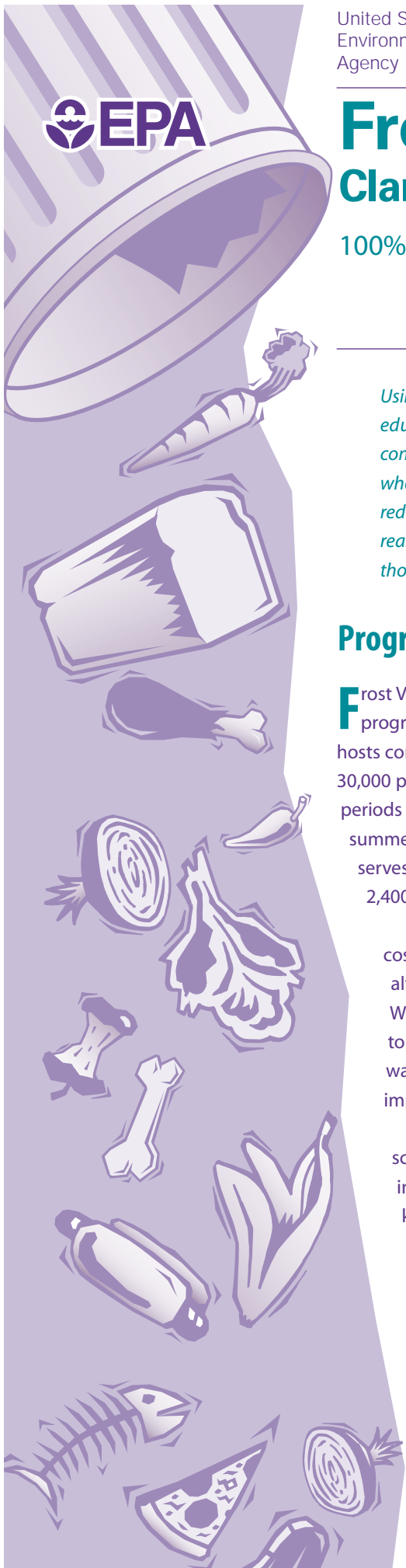
knight standard feed mixer, which holds up to 6 tons of material. Staff wash cans after each use. During the summer with camp in session, it takes 3-4 days to amass one mixer load of material; during the fall and winter it takes 2 to 2 1/2 weeks.

In addition to food, Frost Valley YMCA composts anything organic, including yard trimmings and lumber. Large items such as lumber are put in a hydraulic grinder and shredded before being added to the mixer.

Staff weigh food and other material going into the mixer and then add an equal amount of wood chips as a bulking agent. The wood chips add carbon, creating a proper carbon/nitrogen ratio. After mixing, materials are piled in a holding bay in the facility's Resource Management Center. Wood chips piled around six-inch PVC perforated pipes line the bottom of the bay. On top of that, staff layer the mixer contents and wood chips.

Contact:

Associate Executive Director for Programs
Frost Valley YMCA
2000 Frost Valley Road
Claryville, NY 12725
(914) 985-2291
fax: (914) 985-0056





Fans attached to the pipes cool the piles and add oxygen.

Materials stay in these piles for approximately 13 weeks until the volume, moisture, and temperature levels have all dropped. Staff then use a front-end loader to put material in a

modified trommel grain separator, which separates out larger material that has not completely broken down.

Material that has gone through the separator is windrow composted for 13-15 weeks.

Frost Valley has no contamination or odor problems. Wood chips control odor, and because the composter and bays are inside, there are no vector problems.

Costs/Benefits

Frost Valley raised \$250,000 for composting equipment and site, educational facilities and equipment, and development before beginning the project. One of the greatest program costs was building the attached classroom, greenhouse, and gardens used to share the program with the thousands of students and families that visit Frost Valley every year. Other costs associated with the program include electricity, fuel, and miscellaneous

operating costs. This totaled approximately \$500 in FY97.

In 1997, as a result of food recovery, Frost Valley avoided approximately \$9,700 in waste disposal costs. It also derives revenue from the sale of recycled materials such as cardboard. Since implementation of its waste reduction program, including composting, Frost Valley has reduced the number of trips to the landfill to empty the dumpster from 16 to 10 per year. In addition, composting is continuously used as an educational program. The educational value of this program is hard to measure in dollars. Because it draws visitors to the facility, it has been very successful in generating additional dollars for other environmentally related projects on the

property such as composting toilets and wood chip technology for heating buildings. In addition, as guests learn more about the project and its benefits, they become more interested and invested in composting as a method of handling food discards.

Landscaping projects and an on-site green house and organic garden demonstrate uses of finished compost.

Tips for Replication

- Make it easy for guests to understand your program and its value. Although it initially cost more to build the classroom, this educational space is an important component of composting at Frost Valley.

Program Summary, 1997

Sector	Residential education facility
Number of meals per year	485,000 (estimated)
Start date	1990
Dedicated Employees*	0.5
Method	Static aerobic piles
Materials collected	Pre- and post-consumer food discards; yard trimmings; lumber
Part of comprehensive waste reduction program?	Yes
Total waste generated	190 tons (estimated)
Food and other organic discards generated (TPY)	80 tons (estimated)
Results:	
Food and other organic discards recovered (TPY)	80 tons (estimated)
Food discards recovered (%)	100%
Total waste recovered (TPY)	100 tons (estimated)
COSTS:	
Average composting costs	\$56 per ton
Average avoided landfill hauling and tipping fee	\$121 per ton
Net savings**	\$65 per ton

* This part-time employee works with both on-site composting and trash management.

** Net savings do not reflect the cost of the composting machine, site, and classroom. Frost Valley reports that these costs have been more than offset via fees paid by visitors.

TPY = tons per year



Green Workplace Program Government of Ontario

70% Recovery of Food Discards



In 1991, the Government of Ontario, Canada, created the Green Workplace Program (GWP). The GWP facilitates waste reduction, resource conservation, and environmentally responsible purchasing in provincial facilities. An integral part of the GWP's waste reduction programs, composting diverted approximately 1,500 metric tons (1,650 U.S. tons) of food discards from landfills in FY96. From all its composting programs combined (in-vessel, on-site, and off-site), the Government of Ontario avoided C\$150,000 in trash disposal costs in FY96. Of this avoided cost, C\$8,580 was from its in-vessel program.

Program Description

When audits showed that food and wet waste constituted up to 70% of the waste stream of institutional facilities, the GWP began nine projects aimed at developing composting expertise and demonstrating on-site composting systems. These sites employ a variety of compost methods, including windrow, aerated static pile, and large scale vermiculture. In total, the sites handle 225 kg (496 lbs.) to 2,750 kg (6,064 lbs.) of food and other organic material each week. Based on the success of these first projects, GWP has expanded composting to 27 government facilities.

The Ontario Government set up a Greening Demonstration Fund to purchase and test environmental technologies. Through this fund, GWP purchased an **in-vessel composting** unit made by Wright Environmental Inc., an Ontario company. Located on the grounds of the Ontario Science Center, this in-vessel system accepts food discards (including dairy, meat,

and fish) from seven different government facilities. A special building, accessible to visitors, houses the composter.

Diners in four correctional facilities and three government office buildings and restaurants put their food discards into "food only" containers. Kitchen staff refrigerate this food, along with food preparation scraps in specially marked 65-gallon containers. On semi-weekly collection days, kitchen staff wheel containers to the loading dock for pick-up. In a unique arrangement, staff and clients from a local detention center collect and transport the discards to the composter.

At the in-vessel site, detention center clients add food discards and bulking agent (such as wood chips and paper towels) to the mixer in appropriate proportions. Material spends 24 to 30 days moving through the

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Manager
The Green Workplace Program
Ontario Realty Corporation
777 Bay Street, 15th floor
Toronto, Ontario M5G 2E5, Canada
(416) 585-7541





vessel. It is then screened and stored in an on-site container which, when full, is taken and emptied at a municipal windrow site. Material is windrowed and cured for three to four weeks.

When the project began, staff from Wright Environmental trained Ministry of Correctional Services employees to run the composting machine. They also trained detention center clients in proper handling and transportation procedures. GWP staff provide training to kitchen and other building employees on how to prepare food discards for composting.

The composter is also being used to test the viability of starting residential and commercial food discard collection programs.

Costs/Benefits

Note: all cost figures are in Canadian dollars. All tons are metric tons.

The machine cost \$180,000, and costs \$50 per ton to run. In FY96, transportation to the Ontario Science Center cost approximately \$49 per ton; landfill hauling and tipping costs were \$138 per ton. In FY96, the in-vessel unit composted 220 tons of food discards, avoiding \$8,580 in waste disposal costs.

Based on landfill costs and participating facilities at the time of

purchase in 1992, GWP projected a 4.6-year pay-back period on the composter. Since 1992, both transportation and landfill costs have gone up, with transportation costs increasing more than landfill costs. In addition, in early 1997, a facility that had contributed 2 tons per day to the compost stream stopped preparing food on-site and discontinued participation in the program. In late 1997, however, another facility will join, adding 4-10 tons per week. In fall 1997, GWP is predicting a 6-year pay-back period. As more material is diverted from landfills and composted, the in-vessel unit becomes more cost-effective.

The Toronto Parks Department saves money by using compost instead of buying soil, peat moss, mulch and fertilizer to maintain lawns and gardens.

Tips for Replication

- Know how much and what type of food discards are generated at your facility. Determine your current food discard collection and disposal costs.
- Calculate how much the preferred composting system will cost (aim for a pay-back period of five years or less).
- Ensure that you have sufficient budget to cover system purchase and maintenance.
- Consider accepting food discards from many sites to increase program cost-effectiveness.
- Train staff to use the composting method correctly.
- Publicize your program; publish results.

In-Vessel Composter Program Summary, FY96

Sector	Government (7 buildings)
Start date	1993
Dedicated employees*	<0.25
Method	In-vessel (continuous flow) and windrow composting
Materials collected	Fruit and vegetable trimmings, plate scrapings, dairy products, fish, meat, bones
Part of comprehensive waste reduction program?	Yes
Total food discards generated (TPY)	314 metric tons (345 U.S. tons)
RESULTS:	
Food discards recovered (TPY)	220 metric tons (242 U.S. tons)
Food discards recovered (%)	70% from participating sites
COSTS:	
Average composting costs**	\$99 per metric ton
Average avoided landfill hauling and tipping fees	\$138 per metric ton
Net savings	\$39 per metric ton

Tons are metric tons. 1 metric ton = 1.1 U.S. tons. Cost figures are in Canadian dollars.

* A dedicated employee is one whose primary responsibility is working with the composting program.

** Average composting costs do not include unit costs for up-front capital expenditures associated with this program.

TPY = tons per year





Larry's Markets Seattle, Washington

90% Recovery of Food and Floral Discards



Larry's Markets recovers approximately 870 tons of organics annually through its off-site composting and rendering programs. Stores also donate canned goods to local charities. The chain realizes a net savings of \$40-\$55 per ton of material recovered (about \$41,000 per year).

Program Description

In 1991, the head of the Environmental Affairs Program at this Seattle-based grocery chain performed an audit and found organics to be the largest part by volume of its waste stream. In order to reduce costs and expand its efforts towards total environmental responsibility, Larry's Markets began using energy-efficient lighting and heating and cooling systems, donating canned goods, and recycling materials including food and floral discards for composting.

As part of Larry's Markets' waste reduction efforts, a project team including management from all five stores worked to create a food recovery program that would fit into employee daily activities. Recycling, including composting, is now part of every employee's job description. In the produce department, staff put unsaleable produce and trimmings in unlined plastic tubs, which they wash periodically. The tubs sit on the bottom level of the cart staff use to stock produce. When tubs are full, staff put them on a central cart which holds eight tubs. They then bring full central carts outside and dump them into 1 1/2-cubic-yard

containers. These containers used to serve as garbage dumpsters; now stores keep their garbage in compactors until it is picked up, less than once a week. Previously, garbage had been picked up twice a week.

At the beginning, hauling compostables from stores was problematic. The hauling company experimented with various trucks and containers, but due to the weight of wet organics, trucks often reached their hauling weight limit before they had been to every store. This problem was solved by splitting the pick-up route between two trucks. In 1995, Larry's Markets contracted with two additional companies that haul organics and run **composting** sites. These companies pick up from stores near their sites. With three haulers picking up compostables, no hauler has a problem with weight limits. The discards are composted with yard trimmings, soil, and other organics to produce topsoil. Closing the loop, Larry's Markets uses the topsoil in its landscaping.

Contact:

Director
Environmental Affairs, Planning and
Information Services
Larry's Markets
699 120th Street, N.E.
Bellevue, WA 98005
(206) 453-5031 ext. 403



Odors in the summer were a problem at first until the stores moved to more frequent pick-up of their compostables. Now, they are picked up two or three times a week from each store. Larry's Markets has had no vector problems.

The chain sends meat and fish bones, fat, and skin to a **rendering** facility. Staff in the meat and fish departments store trimmings in tubs in a 40°F cooler. Once a week Darling Delaware Company empties these tubs. Depending on the current market, Larry's Markets pays either nothing or 1¢/pound for this service.

Each store provides **donations** to a church or food bank that picks up non-perishables approximately once a week.

Costs/Benefits

Start-up costs were minimal. Two hundred dollars bought extra plastic tubs; stores use their existing dumpsters to collect compostable material.

Notwithstanding a 34% rise in disposal costs, in 1993, Larry's Markets avoided over \$20,000 in hauling and tipping fees, approximately 25% of its waste removal budget. In 1995, net savings through composting were approximately \$35,000.



Depending on the store and hauler, stores pay \$105-\$110 per ton in trash hauling and tipping fees, and \$55-\$65 per ton in food discard hauling and tipping fees, thus saving \$40-\$55 per ton composted.

Employees are proud of their accomplishments in helping the stores become environmentally and socially responsible. Customers are aware and appreciative of the efforts.

Tips for Replication

- Know the composition of your waste stream. This will help create the most effective diversion scheme for your business.
- Identify community resources. Larry's worked with the King County Solid Waste Division and with the Clean Washington Center, which provided help in assembling routes, contracting with its initial hauler, and negotiating with one yard trimmings composter to take food discards.
- Develop a good working relationship with government officials. The Washington State Department of Ecology helped with regulatory issues.
- Consider creative alternatives to meeting both your needs and the needs of the companies with which you work.
- Make a commitment to the environment.
- Build awareness of the program's value at all levels of the company.
- Be prepared to take at least six months to change worker habits and to effectively communicate the benefits of an organic discard recovery program. After the initial six months, continuing, though less intensive, training is needed to reinforce the message, and to teach company practice to new employees.

Program Summary, 1995

Sector	Supermarket
Retail Sales per year	\$100 million total, 5 stores
Start date	1991
Dedicated Employees*	0
Method	Off-site windrow composting; rendering; donations
Materials collected	Produce and floral trimmings and spoils, waxed cardboard; meat and fish discards; out-of-date canned goods
Part of comprehensive waste reduction program?	Yes
Total waste generated (TPY)	3,000 tons, 5 stores
Food, floral, waxed cardboard discards generated (TPY)	970 tons (estimated)
RESULTS:	
Food, floral, waxed cardboard discards recovered (TPY)	870 tons: 750 to compost; 120 to rendering (estimated)
Food, floral, waxed cardboard discards recovered (%)	90%
Total waste recovered	64%
COSTS:	
Average composting costs	\$55-65 per ton
Average avoided landfill hauling and tipping fees	\$105-\$110 per ton
Net savings	\$40-55 per ton

* A dedicated employee is one whose primary responsibility is working with the food discard program.
TPY = tons per year



Middlebury College Middlebury, Vermont

75% Recovery of Food Discards



Students and employees at Middlebury College collected approximately 288 tons of food discards for on-campus composting in 1996. This represented approximately 75% of the college's total food discards. As a result of its composting program, Middlebury avoids approximately \$137 per ton in landfill hauling and tipping fees. In 1996, this led to a net savings of over \$27,000.

Program Description

After a waste assessment found food to be the heaviest component of the waste stream, Facilities Management staff at Middlebury College (student population 2,000) decided to implement a pilot composting program to divert food discards.

The pilot was successful and the composting program now involves all five dining halls, three kitchens, and three snack bars.

Although Middlebury began its program by sending material off-site for composting, in 1996, due to price changes in both trash and composting fees, the College began **composting on-site** instead.

The kitchens prepare between 3,400 and 3,600 meals per day year-round. In each dining hall, dish room staff put food preparation discards as well as post-consumer leftovers into small "food only" trash cans on wheels.

College Dining Services and General Services staff empty these, along with waxed cardboard and pre- and post-consumer discards collected from the snack bars into a compactor outside one of the kitchens. Staff empty the compactor twice a month and take discards to on-site aerated

static piles for composting. The College is seeking funding for an in-vessel composter.

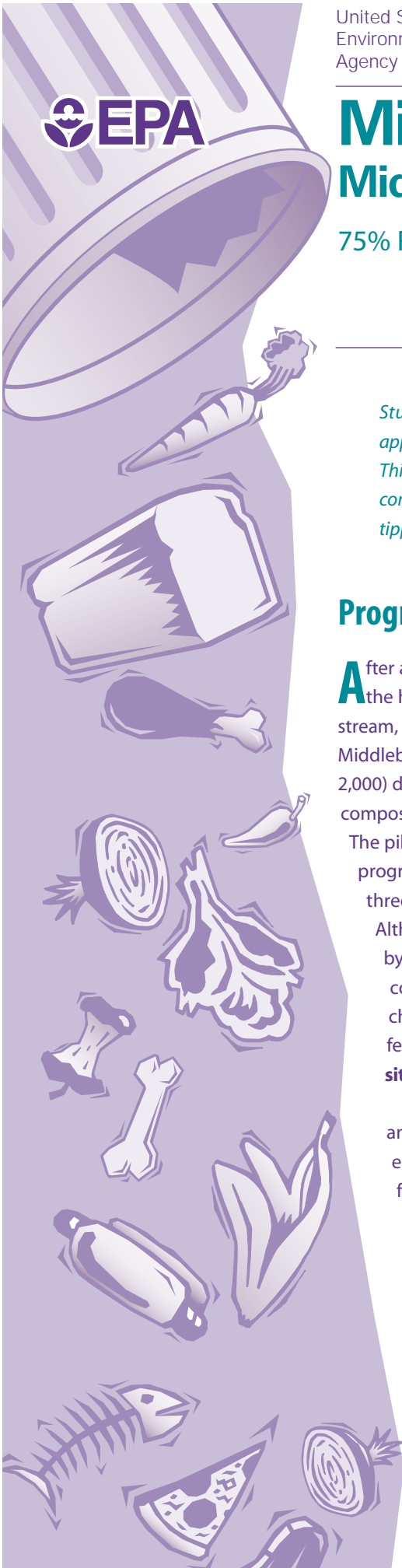
Middlebury has also had success collecting food discards at special events. In the spring of 1997, about 4,000 people attended a graduation picnic at which food discards were collected and later composted. Picnickers brought all their discards to tables where Facilities Management staff sorted it into "recycle," "compost," and "trash" barrels.

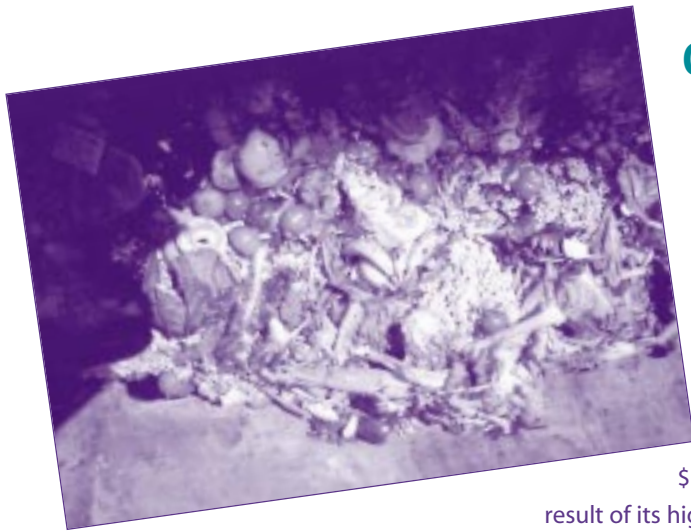
The recovery rate at the dining halls and kitchens is very high. It is lower at snack bars where customers bus and separate their own discards, and where many customers buy food to go.

To help avoid contamination of compostable organics, Facilities Management staff notify dining services managers when contaminants such as plastic wrappings, metal wire from wooden crates, and metal rings from ice cream containers are found among the food discards. Managers are responsible for keeping food discard containers relatively

Contact:

Environmental Coordinator
Service Building
Middlebury College
Middlebury, VT 05753
(802) 443-5043
fax: (802) 443-5753





Costs/Benefits

Middlebury College composts an average of 24 tons of food discards per month. In 1996, the cost per ton for composting, including tipping fees, trucking, labor, fuel, and supplies was \$42. For recycling it was \$145; for trash, \$137. As a

result of its high food recovery rate, Middlebury realized net savings of \$27,000.

Tips for Replication

- Educate staff on how to compost and why.
- Keep people involved in the program with an ongoing dialogue between the Environmental Coordinator and food service employees.
- Commit to solving problems rather than saying “forget it” when problems arise. Keep trying, even if the program is not perfect at first. Let problems serve as catalysts for improvement.

contaminant free. The program does accept a bit of contamination, as compost is screened at the end. When staff screen compost, they rent a machine with a rotating mesh barrel. The mesh lets small soil particles through and captures larger contaminants.

The College used to have two compactor containers. Due to odor problems, however, one compactor was removed and one of the satellite sites stopped separating out compostables. To mitigate odor from the remaining compactor container, the College installed a filter. In summer 1997 staff painted it white so that it would not absorb as much heat, thereby cutting down on organic processes until the material is transported

to the compost site.

This reduced odor. In a continuing effort to lessen the odor problem, Facilities



Management staff are working to develop a system for daily collection from the compactor container. This, they believe, will completely eliminate odor problems.

Program Summary, 1996

Sector	College
Average number of meals prepared	3,400-3,600 meals per year total in three kitchens
Start date	1993 off-site composting; 1996 on-site
Dedicated Employees*	0
Method	On-site windrow composting
Materials collected	Kitchen scraps, pre- and post-consumer food discards
Part of comprehensive waste reduction program?	Yes
Total waste generated (TPY)	1,133 tons
Food discards generated	384 tons (estimated)

RESULTS:

Food discards recovered (TPY)	288 tons
Food discards recovered (%)	75% (estimated,)
Total waste recovered (TPY)	725 tons
Total waste recovered (%)	64%

COSTS:

Average composting costs	\$42 per ton
Average avoided landfill hauling and tipping fees	\$137 per ton
Net savings	\$95 per ton

* A dedicated employee is one whose primary responsibility is working with the food discard program. TPY = tons per year

DOCS kitchen staff collect large bones and liquid fat in 30- to 50-gallon barrels provided by a **rendering** company. The company retrieves them every two weeks free of charge and processes these materials for manufacture into cosmetics and soaps.

Costs/Benefits

Despite increased hauling and tipping rates, the Department's trash disposal expenditures decreased 10.3% in the first seven years of its food discard recovery program. In FY89, DOCS spent \$2.3 million on trash disposal. In FY97, DOCS spent \$2,062,477 on trash disposal, avoiding \$2,350,957 in disposal costs through the Department's recycling (including composting) programs. In 1997, handling material for composting costs approximately \$34 per ton. This covers expenditures on capital equipment, supplies, and civilian labor, including the position of Resource Management



Director, which was created to oversee the program. The average landfill tipping fee is \$125 per ton. Net savings through composting are approximately \$91 per ton. Lowered fertilizer costs at DOCS farms avoids additional costs.

Inmates feel positive about the program. Able to see waste becoming an end product, inmates feel part of a productive process that makes sense. Before the program began, inmates watched a closed-circuit video on why composting works, and how it saves money and resources. Recycling, including composting, has become just another way of doing business at DOCS.

Three facilities offer inmates technical training in composting. Inmates learn the basics of recycling, such as what to do and where recyclables (including compostables)

go once they are collected. Inmates also learn technical aspects of the processes. Guest speakers explain what inmates can expect on the job. When they leave prison, inmates who have gone through this training will have skills and some of the language that qualify them for jobs in recycling, including composting, facilities.

DOCS provides communities with free compost as a community service.

DOCS uses some finished compost on its farms, but most is used in inmate horticulture programs and prison landscaping. Eighty percent is used in-house, providing large avoided costs from not buying green house soil mixes, peat moss, or mulches. Twenty percent is used in inmate public service programs.

Tips for Replication

- Present a technically sound and feasible plan before start-up to ensure success.
- Involve everyone, from the superintendent to the commissioner to the maintenance workers, from the start. Educate people so they understand why composting makes sense both environmentally and economically. If people understand why you are offering a good program, they will buy into it.

Program Summary, FY97

Sector	Correctional Facilities
Meals per day	125,000
Start date	1990 at 2 sites; 47 facilities in 1997
Dedicated Employees*	1
Method	On-site and off-site windrow composting
Materials collected	Food preparation discards, leftovers, chicken bones, soiled paper, waxed cardboard
Part of comprehensive waste reduction program?	Yes
Total waste generated (TPY)	20,875 tons
Food and other organic discards generated (TPY)	6,889 tons

RESULTS:

Food discards recovered (TPY)	6,200 tons
Food and other organic discards recovered (%)	90% from participating facilities
Total waste recovered (%)	80% from facilities participating in composting program; 50% total solid waste stream from all prisons

COSTS:

Average composting costs	\$34 per ton
Average avoided landfill hauling and tipping fees	\$125 per ton
Net savings	\$91 per ton

* A dedicated employee is one whose primary responsibility is working with the food discard program. TPY = tons per year



San Francisco Produce Recycling Program California



Begun in 1996, the San Francisco Produce Recycling Program is a collaborative effort among many public and private participants—the city and county, produce businesses, a farmer, a hauler, a food bank, and a composter. From June 1996 to August 1997, this program provided 450 tons of edible food to charities, 300 tons of inedible food as animal feed, and 750 tons of food to a composting facility. In that period, food discards came from more than 40 wholesale and retail businesses; the program has since greatly expanded.

Program Description

In 1997, the **San Francisco Food Bank** collected more than 60 tons a month of food from 25 wholesalers at the San Francisco Produce Terminal and from other city wholesalers. Food Bank staff collect food in its original packaging, as long as it is at least 50% edible, and transport it in a refrigerated truck to their warehouse where volunteers separate edible food from inedible food.

The Food Bank distributes over 37 tons a month of edible food to member service agencies. A local dairy and heifer farmer collects the remaining inedible produce, which he and other farmers use as **animal feed**.

In August 1996, Sunset Scavenger Company, a local hauler, began picking up some of the inedible produce the Food Bank could not collect from the produce terminal. Sunset Scavengers provided each participating business with a 1- or 2-cubic-yard unlined bin for its spoiled produce. Vendors keep these containers covered to avoid vector and odor problems as well as scavenging and illegal dumping. Sunset Scavengers added 12 wholesalers and one retailer in October 1996. The company began additional pick-

up from seven large supermarkets in April 1997 and from 14 Safeway supermarkets in fall 1997. It plans to expand to several hundred businesses to reach a goal of 8,000 tons per year. In fall 1997, Sunset Scavengers also expanded collection to include waxed corrugated cardboard. It hauls discards to Richmond Sanitary Compost Facility in Richmond, California, where the material is **windrow composted** along with yard trimmings. Finished compost is sold, mostly to professional landscapers.

Before food-related businesses join the program, outreach contractors meet with employees to provide any needed assistance and staff training. The contractor also conducts monitoring and follow-up. For example, at a new supermarket, the contractor meets with the produce section supervisor to devise a plan for the store. As produce workers already separate out wilted lettuce leaves and spoiled fruit into boxes,

Contact:

Organics Recycling Coordinator
Solid Waste Management Program
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San Francisco, CA 94103
(415) 554-3423
fax: (415) 554-3434





putting vegetative discards in the square container provided by the city is little extra work. Depending on the supermarket's needs, Sunset Scavengers will pick up one, two, three, or more days a week.

Costs/Benefits

A \$97,000 grant from the City and County of San Francisco provided the San Francisco Food Bank with a refrigerated truck for produce collection and a partial year's salary for a full-time driver. Future grants will help expand collection and make capital improvements. There is no cost to wholesalers for food bank and animal feed services.

San Francisco residents and businesses pay variable trash rates based on frequency of pick-up and weight or volume. These trash fees provide funding for Sunset Scavengers' organics pick-up, and cover the cost of running two trucks (as of 1997), which can accommodate food discards from over 200 businesses.

Benefits of this program are manifold. Food service agencies save money through reduced purchases; they boost the nutritional value of the food they serve. Farmers save money on feed costs. The Richmond Composting Facility produces higher quality compost through this program. Produce businesses save money through lower trash costs as well as through their tax-deductible **donations**

to the Food Bank. The experience of two Produce Terminal vendors—Cooks Company and DeMatti Brothers—illustrates this program's cost-effectiveness to participating vendors. Cooks Company cut its trash bill by approximately 45% within four months of joining the program. In fall 1997, the company received trash pick-up once a week. Previously, trash had been picked up at least twice a week. DeMatti Brothers reduced the size of its trash container by half and reduced the number of trash pick-ups from four a month to two a month, reducing its trash bill by 10-15%.

For the first year, Sunset Scavengers, which also collects trash from the Produce Terminal, did not charge businesses for pick-up of compostables. In fall 1997, it began charging at a rate that is 25% less than what businesses pay for trash pick-up.

Businesses that may have been reluctant to join will have a clear financial incentive. Sunset Scavengers predicts that vendors will reduce their total disposal costs by an average of 10%.

Tips for Replication

- Place the highest use value on edible food redistribution. When developing your program, work with and support local food donation organizations to incorporate edible food recovery.
- Identify local regional markets for inedible food, including farmers and composters.
- Work with the hauler to develop a collection strategy and financial incentives for participating businesses.
- Put time into working with businesses. Provide monitoring and follow-up. Remind businesses that they reap many benefits from participating, including financial and public relations.

Program Summary

Sector	Public/private collaborative: city and county government, retailers and wholesalers, a food bank, a farmer, a hauler, and a composting facility.
Start date	1996
Dedicated city employees*	<0.25 plus 0.5 FTE contractor time
Method	Edible food donations; animal feed; off-site windrow composting
Materials collected	Produce trimmings, produce
Part of comprehensive waste reduction program?	No
Total waste generated	NA
Food discards generated	NA

RESULTS:

Food discards recovered (TPY)	1,500 tons (June 1996-August 1997)
Food discards recovered (%)	50-75% from participating vendors

COSTS:

Costs and savings for participating vendors are currently unavailable.

* A dedicated employee is one whose primary responsibility is working with the food discard program. FTE = full-time equivalent NA = not available TPY = tons per year



Shop Rite Supermarkets New Jersey

80% Recovery of Food Discards and Other Organics



In New Jersey, 25 Shop Rite stores divert 3,000 tons of organics per year. They collect a wide array of materials for off-site composting and rendering. As a result, participating stores divert approximately 80% of their organics to a composting facility and 90% of their total waste stream through recycling, including composting. On average, stores realize a net savings of \$57 per ton in avoided disposal costs.

Shop Rite Supermarkets began a pilot composting program in 1994. By summer 1997, Shop Rite's compost program had grown to include 25 stores. They **off-site compost** a wide variety of organic materials, including floral and produce trimmings and spoils, out-of-date bakery items, old seafood, soiled paper products, waxed corrugated cardboard, food spills, and out-of-date dairy and deli products. Composting responsibilities are integrated into employee job descriptions. Each store runs its composting program differently, but typically staff in each department collect compostables in waxed corrugated cardboard boxes. These boxes are not recyclable but are compostable. Using original produce boxes to collect compostable produce allows the stores to avoid buying special collection containers. Staff put the whole, full box in a compactor, which is emptied once or twice a week.

Compactors vary in size, with the largest holding 20 tons. These compactors were previously used for garbage. Because of the high diversion rate, stores now only need small dumpsters (12 cubic yards) for their garbage. A

hauling company takes compacted organics to a composting site where they are ground with yard trimmings and windrow composted. The nutrient-rich finished compost is screened to remove contaminants. It is sold to farmers, golf courses, municipalities, and people involved in land reclamation.

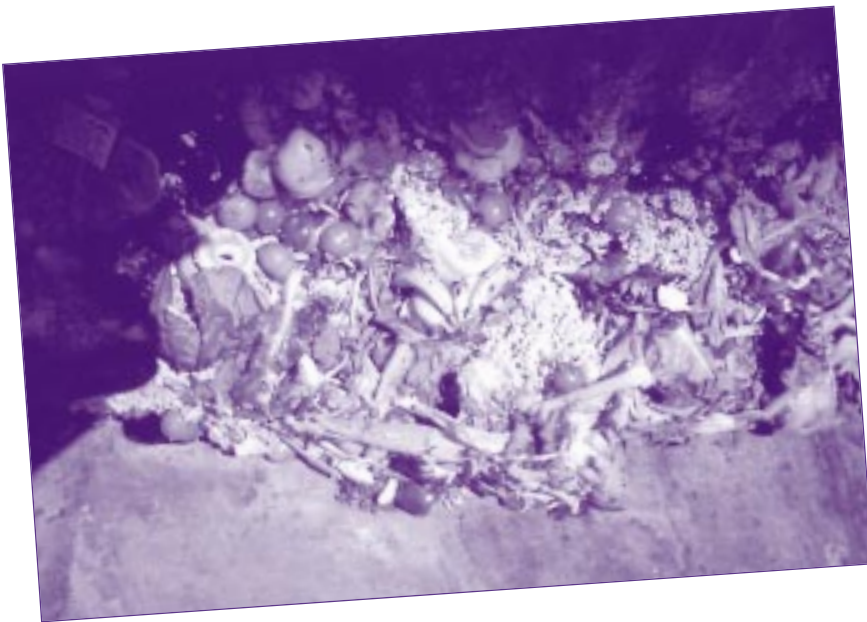
Shop Rite has no major problems with odors, vectors, or contamination. The compost site allows 5% contamination per load; it rejects highly contaminated loads, forcing stores to pay the additional costs of landfill disposal. Compactors are kept locked until a designated time each day when staff are directed to unload their compostables. This allows management to watch and ensure there are no contaminants.

Rendering companies provide collection barrels and pick up meat product discards at no cost.

Contact:

Manager, Environmental Affairs
Wakefern Foods
Shop Rite Supermarkets
33 Northfield Ave.
Edison, NJ 08818
(732) 906-5083





Tips for Replication

- Analyze your waste management practices; understand the economics of your garbage.
- Manage your organics recovery program on a continuing basis. Pay attention to it. The process does not run on its own.
- Train employees well.

Costs/Benefits

Start-up and operating costs for the organics recovery program are minimal. Most stores already had compactors, which they used for garbage and did not need to buy collection containers. Stores also avoid disposal costs for the waxed cardboard boxes, which are composted along with organics. There are some costs for

employee training and for signs explaining the program. Some stores have bought and installed an additional compactor.

Through its food recovery program, each store avoids

\$15,000 to \$40,000 per year in disposal costs. The lower cost avoidance may be at a smaller store or in an area with a lower tipping fee. New Jersey Shop Rite stores pay an average tipping fee of \$90 per ton for garbage and \$33 per ton for composting. Hauling fees for garbage and recovered organics range from \$11 to \$17 per ton.

Store employees typically live in the same town as the store in which they work. Participating in this hands-on recycling program allows them to contribute to their community by reducing its waste stream and recovering valuable raw materials.

Program Summary, 1997

Sector	Supermarket
\$ sales per year*	4.3 billion - Wakefern Food Corp./Shop Rite Supermarkets
Start date	1994; 25 participating stores 1997
Dedicated Employees**	0
Method	Off-site windrow composting, private hauler; rendering
Materials collected	Floral and produce trimmings, out-of-date food, soiled paper, waxed corrugated cardboard
Part of comprehensive waste reduction program?	Yes
Total waste generated (TPY)	4,167 tons (projected)
Food and other organic discards generated (TPY)	3,750 tons (projected)

RESULTS:

Food and other organic discards recovered (TPY)	3,000 tons (projected)
Food and other organic discards recovered (%)	80%
Total waste recovered (TPY)	3,750 tons (projected)

COSTS:

Average compost tip fee	\$33 per ton
Average avoided landfill tip fee	\$90 per ton
Net savings	\$57 per ton

* Wakefern Food Corporation is the largest retailer-owned supermarket food cooperative in the United States, with 190 supermarkets trading under the Shop Rite banner.

** A dedicated employee is one whose primary responsibility is working with the food discard program. Shop Rite did not need to hire anyone specifically to run this program.

TPY = tons per year