

# **DESIGNING AND EXPANDING CAMPUS RECYCLING PROGRAMS**

- Connecting Recycling and Solid Waste Disposal**
- View of the Larger Recycling Process**
- Common Steps to Implementing/Expanding a Program**
- Ideas to Improve Your School's Program**
- Opportunities for Getting Students Involved**
- Access to Additional Resources**
- Opportunities for Non-SWM Employees**

# **Integrated Approach to Disposal**

# STATUS REPORT

- ❖ **Approximately 75% of Colleges and Universities have a Recycling Program**
- ❖ **Projection of Approximately 2,700 Campus Recycling Programs Nationwide**
- ❖ **Shift towards Greater Facilities Management Roles**
- ❖ **Implications of this Shift**
  - better performance
  - potential to benefit from reduced disposal costs
  - disenfranchising of students
- ❖ **Impediments**
  - transient student populations
  - multiple departments to coordinate
  - student apathy
  - lack of space
  - difficulties finding markets
  - inadequate funding

# OPERATIONS

## Collection Equipment

deskside containers

central containers

divided trash containers

carts

- polycarts
- 60, 95 gallon
- \$50-100 each

dumpsters

- 2-12 cubic yard capacity
- \$400- \$1000
- mechanically emptied by front-loading, side loading, or rear loading vehicles
- can be equipped with vertical compactors for increasing capacity by 200-300%
- Advantages – durable, can also be used to collect recyclables
- Disadvantages – fixed location, requires periodic maintenance (painting, welding), requires specialized vehicle to collect

roll-offs

- 20-40 yard capacity
- \$2000 - \$3000
- Advantages – large capacity, can also be used to collect recyclables, can be divided to collect more than one materials, can be equipped with horizontal compactors for maximizing volume
- Disadvantages – requires specialized vehicle to collect, greater access needed by vehicle

Semi- trailers

## **Collection Methods**

source separation =

- higher collection costs with more containers
- lower processing costs

commingling =

- simplified collection
- collection costs lower
- processing costs are high
- more materials collected by the program
- often dictated or allowed by the buyer

## **Retrieval**

collection frequency

vehicles

- dual-use
- cube vans
- compactor trucks
- roll-off/lift hook trucks

hauling

- self-haul
- contracted service

## **Destinations**

- drop-off facility
- intermediate processing facility (IPF)
- materials recycling facility
- recycling mill

# **ORGANIZATION**

## **Program Structure**

- facilities management
- student operated
- partnership
- private company
- municipal

## **Background Assessment**

- waste disposal practices
- departments and people in charge
- disposal rates (“tipping fees”)

## **Customer base**

- enrollment
- number of residence halls
- residence hall population
- faculty/staff numbers

## **Services Available**

- campus newspaper
- TV
- radio station
- print shop

## **Administrative Support**

- policies
- directives

## **Advisory board / Recycling Committee**

- permanent body or an ad-hoc task force
- keeps communication going
- more input, assistance, and acceptance for program.

## **Funding**

Types include

- grants or loans (for one time equipment needs)
- purchasing approval for co-collection abilities (ongoing)
- FTE increase (ongoing)
- work-study entitlement
- student fees (one-time or ongoing)
- off-campus grants (usually one time)
- campus surcharges
- avoided disposal cost accrual
- by revising trash disposal
- by ongoing cost avoidance through recycling (only if recycling is cheaper than landfilling)
- self generated
- infrastructure development / cost recovery

## **Recycling Coordinator**

- Average salary in a recent study (\$27,000 – 53,000)
- .75 – 1.00 FTE
- dedicated to recycling only
- but with an organizational connection to the department responsible for custodial or trash disposal

## **Waste Stream Assessment**

- shows where to best target your efforts
- gives information about what materials to collect, where, how often
- gives a estimate of container capacities , equipment needs, and labor requirements
- also shows how well much you're capturing through recycling

## **Custodial Interface**

Custodians have increasingly taken a greater role in campus recycling.

- daily tasks
- frequency of service
- staffing levels
- many schools report favorably on these changes

## **Processing / Marketing**

Designing a program from finish to start or going "downstream first"

- equipment interface / transportation
- grading
- processing
- quality control

## **Use of Competitively-Bid Contracts**

- Campuses are lucrative accounts for area buyers-
- Programs which have used their purchasing department to formalize the bid process, get higher prices and better service.

## **Materials Collected**

- 93% of 132 colleges and universities in the EPA's 1992 study collect computer paper and white ledger
- Trend toward commingling all office papers
- Other materials commonly collected according to the EPA study include:
  - UBC's (aluminum cans) = 90%
  - yard waste=72%
  - newspaper = 59%
  - glass = 43%
  - plastic = 39%.

## **Measurement**

### Generation

- average waste generation rate for universities with campus housing is 820 pounds, (significantly less than the national average of 1550 pounds per year)

### Diversion

- Nationally, 27 percent in 1995, up from 17 percent in 1990.
- Average campus diversion in 1992 was 15%. Importantly, about half of the schools could not divert more than 10%. On a more positive note, 40% diversion rates are becoming common.

College and University Recycling Council (CURC) standards

# **OUTREACH**

## **Strategies**

- audience-specific
- extrinsic prompts
- intrinsic emphasis

## **Ideas**

- e-mail listserver
- free "filler" ads
- tree-savings stack
- tree-savings sheets
- displays
- Environmental Impact Reports
- in-office trainings

## **Enlisting Student Activism**

- student fee referenda
- printing and posting policy
- pizza box campaign
- junk mail campaign
- soft drink contract revision

# **OTHER OPPORTUNITIES**

## **Waste Reduction**

- refillable mugs
- reusable shipping containers
- material reuse
- microscaled laboratory experiments

## **Contract Reform**

- buying Recycled
- joint procurement
- building standards

## **Composting**

- yard wastes removed from campus
- food waste composting

## **Academic Integration**

- class projects
- independent studies
- internships
- recruitment

# CONCLUSIONS

Recycling tends to be most successful when:

## **In Operations**

- ❖ collection balances convenience for the generator and collector
- ❖ expansion of collections is done incrementally
- ❖ custodial staff are involved
- ❖ equipment can be used for both trash and recycling
- ❖ local recycling processing details are known

## **In Organization**

- ❖ solid waste managers know the campus waste stream and generation sources
- ❖ trash disposal savings are accrued to fund recycling
- ❖ student government and other departments support the program
- ❖ campus administrators sanction the effort
- ❖ competitive bidding process is used to maximize recycling revenues

## **In Outreach**

- ❖ Students help promote recycling to other students
- ❖ emphasis is placed on intrinsic reasons to recycle
- ❖ face-to-face interaction is used

## **In Other Opportunities**

- ❖ off campus vendors assist the effort
- ❖ students' academic involvement is recruited

- ❖ recycling provisions are designed into new buildings
- ❖ purchasing power is exerted

# RESOURCES

***Solid Waste and Recycling, Facilities Management: A Manual for Plant Administrators.***

Third Edition

Association for Higher Education Officers (APPA)

1643 Prince Street Alexandria, VA 22314-2818 703-684-1446

Website: <http://www.appa.org>

***Recycling and Waste Management Guide to the Internet***, Government Institutes,  
4 Research Place, Rockville, MD 20850, 301-921-2355, E-mail:

[giinfo@fovinst.com](mailto:giinfo@fovinst.com) Website: <http://www.govinst.com>

***Ecodemia: Campus Environmental Stewardship at the Turn of the 21<sup>st</sup> Century, Lessons in Smart Management from Administrators, Staff, and Students*** Julian Keniry, National Wildlife Federation Campus Ecology Program, 8925 Leesburg Pike, Vienna, VA 22184, 703-790-4318,

Website: <http://www.nwf.org/campus>

***Green Investment, Green Return: How Practical Conservation Projects Save Millions on America's Campuses*** by David J. Eagan, PhD and Julian Keniry, National Wildlife Federation Campus Ecology Program, 8925 Leesburg Pike, Vienna, VA 22184, 703-790-4318,

Website: <http://www.nwf.org/campus>

***Resource Recycling: North America's Recycling and Composting Journal***, P.O. Box 10540, Portland, OR 97296, 503-227-1319, E-mail: [resrecycle@aol.com](mailto:resrecycle@aol.com)

**College and University Recycling Council** of the National Recycling Coalition,  
1727 King Street, Suite 105, Alexandria, VA 22314

Website: <http://www.nrc-recycle.org/Programs/Councils/CURC>

**U.S. Environmental Protection Agency**

Office of Solid Waste Management

Website: <http://www.epa.gov/msw/recycle.html>

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