

US EPA ARCHIVE DOCUMENT



## Section 5

# CASE STUDIES

## MALL OF AMERICA

### Bloomington, Minnesota

*Through a model program, this mega-mall is taking a big bite out of its waste stream.*



#### Overview

For thousands of pigs, life in Minnesota is hog heaven, thanks to the biggest mall in the country. Since 1995, the Mall of America in Bloomington, Minnesota, has contracted with a local hog farmer to haul more than 150 tons of food waste per month from the mall's restaurants to be used as pig feed. The mall pays for the gas burned by the farmer to haul the food waste, but saves much more on landfill tipping fees. But the biggest beneficiaries of this arrangement are the pigs, who routinely find morsels of steak, lobster, and vegetables in their slops.

This livestock feeding program is just one component of a far-reaching reuse and recycling program that is helping the Mall of America divert 50 to 60 percent of the 800 tons of solid waste generated by the facility each month. The largest fully enclosed retail complex in the United States, Mall of America was designed with recycling in mind. The 520 stores and restaurants in the mall use a system of built-in

chutes and rolling carts to efficiently move trash and recyclables through the facility to a single, centralized loading dock. In a busy month, the facility collects up to 200 tons of OCC, selling it directly to a local paper mill. Other common recyclables collected by the mall include paper, plastics, glass, and aluminum; electronics, batteries, and fluorescent bulbs are also recycled.

Because of its ambitious and innovative approach to recycling, Mall of America is considered a model of commercial recycling. Developers, building managers, and recycling experts from around the world have visited the mall to learn from its example.

#### Operational Details

- Tenants at Mall of America—including hundreds of retailers, 50 restaurants, eight nightclubs, and three schools—collect recyclables from their operations and self-haul the recyclables to one of several waste areas where there is one



chute for OCC and another chute or cart for commingled recyclables such as bottles, cans, and paper. In addition, tenants can store some recyclables in one of the mall's 27 waste rooms; other materials, such as packing peanuts, must be transported directly to the loading dock in bags or boxes.

- The facility's waste management and recycling staff—totaling roughly 20 full time employees—collect recyclables from the chute system, carts, and waste storage rooms and transport the materials to one centralized loading dock for sorting and storage. Materials such as OCC and plastic film are baled.
- Recyclables are picked up from the mall and hauled away by several different vendors and organizations. The mall's waste hauler picks up most types of recyclables, while a local paper mill hauls the OCC and specialty recyclers take materials such as end-of-life electronics and leftover paint. The mall donates all aluminum cans to a local charity, which collects and sells them.
- The mall's 50 restaurants collect food waste in 33-gallon containers. Recycling staff pick up full containers and transport them to the loading dock, where the amount of food waste generated by each restaurant is weighed and documented. The containers are then kept in a storage area, where a truck from the hog farm picks them up each morning.
- The recycling program is managed by the facility's environ-

mental supervisor, who spends roughly 80 percent of his time overseeing the program and educating tenants about recycling procedures. The supervisor visits tenants regularly and also posts recycling reminders in the mall's monthly tenant newspaper.

### Keys to Program Success

- The recycling program has had the support of upper management from the beginning. The facility was designed for recycling before construction began.
- All tenants sign a lease that requires recycling (the only exceptions are the anchor stores, which control their own waste and recycling services). Tenants that do not recycle effectively can face increased waste management charges.
- The supervisor of the recycling program is personally committed to recycling and has developed innovative ways of meeting the mall's ambitious goals for waste diversion. For example, the mall has purchased a high-density, water-eradicating extruder to remove 800 tons of water from its waste stream each year.
- Due to its size, the mall collects most materials in sufficient volume to ensure that recycling is cost effective.





# WESTFIELD SHOPPINGTOWN MISSION VALLEY

San Diego, California

*Multi-faceted reuse/recycling program diverts nearly 65 percent of mall's waste.*



## OVERVIEW

With 1.5 million square feet of retail space and 130 tenants, Westfield Shoppingtown Mission Valley has the potential to generate a large volume of waste, yet this outdoor mall has just two trash compactors on site, when most facilities of that size would need between five and eight.

Since getting serious about waste reduction in 1995, the mall has gradually expanded its reuse and recycling efforts to the point where it now diverts nearly 65 percent of its waste annually. Today, the program is a multi-faceted effort that includes:

- Routine recycling of materials such as OCC; paper; plastic bottles and films; polystyrene packing “peanuts” and other foam; glass; aluminum and other metals; and fluorescent bulbs. Westfield Mission Valley also recycled more than 600,000 pounds of broken concrete and asphalt during a recent renovation of one part of the facility.
- Reuse of fixtures, furniture, carpeting, and construction materials from store remodelings. The materials are either donated to reuse organizations or reused within the mall itself.

- Collection of food waste from the mall's restaurants for use as livestock feed at area hog farms.
- Composting of yard waste and landscape trimmings.
- Recycling Christmas trees through a program that Westfield Mission Valley hosts in its parking lot every holiday season. Trees brought in by the public are hauled away by the City of San Diego, which partners with Westfield in the program.

As a result of these efforts, Westfield Mission Valley's waste disposal costs have dropped more than 40 percent since 1994. In recognition of this success, the California Waste Integration Board has five times awarded Westfield with its WRAP award for outstanding achievement in waste reduction, recycling, and resource conservation. In 2002, the mall was named California's retail recycler of the year.

## OPERATIONAL DETAILS

- Tenants at Westfield collect recyclables from their retail operations, including OCC, plastic wrap, packing peanuts, paper, and other materials. Tenants separate these materials by type and leave





them, along with their trash, at the rear of their space.

- Visitors to the mall can deposit cans and bottles in bins located on walkways throughout the facility.
- The mall's housekeeping staff uses motorized carts to make regularly scheduled pickups of recyclables and trash from the rear of merchant spaces. Tenants can call housekeeping to schedule extra pickups during mall hours. Housekeepers also empty recycling bins located on walkways and in other common areas.
- Housekeeping staff transport all recyclables to one of five staging areas located throughout the mall. Most recyclables are placed in storage bins by type. OCC, plastic film, and polystyrene foam are baled. Two different recycling service providers pick up recyclables from the mall.
- The mall typically remodels 30 to 40 retail spaces each year. During remodelings, large roll-off containers are kept on hand to collect fixtures, carpeting, and construction materials for reuse.
- The facility's operations manager directs the reuse/recycling program, which is supervised on a daily basis by the heads of the housekeeping and landscaping departments. More than 15 staff contribute to the effort, with several housekeeping staff spending most of their time on recycling and waste management.
- During his welcome visit with new tenants, the operations manager provides an introduction to the recycling program.

Mall management visits all tenants frequently and provide recycling feedback.

### COST-EFFECTIVENESS

Westfield Mission Valley's reuse/recycling program largely pays for itself. The primary economic benefit from the program comes in the form of reduced waste disposal costs, which have fallen from an annual total of \$63,600 in 1994 to \$37,600 in 2002—a 40 percent drop. These savings have easily offset any initial capital invested in the program.

Keys to the program's cost effectiveness include:

- A "no cost" recycling service agreement. Westfield's primary recycling service provider does not charge a fee for hauling recyclables from the mall. Westfield receives a portion of revenues generated from certain recyclables (such as OCC) once the price of those commodities exceeds an established benchmark. However, this portion generally amounts to less than \$1,000 per month.
- Low capital costs for equipment. Westfield's primary recycling service provider furnishes the mall with balers and compactors at no cost. The motorized carts used for collecting and transporting recyclables are also needed for trash collection, and thus are not an added expense.
- Combining recyclables collection with trash collection. Housekeeping staff collect recyclables at the same time they collect waste from each tenant. This system limits the amount of extra labor required to implement the recycling program.





## KEYS TO PROGRAM SUCCESS

- The manager of Westfield Mission Valley's reuse/recycling program is committed to waste prevention and had broad experience from starting a similar program at another Westfield mall (Plaza Camino Real) in the early 1990s.
- The recycling program has the support of Westfield's upper management.
- Westfield Mission Valley limits the amount of work required of tenants by having housekeepers transport recyclables to staging areas. This system not only boosts tenant participation (currently at 100 percent), but also reduces the contamination level of the recyclables.
- Mall management are committed to training and retraining tenants on the recycling procedures. Management view tenant education as an ongoing job.



## VF OUTLET SHOPPING VILLAGE

Reading, Pennsylvania

*Broad recycling program has reduced solid waste disposal costs by 67 percent.*

### OVERVIEW

In the early 1990s, VF Outlet Shopping Village found that its solid waste disposal costs had skyrocketed into the \$100,000-per-year range. For mall management, bringing these costs down was a key motivation for launching a facility-wide recycling program.

The program began with a focus on recycling OCC, which the tenants generate in large quantities. Over the years, the program has gradually expanded to include everything from plastic films and bottles to paper, aluminum, glass, and yard waste (which is composted). The facility's 80 tenants all participate in the program—in fact, the terms of their lease require participation. The program's success is illustrated by the fact that, as of 2002, the facility's annual solid waste disposal costs had fallen to \$32,000—a 67 percent drop. VF Outlet Shopping Village received Waste Watcher Awards from the Pennsylvania Department of Environmental Protection in 1998, 2000, and 2001.

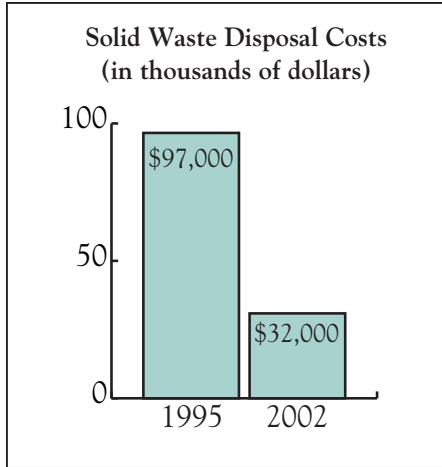
### OPERATIONAL DETAILS

- Tenants at VF Outlet Shopping Village collect recyclables such as OCC, plastic wrap, and paper from their retail operations. The tenants self-haul these materials to one of eight

consolidation areas within the mall, loading docks, and closets.

- Shoppers can deposit cans and bottles in bins located throughout the facility and in the food court. Custodial staff empty these bins daily and haul the recyclables to the consolidation areas.
- The facility's maintenance and grounds staff pick up recyclables from the consolidation areas daily, using a box truck. They bail OCC and then store it in an onsite trailer; other recyclables are taken to a staging area. A local recycling company picks up all recyclables on an "as needed" basis.
- The recycling program is managed by the facility's maintenance foreman. Nine maintenance and grounds staff contribute part of their time to the effort, some of them spending an hour or two each day collecting materials and baling OCC.
- Tenants receive a handbook that provides information about the recycling program. The program manager also meets with new tenants to explain the program and their obligations.





- To inform tenants of program accomplishments, the program manager posts information on recycling results at each of the eight consolidation areas.

### COST-EFFECTIVENESS

VF Outlet Village's recycling program has been cost effective from the outset due to two factors: the income generated by recycling OCC, and the money saved by reducing waste disposal costs.

VF recycled 499 tons of OCC in 2002, generating over \$25,000 in income. The facility derives little or no income from its other recyclables, but for each ton of material recycled it avoids a \$50-per-ton waste disposal fee. VF saved approximately \$25,500 in avoided disposal fees in 2002, on a volume of over 510 tons recycled.

Estimated labor costs for the recycling program totaled \$26,000 in 2002. Other costs include the capital invested in recycling equipment (two bailers for OCC, bins for bottles and cans, and a box truck that is used for collecting both recyclables and solid waste). This equipment has been purchased gradually over the years.

### KEYS TO PROGRAM SUCCESS

- The recycling program has the support of upper management.
- The program started small, with its original focus on OCC recycling. The program expanded to include other recyclables as resources allowed.
- The program manager educates tenants on their recycling obligations through distribution of a handbook and through face-to-face meetings. VF considers

tenant education the biggest challenge for its recycling program.

- VF sought the help of the county recycling coordinator in finding markets for recyclables.

### 2002 RECYCLING TOTALS

OCC: 499 tons

Mixed paper: 15 tons

Plastics: 8.5 tons

Glass: 1.25 tons

Aluminum: 0.50 tons

*Total recycled: 524.25 tons*





# IKEA SCHAUMBURG

Schaumburg, Illinois

## OVERVIEW

Since the 1990's, IKEA has proactively sought ways to minimize waste and materials. IKEA Schaumburg recycles their five main waste materials—cardboard, wood, metal, plastic, and glass. Today, IKEA's recycling rate is more than 70 percent.

IKEA Schaumburg has been a leader in environmental work. For example, they have an environmental education program for IKEA Schaumburg's 600 employees. The training includes general environmental knowledge, an overview of IKEA's environmental policy, what IKEA has done so far, and how the company will continue to improve environmental and recycling initiatives.

IKEA Schaumburg also recycles fluorescent bulbs and restaurant oils—substances that are reprocessed and reused to serve other functions. Their latest effort allows consumers to deposit household batteries and light bulbs—even those not purchased at IKEA—in customized, in-store containers and IKEA pays for the recycling. IKEA Schaumburg is also planning to install a vermicomposting system to handle the food waste from the restaurant.

## OPERATIONAL DETAILS

Employees attend training where they learn how to separate and dispose of materials properly. Cardboard, wood, metal, film plastic, hard plastic, paper, ceramic, and glass are recycled. Plant waste is turned into compost.

An environmental coordinator is assigned to promote IKEA's environmental efforts and ensure material that cannot be recovered and recycled is handled and disposed of in the safest possible manner.

New recycle stations were built for IKEA customers and other members of the Schaumburg community. They serve as both a collection station and a communication kiosk.

Containers designed to separately store "flashlight type" batteries and low-energy use light bulbs are mounted on a post between the checkout stations and the customer service/merchandise pickup entrance near the front of the store. Various types of batteries, including: A, AA, AAA, C, D, transistor radio, and rechargeables may be dropped off anytime the store is open.

## COST EFFECTIVENESS

Implementing a new storewide recycling effort has reduced waste cost per pallet of merchandise sold at the facility by over 40 percent.





### KEYS TO PROGRAM SUCCESS

- IKEA Sweden has an environmental plan that is communicated and carried out at the individual stores.
- IKEA Schaumburg distributes communications to its customers explaining programs, such as the drop-off for bulbs and batteries, so customers have ease of use while contributing to the effort.
- IKEA reports that it is always looking for ways incorporate the purchase of recycled products, including the purchase of 30 percent postconsumer office paper and computer paper for their store.

### 2003 RECYCLING TOTALS

Cardboard: 770 tons

Paper/Plastic/Glass: 49 tons

Metal: 56.5 tons

Fluorescent Tubes: 0.3 tons

Wood: 558 tons

Waste: 956 tons

*Total recycled: 1,436 tons*