Compost Collection in Cambridge from Businesses and Schools

Massachusetts Department of Environmental Protection
FY06/FY07 Technical Assistance Grant

Final Report Submitted by:

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1. Services To Market, Recruit, And Train Businesses For Organics Collection, July 2007
   (John Connolly, JF Connolly & Associates)

2. Organic Material and Food Waste Management Reducing, Recycling, and Reusing Commercial Waste in Cambridge, Massachusetts and Greater Boston, December 2006
   (Mieko Ozeki, Harvard Extension School)

3. Solid Waste Advisory Committee Meeting Summary, June 2007
   (Gretchen Brewer, MassDEP)

4. Partnerships Move Commercial Organics Collection Forward, August 2007
   (Molly Farrell Tucker, BioCycle Magazine)

1. Project Description and Goals

Food waste recycling services for Cambridge businesses began in September 2006, offered by Save That Stuff (STS), the City's business recycling hauler. Participants include supermarkets, hotels, cafeterias, restaurants, florists, and coffee shops. This service was offered for the 2007-2008 school year to the Cambridge Public Schools (CPS) participating in CitySprouts.

Composting is cost effective by removing heavy, wet materials from the trash. By participating, businesses reduce landfill emissions that contribute to climate change and help preserve landfill space. For every ton of food waste composted, 0.927 tons of CO_2 emissions are avoided. Through August 2007, over 2000 tons of food waste has been collected, now averaging 14 tons/day.

The goals of the project were:

- Identify the most appropriate and effective collection strategy.
  This included establishing cost-effective pricing so organics collection is the same or less than trash disposal; recruiting high, medium and low generators with a secondary emphasis on generators that offer good publicity opportunities through their participation; and identifying conveniently located processing facilities.

- Establish a dense route that diverts 10-15 tons/day, 5-6 days/week.
  STS is now working towards 20 tons/day.

- Recruit City Sprouts schools to implement compost collection.

In May 2006, the City issued a Request For Bids for "Services to Market, Recruit and Train Businesses for Organics Collection". The RFB was sent to over 40 firms and individuals, including marketing agencies in Cambridge. Bids were received from Carl Guidetti, John Connolly & Associates (JC) and The Resource Technologies Group & Aceti Associates (Marsha Gorden and Jan Aceti). John Connolly & Associates was awarded the bid, as the most responsive and responsible bidder.

The work scope included technical assistance for food waste generators to design in-house collection systems, staff training, follow-up visits, and the hand-off of continuing responsibilities for program growth to STS.

The City found the following publication very helpful during the planning and implementation of this project: *Composting in Restaurants and Schools: A Municipal Tool Kit*, *Center for Ecological Technology (see http://cetonline.org/Publications/res-schools-online.pdf)*

2. Project Stakeholders & Supporters

City departments directly involved in the project included the Department of Public Works (DPW), Community Development and Economic Development. Inspectional Services, Health, the School Department (SD), City Council and the City Manager's office were key City agencies kept informed of the project. The Chamber of Commerce, CitySprouts and the SD provided letters of support with the grant proposal.

Within the DPW, leadership and involvement from the Recycling, Sanitation, Sewer Division and Commissioners was key. The Sewer Division is very supportive, since large food generators can cause significant operational and financial burdens on the sewer systems when garbage disposals are abused and there is non-compliance regarding grease traps. This was noted this on the priority list and used it as leverage when soliciting participation from specific generators. These customers may also see lower water bills if organics diversion results in less water consumption.

Community Development has been very engaged; since organics diversion is a goal in the City's Climate Protection Plan, see www.cambridgema.gov/climate.

The Cambridge Chamber of Commerce was extremely supportive in reviewing the project and assisting with publicity. Other business organizations that were kept informed and helped with promotion efforts include the Central, Harvard and Inman Square Associations, Local First, Food Associations and the Boston Green Tourism Lodging Committee.

STS has been an excellent project partner and the City has been very pleased with this partnership. They are professional, accessible and very enthusiastic about offering this service.

3. Publicity, Interviews and Presentations

The project was announced at the 2006 and 2007 City of Cambridge *Go Green Awards* with 80+ government and business people in attendance. STS exhibited a poster and distributed brochures. As part of the City's annual Go Green Month Celebration each May, Community Development and the DPW team up to recognize Cambridge businesses and institutions for outstanding environmental efforts with regard to transportation, waste reduction and energy. See www.cambridgema.gov/gogreen. Businesses that demonstrate exemplary efforts in all three categories are eligible for the Climate Leader Program.

Randi Mail, Recycling Director and John Connolly, project consultant, recruit businesses at the Taste of Cambridge.

The project had good exposure to over 50 participating restaurants at the *2006 Taste of Cambridge* event with key support from the Cambridge Chamber of Commerce.

The Inman Square Business Association coordinated a special meeting for restaurants where Oleana and 1369 Coffeehouse talked about their participation and experience. Enthusiastic managers at Boutique Fabulous and East Cambridge Savings Bank organized the meeting by sending a letter to area businesses and going door-to-door to encourage attendance!

DPW and STS gave project presentations at (most recent listed first):

1. Solid Waste Association of North America (SWANA) Conference – Massachusetts Chapter, September 25, 2007
2. MassDEP, Solid Waste Advisory Committee meeting, June 28, 2007
3. American Public Works Association – New England Chapter, June 20, 2007
4. Inman Square Business Association, March 21, 2007
5. 7th Annual Massachusetts Organics Summit, March 6, 2007
6. Best Practices Workshop, City of Cambridge Economic Development, November 8, 2006 and February 14, 2007
7. Massachusetts Environmentally Preferable Products Conference, October 25, 2006
8. Liquor License Renewal Meetings, City of Cambridge License Commission, October 17-19, 2006
9. Boston Green Tourism – Lodging Committee meeting, August 3, 2006

Most recently, the project was the featured story in the August 2007 issue of BioCycle magazine.

4. Generators (Deliverables, Challenges & Lessons)

Priority List & Recruitment

From the City's License Commission food license database, we established a priority list of generators and identified each as a high (108), medium (117) or low (520):

High:	universities, supermarkets, hotels, labs, and industrial food processors
Medium:	cafeterias (assisted living homes & corporations), large restaurants, and hospitals
Low:	bars, florists, coffee shops and schools

STS concluded that tonnage from hair salons and barbershops was insignificant.

The overall marketing approach established large 'anchor' customers and then added smaller customers to form a viable, dense route. The project team identified which partner (City, STS, MassDEP or JC) was the most appropriate to make the initial contact with each generator.

The priority list was a good starting point. The DPW Commissioner mailed a letter to 225 food waste generators introducing the project and the consultant, and invited their participation. The response to the DPW mailing was favorable. The DPW also mailed letters to its 60 commercial trash customers informing them of rising trash fees, offering a discount if participation in the recycling and/or composting program was demonstrated.

Contacts varied in terms of organizational responsibility, interest, and decision-making authority. Availability of and accessibility to decision-makers was affected by summer vacations, Thanksgiving and Christmas. The fall return of college students made it challenging for hotels, in particular, to plan development of a brand new program. One needs to identify and contact the appropriate contact(s), receive replies to emails, phone calls, and secure meetings.

Large, corporate organizations such as supermarkets, hotels, shopping malls, and restaurant chains, require significant time to cultivate and have varied decision-making environments. Some supermarkets and shopping malls had unique organizational issues that must be approached in a strategic way, such as recent acquisitions, out-of-state corporate headquarters or an independent service company managing waste services, as was the case with the Cambridgeside Galleria Mall and their waste vendor, Brask Enterprises. A helpful resource entitled, "A Guide to Waste Reduction at Shopping Center" developed collaboratively by the US EPA and the International Council of Shopping Centers can be found at www.epa.gov/rcc/amr.htm.

STS's designer, Alison Fillmore, developed a "leave behind" brochure, a bilingual training poster (English + Spanish), a 3-color hot-stamp for the 68-gallon collection toters and a decal for the truck. Visit www.cambridgema.gov/recycle to download the brochure and training poster.

Over 260 potential customers were contacted in person, or via phone and email, with a focus on large quantity "anchors" such as supermarkets, educational institutions, hotels, and large restaurants. Of these, the consultant contacted 131 directly. The lag time between the initial contact (July/August) and when service would begin (September) resulted in some loss of interest. Smaller, independent generators were enthusiastic. This was especially apparent at the *Taste of Cambridge*. Generators were motivated to support the City, do the right thing for the environment, save money, and enhance common ground of Square Associations or surrounding businesses.

The City created a GIS map of generators from the priority list to show route density. This was particularly helpful to the consultant to gain familiarity with the City's major business districts.

Details of one specific publicity effort follows:
In April 2006, the first annual Cambridge Science Festival was held during the week of April 21-29. The DPW submitted a proposal to promote patronage of the composting businesses during the event. The festival organizers selected the "Compost That Stuff" project as an event partner. During that week, composting businesses promoted their participation and held a drawing for their customers for the chance to win something. The value of the prize was up to the business, but it was not a raffle. Participating businesses were highlighted in the Festival's official program, which was distributed widely throughout the City (see page 28 at www.cambridgesciencefestival.com/pdf/program.pdf). The DPW provided a sign and 150 tickets for business customers to complete to enter to giveaway. To prepare, businesses were asked to determine what the prize would be and write it on the sign provided (ex. gift certificate, gift basket, etc). They set up the sign, tickets, a bowl and a pen in a visible location so customers could find out about it and enter the drawing.

Training

To ensure program success, it was critical to identify a champion at each business. For program sustainability, generators need to institutionalize organics training into the overall company-training program and job responsibilities. In doing so, the program can endure through management team changes and employee turnover.

It is preferable that the champion be a senior manager who clearly endorses the program. This helps institutionalize the composting culture and guarantee that employees understand exactly what to compost and know to remove contaminants, yielding a high quality organic stream. As the program grew, peer pressure and personal connections among restaurant owners and staff helped encourage participation.

JC assembled a training packet for each generator. For each, the business name was added to customize the document and any other modifications, if requested. The packet included a questions and answer section that addressed the following:

- ✓ *What are organics?*
- ✓ *What is organics recycling or composting?*
- ✓ *What is contamination?*
- ✓ *Why are we separating organics?*
- ✓ *What is a composting facility?*
- ✓ *Organics vs. trash… what's the difference?*
- ✓ *Can I add liquid or grease?*
- ✓ *Can we add meat?*
- ✓ *What are renderings? Can they be included?*
- ✓ *Does it smell?*
- ✓ *What happens to the organics once they leave the facility?*
- ✓ *What do I do if something organic spills?*
- ✓ *Why do we have to use special bags?*
- ✓ *Why aren't more businesses recycling organics?*
- ✓ *Why has organics recycling become so important?*
- ✓ *Is the role of the associate really as simple as sorting organics from trash?*
- ✓ *How can I assure our facility really adopts a new organics recycling culture?*
- ✓ *How can I help our company and lower costs?*

Participants

Whole Foods and Shaw's, the two major supermarket chains and Harvard University serve as anchor generators generating significant tonnage. Shaw's currently has only one store out of the four Cambridge locations participating at this time. The Museum of Science, Pfizer, Lesley University, hotels, and restaurants make up the bulk of remaining generators, with smaller establishments such as flower and coffee shops providing route fill-in.

On average, it took 1-4 meetings to secure a commitment from a generator to participate and complete training. This assumes that each meeting took 1 hour, but does not include phone calls, emails and preparation. Small independent businesses can be resolved in one meeting, mid-sized organizations in 2-3, and 3-5 meetings for large organizations with multiple locations.

As of August 30, 2007, Cambridge participants include:

1. Cambridge Common
2. Cellars Wine
3. Central Square Florist
4. Charles Hotel (Pronto & Henrietta's Table)
5. Charlie's Kitchen
6. Formaggio Kitchen
7. Harvard Business School
8. Harvest Coop Markets
9. Hong Kong Restaurant
10. Hot Off the Press
11. Irving House at Harvard
12. Genzyme (Sodexho cafeteria)
13. Lesley University
14. Magnolia's Southern Cuisine
15. Museum of Science
16. Oleana
17. Ole Mexican Grill
18. Petali Fresh Flowers
19. Redline
20. Rendevous in Central Square
21. Sheraton Commander Hotel
22. Star Market (Sidney St)
23. 1369 Coffeehouse
24. Whole Foods (Fresh Pond)
25. Whole Foods (Prospect St)
26. Veggie Planet

There are about 30 additional customers in Boston and Newton. New customers will be added as the program grows through referral and word of mouth. STS hired Tina Crisafulli, a new staff person, who spends about 40% of her time recruiting and training new organics customers. These efforts will increase tons of organics diverted and improve performance in all locations.

The City hopes to see participation from more restaurants, as well as the Cambridge School of Culinary Arts, Cambridgeside Galleria Mall, and the other Shaws/Star Markets.

5. Hauler Issues (Deliverables, Challenges & Lessons)

Cost for Service

STS established pricing at $100 per ton with a $20 minimum, which reflects load size, tip fee, and transportation costs. This translates into 3 toters or 400 pounds per pickup. Toters are rented to customers for $3 each per month. Customers can request collection up to 6 days per week, with many requiring once a week pickup. In order for nearly all businesses to implement an organics diversion program, the service must be cost-neutral or result in a savings.

In general, STS's pricing was competitive with trash removal costs for Cambridge businesses. Since trash costs for businesses are often based on volume or per container haul, STS found it challenging to move customers to weight-based fees.

Businesses with higher trash fees save money by reducing their trash weight, the number of dumpster pulls or by downsizing dumpster size. Actual costs and benefits varied with each

generator. STS believes that customers can save some money if they have a good deal with their trash hauler and up to 20% if they do not.

What to Compost

All food scraps can be put in the organics carts, including kitchen trimmings, plate scrapings, coffee grounds and filters, tea bags, cooked meat, bones, fish, dairy products and baked goods. Food-soiled papers including paper cups and plates, placemats and milk cartons also are accepted, as well as waxed cardboard boxes, sawdust, yard trimmings and floral clippings. Composting waxed and soiled cardboard is good for the processor and helps to maximize program economics and synergy for generators, and leverages the hauler's economics.

Glass, plastic, Styrofoam, metal, liquids, grease, and other non-compostables are not accepted.

Generators want to know where organics will ultimately be processed for liability concerns included contamination, permitting and diseases.

Timely feedback to the generators has been important for success. STS's driver, Steve DeAngelis, was trained to remove contamination and tell the office at the end of the day so that the customer knew there was an issue. The driver is well informed about what is considered contamination and that training is available to customers. It is important to keep the driver updated if there are any changes to the list of what is and is not accepted for composting.

Food waste collected from Harvard University.

Riding the Route

In October 2006, the Recycling Director, Randi Mail rode on the truck to observe organics collection at several customers and accompanied the driver to Rocky Hill to dump the load. This was a great opportunity to get a direct understanding of collection logistics, including containers, timing, compostables, routing, and how contamination and spillage are addressed.

In November 2006, Harvard student Mieko Ozeki rode on the organics truck and included the following points in her follow-up report regarding the compostables collected:

- ✓ *Compost was collected from Ming's Supermarket and three Whole Foods. Compostables included rotten vegetables such as bok choy and spinach, day old baked goods and wax cardboard. Other supermarket organics include food scraps from preparing meals for salad bars and buffets. At the Whole Foods Fresh Pond, the contents of this compost were mostly dented or bruised fruits and slightly rotten vegetables. Most of the food looked edible in spite of its defects. The store manager said that employees could not consume these items for the purposes of their insurance policy.*

- ✓ *Supermarkets accounted for 34% of the total compost collected. Appearance standards for produce are high, which means that a lot of edible fruits and vegetables are thrown out. Prepared foods such as salads, sushi, hot food items, soups, baked goods, and packaged meals have limited shelf life and are thrown out if not consumed within a day of production. The mass quantity produced is an issue because diversion to a waste or compost facility should not be the only alternatives to regulating the amount of food produced.*

Harvard uses 55-gallon Brute barrels for food waste, which are dumped off the loading dock directly into the truck hopper.

- ✓ *At the Harvard Business School twelve 55-gallon Brute barrels were emptied weighing 2,161 lbs. Day old baked goods, unsold prepared salads, sushi, cold cuts, seafood, egg shells, soup as well as food scraps from meal preparation were found. On a daily basis, food service employees deliver fresh baked goods, salads, and prepared foods to dining halls and at the end of the day, they dispose of leftovers in the compost bin as well as clean out refrigerators of unused ingredients. The large amounts of liquids (soups and drinks) found at this site were problematic because of spillage. Harvard is the 2nd largest generator.*

- ✓ *STS collected from two docks within the Longwood Medical area: Harvard Medical School's New Research Building and 200 Longwood Avenue. The primary materials collected are laboratory animal waste, which includes fecal matter and wood shavings used for bedding inside animal cages. 7 toters and one dumpster, weighing 4,520 pounds were emptied that day. Laboratories were the third largest generators of composted waste.*

- ✓ *Toters at Charlie's Kitchen and Rendezvous are stored in an adjacent alleyway. Pick-ups are oncall, 2-3 times per week. Compost included food scraps from meal preparation, unconsumed meals, and paper napkins. Cooked hamburgers and meats are accepted because pathogens are burned off and limit the contamination from bacteria. Restaurants contributed 3% of the total net weight collected.*

- ✓ *Composting is an excellent diversion of organics from the waste stream, but it should be the last tactic for the commercial and residential sector. Following the three Rs mantra of "reduce, reuse, recycle", it is fundamental that commercial operations assess their use of organic materials and to reduce their output from the source. Reuse is key to reducing the amount of composted outputs.*

Savings for Customers

Average savings for customers was predicted to be 10% per ton for those switching from a trash JC compiled the examples below to represent actual cost savings scenarios:

Restaurant:

Trash disposal prior to composting	$950 per month; 6 days/week
Current organics disposal (including recycling)	$260 per month; 4 days/week
Current trash disposal	$575 per month; 4 days/week
Pre-composting	$11,400 per year
Post-composting	$10,200 per year
Net savings	**$1,200 per year**

Specialty Foods Retailer:

Trash disposal prior to composting (estimated)	$1,300 per month; 3 days/week
Current organics disposal (estimated)	$390 per month; 4 days/week
Current trash disposal (estimated)	$870 per month; 4 days/week
Pre-composting	$15,600 per year
Post-composting	$15,120 per year
Net savings	**$480 per year**

Florist:

Trash disposal prior to composting	$230 per month; 2 days/week
Current organics disposal	$100 per month; 1 day/week
Current trash disposal	$115 per month; 1 day/week
Pre-composting	$2,750 per year
Post-composting	$2,580 per year
Net savings	**$170 per year**

Supermarket:

Trash disposal prior to composting	$2,490 per month; 1 day/week
Current organics disposal	$1400 per month; 6 days/week
Current trash disposal	$ 490 per month; as needed
Pre-composting	$29,900 per year
Post-composting	$22,680 per year
Net savings	**$7,220 per year**

Since Whole Foods at Prospect Street started composting in early 2006, the store has saved $30,924 by only needing their trash compactor pulled every two months, instead of several times twice. Kabloom was saving $25 a month, however the location has since gone out of business.

Containers & Liners

STS ordered 68-gallon carts from Otto Industries in September 2006. There were a few instances of toter leakage, related to a manufacturers defect. The company resolved the problem by the replacing the toters. For a short while, to ensure that the toters were leak proof, STS tested the toters by filling them with water before delivering them to customers.

Generator training and development of in-house operational procedures preceded the first pick-up for each participant. However, some small generators did not request training. Options for recycling cardboard other materials were also presented, to improve diversion ratios through diligent source separation and to reduce overall waste expense to the

generator. Follow-up site visits for program evaluation were offered to new generators.

Locking carts are used in some locations to prevent spillage in alleys or at the curb. Most customers prefer to use plastic liners to reduce the need to wash toters. STS may require the use of liners to avoid toters getting too dirty. A large rubber band holds the bags in place, even when the toter is emptied into the truck. The customer decides when to change the bag.

Compostable bag options were identified and discussed in terms of vendors, pricing, logistics, and availability. JC recommended a compostable bag vendor and facilitated connection to STS. For a short while during the project, STS procured biodegradable bags for customers. Use of biodegradable liners in the toters is discouraged because they are costly (60-80 cents each), but some customers used them in 23-gallon Slim Jim containers kept inside. Currently, only one customer uses biodegradable bags consistently.

Collection Logistics & Routing

STS purchased a 25-yard packer truck with an onboard scale. They considered buying a rendering truck or front loader, but decided that a packer can loading dock stops, allows the driver to see the material collected and can be replaced by use other backup packer vehicles if necessary. Rendering trucks dump loads overhead, eliminating the driver's ability to see what is being dumped into the truck. As a new program, STS wanted to ensure quality control and packer trucks allow the driver to address contamination immediately.

Tonnage Scenarios
(10-20 tons/day, Pickup 5-6 days/week)

Tons/day	Days/wk	Tons/year	Tons/wk
10	5	2600	50
15	5	3900	75
20	5	5200	100
20	6	6240	120

The driver starts at 5am along a 100-mile route, developed by STS. This includes customers in Cambridge, Boston and Newton and driving to Rocky Hill Farm (RHF) in Saugus to dump the load. Certain generators have time sensitive service needs such as the Harvard Business School and Whole Foods (Fresh Pond). The truck must be off route by 3pm to get to the compost site before it closes.

The original goal was to collect 10-15 tons per day, 5-6 days per week. STS has since revised this and is working towards 20 tons/day, 6 days/week. Average time per stop ranges from 1-30 minutes, depending on the number of toters and access. Customers should be advised to inform their trash hauler when the organics collection program has begun to avoid trash drivers emptying organics toters by mistake. With up to only 20 tons per day leaving the commercial trash stream this program is not problematic for trash service vendors in Cambridge at this time.

Appropriate collection schedules were established based on generator operational considerations, diversion tonnage, and program economics. Generators were offered assistance to optimize their total waste program around organics with corresponding reductions in trash tonnage, pick-up frequency, and expense.

On board truck scale in composting packer.

Toters at Whole Foods Fresh Pond are emptied from their loading dock due to significant storage constraints. They may soon convert to a compactor because of high volume.

On hot summer days, the packer truck takes three loads instead of one to the compost facility because the material turns to liquid more rapidly. STS varies pick up from customers with absorbent organics in order

to deal with liquids (ex. lab bedding, wax cardboard, baked goods, sawdust, potted soil). Absorbent material cannot be collected first because it creates a wall in the truck body that prevents liquid materials from entering the body and it slides back into the hopper.

Before collection began, STS met with the DPW Commissioner to discuss concerns about minimizing the time that toters are set at the curb in high-traffic pedestrian areas to avoid additional sidewalk clutter and potential for spillage. STS addressed these concerns in a follow-up memo that detailed these strategies:

1. Most customers will use liners in small collection containers indoors so that the toters will not have loose food inside;

2. Toters for organics will be stored and placed for pickup where trash is. In other words, organics toters will not be introduced in areas where trash has not been.

3. STS will provide early morning service or "call ahead" for customers placing toters at the curb to minimize curbside setout to 1 hour at most;

4. Drivers will always have a shovel and broom to clean up any waste.

6. Processing Facilities

Organics have mostly been composted at Rocky Hill Farm (RHF), 10 miles north of Boston in Saugus, MA. They have the capacity to handle 15 tons of food waste per day. Prior to this project, STS had been bringing compactor loads of organics to RHF from supermarkets.

The RHF composting facility reports success with receiving organic loads from Cambridge businesses. No problems have occurred with quality, odors or significant load contaminants such as plastics. Organics feedstocks are fresh daily and delivered in a consistent fashion.

One challenge for STS has been that the processor has limited hours of operation on Saturdays, and typically closed on Sundays and holidays. The food service industry is a 365-day per year business, and weekends and holidays are among the busiest times. Generators often lack storage space to hold toters between pick-ups, a common problem for hotels and in dense areas like Harvard Square.

Further, food waste cannot be stored in collection vehicles overnight because the organics liquefy and slide out. STS has retrofitted packer trucks with baffles to

Compost piles at Rocky Hill Farm in Saugus, MA.

Save That Stuff dumping organics at Rocky Hill Farm in Saugus, MA.

better contain food waste during regular collections. In hot weather, they have to dump vehicles more often. Soup is not accepted.

Haulers establishing new organic collection routes might not attain a full load from one day's collection. Programs are advised to take this into consideration when planning their collection routes and/or their budgets with the knowledge that they may need to deliver a partial load to the composting operation since Massachusetts regulations do not allow for routine overnight vehicle layover.

STS has explored partnering with regional farms, including The Food Project in Lincoln that might want to add food waste composting to their site and explored with MassDEP whether the Needham, Lexington or Raynham municipal leaf and yard waste facilities could compost some of the organics. Nothing definitive has developed yet on either scenario. RHF did receive technical assistance from MassDEP to increase the efficiency of its processing systems, but they cannot accept all organics from the program if STS collects 20 tons/day.

Meanwhile, the City is now learning about anaerobic digestion and the possibilities it could offer if organics collection were expanded in Cambridge to residents as they look toward the possible 2010 disposal ban on food waste.

7. Composting Increases Other Green Efforts

3 color hot stamp on STS toters for customers.

Restaurants not previously recycling before diverting organics, have signed up with STS for collection of cardboard, bottles, and cans. This helps STS subsidize the organics service and brings the concept of zero waste closer to their company and customers. This has allowed STS to leverage the business potential of current and future customers, an important component of maximal daily utilization of equipment and personnel.

Generators diverting organics should also recycle shrink-wrap. STS has also encouraged product substitutions such as switching from plastic coffee stirrers to wooden ones. After restaurants divert food waste and other compostable materials from their trash, usually just plastic film scrap, bathroom trash and Styrofoam are left. Charlie's Kitchen is trying to push suppliers to eliminate non-recyclable packaging and is fueling vehicles with used vegetable oil and may heat their restaurant with it.

Generators that divert food waste from garbage disposals help reduce sewer maintenance costs for the City and save money on water by using less. Pipes clogged with food and grease need to be excavated and cleared. This expense is only charged back to the offender if it is clear that they have caused the problem. STS has advised customers to install grease traps to keep grease

Excavated sewer pipe clogged with grease and food waste.

out of sewers. State plumbing code (248 CMR 10.00) requires that most food handling establishments install a grease trap and interceptor.

In addition, the City believes that the composting program has helped to clean up trash storage, an important rodent control strategy. By separating out organics and placing the waste in leak-proof containers, we greatly limit access to the source of food for rodents.

8. Project Budget & Expenses

With the MassDEP grant funds, $30,000 has been spent on the consultant and $4556 on publicity materials. In terms of in-kind expenses, STS spent $210,000 for a new 25-yard McNeilus packer truck including $800 for artwork; and $15,636 for 196 68-gallon Otto carts with the 3 color hot stamp.

9. Cambridge Public Schools (CPS)

The original intent of this project, came from the DPW's desire to offer food waste collection services to the CPS schools participating in CitySprouts. Compost collection at the schools would be in lieu of the polystyrene recycling program, which began in the mid-1990s. Ideally, biodegradable food service items would be purchased instead of polystyrene products and nearly all cafeteria waste would be collected for composting.

Diverting organics from the school cafeterias would help meet the City's climate protection and recycling goals, and potentially save the DPW money in reduced solid waste costs. The DPW pays for solid waste services for the schools and the SD pays for the purchase of food service items. Currently, polystyrene items (bowls, trays, cups and plastic utensils) are collected daily from all CPS and recycled by the Boston Public Schools STRIVE program. See http://boston.k12.ma.us/stc/strive.htm. The cost is $0.80 per pound, including hauling and recycling, totaling about $10,000 annually for about 5-8 tons.

STS quoted $16 per pickup for the schools. The DPW looked at different collection frequencies based on student enrollment. The DPW currently collects trash daily from all schools, making it challenging to propose less frequent organics collection. Although the volume of food waste is small, rodent concerns persist. Schools with less than 400 students could get collection 2-3 days a week and schools with 400+ students could get collection 3 or 5 days/week. Collection cost scenarios for CitySprouts schools vary from $7500-$12,100 and for all schools $16,700-$26,500. If 50% of food waste were diverted from disposal, estimated avoided trash fees would be $3185 if the CitySprouts schools participated, and $8660 if all schools participated.

Two projects completed in 2004 and 2005 provide context for the DPW's school composting goal:

1. <u>FY04 City of Cambridge Harvard Graduate Internship Project</u>

   The internship objective was to complete a detailed environmental and fiscal analysis and develop recommendations for the DPW and the CPS to plan and implement strategies to decrease waste and increase cost effectiveness of waste management. The DPW wanted to increase tons diverted from the schools and shift the polystyrene recycling funds to pay for food waste recycling services. Avoided disposal costs are also considered. The polystyrene recycling program cost the DPW approximately $10,000/year or $1400 per ton (the SD

now pays for this program as a result of cuts to the DPW budget in FY06).

Katie Storey, a Harvard graduate student, completed two waste sorts at the Haggerty School to get snapshot of the volume of food waste. There was 72 pounds of food waste or .35 pounds per student. Based on a 50% capture rate, we calculated the following potential annual food waste tonnage (180 schooldays) for the 5 CitySprouts schools:

2086 students ***X*** *.175 lbs/student* ***X*** *180 days* ***= 32.8 tons/year or*** *73 lbs/day/school*

These results helped the DPW and STS recognize that the food waste volume generated by schools was not sufficient to justify a collection route. Business participants were needed as "anchors". Once established, the schools could piggyback onto the collection route.

At the time, the cost for biodegradables was three times as expensive as conventional products and that not all products were offered. Products used in the CPS cafeterias include 4 and 6 oz bowls, spork kits with a napkin and 5-compartment lunch trays.

The two main conclusions from the internship were that 1) organics collection at the schools would likely begin before biodegradables could be purchased at a reasonable cost and 2) the cost of biodegradables could be decreased through collective purchasing and leveraging buying power with universities and/or municipalities.

2. <u>FY05 MassDEP Technical Assistance grant</u>
   Massachusetts Community Purchasing Collaborative for Biodegradable Products

   The grant objective was to lower the costs of biodegradables and identify a company that could provide the service products needed in the CPS cafeterias. 2004 pricing was three times as much as polystyrene products and not all products used by the CPS were available. MassDEP surveyed interest to buy biodegradables among municipalities, schools, hospitals, and prisons. They compiled a chart of the total projected quantity of each product needed and issued a Request for Information. The intent of the RFI was to identify serious vendors, determine whether quantity discounts would apply and understand if products offered could satisfy current needs. Six vendors responded including Mansfield Paper, Full Circle Industries, Poly America, BioGroup USA, Zerust Consumer Products and Bambu. Soon after, the MA Operational Services Division added biodegradables to state contract GRO20 with two vendors: Nature Friendly & Cereplast.

   On state contract, Nature Friendly offers the 5-compartment tray for $.097 each, but does not carry the 4/6 oz bowls or spork kits. Cereplast does not carry any of the products used, however individual utensils are $.02 each.

The DPW had several meetings with CitySprouts to plan the best strategy to secure interest from schools administrators and custodial staff to participate in the program; and initiated discussions with top administrators about which schools would be best for a pilot. A letter/flyer geared towards principals was created to introduce the opportunity to participate in the program. The DPW will continue to work with the SD to look at costs and operational challenges, using the participation of Cambridge businesses as a great example for reducing waste and saving money.

10. Recommendations

- ✓ MassDEP should expand Apple D'Or's Franklin Park permit for transfer of food waste and help site anaerobic digestion facilities near Cambridge/Boston to decrease hauling distances and increase processing capacity to accommodate program expansion. In addition, MassDEP should promote an understanding of the synergies when municipalities initiate relationships and partnerships with haulers, processors and generators.

- ✓ The City should examine organics diversion as a long-term, sustainable recycling strategy for residential collection. Organics diversion should be promoted as a preferred sustainable waste management practice that reduces climate change, saves money, reduces rodent problems and prevents sewer problems.

- ✓ Project partners should market organics diversion to additional business executives, owners, decision-makers, supporting entities, and the sub-communities within the City.

- ✓ Haulers must work with processors to ensure that organics recycling is cost-effective and market-driven. A paradigm shift is needed in the hauler community to support businesses willing to engage in partnerships with new organics-niche hauling companies.

- ✓ Communities and industry groups should recognize generators that divert organics for composting to maintain motivation for this preferred business practice, optimized organics diverted, raise public awareness, and create competitive advantage.

- ✓ Surrounding communities interested in replicating this project should be proactive and consult the project partners. Future efforts must be deliberate and well executed, given the breadth and depth of the traditional waste disposal environment (collection and hauling of trash to landfills and incinerators).

Attachments Follow:

1. Letter from DPW Commissioner Lisa Peterson
2. Compost That Stuff! brochure
3. Best practices memo from Save That Stuff
4. Density map
5. Request for Bids: Services to Market, Recruit and Train Businesses for Organics Collection
6. Letter/flyer to CitySprouts Schools
7. Science festival promotion sign/tickets
8. Organics training materials (ex. Lesley University)
9. Biocycle, August 2007 - *Partnerships Move Commercial Organics Collection Forward*