



City of Fort Collins

Community Planning and Environmental Services
Natural Resources Department

INTERIM REPORT

NEW MEASURES FOR SOLID WASTE REDUCTION IN FORT COLLINS

JULY 27, 1999

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JULY 27, 1999
INTERIM REPORT
NEW MEASURES FOR SOLID WASTE REDUCTION IN FORT COLLINS

I. INTRODUCTION

The City of Fort Collins has played an important role in designing and creating recycling and waste diversion programs for its residents based on adopted public policy, voluntary participation by citizens, and limited local authority over the trash hauling industry. This Interim Report provides an update on the status of recycling in 1999, and presents six recommendations for new measures to improve citizens' recycling and waste opportunities. The list of projects was requested by the City Council in January, 1999 to help Fort Collins meet its waste reduction goals. The Council specified that projects were to be carried out within an 18-24 month timeframe, during which further discussion of the option of trash districting would be postponed. After a two-year period, the Council agreed that it would reexamine the need for a more prescriptive collection system.

Fort Collins has not provided municipal trash collection since 1964, relying instead on private hauling companies (six of them, currently) who compete to provide subscription trash and recycling services to citizens. The City plays a role in managing solid waste through the Natural Resources Department, which has provided education and outreach, policy development and planning, and some limited materials collection projects, such as Christmas trees and leaves for the past ten years.

In May 1995, the City expressed its concern about the need to support and improve recycling by adopting policies for waste disposal and ordinances, with an overall goal of reducing Fort Collins' waste stream by 20%. As part of their City trash hauling licenses, companies must provide recycling services to their residential customers (excluding multi-family) at no additional cost, and they must charge per volume for trash collection. Since these changes occurred, several important accomplishments have been made in Fort Collins. The rate of participation in residential curbside recycling has risen to 86% and the amount of waste diverted from landfills through recycling or composting in 1998 was 24%, surpassing the 20% goal set in 1995 (Appendix 1, 1998 Annual Solid Waste & Recycling Report).

As we move into a second decade of recycling and waste diversion activities in Fort Collins, the City is in the position of asking what else can, or should, be done to improve solid waste reduction for residents. It is a time when citizen demand for expanded recycling options is growing at the same time that local infrastructure to process materials has nearly reached full capacity, in part due to high participation. In the next few years, limited processing capacity will make higher recycling rates more difficult to attain.

The City can strategically target new materials and waste generation sources using data about local conditions, and plan for expanded infrastructure and collection systems to

assist waste reduction efforts. According to a recent study by NRD, (Appendix 2, 1999 Calculation of Fort Collins Waste Diversion and Recycling Rate) the community currently diverts up to 24% of its waste stream from landfill disposal through recycling, reuse, and composting efforts. This compares favorably to national averages of 28%, especially in light of extremely low regional landfill fees. While some people may consider that the City's recycling goal of 20% diversion has been adequately met and that further waste reduction steps are unnecessary, public interest in waste reduction remains high. According to a 1998 public opinion survey conducted by the City, 86.7% of 813 people who responded agree or strongly agree that "I do everything I can to recycle", and 78.5% indicate they would like to recycle more types of materials (Appendix 5, "What's Your Opinion of Trash and Recycling Services in Fort Collins?").

Fort Collins' waste diversion successes can be characterized as "picking the low-hanging fruit". Many of the more easily collected, processed, or marketed commodities are being removed from the waste stream. Within the next few years, getting to higher levels of diversion and recycling will become harder to accomplish, and it will be up to the City to systematically target new materials, processing infrastructure, and collection systems.

Recommendations

From data produced last year by Larimer County in a Solid Waste Characterization Study (Appendix 3), it is apparent that paper products continue to be a large portion of our local waste stream (44% for residential trash and 18% for commercial), which is largely recyclable. Organic material, including wood products, and yard and food waste, make up another significant fraction (32% for residential, 42% for commercial). These represent areas in which the community should strive to recover substantially higher quantities of materials, through a combination of existing infrastructure, increased efforts on the part of individuals and businesses, greater outreach and education, different collection programs, and new pilot projects

Staff has developed a list of recommendations on how to address new opportunities, as well as potential problems, for recycling programs in Fort Collins. New projects to be considered for the City to add to its Solid Waste Reduction program are detailed later in this report, and include:

- assisting with expansion of the Larimer County Recycling Center,
- building a full service drop off center located centrally in Fort Collins,
- working with the construction industry to encourage diversion of waste generated from new growth and development,
- additional education/outreach, more comprehensive messages to targeted audiences
- providing data to assist market development.

The City has an important role to play in identifying and providing strategic opportunities for citizens. Without additional efforts and some combination of new measures, waste reduction and recycling activities in Fort Collins are not anticipated to rise above existing levels. It will be a challenge to respond to continuing interest from the public for ways to

expand recycling, especially given the City's indirect role in managing the waste system, fluctuating markets, and diminishing capacity to process increasing volumes of materials locally.

II. BACKGROUND ON RECYCLING IN FORT COLLINS

For the past decade, Fort Collins residents and businesses have demonstrated strong commitment to recycling despite poor local markets, lack of state legislation, and negative signals sent by short-term economic conditions. Colorado's landfill tipping fees are among the lowest in the country, averaging \$18 per ton locally, which creates an enormous disincentive to using disposal alternatives like recycling. Colorado ranks 47th in the nation in per capita solid waste management state funding (June 1996 study; North Carolina Office of Waste Reduction). The State neither provides leadership or data analysis to establish what levels of recycling or waste disposal occur in Colorado.

In 1994, Fort Collins increased its involvement, staffing, and budget for recycling and solid waste reduction. City Council approved a new work program for the Natural Resources Department to carry out a number of projects, including:

- expanded promotional and education programs,
- changes to existing recycling ordinances to make it easier to recycle,
- assessment of impacts of trash trucks on City streets, and
- develop goals and measurable objectives for an integrated waste program, and
- develop plans for the community to meet policies, goals, and objectives.

Fort Collins' Adopted Goals and Objectives

In May, 1995 the Council adopted Resolution 95-63, which created policies and goals to reduce Fort Collins' total waste stream by 20% and identified specific targets as follows.

- Divert 70-80% of compostable material from landfills.
- Increase participation in residential curbside recycling to 80-90%.
- Reduce by 35% the paper products in waste streams from commercial customers.
- Increase participation in commercial recycling services to 50%.
- Reduce the average number of trash trucks per week on residential streets from six to two for at least 80-85% of the residential streets.

Progress in Meeting City's Goals

In the four years since Council set its solid waste reduction goals, the City has collected data and tracked reports from trash haulers to document changes that have occurred. These data show the rate of participation in residential curbside recycling has steadily climbed, most recently to a remarkably high level of 86% and that the amount of waste diverted from landfill disposal for recycling or composting appears to have reached 24%.

A more complete report on this information is provided in Appendix 1, Fort Collins Annual Report on Solid Waste and Recycling.

Incomplete data prevent us from tracking exactly how much progress has been accomplished for 1995 goals that were specifically set for composting, paper reduction, commercial participation, and trash truck traffic. There are good indications that some progress is being made. For instance, there is a vigorous level of activity at a local commercial composting business (Hageman’s EarthCycle), and strong markets exist for large commercial accounts, especially for high-grade office paper and baled cardboard. However, as mentioned earlier, significant gains remain to be made in paper products and compostable organic materials; these are the next “frontiers” for waste reduction.

Another indicator is the Larimer County Recycling Center, which acts as a regional processing plant for a broad variety of materials. The LCRC has experienced considerable increase in the volumes of recyclables that it processes. It currently handles an average 110 tons of recyclables per day (Larimer County’s landfill receives 750 tons of trash per day), up 30% from 1996. At the rate that recycling is growing, decisions will need to be reached in the immediate future about expanding the plant, which has a design capacity of 140 tons per day.

III. INTERIM PROJECTS

Six New Measures Proposed by Staff

In the process of developing ideas for new interim projects, as requested by the Council in January, staff solicited input from local trash haulers, Natural Resources Advisory Board members, and staff from Larimer County Natural Resources Department. Two “round-table” meetings were held and the group generated a brainstorming list of new measures. Staff then prepared a short list of recommendations to make to Council, based on these ideas. They are grouped in two categories – those that can be implemented using existing resources or relatively small amounts of new resources, and those that will require large amounts of new funding.

A. Three Projects That May Have Sufficient Existing Resources

1. Increase Landfill Diversion Rate

Type of actions:	Adopt new policy change
Budget:	No new dollars required.
	Provides policy basis for new and expanded efforts over next ten years.
Timing:	Council to review Resolution in fall, 1999; adopted policy would set direction for City programs for next 10 years.
City’s Role:	Leadership role, acts as catalyst for public and private sector to take actions.

Staff recommends that the Council incrementally increase the policy goal for the community’s diversion rate from 20% to a level of 30% by the year 2002, 35% by the year 2004, and 50% diversion by the year 2010. In California, a state law requires communities and counties to reach a 50% diversion rate by 2000 and some of them, including Los Angeles, have already achieved the goal.

Again, referring to the City’s 1998 survey of public opinion (Appendix 4) and current 24% waste diversion levels, it is evident that the citizens of Fort Collins are capable of responding to the challenge of diverting even more materials. However, if the “bar is raised” for Fort Collins’ diversion rate, it would need to be accompanied by a commitment to step up the City’s activities for recycling, waste prevention, composting, purchasing, promotion and education, and planning on a deliberate schedule. New projects would be phased in over the course of the next decade as they become feasible in relation to public interest, market conditions, funding, and new technology.

2. Continue and Expand Public Outreach with Emphasis on New Messages

Type of action:	Ongoing education program
Budget:	Use existing budget, or locate \$10,000 new funds (optimal).
Outcome:	Greater public awareness of costs and paybacks of recycling, possibly leading to “unbundled” trash bills to show recycling costs.
Timing:	Immediately
City’s Role:	Partner in regional education campaign coalition.

The public should be invested with a greater understanding about how the recycling industry works and is influenced by global conditions. Over the past decade or so, the industry has matured and there is more experience and “history” in marketing commodities throughout the country and internationally. Investment in new and re-tooled processing mills is steadily occurring, as is new technology for remanufactured goods.

The City should work on providing information to the public about true costs and how market prices affect local recycling opportunities. We need to stay closely involved with local haulers and the waste disposal industry, including Larimer County Natural Resources as manager of our local community landfill, in the development of new diversion programs. This will enable the City to assess economic feasibility and market development needs, and help create public involvement based on awareness and acceptance of costs.

3. Data Collection to Aid Market Development

Type of action:	New economic development/ information program
Budget:	Some additional staffing (<1/4 FTE) or consulting assistance (\$5,000-10,000).
Outcome:	Public agencies act as resource for data on locally generated recyclables. New local and/or regional processing plants may be built that would improve markets for recyclables.
Timing:	As soon as budgeted.
City's Role:	Partner with other northern Colorado recyclers to establish database.

Fort Collins could take a leadership role for northern Colorado in providing reliable data to prospective recycling businesses about the volumes of materials generated locally. This would require ongoing monitoring of local recycling activities and trends. A greater number of processing and/or manufacturing facilities for recyclable materials on the northern Front Range would reduce transportation costs and improve the viability of community recycling programs.

B. Three Projects That Are Not Currently Funded

4. Expand Larimer County Recycling Center (LCRC)

Type of actions:	Participate in the County's integrated planning and analysis process. Provide support/endorsement to Larimer County Commissioners.
Budget:	The City could share some portion of the costs, which have only been roughly estimated at this time: minimally; increase plant to 100,000-ft. sq. (\$500,000). Potentially also add second baling line (\$500,000).
Outcome:	Capacity to process more recyclables locally. Potential to process new streams of materials, i.e., #7 mixed paper (combined junk mail, newspaper, magazines, etc). Enables local government to meet public interest in recycling Gives local public agencies better control for marketing materials (e.g., to secure contracts with paper mills).
Timing:	County will review options, analysis, and recommendations by November, 1999. If warranted, expansion could proceed as soon as 2000. Construction and start-up would take at least 12 months.
City's Role:	Partner with County to develop and accept policy decisions and to meet fiscal needs.

The future of Fort Collins’ integrated solid waste management is closely linked with the capacity and scope of Larimer County Recycling Center’s operations. Currently, the LCRC is processing 110 tons per day and accepts commercial material; the facility was designed for a maximum of 140 tons of residential curbside material per day.

Unless the plant’s capacity is increased, materials may start to be turned away, either to be processed in other facilities (Denver) or worse, to be landfilled. Without having a place to take materials, it would not be appropriate to continue to encourage citizens to increase their recycling efforts. If the City of Fort Collins wishes to continue to meet public demand for recycling and solid waste diversion, it will be critical to expand the recycling center with additional floor space, and possibly additional baling equipment within the next few years.

An expansion would also allow Larimer County to consider adding new streams of materials at the processing plant. For instance, a paper mill in Arizona now accepts a mixed fiber (#7) grade that includes junk mail, magazines, office paper, and chipboard, which could be incorporated into the existing curbside program without changing haulers’ collection system. This would significantly increase the amount of wood fiber recovered, since 44% of our residential waste stream is made up of paper products (Appendix 3, 1998 Larimer County Waste Characterization Study).

The County Commissioners have informally supported the concept of expanding the recycling center. A County Solid Waste Action Group, which represents a variety of participants including Fort Collins, is working on an evaluation of funding options for the recycling center and its expansion needs. The group is scheduled to make a report to the Commissioners in November, 1999.

5. Build a Central, Multi-material Drop-off Site in Fort Collins

Type of action:	Capital project
Budget:	Approximately \$100,000
Outcome:	City and partners sponsor construction of full drop-off collection site, and pay costs of contracting to have materials transported to the Recycling Center.
Timing:	If budgeted, it would take an estimated 12 months to complete the planning, design, permitting, and construction.
City’s Role:	Major sponsor, coordinator with partners.

A new, expanded drop-off site is proposed that would increase the range of the materials that are currently collected through Fort Collins drop-off programs, and also to serve as a recycling education center. From data produced by Larimer County’s Waste Characterization Study (Appendix 3), it is clear that large amounts of paper generated by households go to the landfill instead of being recycled. Currently, the only public drop-off site for cardboard, paperboard,

office paper, and other grades not collected in Fort Collins’ residential curbside programs, is located at the Larimer County Recycling Center.

Multi-family housing residents in particular would immediately benefit from expanded, central drop-off site. Apartment dwellers only receive on-site recycling at the discretion of their property managers, and thus many are entirely dependent on free drop-off sites that are scattered throughout Fort Collins to recycle newspapers and commingled containers. This can mean a series of trips, since there is no single site in Fort Collins that accepts everything.

The distance of LCRC’s full service drop-off site makes it a fairly long, or at least an out-of-the-way, trip for many citizens in Fort Collins. A comprehensive drop-off site located more centrally in town could provide enough of a convenience to citizens as to double the amount of materials that are currently collected in Fort Collins. It would directly increase the potential for recycling by multi-family residents, and would probably be used by county residents during trips into town.

Some preliminary scoping work has been initiated for this project in collaboration with Colorado State University, since the University may be interested in sharing some part of the operations of a drop-off site if it complements the campus recycling program. Larimer County is another important partner to include in developing this project, since it would augment services provided by LCRC and increase volumes at the plant, as well as reduce some traffic congestion at the landfill gate and on South Taft Hill Road. If the project is approved by Council, planning would be completed to establish a suitable location; traffic volumes and flows, including truck transport trips; usage and volumes of materials; partnerships; costs and use of revenues from sales of materials.

6. Construction and Demolition (C&D) Diversion Pilot Program

Type of action:	Research and design, implement pilot program
Budget:	Approximately \$30,000 matching funds
Outcome:	City and partners create a source separated disposal system for builders. Project would run 18 months or more, and volumes of diverted C&D would be measured.
Timing:	As budgeted.
City’s Role:	Lead planner and coordinator, major sponsor.

Building construction and demolition (C&D) debris was identified in a recent waste characterization study at the Larimer County landfill as one of the most abundant components of the local waste stream. The objective of this project would be to conduct research into the design and implementation of a C&D diversion project in the vicinity of greater Fort Collins. Work that has already been initiated to investigate what options exist will continue, including:

- Partner with regional groups; Larimer County, local businesses, Homebuilders Association.
- Determine capacity and economic feasibility of local processing (costs, end-markets).
- Find suitable site for processing activities.
- Apply methodology from other areas' C&D projects if applicable to Larimer County.

Public Process and Recommendations

A limited public outreach process was conducted to solicit input on the Interim Plan. Participation was solicited from the six local trash hauling companies, the Solid Waste Reduction Committee from the Natural Resources Advisory Board, and Larimer County Natural Resources Department staff. This group met twice in a “round table” setting during early spring, 1999 to brainstorm ideas for new projects that the City could implement to help the community reach its waste reduction and recycling goals. A list of 15 ideas was developed, with consensus by City staff to select the top six ideas, described above, for recommendation to the Council. Other ideas that were not prioritized included:

- Work with commercial sector to divert its waste and recycle more.
- Create a regional planning network to work together on waste diversion.
- Target paper products for more recycling and diversion from landfill.
- Work with haulers to determine feasibility of collecting compost, e.g., curbside or drop-off system.
- “Unbundle” recycling from trash collection so people understand real costs.
- Create more recycling services for multi-family residents.
- Encourage use of recycled materials in new construction.
- Examine system (landfill tipping fees) used to pay for waste diversion programs.
- Change collection system to lower haulers' costs for providing recycling.

Natural Resources Advisory Board Recommendations

The Natural Resources Advisory Board reviewed the ideas that were generated at the round-table sessions and endorsed the short list of recommendations for new waste reduction measures at its June 2 meeting. However, they also strongly urged the City to include a measure in the Interim Plan to “create, implement, and enforce a uniform mechanism to ensure that variable trash rates (pay-as-you-throw, or PAYT rates) are effectively applied by all local trash haulers”. The NRAB is very concerned about reports from some citizens that haulers may not be consistently applying PAYT rates.

NRAB's suggestion was not added to staff's recommendations in the Interim Plan, since it is an existing assignment to resolve the problem and ensure full compliance and implementation of the City's ordinance. With assistance from the City Attorney's office, NRD plans to make a report to Council later this fall on how the

issue is being addressed. (A root cause seems to be the need for better assurance of equity among the regulated community, so that haulers who consistently charging for each and every bag of their customers' trash are not put at a disadvantage with their competitors who fail to apply PAYT rates.)

IV. DATA AND MEASUREMENTS

1998 Annual Report on Solid Waste and Recycling in Fort Collins

The City monitors the amount of trash and recyclables collected in Fort Collins, and participation in curbside recycling by residents. Data are collected through surveys of local recycling programs; required biannual reports from trash haulers; and gate receipts from Larimer County Landfill. (The 1998 report is included in Attachment 1).

The City's measurements show that recycling has become a regular activity in citizens' lives. Participation in curbside has risen substantially from 3,843 single-family households (18%) in 1991 to the current level of 23,327 households (86%) in 1998. This meets the range of 80-90% that was set as a community goal.

Records of recycling volumes show a steady level of recycling in Fort Collins. In 1998, the amount of recyclables collected by the haulers reached 12,136 tons - the same average quantity of materials (newspaper, glass, cardboard, etc.) that has been reported four years in a row, and 2.5 times more material than was reported in 1992.

Solid Waste Diversion Rate in Fort Collins

In 1998, NRD calculated for the first time how much trash was diverted from local landfills, and instead disposed of through recycling, composting, or reuse (the full report is included in Attachment 2). Each large, commercial account that could be identified as a generator of recyclables was surveyed and total volumes of materials were compared to measurements of trash generated in Fort Collins. It appears that the community surpassed the 1995 goal for 20% diversion, and that nearly one-quarter of our waste stream was diverted from landfill disposal through the combined efforts of the residents and businesses. The waste diversion report:

- Outlines diversion activities for numerous materials,
- Breaks down the percentage of the waste stream generated by residential generators and the percentage of the waste stream generated by commercial generators,
- Calculates the recycling rate,
- Provides an explanation of solid waste generation figures for Fort Collins,
- Presents baseline data on commercial recycling in Fort Collins, and
- Lays out a schedule for continuing to collect commercial recycling data and expanding the study in spring of 2000.

Improvements Needed to Better Quantify Waste Diversion and Recycling

In the interests of improving the quality and consistency of data from local haulers, reporting activities were reviewed in spring of 1999, and several changes have been made to better define different waste streams.

- Better quantification of different sorts of waste; i.e., roll-off containers, construction and demolition (C&D) material, loose vs. compacted trash. Previous reporting did not account for differences in these types of solid waste.
- New categories in the trash hauler reporting form that has been in use since 1995 to collect baseline data on recycling activities in Fort Collins.

V. LONG-RANGE PLANNING

Many of Fort Collins' local waste diversion and recycling concerns are impacted by waste management decisions that are made at the regional level, especially those that involve the Larimer County Landfill, of which the City Of Fort Collins is a part owner. The City's Natural Resources Department actively participates in joint planning processes with Larimer County, other northeastern Colorado interests, and on a state-wide basis.

Larimer County convened a task force in 1997 to study long-term options for local solid waste management, especially with respect to expanding the County's landfill. A report was made to the County Commissioners in early 1999 with the recommendation to seek approval from the State for a vertical expansion that would bring an additional 18 years of lifespan at no additional capital or operating costs. The consensus was for the County to stay in the business of operating its landfill, and to increase efforts for solid waste diversion where practical. Additional policy questions likely to arise from the next stage of the task force's evaluation include:

- **How should recycling and waste reduction programs be funded?** The current system subsidizes these and other environmental activities through revenue from gate fees at the landfill. An unintended consequence of waste diversion is to reduce the payload (trash), which then jeopardizes funding needed for ongoing landfill operations and limits funding available for subsidiary programs.
- **Should the County create differential landfill tipping fees?** If the County's finances would justify it, clean loads of material could possibly be charged a lower tipping fee than trash that must be landfilled, as an incentive to increase diversion that can be recycled. For example, carefully sorted construction debris can be put to beneficial use by salvaging or mulching the lumber to use in making compost.

- **Should the Larimer County Recycling Center be expanded?** When it was built in 1992, the Recycling Center was designed to handle 105 tons of recyclables per day. Today, the plant averages 110 tons and is expected to rise to 140 tons per day by summer of 1999. To accommodate strong public programs and excellent public participation, it may be necessary to expand the plant by 15,000 – 25,000 sq. ft. (from 35,000-sq. ft. to 50,000 or 60,00 sq. ft.). Additional space would allow the County to consider installing another baling line, and/or increase storage area to protect materials from the weather.
- **Future Operations/Management Contract for Recycling Center.** At the end of 2004, the contract at the Larimer County Recycling Center expires. The County will have the option of taking over management of the facility itself, or reopening the contract for bid. This decision will influence the profitability of the plant and future expansion plans.

VI. Appendices

1. 1998 Annual Report on Solid Waste Reduction and Recycling in Fort Collins
2. 1999 Calculation of City of Fort Collins' Waste Diversion and Recycling Rate
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**ATTACHMENT 1
December 1998 Biennial Report**

**RESIDENTIAL CURBSIDE RECYCLING PARTICIPATION
December 1991 Through December 1998**

Residential Curbside Recycling Participation			
Year	# Total Single-Family Homes	# Single-Family Homes Recycling	% Homes Recycling
June 1991	21,368		
Dec 1991		3,843	18%
June 1992	21,913	4,176	19.1%
Dec 1992		4,839	22.1%
June 1993	22,660	7,799	34.4%
Dec 1993		8,501	37.5%
June 1994	23,552	7,861	33.4%
Dec 1994		8,892	37.8%
June 1995	24,488	13,111	53.5%
Dec 1995		14,813	60.5%
June 1996	25,444	20,114	79.1%
Dec 1996		20,497	80.6%
June 1997	26,435	20,797	78.7%
Dec 1997		22,633	85.6%
June 1998	27,138	23,178	85.4%
Dec 1998		23,327	86.0%

% Multi-Family Complexes Recycling	% Commercial Customers Recycling
na	na
na	na
25.6%	4.0%
29.2%	5.0%
33.2%	7.0%
26.8%	13.2%
27.2%	14.8%
16.8%	14.1%
16.8%	14.2%
56.8%	15.4%
37.6%	16.0%
22.8%	15.6%
23.6%	16.8%
22.8%	17.2%
23.6%	17.3%

RECYCLING MILESTONES

June 1, 1991 -- Ordinance requiring trash haulers to provide recycling service (not "for free") to customers who desire the service becomes effective.

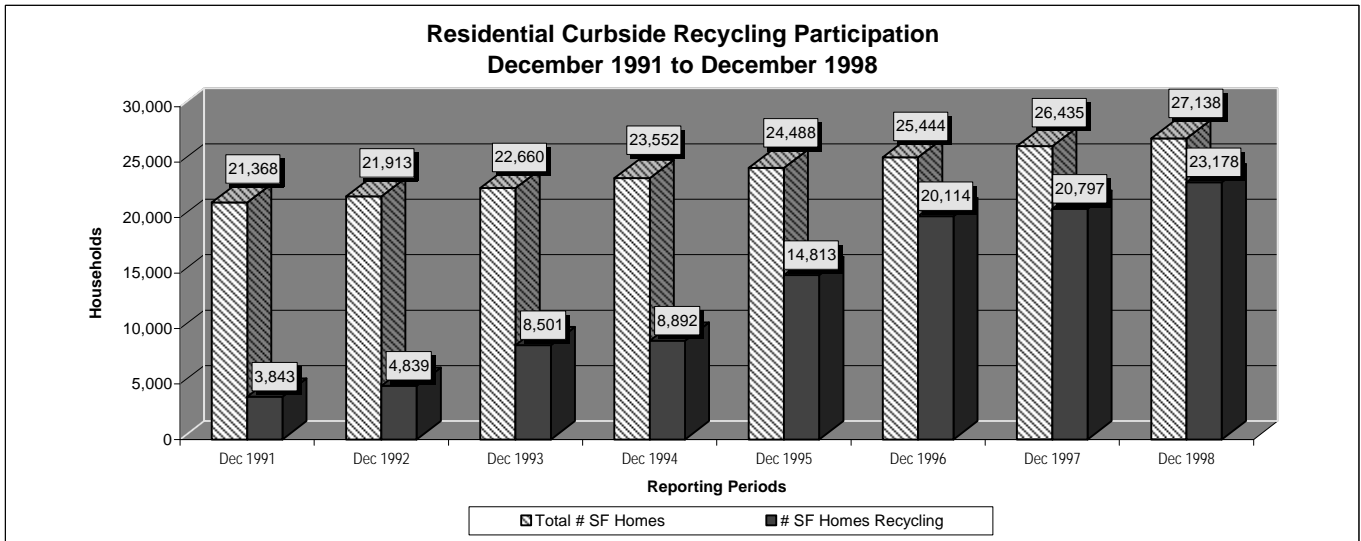
December 1, 1992 - Larimer County Recycling Center Opens

January 1, 1993 - Landfill tipping fees increase to pay for recycling center

January 1, 1993 - All trash haulers in Larimer County are required to charge customers for the amount of trash disposed. (four options acceptable). Flat fees are no longer allowed.

October 1, 1995 - Ordinance requiring trash haulers to provide weekly recycling collection as part of basic trash collection service becomes effective.

January 1, 1996 - Ordinance requiring volume based rates becomes effective. Haulers permitted to establish a flat monthly base fee to recover fixed costs.



GOAL INDICATOR: Percent Participation in residential curbside recycling services

TARGETS: 70% BY June 1998
85% by Year 2000

MEASUREMENT SOURCE: Semi-annual report from local solid waste haulers

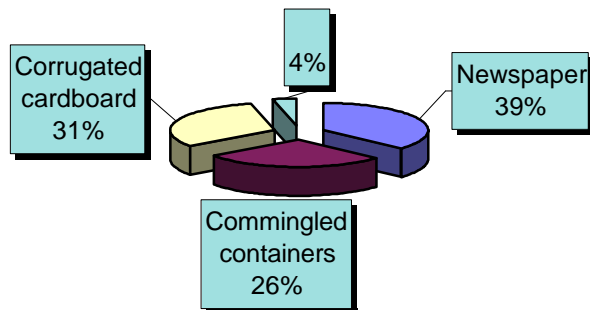
Current Residential Curbside Recycling Participation: Increased from 85.6% in December 1997 to 86.0% in December 1998

December 1998 Report

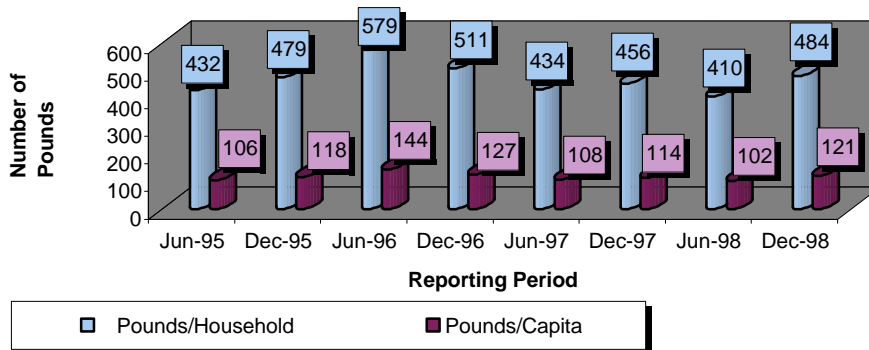
**RECYCLABLE MATERIALS COLLECTED IN FORT COLLINS
BY SOLID WASTE HAULERS (Residential and Commercial)**

Tons of Recyclable Materials Collected			
Material	Number of Tons		
	January-June 1998	July-December 1998	TOTAL
Newspaper	2,033	2,718	4,751
Commingled containers	1,579	1,644	3,223
Corrugated cardboard	1,754	1,957	3,711
Office paper	197	254	451
TOTAL TONS	5,563	6,573	12,136

Tons of Recyclable Materials Collected
January - December 1998



**Total Pounds of Recyclables Collected
(Residential and Commercial Customers)**

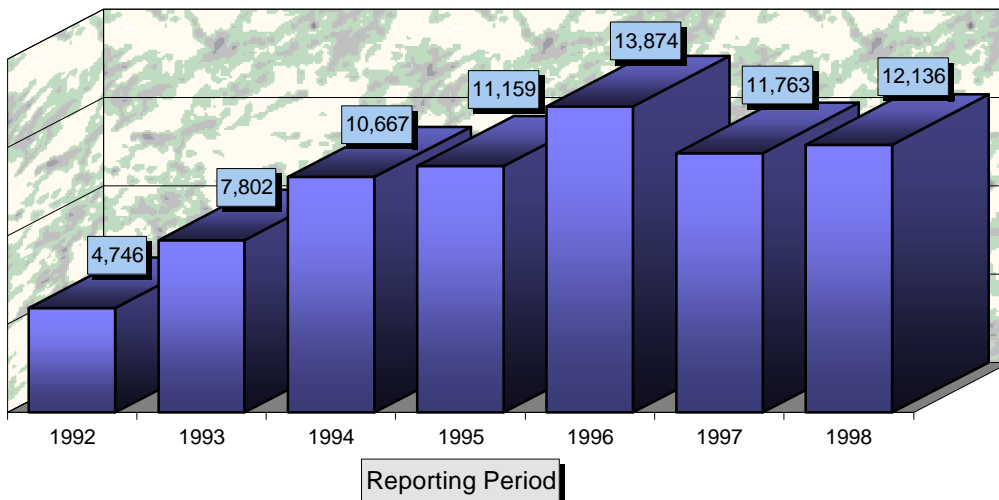


FORT COLLINS RECYCLABLE MATERIALS VOLUMES

December 1998 Annual Report

Tons of Recyclable Materials Collected in Fort Collins January 1992 - December 1998			
Reporting Period	Tons	Total Tons Per Year	% Increase or Decrease from previous year
January - June 1992	2,137		
July - December 1992	2,609		
1992		4,746	
January - June 1993	3,156		
July - December 1993	4,646		
1993		7,802	+64.4%
January - June 1994	4,697		
July - December 1994	5,970		
1994		10,667	+36.7%
January - June 1995	5,290		
July - December 1995	5,869		
1995		11,159	+4.6%
January - June 1996	7,371		
July - December 1996	6,503		
1996		13,874	+24.3%
January - June 1997	5,731		
July - December 1997	6,032		
1997		11,763	-15.2%
January - June 1998	5,563		
July - December 1998	6,573		
1998		12,136	+3.4%

Tons of Recyclable Materials Collected by Haulers in Fort Collins
from Commercial and Residential Customers

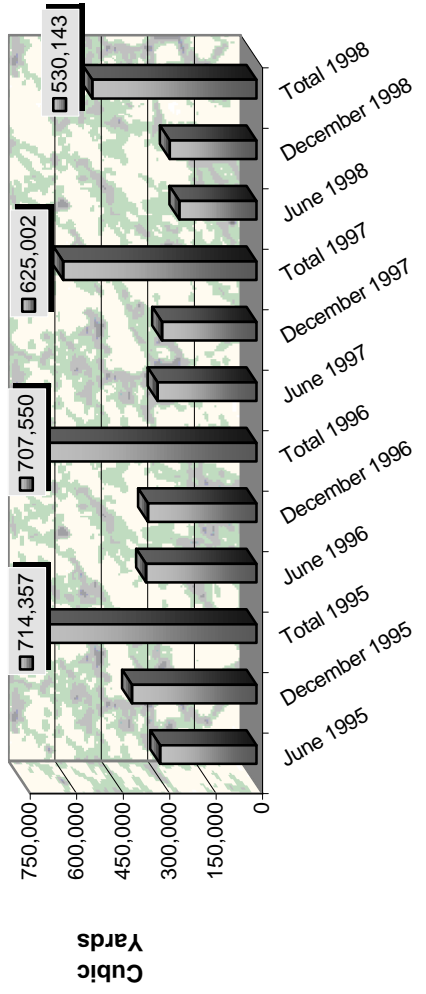


GOAL INDICATOR:	None Set
TARGETS:	Increased Volumes
Measurement Source:	Semi-annual Report from Local Solid Waste Haulers

SOLID WASTE COLLECTED IN FORT COLLINS

June 1995 - December 1998

SOLID WASTE LANDFILLED (Reported by Haulers)												
	June 1995	December 1995	Total 1995	June 1996	December 1996	Total 1996	June 1997	December 1997	Total 1997	June 1998	December 1998	Total 1998
Hauler 6	7,430	6,485	13,915	6,039	3,763	9,802	3,334	3,352	6,686	4,172	3,877	8,049
Hauler 4	10,400	13,080	23,480	10,180	12,680	22,860	12,500	12,800	25,300	12,600	13,080	25,680
Hauler 2	55,561	119,157	174,718	113,969	103,995	217,964	76,940	77,130	154,070	61,540	80,566	142,106
Hauler 3	20,174	24,027	44,201	18,353	18,435	36,788	18,380	18,170	36,550	18,010	18,120	36,130
Hauler 5	3,206	957	4,163	957	1,185	2,142	1,087	981	2,068	884	809	1,693
Hauler 1	214,876	239,004	453,880	207,835	210,159	417,994	207,848	192,480	400,328	152,201	164,284	316,485
TOTAL Cubic Yards Solid Waste Landfilled												
Conversion to Tons	311,647	402,710	714,357	357,333	350,217	707,550	320,089	304,913	625,002	249,407	280,736	530,143
% Increase / Decrease	103,882	134,237	238,119	119,111	116,739	235,850	106,696	101,638	208,334	83,136	93,579	176,715
		29.2%		-11.3%	-2.0%		-8.6%	-4.7%		-18.2%		12.6%



GOAL INDICATOR: Decrease Volume of Fort Collins Waste Disposed at Landfills by 20-30% Between 1995 and 2000 (Approximately 5% Each Year)

- TARGETS:**
- December 1995 -- 678,639 cubic yards
 - December 1996 -- 642,921 cubic yards
 - December 1997 -- 607,203 cubic yards
 - December 1998 -- 571,486 cubic yards
 - December 1999 -- cubic yards
 - December 2000 -- 535,768 cubic yards
- ACTUAL CUBIC YARDS:**
- 714,357 cubic yards
 - 707,550 cubic yards
 - 625,002 cubic yards
 - 530,143 cubic yards

Measurement Source: Semi-annual report from local solid waste haulers

Attachment 2

Calculation of Fort Collins' 1998 Waste Diversion Rate

INTRODUCTION

As part of the City's goal to improve the quality of solid waste and recycling data, the Natural Resources Department performed a study in spring of 1999 to quantify the full extent of waste recycling activities taking place in Fort Collins. This was the first comprehensive analysis of waste recovery activities by commercial and residential sources in Fort Collins. It provides baseline data to evaluate future trends in waste recycling, and track impacts that City initiatives have on waste reduction levels.

Using the methodology outlined below, the research yielded a combined commercial and residential recycling rate of 24% for 1998. This figure was based on recovery of municipal solid waste (MSW) materials, as defined by the US Environmental Protection Agency (EPA), and is close to the reported national average of 28%¹. As a continuation of the 1998 baseline study, survey work will continue to be modified in future years in order to follow trends in waste recycling and reduction within all sectors of Fort Collins.

This year's study revealed several important statistics about how well current programs are working and where more effort could be expended in future to optimize waste reduction efforts. Among the key findings of this report are the following:

- In 1998, the commercial sector accounted for 70% of the total volume of materials recycled in Fort Collins; residential curbside programs, drop-off centers, and City-sponsored clean-up days (Christmas tree and leaf recycling) accounted for 30% of the total volume.
- City of Fort Collins offices and departments recycled 168 tons of waste in 1998 through internal collection programs, composting, and reuse.
- At least eight different processing facilities handle and recycle wastes that are generated by the Fort Collins community. These include three scrap metals handlers, two organics recyclers, and at least three materials recovery facilities (MRF's). At least half of these facilities are located outside Fort Collins, with some in Denver.
- Recycling of paper grades, particularly old corrugated cardboard (OCC), is extremely successful and well integrated at many retail stores and supermarkets throughout Fort Collins. In contrast, plastics recycling volumes are very low and reflect limited, even decreasing market opportunities for plastics recycling along the Colorado Front Range during recent years.
- Construction and demolition (C&D) debris is the single largest component in the Larimer County landfill (55%, or 480,454 cubic yards²). C&D recycling is currently very marginal in Fort Collins

¹ Environmental Protection Agency, Characterization of Municipal Solid Waste in the United States: 1996 Update.

² Larimer County Natural Resources Department.

with only small percentages of wood or scrap waste being recovered. There is currently only limited infrastructure to recycle C&D in Fort Collins.

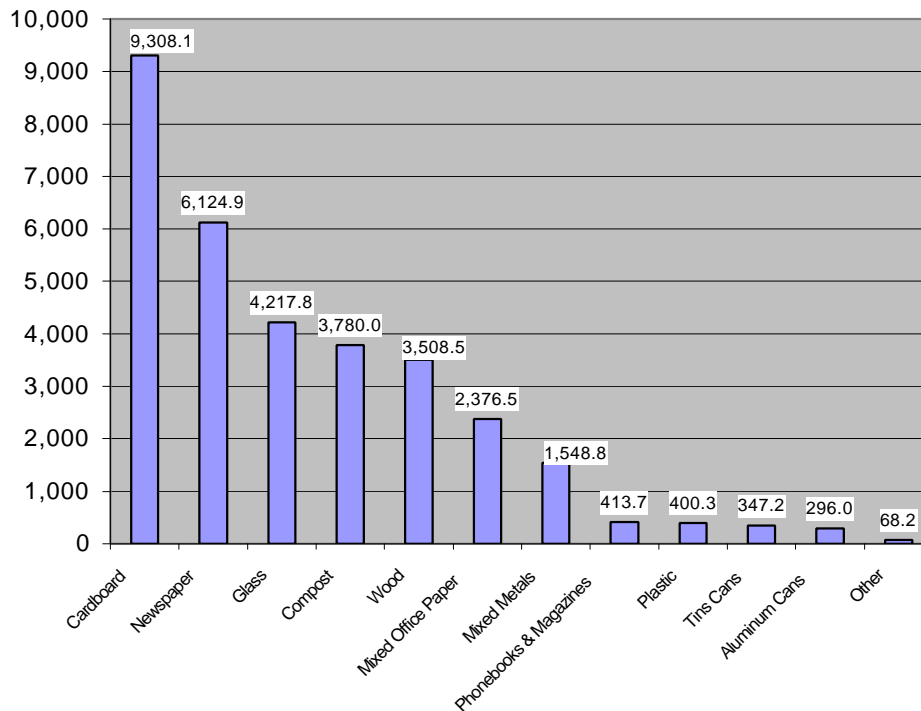
CURRENT STATUS OF RECYCLING IN FORT COLLINS

Graph 1 presents the individual volumes of recyclable commodities recovered in 1998 in Fort Collins (total volume equals 32,390 tons). Presentation of the relative recycling rates for materials listed below (e.g., 9,308 tons of recycled cardboard represents 65% of all cardboard generated) was not included here, as insufficient information was available on local generation rates for individual materials listed below.

Materials of note include high volumes of cardboard from retail establishments, newspaper collected through curbside residential programs and the *Coloradoan* plant, and glass recycled through drop-off programs and by the Anheuser-Busch plant. The presence of a commercial composting operation on East Prospect, as well as City-sponsored collection days for trees and leaves, contributed to significant diversion of organic materials.

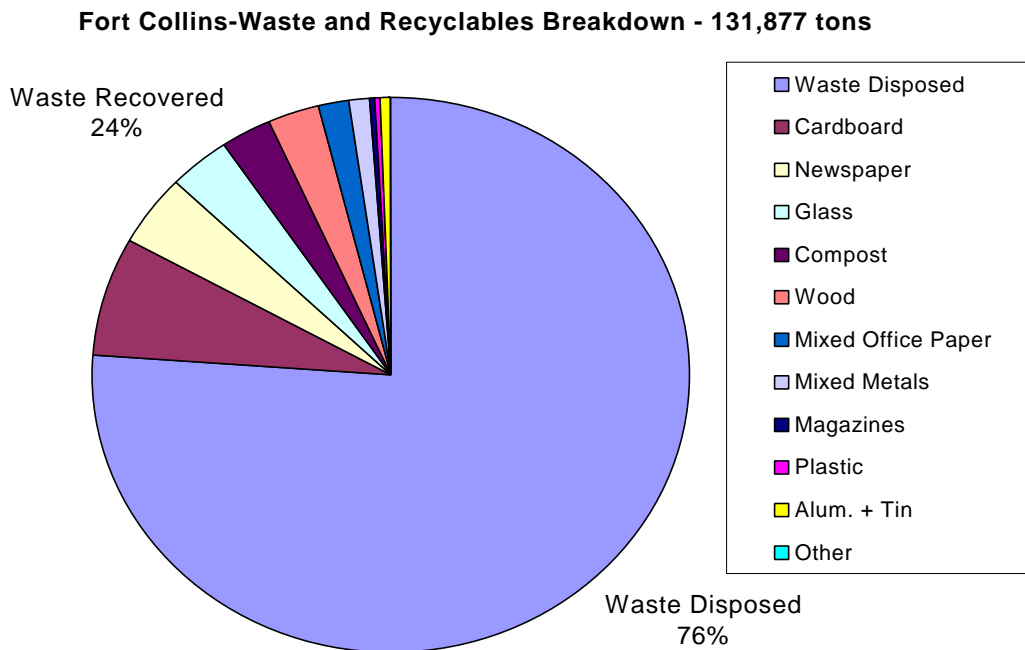
Lower recycling volumes were achieved for plastic wastes, which was attributed to limited market opportunities that currently exist for recycled plastic throughout the country. Construction and demolition (C&D) debris is not listed here, as it is not included in US EPA’s definition of municipal solid waste (MSW). However, because it is such a significant portion of the local waste stream that is recovered at very low rates, this component will be examined in next year’s annual report.

Graph 1: Commercial and Residential Recycling Volumes (1998) in Fort Collins



Graph 2: Fort Collins Waste and Recyclables (1998)

Graph 2 presents the percentage breakdown for all recovered materials as part of the overall waste stream in Fort Collins.



PROJECT METHODOLOGY AND RATE CALCULATION

The methodology used to calculate the overall diversion rate of 24% is presented below. Since 1998 was the first year that the City quantified waste diversion and compared it to all wastes generated, many issues and problems with data collection were encountered. Among the most significant challenges was the need to accurately determine the tons of waste generated in Fort Collins (denominator) against which to compare tons recycled (numerator). As part of the City's goal to improve the quality of data obtained through mandatory reports by the trash haulers in Fort Collins, next year's analysis will be based on a different methodology to estimate total waste generated.

Recycling Data Collection Methods

The results of the City's survey indicated that 32,390 tons of MSW were recycled in Fort Collins in 1998 from commercial and residential sources. In establishing this baseline figure, data were collected using the following four methods:

1. Regional Materials Processing and Recycling Centers

In collecting data directly from regional recycling centers, City staff either talked directly with representatives of processing facilities, or reviewed 1998 materials summary sheets provided by

facility managers. Recyclers also handled materials generated beyond Fort Collins city limits. Therefore an emphasis was placed on properly determining the percentage of recyclables that originated from within Fort Collins. In each case, this was estimated by facility representatives based on their knowledge and familiarity with their own operations. Regional materials processors surveyed for information included A-1 Organics, Aragon Iron and Metal, Colorado Iron and Metal, Hageman Earth-Cycle, Waste-Not Recycling, and Larimer County Recycling Center (Waste Management).

2. Denver Recycling Facilities

For several large retail businesses and production industries in Fort Collins, regional centers are bypassed and recycling arrangements are made directly with processors in Denver. These tonnages were accounted for by contacting all major recycling facilities in Denver to discuss their Fort Collins accounts. Greater metropolitan Denver recycling facilities included Tri-R Recycling, Newell Metals Recycling, and Waste Management of Denver.

3. Commercial Business Self-haul (Back-haul) for Recyclables

Through internal hauling arrangements, several Fort Collins businesses self-haul recyclables such as cardboard back to their own distribution centers in Denver or elsewhere. Businesses that typically back-haul include large supermarkets and large commercial retailers. Self-hauling typically occurs when large quantities of cardboard packaging are generated, and it becomes efficient for companies to transport their own recyclables. Tonnages were identified through direct conversations with store and outlet managers.

4. Residential Curbside Recycling; Data from Trash Haulers

In addition to newly acquired data from the commercial sector, existing data on residential curbside collection were included for calculating total waste diversion in Fort Collins. These figures are regularly provided by local haulers in biannual reports to the City. Volumes for 1998 were confirmed through materials summary reports made by Larimer Country landfill managers.

Waste Generation Rate Collection Methods

The waste generation rate for Fort Collins was calculated by taking the current population percentage of Fort Collins in Larimer Country (47%) and applying that percentage to the total annual volume of solid waste received at Larimer County landfill (LCL). Solid waste data were based on 1997 County landfill figures (figures for 1998 were not available at the time of this report from Larimer County Department of Natural Resources).

For this first waste diversion report, data from Larimer County landfill were utilized instead of the City's data on trash volumes collected in reports from trash haulers as a condition of their Fort Collins licensure. There appears to be considerable variability in MSW tonnages as currently reported by haulers. This is largely because the reporting form did not ask haulers to distinguish between 'loose' and 'compacted' solid waste (compacted MSW collected by packer trucks is much heavier than loose material in 'roll-off boxes', making it difficult to combine yardage, then accurately convert to tons).

In addition, the City's reporting forms did not ask haulers to identify separate categories of waste, or their respective volumes, such as those used by Larimer County in waste characterization studies. New forms that have been issued for the next reporting period will enable the City to collect clearer, more accurate data from registered haulers in Fort Collins and thus better interpret local information.

For 1997, it was estimated that 99,487.5 tons of waste was sent to area landfills from Fort Collins. During that year, city-generated waste went to both the LCL and a landfill in Ault (Weld County) operated by Waste Management (WMX).

Larimer County reported a total of 167,119 tons were received at its landfill in 1997. Fort Collins' portion was calculated as 47% of the total, or 78,545.93 tons (again, based on the city's 47% portion of Larimer County's population).

Data for the Ault landfill were not obtainable, and therefore an estimate was made of tonnages of Fort Collins waste received by WMX in 1997. Larimer County landfill data from 1996 were compared to 1997, the year that WMX began hauling the majority of trash it collects in Fort Collins to Ault. Between 1996 and 1997, Larimer County reported a drop in the 'Compact MSW' category of 68,806 cubic yards, or 26,177 tons (using a conversion unit of 760 pounds per yard of MSW). Due to the timing, this change was assumed to be the result of WMX's decision to haul waste to Ault. To allow for variances, 80% of the 26,177 tons (20,941.6 tons) was attributed to waste collected within Fort Collins.

Breakdown of Fort Collins' Recycling and Municipal Solid Waste (MSW) Generation - 1998

	<u>Tons</u>	<u>Figures Used</u>
• Larimer County landfill - total MSW landfilled 1997 ³	= 167,119	
Larimer County waste attributable to Fort Collins (47%)	= 78,546	78,546
• Larimer County 'compact msw' 1996 ⁴	= 126,628	
Larimer County 'compact msw' 1997	= 100,451	
Difference 1996 and 1997 (reflects use of Ault landfill)	= 26,177	
80% of difference (attributable to Fort Collins)	= 20,941	20,941
		99,487
• Commercial and Residential Recycled Tonnage (Based on results of project, Table 1)	= <u>32,389.9</u>	32,389.9
	Total Tons	131,877.5

Recycling Rate = 32,389.9 / 131,877 = 24.5%
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³ Larimer County Office of Natural Resources

⁴ See attached sheet 'Larimer County Landfill 1996 Summary of Waste Received'

DEFINITIONS OF RECYCLED MATERIALS

Graph 1 presents the recycled materials considered for this study and the number of tons from each category recovered in Fort Collins during 1998. Waste material categories were based on US EPA's definition for MSW in Characterization of Municipal Solid Waste in the United States: 1996 Update.

“MSW includes wastes such as durable goods, non-durable goods, containers and packaging, food scraps, yard trimmings, and miscellaneous inorganic waste from residential, commercial, institutional, and industrial sources. MSW does not include wastes from other sources such as construction and demolition debris, automobile bodies, municipal sludges, combustion ash, and industrial process waste that might also be disposed in municipal waste landfills or incinerators.”

A description of each category of recycled materials is provided below, with a brief explanation of the sources from which tonnages were collected.

Other: Ink and Toner Cartridges, Carpet Padding, and Auto Motor Oil

- Ink and toner cartridges are collected throughout Fort Collins in office supply stores, and through small businesses that specialize in cartridge collection. Many stores accept cartridges from the public, and pay for them depending on the type of cartridge.
- Auto motor oil is currently accepted at the two service stations in town that provide oil recovery programs.
- Carpet padding is recycled at the Larimer County Recycling Center (LCRC) where current market prices are paid by weight.

Mixed Scrap Metal: Appliances, Ferrous and Non-ferrous Scrap Metals

The Fort Collins community has two local scrap metal recyclers that process large volumes of industrial scrap metal. To properly calculate the percentage of scrap metal that meets EPA's definition of municipal solid waste, only appliances and common scrap items generated by non-industrial sectors were factored into this study. These include copper, aluminum, and other wire wastes collected by area businesses, and metals separated at the landfill that are directly recovered by a contractor. Large-scale industrial scrap and car bodies were not included as mixed metal scrap.

Mixed Office Paper: Photo Copier Paper, Printer Paper, Ledger Paper, 'Office Pak'

Mixed office paper includes all commonly found grades of paper in office environments. Volumes were calculated based on available data from area recycling centers.

Magazines and Phone Books

Volumes of magazines and phone books were estimated from collection programs in Fort Collins, including Colorado State University's recycling program and Larimer County Recycling Center.

Plastics: #'s 1 & 2 Containers, Shrink Wrap, and Plastic Pallet Strapping

Recycled plastic waste primarily includes plastic bottles collected through residential curbside programs, as well as one commercial generator that recycles plastic strapping and shrink-wrap.

Compost and Wood: Leaves and Grass Clippings, Limbs, Trees, and Brush

The compost and wood category includes material collected through the City's leaf collection and Christmas tree recycling programs, and organic wastes recycled by commercial compost companies.

Aluminum Cans, Glass, Tin Cans

Volumes for these materials were calculated using figures on curbside recycling, and from large commercial generators. Notably, Anheuser-Busch recycles large volumes of aluminum and glass materials.

Cardboard and Newspaper

Volumes for cardboard were calculated primarily from the commercial sector, where the largest percentages are generated. Retail outlet stores, supermarkets, and the County drop-off center at the landfill were the source of the most substantial volumes. Newspaper were collected primarily from curbside residential recycling and supermarket drop-off programs, as well as from publication of the *Coloradoan*, which represented the largest commercial generator of recycled newspaper.

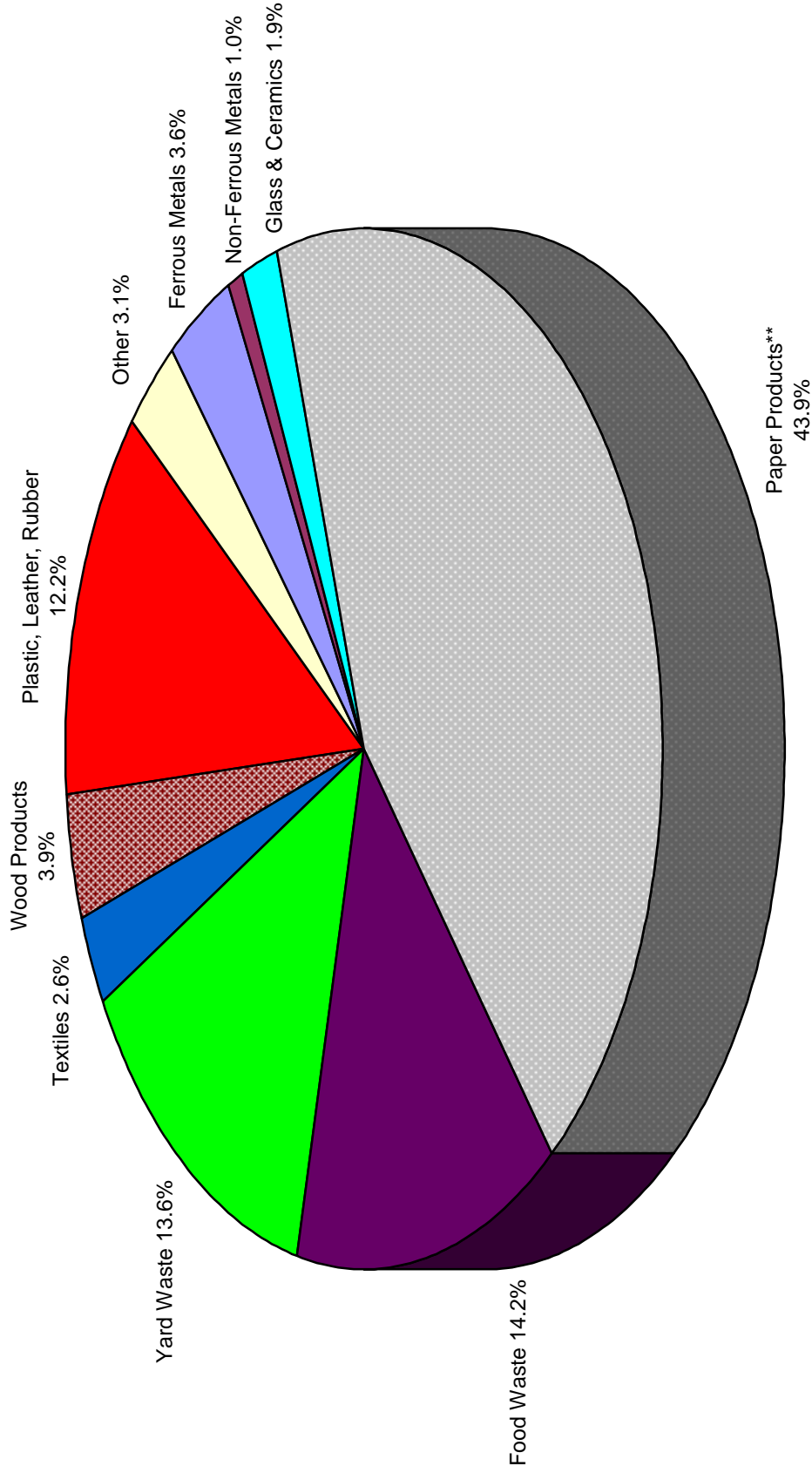
SUMMARY

The findings of this study represent the first comprehensive assessment of all recycling activities, commercial and residential, taking place in Fort Collins. The 24% waste diversion rate that was established by the study exceeds a 20% goal set by the City Council in 1995, demonstrating significant achievement and a benchmark for measuring the community's progress at recycling.

It should be recognized that approximately 70% of all wastes diverted from disposal in landfills was attributable to voluntary measures that are being implemented by the commercial sector. Many of the commodities that are being recovered are conventionally recycled materials with well established markets, such as cardboard, office paper, and glass. Businesses have recycled these resources for many years, and as long as a collection and processing infrastructure continues to be in place, will continue to do so.

However, this report found that beyond the standard recyclable materials, little recovery of other recyclables occurs within the commercial sector. Plastic materials and waste from the construction industry are among the most significant items that are currently being recovered at only very low rates. In order to move into higher levels of waste reduction in the City of Fort Collins and realize decreased reliance on the current landfill, future City solid waste program will have to focus on more aggressive recovery of these waste stream, particularly construction and demolition debris.

COMPOSITION OF RESIDENTIAL WASTE*



Larimer County Waste Characterization Study (Nov, 1997 - Jul, 1998).

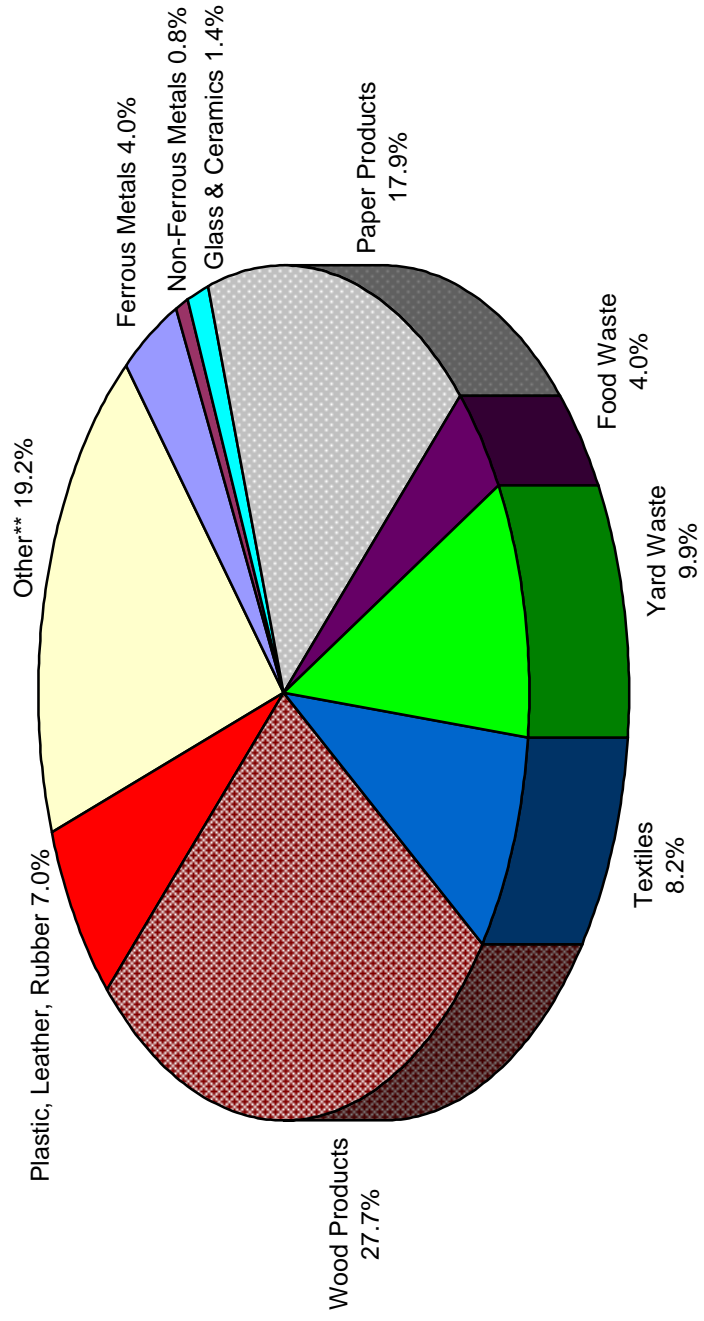
Percentages are based on weight.

* solid waste collected from Larimer County residences and hauled by a commercial trash hauler.

** includes paper, paperboard, and cardboard.

Figure 3. Composition of Residential Waste Received at Larimer County Landfill.

COMPOSITION OF COMMERCIAL WASTE*



Larimer County Waste Characterization Study (Nov, 1997 - Jul, 1998).

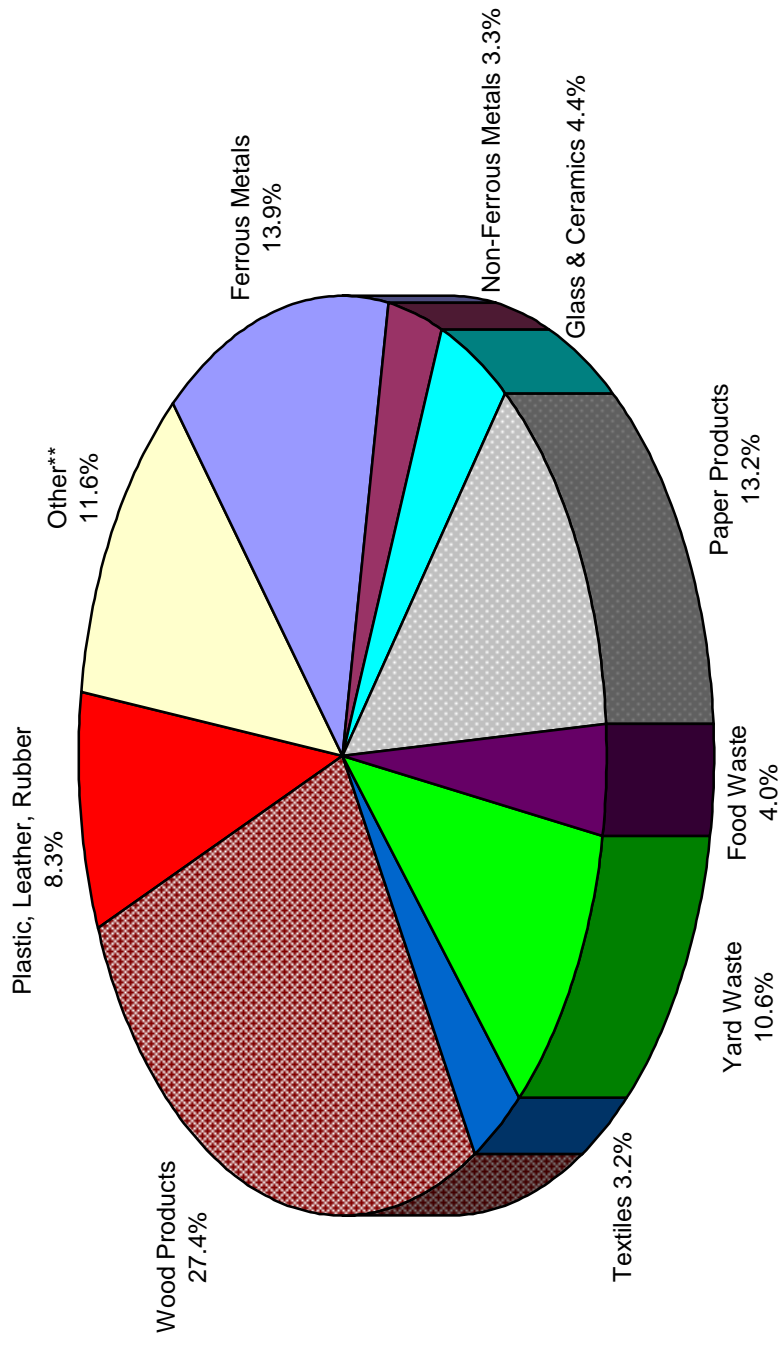
Percentages are based on weight.

* any non-residential waste hauled by a commercial enterprise.

** includes rock, brick, concrete, drywall, and asphalt roof shingles.

Figure 3. Composition of Residential Waste Received at Larimer County Landfill.

COMPOSITION OF SELF-HAUL WASTE*



Larimer County Waste Characterization Study (Nov, 1997 - Jul, 1998).

Percentages are based on weight.

* any solid waste hauled to the landfill by a private (non-commercial) party.

** includes rock, brick, concrete, drvwall, and asphalt roof shingles.

Figure 3. Composition of Residential Waste Received at Larimer County Landfill.

ATTACHMENT 4

PUBLIC OPINION SURVEY, March 1998
What's Your Opinion of Trash and Recycling
Services in Fort Collins?

The City and its consultant, Hilton Farnkopf & Hobson (HF&H), conducted a public opinion survey of residents in March 1998, in order to gauge residents' feelings regarding their current trash and recycling services, as well as their opinions regarding a districted waste collection system. Below is an excerpt of one section of the survey which was reported in Chapter 3 of the "Trash Districting Feasibility Analysis" prepared by HF&H on May 1, 1998. There were 813 respondents to the mail-back survey.

' Questions 11-15 were designed to gauge respondents' current recycling efforts, as well as their demand for more recycling services:

Efforts to Recycle	Agree/ Strongly Agree	Neutral	Disagree/ Strongly Disagree	Number of Responses
11. I am satisfied with the quality of my current recycling and trash collection service.	77.4%	13.8%	8.8%	774
12. I try to do everything I can to recycle instead of throwing materials into the trash.	86.7	8.2	5.1	790
13. I would like to recycle more types of materials.	78.5	13.2	8.3	756
14. I would like to receive and use a separate container for my yard waste.	52.8	24.0	23.3	742
15. I am willing to pay more for increased recycling services (i.e., more types of materials would be collected).	33.3%	17.4%	49.3%	765

In general, respondents indicated they are satisfied with their recycling service, and believe that they make every effort to recycle their materials. Further, a very large majority, 78.5% indicated that they wanted to recycle more types of materials. When questioned about whether residents wanted to use separate yard waste containers, only a simple majority (52.8%) indicated support. It is also clear that most residents would not want to pay more to increase the type of materials recycled.

' Question 16: As another measure of support for recycling, respondents were asked how many times per month they set out recyclable materials for collection. Out of 617 respondents, a majority indicated weekly participation in recycling programs. Twenty-five (4%) of respondents wrote in zero times per month, although it wasn't one of the pre-defined answers for this question.

	Once per Month	Twice per Month	Three Times per Month	Four Times per Month	Number of Responses
16. I currently set out recyclables for collection this many times per month.	14.4%	17.2%	10.9%	57.5%	617