

## **Waste Reduction and Recycling**

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## **Long-Term Vision**

*CU envisions an increased commitment to a waste-free campus. This will require CU to continue reducing the amount of waste generated. This will also require expanding operations and facilities capable of diverting the majority of solid waste from landfills, creating equitable and incentive-based funding mechanisms, and delivering innovative educational programs. Combined, the University of Colorado at Boulder will become a new model in sustainable materials management.*

## **Individual Goals**

1. CU will provide adequate resources and administrative commitment to waste reduction and recycling. Recent analyses have demonstrated recycling's cost effectiveness at CU. Moreover, recycling can be expanded at costs lower than landfilling if resources were shifted to create incentives to divert more material. Options for increasing administrative commitment include creation of equitable billing rate structures, waste reduction directives, adequate budgets, and expanded facilities.
2. CU will strive to reduce waste generation. Waste generation has decreased for the past two years despite enrollment increases, building expansion, and packaging trends like "grab and go" food service. However, CU still generated almost 450 tons more last year than in 2000. Waste generation can continue to be reduced. A nominal 20 percent reduction could cut over \$200,000 in tipping fees and potential operating and maintenance costs annually. These cuts could best be achieved through combination of education by the Environmental Center and administrative leadership.
3. Boost recovery through expanded recycling and composting. While more materials continue to be recycled, there are ample opportunities for improvement. Over 850 tons of currently accepted recyclable materials continue to be thrown away. While it will not likely be feasible to recover every newspaper, bottle, or can, CU should aim to capture the majority of these materials. The consultant group working with the Recycling Financial Advisory Board helped prioritize more convenient recycling stations, better outreach, and composting of organics as the best ways of meeting this goal. The RFAB also addressed the need to relocate the existing recycling facility and Facilities Management's operations in order to recover these additional materials.
4. Connect recycling with other sustainability and community development efforts in innovative and exciting ways. Recent long-term planning by the Environmental

Center emphasizes joint promotions among the various conservation and sustainability programs and projects at CU. In addition, the Environmental Center could collaborate with student groups and campus initiatives working on issues of joint concern (i.e. campus health and safety, charitable work in disadvantaged communities, development of student leaders, etc.). Unified efforts such as these could increase the base of support and reinvigorate individual programs like recycling. Integrating class projects, internships, and other academic resources can help attain this goal as well.

## **Background, Needs and Trends**

Established in 1976, CU Recycling has become one of the leading campus recycling programs in the country. The program has been recognized by relevant state and national agencies and continues to contribute to the groundswell of campus recycling nationwide.

CU Recycling's mission is to divert recyclables from the waste stream cost-effectively while promoting the benefits of recycling and resource conservation and providing opportunities for meaningful student involvement.

CU Recycling meets its mission by recycling and composting about one-third of its waste at costs lower than landfilling. In addition to financial benefits, CU annually saves over 18,000 trees, 16.8 million BTUs in energy savings, 8 million gallons of water, and over 1,600 tons of carbon emissions. Recycling is a practical behavior practiced by the majority of the university community. The 1,400 tons collected last year resulted from thousands of individual actions. Person-by-person, and pound-by-pound, recycling has proven itself as a viable strategy for cost-effective environmental reform.

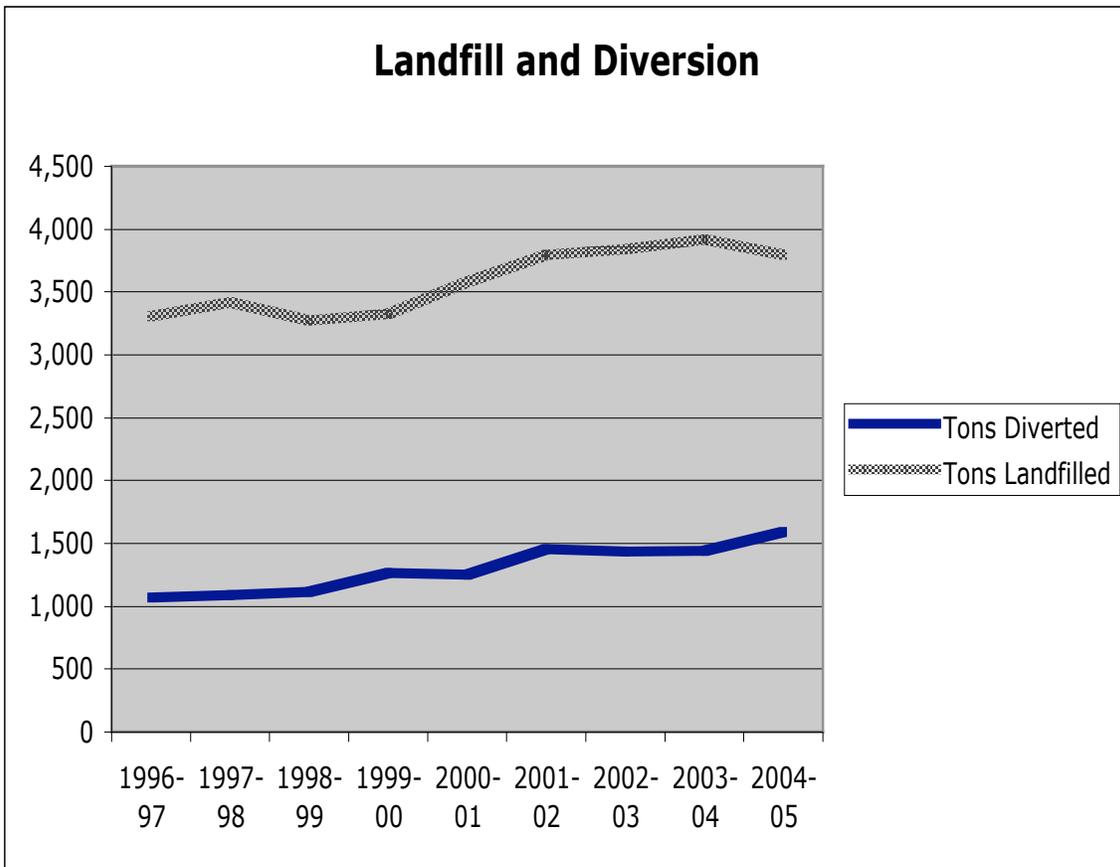
Over the past thirty years, recycling at CU has matured to an interdepartmental effort. Between 1976 and 1990, recycling was run entirely by students. In 1991, the Student-Administration Partnership was formed by the Chancellor to apportion operational and educational responsibilities between Facilities Management and student government (UCSU). In 1995, Facilities Management and Housing internalized trash hauling. In 1999, an agreement between UCSU and Facilities Management matched student fee investment with CU's collection capabilities.

These interdepartmental partnerships have been largely effective. New operations almost doubled diversion between 1990 and 2000 (14% - 27%). Investment in a campus recycling facility was returned in six years from disposal cost savings. CU's internalized trash hauling operates less expensively than the private sector. A Business Review of the program initiated by the Vice Chancellor for Administration in 2003, documented net savings from recycling of over \$215,000 annually.

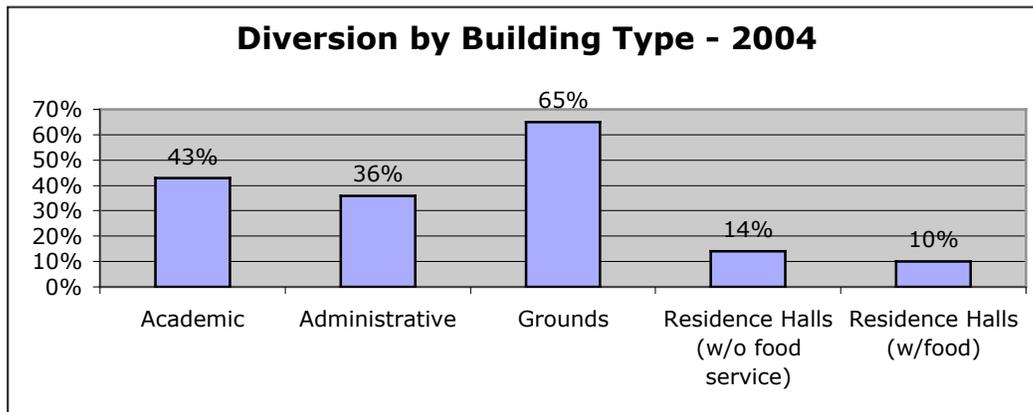
CU still has ample opportunity to cut waste and boost recycling. A recent consultant study concluded CU can almost double its current recycling effort while remaining cost-effective. A combination of waste reduction initiatives, more convenient recycling

collection, and composting can reach the goals described in this section of the *Blueprint*. High-level directive will likely be needed to strengthen budgets within Facilities Management and to develop new, more equitable funding mechanisms. A phased approach is recommended which considers staffing cuts and facility limitations and which re-builds operational momentum to establish an optimal level of recycling at CU. Assuming these types of administrative commitment increase, UCSU and the Environmental Center should refocus its effort on boosting University community involvement- concentrating on connecting recycling with other environmentally-sound behaviors and delivering academic and financial returns.

Waste generation increased annually since 1999, largely a result of increased enrollment, additional square footage, and the proliferation of packaging. At the same time, recycling rates remained level. Over the past two years however, waste has decreased while recycling has improved. This important shift is reflected in the chart below.



While the campus-wide diversion averages 30%, diversion rates vary widely between departments. The chart below indicates the residence halls have the greatest potential for boosting diversion.



Campus-wide, there are still significant, recoverable quantities of recyclables in the trash including over 300 tons of office paper, 300 tons of newspaper, and 260 tons of cardboard. If these materials were diverted, it would nearly double the current recycling effort.

One of the important findings of the 2003 Business Review is that the current system developed on campus for collection and transport of recyclables materials is less expensive than the collection and transport of solid waste. In 2002 for instance, the 1,457 recycled tons avoided \$550,198 in solid waste costs. <sup>1</sup>

CU's operation is also less expensive than comparable service by the private sector. The Housing department for instance, determined in 2004 that it would cost approximately 67% more, or an additional \$103,000 annually, to outsource recycling and trash disposal.

A Diversion Potential Assessment (DPA) was conducted between Fall 2003 and Fall 2004 by Skumatz Economic Research Associates (SERA) to meet the charge by Vice Chancellors Tabolt and Stump for a Recycling Financial Advisory Board (RFAB). The DPA Model was developed to examine the potential diversion that could be expected if various waste reduction, recycling, composting, and educational programs were implemented. It is a robust and flexible analytical tool that can be easily updated to meet the Vice Chancellors' directive to have the best recycling program at the lowest cost.

The most important conclusion from the DPA is that, in addition to organics recycling, the biggest opportunities lie in getting more people to recycle the materials already collected. For some materials, we are only recycling about half of the volume of material generated, with the other half being landfilled. This implies the best opportunity to increase recycling levels is to both provide more collection locations to make recycling more convenient, and to enhance recycling promotions efforts.

<sup>1</sup> Business Plan Review of Recycling Activities. March, 2003, Stuart M. Takeuchi

In 1996, when CU implemented its internal solid waste program, tipping fees at the landfill were \$13.40. In FY2000, the fees increased to \$20.00 per ton. Now they are \$24.00 per ton- a 79% increase in under ten years.

Tipping fees for landfill disposal are projected to increase statewide as private companies raise rates to remain profitable. This trend will favorably affect recycling's financial appeal. Although, in the near-term, it is doubtful tipping fees for CU will reach the U.S. average of \$50 per ton--a rate that has fueled recycling nationwide

The UCSU Environmental Center surveyed CU-Boulder students in the fall 1999 to gauge the level of environmental concern at the university. Among the results included: 92% believed it is either very important or somewhat important that the campus is a leader in campus environmental management, 57% indicated they would be willing to pay \$2.00 or more per semester in student fees to improve campus recycling programs.

A spring 2003 survey of CU Boulder building proctors indicates participation rates of 70% to 100% of faculty and staff recycling within CU buildings. The proctors indicate a high level of familiarity with and support for the campus' recycling efforts. <sup>2</sup>

CU Recycling has demonstrated that, with concentrated effort, participation can be increased. During the 2005 spring semester, CU competed with 50 other campuses in the national RecycleMania! contest for best campus recycling diversion rates and volumes. <sup>3</sup> Over the nine week contest, CU boosted recycling an additional 24 tons (15%) over previous levels.

It might easy to overlook or underestimate that environmental recycling's benefits. This may be due to the fact that environmental benefits from local recycling efforts aren't often apparent in the local natural environment (the way alternative transportation reduces traffic for instance); or because the 3-5 tons of recyclables collected from loading docks and private offices each day aren't immediately visible to the public. More than ever, however, recycling is working! One only need look at CU's Environmental Impact Report below to appreciate the collective impact recycling has. The 1,400 tons (that's 2.8 million pounds!) that students and utility workers collected in 2005, result from thousands of individuals' daily efforts. Person-by-person and pound-by-pound, recycling is an activity with real benefits.

To the extent the University community understands this, recycling will continue to succeed at CU. Recycling remains one of the best (and easiest) ways the average person can help. When an individual knows they're making a difference, they are more likely to instill and expand these behaviors. This personal and collective behavior pattern has been validated as one of the principle motivators of recycling. <sup>4</sup>

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<sup>2</sup> Business Plan Review of Recycling Activities. March, 2003, Stuart M. Takeuchi

<sup>3</sup> <http://www.recyclemaniacs.org/index.htm>

<sup>4</sup> For best practices and research on motivating recycling and other sustainability behaviors see [www.CBSM.org](http://www.CBSM.org)

# Environmental Impact Report

## By Recycling last year, you helped save...

<b>62,500</b>	gallons of gasoline.	
<b>1,615</b>	metric tons of air emissions and waterborne waste.	
<b>8</b>	millions gallons of water.	
<b>18,000</b>	fully grown trees.	
<b>3,900</b>	cubic yards of landfill space.	
<b>16.8</b>	million BTU in energy savings.	
<b>160</b>	houses powered per year.	
<b>1,100</b>	metric tons of greenhouse gas emissions.	
<b>835</b>	cars off the road per year.	

Thanks for making a difference.

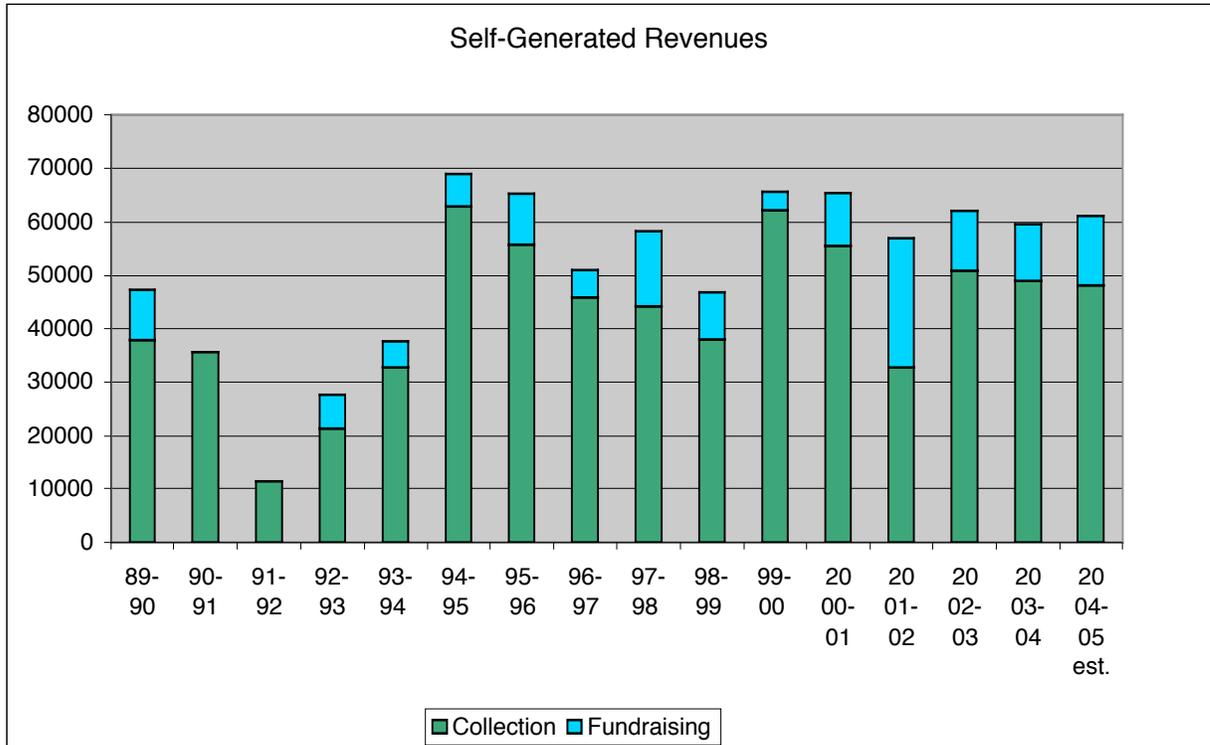
"We need to C.U. Recycling"  
www.colorado.edu/recycle  
303-492-8307

Sources: Environmental Protection Agency, National Recycling Coalition

In American higher education, virtually every campus has initiated recycling efforts. It is estimated that the average diversion rate for institutions is 26%, with aluminum, paper, and cardboard volumes being the greatest. Of 891 schools surveyed, 17% reported diverting more than 40% of their waste streams.<sup>5</sup>

The depressed market prices and decreasing self-generated revenues which have plagued programs nationally as well on campus, have improved. Regional markets are expected to remain stable for the next three to five years. The chart below illustrates a fairly steady progression in material sales revenues since 2002.

<sup>5</sup> *State of the Campus Environment: A National Report Card on Environmental Performance and Sustainability in Higher Education*, National Wildlife Federation, 2001.



Eco-Cycle and the Boulder County Resource Conservation Division are working together to design a mechanical retrofit to the Boulder County Recycling Center to accept ‘single stream’ recyclables. This would likely mean that mixed papers, corrugated cardboard and commingled containers could all be delivered to the County facility in one stream, consolidating into one container what is currently collected in five. This retrofit could be operational by Fall 2006

This will be an important development that CU will need to carefully consider. A team of students and a professional consultant are currently working with CU Recycling staff to weigh the merits of a conversion to single stream. Important advantages include increased convenience for participants, which in areas with low participation (such as residence halls), may result in significantly increased diversion. It will also likely result in lower collection costs. However, converting to single stream will likely result in lower revenues earned from the sale of materials. Currently, approximately 90% of all materials processed through the IPF return a net surplus. After UCSU’s processing costs, over \$40,000 is returned annually to offset student fee subsidy. This funds other activities such as outreach, development of waste reduction, environmentally-preferable purchasing, and other resource management programs. If additional tons are not able to offset the lower prices paid for mixed recyclables, revenues will likely decrease.

A single stream system will be tested in the residence halls in 2006 to quantify and project these impacts. From this analysis, the program can determine if source separation, single stream, or a combination is most appropriate for CU.

## **Current Programs and Accomplishments**

### *Waste Reduction*

The Campus Master Plan recognizes waste reduction as a priority and has set a goal to reduce the waste for which the campus must pay removal costs. (Section IV.D.8).

The campus has initiated some waste reduction efforts, such as the pay-for-printing at public computing labs. This program saves the University over \$750,000 per year and reduces paper consumption by more than 18 tons annually.

UCSU has long had a reusable cup program, which has reduced disposable cups by over 30% in the University Memorial Center. This program was recognized with the U.S. Environmental Protection Agency Pollution Prevention Award in 1990.

UCSU conducts a reusable drive for local charities targeting students' books, clothing, and appliances, during Spring Semester Move-Out. In May, 2005 collection of computers and peripherals was tested with support from Dell Computer, resulting in more than 20 tons recycled or donated to Colorado school districts.

Since 1990, UCSU has conducted dozens of waste reduction workshops in academic and administrative departments on campus. These workshops include innovations that the Solid Waste Advisory Board has recommended for CU including advanced voice mail, e-memos, and Imaging Services print-on-demand capabilities.

UCSU has prohibited the use of deep-dyed, neon paper as a principle contaminant to paper recycling.

Waste reduction practices promoted to CU office users include double-sided copying as well as the use of interdepartmental mailing envelopes, advanced voice mail, e-memos, and Imaging Services print-on-demand capabilities.

Web services such as the Personal Look Up System (PLUS) for registration and grades reduce the need for paper-based transactions.

The PeopleSoft financial and human resources information systems, implemented in 2000, are designed to provide for paperless transactions, replacing the Financial Reporting System implemented in 1977 which required paper forms for every transaction.

UCSU and Facilities Management monitor excessive amounts of print overruns that enter the IPF for recycling. Departments are provided with information about waste reduction options on campus.

Telecommunications plans to reduce telephone directories delivered to campus by approximately 25 percent (an estimated 25 tons of paper reduced). Hard copies of the Denver area white and yellow pages will be replaced with on-line versions beginning in January, 2006.

### *Campus Planning*

The Campus Master Plan was revised in 1998 to improve solid waste management. The plan called for:

- Decrease waste generation.
- Increase convenience of diverting recyclables.
- Integrate recycling when new facilities and major renovations occur.
- Recycle and minimize waste in construction projects.
- Continue to replace trash-only containers (indoors and outdoors) with solid waste stations for both trash and recyclables. <sup>6</sup>

### *Recycling Financial Advisory Board*

The Recycling Financial Advisory Board (RFAB), comprised of students, faculty, and staff appointed by Vice Chancellors for Administration and Student Affairs, met regularly since its inception in June, 2003 until May, 2005. In addition to its financial tracking and reporting work, RFAB was tasked with three important projects:

- Formal planning of a replacement recycling facility based on a needs analysis;
- Research and recommendations leading to ways to best expand the program;
- Revision of a Memorandum of Understanding (MOU) between the primary parties involved in recycling.

Findings and recommendations for each of these projects have been refined over the past year and are ready for discussion with, and direction from the Vice Chancellors.

### *Collection Operations*

CU's recycling program is organized as a partnership among UCSU, the Housing department, and Facilities Management. Twenty-seven UCSU employees, ten Facilities Management and Housing employees, and countless volunteer hours provide staffing for the program. The program recycles between 3-5 tons each workday from more than 850 locations on campus. Almost 30 percent of the campus waste stream is diverted through the recycling program.

Some of the key accomplishments over the past several years include:

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<sup>6</sup> Campus Master Plan Sections IV.C.7, IV.C.3.f). Appendix 7 of the CU-Boulder Construction Standards

- Expanded automated collections of cardboard from residence halls, family housing courts, and the UMC with UCSU-funded equipment. Eight locations were added in 2003-04. Seven more were added this year totaling 20 automated cardboard locations. Over 13 tons of additional tons of cardboard are being recycled as a result of this improvement.
- Increased the confidential shredding service as revenue-generating mechanisms
- Boosted Facilities Management's central collection locations from 765 in 2002 to 850 currently.
- Increased desk-side recycling bins to over 10,000.

CU Recycling also continued its cardboard recycling program during residence hall move-in. Last Fall, a record 20.3 tons of cardboard was collected during the two-week move-in period in the residence halls. Participation was close to 100%, which diverted over 400 cubic yards of cardboard from the landfill. This effort is an exceptional example of achieving both disposal cost savings and environmental benefits

The recycling program offers recycling at special events on campus such as concerts, career fairs, the Boulder Boulder (55% diversion and 10 tons collected in 2004), and home football games. The 2004 football season was yet another for the record books as 10,000 pounds of co-mingled containers and corrugated cardboard were recycled - averaging 1,600 pounds of materials at each home game. CU Recycling also took the lead in helping the international Sustainable Resources Conference be a near zero-waste event

CU Recycling works in partnership with Cerebral Palsy to collect donated charitable goods during residence hall move-out. In spring of 2004, over 4 tons of useful items were donated including cell phones, inkjet cartridges, spare change, textbooks, food and personal care products. CU Recycling also coordinates the proper disposal of common move-out items such as loft wood and cinderblocks as part of this reusables drive.

CU Recycling has been active nationally on the electronics waste issue. Computers, monitors, cell phones, and other electronics pose significant challenges to programs like CU's. E-waste is potentially toxic, difficult to collect, and expensive to dispose of properly. CU Recycling convinced the Dell Corporation of the value associated with supporting a dedicated campus computer recycling effort. \$10,000 was provided by Dell to help offset the costs of a collection event held in May, 2005 where over 20 tons of personal computer equipment was "rounded-up" from students, faculty, staff, and alumni.

A program to collect food waste has also been developed. Over 100 tons of pre-consumer and post-consumer food waste has been collected in just over six months (April - September, 2005) and shipped to a private facility in Golden. The Housing department has committed 10 hours per week of employee time to train food service staff and coordinate collections with Eco-Cycle. This fee-for-service arrangement is lower than trash disposal. A campus facility to convert food waste into 200 tons of fertilizer annually was cost-effective compared to two off-campus options studied. Funds were raised from UCSU and the U.S. EPA to implement an in-vessel composting operation on

an approved East Campus site. However, costs for the project increased and the remainder of funds for the project were unavailable.

### *Outreach*

The four-year capital expansion plan as approved and funded by UCSU has also advanced educational materials and activities. Years One, Two and Three capital outreach projects, as listed below, have produced signs, displays and brochures and have resulted in improved information and increased awareness.

- Green products guide
- Family Housing and Housing in-room container stickers
- Desk side container stickers
- Color displays and posters in residence halls and academic buildings
- Improved signage at central recycling locations at Family Housing, residence halls and academic/ administrative buildings.
- Expanded information on container labels
- Permanent signage in large classrooms
- Color bus ads
- A new training video for staff, volunteers and community service workers.

## **Action Steps CU Can Take to Achieve Goals**

- Waste generation on campus: CU's waste generation has decreased despite rising enrollment and additional buildings. However, wasteful products and practices continue to drain resources from CU. Several initiatives can be used to decrease the amount of waste generated at CU. These include:
  - Revising vendor contracts for soft drinks, concessions, and food service supplies
  - Reduce overruns and excessive printing
  - Establishing more stringent conditions for commercial solicitation on campus and sale of campus mailing lists
  - Establishing a program to collect and redistribute reusable office supplies among CU offices and student groups
- Expand recycling and composting operations: Sixty percent diversion is an attainable goal. To reach it, a number of improvements must be made to the existing recycling program (listed below). The expanded recycling efforts will inevitably require increased capacity at the campus recycling facility. Plans are

currently underway to relocate the IPF (Intermediate Processing Facility). The relocation of the IPF needs to account for these expansions.

- Additional cardboard recycling
  - More indoor cabinets and outdoor containers
  - In-room recycling containers for residence halls and family housing courts
  - Full implementation of compost collections
  - Additional collection of low-grade papers,
  - Ability for vendors and the public to drop-off recyclables.
- Design for Recycling: In campus construction and major remodeling projects where adequate, code-compliant space for recycling containers have been designed into floor plans, recycling is greatly increased. However, recycling provisions are not standardized throughout CU. The specifications designed for recycling containers at CU should be used (and modified if needed) as campus building standards. In addition, the Campus Master Plan (which calls for recycling containers to be sited along with trash cans) should be adhered to.
  - Improved Outreach: The results of the Diversion Potential Assessment show CU Recycling is currently under funded in its annual outreach efforts in terms of staff and supplies.

Proposed improvements are based on feedback from various campus audiences that recycling information could be more attractive and interactive as well as the findings of the waste composition study which showed the large volumes of recyclable materials in the common trash can. Major improvements are needed on the outreach front for the campus community to gain a “second nature” habit to recycle and recover valuable resources.

Nowhere is it more important to instill good conservation habits than in the residence halls and family housing courts. Students have responded favorably in the past several years. Outreach campaigns like Recyclemania and the wind energy initiative have boosted participation measurably. However, because of the annual influx of new students each fall, outreach needs to be continual. Fortunately, efforts between the Environmental Center and Housing have become more organized and can be more easily repeated each year.

Faculty and staff in academic and administrative buildings have fairly high participation rates relative to the rest of the campus community. Current activities can be expanded such as presentations at employee development and department staff meetings, printing and distributing color Environmental Impact Reports, and printing improved procedural information (i.e., posters on common contaminants and acceptable paper grades).

To reach the general campus community, initiatives such as public service announcements, an increased direct presence via tabling, surveys and giveaways, color bus ads, letters to the editor, and advertising will have large impact.

## Metrics and Assessment

Fortunately, the solid waste and recycling program has been thoroughly analyzed. This has included auditing through the Business Review of Recycling Activities, along with subsequent analysis through RFAB. Analysis has also included the consultant's Diversion Potential Assessment. A recent proposal to Sustainable CU will fund an independent review CU funding and billing mechanisms to apportion costs equitably among departments along with incentives for diversion- two financial aspects of the program which currently do not exist at CU.

The financial analysis that RFAB conducted should be fairly easy to replicate each year. This analysis will track important measurements of the program including:

- Diversion rate
- Costs per ton for landfilling from trash dumpsters and roll-offs
- Costs per ton for recycling from the IPF as well as direct delivery to the County facility
- Revenue tracking
- Avoided costs from diversion
- Net annual savings from diversion

Recovery rate analyses are another important set of metrics for CU Recycling. These measure the total amount of a certain recyclable available and how much is being recovered for recycling. The last recovery rate analysis was last conducted through a waste sort as part of the Diversion Potential Assessment. The same methodology should be employed as part of the single stream test scheduled for 2006.

Monthly measurement and reporting of recycling weights, shipment/delivery frequency, and market prices has been refined during the most recent contract with Eco-Cycle. This system will continue to provide prompt, accurate measurements. It will be especially important in upcoming "Recyclemania" competitions between colleges and universities nationwide.

Facilities Management has an important role. In addition to contributing to the metrics above, FM will be increasingly called-on to provide landfilling data as well as maintain a revised billing structure for trash disposal. Scales on the new trucks along with enhanced billing software could increase the accuracy and frequency of these important metrics.

In addition to financial and volumetric analyses, the environmental impacts of recycling also need regular quantification. A new Environmental Impacts Calculator is being developed by the National Recycling Coalition and should be used by CU.

## Further Planning and Research Needs

- The Diversion Potential Assessment (DPA) model is as an easily updated Excel spreadsheet created for CU Recycling by Skumatz Economic Research Associates. Fortunately, this tool can be used regularly to decide and plan cost-effective growth of the program.
- Work is just beginning to determine costs and benefits of converting to a single stream recycling operation. CU Recycling has begun testing a “dual stream” system in the Housing department (commingled containers and mixed fibers) and will test single stream collection in Spring, 2006 to provide recommendations and long-term direction to the campus partnership.
- More than ever, CU Recycling is called upon to meet student interest in recycling issues. Students want to make a difference with their degree and are increasingly viewing CU Recycling as a means of accomplishing this. This approach can also lower program costs (compared to using classified staff time or outside consultants) and can personalize programs in ways students are more inclined to participate in. Activities could consist of increasing guest lectures and class tours of local recycling systems. CU Recycling could also work with academic departments and individual faculty to help develop coursework, independent studies, and internships. There are several off campus funding sources to help develop more direct levels of service.

## Challenges

- Current space constraints are preventing growth of the program. A larger facility would allow new materials to be collected, better space for class tours and training, and vital support for Facilities Management’s collection operation. For more details, see Appendix A.
- Just because recycling is less expensive than trash disposal doesn’t mean recycling is fully funded. Successful programs around the country have reallocated costs to reward recycling and, where subsidy is needed, have sought creative means to raise capital and operating funds. A partial list, relevant to CU, is included here for discussion and planning.
  - Advocacy for Adequate Facilities Budgets:  
Facilities Management’s budget for recycling was greater in 1996 than it is currently. The cuts FM took over the past three years should be restored. Students can be especially effective in this type of campaign.

- CU Recycling's successful "Custodial Appreciation Drive" could be revived to focus on full funding for the key partner in the Partnership.
- Athletics:  
The Athletic Department is committed to funding the relocation of the recycling facility. It might be advantageous to Athletics to fund this move sooner rather than later. Athletics could use the area for surface parking and storage, avoid inflation of future construction costs, and gain stature among the community.
  - Corporate Sponsorship:  
Dell and Apple, Sodexo and Aramark, Coke and Pepsi, are just a few examples of extreme competition for 18-24 year old consumers. Some of these companies have already expressed interest in supporting CU Recycling- in part for the positive publicity they could garner. The Environmental Center has just begun to tap corporate sponsorship with a nationally-promoted \$10,000 award from Dell this year.
  - Cost Recovery:  
Companies who do business with CU are increasingly responsive to waste reduction and recycling, especially if a competitive bidding process is used. CU's Purchasing department first worked to improve vendor's support for recycling in 1995. Other schools are using this model to share responsibility with vendors who import packaging waste to campus (i.e. concessions, food service, soft drinks, computers). Assistance from these vendors is increasing at CU and in the U.S. and ranges from minimal packaging to financial support.
  - Grants:  
CU Recycling has become a proficient fundraiser. Almost a quarter million dollars for recycling and composting has been raised from off campus sources since 2000. There are reasons to believe this trend will continue, though with more emphasis being placed on matching funds by funding agencies, our proposals to the EPA, NSF, OEMC, and Boulder County, will need to be coordinated with other funding sources in order to succeed.
  - The City Trash Tax:  
All private trash companies hauling roll-offs from CU (Western, BFI, Waste Management, and others) collect and remit to the City, about \$7,000 annually. Those funds could be returned to fund program development, especially campus construction/demolition diversion since most of the funds remitted are from construction roll-offs.
  - Cost-Avoidance Accrual:  
"Pay-as-you-throw" (variable rate billing) is ready for institutions like CU after proving itself municipally as the single most effective financial incentive to recycling (Loveland, Colorado for instance, has sustained a 60 percent diversion for over ten years). Other schools are using cost savings to expand recycling; CU should consider this also.
  - Surcharges:

Surcharges for recycling are common but add additional costs and are rarely sunsetted. CU's 'pad replacement fee' however might be a viable, non-regressive mechanism to fund solid waste.

- Indirect Cost Recovery (ICR):  
Aside from (a diminished) Facilities Management budget, there is no institutional funding for recycling at CU apart from student fees. An estimated 30 percent of peer institutions in the U.S. have made commitments through their ICRs or other means to support waste reduction and recycling; CU is overdue.
- Student Fee Subsidy:  
Because the majority of CU students feel recycling is the right thing to do, student fees have continued to subsidize recycling on campus. Although revenues from the sale of materials are returned to UCSU, they have never offset more than 60% of total costs of UCSU's involvement.
- UCSU Capital Fund:  
In 2000, UCSU Legislative Council passed a four-year capital funding program. Over \$180,000 in equipment has been purchased, largely for containers, location improvements, and vehicles. UCSU's Strategic Operating Reserve (SOR) should not be considered a source for continuing these types of capital assistance to the Partnership.
- Sustainable CU:  
This is a recent student referenda that funds campus-wide sustainability projects. Return on investment (ROI) is an important criteria for this fund. The potential for funding then will likely be limited to proposals with matches from the Administration or off campus sources. A short list of requests for consideration include in-vessel composting, biodiesel processing, or collaboration with Athletics to relocate the IPF.

## Links to Other Blueprint Chapters

**Climate:** Landfills rank as the second largest source of greenhouse gas emissions in the US (after fossil fuel consumptions). Landfills are the leading source of methane into the atmosphere, which is a virulent contributor to global warming. Carbon sequestration and net reductions in process emissions are other ways recycling helps stabilize climate change. Nationwide, the EPA estimates that when a life-cycle approach is taken (including extraction, distribution, and manufacturing new products for example), waste reduction and recycling is reducing global greenhouse gas emissions by over 30 million metric tons of carbon equivalent (MMTCE) and saving over 62 trillion BTUs in energy annually- much greater than originally estimated. How can the Climate protection initiatives at CU re-integrate recycling in ways that helped win the EPA's Climate Protection Award? Are there other awards? Will recycling be included with other climate initiatives?

**Literacy:** Higher education is making important contributions to the recycling industry. Applied research, interns, and entry level professionals from college are advancing recycling domestically and abroad. An important demographic pattern should be considered in this, perhaps the most important section of the Blueprint. The third grade student in 1990 is entering CU this year. Considering the emphasis the Nation placed on recycling through the 1990's, what effect has K-12 recycling education had on incoming students? What are their current attitudes and practices? Are they interested in continuing their environmental commitment after graduation? What skill sets do they possess? And is CU teaching the skills and competencies sought by private sector, government, and NGOs? What are the requisites for entry-level positions in environmental fields? What Action Steps can be shared among committees to assure students have their interests met at CU and beyond?

**Water:** Composting is an excellent method for water conservation and better turf management. It is also one of the best examples of CU's closed-loop approach to advanced recycling and 'zero waste'. Finished compost should be used in CU's grounds operations to the fullest extent possible.

**Transportation:** Recycling requires several vehicles to collect and transport materials from the campus. Preserving vehicle access while reducing emissions are two objectives for the Transportation Chapter to consider. Additionally, recycling automotive wastes by the Transportation Center, using alternative fuels, and installing recycling containers at bus stops could be addressed.

**Purchasing:** The Blueprint for a Green Campus laid out a goal to "green the campus' consumption habits". Perhaps more than other environmental activities, recycling's success is wholly dependent on using secondary materials in new products; there is no 'cycle' in recycling until the 'loop' is closed. Environmentally preferable purchasing is absolutely essential for recycling.

More directly, CU should try to limit the amount of low-value, non-recyclable waste imported to campus through its purchases. In addition, it is reasonable to expect vendors to contribute financially to the recovery of their waste products. Precedent has been set for cost recovery in both the soft drink contract and Athletic Department's concessions contract.

## **Appendix A: Details on New Recycling Facility**

The availability and usefulness of the Intermediate Processing Facility, opened in October 1992, has been a significant part of the recycling program's success. While the primary function of the IPF was to sort recyclable materials for pick up in roll offs by Eco Cycle, the IPF has also proven useful as a holding and staging area for infrequently recycled materials such as phone books and print overruns, the location of a trash and cardboard compactor, where confidential shredding occurs, and is in a location convenient for the work-study students who provide the sorting service. <sup>7</sup>

The IPF is a critical part of CU's collection operation. It is also the staging area for the solid waste operation. Centrally located on Main campus, the IPF enables less driving and route time for the two front-loading trucks CU owns. CU is fortunate to have bundled its solid waste and recycling operations in one facility, unlike many campus programs nationwide. Numerous economies are being gained with this co-location and can be expanded on.

Current space constraints are preventing growth of the program. A larger facility would allow new materials to be collected, better space for class tours and training, and vital support for Facilities Management's collection operation.

RFAB has concluded that relocating the recycling facility to East campus, would result in additional collection and transportation costs. The cost to Facilities Management is estimated at \$39,000 annually. UCSU would require an annual increase of at least \$41,000 annually to staff the facility should work-study jobs need to be replaced by hourly or classified positions.

In March, 2002, Facilities Planning presented its report which identified viable spaces on Main and East campus. <sup>8</sup> This report should be reintroduced to the Boulder Campus Planning Commission (BCPC) for next steps to securing space for a new facility.

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<sup>7</sup> Business Plan Review of Recycling Activities. March, 2003, Stuart M. Takeuchi

<sup>8</sup> *Review of Possible Sites for Relocation of Recycling Facility, Facilities Planning 3/02*

## **Appendix B: References**

“Recycling is Working in the United States” January , 2002. [www.epa.gov](http://www.epa.gov)

The Future of Waste Reduction in Boulder. City of Boulder Office of Environmental Affairs. May, 2005

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State of the Campus Environment; A National Report Card on Environmental Performance and Sustainability in Higher Education” 2001. National Wildlife Federation, Education Foundation of America  
<http://www.nwf.org/campusecology/html/stateofthecampusreport.cfm>

Grassroots Recycling Network (GRRN)  
[www.grrn.org](http://www.grrn.org)

Dell Report

Compost Guide

Toolkit for Soft Drink Contract Reform

Campus Master Plan Provisions for Recycling

White Paper

CU Recycling Bulletin

College and University Recycling Council