

Commercial Organic Waste Diversion at DIA – A Pilot Study

Presented to the Colorado
Rocky Mountain Chapter of
SWANA

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Presentation Overview

- Background
- Objectives
- Scope/Design
- Results/Data
- Lessons Learned
- Future Implementation

Background

- Integrated Waste Management Program (Nov. 2005):
 - Established a baseline disposal rate of 0.51 lbs/passenger
 - Recommended an organics composting pilot be conducted
- DIA Waste Composition Study Results (Spring 2008):
 - 29% of overall waste stream is organic
 - 8% lavatory paper waste
 - 3% other (waxed cardboard)
 - 18% of waste, by weight, in Main Terminal and Airport Office Building (AOB), was food waste.

Background cont.

- City and County of Denver (CCoD) Solid Waste Management Division and DIA apply for and receive CDPHE's Recycling Resources Economic Opportunity Grant (July 2008).
 - Designed to be a dual, concurrent one-year program to collect, compost and increase diversion of organic waste from both residential and commercial operations.
 - Residential – yard, food and paper
 - Commercial – pre-consumer food and paper

Background cont.

- DIA EMS
 - ISO 14001 Certified
 - Sets sustainability targets
 - Reduce energy use by 1% per passenger
 - Reduce hazardous waste generation by 5%
 - Reduce solid waste by 5% per passenger
 - Training, education and outreach



Objectives

1. Determine the feasibility of diverting organic waste from the Main Terminal and AOB.
 - Staffing
 - Education
 - Communication
 - Containers
 - Hauling
2. Determine vendor acceptance of composting at DIA.
3. Evaluate if diversion of organic waste could help meet DIA solid waste goals.

Scope/Design

- Participants:
 - 16 Food Vendors
 - DIA Environmental Services
 - CCoD Solid Waste Management Division
 - DIA Environmental Focal Points (EFPs)
 - Integrated Service Solutions (ISS)
 - AECOM
 - Waste Management, Inc.
 - A1 Organics
 - HDR, including Gracestone, Inc. and LBA Associates

Scope/Design cont.

- Organic Material Collected:
 - Food Preparation Waste (fruit, vegetable trimmings)
 - Pre-consumer Food Waste (bread, pretzel dough, coffee grounds)
 - Compostable Paper (waxed cardboard, paper towels)
 - Lunchroom Waste (coffee grounds, paper towels, food)
 - Limited Restaurant Post-consumer waste (food scraps, paper)
- Materials Used:
 - BioBag[®] Liners – Super Slims (27 cases), Pail Liners (27 cases)
 - Collection Containers – slims (30), pails (21), 65 gal. carts (2), 30 yd roll-off (1)
 - Gloves

Scope/Design cont.

- Collection Areas:
 - Main Terminal Vendors (16)
 - AOB and Selected Terminal Lunchrooms (12)
- Timeframe:
 - July 2008 - Kickoff
 - Aug. 2008 - Site Tours
 - Sept. 2008 - Vendor survey and participation confirmation
 - Oct. 2008 - Order materials
 - Nov./Dec. 2008 - Logistics, including container deployment, collection schedule, training, hauling arrangements, and communications
 - Jan. 26 through April 15, 2009 - Pilot Program

Scope/Design cont.

Training

DIA Composts!

Clean & Green at Denver International Airport

All Food
Meat, seafood, shell, poultry, bones, dairy, eggs, pizza, coffee, cream, soups, dips, dressings, oils, fats, and oils, nut butters, spreads, jams, and jellies

Meat to Compost
Meat, seafood, shell, poultry, bones, dairy, eggs, pizza, coffee, cream, soups, dips, dressings, oils, fats, and oils, nut butters, spreads, jams, and jellies

Baked Goods
Cakes, cookies, bread, pastries, pies, and tarts. Do not include items with nuts, raisins, or other hard objects.

Dairy
Cheese, butter, margarine, cream, sour cream, yogurt, cottage cheese, ricotta, and cream cheese. Do not include items with nuts, raisins, or other hard objects.

Meat
Meat, seafood, shell, poultry, bones, dairy, eggs, pizza, coffee, cream, soups, dips, dressings, oils, fats, and oils, nut butters, spreads, jams, and jellies

Produce
Fruits and vegetables, including stems, leaves, and roots. Do not include items with nuts, raisins, or other hard objects.

Paper
Paper plates, paper cups, paper napkins, paper towels, paper bags, paper liners, paper doilies, paper serviettes, paper placemats, paper coasters, paper napkins, paper towels, paper bags, paper liners, paper doilies, paper serviettes, paper placemats, paper coasters

Plastic
Plastic plates, plastic cups, plastic napkins, plastic bowls, plastic containers, plastic lids, plastic bags, plastic liners, plastic doilies, plastic serviettes, plastic placemats, plastic coasters

Trash
Glass, metal, styrofoam, wood, plastic, and other non-compostable materials

NO (with a red X over a trash can icon)

NO (with a red X over a trash can icon)

Thank you for the pilot program is provided by a grant from the Colorado Department of Public Health and Environment and contributions from Denver Solid Waste Management, DIA Environmental Services, Haring Pacific Company, H. J. Organics, OMAA Anderton and Co.

Headlines? Call DIA Environmental Services at (303) 562-4790

What You CAN Put in Your Green Bin

- ✓ Baked goods
- ✓ Bread
- ✓ Butter and margarine
- ✓ Candy
- ✓ Cereal
- ✓ Cheese
- ✓ Coffee grounds
- ✓ Dairy products
- ✓ Egg and eggshells
- ✓ Fish and shellfish
- ✓ Fruits
- ✓ Grains
- ✓ Sauces and dips
- ✓ Jams and jellies
- ✓ Meat
- ✓ Nuts and fruit shells
- ✓ Pasta
- ✓ Peanut butter
- ✓ Pizza
- ✓ Poultry
- ✓ Processed foods
- ✓ Rice
- ✓ Salads
- ✓ Vegetables
- ✓ Coffee filters
- ✓ Facial tissue (even scented)
- ✓ Greasy pizza boxes
- ✓ Microwave popcorn bags
- ✓ Paper coffee cups
- ✓ Paper hot cream cartons
- ✓ Paper milk and juice cartons
- ✓ Paper napkins
- ✓ Paper plates
- ✓ Paper take-out cartons
- ✓ Paper towels
- ✓ Tea bags
- ✓ Tissue paper
- ✓ Wood cardboard (e.g. produce boxes)
- ✓ Wax paper
- ✓ Cotton balls
- ✓ Dryer lint
- ✓ Fasteners
- ✓ Hair gel and hairnets
- ✓ Wooden chopsticks
- ✓ Wooden popsicle sticks
- ✓ Wooden toothpicks
- ✓ Flowers
- ✓ Grass clippings
- ✓ Houseplants
- ✓ Leaves
- ✓ Plant trimmings
- ✓ Small branches
- ✓ Weeds

What You CANNOT Put in Your Green Bin

- ✗ NO Plastics of any kind
- ✗ NO Styrofoam
- ✗ NO Metal
- ✗ NO Glass
- ✗ NO Cooking oil
- ✗ NO Grease
- ✗ NO Liquids
- ✗ NO Full-sized cartons (Typically these are broth cartons and soy milk cartons. But you should tear the carton to determine if it is full-sized for reuse.)
- ✗ NO PLASTIC BAGS

Compostable Bags

To make composting clean and easy, your business has been given compostable bags that are made from plants like corn, wheat and potatoes.

Please only line your green composting bins with the GREEN bags that are labeled COMPOSTABLE and provided to you by DIA Environmental Services. Other bags are not acceptable.

Scope/Design cont.

Scheduling

- Pickups from 7:00AM to 9:30PM, 7 days/week.
- Tailor the pickups to the vendor business needs. For example, more frequent pickups in the morning for coffee shops.
- Coordination of three different groups for pickups.
- Adjust schedule as needed.



Scope/Design cont.

Publicity



Denver International Airport's Newest Green Initiative

DIA Composts!

Thanks to a grant from the Colorado Department of Public Health and Environment, the City of Denver is launching a pilot composting collection program in Denver International Airport's main terminal and the AOB in late January. During the next couple of months, DIA Environmental Services, Denver Solid Waste Management and fifteen concessionaires will be partnering on this project.

Similar to Denver's residential composting collection pilot program, participating businesses at DIA will sort and collect their pre-consumer food scraps and soiled paper products. The collected material is sent to A1 Organics' commercial composting facility where it is turned into nutrient-rich fertilizer. This helps to minimize the amount of trash disposed at the airport and reduces greenhouse gases resulting from landfilling these organic materials.



Results/Data

- Organics Collected: 31 - 38 tons (~151 cubic yards,
–Derived from weights taken on 3% of all containers emptied)
- 820 collections/week → 9400 total
- Labor: 70 hr/week
- Cost Breakdown:

CATEGORY	COST %	NOTES
Equipment	15	Containers/Bags
Design/Printing	4	Training Materials
Labor	71	ISS/AECOM/ES
Hauling/Tipping Fees	9	WMI/A1 Organics

12

Objectives Revisited

1. Determine the feasibility of diverting organic waste from the Main Terminal and AOB.
 - Staffing
 - Education
 - Communication
 - Containers
 - Hauling
2. Determine vendor acceptance of composting at DIA.
3. Evaluate if diversion of organic waste could help meet DIA solid waste goals.

Lessons Learned

1. Proved the feasibility of diverting food waste from the Main Terminal and AOB.
 - Communication helped with education and reduced contamination issues (flyers, daily oversight and feedback)
 - Containers
 - “Right sizing” numbers and types
 - Adjustments for Super Slim liners
 - Liner strength issues (double bagging)
 - 65-gallon vs. custodial carts
 - Cleanliness issues
 - Schedule adjustments (increase/decrease pickups)
 - Staffing requirements

14

Lessons Learned cont.

2. Food vendors are receptive to composting
 - Good PR
 - Right thing to do
 - Vendor employees didn't have to haul trash

3. Based on the data collected, solid waste diversion could be slightly reduced (0.445 to 0.440 lbs/passenger based on 2008 data).

Future Implementation Considerations

- Scope
 - Terminal and AOB
 - Expansion to Concourses
 - Post-consumer waste
- Costs
 - Composting costs are approximately 3 times higher per ton than normal trash disposal (excluding labor)
 - Use of biodegradable bags
 - Labor
 - Hauling
- Logistics
 - Types of containers
 - Container locations
 - Compost facility location

Future Implementation Considerations

- Potential Barriers
 - Vendor Costs
 - Labor for hauling and tipping containers
 - Material costs for bags and containers
 - DIA Costs
 - Labor
 - Hauling and tipping fees
 - Expansion to concourses – available space
 - Other
 - Security
 - Wildlife concerns

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