



# ALAMEDA STOPWASTE.ORG COMPARISON COMMUNITIES AND LEADING PROGRAM INITIATIVES

*-- FINAL REPORT --*

*PREPARED AS PART OF ALAMEDA COUNTY SOURCE REDUCTION AND RECYCLING BOARD /  
2006 MEASURE D "FIVE YEAR AUDIT" PROGRAM ASSESSMENT*

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## Acronyms:

- **ADFs:** *Advance Disposal Fees: A charge at the point of sale to cover the disposal of the purchased item.*
- **C&D:** *Construction and Demolition: Refers to both the economic sector and waste generated in the sector.*
- **C&I:** *Commercial and Industrial: Refers to both the economic sector and waste generated in the sector.*
- **C/S:** *Curbside: The collection of materials by a hauler at the location of disposal.*
- **EOW:** *Every-Other-Week Collection: Materials are collected at the curb every second week.*
- **FTE:** *Full Time Employee: Refers to one employee working 40 hours a week for 52 weeks a year.*
- **HH:** *Households: Defined as a housing unit, can be single family or multi family.*
- **HHW:** *Household Hazardous Waste: Any number of materials used in the home that are hazardous to dispose of including paint, oil and batteries.*
- **MFU:** *Multi-family units: A residential structure with two or more units in it.*
- **MRF:** *Materials Recovery Facility: Facility used for the separation, sorting, and distribution of recycled materials.*
- **MSW:** *Municipal Solid Waste: The residual waste material collected after any recycling activities.*
- **OCC:** *Old Corrugated Containers*
- **PAYT:** *Pay-As-You-Throw: A system of incentivized residential rates designed to encourage recycling and diversion by charging higher rates for collection of larger volumes of trash.*
- **SS:** *Single Stream Recycling: All recyclable materials are collected in one container.*
- **WTE:** *Waste to Energy Facilities: Facilities used for the combustion of solid waste and the capture of resulting energy produced.*

# 1. INTRODUCTION

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As part of a larger project to conduct a “Five Year” audit of the StopWaste portfolio of programs (under subcontract to HF&H Consultants), SERA was responsible for conducting research on comparable residential jurisdictions to communities within the Agency that might provide information, lessons, or program options of use to the communities within Alameda County. SERA consulted its in-house proprietary database of communities around the nation to identify candidate communities based on criteria including:

- Demographics suitable to reflect the diversity of Agency members;
- Similar production of yard waste;
- Program options that might help fill program gaps for Agency members; and
- Other criteria.

SERA identified 10 candidate communities, which were winnowed down to the five communities summarized in this document – Boulder, CO; Chapel Hill / Orange County NC; Chula Vista, CA; Madison, WI; and Portland, OR. For each community, this report summarizes:

- Demographics
- Diversion situation / results;
- Facilities;
- Collection system and basic residential diversion programs; and
- Special programs operated / available in the community.

Key identifying features for these communities are summarized below.

## **Boulder, CO**

Population: 83,432

Single Family: 18,812

Multi Family: 22,706

Diversion: 42%

*Brief Description:* Boulder has instituted aggressive PAYT rate structures for multiple franchised haulers. The city is in the process of implementing a curb side household organics collection program and single stream recycling.

## **Chula Vista, CA**

Population: 212,954

Single Family: 38,879

Multi Family: 36,843

Diversion: 47%

*Brief Description:* Private hauler collects trash, recycling and yard waste using variable rates for large wheeled carts.

## **Portland, OR**

Population: 513,627

Single Family: 151,484

Multi Family: 93,786

Diversion: 55%

*Brief Description:* Portland franchises 29 separate haulers to collect trash and recyclables and the city sets PAYT rates for all of the haulers. Currently collect yard waste at the curb, not household organics.

## **Chapel Hill, NC (summarized with Orange County in the report)**

Population: 48,715

Single Family: 7,976

Multi Family: 11,108

Diversion: 37%

*Brief Description:* City provides garbage and yard waste collection paid for in taxes and the county collects dual stream recycling. The county has instituted mandatory recycling for C&D waste and one of the first mixed load salvage programs in the country.

## **Madison, WI**

Population: 203,704

Single Family: 42,234

Multi Family: 58,564

Diversion: 57%

*Brief Description:* The city uses single stream collection and mandatory recycling coupled with bans to achieve its high rate of diversion. They do not collect yard waste/organics at the curb or use PAYT for rate setting.

Table 1 below provides a summary of the population, as well as basic and enhanced programs present in the various communities. Table 2 lists key facility-related characteristics. Community summaries are included in the following chapters, listed in alphabetical order.

These cities each provide examples of successful programs with relatively high residential diversion rates. The profiled cities measure diversion in a number of ways (as detailed in the footnote in Table 1), and therefore are not directly comparable to diversion as measured by California State method. However, the communities present useful lessons because they provide considerable variation in their solid waste systems. They use municipal and franchised collection methods, (and one uses a county program for recycling). Some provide service weekly and others every other week. PAYT is in place in three of the communities, and all have aggressive education programs. All have curbside recycling and while several have single stream, two others are moving toward single stream. Three have curbside yard waste programs. All have tackled multifamily in some way, as well as construction and demolition streams. Most have also added initiatives directed at the commercial sector. Several are active in waste prevention, and bans play a key part in all but one of the communities. Funding innovations were not found in many of the communities; most rely on taxes or user fees (PAYT), although there are some elements of interest in Chapel Hill, and Portland.

**Table 1. Population and Program Inventory for Comparable Communities**

City & population	Div % <sup>1</sup>	Garb	Recy	YW	C&D	C&I	MF	WP	Educ	Ban	ADF	Prod.Resp	Reuse
Boulder (83K)	52.3%	Franch, PAYT, autom.	Franch, EOW, dual, embed	D/O+	Yes	Yes	Yes	Yes	Yes	No	No	No	Yes
Chapel Hill (49K / 120K)	45%	Muni, taxes	County, wkly, dual, mand. fee	Muni, wkly, taxes	Yes	Yes	Yes	No	Yes	Yes	No	No	No
Chula Vista (211K)	50%	Franch, PAYT, autom.	Franch, wkly, SS, embed	Franch, wkly, embed	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No
Madison (204K)	57%	Muni, taxes, autom.	Muni, wkly, SS, mand/tax	D/O+	Yes	No	Yes	No	Yes	Yes	No	No	Yes
Portland (514K)	54.5%	Franch, PAYT, autom.	Franch, dual, embed	Franch, EOW, embed	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No

Key: Div=diversion (some measured differently); Autom=automated collection of wheeled carts; SS=single stream recycling, embed=recycling costs embedded in garbage fees; YW=yard waste; WP=waste prevention; ProdResp=Producer Responsibility;

<sup>1</sup> Diversion rates are measured differently for each city: **Boulder**- The reported figure is residential tonnage diversion. The largest hauler provides official reports on curbside diversion to the City, based on weight tickets for recycling and MSW at the transfer station. This hauler collects for over 80% of the City. Including drop-off recycling tonnages (collected by another hauler) would increase residential diversion rates reported here. **Chapel Hill**-The reported value is residential and non-residential. Measure waste reduction using diversion from the landfill compared to a 1991-1992 baseline level, and credits are given for waste diversion completed by the city pre baseline. They work to measure "what isn't there" in terms of disposal measurement. **Chula Vista**- City-wide figures are reported. The City uses the CA statewide waste reduction measurement technique. **Madison**- The figure reported is combined residential and non-residential diversion. The computation is based on a sum of program by program diversion divided by combined landfilled and diverted tonnage. **Portland**- The figure is city-wide, including both residential and non-residential tonnage. The City's recycling rate calculations align with OR DEQ methodology, including DEQ's assignment of credits for waste prevention, re-use and home composting.

**Table 2. Facilities in Comparable Communities**

Facilities						
City	Landfill	Transfer Station	MRF	Compost	C&D	Hard to Recycle/HHW
Boulder	Pvt landfills outside City	Private owned/operated	Public own/private operated	Private own/operated	No	Private own/operated-claim to have the first CHaRM center in the country.
Chapel Hill	County owns/operates	County owns/operates	Private owned/operated	County owns/operates, private facilities available	Both public and private facilities available. A large part of the C&D program.	Drop-offs available at 5 sites and landfill operated by city.
Chula Vista	Pvt owned/operated	No. Hauled direct to LF.	Private owned/operated	No.	Private owned/operated	At landfill.
Madison	Owned/operated by county	Owned/operated by city	Private owned/operated	owned/operated by county	Private owned/operated and some at landfill	Owned/operated by city and county
Portland	Private	2 public, 3 private	Public owned/operated and Private owned/operated	Private own/operated	Private owned/operated	At public transfer station

## 2. CITY CASE STUDIES

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### ***City: Boulder, CO***

#### **Statistics:**

Population: 83,432  
Total Housing Units: 41,518  
Single Family: 18,812  
Multi Family: 22,706  
Total Tons of Garbage: 53,075<sup>2</sup>  
Total Tons Recyclables: 15,477  
Total Tons Composatables: 801  
Residential Tons Garbage: 12,882  
Residential Tons Recycling: 8,964  
Residential Composatables: 478  
Curbside Residential Recycling Rate: 42.3%  
Drop-off wood waste and yard waste: 10%  
Total Residential Diversion Rate: 52.3%  
Multi Family Recycling: 11.8%  
Commercial and Industrial Recycling: 15.8%  
Commercial and Industrial Drop-off: 1.8%  
Total Commercial and Industrial Rate: 17.6%

#### **Facilities:**

- Landfill: None in city; privately owned landfills outside City
- Transfer Station: Private owned/operated
- MRF: Public owned/private operated
- Compost: Private owned/operated
- C&D: None in city
- Hard to recycle/HHW: Private owned/operated

#### **Collection:**

##### *Garbage:*

Residential garbage in the city of Boulder is collected by multiple franchised haulers; however there is one primary hauler providing service to a supermajority of the customers. In 2001 Boulder passed a city ordinance that required that all haulers provide customers with variable rate structures. The haulers must also provide curbside recycling with the costs for the program embedded in the garbage bills. The city allows the market to dictate the actual prices that the haulers charge, but the ordinance requires recycling costs be embedded in the PAYT rates.

##### *Recycling:*

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<sup>2</sup> Tonnage reported from 2006 by the city's largest hauler. This hauler handles ~90% of the accounts in the city and tonnage reflects materials collected through the hauler's programs only. Percentages more accurately reflect overall diversion rates for the city.

In 1989 the city instituted a Trash Tax and took over the curbside recycling program. The city expanded the old curbside recycling program to form a partnership between a non-profit (Eco-Cycle) and a local hauler (Western Disposal) to collect curbside recyclables city wide. In 2001 the city transformed collection into a regulated, private industry with multiple haulers. The city now uses the funding from the Trash Tax to pay for expanded commercial recycling and hard-to-recycle materials collection.

Boulder is currently in the process of switching to single stream collection for residential HHs. In 2006, the city conducted a pilot program to study the feasibility of a switch to single stream. The pilot found that for nearly the same costs, the city can switch from the current alternate bi-weekly commingled and fibers collection to alternate bi-weekly collection of single stream recyclables and household organics and yard waste.

#### *Yard Waste:*

The city does not have curbside yard waste collection at this time. Boulder residents can use a free drop-off site, and the city also provides free seasonal clean-ups twice a year. The city plans to implement a green waste collection program by 2008. The new program is expected to collect household organics; however, the recent appearance of bears inside the city limits may force the haulers and city to rethink this program.

#### **Special Programs:**

##### *Construction and Demolition:*

The city Trash Tax funds the wood waste drop-off site located on Western Disposal's property. The site accepts dimensional lumber and clean wood for both residential and commercial waste. The city has also partnered with the Boulder Green Building Guild, and recycling is part of the city's "Green Points" building program. However, there is no true C&D waste facility in the city and there is ample room for growth in this area of diversion.

##### *Commercial and Industrial:*

The city and haulers have recently begun commercial food waste collection. This program allows for food scraps to be diverted but at this time the cost for subscription to the service is at a premium. The city is expecting to subsidize the program and believes that it can collect up to 10% of the commercial waste stream through the food scraps program. Free waste audits are also offered and composting and recycling curbside collection is promoted and encouraged by the city.

The city offers "recycling coupons" to businesses to encourage recycling. Under this program the city pays the hauler for the first three months of recycling service for businesses signing up for one year of new service.

##### *Multi-Family Units:*

Dual stream recycling is collected by the haulers but little economic incentive exists to encourage recycling in this sector. The MFU sector recycling rate is only 11.8% compared to 42.3% for single family HHs. Recycling volunteers and education/outreach are being used to target MFUs.

##### *Waste Prevention:*

In February of 2006 Boulder drafted a Master Plan for Waste Reduction in which the city plans to divert 85% of its waste by 2017. Waste prevention and source reduction are a key aspect of

the plan. The city works with the university to encourage waste reduction in both campus and off-campus housing, coordinating "green teams" to spread the word.

*Bans:*

No bans are in place at a city wide level at this time. There is a planned e-waste ban for 2007.

*Re-Use Areas:*

The city, along with the major hauler and a non-profit, is working to create a "Recycle-Row" on the east end of town. This is a multi-year campaign to consolidate all of the waste and recycling businesses into a one mile stretch of road. It is hoped that these businesses will be able to meet all commercial and residential recycling, re-use and waste reduction needs. The MRF, the compost center, ReSource 2000 (a re-use yard for construction materials), the wood waste drop-off, and transfer station are all currently located there and the city is planning on expanding the area. The Boulder CHaRM (Center for HArD to Recycle Materials) is planning to move to Recycle Row.

*Other:*

CHaRM, Boulder's Center for Hard to Recycle Materials is a drop-off for residential and commercial materials that is run by a non-profit organization. The CHaRM collects such materials as e-waste, textiles, #2 and #6 plastics, plastic bags, copiers and fire extinguishers.

## **City: Chapel Hill, NC, Orange County NC.**

*(Note: Chapel Hill and Orange County were examined together because garbage service collection is provided by the City but other diversion activities within City limits are provided by the County.*

### **Statistics:**

Population: 48,715  
Total Housing: 19,084  
Single Family: 7,742  
Multi-Family-11,342  
Orange County  
Population: 120,100  
Total Housing: 54,400  
Single Family: 30,397  
Multi Family: 24,003  
County Diversion Rates  
Overall County Waste Reduction: 45%  
MSW: 53% 57,568 tons  
C&D at Landfill: 14% 15,686  
Tires: 1% 1,339 tons  
Total Recovered at Landfill: 11% 11,992 tons  
Urban C/S Recyclable Collection: 4% 3,810 tons  
Rural C/S Recyclable Collection: 1% 1,184  
MFU C/S Recyclable Collection: 1% 1,033 tons  
Drop Off Recyclables: 5% 4,983 tons  
Total Recycled by County Programs: 13.4%  
Total Recycled by Others (Not Orange County Solid Waste Dept.): 8% 8,405 tons

### **Facilities:**

- Landfill: County owns/operates
- Transfer Station: County owns/operates and private facilities
- MRF: Private owned/operated
- Compost: County owns/operates
- C&D: Both public and private facilities available
- Hard to recycle/HHW: Crop offs available at 5 sites and landfill

### **Collection:**

#### *Garbage:*

Trash collection in the City of Chapel Hill is operated and collected by the city. Trash is collected weekly from 11,000 SF homes in the city limits and the surrounding rural areas. Collection costs are included in taxes and the city provides a 69-gallon container to customers at no additional cost. The city does not use PAYT rates.

#### *Recycling:*

Recycling for Chapel Hill is conducted by the Orange County Solid Waste Management Department (OCSWMD). The OCSWMD is responsible for collecting recycling, running the landfill, reducing waste, and composting. For SF and duplexes the county provides bins for dual stream collection. The MF program is voluntary but the county estimates that over 95% of the

MFUs in the county are receiving C/S recycling service. The estimated cost per HH for the county to provide collection, not including processing, is \$2.40/HH/month.

*Yard Waste:*

Weekly curbside collection of yard waste is provided by the city on a different day than the collection of recyclables and garbage. The yard waste service does not include the collection of household food waste. Collection is manual or automatic and the materials can be set at the curb in bundles or customers can purchase a roll cart for \$43.00. Seasonal collection for Christmas trees is also provided.

**Special Programs:**

*Construction and Demolition:*

Orange County has been a national leader in the area of construction and demolition (C&D) programs. Through the implementation of various ordinances and the construction of C&D facilities the County has reduced its C&D materials land filled by 50% and increased recycling by 221%. The Regulated Recycled Materials Ordinance requires the recycling of cardboard, metal, and clean wood. Originally the ordinance banned the materials at the county landfill. However, this led to haulers shipping the materials out of county, which saved room in the Orange County landfill, but did not lead to the materials being recycled or re-used. The 2002 ordinance mandated that the haulers must not landfill any of the regulated materials generated in Orange County in any landfill. It is strictly enforced by increasing fines. The county has levied numerous fines to enforce the ordinance and continues to do so. In addition, there are financial incentives for source separated materials and fines for job sites that have not submitted a recycling plan.

The County also requires that properties specify adequate outdoor recycling storage on their plans or make a certified agreement with an adjoining property to handle the recyclable materials generated. In conjunction with the ordinance, the county constructed a \$1.5M facility to manage the additional scrap metal, corrugated cardboard, clean wood waste, and yard waste diverted through the ordinance.

The county wide bans were followed by municipal level bans and ordinances. In addition, every roll-off container and truck is licensed and tagged to ensure that the materials are being recycled. The county has one dedicated FTE for the enforcement of the program. The negatives of the program include the loss of revenue for the county. A number of private C&D facilities popped up in the county and the county lost 50% of its C&D material and associated revenue to these private facilities. The county is looking at ways to "win back waste" and bring the materials back to county facilities.

*Commercial and Industrial:*

Like many other cities and counties, Chapel Hill has free waste audits for commercial businesses. This program has been picking up a lot of steam in the past few months, going from about one a year for the last twelve years to a dozen in the last eight months. The increase in popularity is being attributed to a societal change in the perception of the importance of recycling in climate change and sustainability.

The OCC bans and mandatory recycling of materials in the C&D sector apply to all commercial businesses and MFUs. The county offers a commercial glass recycling program for 100 bars and restaurants in the county that generate at least 500 pounds per month (some businesses combine their recycling areas to qualify). This program diverts 40 tons of materials a month.

### *Multi-Family Units:*

Like the C&I and C&D sectors, the OCC ban and mandatory recycling applies to MFUs. The county uses a unique recycling education program for MFUs and other hard to reach areas such as trailer parks. If the hauler (the county) identifies an area that is performing poorly (i.e. high contamination levels, low recycling rate), they send out volunteer recycling educators to go door-to-door and inform the residents of the best practices and the importance of diversion. This has been very successful.

### *Education:*

The Orange County recycling education program won the 2004 National Recycling Coalition award for Public Education. The county has crafted a detailed and comprehensive plan that specifically deals with two problems unique to the area:

- Turnover: The area faces a high turnover of residents primarily due to the 25,000 university students at UNC.
- Languages: A 2000 survey found that 83 different languages were spoken at home in the county and the Hispanic speaking population has grown by 400% in the past 10 years.

The overall cost of the program is \$1.12 per resident per year, including 1 FTE, advertising and supplies.

### *Bans:*

There are several bans enforced at the landfill including:

- Yard waste (state wide)
- OCC
- Clean wood waste
- Scrap metal
- Aluminum cans

### *Re-Use Areas:*

Although no longer in operation, the county pioneered a re-useable item collection and salvage program at the landfill. The county would hand sort materials at the landfill and pull out re-useable items, particularly C&D materials. At its height, this program was collecting over 1,000 tons/year. The program led to the Regulated Recycled Materials Ordinance which greatly reduced the amount of re-useable items being disposed of in the landfill. The program has been discontinued due to risks to health and injury.

### *Funding Innovations:*

Orange County uses an enterprise fund to pay for 77% of its recycling costs. The enterprise fund is created from the county 3-R fee. This fee is charged to all county residents, both SF and MFU, businesses, and public buildings regardless of whether or not they receive C/S service. There is a base fee of \$37 per house, apartment or business, and the funds are used for education and outreach, drop-offs, HHW services, and similar services. If the property receives C/S service it pays an additional fee for that service. For example, single family houses receiving weekly urban collection pay an additional \$44. Property owners pay the fee regardless of whether or not the occupant chooses to recycle. The remainder of the recycling program is funded by a combination of state grants, landfill revenues, and recycling materials sales.

*Other Programs:*

Roving Recyclers: The County uses volunteers to pull contaminants out of public recycling containers. This program not only reduces contamination but increases the feeling of self efficacy among residents.

## **City: Chula Vista, CA**

### **Statistics:**

Population: 211,513

Total Housing Units: 73,984

Single Family Units: 40,388

Multi Family Units: 33596

Diversion: 48% overall diversion rate

Single Family 2006:

Yard Waste: 22,603 tons

Recycling: 18,472 tons

Multi Family thru Sept 07:

Recycling: 1,226 tons

Commercial 2006:

Recyclables: 4,532 tons

Green Waste: 1102 tons

*(All rates are for hauler only, do not include self haul or third party recyclers)*

### **Facilities:**

- Landfill: Private owned/operated
- Transfer Station: Private owned/operated
- MRF: Private owned/operated
- Compost: None in city
- C&D: Private owned/operated
- Hard to recycle/HHW: At landfill.

### **Collection:**

#### *Garbage:*

Garbage in Chula Vista is collected by one franchised hauler. The city has a PAYT rate structure in place, with recycling and yard waste costs required to be embedded in the bills in order for the hauler to receive the franchise permit. Weekly collection costs for 32-gallons are \$12.04 per month, 64-gallons cost \$15.60 and 96-gallons cost \$18.35. The city's overall sustainability push led the hauler fleet to switch to 26% bio-fuel trucks.

#### *Recycling:*

Recycling is single stream and collected by the same hauler. The city switched to single stream recycling in 2003 and observed an 89% increase in recycling, an 11% decrease in solid waste, and a 2% increase in yard waste. The contamination levels in the single stream system range from 6-9% and change seasonally.

Both SF and MFUs are collected single stream and the program led to large increases in the recycling tonnage collected for both types of households. Single family HHs went from 8.53 lbs/hh/week to over 17 lbs/hh/week. Multi family units increased their recycling from 1.22 lbs/unit/week to an average of 3.10 lbs/unit/week. No information was available on the cost to switch SF households to SS, but the cost for the MFU switch that occurred last year exceeded \$200K. The diversion tonnage increases can not be attributed solely to the switch to single stream, but also derives from the resurgence in recycling marketing and increased awareness.

Single stream has been found to work especially well for those with limited storage space for recycling carts or bins.

In order to make the switch successful, an intense outreach program was used to inform residents of the change and to help reduce the contamination levels in the recycling stream. The city had public meetings every three weeks for three months and meetings with various stakeholders. They also answered as many as 1,500 phone calls per day at the busiest times. Both recycling and garbage are collected in the same truck.

#### *Yard Waste:*

Yard waste in Chula Vista is collected weekly in a dedicated truck and the costs for collection are embedded in the garbage fees. Residents may set out materials in their own cans, in bundles, or rent cans from the hauler for \$1.00/month. The hauler collects leaves, brush and lumber but not household organics. Chula Vista has no composting area for its collected yard waste. The materials are brought to the landfill and used as ADC.

#### **Special Programs:**

##### *Construction and Demolition:*

In order for a project to receive a building permit a completed Recycling and Solid Waste Management Plan must be submitted to the city. Authority over the permits provides the City with strong control over the C&D waste stream. The recycling plans mandate that a site must recycle 50% of its designated recyclable materials either on-site or at permitted facility.

The plan also requires that adequate space for recycling must be included in the building plans. This space must provide equal room for both trash and recycling carts and have sufficient space for containers to divert the designated recyclables generated on the property. The city is also developing a demolition plan similar to the San Jose (CA) model that requires a security deposit for recyclable materials. The City will be taking a full Construction and Demolition ordinance to the Council in the fall of 2007.

##### *Commercial and Industrial:*

Chula Vista has a city wide ordinance mandating that any commercial property must contract with a hauler for the collection of recyclable materials, and must build a recycling enclosure that can hold both trash bins and recycling bins or carts. Every new building in the city for the last four years has had to construct an enclosure large enough to house two, four cubic yard bins (one for trash, one for recycling). The following materials must be diverted from commercial businesses:

- paper,
- cardboard,
- food and beverage containers,
- yard waste,
- clean lumber, and
- metals.

The city may also require that certain buildings provide space for the recycling of ancillary items such as restaurant grease or auto repair scrap metal.

Yard waste must be disposed of separately in the C&I sector. If the business contracts with a landscaper the landscaper must recycle or compost 100% of the organic material generated. The business is responsible for gathering receipts from the contractor proving that they have diverted all of the organic waste and must be able to provide those receipts to the city if requested.

The city has 2 FTEs enforcing the C&I ordinances. A portion of this enforcement is conducted via visual inspection of dumpsters and trash enclosures. The other portion is enforced with the assistance of the haulers. Haulers provide the city with the business accounts that have only contracted for garbage collection, but not recycling.

*Multi Family:*

The costs of recycling collection are embedded in the hauler fees charged to MFUs and all MFUs receive "free" recycling. Property owners are required to have recycling bins/carts and garbage carts in the same enclosure with easy access for the residents. The city may also require that a MFU install two chutes for recycling next to the trash chute if they discover that a unit is performing poorly.

*Hauler Incentives:*

The city of Chula Vista and its haulers have a revenue sharing arrangement with an economic incentive built in to encourage recycling by the hauler. The hauler keeps all of the revenues they generate on recycling loads up to \$60/ton. All revenues over \$60 are split between the city and the hauler 60/40, with the split depending on where the City's diversion is in relation to the state diversion goal. If the overall rate is under the 50% diversion goal, then the city receives the 60% share of additional revenues, and the hauler receives the 60% portion if the overall diversion for the city is over 50%.

## **City: Madison, WI**

### **Statistics:**

Population: 203,704  
Total Housing Units: 100,798  
Single Family: 42,234  
Multi Family: 58,564  
Overall Diversion: 57% 64,568 tons  
Large Items: 10,520 collected 2,186 recycled  
Recyclables: 20,389  
Leaf Collection: 17,486  
Yard Waste Drop-Off: 6,539  
Brush: 12,072  
Home Composting: 4,950  
In House Metal: 256  
Waste Oil: 232  
Oil Filters: 18  
Tires: 37  
Computers: 103  
Move Out ReUse: 34  
Madison Stuff Exchange: 219  
ReUse-A-Shoe: 47  
MSW: 39,952

### **Facilities:**

- Landfill: County owned/operated
- Transfer Station: City owned/operated
- MRF: Private owned/operated
- Compost: County owned/operated
- C&D: Some at transfer station the rest is private owned/operated
- Hard to recycle/HHW: City and County owned/operated

### **Collection:**

#### *Garbage:*

The city collects garbage weekly with automatic trucks, with fees paid through property taxes instead of using PAYT rates. Residents receive a "Cadillac Service" which places no limits on the amount of trash that residents may dispose of.

#### *Recycling:*

Madison uses automated collection of wheeled single stream carts for recycling. Recycling is mandatory and the city has curbside collection of recycling, garbage, and scheduled seasonal brush collection. The city switched to single stream recycling in 2005.

This switch required a capital outlay for carts, which was offset by increased efficiencies in routes and a decrease in 2 FTEs. This switch prepared the city to deal with its continuing growth; in the past few years, residential households have increased by 800 per year, and the single stream collection will require no increase in fleet size for several years. Residents can

select between 35-gallon, 65-gallon, or 95-gallon cart service. The trend is for residents to trade up to the larger recycling carts; for every resident requesting a small cart, 10-12 request larger recycling carts.

The city reports it is hard to determine the level of additional diversion resulting from the switch to SS because there was a concurrent addition of mixed paper to the recycling stream; however, city estimates single stream may have led to an increase of about 30% in recycling tonnage. With SS now being used, the city is also looking into the possibility of implementing a 3-bin system adding household organics collection.

Madison has a participation rate of nearly 95% in its curbside recycling program, with a significant debt to the mandatory recycling ordinance. Mandatory recycling is used as an education tool to affect the overall attitude toward recycling in the city. The mandatory recycling ordinance, along with bans on white goods, batteries, CFLs and tires, is enforced at the landfill. No fines for violating the ordinance have yet been levied. For single family residencies mandatory recycling is enforced on an "on-call" basis. However, for MFU the city conducts complete inspections of residencies to ensure that they are recycling. The city provides recycling carts and collection at no additional cost to the MFU so usually it is just a matter of informing the property owner of the available options.

#### *Yard Waste:*

The city provides a year round drop-off area for residents and seasonal curbside collection. Household organics are not currently collected, but the city is looking into this option.

### **Special Programs:**

#### *Construction and Demolition:*

Demolition projects within the city must complete a Recycling Program Form detailing the plans for recycling or diverting the materials generated in the demolition or deconstruction project. The program is not currently large or comprehensive, and plans are reviewed on a case-to-case basis.

#### *Multi-Family Units:*

The city provides recycling to MFUs up to eight units at no charge. These units were included in the recent switch to single stream collection which had a large influence on the recycling rate for the MFUs. Madison completed a study of MFUs and found that the main barriers to recycling were:

- *Inconvenience:* Residents did not like separating materials in bags and bundling newspaper
- *Confusion:* When residents, especially in the college population, switched residencies they were unsure of the new recycling procedures for each MFU

The single stream recycling program addressed both of the barriers directly and greatly increased diversion among MFUs.

#### *Education:*

Education in Madison, like all of the other cities researched, is integral in the success of the recycling and diversion programs. The city has noticed a direct correlation between education programs and recycling rates and continues its aggressive outreach programs. Included in this is open communication between all of the stakeholders involved in the city's diversion efforts.

The city recycling coordinator stressed the importance of an open relationship with all of the various stakeholders. By sharing information and program goals, the City was able to gather the support of all the actors (including the haulers) in working together to achieve mutual goals of increasing the amount of waste diverted.

Two other important overall aspects were very important in Madison:

- "Simple Message": Keep your message and goals simple and focus on only a few important goals.
- Be Willing to Change: The agency is always looking for ways to improve. By being willing to change they can adapt to become the most efficient program.

#### *Bans:*

Bans (enforced at the landfill), along with the mandatory recycling ordinance, are large contributors to the city's high rate of diversion. The bans include:

- CFLs,
- White goods,
- All recyclables,
- Tires,
- Batteries, and
- Thermostats containing mercury.

The bans are rarely enforced for the single family residential sector and are used more as an outreach and education tool.

#### *Re-Use Areas:*

Madison's materials exchange web site diverted 219 tons of material last year. In addition, a reuse area is located seasonally on the UW campus to divert (mainly) furniture items during student move-in/outs. This program added 34 tons to Madison's diverted materials stream. The city also has the Re-Use-A-Shoe program which diverted 47 tons of material last year.

#### *Producer Responsibility:*

CFLs have been banned at the landfill and the City of Madison and Dane County ordinances require that retailers who sell fluorescent lamps take back old lamps from their customers and recycle them. The retailers are allowed to charge an extra fee if they want, but all retailers must accept the items whether they charge a fee or not. Retailers selling thermostats containing mercury must also accept those for return from customers for recycling.

## **City: Portland, OR**

### **Statistics:**

Population: 513,627  
Total Housing Units: 245,274  
Single Family: 151,488  
Multi Family: 93,786  
Overall Diversion (2004): 54.5% 572,050 tons  
Residential Curbside Yard Debris: 24,300 tons  
Residential Curbside Recyclables: 49,500 tons  
Self Hauled Materials: 27,000 tons  
Home Composting: 18,000 tons  
Bottle Bill Recycling: 8,900 tons  
Residential Solid Waste: 112,200 tons  
Commercial Recycling: 444,300 tons  
Commercial Solid Waste: 366,000 tons  
Total Solid Waste: 478,200 tons

### **Facilities:**

- Landfill: Private owned/operated
- Transfer Station: 2 public, 3 private
- MRF: Both public (Metro Regional) and private facilities available
- Compost: Private owned/operated
- C&D: Private owned/operated
- Hard to recycle/HHW: At public transfer station (Metro Regional)

### **Collection:**

#### *Garbage:*

Portland has a unique franchise collection system for residential garbage, recycling, and yard waste. The city has granted non-exclusive franchises to hauling companies in specific geographic areas and has 29 private hauling companies serving the city. The haulers must provide collection of recyclables in two yellow bins, bi-weekly yard waste collection, and glass collection in a separate rigid container. The rates are set yearly by the city and are a Pay-As-You-Throw (PAYT) system.

The rates set by the city range from a 20-gallon mini can for \$17.90 per month to a 90-gallon cart for \$31.05 per month. As of December 2006, 11.2% of residents were subscribed to the mini-can level of service. The city gathers data from all of the haulers and takes into account costs of labor, transportation, and depreciation of vehicles, the value of recyclables, and other factors to determine a universal rate for all franchised haulers. Those that serve the hillier or narrower streets of the city may charge an additional "terrain" fee to cover the costs of the service. The rates the city sets give the haulers the "opportunity" to make 9.5% net revenue depending on their level of efficiency.

#### *Recycling:*

Recycling fees are embedded in the garbage fees; the program includes weekly dual stream collection of recycling and glass. Prior to the adoption of the franchise system the average household recycled 226 pounds per year, and in 2006 it increased to 700 pounds per year. The city has plans to switch to single-stream collection of recyclables in 2008.

*Yard waste:*

Similar to recycling, the yard waste rates are embedded in the garbage bills. Yard waste is collected bi-weekly. Interestingly, the state of Oregon requires that all municipalities offer weekly collection of yard waste unless they can prove that bi-weekly collects an equivalent amount of materials. The city found that with bi-weekly collection, and the lower rates associated with the service, they can collect as much (if not more) yard waste compared to weekly programs. The same is not true for monthly collection. With monthly collection of yard waste the average amount collected was 100 pounds/household/year compared to bi-weekly which collects 345 pounds/hh/year.

**Special Programs:**

*Construction and Demolition:*

Portland passed the Enhanced Dry Waste Recovery Plan and has banned construction materials from being disposed at the landfill. All building permits over \$50K are required to separate and recycle at least 50% of their material. The city backs up the program with site visits and inspections and encourages the re-use of materials on-site. General contractors must complete a "Pre-Construction Recycling Plan Form" and return it to the city detailing its recycling plans and efforts.

*Commercial and Industrial:*

The city has mandated a 50% recycling rate for all commercial properties and is planning on increasing that rate to 65% to be on par with the residential recycling rates. Unlike residential rates, commercial rates for the 28 franchised haulers are not regulated. Nearly 83% of the commercial tonnage is handled by only nine haulers. To receive a franchise permit the haulers must offer recycling of 14 principal recyclables, report collections to the city, and pay an additional \$3.80 per ton franchise fee to the city on each ton of garbage tipped. There is no charge on recyclables.

The city has also created a "blue works" program to spur commercial recycling. This program offers free waste audits and technical assistance to all businesses to set up a viable recycling program. It also provides free recycling carts to the haulers who in turn supply the businesses. This program has grown to 5 FTEs and spends over \$200K annually on the cart give-aways. The program uses social marketing and public recognition of outstanding workplace programs to promote its goals. The "blue works" program also works closely with large scale food operations such as hospital cafeterias and large restaurants to increase food waste composting.

*Multi-Family Units:*

Every hauler and property owner must provide recycling collection and containers that are "at least as convenient" as garbage collection. The multi family sector is operated under the commercial sector heading and the MFU goal is also to increase recycling to 50% and then to 65%. The multi-family sector has the lowest recycling rate, and to combat this low performance, the city is requiring a standardized recycling system for all multi family units that includes a requirement that property owners distribute educational materials to tenants on their recycling systems.

*Education:*

Education is the overriding connection for all of the programs the city uses. The new push of the city's education programs is to inform residents and businesses about the links between solid waste, recycling, greenhouses gasses, and climate change.

*Bans:*

The city bans C&D materials from disposal at the landfill. Styrofoam cups and to-go containers have been banned city wide for a number of years. Portland is considering implementing a ban on disposal of all recyclables in the garbage.

*Re-Use Areas:*

Portland operates a re-use program for construction and demolition debris at its transfer stations. Salvaged materials are collected at the point of drop-off and are hand sorted by transfer station employees or pulled out and separated by the generator. It is a voluntary program and it collected 19 tons of re-useable C&D materials last year. The program is a partnership between the city and a local non-profit and Portland is considering expansion of the program.

*Funding Innovations:*

The city uses an enterprise fund to pay for its recycling programs. The fund is generated by the franchise fees charged to the haulers. For haulers 5% of the franchised hauler fees go to the city and \$3.80/ton surcharge on each ton tipped goes to the city.

*Waste Reduction:*

Waste reduction and prevention is a major contributor to the Portland recycling plan. Portland is using the following programs to reduce waste generation:

- Public outreach and education,
- Green building programs,
- Recycle at Work, technical assistance and recognition,
- City purchasing and procurement, and
- Product stewardship.

The city has partnered with the state DEQ, Northwest Product Stewardship Council and other groups to promote waste reduction. The state legislation passed e-waste recycling requirements in 2007 which are being enforced in the city.

*Other:*

Portland operates "Fork-it-Over", a food waste re-use program. The city put up grant money to food banks and homeless shelters to purchase freezers, refrigerated trucks, and other food storage devices. The program coordinates the re-use of food items from large producers, restaurants and cafeterias to shelters and food banks. This has become one of the most cost effective programs in the city.