ATTACHMENT A

A RESOLUTION RECEIVING THE STRATEGY REPORT ON IMPLEMENTING CARRBORO'S ZERO WASTE RESOLUTION
Resolution No. 21/2002-03

WHEREAS, the Carrboro Board of Aldermen passed a resolution on September 22, 1998 in support of creating a "*Zero Waste Plan* in order to eliminate waste and pollution in the manufacture, use, storage, and recycling of materials," and

WHEREAS, the Carrboro Board of Aldermen, as specified in the Action Agenda for 2002-2003, have continued to seek opportunities to implement appropriate strategies toward that end, and has instructed staff to prepare a report to outline strategies for implementing the Zero Waste Resolution.

NOW, THEREFORE BE IT RESOLVED by the Carrboro Board of Aldermen that the Aldermen have reviewed the report provided by the Planning Staff on strategies for implementing the Town's Zero Waste Resolution.

BE IT FURTHER RESOLVED by the Carrboro Board of Aldermen that the Aldermen receive the report, and direct staff to convene a meeting of appropriate representatives of the interested local governments within the County to explore further the strategies contained in the report.

This is the 24th day of September in the year 2002.

A Report to the Board of Aldermen -September 2002

Town of Carrboro
Planning Department

Toward ZerØ Waste

Strategies for Carrboro

Town of Carrboro
Planning Department

Toward Zero Waste:
Phase I Strategies

Table of Contents

Toward Zero Waste:

Phase I Strategies

Town of Carrboro
Planning Department

Background

On September 22, 1998, the Carrboro Board of Aldermen passed "A Resolution Supporting the Creation of a Zero Waste Plan" (Appendix A). As an element of the 2002-2003, Action Agenda the Board of Aldermen has instructed staff to "study and make recommendations on appropriate steps to move toward zero waste such as reducing solid waste, increasing recycling, identifying and attracting businesses that use local waste products as raw materials, and supporting national efforts toward zero waste." This report provides policy and program strategies and recommendations.

This report, *Toward Zero Waste,* draws on direction from national Zero Waste Campaigns, North Carolina resources available to assist with elements of a local Zero Waste campaign, and experiences of other communities in identifying strategies. Opportunities identified in this report address:

- increasing recycling
- identifying and attracting businesses that use local waste products as raw materials, and
- supporting national efforts toward zero waste.

A Status Report on Solid Waste and Recycling was presented to the Board on May 28, 2002. That report described the status of programs for solid waste management and recycling in Carrboro. The status report laid the groundwork for specific recommendations about Carrboro's solid waste management system. The Status Report is intended to be a companion to this report as it provides a baseline of what Carrboro is currently doing in many of these areas, and provides the basis for evaluating change options to ensure Carrboro meets or exceeds expectations, including Carrboro's commitments of waste reduction within the Orange County Comprehensive Solid Waste Management Plan, and in the Carrboro Vision 2020 document (see Appendix A).

This current review is a starting point for going beyond the *status quo.* It provides strategies and recommendations toward implementing Carrboro's Zero Waste Resolution. This should not be viewed as a final product, but rather the first phase of continuous improvement toward the goals of a Zero Waste program.

Zero Waste: The Concept[1]

Zero Waste is not just about whether or not a community can truly eliminate all of their waste. Zero Waste represents a planning approach that weds the America economic system based on entrepreneurship and free-market capitalism with the often-sidelined principals of conserving resources, minimizing pollution, maximizing employment opportunities, and providing the greatest degree of local economic self-reliance. Zero Waste defines the discipline required to create more sustainable interaction with our natural world.

Zero Waste is a philosophy and a design principle for the 21st Century. It includes 'recycling' but goes beyond recycling by taking a 'whole system' approach to the vast flow of resources and waste through human society.[2]

Zero Waste maximizes recycling, minimizes waste, reduces consumption and ensures that products are made to be reused, repaired or recycled back into nature or the marketplace.

Zero Waste:

- Redesigns the current, one-way industrial system into a circular system
- Challenges business systems that use too many resources
- Emphasizes, through job creation and civic participation the value of human resources
- Helps communities achieve a local economy that operates efficiently, sustains good jobs, and provides a measure of self-sufficiency.
- Aims to eliminate rather than manage waste

Zero Waste is not only about recycling and diverting waste from landfills and incinerators, it envisions the restructuring of production and distribution systems to prevent waste from being manufactured from the outset. Zero Waste recognizes that production and economic systems are not linear, but represent circular or web-like relationships.

"To achieve true sustainability, we must reduce our "garbage index" - that which we permanently throw away into the environment that will not be naturally recycled for reuse - to near zero. Productive activities must be organized as closed systems. Minerals and other non-biodegradable resources, once taken from the ground, must become a part of society's permanent capital stock and be recycled in perpetuity. Organic materials may be disposed into the natural ecosystems, but only in ways that assure that they are absorbed back into the natural production system." [3] - David Korten

According to the GRRN, "The 'waste problem' is in reality a resource problem. We see 'waste management' as the failure of 'resource management.' The first step in changing from a waste management mindset to a waste elimination ('zero waste') mindset is to see used resources as a 'supply of discards' (an economic asset), rather than as a 'waste stream' (a liability)."[4]

[1] Adapted from GrassRoots Recycling Network © 1996 – 2002 from: http://www.grrn.org/zerowaste/zerowaste_faq.html

[2] GrassRoots Recycling Network © 1996 – 2002 from: http://www.grrn.org/zerowaste/zerowaste_faq.html

[3] - David Korten Recycling Council of British Columbia's Annual Waste Reduction Conference held May 10-12, 2000 at the Penticton Lakeside Resort, Penticton, BC Canada

[4] From http://www.grrn.org/zerowaste/articles/zeroing_in.html

Zero Waste: The Strategy

I. Reducing Waste

Source Reduction: Select Opportunities

The conventional method of dealing with waste materials is "end-of-the-pipe" or after it has been created. A preferred approach would be to focus instead on preventing the waste from being created in the first place. Source reduction is named as the number one recommended way of managing waste in North Carolina's waste management hierarchy[5]. The Environmental Protection Agency (EPA) report, ***Solid Waste Dilemma: An Agenda for Action***, defines source reduction as *"the design, manufacture, and use of products so as to reduce the quantity and toxicity of waste produced when the products reach the end of their useful lives."*

This non-traditional approach is an ethic as much as a method of managing waste and is one of the core concepts of the *Zero Waste* philosophy. Source reduction methods include: product reuse, reduced material volume, increased product durability, reduced toxicity, and decreased consumption. This report focuses on a few methods of source reduction that are relatively easy to implement.

Source reduction should be a primary focus of the Town's waste reduction and public education program.

The residential sector can be provided with source reduction information on a periodic basis that can be utilized to minimize the amount of waste generated in their homes. Since source reduction is not as tangible as recycling, it will be important to emphasize source reduction as a very important component of solid waste management. The Town's public support of this method of reducing solid waste will provide greater awareness by the general public. Source reduction methods that should be promoted to citizens includes, but is not limited to:

- xeriscaping
- backyard composting;
- reuse of materials;
- buying in bulk; and
- non-toxic alternatives to household cleaners.

Some of these methods are dealt with in more detail in the material that follows. In addition to these efforts, Town agencies should adopt and enforce office policies to reduce the volume of waste generated in their offices, thereby setting an example for local businesses. These policies should include:

- copying on both sides of paper;
- keeping document file copies on computer disks only;
- buying locally to avoid accumulating waste mail packaging; and
- buying recycled products.

Public Education on Source Reduction

Education on the need to reduce waste is imperative to a sound waste reduction program. Education on source reduction helps citizens and businesses realize why it is important and increases their desire to learn more about the practice. Education might focus, for example, on the fact that the cost of packaging accounts for $1 of every $10 spent and that by selecting products with longer lives and those which can be repaired, the amount of waste generated will decrease. Communication of information on the amount of packaging disposed of each year may convince businesses of the immediate need to reform purchasing protocol.

[5] The Waste Management Hierarchy is found in the NC General Statutes 130A-309.04(a).

Information on source reduction can be conveyed in simple yet interesting ways to encourage the practice. The more information citizens acquire on the practice the more likely they are to participate.

The Town should pursue state and County assistance for implementation of source reduction education programs. The following suggestions should be promoted through various educational vehicles by the County and the Town:

1. Buy reusable items in place of disposables.
2. Buy durable goods and appliances.
3. Buy what you *do* need in bulk to save packaging.
4. Avoid excess packaging.
5. Buy only what you need and consume less.
6. Repair worn and damaged goods and equipment.
7. Give items no longer needed to others or charities.

Xeriscape

This year's drought has affected not only area farmers, but also homeowners. Many homeowners are seeing their landscapes wither due to lack of rainfall, local water use restrictions, and the summer heat. To help alleviate landscape water problems this summer and in the future, the Town should begin promoting Xeriscape landscaping. Xeriscape, a term coined in Denver, Colorado, means "water conservation through creative landscaping." Xeriscape, which comes from the Greek word 'Xeros,' meaning dry, is considered a viable alternative to the conventional high water requirement landscapes. It is a registered trademark of the National Xeriscape Council, Inc. of Austin, Texas, a non-profit organization dedicated to water conservation.

The principles associated with the concept of xeriscape have been long advocated on the Prairies and in areas with dry climates or areas where fresh water supplies are limited. They include: appropriate planting and design, soil improvement, efficient irrigation, practical turf areas, appropriate plant selection, use of mulches, and maintenance. More details on the principles of xeriscape are provided in Appendix B.

The benefits of xeriscaping are many.

- reducing waste delivered to the landfill
- reducing pollutant runoff from chemicals applied to lawns
- better protection of landscaping investment
- reduced susceptibility to pests
- reducing watering requirements
- reducing costs of fertilizer and pesticide applications.
- xeriscape principles such as design, mulching, and efficient irrigation also reduce landscape maintenance.

The Town should establish policies and guidance to promote xeriscaping by individual homeowners, landscape companies, and developers. Carrboro should explore opportunities for including xeriscape practices where appropriate in Town operations.

Food Waste

Major generators of food waste include restaurants, supermarkets, produce stands, school cafeterias, hospitals, food processors, farmers, hotels, prisons, employee lunchrooms, and community events. Examples: leftovers, outdated bread, wilted lettuce, surplus canned goods, vegetable peels, and fruit pits. Food wastes may be composted, fed to swine, rendered, or re-distributed for human consumption, the latter being the highest value.

The Interfaith Council collects food from local groceries for distribution to food banks and shelters. Orange County offers food waste collection from businesses in Carrboro, through a contract with a company that composts the waste, but only 3 businesses are currently taking advantage of the opportunity. The finished compost is available locally at Southern States in Carrboro – a good example of completing the recycling loop locally.

Carrboro should work with Orange County and local food service businesses to increase the amount of food waste recovered from the waste stream from composting. In addition, the Town should support and publicize programs like the Interfaith Council that collect still edible food for re-distribution before it is discarded. State legislation protects from liability any person or organization that donates for use or distribution by a non-profit agency (See statutory text in Appendix C).

Backyard Composting

The Town currently expends considerable resources on collecting yard waste and landscaping debris from residents. Back yard composting has the potential of reducing significant amounts of food waste and yard debris from the waste stream.

The Town should implement the following strategies to significantly increase backyard composting of kitchen and yard waste

1. Identify organizations that specialize in educating homeowners on techniques of backyard composting to provide educational workshops
2. Work with neighborhood associations to promote backyard composting
3. Coordinate sales of backyard composting bins at the Farmers Market or other avenues.

Toxicity Reduction

The diversion of special wastes from the landfill for recycling constitutes one aspect of waste reduction. But even more importantly, these diversions are important in that they reduce the toxicity of the waste stream. Problem wastes, some of which are addressed in more detail in the material below, include:

- Household hazardous waste
- Household and lead acid batteries
- Computers and electronic equipment
- Waste motor oil and oil filters
- Agricultural and yard care chemical residues
- Spill residues
- White goods
- Scrap tires
- Land clearing and construction debris
- Sludges

Electronics Recycling

Computers, especially monitors, contain heavy metals. As part of the County's Toxics Reduction Improvement Program (TRIP) the County is trying to keep these computers out of the landfill, because placing these toxic metals in the landfill can result in long-term environmental liability. The County has hosted two one-day events for recovering electronics, and in July 363 County residents brought used, outdated and obsolete electronics equipment to the second County-sponsored electronics recycling

collection day at the Eubanks Road Park and Ride lot. The majority of the 33,200 pounds of equipment collected consisted of computers, printers, monitors and related devices. People also recycled cell phones, VCRs, stereo equipment, and a variety of other electronic devices. No televisions were accepted, as there is no market for them yet.

This program is provided with no charge to participating residents of Orange county (including Carrboro). It is not open to non-residents of ORANGE County due to cost ($6/monitor) to the county for contracting out disposal of computer monitors ($6/monitor). Businesses with multiple computers to discard can contact the County for more information on commercial computer recycling. Beginning this fall, the County plans to establish a permanent collection program at the Orange County Landfill, and does not plan any more one-day collection events.

Carrboro should actively publicize this program once it is established permanently, and assist in directing more of the discarded components out of the waste stream and into recycling and reutilization. The Town should work with Orange County to expand this program to address other similar problem waste materials.

Used Motor oil

Improperly disposed motor oil can lead to surface water, groundwater, and air pollution when improperly discarded. Crankcase oil drainings have been reported to account for more than 40 percent of the total oil pollution of our nation's harbors and waterways. The Association of Government Oil Recycling Officials estimates that recycling used oil could reduce U.S. petroleum imports by 25.5 million barrels of oil per year (about 0.8 percent of total import) Recycled oil is typically cleaned and blended as an industrial fuel to be burned as a source of recovered energy, or can be re-refined into lubricants of comparable quality to virgin oil products.

The County currently provides collection of used motor oil at the staffed convenience center sites located in the unincorporated areas, but provides no sites within Carrboro for collection.

The Town should collaborate with the County to implement the following strategies to improve used motor oil management practices:

- Solicit the cooperation of local high-volume vehicle lubricating centers in providing drop-off facilities for used motor oil brought in by the public.
- Evaluate the need for additional collection sites to be provided once participating vehicle service centers have been identified.
- Work with the media and local service stations to promote use of the locally sponsored drop-offs, including the posting of signs notifying customers of oil collection sites.
- Enforce prohibited disposal of used motor oil and disposal in refuse containers.
- Encourage all vehicle service centers in the jurisdiction to offer used oil collected at their facility for recovery through acceptable market outlets.
- Direct all Town departments to procure re-refined used oil for use in all technically feasible lubricating applications.
- Educate the public on the negative environmental impacts of improper disposal of used oil

Batteries

Household and lead acid batteries should not be disposed of in the landfill due to their toxic heavy metals content which could be released to the environment. Currently, the State prohibits the disposal of auto batteries in landfills. Reclaimed lead acid batteries can be recycled, assuming they are handled properly, thereby reducing potential environmental and human health problems. Most auto battery retailers accept old batteries in

exchange for the purchase of new ones. However markets for household batteries, although available in Europe, are not yet well established in the United States; and none are known to be located in North Carolina.

Although the two types of batteries--household and lead acid--are lumped together in this section, the problems and solutions are quite different. Both pose serious potential for water, air, or soil pollution if disposed of in landfills or by combustion.

Separation of **household batteries** from the municipal waste stream is limited by the size of the battery and hence difficulty in centralized separation, and by the lack of readily available markets. In the absence of an immediately available market for household batteries, they can be collected and stored in drums to be disposed of by a hazardous waste disposal company. The County currently collects household batteries at the solid waste convenience centers.

To minimize the environmental impact associated with the disposal of household batteries, the Town should evaluate feasibility of the following strategies:

- Promote and practice use of rechargeable batteries in feasible applications.
- Work with battery manufacturers and local retailers to develop a program for returning batteries to the point of sale.
- Work with retailers to develop a program to inform consumers regarding the problems with batteries in the waste stream, procurement options to minimize battery waste, and acceptable disposal alternatives.
- Evaluate the alternative of providing collection of source-separated household batteries at convenient drop-off sites and coordinate with County efforts for collection.
- Prohibit the land disposal of household batteries in household waste as soon as alternative management options are in place.

Lead acid batteries enjoy a much more favorable market and fairly well established infrastructure for collection and recovery. Management problems revolve around the do-it-yourself mechanics and small service shops that lack direct access to collection infrastructure, and with "backyard" battery recyclers who recover the lead, but dump gallons of lead-saturated acid and mountains of lead-contaminated casings on the ground. The County collects lead acid batteries at solid waste convenience centers.

The following strategy should be implemented to improve the management of lead acid batteries:

- Identify any Carrboro enterprises that are purchasing batteries for lead recovery and determine if each operation is environmentally suitable.
- Provide educational literature to all local battery wholesalers and retailers outlining recycling options and proper storage and transportation methods.
- Encourage all distributors of lead acid batteries to accept used batteries returned for recycling by customers who purchase new batteries.
- Require that all facilities for collection and storage of lead acid batteries be designed to prevent leakage to the environment.
- Encourage all retailers to participate in a publicity program to inform consumers of available battery exchange programs.

II. Increasing Recycling

Residential

Curbside / Multifamily Collection

Orange County provides through contractual arrangements, pursuant to the interlocal agreement, collection services for recyclable materials from single family and multifamily households. While Carrboro does not have direct, independent control over these contractual services, there are steps that can be taken to improve the performance of these programs.

The Town should consider the following measures for multifamily and single family recycling to enhance recovery rates:

- Continue to evaluate the use of variable fee systems
- Provide education and on-site technical assistance
- Targeting improvements at low-performing sites / neighborhoods based on County analysis
- Ensuring buildings are equipped with adequate recycling containers at each dumpster site
- Making participation mandatory

Further, the Town should begin discussion with the County to provide the following enhancements to the services:

- Collecting a wider range of materials
- Maintaining detailed records and conducting performance measurement
- Enhancing program convenience

Drop Off Recycling

A newly refurbished recycling site - the Town of Carrboro's first since 1995 – opened at Carrboro Plaza, April 22 in celebration of Earth Day. The new site at Carrboro Plaza replaces the former location that was closed seven years ago in conjunction with shopping center renovation, and is located directly behind the ABC store, off Highway 54 bypass. This is the fifth un-staffed site in the Orange County Solid Waste Management recycling drop-off system. There are six staffed sites as well. The site will be open 7 days a week, and is set up to receive recyclable materials only.

Carrboro residents can recycle the following materials at the site:

- newspapers,
- glossy magazines,
- telephone books,
- corrugated cardboard,
- mixed paper,
- metal cans and aluminum foil,
- glass bottles and jars, and
- all plastic bottles (#s 1-7)

Businesses may use the site for everything except large amounts of corrugated cardboard boxes. There is a limit of fifty boxes per week. Those generating more than that should acquire recycling service at their place of business.

The Town of Carrboro and Orange County will share responsibility for proper, safe, and clean operation of the site. This site has been traditionally left with little attention, and little publicity.

Carrboro should actively promote this site to increase the capture of some of the materials that are not yet being recovered at the curb, or from area businesses. The Town should monitor the site and identify use problems that can be addressed by education or enforcement.

Public Education and Promoting Participation

One of the most important aspects of successful waste reduction and recycling strategies is community involvement. Without strong educational and promotional programs, public awareness and participation will be haphazard and difficult to achieve. Residents' willingness to accept new solutions to Carrboro's solid waste, which may require both increased costs and changed habits, may depend on the quality of the communication programs. More detail on planning a public education program can be found in Appendix D.

The Town should collaborate with the County to commit the necessary resources to this process of developing a waste reduction and recycling communications program that might initially include some of the following:

- Conduct a public opinion survey to gauge public support for recycling efforts.
- Develop a catchy waste reduction program logo for use on printed materials.
- Meet with other organizations involved in recycling to learn more about each organization's activities, identify areas in which these organizations and the Town can work together to accomplish mutually held objectives, and to gain input on what Carrboro can do to enhance recycling.
- Establish a waste reduction and recycling hotline to provide a mechanism for individuals to get prompt answers to their recycling questions.

Commercial and Institutional

Based on available data, it appears that the largest missed opportunity for waste reduction in Carrboro is in the commercial sector. The commercial sector component of the waste stream accounts for one third (33%) of the total Carrboro MSW waste stream at a cost for disposal of about $109,000, which is about one third of the total disposal (tip fee) costs. Yet, Orange County reportedly spent only $10,250, or 5% of the Town' share of the recycling program cost, on providing recycling services to the commercial sector in Carrboro.

While an unknown number of businesses may recycle on their own, many businesses in the Town generate significant quantities of recyclable materials not collected by the County program. The key is to determine which businesses and materials to target to make the largest impact on the waste stream at a reasonable cost and how to make recycling a positive program for interested enterprises.

The program currently focuses on only commercial food waste and glass, resulting in a large portion of the commercial waste stream with high potential rates of recovery not being addressed - especially office paper, and other paper products. In addition, a rising problem of the commercial waste stream – computers and other electronic components – are not being addressed directly in Carrboro.

The goal of commercial recycling programs should be to maximize participation and the tonnage of materials recovered while minimizing public sector costs and involvement. Businesses need strategies for cooperative programs with the County and Town that will allow them to reduce what they generate, take advantage of existing programs when practical, and work together with other businesses of their type. The Town's role should be in providing guidance and support to businesses' efforts.

The Town should work with the County to build upon the existing efforts and infrastructure, assisting the commercial and institutional sectors to define the most effective means for reduction and recycling and to expand education and provide service to those not yet reducing or recycling waste. These efforts might include:

- Identify, publicize and applaud existing efforts
- Focus attention on largest employers/institutions first
- Solicit enhanced service from the County commercial recycling coordinator

- Promote County-wide "peer match" program for each class of organization
- Endorse and adopt programs being developed by other groups.
- Consider a commercial recycling awards program
- Promote a County level business/government recycling discussion forum.
- Develop, or leverage County development of a reduction and recycling assistance program for small business and retail sector, working with both generators and commercial haulers.
- Take a lead role in establishing a county-wide commercial Recycling Advisory Committee.
- Provide education and promotional materials and technical assistance to commercial/institutional sector.
- Evaluate feasibility of commercial/institutional recycling incentives, including mandatory recycling ordinance, service fee breaks, and disposal bans.

Carrboro can cooperate with Chapel Hill and the County to play a significant leadership role at a low cost by co-organizing and co-sponsoring a county-wide "public-private partnership program." The program might include events and programs designed to cost-effectively transfer the tools needed to the private sector such as:

- "Business leader Waste Reduction Breakfast Seminar Program". (This would be most effective at the County level.)
- "Peer Match Program" that matches like businesses with successful recycling programs with those interested in starting.
- County business waste reduction and recycling resource directory.

Carrboro should set an example for other organizations in enhancing commercial waste reduction and recycling. One area where it can focus effort is in defining the goals for reduction and recycling programs. These are:

- Use products and materials made from recycled post-consumer waste.
- Increase durability and reutilization characteristics of items procured.
- Reduce the amount of materials required to provide services through increased efficiency and waste minimization.
- Recycle waste wherever feasible, modifying in-house operations where necessary.

In the event that efforts in the above areas are insufficient to meet the Town's goals, the Carrboro may consider instituting recycling ordinances or policies.

Construction and Demolition Waste

Much of this segment of the waste stream going to the landfill is serviced privately at the project sites, and hence, little conclusive information is available on quantities or costs. A focus on minimizing this portion of the waste stream may not have a direct impact on town costs, but it could have a real impact on Carrboro waste contribution to the landfill, and hence the life of the landfill.

The Town has the opportunity to control this by incorporating waste reduction into new construction, demolition, and renovation projects by making a waste reduction plan part of the permitting requirements. Orange County has adopted an ordinance to accomplish this, and County Staff have been working with the Town on proposed implementation strategies in Carrboro later in 2002.

Further, an enforced ban in Carrboro planning limits on certain types of waste for which stable markets exist (metals, vinyl, clean wood and pallets, for example) would impose that requirement on the contractors and hence the private haulers. Additionally, all new developments - residential or commercial – should be planned with adequate facilities and space to accommodate recycling.

The current construction and demolition (C& D) landfill on Eubanks Road is projected to reach capacity by December 2002. A C & D Recycling Task Force, established by the Board of County Commissioners reviewed this matter and in August 2000 issued a final report that recommended: "Mandate recycling or reuse of C & D waste in Orange County through the use of an ordinance."

Recycled Materials Ordinance

County staff developed a mandatory recycling ordinance with input from Commissioners, builders, haulers, and municipalities. The ordinance includes the following provisions:

1) Creates a list of "regulated recyclable materials, " that includes unpainted, untreated wood waste, scrap metal, pallets, and clean, corrugated cardboard. The ordinance also provides for many other materials to be added to the list of regulated recyclables.
2) Requires that Recyclable Materials Permits be obtained in conjunction with building or zoning compliance permits.
3) Mandates separation of scrap metal, clean wood waste, cardboard, and pallets as a condition of development permits
4) Requires licensing, renewable annually, of haulers operating in Orange County.
5) Recycling in compliance of the ordinance is condition of receiving a haulers' license in Orange County
6) Prohibits burning of solid waste, excluding yard waste.
7) Allows up to a 60-day delay of demolition projects to provide time for an assessment of the recyclability of materials in the structure to be conducted.

The Town should endorse this ordinance and provide assistance to businesses and contractors in planning for the handling of recyclable materials and to facilitate implementation of the ordinance. The Town should also require all new commercial and residential developments to provide adequate space and facilities for managing recyclable materials and recycling equipment.

Deconstruction

An alternative to traditional demolition that is gaining in popularity is the practice of "*deconstruction.*" Deconstruction is the careful and systematic disassembly of an existing structure for the purpose of salvaging components for reuse and recycling. Deconstruction is a labor-intensive, low technology method of removing buildings and structures that is environmentally beneficial in that it minimizes the impact, while maximizing the potential for diverting materials from disposal. The deconstruction process can be thought of as reverse construction – taking a structure apart layer by layer and treating the removed materials with care to maximize their value for reuse on another job or for resale through retail or other outlet. Deconstruction projects – large and small – have been shown to be cost beneficial over traditional demolition (See Appendix E).

Another option to demolition is house salvage and moving. Relocating an existing home that is slated for demolition can provide a new affordable home while not only preventing waste from a house that would otherwise be demolished, but also preventing much of the waste associated with new house construction.

The Town should encourage the relocation or deconstruction of buildings requiring demolition in new development plans and encourage salvage of materials for reuse, resale, or donation. Carrboro should also set an example by stipulating in any contracts for demolition of Town property that deconstruction is the preferred approach.

Landscaping and Yard Waste

Yard waste comprises approximately ten to twenty-five percent of the municipal solid waste in North Carolina. Carrboro provides residents that receive roll-out service with collection of yard waste approximately twice per month with no additional charge for the service. Leaves must be bagged for collection from March through October, but may be raked to the curb for collection November through February for vacuum removal and mulching at the Public Works yard. By bagging leaves in plastic bags, mulching of those leaves may be hindered. Public Works has started offering separate roll-out containers for collection of yard waste, and currently has 100 containers in use.

Other than leaves picked up by vacuum trucks, yard waste and landscaping debris that the Town picks up from residents is disposed at the County Landfill at a tip fee of $15.00 per ton. In FY 2001-02 Carrboro paid approximately $5,500 in tip fees to dispose of about 365 tons of yard waste. With use of a small grinder, the Town could process virtually all yard and landscaping waste. Tip fees savings could pay for the grinder in four or five years.

The Town should consider separate roll-out containers or could require paper sacks for the collection of yard waste to facilitate mulching. The Town should evaluate the feasibility of processing wood wastes such as landscape trimmings, piece lumber, and pallets to include in the mulching operation.

Setting an Example

In addition to services provided to the residents and businesses in the community and public education programs to promote those programs, Carrboro should be putting these principles in practice within Town operations. The waste reduction message will be heard much louder and clearer as Carrboro government operations demonstrate by example a commitment to waste reduction and recycling.

The Town should play a leadership-by-example role in enhancing waste reduction in the short term through the following measures:

- Adopt a waste reduction and recycling policy for all Town operations (including toxicity and source reduction).
- Identify areas for enhanced recycling program development and work with Orange County for expansion of the government recycling services.
- Maximize employee participation through education and training.

III. Markets for Recycled Materials

Many instances of reluctance to put increased emphasis or add new materials to recycling programs is credited to poor markets for materials. Since Markets do fluctuate based on many factors, including the economy, and supply and demand, some action is needed for recyclable materials markets to expand. (See Appendix F for current market prices for various commonly recycled materials as of August 2002).

Stimulating Markets

The single most important way to improve recycling markets is to encourage the widespread purchase of recycled products. The familiar recycling symbol of three chasing arrows represents the three steps in the recycling process: 1) collection and processing; 2) manufacturing; and 3) buying products that contain recycled material. The often-overlooked third step is essential to "closing the recycling loop." Programs cannot maximize collection of recycled materials and expect the market to be favorable if there is no outlet for the goods manufactured from those materials. Buying products manufactured from recycled feedstock stimulates North Carolina and regional markets for recyclable materials – a classic supply and demand relationship. This provides an incentive for manufacturers to use more recyclables in production, which in turn conserves energy, prevents pollution, and reduces dependence on natural resources.

There are many opportunities for buying recycled, reused, or refurbished materials in place of virgin materials. While this is the topic of a separate Action Agenda item that will be addressed in a future report a few strategies are listed here:

Recycled Items on North Carolina State Contract

The State has expanded its efforts in securing products and supplies that contain recycled content, especially post-consumer content, are reusable, refillable, repairable, more durable, and less toxic. 115 open market bids were awarded through the bid process that supports environmental purchasing. These include used equipment, packaging materials, and many expendable supplies that contain post-consumer recycled content.

North Carolina's Online Waste Commodity Trading Service

WasteTrader, a free waste exchange service developed by the N.C. Division of Pollution Prevention and Environmental Assistance (DPPEA), is available at www.ncwastetrader.org. The service, made possible in part by support from the N.C. Energy Office, is North Carolina's marketplace for discarded or surplus materials. Businesses, industries, and local governments can use ***N.C. WasteTrader*** at no cost to reduce solid waste going to landfills. The exchange also reduces reliance on disposal as the preferred option for managing hazardous wastes. That in itself can result in significant savings to governments, businesses, and industries in avoided disposal costs.

Carrboro should establish a "buy recycled" policy and systematically review procurement practices to maximize to the extent practical the extent to which recycled goods are favored over goods made from virgin materials. The Town should explore these opportunities fully in the upcoming report. Carrboro may be eligible for a grant from the NC DENR Division of Pollution Prevention and Environmental Assistance to facilitate establishing a "buy-recycled" program.[6]

[6] For more information on buy-recycled grants available from the DPPEA, see http://www.p2pays.org/BuyRecycled/br%20facts.pdf.

IV. Identifying and Attracting Recycling Businesses

During the last past 20 years, the combined efforts of many have helped establish basic principles that form the basis for an environmentally sound approach to economic growth. Sprouting recycling industries are a prime example of the product of that effort. The Carrboro public has embraced recycling for several primary reasons.

- ✧ Participation has been made relatively easy
- ✧ Citizens believe they are doing their part to promote environmental stewardship.

But recycling goes beyond that. It can help revitalize existing industries and attract new industries to striving communities. And it can preserve existing jobs and create new jobs. In other words, recycling can be an economic development tool as well as a resource conservation tool. Reuse, reclamation, remanufacturing, recycling, and waste reduction offer some of the most readily available development opportunities for communities. Discarded materials are an untapped local resource that can contribute to local revenue, job creation, business expansion, and the local economic base.

Types of Businesses

If the County closes the existing landfill with no replacement, we will not only be exporting our waste, but also the landfill related jobs, compounding the negative impacts. This is a double incentive to focus on innovations that put people to work reducing the amount, and hence the cost, of waste exported. According to a report authored by the Institute for Local Self Reliance (ILSR), recyclables collection and processing companies sustain 5 to 10 times more jobs per unit of material handled than landfilling.[7]

However, it is the next step in the process – manufacturing new products from the old - that offers a much higher economic return on the development investment. New recycling-based manufacturers employ more people at higher wages than the recyclables collection and intermediate processing operations. The ILSR reports that recycling-based paper mills and plastic product manufacturers, for example, might employ as many as 60 times the number of workers per unit of material handled as landfills. "Manufacturing using *locally collected discards* also adds value by producing finished goods -- a drastic change from the current paradigm in which our communities export raw materials and import finished products."[8] While some marginal value is added to discarded waste materials by the process of cleaning, sorting, and preparing for marketing, significantly more value is added when the recovered materials are then converted to commodities or goods by end-use manufacturing.

Recycling-based manufacturing reduces reliance on distant markets and manipulated prices for selling recyclables and can provide greater market stability that allows the confident development of recycling infrastructure. The benefits created include

- ♦ Local jobs creation
- ♦ Access by local manufacturers to dependable, cheap source of raw materials
- ♦ Reduced landfill dependence which saves residents and the Town money that can now be spent elsewhere
- ♦ Local ownership ensures that business assets remain in the region
- ♦ Ripple economy enhances the stability of the local retail and professional business environment
- ♦ Direct and indirect enhancing of the local tax base.

[7] Brenda Platt, GRRN Green Paper #3: Create Jobs From Discards. http://www.grrn.org/resources/grrn3.html

[8] Brenda Platt, GRRN Green Paper #3: Create Jobs From Discards. http://www.grrn.org/resources/grrn3.html

In addition, using locally collected discarded materials for reuse or to manufacture new products sold in local or regional markets closes the loop. This promotes the local economy, and improves regional economic efficiency - important steps toward a more sustainable community.

The following is a list of types of manufacturing industries, by feedstock that entrepreneurs might consider.[9] Highlights of some example opportunities that might be suitable for a community of the size and nature of Carrboro can be found in Appendix G.

- Agricultural/Animal Products
- Building and Construction Products
- Organic Products: Compost, Mulch, and Soil Amendments *(Highlight)*
- Office Products
- Pallets *(Highlight)*
- Wood Products[10] *(Highlight)*
- Paper Products
- Plastic Products *(Highlight)*
- Textile Products
- Transportation Products *(Highlight)*

Carrboro has serious constraints in even considering much industrial development. In addition to the very limited, properly zoned property within Carrboro, the current drought demands caution in considering any industry that requires extensive water supply.

In addition to manufacturing industries using recycled feedstock, there are many niche opportunities in the materials reuse arena. According to ILSR, on a per-ton basis, pallet repair operations sustain 14 times more jobs than disposal facilities, electronics reuse enterprises sustain 68 times more jobs, multi-material reuse facilities sustain 38 times more jobs, and textile reuse businesses create 37 times the number of jobs as disposal facilities. Carrboro is home to several thrift shops and reuse based companies that have been supported in their development by the Town.

This discussion represents only a few of the many opportunities that exist for recycling enterprises in Carrboro. While the amount of land in Carrboro currently zoned for industry is very limited, opportunities may still exist, or open in the future, with imagination and innovation being the guiding principle. For a stepwise guide to considering among the many business types, see Appendix H.

Business Development Tools Available in North Carolina

In addition to the existing economic development tools employed by Carrboro, many resources are available as a good starting point for individuals and businesses interested in pursuing one of these businesses ventures, or some other. They include organizations that have focused on technical assistance, business planning assistance, and financial assistance for recycling based industries. The following lists some of these resources available in North Carolina:

- ✧ Recycling Business Assistance Center (RBAC) is a partnership between the Division of Pollution Prevention and Environmental Assistance (DPPEA) and the Department of Commerce.
- ✧ Solid Waste Management Trust Fund is administered by DENR DPPEA to provide funding for a range of solid waste management activities to help support North Carolina's 40 percent waste reduction goal.
- ✧ Self-Help Bank is a project of the North Carolina Environmental Loan Fund dedicated to provide financial assistance to the recycling industry.

[9] North Carolina Manufacturers of Recycled Products, NCDENR DPPEA, Fall 1999. The full document is available at: http://www.p2pays.org/search/pdfframe.asp?pdfurl=/ref/03/02333.pdf

[10] [excerpted from Recycling Wood: a Supplement to Recyling Works, summer 2002, NC DPPEA.]

- ✧ Sustainable Jobs Fund is a community development venture capital fund that finances companies which foster sustainable communities.
- ✧ Tax Credits for Recycling Operations[11] NC DENR Solid Waste Section administers the Recycling and Resource Recovery Tax Certification Program for special tax treatment.
- ✧ Community Development Block Grants are administered by the state of North Carolina and provide funds to local government at the municipal or county level.
- ✧ The Industrial Development Fund provides industrial financing in the form of grants or loans.
- ✧ Business Energy Loans provides low interest loans for industrial and commercial business pursuing energy conservation measures.
- ✧ Industrial Access/Road Access Fund, sponsored by the N.C. Department of Transportation, helps to finance the construction of roads for new and expanding industrial facilities.
- ✧ Rail Industrial Access Program sponsored by the N.C. Department of Transportation to help ensure that companies have the track needed to transport freight and materials.
- ✧ Industrial Revenue Bonds financially assist new and expanding industry engaged in some manner of manufacturing.
- ✧ Sustainable Jobs Fund, L.P. is a community development venture capital fund which finances recycling, remanufacturing, environmental and other companies.

Descriptive information on these resources, as well as contact information, can be found in Appendix I.

The Town should explore further the nature of various industries to determine compatibility with currently zoned industrial properties. The Town should consider utilizing available resources to provide incentives for appropriate recycling business development.

Recruiting Businesses

To actively recruit businesses to locate in Carrboro requires more than just pointing them to existing resources. Many of the same tools being currently employed in Town to recruit or assist businesses could be directed specifically at desirable recycling based businesses. Other strategies that might prove more successful include cooperating with the County in developing a special zone or loan program or other incentives. Developing a recycling business assistance program of this nature would require cooperation and participation between the various governments and private stakeholders.

The Town should evaluate the feasibility of using incentives to attract appropriate recycling-based businesses to Carrboro. Carrboro should work with Economic Development Departments in Chapel Hill, Hillsborough, and Orange County to develop a county-wide plan to recruit recycling-based businesses and industries.

[11] More information on applying for Resource Recycling and Recovery Special Tax Treatment can be found in Appendix I.

V. Supporting National Zero Waste Efforts

About the National Effort

The group spearheading the call for Zero Waste in North America is the GrassRoots Recycling Network (GRRN), a national network of waste reduction activists and professionals promoting the messages: Zero Waste; Create Jobs from Discards; and End Corporate Subsidies for Wasting. GRRN was founded in late 1995 by members of the Sierra Club, the Institute for Local Self-Reliance and the California Resource Recovery Association.

GrassRoots Recycling Network (GRRN) is a North American network of waste reduction activists and professionals dedicated to achieving a sustainable economy based on the principle of Zero Waste. GRRN's Zero Waste Campaign advocates for corporate responsibility for waste, government policies for resource conservation, and sustainable jobs from discards.

The mission **of GRRN** is to eliminate the waste of natural and human resources -- to achieve Zero Waste. They purport to "utilize classic activist strategies to achieve corporate accountability for waste and public policies to eliminate waste, and to build sustainable communities."[12]

GRRN originally got the Zero Waste idea (via Dr. Daniel Knapp, president of Urban Ore in Berkeley, California) from the Australian Capital Territory of Canberra, which endorsed in 1995 a goal of 'No Waste by 2010.' For more information on national efforts on Zero Waste, see Appendix K.

Carrboro's Role

According to the Grass Roots Recycling Network, government action is necessary:

> "One vital next step is altering the rules at the federal, state, and local levels of government in order to send signals to the marketplace that reflect the priorities we want. Currently, the rules governing the marketplace favor a one-way flow of materials from the extractor or harvester of virgin resources, to the producer, to the consumer, to the landfill or incinerator. Public-sector intervention is needed to fashion a system in which resources are conserved and materials are produced and utilized sustainably with minimal environmental and public health impacts."[13]

What Does Carrboro's Zero Waste Resolution Really Mean? Carrboro is only one of a few communities that has formally embraced the call for zero waste. According to Scott Mouw, NCDENR Division of Pollution Prevention and Environmental Assistance, Carrboro is the only Zero Waste community in North Carolina. In fact, the only governments in the United States that have formally established Zero Waste Goals are Del Norte County in California, Santa Cruz County in California, San Francisco, Seattle, The Oregon Department of Environmental Quality.... and Carrboro. Our government partners in the Western Hemisphere include Toronto, Nova Scotia, and the Regional District of Kootenay Boundary, British Columbia.

If it is such a good thing, why so few takers? The answer lies in the fact that making that commitment implies that steps will be taken, programs put in place, and dollars spent to strive toward that goal. It sounds good to say it – "Zero Waste" – but it is a major change in the way business is done to mean it. To be a well-intentioned member of the Zero Waste club means no longer seeing waste as waste, but rather as an opportunity. It means no longer sitting back and riding on the programs established by the county on our behalf – they are not enough. It does not

[12] ZERO WASTE CAMPAIGN: Beyond Recycling, Last modified: June 05, 2002, from: http://www.grrn.org/zerowaste/articles/campaign_zw.html

[13] excerpted from Platt and Seldman, *Wasting and Recycling in the United States 2000*, Washington, DC. Copyright 2000 by the GrassRoots Recycling Network.

mean that we will wake up tomorrow and no longer need a landfill – but it does mean conducting business as though traditional waste management is no longer a given.

Striving For Zero Waste[14]:

There is a lot to do, and Carrboro can draw on what other progressive communities are doing to select those components that might work here, and get us a little closer to the goals of Zero Waste.

- Moving the emphasis up the waste stream to consumers, advertisers, manufacturers, and product designers, to the "front end" of the system.
- Pursuing waste prevention, reuse, repair, recycling, and composting, and eliminating materials and products that do not allow for those activities.
- Paying up front the full costs of environmental degradation and social fragmentation by including those costs in the price of products and services.
- Focusing on renewable resources and doing more with less.
- Defining economic success as delivering more services with fewer energy and material resources (e.g. for housing, food, transportation).
- Developing information analogous to the Toxics Release Inventory to report wastes generated and materials and energy used, to provide facts allowing consumers to make informed choices.
- Promoting repair, resale, and reuse of durable products designed for recyclability at the end of their useful life.
- Recognizing that most environmental impacts from products (e.g. pollutants created, energy consumed, habitat destroyed) comes from resource extraction and industries 'upstream' of consumers, rather than from their disposal in landfills.
- Advocate for eliminating subsidies for extraction and harvesting of virgin materials, and eliminating exemptions from hazardous waste rules for mining wastes.
- Promoting a sustainable community that facilitates a transition from a linear, consumption-driven economy to a cyclical service-oriented economy.
- Harnessing the forces of the marketplace (e.g. through variable rate pricing for residential garbage collection systems) to achieve these goals.

Appendix L provides more specific examples of what can be done to incorporate some of these concepts into public policy.

[14] Adapter from Grass Roots Recycling Network at: http://www.grrn.org/zerowaste/articles/whatiszw.html

VI. Conclusions

Many recommendations are made throughout this report – some are relatively simple, some would require significant planning efforts and / or fiscal and personnel resources, and some just might prove impractical without commitment of substantial resources. This report is not intended to be viewed as a plan ready for implementation, but rather a guide to incorporating Zero Waste principles in Town and activities, and implementation strategies from which the Town can select. If Carrboro truly wants to go beyond the lexis of Zero Waste, and lay the ground work for necessary changes, a commitment of substantial resources might be necessary for the ongoing planning, coordination, communications, and monitoring that would be necessary.

Some of these elements, however, can be considered for implementation in the short term. Key program elements to initiate in the short term that are essential in laying the foundation for further progress toward enhancing waste reduction in the longer term include the following:

- Adopt a waste reduction policy for all Town operations.
- Promote source reduction in County and / or Town-wide education program.
- Provide or leverage County or State assistance to neighborhood organizations to encourage backyard composting and xeriscaping.
- Provide or leverage County provision of technical information and assistance on commercial waste reduction and recycling methods and opportunities.
- Encourage the private sector to implement source reduction methods.
- Catalyze program development by Orange County for expansion of the existing collection, processing and marketing infrastructure.
- Explore further the potential for targeted recycling business development within Carrboro and Orange County.

To go beyond these measures may require evaluation of existing resources and a re-thinking of other priorities.

Certain changes may trigger a need for modifications to these strategies. Examples of conditions that might trigger review and revision could include, but are not limited to, the following:

- Changes in disposal capacity availability
- Changes in the waste stream
- Environmental priority changes
- Legislative or regulatory changes
- Change in relative costs of options
- Significant region or private developments
- Growth/decline in population or industry
- Market availability
- Successes or Failures in implementation
- Public opinion

Carrboro should institute a periodic review and update process to revisit these various strategies and to adjust objectives and strategies based on changing conditions and experience with implementation.

Toward Zero Waste
PHASE I STRATEGIES

Town of Carrboro
Planning Department

Appendices

Appendix A: Policy Framework

The following resolution was introduced by Alderman Allen Spalt and duly seconded by Alderman Jacquelyn Gist.

A RESOLUTION SUPPORTING THE CREATION OF A ZERO WASTE PLAN

Resolution No. 11/98-99

Whereas, the placement of materials in waste disposal facilities, such as landfills and incinerators, causes damage to human health, wastes natural resources and wrongly transfers liabilities to future generations; and,

Whereas, the elimination of specified types of waste for disposal, also known as disposal bans, will protect states from waste importation from other states and nations; and,

Whereas, consumers are currently forced to assume the high financial cost of collecting, recycling, and disposing of materials; and,

Whereas, tax subsidies for waste and virgin materials send the wrong economic signals to both consumers and producers; and,

Whereas, a resource recovery-based economy will create and sustain more productive and meaningful jobs; and,

Whereas, increasingly, U.S. and international governments and organizations are adopting the policy that the financial responsibility of collecting, recycling, and disposing of materials belongs with producers; and,

Whereas, producers should design products to ensure that they can be safely recycled back into the marketplace or nature; and,

Whereas, most types of waste streams can be eliminated through across-the-board minimum recycling content laws, the use of non-toxic alternatives in product design, and local composting facilities; and,

Whereas, recognizing that some presently non-recyclable materials are necessary for public health and national security, in which case, retrievable storage is the only safe alternative; and,

Whereas, recognizing that voluntary recycling goals have not, and in all probability cannot, achieve waste elimination; and,

Whereas, with the understanding that government is ultimately responsible for leading by example and establishing criteria needed to eliminate waste, so that manufacturers produce and businesses sell materials that can be safely recycled or composted.

NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF ALDERMEN OF THE TOWN OF CARRBORO:

Section 1. The Board of Aldermen supports the creation of a Zero Waste Plan in order to eliminate waste and pollution in the manufacture, use, storage, and recycling of materials.

Section 2. This resolution shall become effective upon adoption.

The foregoing resolution having been submitted to a vote, received the following vote and was duly adopted this 22nd day of September, 1998:

Ayes: Alex Zaffron, Michael Nelson, Diana McDuffee, Jacquelyn Gist, Allen Spalt

Noes: NONE

Absent or Excused: Hank Anderson, Hilliard Caldwell

Board of Aldermen 2002-2003 Action Agenda Item:

Implement Carrboro's Zero Waste Resolution

Study and make recommendations on appropriate steps to move toward zero waste such as reducing solid waste, increasing recycling, identifying and attracting businesses that use local waste products as raw materials, and supporting national efforts toward zero waste.

From Carrboro Vision 2020:

5.10 Solid Waste

5.11 The town should aim to recycle all solid waste as a "No Waste" community, and should devise strategies to minimize waste landfill. The town should encourage source reduction through all available means, including mandatory or "pay as you throw" collection of recyclables.

5.12 Carrboro should develop and encourage a network of neighborhood composting facilities. The town should also explore the creation of a town compost heap that would benefit the community's gardeners.

5.13 Recycling facilities should be readily available throughout the town.

5.14 The town should investigate ways to increase the life span of the current landfill.

5.15 Carrboro should work with the county to educate all citizens about waste reduction. Creative, non-traditional programs, such as turning garbage into art, should be pursued.

5.40 Construction

5.41 The town should encourage the reduction of waste materials in the course of new construction or renovation. The town should promote, be a leader in, and require, where practical, the use of recycled building materials, recycling plans for construction and demolition materials, and the extent to which "green building" techniques are being employed.

5.7 Toxic Use

The town will work to reduce its use of hazardous and toxic products in town operations and will expand, promote, and provide public education on such efforts as with its least toxic integrated pest management policy.

1.4 Town Services

The Town plans to utilize electronic technology to the fullest in order to be a "Community on the Web." Access to public documents and community updates should increase flexibly and swiftly in response to changing community needs.

1.41 Carrboro should encourage paperless transactions to minimize solid waste disposal. All town services should be made available on-line, including information, town forms, ordinances, and payments.

Appendix B: Xeriscaping

THE SEVEN PRINCIPLES OF XERISCAPE

1. Plan and design comprehensively: Have a plan. Find out where things are. Consider the view, the slope, the exposure, and soils of the area. Take into account the existing vegetation and topography of the site and the intended use. Group plants with like water needs together. Decide where things will be. Decide when things will be done. Most landscapes are best done in phases.

2. Evaluate soil and improve if necessary: Soils can vary within a given site; an analysis based on random sampling can provide information for plant selection and soil amendments. When appropriate, soil amendments such as sphagnum peat moss or compost can improve root development, water penetration, and retention. Improve the soil before planting and installing the irrigation system.

3. Create practical turf areas: The type and location of turf areas should be considered a major design element of the landscape. The selection and location of turf should be decided on the same basis as other plantings; i.e., the purpose and function in the landscape. The reduction or elimination of turf areas, and locating them separately so that they may be watered more efficiently, can result in significant reductions in water use.

4. Use appropriate plants and group according to their water needs: Most plants have a place in Xeriscape. Plant selection should be based on the intended use in the landscape. Use of plants with low water needs will allow the maximum water conservation.

5. Water efficiently with properly designed irrigation systems: The irrigation system should be well planned and managed. Irrigate turf areas separately. Group plants with like water needs together. Not all plants need the same amount of water. Irrigation needs change with the season and the weather. Irrigate according to the condition of the plants, rather than on a fixed schedule. Plants may require supplemental irrigation until they become established (two or three years).

6. Use organic mulches to reduce evaporation: Mulches minimize evaporation, reduce weed growth, slow erosion, and help prevent soil temperature fluctuations. The use of mulches, applied and maintained to proper depth, is one of the keys to a successful Xeriscape. Organic mulches such as wood chips or bark are best. Do not use any solid plastic under the mulch or elsewhere in the landscape.

7. Practice appropriate maintenance: Proper pruning, weeding and fertilization, plus attention to the irrigation system, will preserve and enhance the quality of the Xeriscape. A landscape adapted to the environment will require less maintenance, less fertilizer and reduce the use of pesticides and other chemicals. The principles of Xeriscape will assure an attractive, healthy landscape with the use of the 'just right' amount of water.

From: http://www.csu.org/xeri/whatis/WhatIs.html

Additional Resources on Xeriscaping

Basic information on xeriscaping:
http://www.ag.usask.ca/cofa/departments/hort/hortinfo/yards/xeri1.html

Logical Landscapes for Green Living in Central Texas by Dick Peterson
City of Austin Xeriscape Program Coordinator
http://www.greenbuilder.com/general/articles/AAS.xeri.html

Appendix C: Food Waste

Liability Protection for donations of food for distribution

North Carolina General Assembly

Chapter 99B. Products Liability.

§ 99B-10. Immunity for donated food. (a) Notwithstanding the provisions of Article 12 of Chapter 106 of the General Statutes, or any other provision of law, any person, including but not limited to a seller, farmer, processor, distributor, wholesaler, or retailer of food, who donates an item of food for use or distribution by a nonprofit organization or nonprofit corporation shall not be liable for civil damages or criminal penalties resulting from the nature, age, condition, or packaging of the donated food, unless an injury is caused by the gross negligence, recklessness, or intentional misconduct of the donor. (b) Notwithstanding any other provision of law, any nonprofit organization or nonprofit corporation that uses or distributes food that has been donated to it for such use or distribution shall not be liable for civil damages or criminal penalties resulting from the nature, age, condition, or packaging of the donated food, unless an injury is caused by the gross negligence, recklessness, or intentional misconduct of the organization or corporation. (1979, 2nd Sess., c. 1188, s. 1; 1989, c. 365; 1991 (Reg. Sess., 1992), c. 935, s. 2; 1995, c. 522, s. 1.)

Highlight

Second Harvest Food Bank of Metrolina – WIN/WIN Mobile Pantry

The 1999 Organic Wastes Recycling Grant enabled Second Harvest Food Bank to purchase a refurbished beverage truck which has contributed to the distribution to needy people of 104,328 pounds of food that otherwise would have been thrown away. Second Harvest anticipates diverting over one million pounds of organic material from the waste stream in the next five years with this one vehicle. In addition, this organization distributed pamphlets and wrote newsletter articles to share information with other interested North Carolina food banks.

Additional Resources on Food Waste

A Fact Sheet for Managing Food Materials from NC DENR DPPEA
http://www.p2pays.org/ref/03/02792.pdf

A Fact Sheet for Restaurant Waste Reduction from NC DENR DPPEA
http://www.p2pays.org/ref/03/02790.pdf

A Fact Sheet for Food Recovery and Donation from NC DENR DPPEA
http://www.p2pays.org/ref/14/13915.pdf

Appendix D: Waste Reduction Education Planning

Public Education Plan

As Carrboro and Orange County proceed on expanding recycling programs, public information and promotion needs will increase accordingly. These efforts might require that the Town hire a coordinator to assist in recycling program planning and to respond to information requests from the public. One means of ensuring that communications resources are effectively utilized is through the development of a communications plan. Outlined here are basic considerations for development of such a plan.

Themes and Messages

As with the development of most plans, a key initial step is to identify specific program goals and objectives. Recycling communications goals for Carrboro may include:

- To educate the public about the role of recycling in the management of solid waste.
- To inform the public about Carrboro / Orange County recycling programs and services as well as all other available recycling options.
- To promote active public involvement and participation in recycling.

Target Audiences

Another key step in the planning process is to identify target audiences for receipt of recycling communications. Such audiences will include:

- ✧ Direct recipients of specific recycling services
- ✧ The news and editorial media
- ✧ Business and industry representatives
- ✧ The general public
- ✧ Nonprofit organizations such as environmental, neighborhood, and civic groups actively involved in recycling.

Objectives of the public education program should clearly address the communication goals and should keep in mind the level of resources available to undertake them. A wide array of communications strategies and vehicles are available. The challenge lies in selecting which techniques will most effectively accomplish each objective within the available resource limits.

- Use of the Media
- Direct and Indirect Mail
- Direct Contact
- Promotional Incentives

Appendix E: Deconstruction

Highlight

An Orange County program that deconstructed an existing county building instead of demolishing it was named one of the top county programs in the state for 2001 by the North Carolina Association of County Commissioners and received an Outstanding County Program Award.

Deconstructing the building meant that more materials could be salvaged for use in other projects, such as the flooring and framing lumber, which was used to replace damaged flooring and erect walls at a building recently acquired to house the Purchasing and Central Services Department. Bricks from the deconstruction were to be used in the construction of a new retaining wall at the Whitted Building in historic downtown Hillsborough.

Another benefit was that less waste was deposited into the county landfill. The project resulted in the recycling of more than one ton of white goods and nearly six tons of metal. The value of the materials recovered was $37,130.

The entire project cost was $37,929. It would have cost an estimated $50,000 to demolish the building. The project resulted in a net savings of more than $12,000, not including the value of the reusable materials.

Additional Resources on Construction and Demolition Debris

Sustainable Building Source Book: Xeriscape from the Green Building Program.
http://www.p2pays.org/ref/04/03097/xeriscape.html

Triangle J Council of Governments page on C&D waste
http://www.tjcog.dst.nc.us/cdwaste.htm

Report on the Feasibility of Deconstruction: An Investigation of Deconstruction Activity in Four Cities, U.S. Department of Housing and Urban Development, January 2001.
www.huduser.org/publications/pdf/deconstruct.pdf.

House Moving: http://www.sustainableliving.com

Appendix F: Markets for Recyclables

North Carolina market prices for recyclables
Prices current as of August 1, 2002*

Item	Western Region	Central Region	Eastern Region
METALS			
Aluminum Cans, lb. loose	$0.45	$0.40	$0.49
Steel cans, gross ton baled	$30	$30	$3
PLASTICS		Central Region markets plastics together	
PETE, lb. baled	$0.07	$0.035	$0.07
HDPE, lb. baled	$0.16	$0.035	$0.16
PAPER			
Newsprint, ton baled	$75	$55	$75
Corrugated, ton baled	$103	$90	$110
Office, ton baled	$110	n/a	$135
Magazines, ton baled	**	$70	***
Mixed, ton baled	$45	n/a	$50
GLASS			Eastern Region sells glass F.O.B. origin
Clear, ton crushed delivered	$30	$26.50	$13
Brown, ton crushed delivered	$20	$16.50	$9
Green, ton crushed delivered	$10	($3.50)	($19)

*Central Region prices from June 2002.
**Markets with mixed paper.
***Markets with newsprint.
Note: Prices listed above are compiled by RBAC and are for reference only. These prices are not firm quotes. RBAC obtained pricing information from processors for each category and developed a pricing range.

from the NC Recycling Business Assistance Center: www.p2pays.org/RBAC

Additional Resources on Markets for Recyclables

The State of North Carolina has recently completed an update of its *Directory of Markets for Recyclable Materials (DMRM)* — a document that lists recycling companies servicing N.C. business, industry, government and citizens. This directory now provides information on more than 620 recycling businesses accepting nearly 250 different recyclable materials. It is available online at www.p2pays.org/dmrm Other tips for finding markets can be found on the help page of the DMRM, at http://www.p2pays.org/DMRM/help/

If you would like more information on recycling markets, or are a recycling company servicing North Carolina and are not listed in this directory, please contact Jason Hale at (919) 715-6542 or jason.hale@ncmail.net

WasteTrader, a free waste exchange service developed by the N.C. Division of Pollution Prevention and Environmental Assistance (DPPEA), is available at www.ncwastetrader.org. To get started, log on to www.ncwastetrader.org and click on one of the four main service functions: **"View Materials Available," "List Materials Available," "List Materials Wanted,"** or **"View Materials Wanted."**

Appendix G: Highlighted Recycling Industry Examples

Highlight: Organic Products: Compost, Mulch, and Soil Amendments

R. Alexander Associates Inc., Apex, North Carolina: Compost Promotional Initiative
This project's goal was to stimulate market demand for North Carolina-produced compost and other recycled soil amendment type products. Project coordinators successfully provided technically based, non-biased compost production and end-use data. Approximately 400-500 potential end users were provided information on compost through trade show booths, educational workshops, and other outreach efforts.

Highlight: Pallets

Work done at the Southern Research Station of the USDA Forest Service indicates the size of the opportunity when producing value added wood products from discarded pallets. According to these numbers, recycling of pallets not only eliminates costly tipping fees, but the value of a discarded 48" x 40" standard pallet is estimated to be 25 cents when sold as boiler fuel, $1 for chips used for particle board production, $2 to $3 when disassembled and used for pallet repair replacement parts, and $5 to $8 when processed into value-added wood products. These numbers point to the opportunity that exists to create employment in communities to produce value-added wood products such as, flooring or paneling from discarded wooden pallets. NCSU wood recycling Web page at www.ncsu.edu/woodrecycling for up-to-date information or contact Urs Buehlmann at (919) 515-5580 or e-mail urs_buehlmann@ncsu.edu.

Highlight: Wood Products[1]

Wood Flour
Wood flour is wood, either softwood or hardwood, that is ground in hammermills to a fine dust (40 – 100 mesh). Depending on its application, it is sometimes also dried to the desired moisture content. Wood flour is used for a wide variety of applications, with its use as inexpensive fillers for wood fiber-plastic composites for decking and railing materials for outdoor uses becoming a major market.

Wood-Concrete Wall Forms (Cinder Blocks)
Inorganically bonded wood products have been produced for a long time; however, these products have never captured a significant market share. Some manufacturers produce large, hollow bricks, whereas others make flat panels from wood residuals and cement to be used for the walls of homes and industrial buildings. Some of these products are fireproof; a special process can also make them termite- and pest-resistant.

Fire Logs
Fire logs are logs made from densified paper or wood residuals for use in home fireplaces. A significant part of fire logs currently on the market are made from waste paper, but wood is a viable alternative. Both types of products normally contain additives (paraffin, for example) to make them burn more easily. Highly densified wood fire logs can contain up to five times the energy equivalent of solid wood.

[1] [excerpted from ***Recycling Wood: a Supplement to Recycling Works,*** summer 2002, NC DPPEA.] For more information on these applications and other resources for recycling wood industries, view ***Recycling Wood: a Supplement to Recycling Works*** at http://www.p2pays.org/ref/20/19143.pdf

Highlight: Wood Products (continued)

Finger-jointed Lumber
Internationally, some companies have been finger-jointing lumber for a long time, but the concept of manufacturing structurally sound lumber from lumber cut-offs is now gaining interest domestically. R24 Lumber, the most widely discussed example (previously located in Charlotte, now in Florida), collected clean southern yellow pine from truss manufacturers or construction sites. These lumber cut-offs were then finger-jointed and glued to new, structurally sound 2x4s or other construction lumber. The recycled lumber was grade stamped for vertical use in building construction.

Animal Litter
Wood pellets have begun to claim market share in the cat and animal litter business where clay-based products dominate. The pellets are produced from wood residuals that are hammermilled and then pelletized. The same wood pellets can also be used as boiler fuel or for use in household pellet stoves, as well as spill cleanup agents and other uses.

Tree Rings
Another innovative idea is to use mulch to produce rings that can be placed around newly planted trees instead of creating a bed with soil as is normally done.

For more information on wood products see: ***Wood Works: A Supplement of Recycling Works*** *Urs* Buehlmann, author, assistant professor and extension specialist at North Carolina State University's Wood Products Extension group *http://www.p2pays.org/ref/20/19143.pdf]*. He maintains a Web site related to wood recycling at www.ncsu.edu/woodrecycling and can be contacted at (919) 515-5580 (phone) or urs_buehlmann@ncsu.edu (e-mail).

Highlight: Plastic Products

The Sustainable Jobs Fund LP (SJF), a $17 million venture capital fund that invests in sustainable companies that generate quality entry-level employment, recently announced its $500,000 investment in EvCo Research LLC (EvCo) of Atlanta, Ga. EvCo produces water repellent and strength-enhancement coatings for the paper and packaging industries. The EvCo coatings use patented polyester compounds derived from recycled PET soft drink bottles. Cardboard boxes protected by EvCoteT are fully recyclable and replace non-recyclable paraffin wax boxes.

Highlight: Transportation Products

Legislation passed in 1991, G.S. 136.28.8 (b), mandates that the North Carolina Department of Transportation (NCDOT) to use recycled materials in highway construction projects. This law specifically requires the department to use rubber from tires for pavements, sub-base materials, and other appropriate applications consistent with economic feasibility and applicable engineering and environmental guidelines. In complying with this requirement, the department has pursued research activities, pilot projects, literature research on a national level, and outreach to private industries to assess merit of potential utilization of various solid wastes and recycled products; and review of specifications, to enhance the department's acceptance and use of solid wastes and recycled products.

One project aimed at complying with this requirement is a noise wall installed on US 421 west of I-40 in Winston-Salem, using approximately 8,000 scrap tires. DOT saw this as an effective way to

Highlight: Transportation Products (continued)

"fight the highway noise with the same tires that cause it while diverting scrap tires from waste stream."[2]

The wall is constructed from structural planks made by combining a grounded, recycled rubber core within a fiber- reinforced composite channel. The structural channels are made by using a fiberglass pultrusion process. Glass reinforcements are combined with thermosetting resin, flame-retardants, U.V. stabilizers, and other performance enhancers to form a permanent, rigid, closed channel. The core, or recycled tire rubber and polyolefin portion, is mixed with flame-retardant additives and shredded recycled plastic scrap, creating the sound-attenuating surface.

Carsonite International manufactured the Carsonite DB Minus noise wall in its Early Branch, S.C. plant. In order to meet the department's annual goal to use one million tires in construction and maintenance operations, the special provision required that the scrap tires used were pulled from North Carolina's waste stream. The tires were processed in Winston-Salem and then shipped to South Carolina to be placed inside the wall panels. The wall sections were put together before shipping to the construction site. The panels were lighter in weight than conventional concrete panels, saving construction time.

For further information on this wall as well as the department's Recycling and Solid Waste Management Program, please contact Azam Azimi, Ph.D., PE, at Azimi@dot.state.nc.us.

[2] ***Recycling Works,*** Volume 8, Number 2 Summer 2002, NC DPPEA, http://www.p2pays.org/ref/20/19142.pdf

Appendix H: Guide to Recycling-based Businesses

FROM: *A Self-Help Lenders' Guide to Recycling Companies*

Step I.

There are several SIC categories which either encompass many aspects of the recycling industry or under which many recycling companies operate (Based on the NC Environmental Business Study's list of SIC codes in the recycling segment).

5093 *Scrap and Waste Materials* Firms that assemble, break up, sort, process and distribute scrap and waste materials, but do not smelt or refine metals. Wide variety of materials include wastepaper, plastics, bags, boxes, bottles, fur cuttings and scraps, metal waste, nonferrous metal scrap, oil waste, textile waste and rubber scrap. Certain recovery activities also fall under this classification, including the recovery of gold from circuit packs and copper from telephone wires.

4953 *Refuse Systems* Collection and disposal of solid waste. Includes the operation of incinerators, solid waste treatment plants, hazardous waste treatment facilities, landfills, and other disposal sites and services. Recycling commodities that are part of municipal solid waste streams -- such as glass, metals, plastics, wood and yard waste – are collected, separated and sold to brokers, processors, or end users. A small number of firms have devised disposal technologies that produce a marketable end product (*e.g.*, bricks and road base material made of pressurized hazardous sludge).

4952 *Sewerage Systems* Collection and disposal of wastes transported through a sewer system and treatment of wastewater prior to disposal back into the environment.

5932 *Used Merchandise* Sale of used merchandise and equipment. Some re-use companies may operate in this category.

7389 *Business Services, NEC* Miscellaneous category of service providers to other businesses. Recycling/reuse firms, especially those providing very new or innovative services, may be classified here for lack of a more appropriate classification.

8711 *Engineering Services* Firms providing professional engineering services (mechanical, chemical, electrical, environmental, etc.) for numerous diverse industries. May be consultants to the recycling industry and/or participants.

8731 *Commercial Physical and Biological Research* Firms engaged primarily in research and development in areas such as agriculture, biology, chemistry, engineering, physics. They operate mainly on a fee or contract basis or as an R&D subsidiary of a larger firm. May be consultants to the recycling industry and/or participants.

8734 *Testing Laboratories* Firms providing a broad array of testing services, such as pollution or environmental testing or assaying services, for example. May be consultants to the recycling industry and/or participants.

Much of collection and some processing is covered under SICs 5093, 4952 and 4953.

The remainder of the SIC codes listed here (primarily business services and consulting) cover a wide array of businesses, most of which are totally unrelated to recycling. While it may be most appropriate to use one of the "major recycling SICs" described here, it is very possible that the SIC data is (in the former case) not specific enough, or (in the latter case) not applicable to the business at hand.

Step II.

Possibly the most straightforward situation is the purely end-use business, *i.e.*, a business that uses recycled materials as an input to produce some final product. The target market for the final product will be the same whether the business uses recycled or virgin inputs, making a comparison of firms producing this particular product quite relevant. The trick is to find the appropriate niche within the mind-boggling SIC framework. If you are working with an end-use business, some of the potential manufacturing SICs are listed below, either by commodity or under *End-Use Manufacturing.* However, since there are countless manufacturing possibilities, SIC-specific information is not included for all manufactured products. Instead, refer to the outline from the SIC guide (Appendix C) to find the type of product the firm produces, then check *RMA Annual Statement Studies* for financials. RMA has a brief description of the type of businesses in each SIC at the front of each guide which might be helpful as you try to figure out what products are encompassed in which categories. All manufacturing SIC segments begin with the numbers "2" or "3."

Step III.

The most difficult type of recycling business to find complete financial data on are those which are vertically integrated, *i.e.*, those firms that carry out multiple steps in the recycling process within the same organization. Paper Stock Company is one example. They collect, sort and process paper stock (SIC 5093). Their parent company, Sonoco Products, buys a large portion of that paper stock for the manufacture of end products (SIC 2652, 2653).

Since Paper Stock is a subsidiary of Sonoco Products, it is not difficult to separate the various types of business activities. Other firms may have less definable business spheres. The NC Environmental Business Study data base, for example, includes a number of firms which classify themselves as engineering or consulting firms (SIC 8711, SIC 8742) but which actually undertake many of the same activities included in SIC 5093 (Scrap and Waste Materials) and SIC 4953 (Refuse Systems). For purposes of financial analysis, to which other businesses should these "crossover" firms be compared? Several strategies for choosing an appropriate SIC segment are recommended, depending on your sense of the business and its future.

Appendix I:
Recycling Business Development Assistance

Recycling Business Assistance Center: http://www.p2pays.org/rbac/

The Recycling Business Assistance Center (RBAC) is a partnership between the Division of Pollution Prevention and Environmental Assistance and the Department of Commerce. RBAC's mission is to promote environmentally sound economic development through the reuse and remanufacture of recyclable materials. To achieve this objective, RBAC provides technical assistance, offers business development opportunities that identify funding sources, and promotes partnerships among government and industry.

RBAC provides the following services through the web site[3]:

- Recycling Business Development Assistance
- Financing
- Directory of Markets for Recyclable Materials
- Recycling Markets Assistance
- Partnerships
- Publications
- Links

Call (919) 715-6500 or (800) 763-0136 for free technical assistance and information about preventing, reducing, and recycling waste.

Solid Waste Management Trust Fund: http://www.p2pays.org/main/financial.asp

The Solid Waste Management Trust Fund is administered by DENR DPPEA to provide funding for a range of solid waste management activities to help support North Carolina's 40 percent waste reduction goal. These activities include technical assistance to local governments, businesses, and other entities on solid waste issues; solid waste educational activities; research and demonstration projects; and recycling market development activities.

Self-Help Bank: http://www.self-help.org/

The Self-Help Bank is a project of the North Carolina Environmental Loan Fund dedicated to provide financial assistance to the recycling industry. Loans are available for working capital, equipment, permanent mortgage for real estate, and some cases of refinancing. Since 1991, Self-Help has lent over $3.8 million to recycling companies across North Carolina.

Sustainable Jobs Fund: http://www.sjfund.com/livesite/index.cfm

The Sustainable Jobs Fund is a community development venture capital fund that finances companies which foster sustainable communities through employment, revitalization, resources efficiency and environmental benefits. The Fund focuses on recycling, remanufacturing, and other environmental sectors that help generate jobs for former welfare recipients and low-income individuals.

Tax Credits for Recycling Operations: http://wastenot.enr.state.nc.us/swhome/Txcrt.htm

North Carolina has a special tax provision for recycling and resource recovery operations. If a business purchases or constructs facilities or equipment for recycling or resource recovery, it may be entitled to special tax treatment. If your equipment and facilities qualify, they become exempt from listing for property tax, and can receive special tax treatment on corporate state income tax and franchise tax. If you are interested in finding out how to apply for a Tax Certification, it is first

[3] Recycling Assistance Business Center at

advisable that you refer to the North Carolina Solid Waste Management Rules regarding the standards for special tax treatment. You can also access examples of qualifying equipment and facilities as well as additional tax provision information. NC DENR Solid Waste Section administers the Recycling and Resource Recovery Tax Certification Program. Contact Jim Coffey at 919-733-0692 for more information.

> Explanation of Special Tax Treatment for Resource Recovery and Recycling Facilities and Equipment http://wastenot.ehnr.state.nc.us/SWHOME/tc_info.htm
>
> How to Apply for Special Tax Treatment for Resource Recovery and Recycling Facilities and Equipment http://wastenot.ehnr.state.nc.us/SWHOME/tc_how.htm
>
> Application for Special Tax Treatment for Resource Recovery and Recycling Facilities and Equipment http://wastenot.ehnr.state.nc.us/SWHOME/tcappl.pdf

Community Development Block Grants: http://www.nccommerce.com/finance/incentives/cdbg/
The Community Development Block Grant program is administered by the state of North Carolina and provides funds to local government at the municipal or county level. The intent of the program is to help fund specific businesses that will create new jobs for low or moderate-income people.

The Industrial Development Fund: http://www.nccommerce.com/finance/incentives/idf/overview.asp
The Industrial Development Fund provides industrial financing in the form of grants or loans. Several categories of funding, such as utility accounts and clean water bonds proceeds, are available for creating or expanding employment opportunities.

Business Energy Loans: http://www.cris.state.nc.us/crisbin/progpage?8000-1
The Business Energy Improvement Program provides low interest loans for industrial and commercial business pursuing energy conservation measures. The loans range from $100,000 - $500,000 for building and industrial process improvements that reduce the amount of energy consumed.

Industrial Access/Road Access Fund: http://www.ncdot.org/
Sponsored by the N.C. Department of Transportation, this fund helps to finance the construction of roads for new and expanding industrial facilities.

Industrial Revenue Bonds: http://www.nccommerce.com/finance/incentives/irb/overview.asp
Industrial Revenue Bonds financially assist new and expanding industry while promoting good jobs and good wages. Three types of bond issuances are available: Tax Exempt, Taxable, and an Exempt Facility/Solid Waste Disposal Bond. Only a company engaged in some manner of manufacturing may use Industrial Revenue Bonds, and proceeds may be used only for land, building, and equipment. In addition, the company must agree to pay its employees a competitive wage plus 10 percent.

Sustainable Jobs Fund, L.P.: www.sjfund.com
A community development venture capital fund which finances recycling, remanufacturing, environmental and other companies that:

- require equity or subordinated debt capital to fuel profitable growth
- create quality jobs for low-income citizens or locate in economically distressed regions of the eastern United States

For more information, call 919.530.1177 or visit www.sjfund.com

A Lenders' Guide to Recycling Companies from The Center for Community Self-Help, Self-Help Credit Union and the Self-Help Ventures Fund http://www.p2pays.org/ref/08/07266.pdf

Appendix J: National Zero Waste Campaign

The Problem and the Opportunity

(from http://www.grrn.org/zerowaste/articles/campaign_zw.html)

As the global economy makes ever-greater demands on the natural environment, political, business and community leaders around the world are pointing to our waste stream and recycling as areas of new business and employment potential. We need to look again at waste because it also represents a flow of materials and resources that adds great value to our economy. A new report released by GRRN, Wasting and Recycling in the United States 2000, describes three basic drivers of change that are turning waste into a dynamic, fast changing, international economic sector:

1. Hazards of waste disposal The U.S. Environmental Protection Agency acknowledges that every landfill will leak. Swedish research now shows that the leachate toxicity of a landfill is still not benign after a thousand years. Even landfill professionals are now saying that we should assess the true costs of landfills based on looking after each of them for 500 years. In Creating Wealth from Waste, Robin Murray states, "Incinerator emissions of acid gases, mercury, dioxins and furans have led to widespread protests in North America, Japan and continental Europe, forcing the closure of plants and the abandonment of plans for new ones. In the U.S., 248 new municipal incinerators have been blocked and the number still in operation has fallen from 170 in 1991 to 119 in 1998."

2. Broader environmental concerns High levels of materials and energy consumption in industrial countries are the driving force behind the global ecological devastation that is a grave threat to mankind. Only 1% of the total North American materials flow ends up in, and is still being used within, products six months after their sale, according to industrial ecologist Robert Ayres. Resource extraction and production of raw materials consumes three times as much energy as manufacturing; manufacturing using recycled, rather than virgin, material saves substantial energy in virtually every case. Landfills are a major source of methane which contributes to global warming. Seventy-one tons of wastes are produced from mining, manufacturing and distribution of products and packaging for every ton landfilled today.

3. Economic problems and opportunities Perverse markets are major obstacles to creating a Zero Waste society. At the local level, the structure of market incentives is almost the exact reverse of the environmental policy hierarchy. In profitability, landfill is at the top of the scale, while recycling remains at the bottom. Perverse subsidies benefit extraction and processing of natural resources, which compete with recycled materials in the marketplace. A 1999 report by the GrassRoots Recycling Network and three other groups showed that 15 direct subsidies to virgin resource extraction and waste disposal industries in the United States will cost taxpayers $13 billion over five years. Lack of manufacturer responsibility for wasteful products and packaging further distorts price signals. Those responsible for producing the products and packaging that become waste are not the ones who pay for waste disposal, recycling and litter pickup, and thus have little economic incentive to reduce or eliminate product waste.

The immense inefficiencies of our materials use and waste production, coupled with the fact that increasing production efficiencies of our industrial economy create vast numbers of under-utilized people, suggest major business opportunities for using both people and natural resources more effectively. Eliminating waste can increase profitability, while cycling resources back into commerce creates local jobs.

GRRN's goal is to reverse unsustainable practices and policies by continuing to build effective coalitions and partnerships for Zero Waste policies based on government and corporate accountability for waste. GRRN has identified the following outcomes as essential to move us towards a Zero Waste society: (a) Extended Producer Responsibility for Waste; (b) Consumer Action Against Wasteful Corporations; (c) Deposit Programs; (d) Jobs Through Reuse and Recycling; (e) Incentives for Reducing Trash; (f) Full-Cost Accounting and Life-Cycle Analysis; (g) Minimum Recycled Content; (h) Ending Subsidies for Extracting Virgin Resources; (i) Shifting Taxes from 'Goods' to 'Bads'; (j) National Resource Policy; and (k) Campaign Finance Reform.

Additional Resources on ZERO WASTE:

The Grass Roots Recycling Network http://www.grrn.org/zerowaste/
Wasting and Recyling in 2000, Grass Roots Recycling Network
http://www.grrn.org/reports/w2k/w2k.pdf

The Zero Waste Alliance: `http://www.zerowaste.org has been formed to promote the use of Zero Waste strategies. The Zero Waste Alliance is a program of the International Sustainable Development Foundation. It is made up of business, university, government and individual members dedicated to helping organizations obtain the competitive and environmental advantages available from Zero Waste strategies. Figure 1 shows the relationships of the members. The *mission* of the Zero Waste Alliance is to support organizations in the creation of a more sustainable future.

Appendix K: Examples of Local Actions Toward Zero Waste

The following opportunities for local action are recommended by Platt and Seldman of the Institute for Local Self Reliance[4]: http://www.grrn.org/reports/w2k/agenda4action.html

- Provide leadership in extending product responsibility (EPR) for manufactured products and packaging, including toxics reduction, increased recyclability, waste minimization, etc.
- Institute other regulatory mechanisms that embody EPR such as minimum recycled-content standards, secondary materials utilization rate requirements, and materials and product bans and restrictions. Consider take-back schemes that will not hamper community-based reuse and recycling efforts.
- Ask manufacturers to voluntarily reduce packaging and meet minimum recycled-content standards for products and packaging (including but not limited to writing and printing paper, building materials, road construction materials, and beverage containers) by specified amounts by certain target dates.
- Pass producer responsibility resolutions calling on producers to share the responsibility for their products and on state and national legislatures to adopt legislation to shift the burden of managing discarded products and packaging from local governments to the producers of those products.
- Pass local ordinances banning use and/or sale of certain types of materials that cannot be reused, repaired, recycled, or composted. (Berkeley, California; Newark, New Jersey; and Portland, Oregon have passed such ordinances.)
- Press local government associations such as the NC League of Municipalities, the NC Association of County Commissioners, the Conference of Mayors, the National League of Cities, and the National Association of Counties, to push for EPR at the state and federal levels.
- Institute full-cost accounting techniques in evaluating and implementing discard management programs, especially techniques that account for remediation, contingent, environmental, and social costs.
- Promote full-value accounting techniques. Full-value accounting should account for the value captured by the local and state economy, such as recycling job and business creation, local community development, and diversified economies.
- Implement campaign finance reforms. Much of the political opposition to changing resource policies is funded by industries that profit from virgin resource extraction and from wasting.
- Connect waste prevention, reuse, and recycling to sustainable development initiatives and agendas. Partner with organizations involved with sustainability issues.
- Expand recycled product procurement programs to environmental preferable product procurement (programs, for instance, might encourage procurement of products that minimize packaging and materials use).
- Educate, educate, educate. Undertake public educational campaigns to link preventing, reusing, and recycling municipal discards with its upstream and downstream benefits and its place within a sustainable economy.
- Expand recycling market development efforts with an eye toward closing the loop locally (i.e., within the local economy), producing high-value end products, and linking recycling-based economic development with a larger vision of sustainable community development. Avoid a narrow focus on "waste management," which limits potential partners who can help foster recycling as a cornerstone of a sustainable materials economy.
- Implement or expand existing buy recycled programs.

[4] excerpted from *Wasting and Recycling in the United States 2000* Washington, DC. Copyright 2000 by the GrassRoots Recycling Network.

- Launch a public information campaign that will allow consumers to make smart choices when making purchases.
- Require building material reuse and salvage (deconstruction) in local projects, particularly government projects, such as those funded by U.S. Department of Housing and Urban Development's public housing demolition program.
- Invest in resource conservation and recycling- and reuse-based businesses. Expand market development efforts, especially community-based recycling economic development policies and strategies. Support recycling-based economic development through grants, low-interest loans, loan guarantee programs, tax credits, technical assistance, research and development, and other initiatives.
- Require counties and municipalities to institute pay-as-you-throw trash fees. Per-bag or per-can fees for trash are a direct economic incentive for residents to throw away as little as possible and recycle as much as possible.
- Create regional waste exchanges. A waste exchange involves one company giving or selling its discards to another company, which in turn uses the material for another purpose. Government agencies can set up and facilitate waste exchanges.
- Retain authority over the collection and handling of municipal discards so that haulers undertake, encourage, and invest in recycling.
- Acquire public property for reuse, recycling, and composting in order to provide a stable land base for eco-industrial parks and reuse and recycling facilities. Establish "discard malls" and lease space to private sector tenants, the same way airports are usually run.
- Ban recyclable and reusable materials and products from landfills and incinerators.
- Institutionalize pay-as-you-throw trash fees.
- Support local nonprofit or for-profit mission-driven recyclers and reuse operations. Community-based recyclers are in business for the good of the community and often provide services that the market undervalues.
- Ban single-use disposable products from public events and festivals.
- Improve recycling levels by targeting a wide range of materials for recovery, providing convenient collection service for reusable, recyclable, and compostable materials, offer service to all households, stimulate recycling in the commercial and institutional sectors, establish incentives for participation, and educate, educate, educate.
- Institute building policies that require reuse and recovery of building materials in new construction and in building demolition projects (deconstruction).
- Press state officials to pass extended producer responsibility policies.
- Use purchasing preference for products made by corporations demonstrating extended product responsibility.
- Support mission-based local reuse, recycling, and waste prevention groups.
- Focus on renewable resources and do more with less.
- Avoid over-packaged products. Buy durable, reused, recycled, reusable, and recyclable products and packaging.
- Inform product manufacturers of intent to buy only reusable, recyclable, and recycled-content products.
- Participate in reuse and recycling programs.
- Compost yard trimmings and food scraps.

ATTACHMENT C

The following resolution was introduced by Alderman Allen Spalt and duly seconded by Alderman Jacquelyn Gist.

A RESOLUTION SUPPORTING THE CREATION OF A ZERO WASTE PLAN
Resolution No. 11/98-99

Whereas, the placement of materials in waste disposal facilities, such as landfills and incinerators, causes damage to human health, wastes natural resources and wrongly transfers liabilities to future generations; and,

Whereas, the elimination of specified types of waste for disposal, also known as disposal bans, will protect states from waste importation from other states and nations; and,

Whereas, consumers are currently forced to assume the high financial cost of collecting, recycling, and disposing of materials; and,

Whereas, tax subsidies for waste and virgin materials send the wrong economic signals to both consumers and producers; and,

Whereas, a resource recovery-based economy will create and sustain more productive and meaningful jobs; and,

Whereas, increasingly, U.S. and international governments and organizations are adopting the policy that the financial responsibility of collecting, recycling, and disposing of materials belongs with producers; and,

Whereas, producers should design products to ensure that they can be safely recycled back into the marketplace or nature; and,

Whereas, most types of waste streams can be eliminated through across-the-board minimum recycling content laws, the use of non-toxic alternatives in product design, and local composting facilities; and,

Whereas, recognizing that some presently non-recyclable materials are necessary for public health and national security, in which case, retrievable storage is the only safe alternative; and,

Whereas, recognizing that voluntary recycling goals have not, and in all probability cannot, achieve waste elimination; and,

Whereas, with the understanding that government is ultimately responsible for leading by example and establishing criteria needed to eliminate waste, so that manufacturers produce and businesses sell materials that can be safely recycled or composted.

ATTACHMENT C

NOW,THEREFORE, BE IT RESOLVED BY THE BOARD OF ALDERMEN OF THE TOWN OF CARRBORO:

Section 1. The Board of Aldermen supports the creation of a Zero Waste Plan in order to eliminate waste and pollution in the manufacture, use, storage, and recycling of materials.

Section 2. This resolution shall become effective upon adoption.

The foregoing resolution having been submitted to a vote, received the following vote and was duly adopted this 22nd day of September, 1998:

Ayes: Alex Zaffron, Michael Nelson, Diana McDuffee, Jacquelyn Gist, Allen Spalt

Noes: NONE

Absent or Excused: Hank Anderson, Hilliard Caldwell