

TOWARD ZERO GARBAGE

**REPORT TO THE TOWN COUNCIL
OF
CHAPEL HILL, NORTH CAROLINA
BY THE
SOLID WASTE REDUCTION TASK FORCE
AUGUST, 1991**



**A RESOLUTION ESTABLISHING A WASTE REDUCTION TASK FORCE
AND IDENTIFYING ITS CHARGE (90-11-12/R-5)**

WHEREAS, the Town of Chapel Hill is taking positive and proactive steps to manage its solid waste both now and in the future; and

WHEREAS, among the several groups working on aspects of solid waste management, none focuses simply on waste reduction efforts by the community;

NOW, THEREFORE, BE IT RESOLVED by the Council of the Town of Chapel Hill that the Council hereby establishes a Waste Reduction Task Force to consist of members appointed by the governing body.

BE IT FURTHER RESOLVED that the charge of the Task Force shall be:

To study ways in which the community can reduce the waste that it generates as well as to determine means to increase recycling and reuse opportunities,

To publicize these ways within the community, and

To concentrate on actions which can be taken by individuals and businesses now, so as to make a relatively immediate impact on individual habits and waste generation.

This the 12th day of November, 1990.

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SOLID WASTE REDUCTION TASK FORCE

EXECUTIVE SUMMARY

INTRODUCTION

In November of 1990, the Chapel Hill Town Council created the Solid Waste Reduction Task Force for the purpose of examining ways in which our community can reduce its solid waste. The Task Force was also charged with determining ways to increase recycling and reuse, and with identifying actions which can make an immediate impact by changing individual and business waste generation practices. From the outset, it was important to the Task Force that all our recommendations encourage sound long-term economic principles of solid waste management while minimizing the cost to the taxpayer and impact to the environment.

ORGANIZATION

The Solid Waste Reduction Task Force held its initial meeting on January 16, 1991. The twenty-two members of the Task Force, who represent a cross-section of the community, decided that an appropriate structure for organization was division of the large group into subcommittees. Each subcommittee was to examine a different segment of the community and recommend ways to reduce solid waste generated from that segment. The four subcommittees established were **General Public, Business/Commercial, Schools/Other Public Buildings, and Construction/Industrial**. Each subcommittee recommendation is labeled as a short-term or long-term goal.

In addition to the recommendations proposed by each subcommittee, the Task Force as a whole compiled a list of recommendations which address policies regarding solid waste management which could result in solid waste reduction.

Subcommittee members discovered through their research that many cities and towns throughout the United States have made significant progress in solid waste reduction. It is the comprehensive nature of their recycling and composting programs that has allowed them to achieve success. Elements typical of their programs are:

- **Comprehensive composting programs (year-round collection of yard waste at curbside and incentives for landscapers to compost their yard waste)**
- **Mandatory participation**
- **Recovery of materials from single- and multi-family households, and from commercial and institutional establishments (both curbside and drop-off collection)**
- **Targeting a wide range of materials for recovery**
- **Economic incentives for materials recovery (unit-based refuse collection rates, reduced tipping fees for recyclable or compostable materials, higher tipping fees for disposal of non-source-separated refuse)**

- **Weekly pick-up of materials at curbside**
- **Provision of appropriate containers for setting out materials at curbside**
- **Education and publicity.**

The focus in all these communities is a partnership between municipal government and citizens to accept ownership of their solid waste, reduce the cost of waste disposal, and lessen the environmental impact of disposing of solid waste.

FUTURE CITIZEN PARTICIPATION

The Task Force recommends that a Waste Reduction Committee be created as a permanent volunteer organization to work with staff and other community groups to develop a progressive, innovative Waste Reduction Program for Orange County.

To date, Task force members have spent well over one thousand hours researching and discussing solid waste management issues. Several ideas generated by the group have already been acted upon, including the addition of a Commercial Recycling Specialist, and increased fees for supplemental commercial refuse collection. Much more work needs to be done, and several Task Force members wish to continue with research and implementation of the ideas presented in the following report.

Please refer to the body of this report for details of the following summarized items:

WASTE REDUCTION TASK FORCE RECOMMENDATIONS

The following plan for solid waste reduction is integrated, with individual points complementing and supporting each other. The Task Force recommends the following actions:

1. **Always consider reduction of waste at the source (source reduction) as a higher priority than recycling, landfilling, or incinerating. Develop a method to quantify source reduction within the solid waste collection system.**
2. **Endorse the 25% goal established by the State of North Carolina for recycling and waste reduction as a minimum target for 1993. In addition, endorse a goal of 40% by 1996.**
3. **Combine all solid waste management programs into an integrated plan.**
4. **Begin preparation for moving to a fee structure based on units of weight or volume (unit-based fee structure) for waste collection; the more waste generated, the greater the fee (recyclables collected at no charge).**
5. **Develop and implement a dynamic and ongoing educational program about waste reduction which includes all segments of the community.**
6. **Raise the landfill tipping fee over the next several years until it reflects**

the landfill replacement cost.

7. Continue to expand residential, commercial, and drop-off recycling programs as markets for other products develop.
8. Restrict the Orange Regional Landfill to waste generated in Orange County.
9. Encourage adoption of a city-wide procurement policy for recycled content, bulk purchases, minimally-packaged and durable products.

SUBCOMMITTEE RECOMMENDATIONS

GENERAL PUBLIC

This subcommittee concentrated on steps that can be taken by citizens to reduce solid waste. Action items are:

1. Design and implement a county-wide waste reduction educational program.
2. Implement a unit pricing system for residential refuse collection.
3. Support the expansion of the existing composting program to include more public outreach, especially in the areas of grass and leaf/brush composting.
4. Develop a program to work with local retailers to increase public awareness of products that produce the least amount of waste.

BUSINESS/COMMERCIAL

Recycling is making progress in the business community, but this subcommittee sees the potential for a great deal more waste reduction. The recommendations are:

1. Provide solid waste audits for all businesses, and offer technical assistance to act upon audit findings.
2. Require a Solid Waste Management Reduction Plan as part of the business license renewal process.
3. Develop a policy to encourage economic development for recycling-oriented businesses.
4. Create a composting program for organic products generated by commercial establishments.
5. Provide incentives/awards for businesses that actively participate in waste reduction/recycling programs.
6. Create a local waste exchange.

SCHOOLS/OTHER PUBLIC BUILDINGS

Schools and other public institutions are in an excellent position to set an example for the community of how maximum waste reduction can be accomplished. Suggestions include:

1. Provide assistance to public schools to:
 - a. Expand the waste reduction/recycling units currently in the curriculum
 - b. Conduct school waste audits
 - c. Establish school waste reduction committees
 - d. Set up composting sites on school grounds
 - e. Investigate serving milk and juice from bulk containers into reusable cups.
2. Encourage purchase of recycled/recyclable materials.
3. Encourage charges for disposable items, and dedicate funds collected for solid waste reduction efforts.

CONSTRUCTION/INDUSTRIAL

This subcommittee investigated ways to reuse construction waste or divert it from the landfill. Recommended actions are:

1. Reserve a protected site at the landfill for discarding "clean" construction waste that can be reused.
2. Purchase equipment which can chip gypsum board into a product which has many potential uses.
3. Purchase equipment to chip scrap lumber for landscaping or building products use.
4. Designate a portion of the landfill site for fill dirt, and establish a clearinghouse to facilitate distribution of information.

CONCLUSION

There is a growing social awareness that waste reduction and recycling are not only right economically, but must be done to help preserve our environment. We should seize the opportunity to channel this "good conscience" feeling into structured programs that aggressively pursue our waste reduction goals for all of Orange County.

In light of the fact that **53% of the Orange County waste stream has the potential to be diverted/recycled without the addition of any new markets or technology**, our community should be able to make significant strides "Toward Zero Garbage" with the implementation of recommendations outlined in this report.

SOLID WASTE REDUCTION TASK FORCE

RECOMMENDATIONS

The following recommendations are the Solid Waste Reduction Task Force's long-term plan for waste reduction. It is an integrated plan with the individual points complementing and supporting each other. No point is intended to stand alone, and elimination of any point could compromise the success of the entire plan. The recommendations have been numbered for convenience and discussion purposes. Sequence does not imply importance of one recommendation versus others.

1. Recommendation:

Always consider reduction of waste at the source (source reduction) as a higher priority than recycling, landfilling, or incinerating. Develop a method to quantify source reduction within the solid waste collection system.

Source reduction includes all activities which eliminate or reduce the weight or volume of materials currently being disposed of through recycling, composting, landfilling, and incineration.

First, our community is capable of achieving and exceeding our goal of 40% reduction/materials recovery by 1996. The Orange Regional Recycling Program was recognized as the "Best Urban Recycling Program" in 1990-91, an award given by the North Carolina Recycling Association.

Other communities have pioneered the programs necessary for achieving high levels of waste reduction and materials recovery, and our community has shown the initiative necessary to achieve comparable levels and more. "Materials recovery levels of 75% are well within the realm of possibility for communities that integrate the best features of the best programs." (Platt et al, 1991 p. 10)

Second, reduction of waste at the source and materials recovery are cheaper than competing volume reduction options. For example, a recent survey showed that eighteen states in the Northeast and Midwest will spend \$525-790 million to recycle and compost 35% of their wastes by 1995. In the same period, they will spend \$7 billion, or 9-13 times as much, to incinerate 43% of their waste. (Denison and Ruston, 1990, p. 12)

Third, source reduction and recycling reduce pollution and consumption of virgin resources and energy over competing volume reduction technologies. "Substituting a ton of scrap paper for virgin paper saves about 10,000 kilowatt hours; burning a ton of scrap paper will generate approximately 600 kilowatt-hours." (Platt et, al, 1991 p. 11)

Adoption of some method to quantify source reduction within our

municipal waste collection system would be helpful in assuring that waste reduction is the primary choice for solid waste management. "Our present approach is to avoid solving difficult problems by transferring them to later stages in the waste cycle." (Denison and Ruston, 1990, p. 19.)

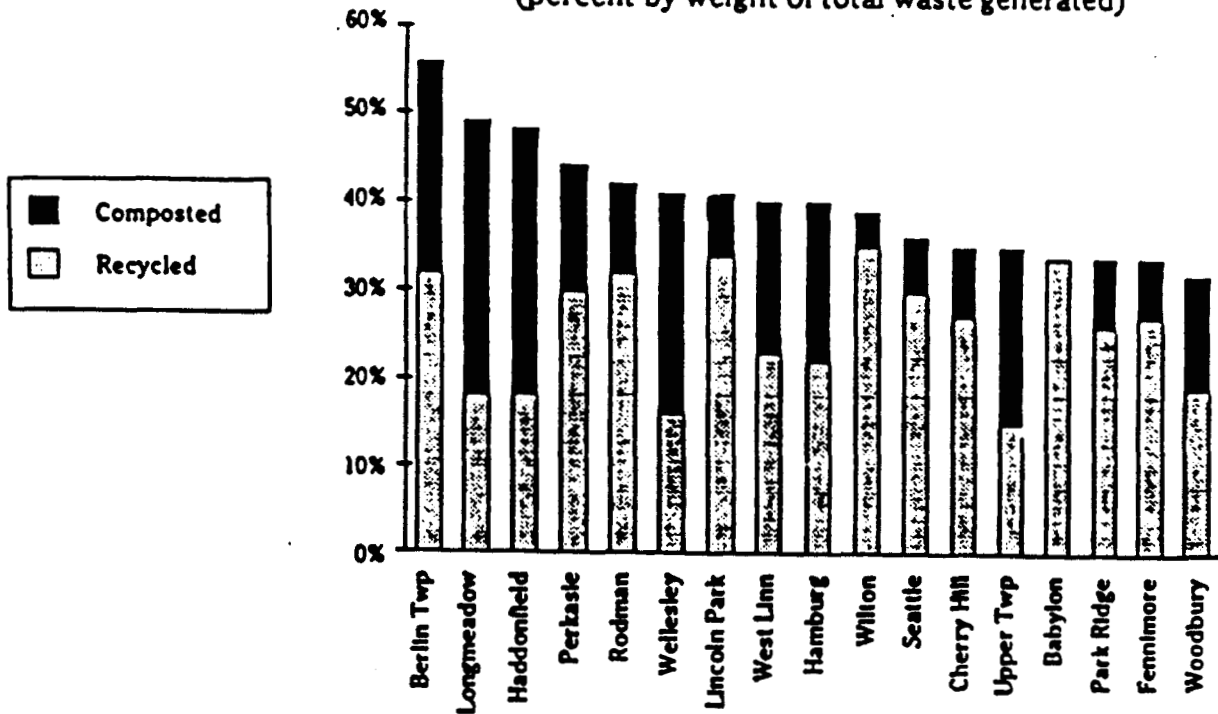
2. Recommendation:

Endorse the 25% goal established by the State of North Carolina for recycling and waste reduction as a minimum target for 1993. In addition, endorse a goal of 40% by 1996.

Chapel Hill has made progress since 1988-89 when we had a 3600 residence curbside-recycling program, 10 drop-off sites, and commercial cardboard collection. At that time, 180 tons/month were recycled, or 2% of all garbage. Today in 1990-91, we have an 11,800 residence curbside-recycling program, a pilot apartment recycling program, glass recycling at restaurants and bars, a commercial cardboard program, plastic container recycling and drop sites, and recycling at UNC. Recycling is now at 500 tons/month, or 6% of the waste stream. This progress has been made possible through the commitment of the staff, the Town Council, the Landfill Owners' Group, and the citizens of our community.

Recycling, Composting, and Total Materials Recovery

(percent by weight of total waste generated)



The Task Force is aware that while 25 % recycling by January, 1993 and 40% by January, 1996 seems ambitious, other communities that have pioneered recycling programs have surpassed these goals and have established new goals of 60% or more, as indicated in the previous chart.

"Seattle and Cincinnati have goals of 60%. King County, Washington has a goal of 65%. New Jersey recently established the highest statewide materials recovery goal: 60% of its total solid waste stream by 1995. Part of that state's new solid waste management policy is to stop encouraging the development of incinerators in most of the state's counties. State policy now stipulates that the 60% goal must be met before a waste incinerator can be developed. This policy acknowledges that communities cannot achieve high levels of materials recovery while operating incinerators. Both systems compete for the same materials and the same funds." (Platt, et al, 1991, p. 10.)

"Recycling should be supported by fiscal policies that reflect its full potential as a solid waste management alternative." (Denison and Ruston, 1990, p. 6.) Funding now comes from landfill tipping fees, and could come from a variety of additional sources such as building the cost of recycling programs into the rates the Town charges for trash collection, or taxes on difficult-to-recycle materials.

One of the most important lessons learned by the editors of Beyond 40% was: "In order to reach high levels of recycling and composting, local officials must implement comprehensive waste reduction and recovery, and use disposal as a last resort only." (Platt et al, 1991, p. 64.)

3. Recommendation:

Combine all solid waste management programs into an integrated plan.

An integrated plan is one that "considers how each proposed program affects other aspects of solid waste management as well as municipal infrastructure and resources." (North Carolina Recycling and Solid Waste Management plan, Public Review ES-45)

The Task Force recommends a solid waste management plan for our community which will maximize the opportunities for source reduction, recycling, and composting. This plan should maximize the use of existing equipment and labor, and minimize the cost.

"When materials recovery programs achieve levels above 50%, they are no longer simply add-ons to conventional waste handling systems. At that point, recycling/composting costs are offset by the reduced costs of conventional collection." (Platt et al, 1991, pp. 47-48.)

The Task Force believes that the Town should consider providing the collection of recyclables. A detailed study of this proposal is necessary to define the costs, the operational details, and the potential savings.

However, most of the successful recycling programs are publicly run. (Platt et al, 1991, p. 39.)

Recycling Program Characteristics

#	Community	Type of Program	Mandatory Source Separation	Public/Private Operation	Pick-up Frequency	Same Day Collection	Containers Provided	Segrega-tions Required	Economic Incent-ives	Partici-pation Rate (%)
1	Berlin Twp. NJ	CS, DO	Yes	Public	Weekly	Yes	Yes	3	Yes	95
2	Longmeadow, MA	CS, DO	Yes	Contract	Weekly	Yes	No	2	No	90
3	Haddonfield, NJ	CS, DO	Yes	Public	Weekly	Yes	Yes	3	Yes	95
4	Perkasie, PA	CS, DO	Yes	Public	Varies	No	Yes	4	Yes	100
5	Rodman, NY	DO	Yes	Public	--	--	--	--	No	90
6	Wellesley, MA	DO	No	Public	--	--	--	--	No	82
7	Lincoln Park, NJ	CS, DO	Yes	Public	Monthly	No	No	1	Yes	85-95
8	West Linn, OR	CS, DO	No	Private	Weekly	Yes	No	3	Yes	84
9	Hamburg, NY	CS	Yes	Public	Weekly	Yes	No	3	No	98
10	Wilton, WI	CS	No	Public	Biweekly	No	No	8	No	50-60
11	Seattle, WA	CS, DO, BB	No	Contract	Varies	No	Yes	Varies	Yes	77
12	Cherry Hill, NJ	CS	Yes	Contract	Weekly	Yes	Yes	2	Yes	92
13	Upper Twp. NJ	CS, DO	Yes	Public	Weekly	Yes	No	2	No	85
14	Babylon, NY	CS, DO	Yes	Contract	Biweekly	No	No	2	No	63
15	Park Ridge, NJ	CS, DO	Yes	Public	Biweekly	No	No	2	No	90
16	Fennimore, WI	CS	Yes	Public	Biweekly	No	Yes	5	Yes	100
17	Woodbury, NJ	CS, DO	Yes	Public	Weekly	No	No	8	Yes	85

Key: CS = Curbside

-- = Not applicable

DO = Drop-Off

BB = Buy-Back

4. Recommendation:

Begin preparation for moving to a fee structure based on units of weight or volume (unit-based fee structure) for waste collection; the more waste generated, the greater the fee (recyclables collected at no charge).

In this regard, waste removal should no longer be considered a community service, but a utility similar to water or electricity. The more one uses the utility, the more one will have to pay. One of the components of the most successful recycling programs is economic incentives for materials recovery. The Task Force believes that unit pricing is an economic incentive which has advantages and benefits that far outweigh the disadvantages. Overall program evaluation has shown that in no case have the problems been a major deterrent to the implementation of a unit pricing fee structure. "Ongoing public education can eliminate or reduce such problems." (Becker and

Browning, 1991, pp. 97-103.)

Some demonstrated advantages of a unit pricing system include: provides equity in pricing, directly links the price to the volume of waste generated, encourages reduction in the amount of "mixed" waste, increases recycling participation, provides the waste collector with direct revenues to offset the cost of collection and disposal, and encourages composting of food and yard waste.

One of the disadvantages of a unit-based collection system is the difficulty in administering the system to multi-family developments. In order to equitably provide both recycling and refuse collection services to as many citizens of Chapel Hill as possible, the collection procedures should be appropriate to the density and access in each development.

"Communities using a volume-based garbage collection fee system have higher recycling rates than communities using a flat-fee structure." (Becker and Browning, 1991, p. 97.)

"Unit pricing encourages customers to reduce the amount of mixed waste they set out for collection. This conserves valuable labor and material resources used in collecting and disposing of mixed waste." (Morris & Byrd, 1990, p. 38.)

As the move is made toward unit-based pricing, it becomes necessary to identify the true cost of municipal solid waste collection and disposal, including taxes, tipping fees, landfill operations and land acquisition, the recycling program, and other hard costs associated with administering these programs. The Task Force believes that it is necessary to identify the costs of individual elements of these programs in order to establish a basis for unit pricing of household mixed waste, yard waste, white goods, and commercial collection. At present, most of these costs are paid out of the property tax general fund, and are not readily identifiable.

With the use of stickers, bags, or containers, volume-based or unit-based pricing is adaptable to all types of collection systems. For instance, in Downers Grove, Illinois customers buy stickers for \$1.25; three stickers are required for the back-door collection of a 33-gallon bag. (Becker and Browning, 1991, p. 97.)

The Task Force recognizes that changes in Town ordinances and procedures will be necessary to move toward a unit-based fee structure, and that these changes may initially be unpopular. However, we believe that "if residents understand the purpose of the volume-based fee system, they are most likely to cooperate and comply with the regulations. Introduction of volume-based fees should be accompanied by easy no-cost access to recycling opportunities and comprehensive information on waste reduction in the home." (Becker and Browning, 1991, p. 103.)

See also: General Public Subcommittee Recommendations.

5. Recommendation:

Develop and implement a dynamic and ongoing educational program about waste reduction which includes all segments of the community.

Education can generate public awareness of the consequences of our current practices and habits and ultimately lead to changing the way people perceive and practice solid waste management in their own home and workplace. Education can take many forms, such as public service announcements, flyers, church bulletins, school newsletters, in-school programs, and media campaigns.

We have a well-developed educational program administered by the Orange Regional Recycling Program, with outreach to schools, businesses, and the community. However, the focus of this program has been on recycling and composting. The Task Force recommendation is to develop, within the existing program, a strong emphasis on reduction of waste at the source.

However, education alone will not accomplish goals. Education is one component of a good program design. Other components of program design are economic incentives and targeting a large portion of the waste stream for recovery.

See also: General Public Subcommittee Recommendations.

6. Recommendation:

Raise the landfill tipping fee over the next several years until it reflects the landfill replacement cost.

The current tipping fee for refuse disposal at the Orange Regional Landfill is \$21/ton. The recent HDR Engineering study indicates that a tipping fee of \$35-55 per ton (1991 dollars) reflects the replacement cost of the new landfill currently in the siting process. Our next landfill will be an engineered landfill and will cost at least \$200,000/acre, not including the cost of the land. (Orange Regional Solid Waste News 1991). This cost also does not reflect the cost of monitoring these high-tech landfills far into the future when "even the best liner and leachate collection systems will ultimately fail due to natural deterioration," according to the EPA, and such technologies may delay releases by many decades. (Denison and Ruston, 1990, p. 6.)

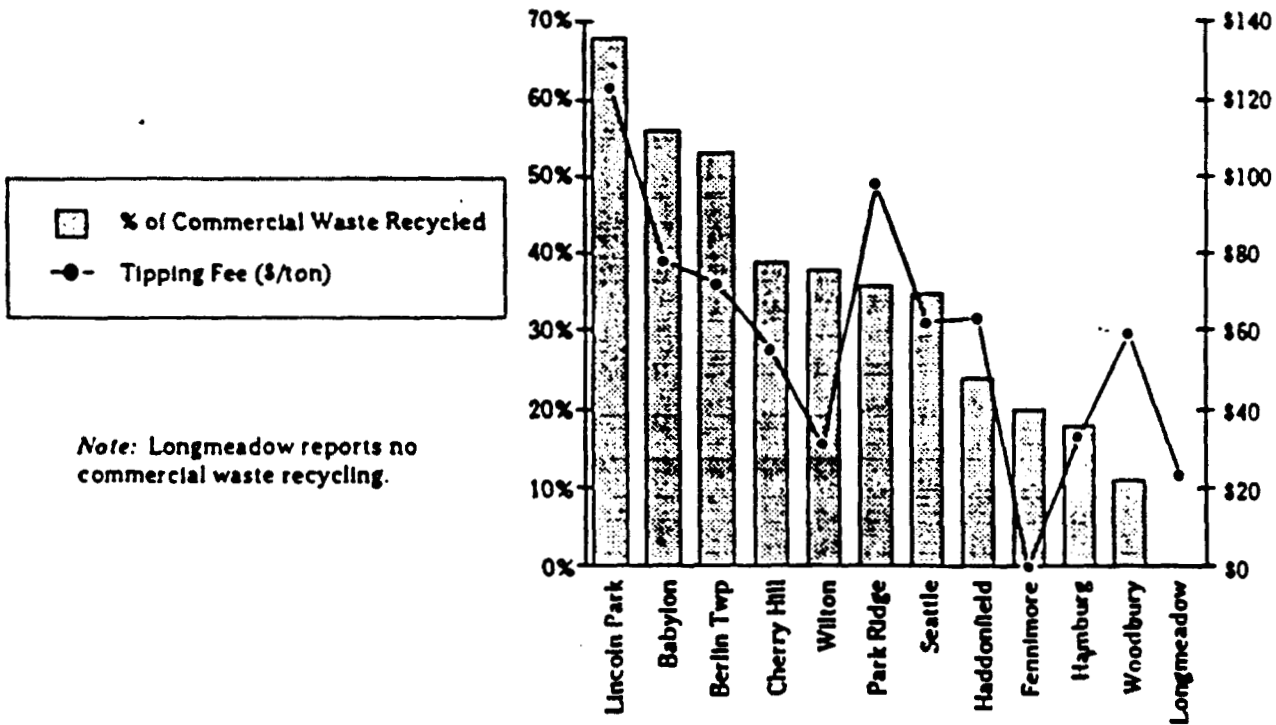
The Task Force supports the idea that "rational waste management is, in essence, materials management." (Denison and Ruston, 1990, p. 18.) We view the landfill tipping fee as one of the tools for materials management. The tipping fee, as such, provides the economic incentive (for citizens and

businesses) to use the primary tools of good materials management: source reduction, recycling, and clean composting.

Durham is planning to raise its tipping fee to better reflect the real costs of landfill disposal, thereby increasing the incentive to major waste generators to reduce their waste. (Sun Shares Newsletter, Spring 1991, p. 1.)

The chart below shows the relationship between tipping fees and commercial recycling in several U.S. cities. There is a correlation between higher tipping fees and higher recycling.

Tipping Fees and Commercial Waste Recycling Levels



7. Recommendation:

Continue to expand residential, commercial, and drop-off recycling programs as markets for other products develop.

Single family residents of Chapel Hill are currently recycling 16% of their waste stream. In all sectors of Orange County, we are currently recycling 6.0% of our waste (10% if white goods and yard waste are included). The SCS Engineering study shows that 53% of the waste being thrown away by residents of Orange County is divertable or recyclable. These materials are available for diversion/recycling without the addition of any new markets or any new technologies. Mixed paper and other paper make up another 23.4% of the residential waste stream and 21.4% of the

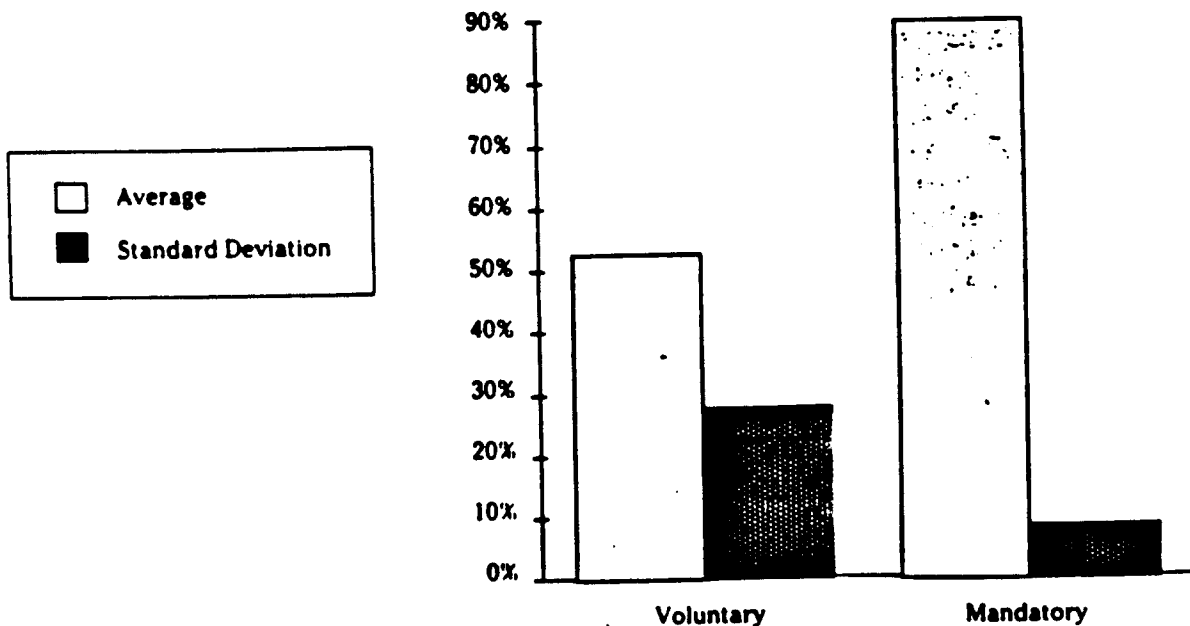
commercial waste stream.

To help recover a greater percentage of recyclables and reduce the cost of residential refuse collection, the Task Force recommends an integrated system of pick-up for garbage and recyclables, and a unit pricing system. We recommend that graduated recycling percentage goals be adopted in order to monitor the success of the unit pricing system and voluntary recycling programs. **If goals are not met, a mandatory recycling program should be adopted.**

A significant improvement in the commercial recycling program should result from the addition of a Commercial Recycling Specialist. To monitor success, the Task Force also recommends adoption of graduated recycling percentage goals for this segment of the community. **If goals are not met, a mandatory recycling program for businesses is recommended.**

"Of the 17 communities discussed in Beyond 40%, 14 have overall recovery levels above 40% and three have recovery levels above 30%. 80% of these programs have mandatory recycling, where residents are required to segregate designated materials for recycling and set them out at curbside or deliver them to a drop-off site. Participation for the 13 mandatory recycling programs averages 90% (plus or minus 10%); for the four voluntary programs, participation averages 75% (plus or minus 14 percent.)" (Platt, et al, 1991, p. 25.)

Average Household Participation Rates for Mandatory and Voluntary Programs



A recent Wall Street Journal/NBC News poll showed that concern and awareness of environmental problems are all but universal. Moreover, it showed people's desire to have change come through the leadership of government and the resulting legislation. "I think the only way you're going to get people to change their lifestyles as far as the environment goes is you're going to have to make it law." (*Wall Street Journal*, Friday, August 2, 1991, p. 1, c. 1.) The increased participation in mandatory recycling programs demonstrates the effectiveness of legislation.

Even so, the Task Force believes that Chapel Hill has demonstrated the ability to successfully implement a voluntary recycling program and this course of action should be pursued as long as progress is made.

8. Recommendation:

Restrict the Orange Regional Landfill to waste generated in Orange County.

All publicly collected waste in Orange County should be deposited at the Orange Regional Landfill.

Precedents for this from other partners in the Triangle J Council of Governments include:

"No refuse from outside Durham County or the City of Durham may be disposed of at a city landfill area." (Durham City Code: Section 10-90.)

"Only waste material generated within the Raleigh city limits or authorized by contract with the city of Raleigh may be deposited in the city landfill." [Raleigh City Code - Section 7-3007(b).]

"Designated local governments may adopt ordinances governing the disposal in facilities which they operate of solid waste generated outside of the area designated to be served by such facility. Such ordinances shall not be construed to apply to privately operated disposal facilities located within the boundaries of a designated local government." [N. C. State Statutes G.S. 130A-309.9 (a).]

Johnston County has a \$15/ton tipping fee for waste generated within the county, and \$60/ton for waste generated outside the county.

The Task Force believes that similar ordinances should be adopted by the Orange Regional Landfill Owners' Group to assure that source reduction and recycling are the least expensive alternatives to irresponsible waste disposal habits throughout the region.

9. Recommendations:

Encourage adoption of a city-wide procurement policy for recycled content, bulk purchases, minimally-packaged and durable products .

In order to reduce waste and help create markets for recycled products, governments should encourage purchase of durable and recycled products. Local governments can have a positive impact on the waste stream by adopting procurement procedures that encourage source reduction. Chapel Hill currently has a policy requiring that at least 75% of paper purchased must have recycled content.

Elements of procurement policies in effect elsewhere include 1) establishing a minimum post-consumer content to facilitate purchasing decisions, 2) requiring purchase of recycled products if available at a reasonable cost, 3) encouraging bulk purchases, minimally-packaged products, and durable goods, 4) requiring contractors with town government to follow procurement policies, and 5) requiring that reusable products take precedence over recycled products.

Adopting source reduction procurement procedures serves as an expression of government policy and as a good example to others. Citizens and businesses should be made aware of these policies and encouraged to follow them.

Specific examples of source reduction procurement actions are purchase of photocopier machines that make two-sided copies, use of cloth hand towels, purchase of longer-life tires or retreads for town vehicles, purchase of energy-efficient light bulbs for all municipal buildings, use of re-refined oil, purchase of construction materials made from construction and demolition debris, and use of vegetative waste compost.

GENERAL PUBLIC

SUBCOMMITTEE RECOMMENDATIONS

The General Public subcommittee examined ways in which citizens can contribute to the reduction of solid waste. Members determined that the keys to reducing waste from this segment of the community are economic incentives and an aggressive educational program that reaches as many citizens as possible. Other categories identified as important were composting and a retail shelf labeling project to increase awareness of least-waste products.

1. Recommendation:

**Design and implement a county-wide waste reduction educational program.
(Short-term, Long-term)**

Existing Practice: Existing educational materials are good and accurate, but are often not widely distributed. In general, only those individuals who are interested in reducing their waste or increasing their recycling efforts have sought them out.

Discussion: One of the goals of the educational program is to reach the great number of citizens who are not currently aware of the issues surrounding waste management (specifically waste reduction), and to provide practical solutions to problems associated with solid waste disposal. To reach the 25% recycling/40% reduction goals, significant numbers of currently uncommitted citizens need to change their behavior.

The subcommittee recommends a comprehensive, ongoing program of educating the public about the many opportunities available for reduction of solid waste, including recycling and reuse. This program should reach out to those not currently recycling, and should encourage active participation from various community groups and public institutions.

Goals and objectives of the educational program should correspond to those of the Public Works Department and the Orange Regional Landfill Owners' Group. Materials for the program should be developed based on identified needs of the currently uncommitted public.

Specific suggestions include:

- Develop methods (such as focus groups and questionnaires) which survey citizen attitudes and habits about source reduction, recycling, and reusable products. The results of the survey could be used to determine the primary focus of the educational program. What are the obstacles to waste reduction? How can the educational program help citizens overcome these obstacles?
- Design and implement a multimedia public relations campaign

with an identifying logo and campaign slogan. A daily "Tip to Reduce Waste" could appear in the same place in the newspaper every day, carrying the program's logo and slogan. The same tip could be heard on the radio several times during the day. Waste reduction tips should be practical, relatively easy to accomplish, and when applicable, specific to Orange County. For example, "Wellspring Grocery in Village Plaza accepts tin cans for recycling. The cans may be placed in containers located ..."

- Encourage local churches and civic groups to include waste reduction "tips" in their publications. This has been used as an effective outreach tool in other communities
- Design a booth for Apple Chill and Festifall that offers information on reducing solid waste. Ask for active participation from schools, civic groups, churches and neighborhoods
- Continue to ask knowledgeable citizens and/or members of the Task Force to submit articles to the newspapers on the importance of "Reducing, Reusing and Recycling." Reprints of articles could be made available to interested citizens/groups
- Expand the recycling Block Leader program to include source reduction. One-to-one outreach by citizens has proven to be an exceptionally effective technique in other communities.

2. Recommendation:

Implement a unit pricing system for residential refuse collection. (Long-term)

Existing Practice: The cost of refuse collection and disposal is hidden in the general tax structure. For residences, a household with one person "pays" the same as a household with four persons.

Discussion: Waste collection and removal should no longer be considered as a community service, but rather as a utility similar to water and electricity; the greater the utility use, the greater the fee paid. Adoption of a unit-based fee structure for the collection of solid waste should have an impact on the amount of waste generated.

The most successful method of reducing solid waste in other communities has been the implementation of a unit-priced fee structure. A unit-based fee structure should reflect the true and complete cost of waste collection and disposal.

Demonstrated advantages of a unit pricing system include:

- Provides equity in pricing
- Directly links the price to the volume of waste generated

- Encourages reduction in the amount of "mixed" waste
- Increases recycling participation
- Provides the waste collector with direct revenues to offset the cost of collection and disposal
- Encourages composting of food and yard waste.

A successful unit pricing program includes the following elements:

- An ongoing public education program
- Distribution of waste reduction information
- Easy access to no-cost recycling programs
- A method of paying for the fixed costs associated with refuse collection and recycling
- A distribution network, if required, that is accessible to residents and that fairly reimburses distributors for their costs
- Methods for resolving potential illegal dumping problems
- Enforceable weight limits on bags and/or containers.

Public education should begin as soon as possible to help citizens understand and accept this solid waste collection philosophy.

3. Recommendation:

Support the expansion of the existing composting program to include more public outreach, especially in the areas of grass and leaf/brush composting. (Short-term)

Existing Practice: There are three compost demonstration sites in Orange County. Yard waste is generally included in municipal refuse collection.

Discussion: Composting is a relatively easy method of waste reduction. Nearly 15% of Orange County's waste stream is material that can be successfully composted. There is no data about how many active composters there are, or what percentage of compostable material is currently being diverted from the landfill.

Senate Bill 111 bans yard waste from North Carolina landfills by 1993. Additional financial support for residential composting education could probably pay for itself in diverted collection and disposal fees. Seattle, Washington has reported great success from their residential compost

demonstration sites; they estimate nearly 9,600 tons of waste are being composted annually into soil amendments and mulch.

Suggestions related to composting:

- Ban grass clippings from municipal collection/landfill by 1992
- Require leaves to be bagged in biodegradable paper bags except at mass collection times
- Purchase low-cost compost bins for resale to the public to encourage backyard composting
- Begin now to educate citizens on how to prepare brush for municipal collection and green box drop-off, sources of biodegradable paper bags for leaves, and alternatives for disposal of yard waste (e.g. "Don't Bag It" program for grass clippings).

4. Recommendation:

Develop a program to work with local retailers to increase public awareness of products that produce the least amount of waste. (Short term, Long-term)

Existing Practice: Consumers are not well-educated about the impact that products they purchase have on the waste stream.

Discussion: Supermarket shelf labeling is a waste reduction strategy developed by the Central States Education Center of Champaign, Illinois in conjunction with the University of Illinois. The objective of the program is to reduce solid waste by educating consumers in the purchase of products that result in less solid waste and waste that is less harmful to the environment. A shelf labeling program is currently in place at an independent grocer in Champaign, and its management is pleased with customer response.

The program developed in Champaign involves labeling store shelves to identify three kinds of products:

- Those with recyclable containers
- Those with the least packaging necessary and/or the most efficient use of packaging
- Those that are "safer earth products"; that is, products that provide an alternative to more toxic or hazardous products.

The labels are used in conjunction with a brochure which explains the program. These two methods are used to try to influence consumers to make purchasing decisions that will result in a reduction of solid waste from leftover or non-recyclable packaging.

Shelf labels are used only where alternatives exist from which consumers may make a choice. For example, ketchup is packaged in both glass and multi-layer difficult-to-recycle plastic containers, so the product in the glass bottle is labeled as recyclable. On the other hand, all pickles are packaged in glass jars, so a choice does not exist; no labels are used for pickles.

In some cases, an alternative may be created where none previously existed in the store. For example, lemon juice and vinegar can be used in place of many kitchen and bath cleaning products; they may be placed on shelves along with the more conventional cleaning products and labeled as "safer earth products." The labels are used to make positive rather than negative associations with products.

Supermarket shelf labeling can provide high visibility for source reduction information to a great number of citizens who make product purchasing decisions on a daily basis.

BUSINESS/COMMERCIAL

SUBCOMMITTEE RECOMMENDATIONS

In the latest Waste Composition Study of the Orange Regional Landfill, figures show that 57% of the waste being landfilled from the business/commercial sector is divertable or recyclable.

This subcommittee looked at ways to decrease the amount of materials being landfilled from this segment of the community. It was concluded that it will take increased effort on the part of both local governments and local businesses to maximize the potential for waste reduction.

Self-evaluation by each establishment is a key factor needed to take maximum advantage of opportunities that exist for them today. Local governments should do their part to expand recycling programs to the commercial sector. There should be positive incentives and recognition for those businesses that take the initiative to reduce and recycle. In addition, local governments should be willing to enact legislation with enforcement measures where initiative is lacking.

With the addition of a Commercial Recycling Specialist, there should be a significant reduction of solid waste from the business sector.

1. Recommendation:

Provide solid waste audits for all businesses and offer technical assistance to act upon audit findings. (Short-term)

Existing Practice: Private waste audits are currently available for a fee. The Orange Regional Recycling staff provides technical assistance to business on request.

Discussion: As we strive to reach new goals in the reduction and recycling programs, and as we move beyond those things that are easy to recycle (glass, aluminum, newspapers), it will become important to identify new markets for other materials. It will also become necessary to find substitutes for products that cannot be recycled or reused.

Municipal waste recycling coordinators are often the early recipients of information about new markets and technologies. As we phase in the requirement for Solid Waste Management Plans for the business sector, the importance of solid waste audits becomes apparent.

Chapel Hill's business community has already voluntarily participated in many new recycling programs; most businesses would probably welcome help with a solid waste audit, and be receptive to the adoption of practices which contribute to the reduction of solid waste.

2. Recommendation:

Require a Solid Waste Management Reduction Plan as part of the business license renewal process. (Short-term)

Existing Practice: Solid Waste Management Plans are required only for new developments.

Discussion: With the initiation of commercial waste audits for businesses, the Solid Waste Management Plan should become an integral part of doing business in Chapel Hill. The Plan should not be viewed as a burden of operating a business in the community, but rather as a way to make a meaningful contribution to the solid waste problems that face all segments of the population.

By showing businesses how to reduce their waste, and by requiring a feasible plan for waste management, we can make a great deal of progress toward achieving our 25% recycling/40% reduction goals.

The Chambers of Commerce, The Downtown Chapel Hill Association, and the Downtown Commission, in addition to the Town, could be valuable repositories of information regarding waste audits, Solid Waste Management Plans, and plan implementation.

3. Recommendation:

Develop a policy to encourage economic development for recycling-oriented businesses. (Short-term, Long-term)

Existing Practice: None known.

Discussion: A county-wide initiative for governing bodies to purchase recycled products whenever possible is an effective way to encourage development of recycling businesses. Muskogee, Oklahoma (pop. 45,000) estimates they have generated and/or saved 1,877 jobs at a net benefit of \$40 million to the local economy, solely through their efforts to attract recycling businesses. Their first step was to institute a city-wide procurement policy that included waste reduction products (minimal packaging) and reusable/recycled products.

Another method of encouraging recycling businesses within the county is to institute financial incentives such as diverted tipping fees and tax credits for such businesses.

A commercial composting operation could potentially divert 13% of materials currently being landfilled. But because of Orange County's low tipping fees, low dumpster charges, and free delivery of yard waste, commercial composting is not a financially feasible business. Virginia

Polytechnic Institute found that banks are more willing to loan money to new commercial composting operations that could show diverted tipping fees on their income sheets.

4. Recommendation:

Create a composting program for organic products generated by commercial establishments. (Long-term)

Existing Practice: Commercial composting is not currently a financially lucrative business because of low tipping fees, low dumpster charges, and lack of incentives for restaurants and groceries to separate compostable food waste. In addition, homeowners are able to obtain leaves and brush clippings from the Town at no charge.

Discussion: Yard and food waste comprise 12.39% of the annual commercial waste stream in Orange County. A composting operation for commercial organic waste could potentially divert most of this material that is being sent to the landfill. Incentives and disincentives need to be instituted to make this an attractive choice. Financial incentives include:

- Instituting a reduced tipping fee for those bringing separated compostable waste to the landfill
- Charging a fee for leaf compost delivery
- Making it economically attractive for food-oriented businesses to separate food waste from other waste.

5. Recommendation:

Provide incentives/awards for businesses that actively participate in waste reduction and recycling programs. (Short-term)

Existing Practice: Display cards are available to all businesses that participate in cardboard and glass recycling programs.

Discussion: One economical way to reward businesses for their waste reduction efforts is to identify them to consumers and recognize them publicly. The design and distribution of a multifaceted logo would provide customers a way of identifying "Green Citizens" and enable them to shop selectively. The sectioned logo would encourage businesses to complete all the pieces, and could discourage complacency among businesses that reduce their waste "some."

Examples of what the facets of the logo could represent are:

- Successful completion and implementation of recommendations

from a waste audit

- Participating in recycling programs (glass, aluminum, cardboard, plastic, office paper, newspaper)
- Separation of food waste for composting
- Use of environmentally safe products
- Purchase of minimally packaged products
- Use of a minimum of disposable products
- Sale of recyclable/recycled products.

The logo could be used positively in business advertising, and could also be used in promotional material and press releases from the Orange Regional Recycling Program.

6. Recommendation:

Create a local waste exchange. (Short-term)

Existing Practice: None known.

Discussion: The Southeast Waste Exchange in Charlotte serves as a triage business for generators of hazardous waste products. In this same fashion, an inventory of waste products generated by local businesses could be kept in a database accessible to other local or regional businesses. "One man's trash is another man's treasure," becomes the operating philosophy for the creation of such a waste exchange. For instance, mail order businesses might be able to use cardboard or Styrofoam packing pieces discarded from retail stores.

SCHOOLS/OTHER PUBLIC BUILDINGS
SUBCOMMITTEE RECOMMENDATIONS

Schools and other public institutions are in an excellent position to set an example for the community of how maximum waste reduction can be accomplished. They can help provide the education necessary to inform citizens about the importance of waste reduction and recycling.

Both the educational programs and the actual practices of these public institutions should focus on the importance of source reduction, followed by reuse of products, and finally, by recycling what cannot be reused. When new items are purchased, preference should be given to products made from recycled/recyclable materials.

1. Recommendation:

Provide assistance to public schools to:

- a. Expand the waste reduction/recycling units currently in the curriculum**
- b. Conduct school waste audits**
- c. Establish school waste reduction committees**
- d. Set up composting sites on school grounds**
- e. Investigate serving milk and juice from bulk containers into reusable cups. (Short-term)**

Existing Practice: Although school-aged children are usually exposed to the concepts of waste reduction and recycling at some time during their elementary and secondary education, the importance of the new "3 Rs" (Reduce, Reuse, Recycle) is not routinely taught as part of each grade level's curriculum.

Discussion: If our children are exposed to waste reduction practices at an early age, and at every level of their school years, these practices will have an excellent chance of becoming part of their daily lives. Many excellent waste management curricula have been developed for study at all grade levels. One of these programs was conceived and produced by Randee Haven-O'Donnell, a teacher at Culbreth Middle School.

Existing Practice: School visits by subcommittee members revealed that some recycling is taking place in most of the schools in the district, but there is no uniform policy regarding waste reduction.

Discussion: To begin reduction, reuse and recycling efforts, it is important for each school to know what kind of waste is being generated in all parts of the school operation. A waste audit for each school will give each a direction to follow in reducing and recycling its waste.

The establishment of a waste reduction committee in each school, starting with pilot programs in one or two schools, would provide a method for the systematic identification of waste and the initiation of recycling projects based on the specific waste revealed in the school audit. Ideally, all segments of the school's community would participate in the waste reduction committee -- students, administration, teachers, other staff members, and parents. The members of the committee would be responsible for designing and implementing a goal-oriented program to help the school reduce its waste stream, reuse as many products as possible, and recycle products no longer usable.

Existing Practice: Most schools send non-meat cafeteria waste, yard waste, and paper towels to the landfill.

Discussion: One effective way to divert school waste currently being sent to the landfill is to establish a composting site on the school grounds. Frank Porter Graham Elementary School has successfully established a compost pile to recycle cafeteria food waste, and Culbreth School is one of the three compost demonstration sites established by the Orange Regional Recycling Program.. In addition to non-meat food waste, paper towels from restrooms can be composted, along with waste from school grounds. Compost bins can be easily constructed at virtually no cost from scrap lumber, chicken wire, or construction pallets. The resulting composted material can be used for 4-H gardens and ongoing landscaping projects at each school.

Existing practice: Milk and juice are served or brought from home in disposable containers.

Discussion: An additional method to reduce solid waste generated by schools is to allow milk and juice to be served from bulk containers into reusable cups. The students at E.K. Powe Elementary School in Durham have initiated this method of waste reduction, and have been pleased with the results. In addition to discouraging the use of disposable cups, this method could save money for schools by allowing purchase of milk and juice in bulk quantities. Careful planning would be necessary to address potential obstacles concerning health/safety issues, but there is clear evidence that these hurdles can be overcome.

The subcommittee recommends that all of the above suggestions be presented to the School Boards of Chapel Hill/Carrboro and Orange County, with the offer of assistance from members of the Waste Reduction Committee.

2. Recommendation:

Encourage purchase of recycled/recyclable materials. (Short-term)

Existing Practice: The majority of paper products purchased by public schools and UNC is on State contract, with recycled paper available only at a greater cost than virgin paper.

Discussion: Purchase and use of recycled paper products by public schools and the University would encourage markets for these products, which eventually will reduce the cost of such products. Purchase of easily-recyclable products, such as paper with low dye content, sends a message to manufacturers that large consumers of paper products want to buy materials that can be easily recycled.

3. Recommendation:

Encourage charges for disposable items, and dedicate funds collected for solid waste reduction efforts. (Short-term)

Existing Practice: Yogurt bowls, salad plates, pizza boxes, paper napkins, Styrofoam cups, and carryout containers are only some of the disposable items that are provided free of charge to users of UNC dining facilities. Often students/faculty/staff use disposable items even when eating inside the dining facility, where reusable items can easily be substituted.

Discussion : UNC should be encouraged to charge a small fee for each disposable item. This fee would make dining hall users aware that there is a cost associated with disposable items -- namely, the cost of collection and disposal.

Money raised by charging for disposable items could be used to fund educational programs aimed at reducing, reusing and recycling.

CONSTRUCTION/INDUSTRIAL SUBCOMMITTEE RECOMMENDATIONS

This subcommittee investigated ways to reuse construction waste or divert it from the landfill. According to the Waste Composition Study of the Orange Regional Landfill, the construction industry in our community contributes approximately 18% of the waste stream. If miscellaneous construction materials are made available to citizens, a large percentage of the usable material could be diverted from the landfill.

Scrap lumber and salvage wood can be chipped for landscaping material, gypsum board can be ground up and put to various uses, and even fill dirt can be diverted through the implementation of an information network.

1. Recommendation:

Reserve a protected site at the landfill for discarding "clean" construction waste that can be reused. (Short-term)

Existing Practice: Miscellaneous construction materials such as damaged cabinets, countertops, sheathing, marble and tile are currently being landfilled.

Discussion: A protected collection area at a convenient location would give citizens an opportunity to glean usable materials, thus diverting them from the landfill. If space is limited, newspaper articles could publicize what items are available for reclamation.

A nominal tipping fee should be charged as an incentive for those contractors willing to separate clean construction waste from other solid waste. Citizens should be given the opportunity to pick up materials at no cost or a small fee.

The implementation of this recommendation would be the beginning of a Waste Exchange program that could be expanded as experience is gained in dealing with salvageable materials.

2. Recommendation:

Purchase equipment which can chip gypsum board into a product that has many potential uses. (Short-term)

Existing Practice: Builders currently pay fees ranging from \$125 to \$300 per house to have scrap sheetrock removed from construction sites. The majority of this scrap is sent to the Orange Regional Landfill; a small amount is sent to private landfills or recycled.

Discussion: Gypsum contains a high percentage of calcium, which has

proven to be an excellent soil conditioner. A machine sold as the Gyp Chipper reduces sheetrock to a product which can be sold to mix with compost, to use as bedding, or to add to soil for peanut farming.

A reduced tipping fee should be charged for contractors who deliver clean, separated sheetrock to the Gyp Chipper location. Citizens or businesses wishing to purchase the chipped product would be charged a fee based on weight.

3. Recommendation:

Purchase equipment to chip scrap lumber for landscaping or building products use. (Short-term)

Existing Practice: Scrap lumber and salvage wood is burned on site or landfilled.

Discussion: Separating scrap lumber and wood from other construction debris would provide a valuable source of materials which are already in demand. In addition, a great deal of construction material would be diverted from the landfill.

A differential tipping fee should be charged for those contractors willing to separate their scrap lumber from other construction waste.

Scrap wood, when diverted from the landfill, can then be chipped for landscaping mulch or building products (chip board, masonite-type siding).

4. Recommendation:

Designate a portion of the landfill site for fill dirt, and establish a clearinghouse to facilitate distribution of information. (Short-term)

Existing Practice: Fill dirt from construction sites is usually taken to private landfills.

Discussion: An area of the landfill designated for fill dirt would encourage building contractors to bring dirt from construction sites to the landfill, especially if no tipping fee were charged. Contractors and/or citizens could then buy the fill dirt, generating revenue for the landfill operator.

A database of those who need fill dirt and those who want to dispose of it would be beneficial as an information clearinghouse. Information could be disseminated through newsletters or by phone.

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