Chapter III
Waste Reduction and Recycling

Waste reduction and recycling are recognized as basic elements of a responsible waste management system because they help to reduce waste generation and disposal rates, preserving the environment and landfill space. Accordingly, the State has identified waste reduction and recycling as priority methods of managing solid waste (RCW 70.95). King County has also identified the importance of waste reduction and recycling in preserving environmentally secure landfill capacity at Cedar Hills. It is the County's policy that aggressive and timely action be taken to preserve and insure the safe use of the landfill for as long as possible (Title 10, King County Code (KCC) 10.14).

The citizens and business community in King County have made the County a national leader in waste reduction and recycling (WR/R). Aggressive goals for WR/R were adopted by the State and County under RCW 70.95 and KCC 10.22.030, respectively, and programs designed to pursue the new policy were implemented through the 1989 King County Comprehensive Solid Waste Management Plan (1989 Plan). In 1991, 32 percent WR/R was achieved. The County has also met its first goal—35 percent WR/R in 1992. This chapter reviews the existing WR/R system and lays out a strategy to achieve the second goal—50 percent WR/R in 1995 and the foundation for 65 percent by 2000.

A. WASTE REDUCTION

1. Existing Conditions

Successful waste reduction requires changes in the ways goods and services are produced and consumed throughout society. Waste reduction challenges citizens and businesses to be efficient and creative to devise more ways to fulfill economic needs while producing little or no solid waste.

State and county legislation identify waste reduction as the highest priority for solid waste management. The development of specific waste reduction education, promotion, and service programs by the County and suburban cities recognizes the importance of waste reduction as part of King County's overall solid waste management strategy.

a. Background

By definition, waste reduction means that less waste is generated at the source or that there is a reduction of difficult-to-recycle wastes at the source. For example, reusable goods are manufactured and purchased instead of disposable ones; packaging is minimized or changed from difficult-to-recycle materials (such as plastics) to more easily recycled materials (such as paper). Other examples include products that are made to be durable and have a long useful life, use of double-sided copies in offices, and use of shrubs and ground cover that don't require pruning or mowing for landscaping. Waste reduction decisions can be made when (1) manufacturers decide what goods to produce, how they are produced, and how to package them, (2) consumers decide what to buy, and (3) consumers decide to use and reuse products efficiently.

Because waste reduction is the act of not producing waste, the best method available for measuring waste reduction is the per capita generation rate for the County. Per capita waste generation is the number of pounds of waste generated, either for disposal or recycling, per person per day within the County. Over the last decade, the County's per capita generation rate has been steadily rising. The goal of the waste reduction program is to reverse this trend over time.

Per capita waste generation is a measure of social behavior and can be influenced by a variety of factors other than waste reduction programs. Therefore, it is difficult to assign quantitative values to discrete waste reduction practices

or programs implemented by the County and suburban cities. Factors that can influence per capita waste generation include changes in population, economic cycles, and other outside influences such as information and public opinion relayed by the national media. As a result, the effectiveness of specific County or city waste reduction programs cannot be assessed at this time by measuring the volumes of waste reduced through the implementation of each program.

Because of these measurement difficulties, the County's WR/R rate includes a conservative estimate of annual waste reduction. The estimate recognizes the success of procurement policies for buying recycled products, promotion of waste reduction to school children, and media programs targeted at residential and commercial generators. Two percent of the total WR/R rate has been assigned to waste reduction, and this amount is expected to increase by approximately 0.05% annually. (See Chapter II.B for a discussion of waste reduction and recycling rates measurement and Table III.13 for WR/R rates.)

Although recycling can be accomplished locally, waste reduction measures are affected by the national and international economies and encompass changes in production methods and consumption patterns. Waste reduction measures extend waste management responsibility to a broader field of players—those who design, manufacture, and consume products and packaging.

Since 1989, local governments in Washington have been prohibited by state law from banning products or packaging and from assessing taxes or deposits on products or packaging for the purpose of affecting their use or disposal (RCW 70.95.C100 and RCW 82.02.025).

Consequently, existing programs in King County are focused on educating consumers and working with businesses to implement waste reduction practices in the work-place. The "ban on bans" will be lifted in July 1993 giving local jurisdictions a broad range of strategies with which to increase waste reduction.

King County and the suburban cities have expanded the public's understanding of waste reduction and provided the means for individuals and businesses to begin to reduce their waste by implementing the 1989 Plan's recommendations for waste reduction (Table III.1).

Table III.1 Summary of 1989 Plan Waste Reduction Recommendations

Program	Description	Implementation Status
Collection rate incentives (city/county)	Establish variable can rates to encourage participation in yard waste and recyclables collection programs.	Established in the County and 28 cities.
City optional programs (city)	Allow cities to receive backyard composting, Master Recycler/Composter, and nonresidential technical assistance services from the County or operate their own programs with funding assistance from the county.	Four cities implementing nonresidential technical assistance; one city implementing backyard composting.
Yard waste programs (county)	Provide backyard composting bins from county and Master Recycler/Composter training.	Established and ongoing.
Nonresidential technical assistance (city/county)	Conduct WR/R consultations for a wide range of nonresidential generators; develop educational materials and hold workshops to assist businesses in implementing WR/R programs in the workplace.	Ongoing technical assistance provided to businesses through onsite visits, coordinated collection, workshops, and phone assistance. Four cities implementing nonresidential technical assistance.
WR/R promotion, education, etc. (county)	Promote WR/R through printed materials, special events, and school programs	WR/R informational brochures; annual Recycle Week; community events; school education programs; WR/R telephone hotline are provided.

b. County Programs

(1) Education

King County has developed a range of education programs designed to reduce the County's per capita generation rate over time. These programs encourage citizens to generate less waste; to generate waste that is more readily recyclable and less toxic; and to recycle a greater portion of the waste generated. Most public awareness and education efforts which promote recycling also incorporate waste reduction components. These efforts include:

- *The* Home Waste Guide, *a widely distributed booklet that leads the reader on a tour through the average home and identifies waste reduction and recycling options.* It includes the "Resource Catalog," which lists contacts for more detailed information on waste reduction, and the "Waste Reducer's Checklist," which explains ways to reduce, reuse, recycle, and compost waste.
- *Special events, such as the annual Recycle Week, which recognize waste reduction accomplishments.* Recipients of the Achievement Awards for outstanding contributions to waste reduction have included an elementary school that eliminated cardboard lunch trays from its waste stream; a consumer cooperative which offers a five-cent rebate to consumers who reuse shopping bags; and a retailer who reuses packing materials provided by consumers and neighboring businesses.
- *School programs, which include materials about waste reduction for children and teachers.* The elementary school program for the academic year 1990-1991 offered an assembly presentation called "The Wiz Kids of Waste." The Wastebusters Program for middle and junior high school students includes student-teacher camp-ins where participants can learn intensively about waste reduction issues. A video focusing on the themes of reduction and reuse was produced featuring words and music written and performed by high school students.
- *Waste reduction education for businesses provided through the Business Recycling Program.* This program includes waste consultations and written materials, such as the *Business Waste Reduction and Recycling Handbook*, which has been distributed to over 2,500 businesses.
- *County Model Employee Program.* Through this program, County employees are encouraged to make double-sided copies, reuse paper and other office supplies, and use washable dinnerware. Some County agencies, such as the Solid Waste Division and the Department of Stadium Administration, use worm bins to compost organic food waste generated at the work-place.
- *Training in waste reduction practices for Master Recycler/Composter volunteers.* The manual for the 1991-1992 training has been revised to expand the waste reduction information.
- *Composting bins to help residents keep yard waste in their own backyard.* The County also provides a wide variety of printed information on composting and operates a composting hotline.

(2) Research

King County conducts experimental waste reduction or pilot projects, including:

- *A project that provides cloth baby diapers to low-income families.* In addition to promoting waste reduction, the program provides educational workshops and opportunities to improve infant care.
- *A project with Seattle Solid Waste Utility to test a variety of food waste composting methods.* This research, funded by a grant from Ecology, will also test the feasibility of backyard food waste composting and on-site nonresidential food and yard waste composting.
- *A financial assistance program (Dollars for Data) to enable businesses to implement waste reduction projects and services.* Businesses provide the County with information and data on the effectiveness of their waste reduction efforts in exchange for waste reduction assistance. Businesses participating in this program include a food bank organization that is vermi-composting unusable food, a hair salon that is providing hair care products in bulk to its clients, a major retail distributor that is replacing disposable plastic clothing bags with durable reusable covers, and a high school that has installed an electronic mail system to convey messages, reports, and other communications in lieu of using paper.

(3) Other Services

The other types of waste reduction measures used by the County and suburban cities are support services, such as rate incentives and a procurement policy that promotes the use of both reusable and recycled products.

Variable can rates, which provide an incentive for garbage subscribers to reduce the amount of materials they throw away, have been established throughout unincorporated King County. Subscribers are encouraged to practice waste reduction and recycling by subscribing to a mini-can rate, which offers cost savings over the regular one-can rate. There are substantial cost differentials between garbage service levels, and an additional fee is charged for each extra can the subscriber requests and occasional extra bags of garbage placed at the curb. The County and suburban cities regularly disseminate rate incentive and recycling information to subscribers through brochures, radio ads, and bus boards.

The King County Recycled Products Procurement Policy promotes waste reduction by requiring county departments to use both sides of paper sheets whenever practicable. All bids and proposals issued by the County require contractors and sub-consultants to adhere to this policy when submitting documents.

c. City Programs

Waste reduction information is included in brochures and other publications distributed by the cities. Many cities participated in the statewide Shop Smart campaign coordinated by Ecology in 1991 to encourage consumers to reduce waste by shopping selectively for minimally packaged products, durable and reusable items, and bulk quantities. The cities have also initiated other efforts to promote waste reduction, such as distributing reusable travel mugs and developing waste reduction kits for schools. (Refer also to Volume II, Appendix E for more information on city programs.) Most cities have enacted some form of garbage rate incentives and several have formally adopted procurement policies.

2. Needs and Opportunities

a. Comprehensive Waste Reduction Strategy

Realization of the next two WR/R goals, 50 percent by 1995 and 65 percent by 2000, can be greatly assisted by major achievements in waste reduction. Despite remarkable WR/R success, the per capita waste generation rate continues to grow (see waste generation discussion, Chapter II, Section B). Also, as recycling strategies are successfully implemented and recycling increases, achieving additional marginal increases in the recycling rate may become more difficult and expensive. These two reasons underscore the need for much more aggressive waste reduction aimed at reducing the County's per capita waste generation rate, in addition to existing and future recycling efforts. A comprehensive waste reduction strategy would encompass legislative efforts to actively pursue elimination of excessive and non-recyclable packaging as well as more focused and better integrated educational efforts and financial incentives. The role of the private sector should also be considered in product design, manufacturing, and marketing.

b. Education

The County and cities have already implemented many waste reduction education programs. However, these could be even more effective with better integrated and more widespread promotion that conveys a clear definition of waste reduction and offers specific examples of actions which reduce waste. A county-wide educational effort, delivered through a variety of media, could reach a wider consumer audience. Specific strategies also need to be developed for businesses, residents, governments, and institutions.

c. Financial Incentives

Financial incentives can be very effective tools in changing purchasing and disposal habits. Manufacturers and retailers need to be encouraged to reduce waste at the points of production and marketing. This can best be accomplished through such state-imposed actions as product disposal charges on particular products, or tax exemptions or credits for companies and institutions that follow specific waste reduction procedures.

At the local level, a variable can rate for garbage collection or other financial incentives to reduce waste need to receive continued emphasis and support. Existing rate incentives could be further developed to increase their effectiveness.

d. Product Packaging and Source Reduction

Under State law, King County and the cities have the ultimate responsibility for managing solid waste and meeting ate and local recycling goals. The County and the cities need a full complement of strategies to deal with solid waste disposal issues. The expiration of the "ban on bans" in July 1993 offers the opportunity to examine the various source reduction strategies. Among the strategies that need to be examined are packaging and product prohibitions, advance disposal fees, deposit systems, and mandatory recycling and disposal sites.

e. Measurement

In order to monitor progress made toward achieving the waste reduction program's goal of a decreasing per capita waste generation rate over time, an accurate method of measurement needs to be developed. The methodology developed must account for changes in the per capita waste generation rate attributable to population shifts and economic cycles so as to produce an accurate projection of social behavior.

The evaluation of the effectiveness of specific waste reduction programs implemented by the County is also necessary for making decisions about how to expand and improve on the County's overall waste reduction effort. As discussed in Section III.A.1.a., it is difficult to measure the impact of discrete waste reduction practices or programs on per capita waste generation rates. Therefore, alternative methods for measuring the effectiveness of programs must be developed that include focusing on the targeted waste stream and potential number of generators impacted by a particular program.

3. Alternatives

There are two waste reduction alternatives considered: maintaining the status quo and expanding existing programs. These alternatives are summarized in Table III.2 and discussed below.

a. Alternative A, Maintain Status Quo

Existing policies and programs promoting waste reduction would be continued (rate incentives, procurement policies, and packaging guidelines). Regional education programs (school programs, publications, special events, technical assistance to businesses, volunteer training) would continue to treat waste reduction as the first priority for solid waste management. The County's model employee program would continue to incorporate waste reduction practices into the work-place.

Ongoing data collection on waste reduction projects through the financial assistance program to businesses would be an important resource for determining effective strategies for the commercial sector.

b. Alternative B, Expand Existing Waste Reduction Programs

The County and cities would continue to integrate waste reduction into all WR/R programs. In addition, each jurisdiction would establish additional waste reduction programs targeted at residences, businesses, governments, and institutions. The County and the cities would all implement and maintain a variable rate structure for solid waste collection with cost differentials that offer substantial incentives to reduce waste.

Table III.2 Summary of Waste Reduction Alternatives

Alternative A	Continue existing policies and programs
Alternative B	Expand existing waste reduction programs

The programs described in Alternative B would require relatively small budgets for implementation. No increases in rates due to these programs is anticipated.

Waste reduction efforts would consist of seven major strategies, which are discussed in the sections that follow.

(1) Integration of Existing Programs

The County and cities would continue to integrate waste reduction elements into programs for all targeted groups. Business, school, and public education programs described under "Existing Conditions" (III.A.1) would continue to operate at the same level of effort. This strategy is referred to as "Waste Reduction First." New strategies that would be implemented under these programs are as follows.

- The County would expand its waste reduction efforts in its business recycling program by developing a model office display which would demonstrate methods, equipment, and procurement procedures that reduce waste. The display would be exhibited at trade fairs, offices, and malls.
- The County Model Employee Program would continue to encourage double-sided copying, reuse of office supplies, and use of durable dishware through motivational signs and waste reduction checklists. A networking committee would be formed to look for potential waste reduction projects within the County.
- The outreach potential of Master Recycler Composters would be increased with additional training in holiday waste reduction techniques and conducting school workshops.

The County would also be responsible for implementing additional programs that are related to existing efforts. These include:

- Green Works - a program which recognizes businesses that have implemented at least three waste reduction strategies. It is anticipated that the positive image associated with Green Works recognition will motivate businesses to incorporate waste reduction into company practices.
- Holiday Waste Reduction - a program that would target consumers as well as businesses by providing information on how to reduce waste generation during the holiday season; presenting demonstrations on how to wrap gifts and make greeting cards using waste reducing techniques; educating consumers on less wasteful purchasing habits; and working with retailers to encourage the use of reusable shopping bags and gift boxes.
- Green Teams - a program that would augment the waste reduction component of the elementary school program by assisting in the formation of teams at each school. Green team members would include students and teachers who would adopt and pursue a waste reduction goal such as reducing the amount of paper or food waste generated at their school. They would be assisted in their efforts through King County curriculum materials.

(2) Media Campaign

The County would implement a county-wide mass media waste reduction educational campaign which would be coordinated across jurisdictions in its message, presentation, and audience. The purpose of the campaign would be to define waste reduction for the public and describe actions they can take to reduce the amount of waste they generate. Media approaches could include the following.

- Newspaper, television, radio and bus-board ads.
- Videos on waste reduction, home composting, and household toxics reduction purchased by the County for possible airing on public access and commercial television stations.
- A multi-jurisdictional project to buy air time to promote waste reduction topics during breaks in children's programming.

(3) Targeted Waste Reduction Plan

The cities and the County would develop specific waste reduction programs to meet the particular needs of their residents, businesses, and institutions. The County would implement, at a minimum, at least one program for each residential, business, and institutional generator class from the following list of existing strategies for unincorporated King County.

Each city would either implement at least one program from each of the waste reduction strategies below for each generator class, or create their own programs appropriate for each generator class. If cities create their own programs, program summaries would be reviewed and commented upon by the County before implementation, and implementation

status would be reported by the cities in their annual report to the County.

Residences

- *Point of purchase exhibits and information.* Develop and display exhibits and information in retail stores to educate consumers on selective shopping techniques that reduce waste.
- *Swap meets.* Sponsor citywide or community-based swap meets to encourage residents to trade or sell used goods.
- *Model programs.* Develop and publicize a model residence where waste reduction techniques have been incorporated into daily activities. A checklist might include the use of reusable sandwich boxes for school lunches, cloth diapers, solar-powered products, and landscaping and gardening practices that reduce waste. Emulation by other residents would be encouraged through a recognition program.
- *Durable shopping bag distribution.* Devise a program targeted at shoppers who do not yet use durable or reusable bags. Provide durable shopping bags containing brochures and other materials on selective shopping and other waste reduction strategies.

Businesses

- *Procurement workshops for businesses.* Conduct workshops that assist businesses in developing procurement programs that favor durable and reusable products.
- *Model programs.* Develop model programs for different types of businesses and encourage emulation by other businesses through recognition programs.
- *Waste reduction technical assistance.* Provide technical assistance to retailers and other businesses in developing waste reduction programs.
- *Product or shelf-labeling programs.* Work with retailers to develop a product or shelf-labeling program to help consumers identify types of products that reduce waste.
- *Directory of businesses/organizations employing waste reduction methods.* Develop a directory of businesses that employ waste reduction practices as a resource for other businesses planning waste reduction programs.

Government/Institutions

- *Procurement standards.* Ensure that procurement specifications for equipment, vehicles, supplies, furniture, parts, and materials provide for the systematic purchase of durable and reusable products.
- *Model programs.* Develop models for waste reduction in offices, cafeterias, parks, or other facilities. Use recognition programs to encourage widespread adoption of waste reduction practices.

(4) Collection Rate Incentives

The County and the cities would continue to implement rate incentives that encourage waste reduction and recycling and further develop variable rates to ensure substantial cost differentials between solid waste collection service levels. These incentives could include:

- Mini-can garbage service.
- A special recycling service rate for customers who do not subscribe to garbage collection service.
- Distribution of recycling costs among all rate payers.
- Substantial cost differentials between solid waste collection service levels.

(5) Waste Reduction Policy and Program Research and Development

King County would undertake a comprehensive analysis of waste reduction policies and programs implemented in other parts of the country to identify new options for augmenting the expanded programs discussed above. Areas of research could include the following:

- Review current assumptions regarding waste generation to determine whether King County's waste generation forecasting model needs revision.
- Analyze trends in manufacturing and product packaging and design to determine the types of packaging to be targeted in waste reduction programs.
- Identify excessive and non-recyclable packaging, wasteful products, unavoidable waste, and waste that could potentially be eliminated or reduced.

- Identify existing waste reduction efforts by the private sector and by government agencies at the local, state, and federal levels.
- Evaluate regulatory options for enhancing waste reduction.

The results of this analysis could lead to additional program proposals for the current planning period. Among the new policies and programs that could be considered are:

- Establish a waste reduction consortium with trade associations and manufacturers.
- Increase intergovernmental waste reduction coordination to influence state and local decisions.
- Work with citizen groups, as well as local, state, and national government coalitions to lobby for regional and national changes in the manufacture, distribution, and marketing of goods and packaging.

(6) Packaging Restriction Program Research and Development

With the expiration of the ban on bans, the County and cities would immediately gain the authority to implement product restrictions or impose taxes. Although local jurisdictions would have the right to act independently, the County and the cities would attempt to coordinate the implementation of any product restrictions or taxes with one another. Any actions would be implemented through ordinances and be subject to public review.

The County and the cities would propose to evaluate the following actions for the 1995 Plan to determine if they are necessary to meet state and local goals:

- Prohibitions on the sale of products made of materials that result in excessive waste or waste that is difficult to recycle
- Enactment of advance disposal fees on the sale of products that also result in excessive waste or waste that is difficult to recycle
- Deposit systems requiring retailers to add a deposit fee for specified products to be refunded upon their return
- Establishment of mandatory recycling/disposal sites by retailers for certain products that they sell. (This option would require amendment of existing statutes.)

Measurement

King County would develop and implement a waste reduction measurement program consisting of:

- Annually reporting the per capita waste generation rate countywide. The reported generation rate would account for population shifts and economic cycles in order to accurately assess social behavior.
- Evaluating the effectiveness of specific waste reduction programs implemented by the County and suburban cities at the end of each planning period. The evaluation would consist of an analysis of the size of the waste stream targeted and number of generators impacted by the particular program.

4. Recommendations

Alternative B, expand existing waste reduction programs, is recommended because it addresses the need for greater waste reduction achievements (specific recommendations that comprise Alternative B are summarized in Table III.3). It provides both short- and long-term strategies for managing waste among businesses, residents, and local governments through waste reduction. The short-term strategy is to increase the awareness of waste reduction opportunities for all generator classes. For the long term, Alternative B provides research and analyses that will lead to the development of more targeted programs and more accurate measurement of program effectiveness. Waste reduction activities are interrelated with recycling programs and goals. Therefore, this recommendation is also coordinated with the recycling recommendations in Section B.

5. Implementation

The waste reduction implementation chart (Table III.4) provides information on program responsibility and projected timelines. Both new and continuing programs are shown.

Table III.3 1992 Waste Reduction Recommendations

		Strategy	Implementation Responsibility
Recommendation III.1	Business waste reduction	Expand business waste reduction program by developing model office display, and recognize businesses that incorporate waste reduction into company practices.	County
Recommendation III.2	Employee recycling program	Form a networking committee to expand and create new waste reduction programs for employee recycling program.	County
Recommendation III.3	Holiday waste reduction	Expand waste reduction programs targeting consumers and businesses during the holiday season.	County
Recommendation III.4	Green teams	Increase number of Green Teams school program sites to include all schools.	County
Recommendation III.5	Multimedia strategy	Purchase videos on waste reduction for airing on public access television and participate with other jurisdictions and television media to buy air time to promote waste reduction	County
Recommendation III.6	Targeted waste reduction	Develop and implement one waste reduction program per generator type (residential, business, and institution).	County, cities
Recommendation III.7	Packaging analysis	Analyze trends in manufacturing and product packaging and design and identify excessive and nonrecyclable packaging.	County
Recommendation III.8	Identification of reducible waste	Identify categories of waste which can or cannot be reduced to target eliminating reducible waste.	County
Recommendation III.9	Waste reduction data	Identify existing waste reduction efforts by the private and public sectors.	County
Recommendation III.10	Consortium building	Establish a waste reduction consortium with trade associations and manufacturers.	County
Recommendation III.11	Intergovernmental coordination	Increase intergovernmental coordination to increase influence on waste reduction decisions.	County, cities
Recommendation III.12	National activities	Develop proposals for establishing industry consortiums, intergovernmental coordination and national coalitions to promote waste reduction in products and packaging.	County
Recommendation III.13	Rate incentives	Continue to encourage waste reduction and recycling through such rate-related incentives as mini-can garbage service, special recycling service rate for non-garbage customers, distributing cost of recycling among all rate payers, and establishing substantial cost differentials between solid waste collection service levels.	County, cities

Table III.4 Waste Reduction Implementation Table

	Program Name	Implementation Responsibility	1992	1993	1994	1995	1996	1997	1998
III.1	Business waste reduction	CO							
III.2	Employee recycling program	CO							
III.3	Holiday waste reduction	CO							
III.4	Green teams	CO							
III.5	Multimedia strategy	CO							
III.6	Targeted waste reduction	C,CO							
III.7	Packaging analysis	CO							
III.8	Identification of reducible waste	CO							
III.9	Waste reduction data	CO							
III.10	Consortium building	CO							
III.11	Intergovernmental coordination	C,CO							
III.12	National activities	CO							
III.13	Rate incentives	C,CO							

Cities = C
County = CO

Planning period
Implementation period
Continuation

B. RECYCLING

The 1989 Plan established minimum levels of recyclables collection service for the residential sector. Household recyclables collection is required in urban areas and drop-sites are required in rural areas. Yard waste collection was specified for both urban and rural areas. Substantial progress has been made implementing residential collection programs. About 95 percent of the County's single-family residences have household collection of recyclables available, and in many areas household yard waste service is provided as well.

Support programs, such as procurement policies and collection rate incentives, encourage participation in WR/R programs and services. Education programs have provided information to schools, businesses, and residents on specific ways to reduce and recycle waste.

1. Existing Conditions

This section reports on the status of the 1989 Plan recommendations for recycling and provides background information on recyclables collection and material markets. More specific information on county and city activities and accomplishments over the last three years is also presented in Volume II, Appendix E.

a. Background

(1) Status of 1989 Plan Recommendations

The status of recycling recommendations made in the 1989 Plan is summarized in Table III.5. Except for special waste recycling, which is readdressed in this plan update, all of the 1989 recommendations have been fully or partially implemented. For instance, while rate incentives are in place in 28 cities, procurement policies have been adopted so far by only the County and six cities. However, other cities have informal policies pending formal adoption.

Additionally, 20 of 24 cities in the urban area have implemented a household recyclables collection program. Auburn has implemented an alternative program which is being assessed for adequacy by Ecology and Algona is still developing plans for its household recycling program. Efforts are ongoing to fully implement all recommendations.

Table III.5 Summary of 1989 Plan Recycling Recommendations

Program	Description	Implementation Status
Urban/rural designation	Determine urban and rural boundaries to provide basis for minimum levels of recycling services.	Established in 1989 Plan.
Recyclables designation	List possible materials to include in collection programs.	Established in 1989 Plan.
Minimum service levels (cities)	Require household collection of recyclables in urban cities and encourage it in rural cities. Require drop-site collection, at a minimum, in rural cities. Require yard waste collection services in both urban and rural cities.	Twenty of 22 urban cities and 3 of 7 rural cities have or plan household collection of recyclables. Yard waste programs are offered or planned in 28 cities.
Minimum service levels (county)	Require household collection of recyclables for urban areas and encourage it for rural areas, which must otherwise be served by drop-sites or buy-back centers. Require yard waste collection in urban areas. County must provide solid waste facilities in rural areas for collection of recyclables and yard waste.	Household collection of recyclables and yard waste is available throughout urban unincorporated King County and some rural cities. Most county solid waste facilities offer recycling services. Drop boxes and buyback centers serve rural areas.
Rate incentives	Establish variable can rates to encourage participation in yard waste and recyclables collection programs.	Established in the County and 28 cities.
Procurement policies	Adopt procurement policies that favor the use of recycled or recyclable materials.	Adopted by the County and six cities; remaining cities have informal policies.
Minimum requirements for new construction	Revise zoning and building codes to include the provision of recycling collection space in new construction.	Recycling space requirements will be included in the Revised King County Zoning Code; recycling space requirements are under consideration by many cities.
Monitoring progress toward WR/R goals	Require cities and county to prepare annual reports on status of programs and progress toward WR/R goals.	Progress by all cities and the County is reported in *Solid Waste Division Annual Report.*
Analysis of multifamily collection options	List options and implementation strategies for cities to use in developing collection programs for multifamily residences.	Draft manual distributed in 1991.
City optional programs	Allow cities to receive backyard composting, Master Recycler/Composter, and nonresidential technical assistance services from the County or operate their own programs with funding assistance from the county.	Four cities implementing nonresidential technical assistance; one city implementing backyard composting. Remainder participate in countywide programs.
Yard waste programs	Provide backyard composting bins from county, Master Recycler/Composter training, Christmas tree collection, and nursery composting demonstrations.	Established and ongoing.
Food waste processing	Evaluate food waste processing alternatives.	Received Ecology grant to study collection, processing, and composting.
MMSW processing	Evaluate implementation issues and develop a procurement approach related to the construction of a mixed municipal solid waste processing facility.	MMSW processing evaluated by Solid Waste Division in report issued in 1991.
Nonresidential technical assistance	Conduct WR/R consultations for a wide range of nonresidential generators; develop educational materials and hold workshops to assist businesses in implementing WR/R programs in the workplace.	Ongoing technical assistance provided to businesses through onsite visits, coordinated collection, workshops, and phone assistance.
Market development	Encourage procurement of recycled products by all King County agencies; emphasize the development of local markets through the King County Commission for Marketing Recyclable Materials.	County procurement policy adopted; cities adopting procurement policies on an individual basis (six cities have formal policies). Marketing Commission established and is undertaking several market development activities.
WR/R promotion, education, etc.	Promote WR/R through printed materials, special events, and school programs.	WR/R informational brochures; annual Recycle Week; community events; school education programs; WR/R telephone hotline.
Special waste recycling	Evaluate collection, processing, and recycling of bulky waste, CDL waste, and woodwaste.	Readdressed in 1992 Plan.

(2) 1989 Plan Urban and Rural Designation

Service levels for collecting recyclables are based on whether an area is urban or rural and include materials formally designated as recyclable in the King County 1989 Plan. Since the criteria in the *1985 King County Comprehensive Plan* (KCCP) for urban and rural designations are consistent with the policies and intent of RCW 70.95, the County used them for the 1989 Plan. They are shown in Figure III.1 and include:

- *Urban.* King County and the cities have made firm commitments to urban development and services; natural features are capable of supporting urban development without significant environmental degradation; public facilities and services are in place or can be provided to accommodate urban growth; and the area is generally developed at one dwelling or more per 2.5 acres and is extensively platted into lot sizes averaging less than five acres.
- *Rural.* There are major physical barriers (for example, steep slopes or water bodies) to urban services; environmental constraints make the area generally unsuitable for intensive urban development; existing resource activities (farming, forestry) and soils make the area desirable for rural designation to encourage continuing resource management; new development will average one dwelling unit per ten acres in areas where large parcels remain, and one dwelling unit per five acres in areas with many existing small parcels.
- *Transitional areas.* Areas that remain low-density land uses as a reserve for future urban development or designation as a rural area.

For urban areas, the County considered total population, population density, and land use and utility service plans. Urban areas are anticipated to develop at higher densities in the long term; areas designated as rural are expected to remain at lower densities.

Figure III.1 illustrates service areas designated as urban and rural for planning purposes; it represents the most recent updates to the KCCP map. Figure III.1 is a guide for collection services. Generally, areas with at least 200 dwelling units per square mile, as determined by the King County *1991 Annual Growth Report* should receive household collection service. Collection service areas are delineated in city and county implementation ordinances and contracts or through Washington Utilities and Transportation Commission (WUTC) regulation of haulers. Collection services are described in more detail under county and city programs, Sections B.1.b and B.1.c, and Volume II, Appendix E. They are also discussed in Chapter IV, Section A.

Figure III.1 Urban and rural service areas. (See overleaf.)

(3) 1989 Plan Designation of Recyclables

Materials are defined as recyclable in RCW 70.95 if they yield a price on the market or have a beneficial end use. Materials designated as recyclable in the 1989 Plan, and therefore among those included in collection programs, are:

- Paper—newspaper, corrugated cardboard, computer, office paper, mixed paper, other paper
- #1 and #2 Plastics—PET (polyethylene terephthalate) and HDPE (high-density polyethylene)
- Glass—container glass
- Metals—aluminum cans, tin (steel) cans, ferrous metals, nonferrous metals, insulated wire, bi-metals/combination metals
- Tires
- Yard waste
- Bulky waste—furniture, appliances, white goods

(4) Minimum Service Levels

Cities are responsible for ensuring the provision of minimum service levels within their jurisdictions and the County does so in unincorporated areas (collection services are summarized in Tables III.6 and III.7). These levels differ for urban and rural areas. However, under the 1989 Plan, both urban and rural collection programs at a minimum were required to collect:

> "(1) glass, mixed paper, newspaper, cardboard, bi-metals and aluminum cans; or (2) any combination of the materials designated as recyclable in this plan (including yard waste) that will result in the collection of at least 10 percent of

the residential waste stream by weight by July 1, 1992, as provided in SHB 1671."

The 1989 Plan minimum service levels for urban areas are:

- Household collection of source-separated recyclables from all residential dwellings, including multifamily dwellings.
- Programs for the collection of yard waste. These programs should be designed to service all residential dwellings and commercial establishments. Either drop-site (mobile or permanent) or household collection may be provided.

The 1989 Plan minimum service levels for rural areas are:

- *Collection of source-separated recyclable materials.* Programs should be designed to service all residential dwellings and commercial establishments through strategically located drop-sites, buy-back centers, or mobile collection services that provide regular service. Household recyclables collection is encouraged but not required.
- *Collection of yard waste.* Programs should be designed to service all residential dwellings and commercial establishments through strategically located drop-sites, buy-back centers, or mobile collection services that provide regular service.

(5) Collection Methods

There are four collection methods for recyclables employed in King County: household, nonresidential, drop-site, and buy-back. Appendix F is a resource guide to recycling centers in King County.

Residents who receive household collection services co-mingle recyclable materials in a single toter or separate them into multiple bins and place them near the street on a specified day for pickup. The commingled system results in higher processing costs; the multiple-bin system involves higher collection costs. For yard waste collection, residents bag, box, or bundle yard waste, or put it into toters or garbage cans. The frequency of pickup differs among service providers and includes seasonal variations. To ensure participation, some cities have passed ordinances banning yard waste from residential garbage cans.

Counties and cities do not have the authority to require haulers to offer recyclable materials collection services to nonresidential generators; therefore, collection services are provided on a voluntary basis. Nonresidential collection service providers typically require minimum volumes and processing levels for specific materials (for example, they might require that all cardboard be baled). Commercial waste haulers and private recyclers often provide multiple bins for customers with large quantities of recyclable items who are willing to source separate them. Source-separated materials usually command higher market value because of lower processing costs and higher quality product. This enables businesses to recover a portion of the market value of the recyclable either through lower garbage rates, monthly payment from the collector, or both. Financial incentives often facilitate paper recycling in individual businesses or office buildings.

Drop-site collection is provided by haulers and private recyclers who collect recyclables at commercial establishments, institutions, and multifamily dwellings. King County and some cities offer recycling and yard waste drop-sites; nonprofit organizations have drop-boxes for reusable or refurbishable goods and recyclables; and some cities hold cleanup days, when residents can drop off materials at a designated location.

Buy-back centers pay for materials from businesses or the public. They may be commodity specific or accept a variety of recyclable materials. Some buy-back centers pickup at businesses, but this is becoming less common and currently is very restrictive regarding types of materials and volume.

(6) Markets

Markets for recycled materials are affected by many of the same factors that affect other industries. For example, recycling markets depend on the availability of materials and on adequate processing capacity to convert reusable materials into feedstock; markets are affected by supply and demand and competition from other sources (such as raw materials); and prices are affected by local, national, and global economic conditions. For materials collected by King County recycling programs, all these factors come into play.

As market conditions vary, so do the recycling rates among different materials (Table III.8). For example,

Table III.6 King County Cities, Recycling Collection Service Summary

	Collector	Who Pays	Cost of recycling [1]	Programs	Bins collected [2]	City drop-sites [3]	Materials Recycled: Glass	Aluminum	Tin	Ferrous Metals	Nonferrous Metals	Cardboard	Mixed paper	High-grade paper [4]	Newspaper	#1 plastic bottles	#2 plastic bottles	Other materials
Algona																		
Auburn	RST			MYN		R	D	DN	DN			DN	DN		DN	DN	DN	
Beaux Arts	Eastside	All		SY	1		H	H	H			H	H		H			Wood, DN
Bellevue	Fibres	Sub	$2.50	SMY	3	R	H	H	H		H	H	H		H	H	H	Drink boxes, poly-coated paper H
Black Diamond	Meridian					Y												
Bothell	WM Sno			SY	3	R	H	H	H			H	H		H	H	H	Oil
Burien	Sea-Tac	All	$1.83	SMY	1,3		H	H	H			H	H		H	H	H	
	Raffo		$1.80				H	H	H			H	H		H	H	H	
Carnation	WM Sno					RY	D	D	D				D		D	D	D	
Clyde Hill	Eastside	All		SY	1		H	H	H			H	H		H			
Des Moines	ST	Sub		SMYN	1		HN	HN	HN			HN	HN	H,N	HN	HN	HN	
Duvall	WM Sno	All	$3.90	SMN		R	HN	HN	HN	HN	HN	HN	HN	N	HN	HN	HN	
Enumclaw	RST					R	D	D				D	D		H			
Federal Way	RST	Sub		SMY	3		H	H	H			H	H		H	H	H	
Hunts Point	Eastside	All		SY	1		H	H	H			H	H		H			
Issaquah	Lawson	Sub	$2.44	SMYN	3	R	HN	HN	HN	HN	HN	HN	HN	N	HN	HN	HN	Drink boxes, milk cartons H
Kent	Kent Dis	Sub		SMN	1		HN	HN	HN		HN	HN	HN	N	HN	HN		Wood pallets N
Kirkland	WM Sno			SMY	3		H	H	H			H	H		H	H	H	
Lake Forest Park	Eastside	All		SMYN	1		HN	HN	HN			HN	HN	N	HN	HN	HN	
Medina	Eastside	All		SY	1		H	H	H			H	H		H			
Mercer Island	Eastside			SY	1		H	H	H	H	H	H	H		H	H	H	
Normandy Park	Fibres	Sub	$3.60	SMY	3	R	H	H	H			H	H		H	H	H	
North Bend	Lawson	All	$4.00	SMYN	3	RY	HN	HN	HN	HN	HN	HN	HN	N	HN	H		
Pacific	RST					R	D	D	D						D			
Redmond	Fibres	All		SMYN	3	R	HN	HN	HN		HN	HN	HN	N	HN	HN	HN	Drink boxes, poly-coated paper H
Renton	WM Rai	All		SMY	3		H	H	H			H	H		H	H	H	
SeaTac	Sea-Tac	Sub		SMY	1		H	H	H			H	H		H	H	H	
Skykomish																		
Snoqualmie	Lawson	All	$4.00	SMN	3	RY	HN	HN	HN	HN	HN	HN	HN	N	HN	HN	HN	
Tukwila	Raffo	Sub		SMY	3		H	H	H			H	H		H	H	H	
	Sea-Tac	Sub		SMY	1		H	H	H			H	H		H	H	H	
Woodinville	WM Sno	All	$1.83	SMY	3		H	H	H			H	H		H	H	H	
Yarrow Point	Eastside	All		SY	1		H	H	H			H	H		H			

Table III.7 Urban Unincorporated Recyclables Collection Service

	Collector	Who Pays	Cost of recycling [1]	Programs	Bins collected [2]	City drop-sites [3]	Materials Recycled: Glass	Aluminum	Tin	Ferrous Metals	Nonferrous Metals	Cardboard	Mixed paper	High-grade paper [4]	Newspaper	#1 plastic bottles	#2 plastic bottles	Other materials
Service Area 1	WM NW	All	$3.74	S M Y	3	n/a	H	H	H			H	H		H	H	H	
Service Area 2	Eastside	All	$1.83	S M Y	1	n/a	H	H	H			H	H		H	H	H	
Service Area 3	WM Sea	All	$2.74	S M Y	3	n/a	H	H	H			H	H		H	H	H	
Service Area 4	Lawson	All	$4.10	S M Y	3	n/a	H	H	H			H	H		H	H	H	
Service Area 5	WM Rain	All	$2.92	S M Y	3	n/a	H	H	H			H	H		H	H	H	
	WM Sea	All	$1.95	S M Y	3	n/a	H	H	H			H	H		H	H	H	
	Sea-Tac	All	$1.83	S M Y	1	n/a	H	H	H			H	H		H	H	H	
Service Area 6	WM Sea	All	$1.95	S M Y	3	n/a	H	H	H			H	H		H	H	H	
	Sea-Tac	All	$1.83	S M Y	1	n/a	H	H	H			H	H		H	H	H	
	Raffo	All	$1.80	S M Y	3	n/a	H	H	H			H	H		H	H	H	
Service Area 7	RST	All	$1.80	S M Y	3	n/a	H	H	H			H	H		H	H	H	
	Sea-Tac	All	$1.83	S M Y	1	n/a	H	H	H			H	H		H	H	H	
Service Area 8	Meridian	All	$1.83	S M Y	1	n/a	H	H	H			H	H		H	H	H	

[1] Monthly charge per customer
[2] Household collection method: number of bins of recyclables collected
[3] City-sponsored residential drop-site services
[4] High-grade paper: collected separate from mixed waste paper.

Eastside Eastside Disposal - Rabanco
Fibres Fibres International
Kent Dis Kent Disposal
Lawson Lawson Disposal
Meridian Meridian Valley Disposal - Rabanco
Raffo Nick Raffo Garbage Co.
RST RST/Federal Way Disposal (Nick Raffo)
Sea-Tac Sea-Tac Disposal - Rabanco
WM Rai Waste Management - Rainier
WM Sea Waste Management - Sea-King

All all residents pay
D drop-site
H household
M multifamily
N Nonresidential
R recyclables
S single-family
Sub subscribers
Y yard waste (household)

100 percent of lead-acid automobile batteries are recycled, but fewer than 1 percent of household batteries are recycled. This is because automobile batteries provide a competitive source of lead (due to costly environmental regulations for lead mining). The core charge on lead-acid batteries encourages users to recycle them, and processors have ample capacity. A core charge is a deposit charged when a battery is purchased; it is refunded when the battery is returned to the retailer after use. However, such market stimulants do not exist for household batteries. Except for small quantities of button cell batteries that are collected and shipped to processors in the eastern United States, there are limited outlets for recycling household batteries.

By far the most significant recycled material is paper—both in terms of volume collected and percent of material generated that is recycled. Paper recycling in King County consists of fairly well-developed systems for collecting cardboard from businesses and mixed waste paper (MWP) and old newspaper (ONP) from the residential sector, as well as a developing commercial, office paper collection system. Recycling has also made significant in-roads in diverting other materials from the waste stream, such as aluminum and tin cans and ferrous scrap. A detailed discussion of market conditions for recyclable materials is given in Appendix D, which provides current and projected recycling volumes and commodity prices, an analysis of the current market and an assessment of potential new markets, and a discussion of the impact of recycling programs on market infrastructure. Key points for each major material market are as follows:

- *Paper.* In 1990, an estimated 165,500 tons of paper were collected for recycling, about 39 percent of the waste paper generated. In the coming decade, the volume of paper collected for recycling is expected to increase by an average of 9 percent annually, but the ability of recycling markets to handle

Table III.8 1990 Recycling by Material Type

Material	% Recycled	Total Tons Generated [a]	Total Tons Recycled
Paper	39	427,600	165,500
Glass	35	37,300	13,000
Metal			
Aluminum cans	43	6,450	2,800
Aluminum scrap and nonferrous	77	14,400	11,100
Tin cans	36	12,000	4,350
Ferrous scrap	69	101,400	70,400
White goods	93	30,000 [b]	28,000 [b]
Lead-acid batteries	100 [c]	5,200	5,200
Household batteries	<1	2,900,000 [d]	<29,000 [d]
Plastics	>1	83,000	930
Textiles	7	43,300	3,000
Tires	23	6,500,000 [e]	1,500,000 [e]

[a] Total tons generated are based on estimates of disposed and recycled tonnages.
[b] Based on Solid Waste Division estimates
[c] 100% recycling is assumed since no lead-acid batteries were found during the *King County Waste Characterization Study* (Appendix B). Nationally, the recycling rate for lead-acid batteries is approximately 85 percent.
[d] Individual batteries (not tons)
[e] Individual tires (not tons)

Source: Recycling Markets Assessment, Volume II, Appendix D

this growth will vary by grade. Newsprint recycling capacity in the Northwest is expected to surpass local supply by mid-1993 as new mills come on line, while MWP will continue to be exported to Pacific Rim countries. The markets for MWP are not expected to come into balance until 1994-1996. Old corrugated cardboard will remain fairly stable, while the market for higher grade office paper will decline in 1992-1994, or until new domestic capacity comes on line. Currently, much of the paper collected for recycling in King County is exported to Pacific Rim countries. Expansion of domestic markets is crucial in order to maintain long-term stability. A substantial barrier to developing domestic markets for paper is the large capital investment required. Before making these investments the paper industry must be confident that there is sufficient demand for their product.

- *Glass.* In 1990, about 13,000 tons of glass were collected for recycling in King county, about 35 percent of the glass waste generated. During the past 10 years, the increasing use of plastics has led to a decreased market share for the glass container manufacturing industry. This decreasing demand for glass containers, coupled with increasing collection of glass containers for recycling, has created a serious market imbalance for glass throughout the United States. In King County, the volume of glass collected for recycling is increasing at an average rate of 10 percent per year. With the implementation of new curbside programs, it is estimated that by the year 1995, recycled glass volumes in the Puget Sound region will reach 77,000 tons/year and will exceed 100,000 tons/year by the year 2000. At this time there are no plans by local manufacturers to increase their cullet use. Unless economically feasible export markets are developed, which is unlikely in the short term, or new end-use markets are developed, the current market imbalance will worsen.
- *Aluminum cans.* Aluminum cans were recycled at a rate of 40 percent in King County in 1990. Aluminum has traditionally been the most profitable commodity for small recycling processors, but currently the market is on a downward trend. The recycling rate for aluminum cans, unlike most materials, does not seem to be significantly increased by curbside programs. The price paid for aluminum cans seems to have a greater impact. When prices are high, people sell cans to buy-back centers. When prices are low, they either store them and wait for a better price, or recycle them at the curb.
- *Tin Cans.* Tin cans were recycled at a rate of 28 percent in King County in 1990. The Steel Can Recycling Institute estimates a national tin can recycling rate of 66 percent by the year 1995 and 75 percent by the year 2000. MRI Corporation, the only processor of tin cans in King County, has recently upgraded its machinery, and with its current equipment probably won't reach capacity until 1995. The steel market is a very established worldwide market. Recycling programs are not expected to have a significant impact on the processors, end-users, or commodity prices.
- *Plastics.* Approximately 670 tons of all types of plastic were collected for recycling in King County in 1990. This represents less than one percent of the 85,400 tons of plastics generated in the County. The plastics manufacturing industry does not use recycled resin in quantities significant enough to have a major impact on markets. From the perspective of the recycling industry, however, the low density of post-consumer plastics will cause these materials to have an increasing impact on collection and processing systems. The addition of #1 and #2 plastic bottles (PET and HDPE) to curbside routes has been manageable with existing equipment, but expansion to other types of plastics may overwhelm this capacity. Some collectors are experimenting with on-truck densifiers as a possible solution to this problem.
- *Compost materials.* In 1990, 38% of the wood and yard waste generated in King County was diverted through yard waste collection programs. The markets for yard waste products are in the middle of a critical period of rapid expansion and development in King County. The input market for unprocessed yard waste and the product markets for composted materials and mulch are being inundated by unprecedented expansions of supply. The dramatic increase of household collection programs over the last few years and continuing into 1993 will continue to provide increasing quantities of yard waste. Over the next few years, collection programs will probably produce an oversupply in the yard waste processing sector, creating compost stockpiles and difficulties in marketing. There will also be some increases in the supply of wood to recyclers, but they already have secured successful channels into the mulching and hog fuel markets. In the long term, there should be

sufficient processing and demand capacity in existing markets to ensure long-term sustainable markets for wood and yard wastes. The products will be primarily topsoil, mulch, and separated wood used as a fuel.

To date there have been no significant efforts to recycle food waste. Most of the area processors have experimented on some level with adding food waste to their yard waste during the decomposition process. Food waste is seen as a potentially strong market and addition to the compost business if processing issues such as odor, contaminants, cost, and other concerns can be resolved. A market is being secured for the food waste compost that will be derived from the County's Ecology-funded pilot project.

- *Other materials.* Currently there are limited collection, processing, and markets for polycoated paperboard in King County. Two processors handle the estimated 50 tons per year that are being recycled in the County. The current market for ferrous scrap is stable, but the price is lower than normal due to generally low prices on international steel markets. Current market conditions for nonferrous scrap are depressed due to an increase in supply caused by domestic smelters producing at or above full capacity. New recycling technologies for tires are being developed at a rapid pace and several facilities are projected to come on line over the next decade. All of the scrap tires generated in the County go to a vast array of processors and end-users throughout the Pacific Northwest or are landfilled. The tire recycling industry is still relatively young, with new technologies developing at a rapid pace. Tire-derived fuel is currently the largest end-use for scrap tires in the state. Several new markets, such as pyrolysis and rubberized asphalt, are on the verge of major growth in Washington State.

b. County Programs

WR/R programs established in the 1989 Plan are discussed under three areas:

1. Recyclables collection (cities and county)
2. Support programs (cities and county)
3. Regional programs (county and cities optional)

Over the last three years the County and suburban cities have achieved significant results in all three areas. Household collection programs are offered throughout most of the County, and support programs such as procurement policies and variable can rates have been adopted by the County and many of the cities. County recycling programs are described below, followed by a synopsis of the cities' programs; waste reduction programs are also discussed in Section III.A. Major achievements of the County and cities are summarized later in this section; a more detailed description of programs is included in Volume II, Appendix E.

(1) Recyclables Collection

Recyclables collection consists of services such as household collection and facilities that have drop-sites. Areas served by household recycling and yard waste collection services are shown in Figures III.2 and III.3. Under the 1989 Plan, King County was responsible for implementing programs that meet or exceed minimum service levels for collecting recyclables and yard waste in unincorporated areas, both urban and rural by September 1, 1991.

Requirements for unincorporated urban collection were met in 1991 by making household recyclables and yard waste collection available to all residents. Table III.7 indicates service providers, materials collected, and other program information for each of the eight unincorporated urban service areas. King County has the authority to contract recyclables collection from residents in urban unincorporated areas, but instead chose to establish a service level ordinance stating program specifications to be implemented by waste haulers. The WUTC regulates franchised waste haulers in providing these services. In May 1991, Ordinance 9928 was adopted (now King County Code [KCC] 10.18), which resulted in certificated solid waste haulers providing recyclable collection services for the 450,000 residents of urban unincorporated King County. The County has developed, and will continue to develop, promotional and educational materials to encourage further participation in these programs.

In accordance with minimum service requirements, county solid waste facilities in designated rural areas collect source-separated recyclable materials and yard waste. Services at rural King County solid waste facilities are:

- Cedar Falls drop-box—recyclables, yard waste

- Enumclaw Landfill—recyclables
- Enumclaw Transfer Station (1993)—recyclables, yard waste
- Hobart Landfill—recyclables, yard waste
- Vashon Landfill—recyclables

Rural collection programs are also planned under the Waste Not Washington Communities Program funded by Ecology for Issaquah and the surrounding area (begun in March 1991); North Bend, Snoqualmie, Carnation, and Duvall, and nearby unincorporated area (begun in early 1992); and the outlying communities of Skykomish and Snoqualmie Pass. Urban and rural areas are further served by privately operated drop-boxes and buy-back centers, which are available to both residents and businesses.

(2) Support Programs

Support programs in the 1989 Plan were the responsibility of the cities and the County, while education programs were to be primarily regional services implemented by the County. The

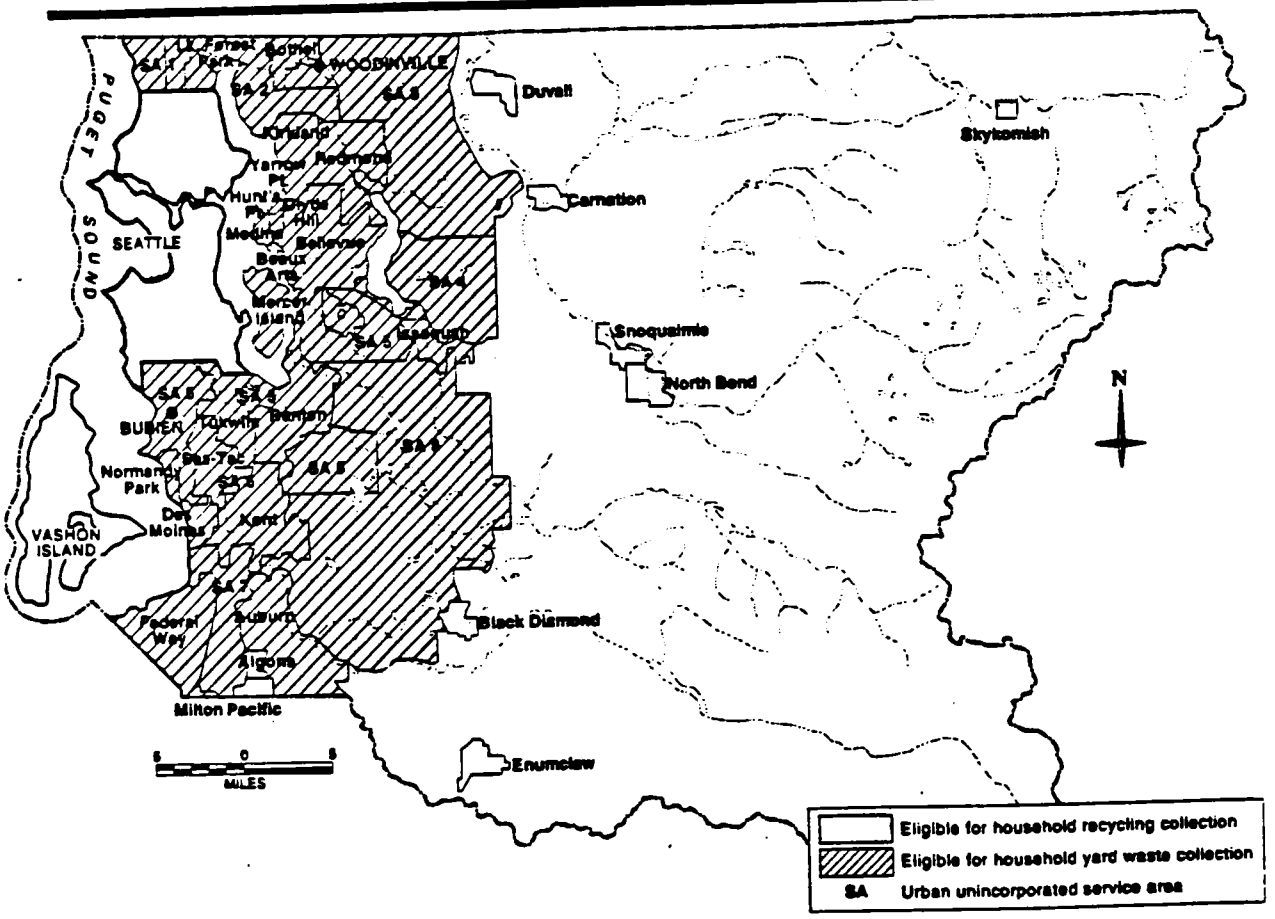

Figure III.2 Single-family household recycling and yard waste collection services, June 1992.

1989 Plan specified five support programs to be implemented by the County to encourage WR/R: rate incentives, procurement policy, recycling space requirements for new construction, monitoring, and a multifamily dwellings recycling implementation handbook.

Rate incentives are achieved through variable can rates for garbage collection, which have been established throughout unincorporated King County to encourage participation in recyclables collection programs. Other rate incentives include a "mini-can" rate, substantial cost differentials between garbage service levels, and rates for recycling service only (for non-garbage customers).

A procurement policy was adopted by the County that favors the use of recycled or recyclable products. In 1992, recycled paper use was at 82 percent in the fourth quarter of the year, surpassing the 1995 goal of 60 percent stated in King County Ordinance 9240. Recycled paper use is expected to climb gradually as additional types of recycled paper become available.

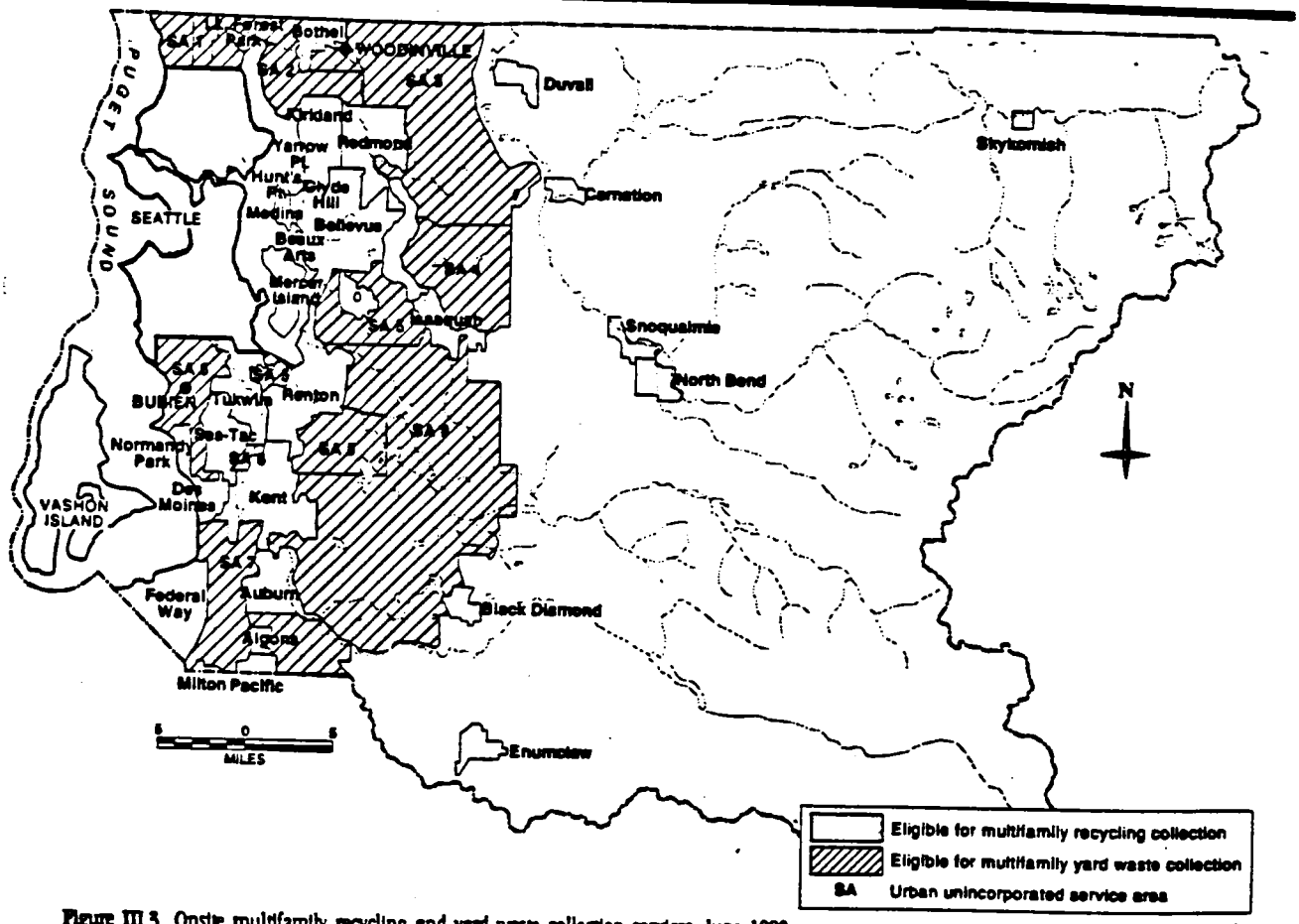

Figure III.3 Onsite multifamily recycling and yard waste collection services, June 1992.

New construction standards have been developed that will require onsite space for collecting and storing recyclables in multifamily and nonresidential structures. Draft standards were distributed for comment in the fall of 1991, and are included in the revised King County Zoning Code under consideration by the King County Council.

Monitoring of the progress made in meeting WR/R goals is reported in the Solid Waste Division's annual report to the County Council. Cities are required to submit reports for inclusion in the annual report. In addition, haulers serving the urban unincorporated areas of King County provide monthly reports of recycling and solid waste tonnages.

The 1989 Plan recommended that the County develop options and implementation strategies for cities to use in developing multifamily residence collection programs. King County prepared a draft manual and distributed it to cities in the spring of 1991.

(3) Regional Programs

Regional programs are those offered county wide to support WR/R goals including public information, education, nonresidential technical assistance, yard waste projects, experimental projects, and zone coordination.

Under the public information program, King County produces information and promotional publications (brochures, newsletters, and reports), maintains a recycling and composting information line, and sponsors special events such as Recycle Week.

Education programs for schools seek to integrate WR/R into K-12 curricula and school disposal practices—providing teacher training, classroom and school assembly materials, and support to the districts in setting up collection programs. In the community, the Master Recycler/Composter Program trains volunteers in WR/R, backyard composting, and household hazardous waste management.

The Business Recycling Program helps businesses and institutions develop and implement WR/R programs in the workplace by providing waste consultations, telephone assistance, workshops, presentations, and written and video materials.

Regional yard waste programs provide residents with yard waste handling alternatives or supplements household collection, such as programs for backyard composting and the collection of Christmas trees for recycling without charge at county disposal sites. From 1989 to 1991, mobile collection sites were provided to communities with no other yard waste alternatives. With the increased availability of household yard waste collection in urban areas, this program was discontinued in 1991.

The County has developed a resource list of over fifty businesses throughout the County that are willing to accept, collect, or recycle used appliances and which meet the new Federal Clean Air Act CFC regulations effective July 1, 1992. The County will monitor the continuing availability of this service to ensure that it remains available at a reasonable fee before considering contracting with appliance dealers and recyclers to collect appliances from residences for a fee to supplement or replace other appliance collection opportunities.

Experimental and pilot projects implemented to encourage WR/R include a project that provides reusable cotton diapers through a diaper service to low-income families; a food waste composting project at the King County Fair to obtain information that might lead to larger-scale food waste composting; a food waste collection processing and product testing grant from Ecology to King County and Seattle; and a model employee WR/R program for the King County Department of Public Works to develop techniques for reducing waste in the workplace.

The Zone Coordination Program provides information, staff assistance, and grants to cities on a variety of issues through meetings and workshops. Zone coordinators are involved in the administration of a WR/R grant program to cities that provides funding for multifamily, nonresidential, and yard waste collection, and other WR/R programs. A previous grant program distributed 17 grants from 1988 to 1991 to assist 23 cities in developing residential and nonresidential recyclables, yard waste, and public education programs.

(4) King County Commission for Marketing Recyclable Materials

The King County Commission for Marketing Recyclable Materials was formed in July 1989 by the King County Council. As part of the Department of Public Works, the Marketing Commission's objective is to help close the "recycling loop" in King County—the local remanufacture and purchase of recycled products. King County and the suburban cities have made tremendous strides in collecting recyclable materials and diverting them from landfill disposal. The Marketing Commission is complementing this effort by promoting markets for recycled materials. The Marketing Commission's efforts focus on encouraging businesses, public agencies, and the general public to buy recycled products. To this end, it is (1) providing information on where and how to obtain recycled products, (2) testing and demonstrating applications for recyclable materials and recycled products, (3) promoting the "buy recycled" ethic through a broad education program, and (4) recommending policy to address recycling market issues.

Voluntary packaging and labeling guidelines were developed by the Marketing Commission for companies to reduce contamination caused by misleading recycling labeling. The County is prohibited by state law from enacting prohibitions or deposits on products or packaging before July 1, 1993. In the absence of state or federal standards, the County has taken this step to help consumers make informed choices.

c. City Programs

The 1989 Plan directs cities to begin implementing minimum service WR/R collection and support services by September 1, 1991 and to complete implementation by September 1, 1992. The services include urban household recyclables collection, rural drop-box services, and yard waste programs. Additionally, three support service programs are being implemented: (1) rate incentives, (2) procurement policies, and (3) onsite recycling space requirements for new multifamily and nonresidential construction. Appendix E provides more detailed information on city WR/R programs.

(1) Recyclables and Yard Waste Collection

Under the 1989 Plan the cities are responsible for implementing programs that meet or exceed minimum service levels for collecting recyclables and yard waste in incorporated areas. Twenty of twenty-two urban cities and three of seven rural cities have household collection of recyclables (Table III.6 provides information on service providers, collection methods, and materials.) Five cities provide residential recycling drop-boxes. Yard waste collection programs are offered or planned in twenty-eight cities. Thirteen cities have recyclables collection services available to multifamily dwellings. In addition, a number of cities provide special collection days for certain recyclables, such as such as plastics and waste oil.

(2) Support Services

All cities, except Kirkland, provide rate incentives through variable can rates. However, the cost difference between can sizes varies among cities, with some offering greater incentives than others. (Refer to Chapter IV, Section A for additional information on solid waste and recyclables collection services and rates.)

The city of Kirkland has used a flat rate collection fee since 1973 as a disincentive to illegal dumping. In spite of their continued use of the flat rate collection fee, the participation rate for curbside collection service in Kirkland is similar to that of other suburban cities with differential rates. Kirkland would reexamine the issue of differential collection rates if the city's participation rate for curbside recycling declined.

Residents of cities where rate incentives are used are regularly educated on how they can reduce their monthly collection bill by taking advantage of differential can rates and recycling services. The cities and the haulers include information with their billings, and new residents are automatically informed of rate incentives when they sign up for collection service.

Six cities have adopted a recyclable and recycled products procurement policy; the remaining cities abide by an informal policy pending formal adoption. Six cities have developed requirements for onsite recycling for new construction; the remaining cities have indicated plans to do so.

(3) City Optional Programs

The 1989 Plan identified three programs for optional city implementation: backyard composting bin, Master Recycler/Composter, and the Business Recycling Program (BRP). Cities could apply for county funds to operate these programs or receive county services. The cities of Auburn, Bellevue, Mercer Island, and Redmond chose to implement their own BRP and received county funds to do so. Waste consultations, focus groups, workshops, and educational materials are among the services they offer. The city of Redmond also opted to implement its own backyard composting program in 1992. No cities chose to implement a Master Recycler/Composter program.

(4) Other Programs

Cities have implemented a variety of other programs including in-house recycling, newsletters and other promotional materials, waste oil collection, award programs, compost ojects, and school projects. (See also Volume II, ppendix E.)

d. Mixed Waste Processing

(1) Background

Mixed municipal solid waste can be mechanically processed to remove recoverable material and reduce the amount of waste disposed. Mixed waste processing (MWP) facilities can remove recyclables and compostable material from the mixed municipal solid waste stream. These materials can be processed and can then be marketed. The quality and consistency of the end products depend on the composition of the incoming municipal waste. Unusable residual materials can be disposed of through landfilling, incineration, or the production of refuse-derived fuel.

King County Code 10.22.020 F. authorizes one privately owned and operated mixed waste processing facility in King County, which could supplement source-separation measures, and directs that the Division evaluate the long-term benefits, costs and risks of mixed waste processing in combination with extensive source separation programs.

(2) Feasibility Analysis

In 1991, King County issued the *Mixed Waste Processing Feasibility Analysis* (see Volume II, Appendix H). The report offers an evaluation of the need for a mixed waste processing facility (MWPF) and an analysis of the constraints which would be placed on the facility and the impact of those constraints on the feasibility of the project.

The report includes discussion of other jurisdictions' experiences with mixed waste processing, as well as the likely effects on the total recycling recovery rate in King County from the construction of an MWPF. The principal findings of the report are as follows:

1. Mixed waste processing could compete with the preferred source seperation programmatic strategies for waste reduction and recycling in King County.
2. King County can obtain critical information about the success of mixed waste processing facilities operating in conjunction with source reduction programs by evaluating these programs where they exist in other jurisdictions.
3. Reconsideration of current facility constraints for the operation of an MWPF is needed.

As a result of this analysis, the Division recommended delaying an issuance of request for proposals for a mixed waste processing facility until 1995 in order to:

- Monitor the success of other areas' ability to combine mixed waste processing with extensive source separation.
- Re-evaluate the potential for a mixed waste processing facility in 1995 to supplement programmatic waste reduction and recycling efforts.

Over the next few years, mixed waste processing technology may continue to advance, and more markets may emerge for the processed end-products. Additionally, sufficient time will have passed for the County to evaluate the long-term success of mixed waste processing combined with source separation in other U.S. communities. In the interim, King County can focus full attention on source separation strategies.

2. Needs and Opportunities

a. Background

The overall WR/R objective of this 1992 Plan update is to develop a strategy that will result in a 50 percent diversion rate in 1995 and lay the foundation for achieving 65 percent in 2000. To focus program efforts, unmet needs in existing collection services must be defined and appropriate government and private sector roles for providing needed services identified. Opportunities must also be identified for improving markets for materials collected for recycling, and for increasing public awareness of the importance of recycling and the need to purchase recycled and recyclable materials.

Ways to enhance existing recycling and waste reduction opportunities need to be identified and the following questions answered:

- What materials remain in the waste stream that have potential market value, especially in the immediate future (next three years)?
- Which markets need to be sustained and which markets need to be enhanced or expanded in order to support a high level of recycling?
- Which material markets have the highest priority?
- Should voluntary recycling programs be continued or should mandatory measures be instituted?
- If only existing WR/R programs are continued, will the County achieve its established WR/R goals, or do existing programs need to be expanded and new programs implemented?
- Is the current recycling infrastructure adequate or are improvements needed?
- Which generators or groups remain unserved or under served by current recycling services and infrastructure? What can be done to improve services to these groups?
- What additional or ongoing WR/R education efforts are needed and which groups are not participating in recycling programs that need to be reached?
- Are current WR/R responsibilities of the public and private sector appropriate and adequate, or should they change?

This section will discuss the needs and identify opportunities for recyclables collection, material markets, and support and education.

b. Recyclables Collection

Recycling needs can be determined by examining the composition of the unrecycled waste stream by generator and analyzing the numbers and types of generators served by existing and planned city and county programs.

(1) Unrecycled Waste Stream By Generator

The amount of waste disposed varies among different types of generators. For example, in King County residential generators contribute a larger share of the solid waste disposed than the commercial sector. The current proportions of the waste stream disposed by residential and nonresidential generators in King County are:

Generator	% of Total Disposed Waste
Urban residential	31
Rural residential	10
Self-haul residential	19
Total residential	60
Commercial haul nonresidential	30
Self-haul nonresidential	10
Total nonresidential	40

Source: *1990-1991 King County Waste Characterization Study*, Volume II, Appendix B.

This information illustrates the need to continue to expand residential recycling programs and to develop nonresidential services.

(2) Service Needs

There is a need for both residential and nonresidential generators to increase recycling levels. To develop effective programs, collection service needs were assessed; areas with adequate recycling service were identified; population data were compiled; tonnages from city and county recycling programs were determined; recyclers, haulers, and end-users were surveyed to estimate recycling volumes and sectors served; and waste composition data were analyzed. This information was used to

estimate the number of county residents currently receiving recycling services. From these data, tons disposed by recyclable material and generator type were determined. Figure III.4 shows the amount of materials that are being recycled or disposed. Paper, wood, and yard waste represent a large share of the materials currently being disposed that are readily recyclable.

Figure III.5 illustrates the disposed waste composition of the major generators in King County. This chart illustrates that single-family residences and self-haulers generate a large portion of the material being disposed. It further indicates that these are groups that will need to be reached in order to achieve established WR/R goals. For example, further education of urban single-family generators about the types of mixed waste paper that can be recycled could increase the diversion of paper in household collection programs.

Table III.9 provides detailed information on the materials which may be recyclable being disposed by single-family, multifamily, and nonresidential generators. This table provides more specific information to support Figures III.4 and III.5.

Percentages of households (urban and rural) and businesses in King County and the cities lacking recycling and yard waste collection service are:

- Single-family recycling—5 percent
- Single-family yard waste—12 percent
- Multifamily recycling—45 percent
- Multifamily yard waste—71 percent

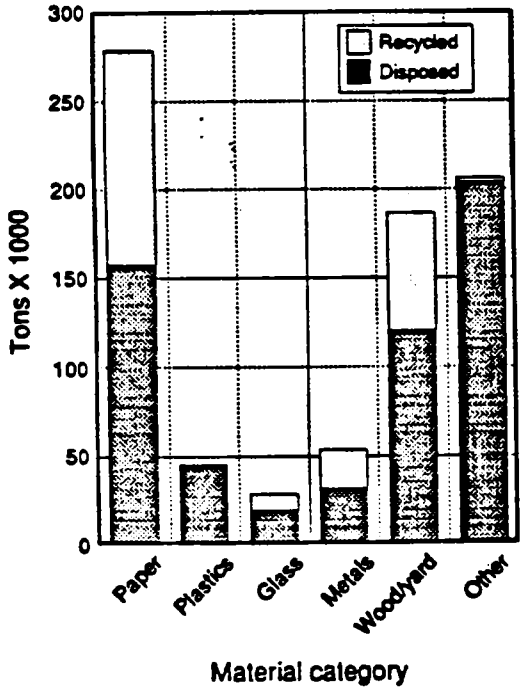

Figure III.4 1990 recycled and disposed quantities by material category. Source: *Waste Characterization Study, Volume II.*

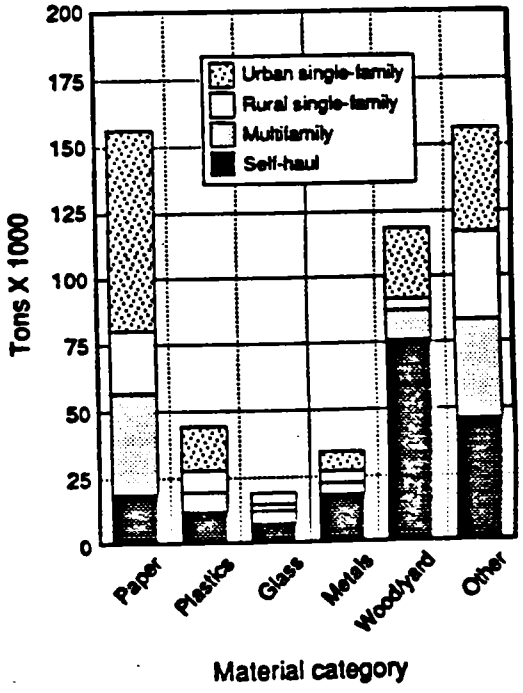

Figure III.5 1990 disposed quantities by generator and material category.

Table III.9 Tons Disposed per Year by Recyclable Commodity and Generator Type

Recyclable commodity	Generator Type		
	Single-family	Multifamily	Nonresidential
Newspaper	2,910 [b]	10,300	6,200
Cardboard	10,060 [b]	7,900	36,200
Office paper	880	260	9,400
Computer paper	200	90	3,110
Mixed paper	18,690 [b]	13,700	27,300
#1 Plastic (PET) bottles	730 [b]	190	0
#2 Plastic (HDPE) bottles	2,900	540	1,100
#3-7 Plastics	14,170	4,330	22,400
Wood waste	2,730	5,100	48,700
Yard waste	26,900	4,600	12,700
Textiles	11,800	6,200	15,900
Food waste	28,500	10,000	16,600
Glass	0 [b]	4,400	3,520
White goods	n/a	n/a	n/a
Tin cans	3,150 [b]	1,300	1,400
Other ferrous metals	2,650	850	7,700
Aluminum cans	770 [b]	520	950
Aluminum scrap	290	0	350
Other nonferrous metals	180	80	780
Batteries, household	n/a	n/a	n/a
Batteries, automotive [a]	0	0	0
Polycoated paper	4,500 [c]	3,000 [c]	7,500 [c]
Tires [a]	0	0	0

[a] Estimates based on deposit of used tire or battery with retail establishment at the time of purchase of new tire or battery.

[b] Denotes tonnage corrections to the September, 1990 waste stream sampling. The estimated volume of the marked commodities was claculated for programs that have come on line between September 1, 1990 and March 31, 1992, and subtracted from the total disposed tonnage sampling numbers.

[c] Based on unpublished research for the polycoated paper industry.

n/a = Figures not available.

Source: *King County Waste Characterization Study*

- Nonresidential recycling—80 percent

While the above percentages indicate overall service gaps, a breakdown by urban and rural areas provides more specific information on services offered and services needed.

In urban areas, household collection of recyclables is available to 95 percent of single-family residences, and yard waste collection is available to 79 percent. For urban multifamily residences in incorporated areas, household collection of recyclables is offered to 51 percent and yard waste collection to 6 percent. All multifamily residences in urban unincorporated areas have access to household collection of recyclables and yard waste (see also Figure III.3). Household collection programs typically include recyclables, such as paper, glass, metals, #1 and #2 plastic bottles (PET and HDPE), and yard waste under 3 inches in diameter. Some recyclables, however, such as white goods, #3-7 plastics (vinyl, LDPE, polypropylene, polystyrene), scrap metal, and yard waste over 3 inches in diameter are not widely collected. As Figure III.3 indicates, there are few opportunities for urban residences to

recycle these latter recyclable materials. This information also indicates there is a need to expand multifamily recyclables and yard waste collection services in the cities of King County, and to a lesser extent, improve single-family household yard waste collection in urban areas.

In rural areas, household collection of recyclables is not required but several rural cities offer it. Others are served by existing or planned drop-sites, thus completing coverage of incorporated rural areas for recyclables collection. Yard waste drop-sites are located in five rural cities, serving 54 percent of rural incorporated area residents. Recycling and yard waste collection services in the rural unincorporated areas are more limited. Drop-sites for recyclables and yard waste are available at rural county disposal sites at Cedar Falls and Hobart; drop-sites for recyclables are available at the Enumclaw transfer station and Vashon landfill. There is still a need to improve recycling and yard waste services in rural areas.

In the nonresidential sector, approximately 10 percent of King County businesses receive recyclables collection service through city-sponsored programs and an additional 10 percent are served through privately operated programs. The majority of the remaining unserved businesses are within a five-mile radius of a drop-site, transfer station, or buy-back center. However, only an estimated 10 to 20 percent of these businesses regularly use these facilities. In short, businesses are not participating in recycling programs at the same level as residences in King County. Significant increases in nonresidential recycling must be achieved to meet WR/R goals.

King County's Business Recycling Program has effectively provided businesses with information about how to improve WR/R activities, and several cities have successful collection programs. However, providing information addresses only one barrier. Regulatory barriers to implementation, such as cross-subsidization between commercial garbage and recycling rates, also need to be addressed; impediments to increased nonresidential WR/R should be identified; and the roles and responsibilities of the cities, the County, and the private sector in overcoming these barriers need to be delineated. The following issues must be addressed:

- *Collection services.* To determine gaps in nonresidential collection services, the following should be identified: types of businesses and areas of the County receiving recycling services and the materials currently collected.
- *Local government authority.* State law does not provide local governments the same regulatory authority for commercial recyclables collection as it does for residential recyclables collection. The cities' and County's authority to provide for commercial recycling must be clearly delineated. Because commercial recyclers respond to market demand, service may not be available to all businesses in a given area, and materials collected and prices charged can vary. Changes in state law may be needed to allow local government the authority to require that a minimum level of recycling services be made available to businesses county wide.
- *Financial incentives.* Rate-setting practices can result in recycling rates that are not competitive with or are more than the cost of disposal. Financial incentives to encourage businesses to recycle should also be addressed.

Programs are also needed to address the significant quantities of waste disposed by self-haulers—largely residents and businesses that do not subscribe to garbage service or periodically dispose of waste at county facilities. Of the 1990 tonnage disposed by residential self-haulers (estimated to be 15 to 20 percent of the single-family population), 18 percent was recyclable materials and 43 percent was yard waste and wood. Of the nonresidential disposed tonnage, 15 percent was recyclable materials, and 27 percent was yard waste and wood.

c. Markets

(1) Background

In order for recycling programs to succeed, increased recycling collection efforts must be accompanied by greater consumer demand for recycled products. King County and the suburban cities can continue to set an example by purchasing recycled products and promoting the purchase of recycled products by the private sector. Market demand can also be addressed by identifying economically viable uses for recycled feedstocks, increasing local capacity to process and remanufacture recyclable and recycled products, and investigating legislative enhancements for recycling markets.

Special attention needs to be given to glass, mixed waste paper, plastics, compost, and other commodities that pose

special market development challenges. Establishment of minimum content standards for glass can be encouraged at the state level, while the County can aggressively pursue testing and use of products that can be made from recycled cullet. Markets for yard waste products can be strengthened by providing quality testing and certification, consumer education and awareness, processing regulation, and open channels for procurement by county agencies.

To ensure the quality of materials collected for recycling, development of commercial paper recycling programs needs to focus on source-separated programs by grade of paper. Collection systems designed for plastics and yard waste also need to emphasize source separation. In addition, continuing education to decrease contamination is important in the collection of all materials. (See Volume II, Appendix D for more information about recyclable materials markets.)

To promote more widespread use of products made from recycled materials and to support recycled materials markets, consumers need to be informed about their availability. For example, Lake Forest Park will use plastic lumber for benches and other equipment in its first city park. While durability will require years to assess, information addressing considerations such as public acceptance and aesthetics can be shared with other jurisdictions much sooner. Various recycled products should be tested for effectiveness, durability, and other qualities by testing programs distributed among the cities and the County.

(2) Key Market Needs

- *Plastics.* The key strategies for King County to pursue in improving markets for recycled plastics fall into three categories: (1) facilitating the design and implementation of source-separated, contamination-free collection systems; (2) buying products that use recycled plastics and encouraging similar purchasing behavior on the part of the cities and the public; (3) educating the public about buying products made from recycled post-consumer plastics.
- *Glass.* Demand must be increased to address the oversupply of glass. The Washington State Department of Trade and Economic Development has established a 1995 goal that 50 percent of the glass recovered statewide be used in glass containers, 15 percent be used in fiberglass insulations, 5 percent exported, and 25 percent used for other purposes. Other uses being explored include refilling wine bottles, glass aggregate as a drainage material, the use of glass aggregate in place of sand in asphalt, and the use of glass foam for insulation.
- *Compost.* The short-term market outlook may bring an oversupply and difficult market conditions. Three factors could contribute to greater supply: yard waste disposal limitations, an expanded PSAPCA burn ban, and other potential regulatory changes. Long-term markets are expected to be more stable with sufficient processing and demand to lead to sustainable markets. Many processors hope government agencies will become major consumers.
- *Mixed waste paper.* Mixed waste paper consists of mixed paper as well as paper left over after higher grades of paper have been removed. Two major weaknesses of the material collected are high contamination levels and lack of consistency in product quality. These weaknesses have prevented local mills from accepting significant quantities for recycling into new paper products. In 1990, 76,000 tons of mixed waste paper were collected in Washington State, with only 6,000 tons consumed by the region's mills. The majority of the mixed waste paper was exported to Pacific Rim countries for recycling.

The current glut of mixed waste paper is expected to get worse before it gets better. As new local and national curbside programs come on line, increasing quantities of mixed waste paper will flood the market and compete for the same export markets.

James River and Daishowa are two large mills which have come on line in the Northwest which accept used phone books for repulping. With these two mills in operation, the Northwest is now a net importer of phone books and markets for these paper products may increase.

(3) Marketing Commission

To pursue its five-year objective to develop markets by stimulating procurement of recycled products, the Marketing Commission needs to:

- Educate the public, government and private industry about the importance of buying post-consumer content recycled

products. Three important topics are recyclable material contamination, product quality and benefits of using products made from recycled materials.

- Encourage increased government recycled product procurement, recommend market development policy and legislation, and encourage collection of commodities in short supply.
- Test the performance of recycled products in new and existing applications. Draft specifications for recycled product procurement, and encourage further research and development.
- Facilitate common market development goals of public agencies, citizens, and the private sector.
- Address policy and legislative issues such as cooperative purchasing, advance disposal fees, and the removal of price supports for virgin material.
- Provide the private and public sectors with information on the quality and benefits of recycled products.

d. Support

No new needs for support programs are identified, however cities and King County need to continue existing support programs. These include collection rate incentives, procurement policies that favor the use of recycled or recyclable products, new construction standards that require onsite space for collecting and storing recyclables, routine recyclables collection data reporting, and annual reports of progress toward Plan implementation.

e. Regional Programs

(1) Intergovernmental Relations/Coordination

The Zone Coordination Unit has functioned as a resource to city recycling staff, administered grants programs, and coordinated meetings among county and city staff to exchange information and ideas. There is a need for the County to provide more information through such activities as periodic mailings that update the role and responsibilities of county WR/R staff; jointly sponsored workshops or roundtables; continued grant program funding, and issue-specific interjurisdictional committees. In establishing disposal bans, for purposes of promoting recycling or for other operational reasons, the County will coordinate implementation with the cities through the Zone Coordination Unit.

(2) City Optional Programs

Three programs were designated as city optional in the 1989 Plan: (1) nonresidential technical assistance, (2) backyard composting bins, and (3) master recycler/composter. Under the program, cities could apply to the County for funds to establish and operate these programs or continue to receive services from the County. There is a need to evaluate which programs operate more effectively as regional services and which are best updated locally. The Backyard Composting Bins Program and the Master Recycler/Composter Program are most cost-effective as regional services, and cities have generally not opted to implement these programs. To continue to offer cities some flexibility in providing services, new programs need to be considered for city optional status.

(3) Education/Schools

More emphasis on coordination with school districts and cities is needed to streamline scheduling and enhance program effectiveness. Currently, presentations depend on individual teachers who request it for their classes. Schools also need assistance with establishing recyclables collection programs.

(4) Public Education

The County's public education and promotion of WR/R issues is extensive. While comprehensive in its coverage of topics and use of various media, there remain opportunities to increase public awareness of the need to reduce, recycle, and purchase recycled products. These include providing information on what to use in place of difficult-to-recycle materials, increased information on procurement for the nonresidential sector, and a more visible waste reduction campaign.

New and innovative promotional approaches need to be explored, such as newspaper inserts, paid advertising, and cooperative efforts with other organizations, businesses, and the suburban cities. Finally, targeted information needs to be delivered to minority, low-income, senior groups, and other groups not reached by previous educational efforts.

(5) Clean Wood Waste

Clean wood is defined as wood that has been processed into lumber and has not been contaminated during use. Most clean wood waste is generated by large commercial and residential construction projects and is taken to privately owned CDL facilities. After September 1993, most CDL generated in the County will be taken to a privately owned processing system developed to meet operational specifications established by the County (Section V.D.1.e.). Recycling will be encouraged by requiring that the contractors maintain a specified minimum processing capacity at one or more of the facilities that receive loads of mixed CDL materials from generators and haulers and by reserving the County's right to prohibit or limit disposal of materials deemed recyclable. The County is also developing WR/R programs that target building contractors and other trades that will utilize the CDL processing system.

While the new CDL processing system is expected to capture most of the clean wood generated in the County, small volumes of clean wood generated by remodeling contractors, do-it-yourself remodelers, and pallet users will likely continue to be delivered to transfer facilities in privately licensed vehicles (PLVs) for disposal. Opportunities for recycling and programs for waste reduction and recycling education are needed for this portion of the wood waste stream not captured by the County's CDL processing system.

The Waste Characterization Study, prepared for the County in 1991, documents the quantity of wood waste present in both the residential and nonresidential waste streams. However, the study did not provide information about the specific components of the wood waste stream. Therefore, it is difficult to project how much wood entering the CDL processing system or County transfer system will be clean wood. This lack of specific information makes it difficult to plan or implement wood waste recycling program. In order to improve the County's ability to manage wood waste, the 1993 Waste Characterization Study will gather information to better differentiate clean wood waste components, identify generator sources, and determine volumes.

f. Summary of Needs and Opportunities

In summary, alternative methods for enhancing recycling efforts should be evaluated that consider the following needs and opportunities:

- Additional residential collection programs to include household collection of yard waste in all urban areas; services and facilities for secondary recyclables such as white goods, #3-7 plastics (vinyl, LDPE, polypropylene, polystyrene), oversized yard waste, and scrap metal; and more comprehensive rural residential recycling systems.
- Self-hauler recyclables and yard waste collection opportunities.
- Yard waste collection alternatives for multifamily and commercial generators.
- More comprehensive, nonresidential recycling systems, which include collection service standards and financial incentives to increase recycling among nonresidential generators.
- Legislative authority allowing the County and the cities to require minimum levels of recyclables collection service for nonresidential generators.
- Market development for collected materials, particularly paper and compost.
- Stronger intergovernmental coordination of common WR/R efforts.
- Identification of additional strategies as potential city optional programs.
- Testing and promotion of additional products made from recycled materials.
- Increased coordination with school districts and cities to assist schools in implementing collection programs.
- Distribution of WR/R information to all segments of the population using multiethnic and other educational strategies.
- Increased diversion of recyclables, such as mixed waste paper, in existing collection services through additional educational efforts.

3. Alternatives

There are three alternative ways to meet the WR/R needs described in the previous section:

- Continue the existing voluntary WR/R efforts.
- Continue existing efforts and initiate new measures to increase recycling of targeted materials or generators.
- Continue some existing efforts and prohibit the disposal of selected recyclable materials.

Criteria used to develop and evaluate recommendations include cost of service, waste diversion potential, and potential for implementation within three years. The alternatives considered are summarized below and in Table III.10. The additional diversion potential for the three alternatives are displayed in Figure III.6.

- *Alternative A—Continue Existing Programs.* This alternative would continue voluntary programs established in the 1989 Plan without instituting new programs or disposal bans or limitations. It would likely result in an estimated additional diversion of 5 percent by 1995, for a total WR/R rate of 40 percent. This increase would be achieved through targeted promotional efforts and continuing public education for existing programs and the addition of services that are currently in the planning stages (i.e., multifamily and yard waste collection programs). Diversion rates greater than 40 percent would not be expected because no significant improvements in recycling services or facilities would be considered.
- *Alternative B—Expand existing programs and institute a yard waste ban.* This alternative would expand voluntary services for all generators, provide collection opportunities for additional materials, and ban or limit disposal of yard waste. It would establish nonresidential collection service guidelines to encourage the expansion of services to commercial generators. This would likely achieve an estimated diversion rate of just over 50 percent by 1995, assuming that a yard waste disposal ban or limitation is in place in 1993.
- *Alternative C—Initiate mandatory recycling through disposal bans.* This alternative would initiate mandatory recycling measures, including disposal prohibitions for certain recyclables and yard waste. It would be more expedient and less costly than focusing on voluntary collection programs for recyclables and yard waste, and if fully implemented would result in an additional 26 percent of recyclables collected, bringing total diversion to 60 percent or more by 1995, but only if active enforcement is initiated. Furthermore, the capacity of processing facilities and the adequacy of markets to absorb each commodity would need to be ascertained before a material is banned from disposal.

The advantages and disadvantages of all three alternatives are compared in Table III.11. The diversion potential of the program alternatives is based on analyses of the *King County Waste Characterization Study* (Volume II, Appendix B), the 1991 Ecology recycling survey results (Washington State Recycling Survey, Ecology), and Solid Waste Division waste generation forecasts. The alternatives reflect policy considerations and priorities expressed by the suburban cities and other participants at plan update workshops.

Each of the three alternatives respond in some way to the needs and opportunities of the WR/R system. Alternative A assumes that there are limited resources and that additional resources would not be allocated to new WR/R programs. This alternative also assumes that continued implementation of status quo programs adequately meets the WR/R needs of King County residences and businesses.

Alternative B assumes that there is a significant amount of material with recycling potential that is being disposed. This alternative also recognizes that additional efforts by the County, cities, and the private sector are needed to meet WR/R needs in the County and to meet established goals.

Alternative C also recognizes that additional diversion of certain materials is needed in order to meet WR/R goals. However, this alternative would achieve additional diversion through mandatory measures, such as prohibiting the disposal of recyclable materials, rather than continue with the existing approach of providing voluntary programs and services.

Table III.10 Summary of Recycling Alternatives

Alternative A	Continue existing programs.
Alternative B	Expand existing programs and institute a yard waste ban.
Alternative C	Initiate mandatory recycling through disposal bans.

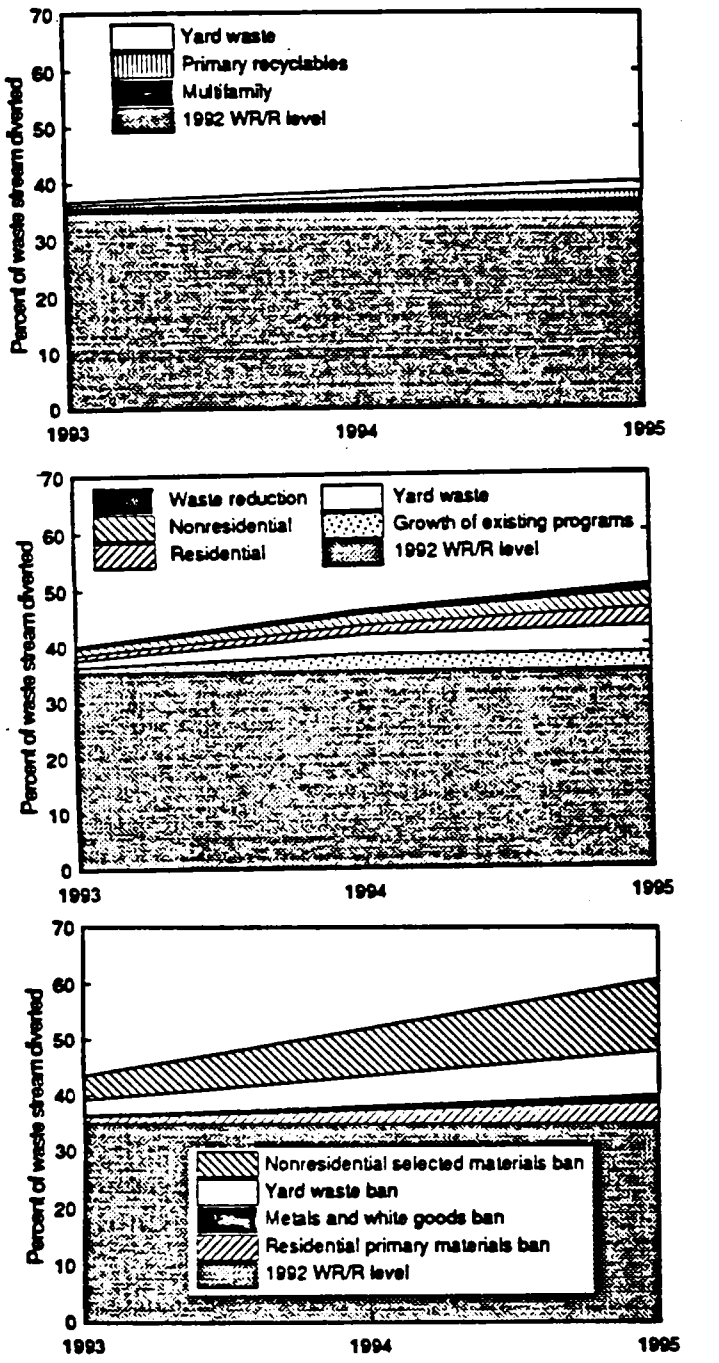

Figure III.6 Additional diversion potential resulting from Alternatives A, B, and C.

Table III.11 Summary and Comparative Advantages and Disadvantages of WR/R Alternatives

Alternative A—Continue Existing Programs

Advantages
- Presents no new costs to cities, County, and the private sector.
- Presents fewest implementation difficulties.

Disadvantages
- Attains only 40% WR/R; falls far short of 1995 50 percent diversion goal.
- Does not address all identified needs in materials collection.
- Does not increase recycling opportunities for businesses and self-haulers.

Alternative B—Expand Existing Programs with Yard Waste Ban

Advantages
- Could attain 50 percent 1995 WR/R goal.
- Utilizes existing hauler infrastructure for service options.
- Requires no additional statutory authority.
- Incurs moderate regulatory and enforcement costs.
- Is less likely to meet with public opposition than Alternative C.

Disadvantages
- Has potentially higher cost to customers for recyclable collection services.
- Incurs additional operating costs for haulers; additional costs for cities and county.
- May incur additional capital costs for construction of facilities.
- Has potential for delays because of facility siting difficulties.
- Requires further planning to clarify public and private responsibilities for providing collection facilities.
- Provides no guarantee that collection needs of the nonresidential sector will be met.

Alternative C—Initiate Mandatory Recycling through Disposal Bans

Advantages
- Could attain 60% WR/R rate, and has highest potential diversion rate.
- Offers potentially lower costs to the County, cities, and haulers for services and facilities.
- Gives greater autonomy to cities in determining additional collection services and their WR/R program.

Disadvantages
- Incurs additional costs to the County and haulers to enforce bans.
- Poses potential increase in illegal dumping if collection alternatives are not economical and convenient.
- Poses potential short-term disequilibrium for recycled product markets.
- Has enforcement and monitoring difficulties.

Specific programmatic proposals for each alternative are described in the sections that follow.

a. Alternative A, Existing Programs

This alternative would continue to implement the voluntary programs recommended by the 1989 Plan described in Section III.A.1, which could result in additional 5 percent waste stream diversion. This could be achieved by more fully implementing the 1989 Plan programs, such as yard waste and multifamily recyclables collection in urban areas; however, this alternative does not meet all of the needs identified in Section III.A.2.

The additional diversion that could be expected from continued implementation of the 1989 Plan recommendations is shown in Table III.12. The 1992 WR/R rate of 35 percent would be maintained, and some additional diversion would result from added multifamily and yard waste service. Existing

programs fall into four general categories: waste reduction, recyclables collection, support programs, and regional programs. These programs and implementation responsibility are discussed in detail in Section III.A.1 and summarized below.

(1) Recyclables Collection

King County and the cities would continue to implement programs to meet or exceed minimum service levels for collecting recyclables and yard waste in the urban and rural areas. The minimum levels of services are described in Section III.A.1, with a list of the recyclable materials.

To fulfill the minimum service levels from the 1989 Plan, multifamily recyclables service and yard waste collection would need to be available countywide. Increasing service availability and participation to multifamily residences in cities would be emphasized. Currently 41 percent of multifamily units in incorporated areas do not have recycling service. Of those that do, it is estimated that fewer than 50 percent use the services.

Household yard waste collection services would be extended to the 21 percent of urban single-family households in incorporated areas (one through four units) that do not currently receive this service. Needs for yard waste collection and processing facilities would be evaluated countywide.

Current levels of yard waste and recycling opportunities would continue to be provided at current levels at county disposal facilities. New facilities scheduled to come on line before 1995, including the Enumclaw Transfer Station, would be designed with the capacity to collect all primary recyclables.

Table III.12 Additional Diversion Potential Resulting from Alternative A

	1993	1994	1995
Yard Waste	.75	1.50	2.25
Primary Recyclables	.30	.85	1.00
Multifamily	.60	1.20	1.75
Total WR/R Increase from 1992	1.65	3.35	5.00
1992 WR/R Rate	35.00	35.00	35.00
Total WR/R Rate	36.65	38.25	40.00

(2) Support and Education Programs

Existing programs would be continued, with emphasis on publicizing service expansions to multifamily dwellings. Education programs include school programs, community event displays, and a recycling/composting hotline. Cities would continue to either utilize the County's Business Recycling Program or apply for county funds to implement their own.

(3) Regional Programs

Existing regional programs would be continued. The Backyard Composting Program and Master Recycler/Composter Program would become regional—instead of city optional—support and education programs.

(4) Program Costs

Implementation of alternative A generally would maintain public and private costs at current levels. Existing funding mechanisms would be used. Collection services would continue to be paid through city contracts or directly through fees charged to customers. Cities would continue to fund other WR/R programs and services with utility taxes, general fund revenue, and grants. Regional programs and services offered by the County would continue to be funded through tipping fees charged at disposal facilities.

The addition of new household yard waste collection services could result in an added monthly cost to participating households. The cost to the customer of new multifamily recyclables collection service could vary widely depending on the size of the complex and the frequency of service. However, most customers should also see a commensurate reduction in their garbage bill, as they reduce the amount of waste being disposed if rates are structured to do so.

(5) King County Commission for Marketing Recyclable Materials

Under alternative A, the King County Commission for Marketing Recyclable Materials would continue to establish, enhance, and ensure methods of utilizing recyclable materials; promote the use of products manufactured from recycled materials; and recommend policies to enhance market

development. The following programs and actions would be undertaken by the Commission to fulfill this charge:

- *Market information.* Maintain a market information system that allows the County to monitor basic trends in the regional recycled materials infrastructure.
- *Recycled products promotion and education.* Continue to expand recycling markets by promoting the use of recycled products by residents, businesses, and public agencies. Educate and motivate the public, government, and private industry about the importance of buying post-consumer content recycled products. This should include information about contamination issues, as well as the qualities and benefits of using recycled materials.
- *Recyclable commodities priorities.* Focus efforts on priority commodities including—but not limited to—glass, compost, mixed waste paper, and plastics.
- *Recycled yard waste compost.* Promote the consumption of recycled yard waste compost in King County through product testing and market development and support activities
- *Clean Washington Center coordination.* Continue working cooperatively with the Clean Washington Center and other agencies to promote local recycling markets, providing assistance and support to the Center for its market development activities in the region.
- *Coalition building.* Facilitate the common market development goals of public agencies, citizens, and the private sector. This can be accomplished by using the expertise of the Commissioners, assisting public agencies to buy recycled products, and recommending policies regarding market development issues.
- *Product testing and demonstration.* Test recycled materials in new and existing applications to evaluate their performance and potential for continued and expanded use. This would include drafting specifications for recycled product procurement, and monitoring and supporting research and development efforts of private industry and other public agencies.
- *Technical assistance.* Provide technical assistance to private businesses and public agencies by providing information on qualities and benefits of recycled products, and assistance in drafting specifications that meet applicable guidelines.
- *Procurement of recycled products.* Promote the purchase of recycled products by the public and private sector by supporting the King County Purchasing Agency to promote local agency procurement of recycled and recyclable materials. Provide technical assistance to targeted businesses to incorporate recycled and recyclable products into the merchandise they market and the supplies they use. Increase exposure and access to recycled and recyclable products for residents.
- *Procurement goals.* Establish procurement goals for targeted commodities by King County.
- *Policy analysis.* Analyze legislative initiatives and recommend policy, including those regarding cooperative purchasing, advance disposal fees, and removal of price supports for virgin material.
- *Legislation.* Support market development legislation at the state and federal level.

b. Alternative B, Expanded Services

Under this alternative most existing services and programs would continue; additional services, facilities, and programs would be provided; more types of materials would be collected; and the 1989 Plan recommendation for a yard waste disposal ban would be phased in beginning in 1993. The first phase of the disposal limitation would affect single-family residences. The second phase would affect all other yard waste generators and is expected to take effect by 1995.

Implementation of 1989 Plan requirements resulted in a 35 percent WR/R rate in 1992. Alternative B is based on the need to go beyond the minimum requirements of RCW 70.95 to achieve 50 percent diversion or higher. This approach identifies additional services or actions needed to do so, assuming King County continues a voluntary WR/R system.

The additional services proposed in alternative B are designed to meet the service needs identified in Section III.A.2:

- Add services (and materials) to established urban household collection programs to include all primary recyclables. These include paper, cardboard, glass, tin, and aluminum beverage containers, yard waste, and #1 and #2 plastic bottles (PET and HDPE).

- Implement a campaign to educate residents in the urban area about the availability of urban household collection programs for all primary recyclables.
- Provide optional collection opportunities for secondary materials in both urban and rural areas. These include wood, #3-7 plastics (vinyl, LDPE, polypropylene, polystyrene), textiles, appliances, furniture, scrap metals, and food waste.
- Provide additional yard waste recycling opportunities to serve residences, self-haulers, and businesses.
- Establish minimum service guidelines for nonresidential recyclables collection.
- Initiate the phased implementation of the yard waste disposal ban.
- Determine roles and services of Solid Waste Division facilities in recyclables collection.

Programs are described in detail in the sections that follow.

The diversion potential of Alternative B is shown in Table III.13. It illustrates the additional increment of diversion expected from continued implementation of the 1989 Plan recommendations and the new diversion increment that would result from new services. The 35 percent WR/R rate being achieved in 1992 would be maintained and there would be some additional diversion as a result of additional multifamily and yard waste services. Expansion of curbside yard waste collection service to all urban residents, initiation of a yard waste ban, and additional composting opportunities would result in an additional 6 percent diversion by 1995. These estimates assume that almost 80 percent of the currently disposed yard waste would be diverted from disposal. It also assumes that, by 1995, at least 50 percent of those eligible for program services would be participants.

New optional programs to provide additional collection opportunities for selected secondary recyclables could result in an additional 1 percent diversion of the total waste stream in 1995. Significant diversions can be achieved through the promotion of multifamily recycling services, additional amounts of mixed waste paper, and additional opportunities for textiles collection. It is estimated these programs would achieve an average participation rate of 60 percent.

The successful promotion of voluntary nonresidential recycling collection service guidelines could result in an additional 3 percent diversion by 1995, if half the businesses targeted in the guidelines recycle 50 percent of their waste stream. Greater diversion could be expected if the legislative authority of counties and cities is changed to allow local governments to require nonresidential recyclables collection.

This alternative also assumes a moderate increase in waste reduction as a result of accelerated educational efforts by cities and the County, and through additional backyard composting of yard waste.

(1) Residential Collection
Minimum Service Levels

Alternative B increases the 1989 minimum service levels for both residential and nonresidential collection. Both urban and rural collection systems must include all primary recyclables (the urban and rural boundaries are shown in Figure III.1; primary recyclables are listed in Table III.15). In changing minimum service levels, cities with contracts for residential garbage and/or recycling services would negotiate these service levels with their contractor. King County would change its service level requirements (KCC 10.18) as needed. Cities with garbage or recycling services regulated by the WUTC could amend their service level requirements to ensure minimum services or work with their franchise haulers through franchise agreements or other means.

Recyclable materials, as defined by this Plan are in accordance with RCW 70.95.030 (Table III.14). They are classified as "primary" and "secondary." Primary recyclables are those materials most commonly collected in household and drop-box programs and those with established or emerging markets, including paper, cardboard, glass, tin, aluminum beverage containers, and #1 and #2 plastic bottles (PET and HDPE). Secondary recyclables are those less commonly collected than primary recyclables because of limited markets or lack of collection systems. These include batteries, #3-7 plastics (vinyl, LDPE, polypropylene, polystyrene), textiles, appliances, furniture, scrap metals, and food waste.

State statute RCW 70.95.090 and KCC 10.22 require that a list of recyclable materials be included in the County's solid

waste management plan. Criteria were developed for determining what recyclable materials could be included on the primary and secondary lists. These criteria are that the materials:

- are already being collected or are collectable,
- are recyclable,
- have markets or potential markets (as described in Appendix D, Recycling Markets Assessments), and
- have potential diversion rates that will contribute to meeting state and local recycling goals.

A scale of high to low was used to rank materials according to the criteria. A high ranking in all the criteria is preferable for placement of materials on the list; however, materials can be included without receiving high ranking for all criteria. Recyclable materials could be placed or kept on the recyclables list for one of the following reasons:

Table III.13 Alternative B, Estimated Percent Increase Resulting from Expanded Voluntary Programs with Yard Waste Disposal Ban

	1992		1995	
	Total Tons	% of Total Waste Stream	Total Tons	% of Total Waste Stream
Total Waste Stream	1,339,600	100.00	1,571,582	100.00
Total Disposal Stream	870,447	64.98	784,573	49.92
Residential Programs				
Single-Family Primary Recyclables	64,212	4.79	119,131	7.58
Multifamily Primary Recyclables	5,068	0.38	29,418	1.87
Secondary Recyclables	12,123	0.90	19,836	1.26
Buy-Back Centers	6,143	0.46	11,600	0.74
Wood Waste	1,000	0.07	16,399	1.04
Construction/Demolition	0	0.00	2,599	0.17
Drop-sites (Primary Recyclables)	1,428	0.11	3,737	0.24
Clean-Up Events	943	0.07	3,000	0.19
	90,917	6.79	205,719	13.09
Nonresidential Programs				
Nonresidential Recycling	303,499	22.66	394,280	25.09
Wood Waste	1,000	0.07	25,047	1.59
Construction/Demolition	0	0.00	8,260	0.53
	304,499	22.73	427,588	27.21
Yard Waste Programs				
Single-family Collection	20,578	1.54	39,090	2.49
Multifamily Collection	0	0.00	4,293	0.27
Nonresidential Collection	136	0.01	1,569	0.10
Roll-off Services	0	0.00	1,170	0.07
Drop-boxes	30,102	2.25	62,005	3.95
	50,816	3.79	108,127	6.88
Waste Reduction Programs				
Residential Programs	12,317	0.92	25,066	1.59
Nonresidential Programs	10,604	0.79	20,509	1.30
	22,921	1.71	45,575	2.90
Total Diversion	469,153	35.02	787,009	50.08

- to create or guarantee an adequate and consistent supply of materials for development and maintenance of a recycled products industry,
- to avoid frequent changes in the recyclables list that could undermine the public's commitment to WR/R,
- to insure adequate diversion of recyclable materials from the waste stream to meet state and local goals.

Table III.14 defines the scale for each of the criteria used for developing the recyclables lists. Table III.15 applies the criteria and displays the ranking for the materials on the Plan lists.

Urban, household, collection programs would be expanded to include the following minimum levels of residential services:

- *Urban household primary recyclables collection.* All single- and multifamily residences would have household collection, or a collection program determined to be equivalent to household collection by Ecology, of paper (newspaper, cardboard, mixed wastepaper); #1 and #2 plastic bottles (PET and HDPE); yard waste (smaller than 3 inches in diameter); glass containers; and metal (tin and aluminum cans). Participation by residences would be voluntary. As the yard waste disposal ban is phased in, household options for managing their yard waste would be limited to participating in household collection programs, self-hauling their yard waste to processors or collection facilities or on-site composting.
- *Urban, single-family, yard waste collection.* Household collection of yard waste (less than 3 inches in diameter) would be required in urban areas. Regular yard waste collection service would likely be subject to volume restrictions to be set by individual cities and by the County.
- *Urban, multifamily, on-site yard waste collection.* Local governments would ensure that this service is available by requiring haulers to provide on-call multifamily yard waste collection service throughout their territory; or through some other means of collection that is deemed appropriate by the individual jurisdiction. This service would be made available in all urban areas but participation by multifamily property owners would be voluntary.

Expanding this service will not cause overall collection rates to rise. Haulers can employ the same equipment used for single-family household yard waste collection. Additional operational costs would be covered by service fees paid by program participants. Promotional costs can be managed within existing budgets.

Although it is expected that only a small percentage of multifamily complexes will participate, the program will close an identified service gap.

- *Urban, household, appliance collection service.* To comply with the federal Clean Air Act which prohibits the venting of chlorofluorocarbons (CFCs) into the air, effective July 1, 1992, appliance and appliances containing CFCs will require special handling before they can be recycled. Other appliances (stoves, ranges, heat pumps, water heaters, dehumidifiers, dishwashers, washers and dryers, trash compactors, furnaces) would also be banned from disposal at the county's transfer stations and landfills on September 1, 1993.

Local governments would ensure that appliance collection service is available to residents by disseminating information about existing collection services or accepting appliances at locally sponsored special events. King County would maintain and continue to regularly update a list of the 50 or more appliance dealers, recyclers, and non-profit organizations that accept large appliances, including those that contain CFCs, or provide household pick-up for a reasonable fee. In addition, over the long term, all new County transfer stations would be designed to accept CFC appliances. The availability and costs of appliance collection would be re-evaluated during the 1995 planning process.

Because appliance collection would not be a part of regular solid waste and recyclables collection services, there would usually be an additional cost to those households that must dispose of a used appliance. In 1992, the average fee for residential pick-up of a CFC appliance in urban areas is approximately $40. The average fee for non-CFC appliances is approximately $30. Costs to local governments for promotion can be managed within existing budgets. Governments can expect to spend an average of $13,000 to sponsor a special collection event; adding appliances to the list of materials to be collected at planned events will add costs to events but can be managed within existing budgets.

- *Urban, household, bulky yard waste collection service.* This includes yard waste too large for regular household collection (limbs, stumps, and other yard waste larger than 3

Table III.14 Criteria for Primary and Secondary Recyclables Rankings

Ranking	Collectable	Processing Capacity	Market Potential	Diversion Potential
H	Materials are easy to set out for pick-up or transport; containers and the means to handle them are readily available.	Either local processing or low-cost transport to processing is available	Markets are well-established and are generally strong, despite periodic fluctuations.	Relatively high volumes, either by weight or cubic yards, are generated and disposed.
M	Separation of this material could be achieved by combining it with another material already collected, possibly creating certain but not unreasonable contamination or handling problems.	Local processing or transport may be available under certain conditions such as moderate increases in cost.	Markets exist but are static and possibly weak due to oversupply or competing materials.	Relatively moderate volumes are generated and disposed.
L	Separation of this material would require special handling and/or equipment due to special properties such as size, bulk, consistency, moisture content and potential for significant contamination of other materials.	No local processing available; transport to processing very costly.	Markets do not exist or are in the early stages of development.	Low volumes are generated and disposed.

inches in diameter), or large volumes generated at one time (i.e., fall prunings). The County and Cities would assure that bulky yard waste collection service is available to households by choosing to provide on-call collection service, disseminate information about private sector chipping services and private yard waste collection depots that accept self-hauled loads of bulky yard waste, or sponsor collection events that accept bulky yard waste. Yard waste disposal limits at county facilities would encourage use of the services provided.

King County would develop countywide information for home owners which identifies private depots and chipping and hauling services that handle bulky yard waste. Cities may choose to develop and distribute information about local services. The County would also sponsor collection events that accept bulky yard waste.

The County would monitor bulky yard waste collection service so that the level of countywide service can be re-evaluated during the 1995 planning process. The need for required household collection of bulky yard waste would also be examined at that time.

- *Urban, household textiles collection service.* Many non-profit organizations provide on-call or depot collection of reusable and recyclable textiles (used clothing, leather goods, and natural household fabrics). Cities and the County would ensure additional collection opportunities by choosing to disseminate information which identifies the organizations that provide this service, by accepting reusable and recyclable household textiles at regular collection events sponsored by local governments, or by providing household collection of textiles on a regular basis. King County would work with the non-profit organizations to help coordinate collection efforts so that countywide service is ensured. The County would monitor textile collection service so that the level of countywide service can be re-evaluated during the 1995 planning process. The need for required household collection of textiles would also be examined at that time.

Costs of promoting available services can be managed within existing budgets. Special collection programs average $13,000 an event. Adding textiles to the list of recyclables to be collected at planned events can be managed within existing budgets. If the local government chooses to provide household collection, costs would vary according to the design of the program.

Table III.15 Designated Primary and Secondary Recyclables with Rankings

(L = low, M = medium, H = high)	Collectable A[1]	Collectable B[2]	Processing Capacity	Market Potential[3]	Diversion Potential[4]
Primary Recyclables					
Newspaper	H		H	H	H
Cardboard	H		H	M	M - H
High-grade office paper	H		M	M	L
Computer paper	H		M	M	L
Mixed Paper	H		L	L	H
PET & HDPE bottles (clear & colored)	H		L	M	L
Yard waste (< 3" in diameter)	H		H	M	H
Glass containers (flint, amber, green)	H		L - M	L[5] - M	M
Tin cans	H		H	M	L
Aluminum cans	H		H	H	L
Secondary Recyclables					
Polycoated Paperboard	L	L - M	L - M	H	L
Other plastics[6]		L	L	L	M
Bulky yard waste (> 3" in diameter)		L	M - H	L - M	L - M
Wood		M	M - H	H	H
Food waste		L	L	M	M
Appliances (white goods)	L	L - M	M	M	L
Other ferrous metals	L	L - M	H	M	M
Other nonferrous metals		L	H	M	L
Textiles		L - M	H	H	H

[1] Currently being collected in most household recyclables collection programs in King County.
[2] (1) Currently being collected in some programs or collected regularly through other means.
(2) Has the potential to be collected (curbside or otherwise). There are no technical reasons why it cannot be collected.
[3] Appendix D - Recycling Markets Assessment [4] Appendix B - Waste Characterization Study [5] green glass
[6] All plastics except PET/HDPE bottles, which are primary recyclables. These are PET (non-bottle), HDPE (non-bottle), vinyl, LDPE, polypropylene, polystyrene, and other plastics. These plastics also known by their SPI codes (1 through 7 respectively).

Rural collection programs would also include the following residential services:

- *Rural, drop-site, primary recyclables collection.* All single and multifamily residences would have collection of the same materials collected at urban households. Participation by rural residents would be voluntary. The County would provide recycling drop-sites or expand household collection service in unserved unincorporated rural areas. The Snoqualmie Valley cities drop-sites (provided through the Waste Not Washington grant) would continue to operate within their own jurisdictions.
- *Rural, single-family, yard waste collection.* Yard waste drop-sites would be required, at a minimum.
- *Review of minimum service level requirements.* In addition to the above minimum service levels, optional household collection of #3-7 plastics (vinyl, LDPE, polypropylene, polystyrene, and all other plastics), and polycoated materials (milk cartons, butter, and frozen food packages) would be considered for possible future inclusion in this Plan for urban areas. The County is evaluating the

following factors to determine the feasibility of collecting these materials: potential markets, potential diversion rates, additional collection and processing costs, and the impacts on collection and processing equipment. If this evaluation indicates that household collection of any or all of these materials is feasible, they would be added to minimum service requirements as early as 1994. If changes are made to minimum service level requirements, then a Plan amendment would be proposed by the County. The cities and the County may opt to collect these materials from all households sooner.

(2) Nonresidential Collection Minimum Service Levels

Alternative B recognizes the need to increase the amount of recyclables diverted from commercial generators. To increase diversion, additional collection services need to be available to businesses and institutions throughout King County, within the limits of local government authority.

The County's Business Recycling Program would continue to offer technical assistance to develop and implement WR/R programs for nonresidential generators. Waste consultations, telephone assistance, workshops, presentations, and written and video materials are among the services that would be offered.

The new primary nonresidential WR/R program included in Alternative B is the establishment and promotion of voluntary nonresidential recycling service guidelines based on an evaluation of gaps in existing services available to businesses. The guidelines would target materials that comprise the majority of the nonresidential waste stream currently being disposed *(King County Waste Characterization Study, Volume II, Appendix B)*. The guidelines would be voluntary because of limited local government authority to require commercial recycling services; however, the guidelines establish the minimum level of service needed to reach the WR/R goals.

Efforts would be made during the 1992 Plan period to pass legislation granting counties and cities the authority to set minimum standards for the collection of nonresidential recyclables. If such legislation is passed, the voluntary minimum service guidelines described in Alternative B would become the minimum service levels requirements, to the extent feasible, pursuant to the new legislation. Cities could develop their own programs and go beyond the voluntary guidelines as long as the minimum standards in the 1992 Plan would be met. Implementing ordinances passed by the County and cities would also be necessary under such new legislation.

Under the voluntary program, the cities and the County would be responsible for promoting and meeting the following nonresidential recycling service guidelines. Nonresidential service providers and the WUTC would be strongly encouraged to voluntarily comply with the service guidelines.

- Cities would ensure that businesses have minimum recycling services available to them. This can be done by initiating contracts to provide these services or by working with haulers, recyclers, and the WUTC. Cities would also be responsible for promoting nonresidential recycling services if they receive funding from the County.
- The County would work with haulers, recyclers, and the WUTC to ensure that businesses in the unincorporated areas have minimum recycling services. The County would also be responsible for promoting service guidelines in cities and unincorporated areas that are served through the Business Recycling Program. The County would also monitor recyclables diversion using data provided by haulers and recyclers.
- Haulers and recyclers would be encouraged to provide minimum recycling services to their customers. Businesses could select their service provider, but if recyclers or cities were unable to provide recycling services, a business' garbage hauler would provide the minimum level of services. Haulers and recyclers would also be requested to provide the County with monthly reports of nonresidential recyclables collected throughout the County.
- The WUTC would be encouraged to permit haulers and recyclers to establish rates and services that meet the minimum service requirements, and to work cooperatively with cities and the County in implementing service guidelines.

The nonresidential (commercial) recycling service guidelines would establish clear and uniform expectations of what constitutes reasonable recycling collection services for businesses in King County. They would recognize the roles of current service providers and the limitations of local government to mandate nonresidential recycling and work within the existing authorities. The guidelines would not be

within the existing authorities. The guidelines would not be intended to supplant current service providers. They would allow current service providers to continue collecting recyclables from current customers and encourage expansion of services to meet recommended service levels. Businesses and institutions would still be allowed to select the best recycling services they can find.

The Division would prepare a handbook to describe the service guidelines. There would be three major components:

1. *Areas to be served (targeted businesses).* Businesses would be targeted for collection service are based on their location and size (service areas are shown in Figure III.7). In primary service areas, all businesses regardless of their size would be targeted; in secondary service areas, businesses with 50 or more employees; and in rural service areas, businesses with 100 or more employees.
2. *Minimum services to be provided.* Minimum would be defined as providing services on a regularly scheduled basis; source-segregating materials to meet processing needs; promoting services to all targeted businesses; and establishing rates in which recycling and garbage services combined cost less than an equivalent level of garbage service alone.
3. *Materials to be collected.* The minimum services would include the collection of paper as described below and at least one other material category other than paper. Nonresidential recyclable materials to be collected would include at least two grades of paper (cardboard, high grade, mixed waste paper, and poly-coated paper). All nonresidential programs would also include at least one of the following categories: at least four types of containers (glass, tin cans, aluminum cans, plastic bottles, and poly-coated paperboard cartons), wood, metals, yard waste, and textiles.

The following options would be promoted among businesses not targeted for collection services because of their size or location:

- *Cooperative collection.* Recycling services would be coordinated for a group of businesses in a limited geographic area.
- *Self-haul to buy-backs and drop-sites.* Businesses would be encouraged to use and would be assisted in locating drop-sites and buy-back centers.
- *Case-by-case services.* Businesses would be assisted with collection alternatives on a individual basis.

King County would monitor the diversion of recyclables from the nonresidential waste stream using information provided by Ecology, haulers, and recyclers. Mandatory recycling measures would be evaluated in the 1995 Plan, and possibly instituted through disposal limitations, if these service guidelines do not result in sufficient diversion.

Under the voluntary service guidelines, no impact on rates is anticipated. Businesses and collection companies would continue to negotiate prices for collection of nonresidential recyclables. If state statutes are amended to give cities and counties authorities to set minimum collections standards for nonresidential recycling, city contracts could be affected.

(3) Recyclables Collection at Solid Waste Facilities

The objectives of establishing recyclables collection service at county transfer facilities and landfills are to:

- Provide the opportunity to recycle at all points of disposal.
- Provide recycling services to self-haul customers.
- Educate customers about recycling.
- Contribute to overall WR/R goals.
- Supplement and enhance private sector recycling facilities and services.

While the private sector would be relied on to provide most of the collection and processing of recyclables in King County, minimum services at county transfer stations would be developed according to the following criteria:

- All existing transfer stations and landfills would continue the current level of recyclables including yard waste services to provide adequate primary recycling services to self-hauler customers.
- All upgraded transfer stations would collect primary recyclables including yard waste, and other materials (from designated recyclables list, Table III.15) in order to fill identified private-sector recyclables collection service gaps.
- All new transfer stations would collect primary recyclables, including yard waste, to provide adequate basic recycling services to self-haulers, and would collect other secondary

materials (from designated recyclables list, Table III.15) in order to fill identified private-sector recyclables collection service gaps.

(4) Yard Waste Disposal Limitations Ban

Major diversion of yard waste is necessary to achieve the 50 and 65 percent WR/R goals. The 1989 Plan recommended a penalty fee for yard waste disposal (p. III-73, 1989 Plan) to encourage source separation of yard waste from the waste stream, beginning in January 1993. This penalty was not imposed because regulations and the necessary infrastructure were not in place to divert yard waste from the waste stream for all generators. Alternative B includes a yard waste disposal ban that would be initiated with a ban on residential collection of yard waste in refuse cans and would progress to banning residential and nonresidential yard waste from the disposal system.

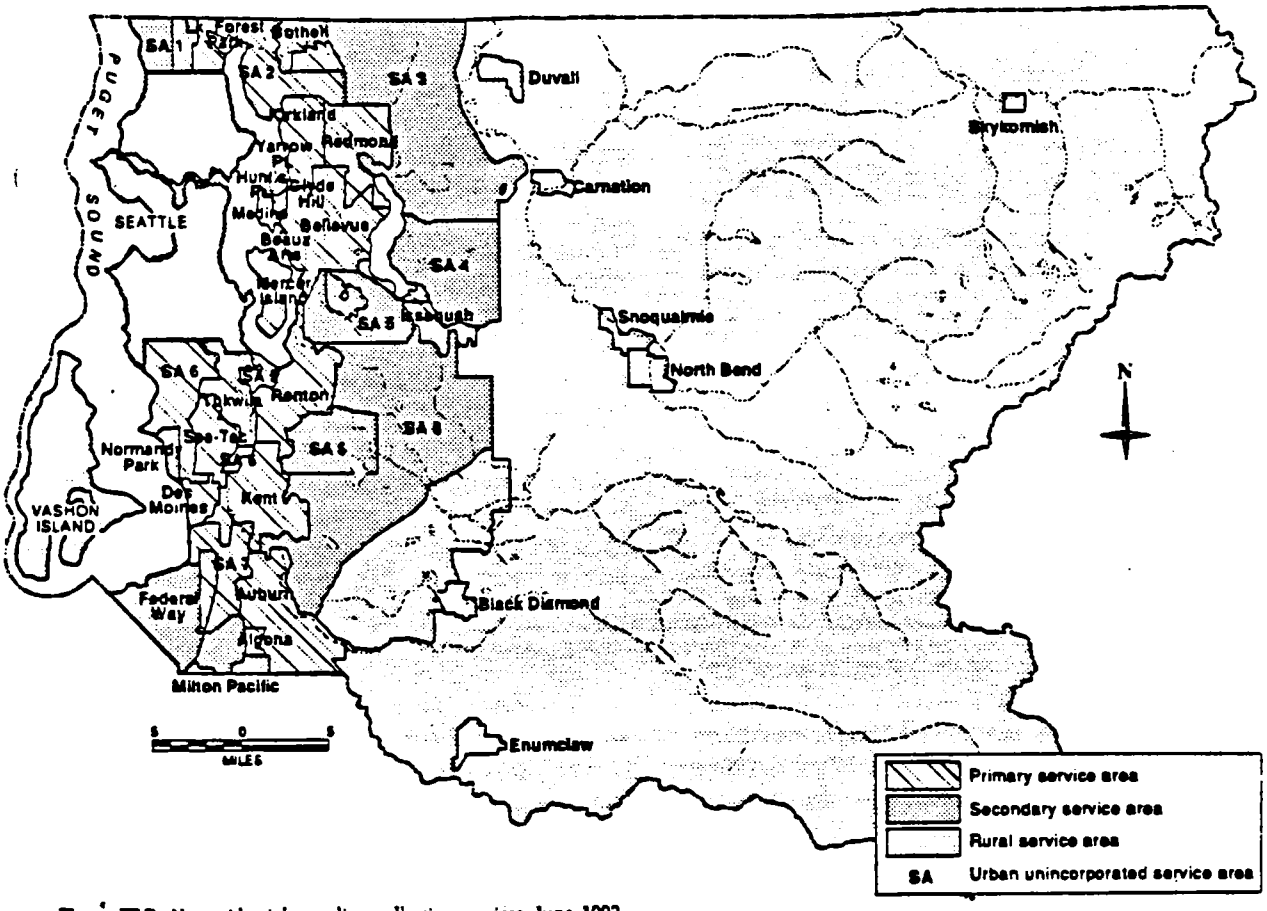

Figure III.7 Nonresidential recycling collection services, June 1992.

The impacts of a yard waste disposal ban on the transfer and disposal systems would be minimal. Facility engineering and operational plans have assumed a total ban on yard waste for the planning period so implementation of a ban would not cause unplanned tonnage decreases at the transfer stations or the Cedar Hills Landfill.

The yard waste disposal ban would be implemented in two phases. Phase 1 would be the implementation of a ban on the disposal of yard waste in refuse cans set out by residents for pickup by garbage haulers. The ban would be applicable to all unincorporated areas where yard waste collection services are available. Phase 2 would be implementation of a ban on disposal at all King County solid waste facilities which would affect both residential and nonresidential generators in the County and suburban cities.

The Plan recommends the extension of household collection service for all primary recyclables, including yard waste, to most households in the County. Therefore, an adequate collection system for Phase 1 of the yard waste disposal ban would be in place.

The residential yard waste disposal ban would consist of the following elements:

- The ban would go into effect in the unincorporated areas of the county during 1993 with the passage of an ordinance prohibiting disposal of yard waste in refuse cans set out for pickup by garbage haulers.
- Suburban cities with existing yard waste collection service programs would have until 6 months after Plan adoption to implement the residential yard waste disposal ban. Cities that are implementing new yard waste collection programs, as recommended by the Plan, will implement the residential disposal ban 6 months after they implement their household collection programs.
- Garbage haulers would enforce the ban by issuing warnings and refusing to collect cans containing yard waste.

Phase 2, a total yard waste disposal ban, would be implemented by 1995. This ban would affect all generators, including nonresidential and self-haul. Implementation of a total yard waste ban would occur only after an environmentally secure and convenient system of collection and processing is developed. The steps to be taken in developing the system would include:

- *Siting of interim yard waste depots* - The primary method of collecting yard waste from nonresidential and residential self-haul generators would be at interim recycling drop-off depots and recycling facilities at new county transfer stations as they are built. The County would revise the King County Zoning Code and work with the cities to revise their zoning codes to allow interim recycling depots as permitted uses in certain existing zones.
- *Interim yard waste depots funding* - Interim recycling depots for the collection of yard waste would be privately owned and operated. However, the County could help fund the cost of developing the depot system through the use of grant funds to ensure enough depots would be available to provide convenient collection service throughout the County.
- *Regulation* - To ensure an environmentally secure alternative to disposal for yard waste, the Health Department would regularly inspect the operations of the depots to assure compliance with health regulations.
- *Markets* - Active markets for composted yard waste already exist in King County. In 1992, 45 percent of the 113,500 tons of yard waste generated in the County was composted at private facilities and offered for sale. Working with the King County Commission for Marketing Recyclable Materials, the County would plan actions to expand markets prior to the implementation of a total yard waste disposal ban.

It is recognized that the greatest potential for compost market expansion is in the private sector. The County would seek to expand private sector demand for yard waste compost over time through its waste reduction and recycling education programs, Business Recycling Program, and other means as they are identified.

Another method of expanding compost markets would likely be changes in procurement policies for government agencies that would favor recycled products, including compost. Actions would include the development of procurement standards for compost products by the Marketing Commission and the incorporation of these standards into the King County recycled products procurement policy. The County would also

encourage the suburban cities to adopt the procurement standards.

The prospect of expanding compost markets to include government-sponsored capital improvement projects would be an incentive for processors to meet the compost quality standards. Private sector confidence in compost may also increase with the establishment of quality standards.

Implementation of Phase 2 of the ban is dependent upon successfully developing and adopting zoning and siting standards for yard waste recycling depots, private sector siting of collection depots, and evidence of an expanded market for composted materials. If these do not occur within the projected timeline, the implementation schedule and respective roles of the public and private sectors for the yard waste disposal ban would be re-evaluated by the County and the cities. Options considered during re-evaluation would include:

- Delaying implementation
- Developing an alternative yard waste depot siting process
- Reliance on new or existing County facilities for collection service
- Examination of the adequacy of the collection capacity of existing yard waste processing facilities as they may exist at the time of re-evaluation, and
- Examining other options for providing convenient collection locations for source separated yard waste.

The County and cities would cooperate in re-evaluating the total yard waste disposal ban options. Some of the criteria that are likely to be used to analyze and select the preferred option from the list above would be:

- Geographic diversity of built drop-off depots, recycling facilities at transfer stations, and processors as they exist at the time of re-evaluation;
- Operating capacity of depots, recycling facilities, and processors;
- Projected annual marketing capacity for yard waste compost;
- Ability of the yard waste collection system to meet or exceed environmental and public health regulations as they may exist at the time of re-evaluation.

(5) Additional County-sponsored Collection Services

- *Incentives to buy-back centers.* Under this program, the County would evaluate the feasibility of providing financial incentives to existing private buy-back centers to encourage them to collect and recycle secondary recyclable materials.
- *Optional secondary recyclables collection.* The County would coordinate countywide events (urban and rural) for the collection of secondary recyclables. These events are discussed under city optional programs, recommendation III.34 in the following section.
- *Clean wood collection.* The County would conduct a waste characterization study at the transfer stations to determine the volume and composition of clean wood waste, generator source, and type of generator using the transfer system.

After completion of the study, programs could be developed to improve waste reduction efforts and increase clean wood waste recycling for generators utilizing transfer stations. Some of the programs that could be offered are:

- collection of source-separated clean wood waste at newly constructed or expanded transfer stations where feasible
- a waste audit program for do-it-yourself remodelers
an education program on wood waste reuse and recycling
- distribution of a list of available recycling processors and businesses that accept clean wood for reuse to the construction trades and general public.

(6) Support

Alternative B includes the following support programs in addition to those in the 1989 Plan.

- *Data reporting requirements.* Haulers and recyclers would continue to provide collection data from household and commercial collection programs, which the County would maintain in a data base. For each city and urban unincorporated service area, the following information would be provided monthly on household collection: average pounds of recyclable and yard waste collected per set-out, program summary tonnage, contaminated recyclables and yard waste by receiving facility, and the number of single-family customers and multifamily complexes (and units) served. For commercial

collection, the following would be collected quarterly by the County: summary of tonnage, amount of contaminated recyclables and yard waste disposed of by receiving facility, and the number of businesses served.

(7) Regional Programs

Alternative B includes the following new programs in addition to those continuing from the 1989 Plan.

- *Primary Recyclables Education Campaign.* The County would develop and implement a campaign to educate the public in the urban unincorporated areas about the availability of household collection service for all primary recyclables. The program is intended to increase participation rates in household collection programs and increase the volume of primary recyclables recovered from the residential waste stream.
- *Single-family, household yard waste collection education program.* King County would implement a program designed to increase participation in the yard waste collection services available in urban unincorporated areas. This would help planned and recently implemented yard waste collection programs achieve their full potential more quickly. The campaign would emphasize waste reduction and composting first, signing up for yard waste service second. The program would be developed for the urban unincorporated area program, but would be available for the cities to use to promote their own yard waste programs.
- *Rural yard waste composting education program.* The County's backyard composting program would be expanded to include education efforts for rural populations. This program would help divert some of the increase in rural residential yard waste anticipated as a result of the PSAPCA burn ban which took effect in September 1992.
- *Multiethnic and other audience-specific materials.* The County would develop and coordinate a comprehensive media campaign to promote WR/R aimed at multiethnic and other groups. The information and promotional materials produced would be available to cities and the County.
- *School education and collection programs with cities and school districts.* The County would work with cities and school districts and haulers and recyclers in the delivery of school educational and collection programs.
- *City optional programs.* Two of the city optional programs recommended in the 1989 Plan would be implemented as regional programs. Backyard Composting Bin and Master Recycler/Composter programs would be offered only as regional programs administered by the County. Only one city opted to implement its own backyard composting program for one year. It would be more cost effective if these programs were implemented on a countywide basis.

The Business Recycling Program would continue to be city optional. In addition, urban and rural secondary recyclables collection events would become city optional. These events (such as "roundups") for the collection of secondary recyclable items, white goods, and other bulky items would be a coordinated program between the County and the cities. Special collection events would be held at regularly scheduled times at designated sites throughout the County. As a city optional program, cities could implement a special collection event with funding assistance provided by the County. In order to receive funding, cities would agree to have regularly scheduled events each year; allow non-city residents to attend; and collect a minimum of four materials from a list of secondary materials.

(8) King County Commission for Marketing Recyclable Materials

Under Alternative B, the King County Commission for Marketing Recyclable Materials would continue to foster the development and expansion of recycling markets in King County and the region with the activities under Alternative A. The Commission would step up efforts to gather and assess market information in order to address increasing volumes and types of materials collected. Such information would be used to set priorities for market development initiatives. For example, the impacts of increased collection of recyclables from residential and nonresidential sources would be more closely monitored to quickly address emerging market supply, demand, and capacity. This is particularly true for yard waste, due to the proposed disposal ban. The Marketing Commission would also work to complement the Solid Waste Division's messages in outreach programs, such as those for yard waste and other primary recyclables.

(9) Program Costs

Alternative B would call for the availability of new collection services that could result in added costs to local governments, residences, businesses, and the private sector. While precise costs of the additional WR/R efforts described in Alternative B are difficult to project, some that can be estimated are described below (complete cost estimates for Alternative B collection programs are summarized in Appendix K).

Existing programs (see Alternative A) would continue to incur public and private sector costs at current levels. Existing funding mechanisms would also be continued. Collection services would continue to be paid through city contracts or directly through fees charged to customers. Cities would continue to fund other WR/R programs and services with utility taxes, general fund revenue and grants. Regional programs and services offered by the County would continue to be funded through tipping fees charged at disposal facilities.

The new collection services would result in additional costs to the customer—and potentially the service provider—if the new services require the purchase of equipment or additional labor.

Some of the additional programs would not add significant costs. Ensuring that on-call multifamily yard waste collection is provided, for example, would expand a service which is already widely available to single-family residences. Implementation of the program will not cause overall collection rates to rise. Haulers can utilize existing equipment with additional operational costs covered through service fees paid by users of the service. Start-up promotional costs would be managed within existing budgets. Cities with contracts for services would need to include these new programs and could recover their costs through fees charged to customers or through other city revenue mechanisms. In areas of the County where recycling services are regulated by the WUTC, the additional costs would be passed on directly to the customer.

New city educational or promotional efforts would be funded by city utility taxes, general revenue funds, or grants. Regional programs, educational or otherwise, provided by the County would be funded through tipping fees charged at disposal facilities.

c. Alternative C, Mandatory Recycling Through Disposal Limitations

Under this alternative, most existing services and programs would continue, while a regulatory approach would be undertaken to increase recycling. This policy alternative is based on the recognition that it may be necessary to go beyond providing voluntary recycling services and waste reduction programs to achieve established WR/R goals. This approach might increase the WR/R level to 60 percent or more by banning disposal of recyclable materials in the county solid waste disposal system.

This alternative would limit disposal of one or any combination of the following: primary residential recyclables; metals and appliances; yard waste; and selected nonresidential recyclables. Table III.15 gives the diversion potential of the bans.

(1) Recyclables Collection

The materials that could be selected for bans comprise a major portion of the waste stream or are readily recyclable. The estimated diversion impact (Table III.15) is based on the amount of these materials currently disposed at county facilities (*King County Waste Characterization Study*, Volume II, Appendix B). King County would evaluate the feasibility of these bans in the same way it would evaluate the yard waste ban (Section III.A.3.b). In addition to yard waste, which would result in an additional diversion of nearly 8 percent, Alternative C would ban disposal of one or more of the following:

- *Primary residential recyclables.* Container glass, aluminum cans, tin cans, newspaper, mixed paper, and#1 and #2 plastic bottles (PET and HDPE). Despite extensive residential collection, these materials are still disposed in significant amounts. Loads containing these materials would not be accepted at transfer stations from haulers or self-haulers. This ban could result in an additional diversion of over 3 percent of the total waste stream by 1995.
- *Ferrous and nonferrous scrap metal and appliances.* Tin and aluminum cans are included in the ban on primary recyclables. A ban of these materials would result in an additional diversion of less than 2 percent by 1995.

• *Selected nonresidential recyclables—all paper, glass, metals, wood, and some plastics.* Banning materials commonly recycled in the nonresidential sector could result in an increased waste diversion of almost 13 percent by 1995. This assumes 80 percent of these materials would be diverted from the nonresidential sector.

Before a ban would be instituted, the County would assess the availability of disposal and recycling alternatives, the capacity of recycling markets to absorb additional materials, the effect on service costs, collection and processing facilities capacity and availability, and which public facilities would best fill any gaps.

Since disposal bans create markets for collection services from the private sector, this alternative assumes the County would be less involved in developing service options than in Alternative B. However, there would be a need for increased county personnel to monitor compliance by checking loads at transfer facilities or randomly surveying dumpsters and garbage cans.

(2) Support Programs

Under Alternative C, no new support programs would be implemented.

(3) Regional Programs and Markets

Programs promoting recyclables collection could be scaled down since garbage haulers would require their customers to source separate. However, substantial public education would still be needed, including programs to provide information on waste reduction, backyard composting, and recycling to educate the general public, particularly the nonresidential sector, about what materials cannot be disposed.

Banning disposal and increasing collection of recyclables would result in pressure on recycling markets to absorb more materials. Potential market impacts include:

• Significant price drops for some commodities, particularly in the short term.
• Insufficient capacity to process materials or use them to manufacture new products.
• Added incentives over the long term for remanufactures to increase the recycled content of products.

To address these and other market impacts, the County would increase its efforts to actively develop markets for materials targeted for a disposal ban. For example, the Marketing Commission would identify market barriers, encourage the private sector to increase local capacity to process recyclables and manufacture recycled products, work with wholesalers and retailers to increase availability of recycled products, and test recycled products in new and existing applications.

(4) Program Costs

Implementation of Alternative C would maintain public and private costs for existing programs at current levels. Existing funding mechanisms would also be used. Collection services would continue to be paid through city contracts or directly through fees charged to customers. Cities would continue to fund other WR/R programs and services with utility taxes, general fund revenue, and grants. Regional programs and services offered by the County would continue to be funded through tipping fees charged at disposal facilities.

Mandatory recycling measures could result in additional costs to the County and the private sector in enforcing disposal prohibitions. The County could incur additional costs of staff to monitor compliance with disposal bans. The private sector could also see increased cost through additional staff to ensure compliance or through penalties or fines paid. The magnitude of the costs to enforce disposal limitations would vary depending on the level of monitoring put in place

4. Recommendations

In order to reach 50 percent diversion by 1995, either voluntary services must be expanded (Alternative B), mandatory measures must be imposed (Alternative C), or a combination of the two alternatives must be implemented. Alternative B is the recommended approach because voluntary programs in many areas have only recently been implemented. These, as well as expanded programs, should be given a chance to work on a voluntary basis before a mandatory approach is considered. One exception is the proposed Countywide yard waste disposal

ban that requires the County and suburban cities to develop alternative collection methods for yard waste.

Alternative B (Table III.16) is recommended for several reasons:

- The expansion of services and facilities builds on the existing recycling system and supports the current approach of making recycling as convenient as disposal.
- These additional services and programs are clearly needed in order to reach the stated WR/R goal of 50 percent by 1995.
- This alternative fills needs not being met by the current recycling system. These include: ensuring high participation in multifamily recycling; expanding participation in all yard waste programs by establishing increased yard waste services for households, self-haulers and commercial generators to support the phased implementation of the yard waste disposal ban; establishing and promoting improved nonresidential recycling services; and providing more opportunities to collect secondary recyclable materials at home or through drop-off services.

The recommended programs and actions target the diversion of large portions of the waste stream, emphasizing materials with potential market value. In addition, Alternative B combines hauler and facility-based options to address service needs of self-haulers and businesses. It also provides service options, which result in the best coverage for recovery of materials that are not generated daily or that require multiple diversion options. Recyclable materials as defined in the 1992 Plan are listed in Table III.14.

5. Implementation

The implementation chart (Table III.17) provides information on program responsibility, and anticipated start times. Both new and continuing programs are shown.

Table III.16 1992 Recycling Recommendations

RECYCLABLES COLLECTION Required Collection		Strategy	Implementation Responsibility
Recommendation III.14	Urban household collection of primary recyclables	Provide household collection of paper, #1 and #2 plastic bottles (PET and HDPE), yard waste (less than 3 inches in diameter), glass containers, and tin and aluminum cans from all urban single- and multifamily residences	County, cities
Recommendation III.15	Rural drop box collection of primary recyclables	Provide rural single- and multifamily residences with drop-sites for collection of the same materials collected at urban households	County, cities
Recommendation III.16	Urban single-family household yardwaste collection	Provide household collection of yard waste (less than 3 inches in diameter) from urban single-family residences in unserved urban areas	Cities
Recommendation III.17	Urban multifamily onsite yardwaste collection service	Ensure yard waste collection service options are available to urban multifamily dwellings	County, cities
Recommendation III.18	Urban household bulky yardwaste collection service	Ensure household collection service options for yard waste too large or in excessive amounts for regular household collection are available	County, cities
Recommendation III.19	Urban household appliance collection service	Ensure large appliance collection service options are available to urban households	County, cities
Recommendation III.20	Urban household textiles collection service	Ensure collection service options are available for textiles on a regular basis	County, cities