

The Second Annual Report of the Recycling Public Advisory Council

January 2003

Authored by:

The Recycling Public Advisory Council

Edited and Prepared by:

The Division of Air and Waste Management
Department of Natural Resources and Environmental Control

Production of this Document Funded by:

The Department of Natural Resources and Environmental Control

For More Information Contact:

James D. Short
Division of Air and Waste Management
Department of Natural Resources and Environmental Control
89 Kings Highway
Dover, DE 19901
Phone: (302) 739-3689
Fax: (302) 739-5060
e-mail: jshort@dnrec.state.de.us



Document #40-09/03/03/01/01.

Executive Summary

The Recycling Public Advisory Council (RPAC) was established by former Governor Thomas R. Carper's Executive Order No. 82 in September of 2000. The Order set a diversion rate goal of 30 percent for Residential Solid Waste (RSW) and charged the RPAC with advising and assisting the Department of Natural Resources and Environmental Control (DNREC) and the Delaware Solid Waste Authority (DSWA) in achieving this goal. The Order also directed the RPAC to report annually to the Governor and the General Assembly on the RPAC's activities and its recommendations for increasing the RSW diversion rate. Specifically, the annual report is to address four issues:

1. the status of attainment of the 30% diversion goal;
2. an accounting of the Recycling Assistance Grant Program and recommendations for future funding of the program;
3. an assessment of both the DNREC and the DSWA in achieving the 30% goal; and
4. such other recommendations as the RPAC shall deem appropriate.

This document, the Second Annual Report of the Recycling Public Advisory Council, addresses these issues for the year 2002.

Progress in increasing the diversion of residential solid waste

Waste generation and recovery in Delaware

The best estimates of RSW generation and recovery in Delaware are those reported by Franklin Associates in two studies prepared for the DSWA. The first study used 1997 data, and the findings were reported in the 1999 document, "Assessment of Solid Waste Discards in Delaware and the Potential for Recycling of Materials." The findings of the second study, which used data for 2000, are contained in the 2002 report, "Assessment of Solid Waste Discards in 2000 and the Potential for Recycling of Materials." According to both of these reports, the RSW diversion rate in Delaware is about 13%.

Delaware's recycling rate is often compared to that of other states or of the nation as a whole. In making such comparisons, one must understand that the recycling or waste diversion rates reported by most states and the U.S. EPA are not RSW diversion rates; rather, they refer to municipal solid waste (MSW), which includes both commercial and residential solid waste. The commercial sector's recycling rate is usually higher than the residential rate – sometimes significantly so – with the result that the MSW diversion rate is usually higher than the RSW rate. In Delaware's case, although Franklin Associates' figures show a RSW diversion rate of 13% for both 1997 and 2000, they show MSW diversion rates of 22% and 21% respectively for those years. It is this higher rate that corresponds to the national average rate reported by the U.S. EPA. The rates reported by other states also typically are MSW rates. However, direct comparisons among the states are not possible, as there is little consistency in the methodologies used for calculating recycling or diversion rates.

The primary focus of this report is RSW, since the RPAC's mandate is to increase the RSW diversion rate in Delaware.

Although Franklin Associates' data yield similar RSW diversion rates for 1997 and 2000, significant differences are shown for certain categories of the waste in those two years. In most cases, these differences can be attributed to changes in Franklin's methodology for generating the data or changes in waste management practices.

The waste category exhibiting the greatest difference for both generation and recovery is the yard trimmings category. The generation shown for 2000 is almost twice that shown for 1997. Franklin Associates states that totally different methodologies were used in deriving the values for the two reports, so it is not possible to make a comparison between the two years. The discrepancy in the values is of concern to the RPAC: if the values shown for 2000 are correct, either Delawareans are generating, on a per-capita basis, more than 2.5 times the national average in yard waste, or the national average generation is underestimated. The RPAC believes that the values shown for 2000 are incorrect and that further research is needed to provide a better understanding of the generation and management of this important part of the residential waste stream. The RPAC is working to resolve the discrepancy.

One of the projects being carried out with the help of funding from the grant program will include a compilation and description of existing yard waste management programs in Delaware. The RPAC anticipates that this project will provide information that will be helpful in identifying future steps needed to yield a more complete understanding of yard waste generation and recovery.

Increases in RSW diversion attributable to Recycling Assistance Grant Program

The projects implemented with the assistance of grant funds have begun to generate data indicating substantial increases in the diversion of RSW among their targeted populations. Here are a few noteworthy examples:

1. Delaware City received funding in both FY01 and FY02 to purchase equipment and supplies for the implementation of a curbside recycling program. Curbside collection for 200 households began in December 2001. The number of participating households has been increasing, totaling 255 as of September 2002, and the quantity of material being collected currently totals more than 5000 pounds per month – almost 22 pounds per participating household. The evidence indicates that this project represents an actual increase in recycling and not a transfer of materials from 'RECYCLE DELAWARE' to the curbside program.
2. The Town of Camden received funding in both FY01 and FY02 to help finance the cost of expanding its existing curbside recycling program. The town was already collecting newspapers for some of its residents and has used the grant money to increase the number of households served by the program and to add cans and plastic bottles to the materials picked up at the curb. For the months of July 2002 through September 2002, the amount of recyclables collected at the curb totaled 8,023 pounds – just under 8 pounds per participating household (the materials collected by Camden's do not include glass containers or corrugated cardboard; therefore, it is not surprising that the amount recovered per household is less than that for Delaware City).
3. The City of Rehoboth Beach used grant money to establish recycling on the beach. Special containers for the collection of aluminum cans and plastic bottles were placed at 125 locations along the beach. During the 2002 beach season, almost 9,000 pounds of aluminum cans and approximately 5000 pounds of plastic bottles that would otherwise

have been disposed of have been recycled. The city manager has reported that the overall program generated a net revenue of \$647 (as a result of the sale of the aluminum) in 2002 and has resulted in “reducing waste going to the landfill and a much cleaner beach.”

All of these programs received assistance from the DSWA.

Recycling Public Advisory Council Activities

During 2002 the RPAC focused primarily on four areas: furthering the implementation of the Recycling Assistance Grant Program; improving its understanding of solid waste generation and recovery data reported by the U.S. EPA, other states, and Franklin Associates; developing a Request for Proposals for a study to determine the feasibility of expanded collection and processing of recyclables in New Castle County; and developing and conducting education and outreach initiatives.

Recycling Assistance Grant Program

The grant program was developed in 2001. That year, \$46,000 in grant money was available. Nine applications were submitted, requesting total state funding of \$122,000. The program was able to fund six of the proposed projects.

In 2002, \$75,000 was allotted to the grant program. Twelve proposals were submitted, requesting \$130,175 in state funding. Ten of the proposals received funding.

For 2003, the DNREC has \$57,000 available for recycling assistance grants (\$50,000 allotted by the legislature, plus \$7,000 carried over from previously funded projects that did not spend all of their grant money). Proposals must be received by the DNREC no later than January 31, 2003, in order to be considered for funding.

Based on the level of interest demonstrated by the groups that are targeted by the grant program, and on the data that the funded projects are beginning to generate, the grant program is very successful. Waste diversion initiatives are being implemented in communities that would otherwise not have the resources for such projects, and material that would otherwise be going to the state’s landfills is being recovered.

The RPAC strongly recommends that the grant program be continued and that the amount of funding provided for grants be increased substantially. The program has demonstrated that there is an interest in the types of programs being encouraged by the grants and has assisted a number of small municipalities in starting or expanding such programs. However, the amount of funding provided to date has not been sufficient to be of assistance to the larger municipalities in the state. The Citizens’ Work Group on Recycling, in its 2000 report, “A Course of Action to Increase Recycling in the State of Delaware,” concluded that grant funding of \$500,000 per year would be needed to raise the RSW diversion rate to 25%. The RPAC recommends funding of \$100,000 per year. This recommendation is made with the recognition that, at this time of budget deficits, recycling may not seem to be a high priority; however, the RPAC believes that a greater investment now in recycling initiatives will pay off in the future in improved environmental conditions, more energy-efficient manufacturing, and the creation of well paying jobs (see Appendix F, Benefits of Recycling).

Understanding Solid Waste Generation and Recovery

The RPAC has learned a great deal in the past year about waste generation and recovery both in Delaware and in other states and communities. Council members and DNREC staff have discussed waste diversion strategies with recycling officials from neighboring states; studied U.S. EPA reports profiling communities that have attained high waste diversion rates and describing national recycling quantities and trends; and reviewed the data on Delaware's waste generation and recovery contained in reports prepared by the DSWA and Franklin Associates.

Based on its current understanding of the elements that contribute to effective and cost-efficient recycling programs, the RPAC believes that curbside collection of recyclables (including yard waste) in densely populated areas of Delaware would significantly increase the RSW diversion rate, and that a cost study should be conducted to help the state decide whether to pursue curbside recycling as a part of its strategy for attaining the 30% diversion goal.

Request for Proposals for a study of collection and MRF construction/operating costs

Data that the RPAC has reviewed on recycling programs in all types and sizes of communities demonstrate that convenience is a key factor in achieving high participation in a recycling program. A study conducted for the U.S. EPA in 1999, "Cutting the Waste Stream in Half: Community Record-Setters Show How," which profiles 17 communities that have achieved a RSW diversion rate of 40% or more, reveals that 16 of those communities have curbside collection of recyclables. The one exception is a small rural town in which residents transport all of their trash and recyclables to a transfer station where they must pay to deposit their trash but may leave their recyclables at no charge.

Curbside collection of recyclables, accompanied by an educational initiative on how and why to recycle, would increase Delaware's RSW diversion rate, especially in the more densely populated areas of the state. The RPAC believes that a curbside program in New Castle County, where 60% of the RSW is generated, could be cost effective. To determine whether this is the case, the RPAC needs Delaware-specific data on the probable costs of collecting, processing, and marketing the materials that would be captured in such a program. To obtain these data, the RPAC has issued a Request for Proposals (RFP) for a study of the costs that would be involved in commingled collection of recyclables in New Castle County and in the construction and operation of a facility (commonly referred to as a Materials Recovery Facility, or MRF) to process and market those recyclables. Provided that sufficient funding can be secured, the study is expected to be completed in the spring of 2003, after which time the RPAC will review the findings and prepare a separate report with its recommendations. The RFP is included as Appendix F.

Public outreach and education

The RPAC's primary outreach initiatives during 2002 were: participation (with the DSWA and the DNREC) in a poster/calendar contest for school children in recognition of America Recycles Day; and development of a program on recycling that could be customized for presentation to interested governmental, business, and civic groups.

Recommendations

The RPAC recommends the following actions for 2003:

1. Completion and evaluation of the cost study for curbside collection of recyclables and construction and operation of a MRF for New Castle County; and
2. Development of a comprehensive strategy for increasing the RSW diversion rate. The strategy will identify each step needed to move the state toward a comprehensive waste diversion program and will include a timetable for accomplishing each step. The recommendations of the First Annual Report, as well as knowledge gained from the curbside collection cost study, will be used in developing a cohesive plan for achieving the waste diversion goal.

The strategy will be included in the RPAC's Third Annual Report.

Closing Statement

We owe it to ourselves and to future generations to manage our society's waste efficiently and responsibly. Responsible waste management includes the types of comprehensive recycling programs (including yard waste management programs) that our existing waste collection and processing infrastructure currently lacks – mainly, efficient and convenient curbside collection of recyclables and facilities at which those materials can be processed and marketed. Improving our existing waste collection and processing infrastructure will require legislation to enable these fundamental changes to occur. The Recycling Public Advisory Council is prepared to assist with the development of this legislation; but successful implementation of the necessary changes will require the leadership, support, and active participation of the Governor's Office and the General Assembly.

Table of Contents

Executive Summary	i
Table of Contents	vi
List of Tables	vii
1.0 Introduction	1
2.0 Progress in Increasing Diversion of RSW	2
2.1 Discussion of the 30% Diversion Goal	
2.2 Waste Generation and Recovery in Delaware	
2.3 Increases in RSW Diversion Attributable to Recycling Assistance Grant Program	
3.0 Recycling Public Advisory Council Activities	7
3.1 Council Charge	
3.2 Method of Measuring	
3.3 Recycling Assistance Grant Program – History and Status	
3.4 Recycling Assistance Grant Program – Recommendations for Future Funding	
3.5 Materials Recovery Facility and Curbside Collection Cost Study	
3.6 Analysis of Recycling Collection Methods in Saint Paul	
3.7 Public Education and Outreach	
4.0 DSWA Activities	14
4.1 ‘RECYCLE DELAWARE’ Drop-Off Program	
4.2 Assistance to Communities	
4.3 Public Education and Outreach	
5.0 DNREC Activities	16
5.1 Support to the RPAC	
5.2 Public Education and Outreach	
5.3 Technical Assistance	
6.0 Recommendations	18
Appendices	
Executive Order Number 82	A
Recycling Public Advisory Council and Education/Outreach Committee Members	B
Status of Recommendations of Citizens’ Work Group on Recycling	C
Status of Recommendations of RPAC in First Annual Report	D
Summary of Grant Projects for FY01 and FY02	E
Benefits of Recycling	F
Request for Proposals for Cost Study	G

References

List of Tables

Table 2-1	MSW and RSW in Delaware – 1997 and 2000	4
Table 3-1	FY01 Grant Summary	8
Table 3-2	FY02 Grant Summary	8
Table 3-3	Costs of Recycling in Saint Paul MN	11
Table 3-4	Demographics: New Castle County DE and Ramsey County MN	11

1.0 INTRODUCTION

This is the Second Annual Report of the Recycling Public Advisory Council (RPAC). The purpose of the report is to fulfill a requirement of Executive Order No. 82, which directs the RPAC to prepare an annual report addressing the following:

1. the status of attainment of the goal of diverting 30% of Delaware's residential solid waste;
2. an accounting of the Recycling Assistance Grant Program and recommendations for future funding of the program;
3. an assessment of the activities of both the DNREC and the DSWA in achieving the 30% recycling goal; and
4. such other recommendations as the RPAC shall deem appropriate.

Executive Order No. 82, issued by Governor Thomas Carper in September 2000, is attached to this report as Appendix A. A list of RPAC members can be found in Appendix B.

During calendar year 2002 the RPAC's work has focused primarily on four areas:

1. furthering the implementation of the Recycling Assistance Grant Program;
2. improving its understanding of MSW and RSW generation, diversion strategies, and measurement techniques for Delaware, other states, and the nation as a whole;
3. developing a Request for Proposals for a study to determine the costs of expanded collection and processing of recyclables in New Castle County; and
4. conducting education and outreach initiatives pertaining to the grant program and to recycling in general, and developing a strategy for the continuation of such initiatives.

The specific activities conducted and progress made in each of these areas are described in the following sections of this report.

2.0 Progress in Increasing Diversion of RSW

2.1 Discussion of the 30% Diversion Goal

Executive Order No. 82 establishes a goal of a “thirty (30) percent diversion rate for recyclables from Delaware’s residential solid waste stream.” The recycling goals of most states, and of the nation as a whole, pertain to municipal solid waste (MSW) rather than residential solid waste (RSW). RSW is only one component of MSW, which also includes commercial waste. Commercial waste, being more homogeneous than RSW, is often easier to recover for recycling; however, determination of quantities of commercial waste discarded and recycled depends on reporting by the companies themselves, which are frequently unwilling to release these data.

Franklin Associates, a consulting firm that studies and reports on waste generation for the U.S. Environmental Protection Agency (U.S. EPA), estimates that RSW composes approximately 55 to 65 percent of total MSW generation nationally. Franklin Associates has also performed two assessments of Delaware’s MSW – one in 1999 and the second in 2002. In the more recent report, they estimated that in 2000, 62 percent of Delaware’s MSW was generated by the residential sector.

In determining how to move forward to achieve the goals of Executive Order No. 82, the RPAC has relied heavily on the findings of Franklin Associates as well as on the report, “A Course of Action to Increase Recycling in the State of Delaware,” completed by the Citizens’ Work Group on Recycling in February 2000. That report contained eleven recommendations that the Work Group felt must be implemented to increase the RSW diversion rate to a maximum of 25%. A summary of those recommendations and their implementation status is attached to this report as Appendix C.

The Franklin Associates reports are available from the DSWA; the report of the Citizens’ Work Group on Recycling may be viewed on DNREC’s website at <http://www.dnrec.state.de.us/air/recycle.pdf>

2.2 Waste Generation and Recovery in Delaware

In its First Annual Report, the RPAC included data from Franklin Associates’ 1999 Delaware study, “Assessment of Solid Waste Discards in Delaware and the Potential for Recycling of Materials,” which assessed the waste generation and recovery in Delaware for the year 1997. Franklin Associates’ recently completed update, “Assessment of Delaware Solid Waste Discards in 2000 and the Potential for Recycling of Materials,” used data for the year 2000. Table 2-1 below is a compilation of waste generation and recovery data contained in both Franklin Associates reports, plus a column showing national MSW recovery data reported by the U.S. EPA for 2000. The numbers shown for Delaware in the table are those generated using the U.S. EPA’s methodology for measuring recycling, rather than DSWA’s methodology. The difference is that EPA does not consider tires burned for energy recovery to be recycling and also excludes the

portion of major appliances that is not recyclable. The EPA methodology more closely matches the methodology adopted by the RPAC (as described in Section 5.2 and Appendix C of its First Annual Report).

Rounded to the nearest whole percentage point, both Delaware studies show a RSW recovery rate of 13%. There are significant differences, however, in the recovery rates shown for certain categories of RSW, notably Durable Goods, Containers and Packaging, and Yard Trimmings. Some of the differences reflect changes in recovery related to the waste management practices being employed at the time; others are a result of changes in the methods used by Franklin Associates to estimate generation and/or recovery.

Table 2-1 shows a significant decline in the estimated recovery of Durable Goods for 2000 (2%), as compared to 1997 (11%). Franklin Associates attributes this to the change in disposal practices between 1997 and 2000. In 1997, much of New Castle County's RSW was being sent to a waste-to-energy facility, where metals were removed both from the incoming waste and from the ash after incineration. In 2000, all RSW discards were landfilled; therefore, metals from discarded items such as small appliances, wires, steel brackets, and miscellaneous metal parts were no longer being recovered.

The lower recovery shown in 2000 for Containers and Packaging (down from 18% to 11%) is largely a result of further research for the later report. For 1997, Franklin Associates assumed that redemption rates for beverage containers subject to Delaware's Beverage Container Law were similar to the rates in other states with deposit legislation; for 2000, based on information received from additional sources, Franklin determined that the redemption rate in Delaware was lower than previously estimated.

The updated report also shows much higher yard trimmings generation and recovery values in 2000 than in 1997. According to Franklin Associates, different methodologies were used in estimating the yard trimmings generation for these two years; therefore, a comparison between the values attributed to this category in the two reports is not possible. They theorize that the increase in the recovery of yard trimmings is probably attributable to better service and improved record keeping on the part of municipalities.

The RPAC believes that the large discrepancy between the yard trimmings values reported for 1997 and 2000 shows that both the generation and the management of this waste category are poorly understood. If the generation numbers for 2000 are correct, either Delawareans are generating, on a per-capita basis, almost 2.5 times the national average in yard trimmings, or the national average generation of yard trimmings is underestimated. The need for a better understanding of this segment of the waste stream is obvious, and the RPAC will continue to work toward resolving the discrepancy.

The Yard Trimmings category must be addressed in any strategy for increasing the RSW diversion rate, for two reasons: first, yard trimmings represent one of the largest components of the waste stream; and second, most of the yard trimmings are generated by the residential sector. Increasing the yard trimmings diversion rate to 50% would raise the entire RSW diversion rate to 23% (using the values reported for 1997) or 25% (using the values for 2000).

One of the projects funded with FY02 grant money includes, as part of its proposal, a compilation of existing yard waste management programs in Delaware. This project,

being conducted by the Warrington Foundation in conjunction with the Mid-Atlantic Composting Association, should help the state and the RPAC identify the next steps that need to be taken to better characterize yard waste generation and recovery. It should also be helpful to municipalities interested in providing yard waste management services for their residents. (For more detail on this and other grant projects, see Appendix E.)

Table 2-1. MSW and RSW in Delaware – 1997 and 2000

Product Or Material	Tons Generated in DE 1997(1)		% Recovered in DE 1997		Tons Generated in DE 2000(2)		% Recovered in DE 2000		% Rec US 2000(3)
	MSW	RSW	MSW	RSW	MSW	RSW	MSW	RSW	
Durable Goods	109,300	68,500	21	11	117,300	72,680	13	2	16.6
Nondurable Goods	160,800	94,769	22	21	177,800	105,240	23	21	28.8
Containers and Packaging	185,100	75,578	39	18	224,200	86,660	37	11	38.9
Total Product Wastes	455,200	238,847	29	17	519,300	264,580	27	12	30.6
Food Wastes	60,400	37,448	0	0	78,800	47,280	0	0	2.6
Yard Trimmings	101,700	91,500	9	9	215,100	193,600	17	16	56.9
Misc. Inorganic Wastes	8,800	4,400	0	0	9,700	4,850	0	0	-
Total Other Wastes	170,900	133,348	5	6	303,600	245,730	12	13	28.8
Total	626,100	372,195	22	13	822,900	510,310	21	13	30.1

- (1) *Assessment of Solid Waste Discards in Delaware and the Potential for Recycling of Materials.* DSWA. April 1999.
- (2) *Assessment of Delaware Solid Waste Discards in 2000 and the Potential for Recycling of Materials.* DSWA. September 2002.
- (3) *Municipal Solid Waste in the United States: 2000 Facts and Figures.* U.S. EPA. June 2002.

Table 2-1 also shows why it is important to specifically address the solid waste generated by the residential sector. Recovery is significantly higher in the commercial sector – so much so that when both sectors are combined, the commercial recovery rate pulls the total MSW recovery rate up by as much as 9 percentage points. The residential sector needs additional help to divert more materials from disposal. This subject is addressed further in Section 3.5 of this report.

The national recovery rates reported by the U.S. EPA pertain to MSW and not RSW; therefore, it is the MSW columns of Table 2-1 that one should refer to when comparing Delaware’s recovery rate to the national average. Thus, using the data for 2000, the recovery rate for Delaware that should be compared with the national average of 30% is 21%. Other states also report MSW rather than RSW recovery rates. However, the states are not consistent in the methodologies that they use for calculating these rates. One might be tempted to compare Delaware’s estimated MSW recovery rate of 21% with that

reported by Pennsylvania (33%), New Jersey (38%), or Maryland (38%) for that same year, but such comparisons are misleading because each state is measuring something different. Nevertheless, the RPAC believes that there is value in attempting to monitor both RSW and MSW generation and diversion rates and intends, in future years, to report both rates for the state.

The remainder of this report focuses on RSW, since the RPAC's mandate is to recommend ways to increase the residential diversion rate. We must do that by identifying those areas where there is room for improvement in capturing materials for reuse or recycling and by developing strategies to implement the recovery, processing, and marketing of those materials.

2.3 Increases in RSW Diversion Attributable to Recycling Assistance Grant Program

The first Recycling Assistance Grants were awarded early in FY02. The DNREC is collecting data on materials diverted by the programs established with the assistance of grant funding. Despite the brief amount of time that these programs have been in existence, they have already begun to demonstrate that the grant program has increased recycling at the local level. Appendix E provides a summary of the grant projects and the status of each, but a few noteworthy examples are provided below:

1. Delaware City received a grant in FY01 for the purchase of recyclables collection equipment and of household bins for 200 households. The city began providing curbside collection of recyclables to those 200 households in December 2001, storing the recyclables in containers provided by the DSWA at the city's public works yard..

From January 2002 through June 2002, the total quantity of recyclables collected curbside was 26,483 pounds, for an average of 4,414 pounds per month (this does not include yard waste, which is collected and managed separately). During that time period, the nearest 'RECYCLE DELAWARE' drop-off site experienced no decline in the quantity of material collected; therefore, the recyclables collected in the Delaware City program appear to represent an actual increase in recycling and not a diversion of materials from one program to another.

In FY02, Delaware City applied for, and received, another grant that has enabled the city to offer curbside recycling to more households and to operate the program more efficiently. Having found that the trailer purchased with FY01 grant money was too small to accommodate all of the recyclables being placed at the curb, the city purchased a larger trailer capable of holding more recyclables and of transporting them directly to the DSWA's processing facility. Delaware City also purchased additional household collection bins. The number of participating households has been increasing steadily and totaled 255 as of September 30, 2002. The quantity of material collected curbside in July, August, and September averaged 5353 pounds per month. This equates to about 21.6 pounds per participating household per month.

In addition to the increased capture of recyclables attributable to Delaware City's curbside program, two other interesting changes have occurred in regard to the city's waste: first, even though there has been no change in Delaware City's yard

waste collection program, the number of households participating in that program has increased; second, the quantity of solid waste that Delaware City has sent to the landfill since the inception of the curbside recycling program has decreased by an average of 10,560 pounds per month (well above the amount of material being collected in the recycling program). These changes are undoubtedly being influenced by many factors, but it is not unreasonable to theorize that they are due in part to residents' increased awareness of the importance of, and opportunities for, waste diversion in their community.

Data submitted by Delaware City on the curbside recycling program suggest that the cost of operating the program for June through September of 2002 amounted to approximately \$2.00 per participating household per month. This cost includes amortization on the collection equipment and the contractual cost for having the materials picked up and transported but not the costs of baling and marketing, which are performed by the DSWA. The RPAC cautions that the reported figures are very preliminary, and four months' operation is not sufficient to yield meaningful cost data.

2. The Town of Camden received grants in both FY01 and FY02 to help cover the costs of curbside collection of recyclables, which the town stores in containers provided by the DSWA. Camden was already collecting newspapers for some of its residents and wanted to expand that program to include more households and additional materials.

Using grant money to purchase a recycling trailer and household bins, the town added cans (aluminum and steel) and plastic bottles to the materials collected curbside for recycling and increased the number of participating households from 300 to an estimated 378 (approximately 50% of Camden's households). For the period July 2002 through September 2002, a total of 8,023 pounds of recyclables were collected in this program. Assuming the number of participating households to be 339 for the 3-month period, slightly less than 8 pounds per participating household per month was collected. It is important to keep in mind that Camden is not collecting corrugated cardboard or glass containers; thus, Camden's per-household poundage is significantly less than Delaware City's.

3. The City of Rehoboth Beach received a FY02 grant to help purchase containers to place on the beach for the collection of aluminum cans and plastic bottles. The containers were in place through the 2002 beach season (23 weeks beginning with Memorial Day weekend). During that time, 8,840 pounds of aluminum and an estimated 5000 pounds of plastic were collected and recycled. It is reasonable to assume that virtually all of these materials would otherwise have been discarded and landfilled, so this program has demonstrated an increase in diversion. By selling the aluminum that was collected, the city realized a net revenue of \$647 from the recycling program. According to the town manager, the program has resulted in "reducing waste going to the landfill and a much cleaner beach."

The DSWA, which accepts the plastic bottles, has reported noticing increased contamination in the plastic since the inception of the beach recycling program. The DSWA and the DNREC are working to resolve this issue.

3.0 Recycling Public Advisory Council Activities

3.1 Council Charge

Executive Order No. 82 created the RPAC and assigned it these responsibilities:

- Advise the DNREC and the DSWA on all aspects of recycling;
- Advise the DNREC in developing grant criteria, including local match requirements, and selection of applications;
- Develop, in conjunction with the DNREC and the DSWA, a methodology for measuring recycling rates;
- Advise the DNREC and the DSWA on possible outreach activities designed to achieve greater recycling rates; and
- Report to the Governor and the General Assembly annually on the status of recycling activities in Delaware.

The RPAC formed three committees to help carry out its charge: the Measurement Committee, the Education Committee, and the Strategy Committee. In 2002, the RPAC determined that the Measurement and Strategy Committees had laid the groundwork that would enable DNREC to pursue the tasks that had been assigned to the committees. Accordingly, the RPAC dissolved these two committees. The Education Committee was retained, as it is needed to plan and conduct educational and public outreach activities on an on-going basis.

The RPAC and Education Committee members are listed in Appendix B.

3.2 Method of Measurement

Delaware's MSW generation and recycling rates are tallied and reported each year by the DSWA. In addition, the DSWA has twice contracted with Franklin Associates to conduct an assessment of discards and recycling in the state. In 2001, the RPAC's Measurement Committee attempted to obtain data on RSW generation and diversion from trash haulers and municipalities. The committee felt that data from these sources would be useful in determining RSW (as opposed to MSW) generation rates and in providing verification of the data reported by DSWA and Franklin Associates. However, the committee found that the major trash haulers were unwilling to provide the requested information, and many of the municipalities were either unable or unwilling to provide accurate data. As a result, the RPAC has determined that the studies conducted by Franklin Associates for the DSWA in 1999 and 2002 (which incorporate data from the DSWA's annual reports) are the best available sources of data on RSW generation and recovery in Delaware. Accordingly, the RPAC has recommended that DNREC use the Franklin Associates data to establish the state's baseline waste diversion rate. The Measurement Committee has already defined those activities and materials that fall within the scope of RSW diversion for measurement purposes (see Appendix J of the First Annual Report); using those definitions, the Franklin Associates data can be used to calculate the RSW diversion rate.

3.3 Recycling Assistance Grant Program – History and Status

The Recycling Assistance Grant Program was developed in 2001. The grant criteria and selection procedures were developed by the DNREC, with advice from the RPAC. For the FY01 grants, recipients were required to provide matching funds equal to at least 25% of the funds provided by the state. The match requirement was revised for the FY02 grants, on the recommendation of the DNREC’s accounting office, to specify that grantees must provide a match of 25% of the total project cost.

Grant selections were made by the RPAC in conjunction with the DNREC.

The chart below summarizes the grant statistics for FY01 and FY02.

	State Funds Available	State Funds Requested	# Applications Received	# Projects Funded
FY 2001	\$46,000	\$122,000	9	6
FY 2002	\$75,000	\$130,175	12	10

Tables 3-1 and 3-2 summarize the projects funded in FY01 and FY02 respectively. A more complete description of each project, detailing the progress and current status of each, can be found in Appendix E.

Table 3-1. FY01 Grant Summary

<i>Grant Recipient</i>	<i>Grant Amount</i>	<i>Brief Description</i>
Delaware City	\$18,940	Curbside & Yard Waste Collection
University of Delaware	\$15,000	Composting Education
Town of Camden	\$6,400	Expanded Curbside Collection
City of New Castle	\$3,750	Recycling Education & Containers
Town of Newport	\$1,150	Recycling Education & Containers
Town of Laurel	\$750	Recycling Education

Table 3-2. FY02 Grant Summary

<i>Grant Recipient</i>	<i>Grant Amount</i>	<i>Brief Description</i>
Warrington Foundation	\$19,000	Compost Education and Bin Sale
Delaware City	\$18,099	Expanded Curbside Collection
Town of Camden	\$10,032	Expanded Curbside Collection
City of Rehoboth Beach	\$9,788	On-Beach Recycling Containers
Limestone Hills Maint. Org.	\$9,180	Curbside Collection Containers
Praise Assembly Church	\$2,993	Drop-Off Recycling Containers
Middle Run Crossing Maint. Org.	\$1,350	Curbside Collection Containers
Fenwick Island Lions Club	\$1,000	Supplies to Construct Containers
Westridge Maintenance Org.	\$936	Curbside Collection Containers
Hockessin Chase Maint. Org.	\$882	Curbside Collection Containers

Two of the FY02 grant recipients (Delaware City and the Town of Camden) had also received grants in FY01. In both cases, the municipalities are using the FY02 money to expand and improve the programs begun in FY01.

The FY03 grants were announced in September 2002, and applications must be completed and submitted to DNREC by January 31, 2003. The amount of funding available for the grants is \$57,000 (\$50,000 allotted by the legislature for FY03, plus \$7000 carried over from previously funded projects that did not spend all of their grant money).

3.4 Recycling Assistance Grant Program – Recommendations for Future Funding

The grant program has been severely limited by the small amount of funding that has been provided. The Citizens' Work Group on Recycling recommended grant funding of \$500,000 per year to approach a diversion rate of 25%, stating that more grant money would be needed to achieve a higher rate. The amounts that have been provided thus far are well below the recommended amount. A small amount of money can help a small municipality, such as Delaware City, provide its residents with a more convenient way of recycling. However, even if all of the small towns in Delaware implemented such a program, a statewide RSW recycling rate of 30% would not be achieved. To reach the goal, it will be necessary to substantially increase recycling in the large municipalities, and to do that, far more grant money, as well as other measures, will be needed.

The amount of grant funding that the RPAC recommends is \$100,000 per year. This still is far less than the amount recommended by the Citizens' Work Group on Recycling, and not enough to provide a municipality the size of Wilmington with the money needed to implement a program that would substantially increase that city's RSW diversion. It would, however, be sufficient to help a city such as Dover or Newark to establish an effective program.

The RPAC is well aware that Delaware is experiencing a budgetary shortfall and does not make this funding recommendation lightly. The members of the RPAC believe that recycling should play a greater role in the state's waste management strategy. Further, there is substantial evidence that increased investment in recycling will yield rewards in the forms of creation of good jobs, more energy-efficient manufacturing, and a cleaner environment (see Appendix F, Benefits of Recycling).

Substantially increasing the diversion in Wilmington will require curbside collection of recyclables. If more 'RECYCLE DELAWARE' site sponsors could be found in Wilmington, additional drop-off centers could be located in the city, and this would help to capture more of city residents' recyclables. However, the RPAC believes that curbside recycling is necessary in such densely populated areas if the 30% goal is to be achieved.

It will also be impossible to reach the goal without addressing yard waste. Several municipalities in Delaware provide yard waste collection and management for their residents, but most homeowners do not have access to this kind of service and have very limited options for managing their yard waste. Grasscycling (leaving grass clippings on the lawn after mowing) and backyard composting are excellent ways to manage these materials, but these practices can address only a fraction of all the yard waste that is generated. Other measures must be developed and implemented if a significant quantity

of this material is to be diverted from the landfills. Such measures could include incentives for more municipalities to provide yard waste composting for their residents.

3.5 Materials Recovery Facility and Curbside Collection Cost Study

In researching various types of recycling programs that have been implemented around the country, the RPAC has learned about strategies and design elements employed in all types and sizes of communities to yield high diversion rates. Among the lessons learned is the importance of making recycling convenient for residents. In 1999 the Institute for Local Self-Reliance conducted a study for the U.S. EPA to identify recycling programs that had achieved high RSW diversion rates. The purpose of the study was to describe policies and strategies used to achieve these high levels and to encourage other communities to replicate successful program elements. The resulting report, "Cutting the Waste Stream in Half: Community Record-Setters Show How," profiles 17 communities that have achieved a RSW diversion rate of 40% or more. All but one of these communities uses curbside collection of recyclables. The one exception is a very small rural town in which residents transport their trash and recyclables to a transfer station where they must pay to dispose of the trash but may deposit recyclables at no charge.

Based on studies such as this, the RPAC believes that a properly designed curbside recycling program, accompanied by an educational initiative on how and why to recycle, may capture at least three times as much material as 'RECYCLE DELAWARE.' The RPAC is in the process of evaluating curbside recycling for New Castle County, where approximately 60% of the state's RSW is generated, to determine whether it could be cost effective. This determination will require Delaware-specific data on the probable costs of collecting, processing, and marketing the materials that would be captured in a curbside recycling program. To obtain the necessary information on costs and capture rates, the RPAC has issued a Request for Proposals for a study to evaluate the costs to collect commingled recyclables at the curb in New Castle County and the costs to construct and operate a facility (commonly referred to as a Materials Recovery Facility, or MRF) to process and market those recyclables. It is anticipated that a contractor will be selected in March 2003, and the study is expected to be completed in the spring of 2003. The RPAC will review the findings and prepare a separate report with its recommendations.

The RFP for the study is included as Appendix G.

Until such time as Delaware-specific data are available from this study, it is reasonable to evaluate current data from other recycling programs in communities with demographic characteristics similar to those of New Castle County. A recent study conducted for Saint Paul, Minnesota, provides some interesting information.

3.6 Analysis of Recycling Collection Methods in Saint Paul

In May 2002, Eureka Recycling (a nonprofit organization founded by the Saint Paul Neighborhood Energy Consortium to focus on waste reduction and recycling in the Twin Cities metro area and to manage Saint Paul's recycling program) calculated recyclables collection and processing costs and recovery rates for the City of Saint Paul, Minnesota, using three different curbside collection scenarios. The results, reported in a document

entitled “A Comparative Analysis of Applied Recycling Collection Methods in Saint Paul,” include some interesting figures, as shown in Table 3-3. (Note: all collection methods are commingled.)

Table 3-3. Costs of Recycling in Saint Paul MN

Collection Method	Collection Frequency	Projected Participation Rate (%)	Collection Cost/Ton	Processing Cost/Ton	Processing Revenue Per Ton	Net Cost Per ton
Dual Stream*	Bi-weekly	78	\$65	\$50	\$44	\$71
Dual Stream	Weekly	78	\$59	\$50	\$43	\$66
Single Stream**	Bi-weekly	76	\$51	\$60	\$33	\$78
<p>* In dual stream collection, residents sort their recyclables into two categories: paper (including newspaper, cardboard, paper, and mail) and containers (a mix of cans, glass bottles, and plastic bottles).</p> <p>** In single stream collection, residents place all of their recyclables in one container.</p>						

As the table shows, the net cost per ton of collecting and processing Saint Paul’s recyclables ranged from \$66 to \$78. For FY02 the net cost of collecting and processing the materials recycled by the ‘RECYCLE DELAWARE’ drop-off program amounted to \$207 per ton. These costs cannot be directly compared because one program (Saint Paul) encompasses a relatively small, densely populated area, while the other (‘RECYCLE DELAWARE’) is a state-wide program that includes rural as well as urban populations and must incur the cost of transporting materials relatively long distances. A comparison between the costs of the Saint Paul program with the costs of operating ‘RECYCLE DELAWARE’ in New Castle County alone would provide a fairer comparison, but the ‘RECYCLE DELAWARE’ costs cannot be allocated in that way. The cost for operating the program in New Castle County alone would certainly be less than \$207 per ton, but the RPAC is confident that it would be considerably higher than the Saint Paul costs.

One reason for the RPAC’s interest in the Saint Paul study is the fact that New Castle County, Delaware, and Ramsey County, Minnesota (the county in which Saint Paul is located), share many similarities, as shown in Table 3-4.

Table 3-4. Demographics: New Castle County DE and Ramsey County MN

County	Population	Households	Persons/HH	HS Educ	Bachelors	HH Income
New Castle	500,265	188,935	2.56	85.5 %	29.5 %	\$52,419
Ramsey	508,667	206,448	2.45	87.6 %	34.3 %	\$45,722

These demographic similarities, together with the cost differential between the Saint Paul curbside recycling program and ‘RECYCLE DELAWARE,’ support the RPAC’s belief that a serious evaluation of the costs of implementing widespread curbside recycling in Delaware is warranted.

The report by Eureka Recycling reveals that curbside collection and processing of commingled recyclables may be more cost effective than Delaware's existing drop-off program; however, there are other important factors that warrant serious consideration and justify expanded recycling in Delaware. They are:

1. Curbside collection of recyclables is consistent with the governor's Livable Delaware goals. If curbside collection of recyclables were a part of the state's public works infrastructure, Delaware would reap the benefits of a higher recycling rate, including reduced pollution and increased landfill life. With the collection of more recyclables, it may be easier to attract recycling-based businesses – businesses that could be more environmentally friendly than many of their virgin-material based counterparts.
2. If a comprehensive curbside program were implemented, the need for drop-off locations could be substantially reduced, or ultimately eliminated. Any savings realized by reducing or eliminating the drop-off program could be redirected to other DSWA recycling activities.
3. The quantity of recyclables diverted from landfilling through curbside collection of recyclables may be 2.5 to 3 times the quantity collected in the existing drop-off program. It is also important to note that:
 - (a) The addition of more drop-off sites does result in the collection of more material; however, the increase generally is not linear, meaning that a ten percent increase in the number of sites will not increase by ten percent the amount of material collected. Therefore, expansion of the drop-off program may not substantially increase diversion.
 - (b) Considering the significant capital expenditure required at this time to expand the Cherry Island landfill, it is only logical to incorporate recycling as a means to increase the life of that facility.
4. Delaware demographics support expanded recycling. New Castle County has the population density, the education level, and the income to implement successful recycling programs.
5. Implementation of curbside collection of recyclables in New Castle County would require the establishment of franchise districts for the collection of the recyclables, and possibly for trash collection as well. Franchise districts provide many benefits to residents, including lower cost of trash and recyclables collection and reduced truck traffic in residential areas (resulting in reduced air pollution and less road wear).

3.7 Public Education and Outreach

The Education/Outreach Committee concentrated on two areas this past year:

1. promoting an activity for children and youth centered on America Recycles Day in November, and

2. putting together a program on recycling that could be presented to governmental, business, and civic groups interested in knowing more about the history and status of recycling in Delaware.

The Committee spent a good deal of time trying to identify an activity for school-age children and youth that would meet the following criteria: involve students in grades one through twelve; cover all aspects of recycling; be fun and involve prizes; and be repeatable on a yearly basis. DSWA proposed modifying plans for a “Trash Can Dan and the Clean Up Kids” Calendar to incorporate a theme for Delaware's America Recycles Day. The Trash Can Dan and the Clean Up Kids Club is a new education program developed by DSWA. In FY '02, DSWA registered over 4,500 Delaware children in the new program. The Committee decided to partner with DSWA and DNREC in this project. Public and private schools were notified of the contest, and 261 entries were received. The twelve first- and second-place winners of the contest (one for each grade) were notified before America Recycles Day (November 15), and the first-place winners' posters were featured in the Delaware State News and Community News of New Castle County in late November. Calendars were printed featuring all of the winning posters; they will be distributed in December to the contest winners, the members of the Clean-Up Kids Club, and the schools in Delaware.

The Committee also identified a need for a comprehensive presentation on recycling in Delaware that could be used by DNREC staff and RPAC members in speaking to municipal officials, nonprofit organizations, and citizens' groups throughout the state. In response, DNREC developed a PowerPoint presentation that can be adapted to the particular interest of the group being addressed. Entitled “The Future Course of Recycling in Delaware,” the presentation includes information about the benefits of recycling, the history and current status of recycling in Delaware, the RPAC, and the Recycling Assistance Grant Program.

4.0 DSWA Activities

4.1 'RECYCLE DELAWARE' Drop-Off Program

The DSWA continues to operate the 'RECYCLE DELAWARE' program, one of the most successful and cost-effective voluntary drop-off programs in the nation. In FY02, approximately 18,703 tons of recyclables were received at 'RECYCLE DELAWARE' centers. This represents about 5 percent of the RSW generated in the state. The materials collected at the centers are taken to the Delaware Recycling Center (DRC), an intermediate processing facility in Wilmington, where they are prepared for market. The cost of transporting the recyclables to the DRC and processing and marketing them amounted to \$242 per ton in FY02, while the revenue realized from the sale of the recyclables was \$35 per ton. Simple calculations reveal a net cost of \$207 per ton of recyclables managed, or about \$0.94 per Delaware household per month.

The DSWA's electronic goods collection program, begun in July 2001, continues to be extremely successful. As of September 30, 2002, almost 2.5 million pounds of electronic goods had been recycled through this program. According to figures reported at a recent U.S. EPA (Region III) conference on electronic goods recycling, this quantity was greater than the combined total for Virginia, West Virginia, Pennsylvania, and Maryland. The materials (computers and computer peripherals, televisions, telephones and telephone peripherals, and electronic games) are taken to the DRC where they are sorted and packaged in preparation for recycling by a contractor.

In November of 2002, the DSWA announced the beginning of a pilot program to collect mixed paper at two 'RECYCLE DELAWARE' locations. If the program proves to be successful, it could be expanded to cover the entire state by the end of 2003.

In addition to recycling the materials collected at the drop-off centers, the DSWA diverts scrap tires, white goods, and yard waste from the working face of its landfills. Tires are sent to a waste-to-energy facility; white goods are picked up by a recycler; and yard waste is used at the landfills as ground cover or wet weather pads, or in the manufacture of topsoil.

4.2 Assistance to Communities

The DSWA has provided assistance to recipients of Recycling Assistance Grants in the form of containers and processing and marketing services. When Delaware City implemented its curbside recycling program, the DSWA provided a full 'RECYCLE DELAWARE' center specifically for storage of the materials collected in the program. The DSWA also transported the materials to the DRC and processed and marketed the materials, all at no cost to Delaware City. The city now transports the recyclables to the DRC in its own trailer (purchased with grant funds), but the DSWA continues to bale and market the materials.

Assistance provided to Camden was similar to that provided to Delaware City. The DSWA supplied storage containers for the collected recyclables. Camden continues to use those containers, and the DSWA provides the transportation, processing, and marketing of the materials.

The DSWA also serves as the market outlet for the plastic containers collected in Rehoboth Beach's program.

4.3 Public Education and Outreach

During FY02 the DSWA enrolled more than 4,500 children in its educational and outreach program, "Trash Can Dan and the Clean Up Kids." The DSWA modified a planned poster/calendar contest to incorporate a theme for America Recycles Day and invited the RPAC and the DNREC to partner with the DSWA in sponsoring and promoting the contest. This contest became one of the RPACs primary outreach activities for 2002.

In FY02 the DSWA also provided information and education to more than 150,000 citizens through public events and mailings, and received 10,936 calls on the toll-free Citizens Response Line.

Information on all of DSWA's programs is available on its website (www.dswa.com).

5.0 DNREC Activities

The DNREC's recycling activities fall into three major areas: providing support to the RPAC, conducting public outreach on the Recycling Assistance Grant Program and recycling in general, and providing technical assistance to grantees and potential grant applicants.

5.1 Support to the RPAC

In fulfillment of its responsibilities under Executive Order No. 82, the DNREC has worked very closely with the RPAC in administering the Recycling Assistance Grant Program and in providing support to the RPAC. The tasks that DNREC has carried out in this area include, but are not limited to:

- making meeting arrangements;
- preparing and distributing agendas and minutes for all RPAC meetings;
- drafting (for RPAC review) and finalizing all grant documents, such as application packages, contracts, and reporting forms;
- publicizing the grant program by means of press releases, announcements, direct mailings, and participation in environmentally themed events;
- conducting workshops for potential grant applicants;
- conducting research (as resources allowed) as requested by the RPAC; and
- preparing the Annual Report.

5.2 Public Education and Outreach

The DNREC conducted or participated in many activities in an effort to increase public awareness of recycling opportunities and to promote the grant program. These activities included but were not limited to: meetings with civic associations; presentations to nonprofit groups; exhibits at special events such as Earth Day, State Fair, Newark Community Day, and Coast Day; and workshops in each county to explain the grant program. Various outreach materials were developed by DNREC staff and distributed at these events. In addition, DNREC staff, with input from the RPAC Education/Outreach Committee, prepared a PowerPoint presentation that could be customized for various audiences.

5.3 Technical Assistance

DNREC staff provided technical assistance to several grant applicants, both in helping them plan their projects and prepare their applications and in assisting with

implementation and problem solving. Some of the more noteworthy examples of this assistance are:

- Rehoboth Beach – DNREC staff located inexpensive refurbished drums (complete with lids) for collection of aluminum cans and plastic containers on the beach; found a source of decals for the drums; helped city officials calculate the quantities of materials that they could expect to collect; and helped locate a market for the aluminum.
- Delaware City – When the trailer purchased with FY01 grant money proved too small to hold the recyclables collected in the new curbside program, DNREC staff helped the city locate a more suitable trailer. DNREC also provided information about yard waste composting and is attempting to help the city find a suitable composting site.
- Praise Assembly Church – When the Royal Rangers found that the containers they had purchased for their expanded recycling program were too small to accommodate the quantity of recyclables being collected, DNREC helped them find more suitable containers.
- The Warrington Foundation – The staff assisted the Warrington Foundation and the Mid-Atlantic Composting Association in revising their initial proposal to better meet the intent of the RPAC and the grant program.

On a continuing basis, the DNREC staff is assisting grant recipients with fulfilling their reporting requirements.

6.0 Recommendations

In its First Annual Report, the RPAC recommended ten actions that it believed were necessary to increase the RSW diversion rate to 30%. Little progress has been made in implementing most of these recommendations (see Appendix D for a summary of the recommendations and their status). Each of the recommended actions could play an important role in helping to increase the RSW diversion rate; however, the RPAC recognizes that it did not incorporate the recommendations into one comprehensive, step-by-step strategy and did not clearly explain how the success of one action could be dependent on the implementation of another.

During the past year the RPAC has accomplished a great deal with limited resources. Much of the RPAC's time, and of DNREC's as well, has been devoted to administering and fine-tuning the grant program. With the grant procedures, forms, and timetables now fairly well established, the RPAC expects to be able to give more focused attention to the development of a strategy for meeting the mandate of Executive Order No. 82. Accordingly, the RPAC makes the two recommendations explained below.

The recommendations are made on the assumption that the Recycling Assistance Grant Program will continue to be funded and with the hope that the Community Relations Officer position, created within the DNREC in 2000 and relinquished in 2001, will be restored. Both of these conditions, presented as Recommendations in the First Annual Report, are crucial to the achievement of the RPAC's mandate.

The RPAC's recommendations for 2003 are:

1. Completion and evaluation of the recyclables collection and MRF construction and operation cost study for New Castle County; and
2. Development of a comprehensive strategy for increasing the RSW diversion rate.

The strategy will identify each step needed to achieve a comprehensive program, the actions necessary for completing each step, and ways in which the various program elements are interdependent. It will include a timetable for accomplishing each step. Recommendations from the First Annual Report, such as landfill bans, franchise districts, and monetary incentives or disincentives, will be incorporated into the strategy with appropriate timelines for implementation. The strategy will be heavily influenced by the results of the cost study on enhanced collection and processing of recyclables in New Castle County. It must address curbside recycling and yard waste management. Some of the elements may require new or revised state laws, in which cases the RPAC will provide draft legislation.

The RPAC will develop this comprehensive strategy during 2003 and will present it within its Third Annual Report to the Governor and the General Assembly.

The Recycling Public Advisory Council offers these findings and recommendations to Governor Minner and the members of Delaware's 142nd General Assembly. We welcome any additional ideas that you would like us to explore.

Appendix A: Executive Order 82

Appendix B
Recycling Public Advisory Council and
Education/Outreach Committee Members

RECYCLING PUBLIC ADVISORY COUNCIL MEMBERS

Paul Wilkinson, RPAC Chairman
Del EASI

Pasquale S. Canzano
Delaware Solid Waste Authority

Patricia Todd
League of Women Voters of Delaware

Robert Propes
Delaware Economic Development Office

The Honorable Donald H. Mulrine
Mayor, Town of Newport

Paul R. Bickhart
Recycling Express of Delaware, Inc.

Richard C. Cecil
Delaware Association of Counties

Kevin Shegog
Tri-State Waste Solutions

John Blevins
Department of Natural Resources and Environmental Control
Division of Air and Waste Management

EDUCATION / OUTREACH COMMITTEE MEMBERS

Patricia Todd, Co-Chair
League of Women Voters of Delaware

Richard C. Cecil
Delaware Association of Counties

Marshall Budin, Co-Chair
Department of Natural Resources and
Environmental Control
Division of Air and Waste Management

James Short
Department of Natural Resources and
Environmental Control
Division of Air and Waste Management

Danny Aguilar
Delaware Solid Waste Authority

Julia Morrill
Wik Associates, Inc.

Robert Chaddock
Del EASI

Deborah Heaton
Sierra Club of Delaware

Alberta Melloy
Garden Club of Wilmington

Albert DelPizzo
Delaware Audubon Society

Appendix C

*Implementation Status of Recommendations of
 Citizens' Work Group on Recycling*

Recommendation	Status
1. Create an Office of Recycling within DNREC to promote and monitor all recycling efforts within the State; establish a Recycling Public Advisory Council to assist and advise the Office.	Implemented by Executive Order No. 82 and with the allocation of an Environmental Scientist and Community Relations Officer (CRO) to DNREC in the FY01 budget. However, the CRO position was cut from the FY03 budget.
2. Establish a voluntary statewide residential solid waste diversion goal of at least 25%.	Executive Order No. 82 establishes a 30% diversion goal.
3. Establish a statewide education program on recycling within the Office of Recycling.	The RPAC in conjunction with DNREC has developed a strategy for a statewide education program on recycling. Limited funding within DNREC and the loss of the CRO position severely restrict implementation of this strategy.
4. Provide funding for grants to encourage communities, counties and municipalities to implement measures to increase recycling.	The RPAC established the grant program in 2001. The Work Group requested \$500,000 in funding for the grant program. Only \$49,000 was granted in FY01, \$75,000 in FY02, and \$50,000 in FY03.
5. Make it easier for the DSWA to site 'RECYCLE DELAWARE' collection centers.	Not implemented, and RPAC believes that additional sites would have little impact on diversion.
6. Enact a State Recycled Products Procurement Law	Signed by Governor Carper on September 14, 2000. However, it is difficult to monitor and has many loopholes.
7. Provide funding for enforcement of the Bottle Bill.	Not implemented.
8. Develop and publish a list of local companies who currently have products made from recycled materials available.	The RPAC has determined that this is not practical, since many products sold by supermarkets, office supply stores, etc., have recycled content.
9. Increase the number of igloos at 'RECYCLE DELAWARE' drop-off sites.	In 2001 DSWA added containers for plastic bags. In 2002, DSWA implemented a pilot project to collect mixed paper.
10. Review report on former Governor Castle's Executive Order No. 82.	Not implemented. Given the amount of time that has elapsed since the issuance of that order (12 years), RPAC believes that there would be little value in performing this exercise.
11. Support and expand recycled materials markets.	Not implemented.

Appendix D
Implementation Status of Recommendations from RPAC's First Annual Report

Recommendation	Status
1. Provide grant funding of \$100,000 for 2003 and increase by \$25,000 each year through 2005.	The General Assembly allocated \$50,000 for the FY 03 grants.
2. Maintain DNREC's current recycling staff level of one Environmental Scientist and one Community Relations Officer (CRO); add a Planner in FY04.	The CRO position has been cut from DNREC, and there are no plans to add a Planner. The CRO is essential to outreach and education and, therefore, to the success of the program.
3. Enhance 'RECYCLE DELAWARE' by increasing awareness of the program; revisiting the idea of adopting legislation that would allow DSWA easier access to sites for drop-off centers; and designing more aesthetically pleasing centers.	Both DNREC and DSWA have promoted the program through education and outreach activities. However, it is not realistic to expect substantial cost-effective gains in diversion through promotion or expansion of this program.
4. Support and expand recycled materials markets through DEDO's Green Industries Initiative (GII) and DNREC's Recycling Assistance Grant Program.	Two grants have objectives of increasing acceptance of compost as a valuable material (see App E for more detail). The GII has been largely inactive over the past year.
5. Enact legislation to give DNREC authority to require waste collectors to report to DNREC the quantities of trash and recyclable material collected in Delaware.	Not implemented. RPAC has asked DNREC to investigate the possibility of requiring this information through regulation, and DNREC will evaluate this possibility during the next round of solid waste regulatory revisions.
6. Encourage diversion of yard waste from disposal by promoting use of compost by govt.; providing rebates for purchase of mulching mowers; and banning yard waste from landfills.	DNREC is investigating the feasibility of instituting a ban on disposal of yard waste in landfills and is evaluating expanded uses for yard waste that will result in greater diversion of this material from the waste stream.
7. Fund a study to determine the per-household cost of recycling/composting in different parts of the state.	See Recommendation 10. Costs of recyclables collection in New Castle County will be a major emphasis of the study.
8. Provide franchise capability to New Castle County and Sussex County.	Legislation to provide franchise capability to New Castle County was drafted but was not released from the Natural Resource Committee during the '02 session.
9. Collect a recycling fee from all waste haulers to support the building and operation of a MRF.	This recommendation has not been implemented.
10. Build a MRF in New Castle County, and adopt commingled curbside collection of recyclables in the more densely populated areas.	RPAC has issued a Request for Proposals for a study of the costs of collecting recyclables at the curb and of building and operating a MRF in New Castle County. Both DSWA and DNREC have committed funds to finance the study.

Appendix E: Summaries of Recycling Assistance Grants

FY 2001 Grants

Grant Recipient: City of Delaware City
407 Clinton Street
PO Box 4159
Delaware City DE 19706
302-834-5473
Contact: Paul Morrill

Grant Amount: \$18,940

Project Description: Implement multi-material curbside recycling program with the goal of enrolling 200 households. Purchase a utility trailer and modify it for use as a recycling collection trailer. Provide collection containers to subscribers. Contract site improvement work at the public works yard to accommodate storage containers provided by the DSWA. Develop a composting program to support expansion of yard waste collection. Develop educational materials to build participation and inform residents on program specifics.

Project Accomplishments: Implemented curbside recycling for 242 subscribers (42 over goal) representing a 40% participation level. Implemented a public education program developed by Wik Associates. On average, 4,000 lbs. of material is being collected monthly with no noticeable drop in recovered tonnage at the nearest 'Recycle Delaware' (RD) drop-off center. All of the RD primary materials (newspaper, clear, brown and green glass, aluminum and bi-metal cans, plastic bottles, and cardboard) are being collected curbside. The early success of the program demonstrated the need for a trailer with substantially greater capacity and over-the-road transport ability; hence, the City applied for additional grant money in FY02. The composting element is delayed pending approval to use state land.

Grant Recipient: University of Delaware
Cooperative Extension Service
531 South College Ave.
Newark DE 19717
302-831-2997
Contact: Mark J. Manno

Grant Amount: \$15,000

Project Description: Implement nationally recognized "Backyard Composting" curriculum to educate primary and middle school students on the basics of composting. The program is estimated to reach 2500 students representing 25 schools.

Project Accomplishments: The program reached 2,742 individuals (primarily students) while coming in under budget by over \$5,000. The program was enhanced with the gift of recycling games created by Dr. William Mitchell, valued at \$5,000. Responses to presentation surveys were overwhelmingly positive. The educator, Hetty Francke, an avid composter and recognized authority, fully engaged both students and teachers.

Grant Recipient: Town of Camden
2 South Main Street
Camden, DE 19934
302-697-2299
Contact: Laura Voshell

Grant Amount: \$6,400

Project Description: Expand existing curbside collection program by adding a new material and increasing newspaper collection.

Project Accomplishments: The original scope of work was amended to make the expanded collection program more efficient and compatible with the DSWA collection infrastructure. Plans were made to collect plastic bottles and aluminum and bimetal cans, in addition to the newspaper already being collected, using a new recycling trailer financed through a FY 02 grant. Recycling collection bins and material handling equipment were purchased, and the expanded program was scheduled to start in fall of 2002. (See summary of Fall 2002 Grants for updated status.)

Grant Recipient: City of New Castle **Grant Amount:** \$3,750.00
220 Delaware Street
New Castle DE 19720
302-322-9812
Contact: Robert W. Martin

Project Description: Recycling education program, via utility bill inserts, on the benefits of recycling and collection locations. Purchase and installation (in Battery Park) of public-area recycling containers.

Project Accomplishments: Public area recycling containers were installed at the northern and southern ends of Battery Park, providing park users with the opportunity to recycle beverage cans and bottles. A flyer announcing the program and reinforcing recycling benefits was included in the June utility bills.

Grant Recipient: Town of Newport **Grant Amount:** \$1,150
226 North James Street
Newport DE 19804
302-994-6403
Contact: Mark D'Onofrio

Project Description: Encourage increased participation in the 'Recycle Delaware' drop-off program by offering collection bins to residents. A total of 200 bins will be available for distribution. Also distribute educational material on recycling, reuse, and waste reduction.

Project Accomplishments: A newsletter was prepared and mailed to residents resulting in the distribution of 40 bins. Additional effort is required to promote the availability of bins in conjunction with a more focused public education campaign communicating the benefits of recycling to both the environment and the community. Newport officials are working to fully complete the project.

Grant Recipient: The Town of Laurel **Grant Amount:** \$750
PO Box 210
Laurel DE 19956
302-875-2277
Contact: Jamie T. Smith

Project Description: Using artwork created by local students, produce and distribute to town residents a brochure designed to increase awareness of the benefits of recycling, locations of drop-off centers, and materials accepted.

Project Accomplishments: A brochure was developed using artwork selected from drawings submitted by more than 600 students. To date, 600 brochures incorporating recycling theme art compositions, information on the benefits of recycling, and the location of the town's 'Recycle Delaware' center have been distributed to town residents.

FY 2002 Grants

Grant Recipient: Limestone Hills, Middle Run Crossing,
Hockessin Chase, and Westridge Maintenance Corporations
in partnership with:

Grant Amount: \$12,348

Boylan, Cayhill Consulting, Inc. (BCC)
2035 Sunset Lake Road
Building A, Suite 2
Newark DE 19702
302-731-7710
Contact: Jim Weldon

Project Description: Establish a subscription curbside recyclable collection program in four communities with approximately 2,200 total residences. Grant funds will be used to purchase recycling collection bins with a goal of enrolling 30% of the communities' households in a single-subscription, voluntary curbside recycling service to be offered by Independent Disposal Services (IDS) under the direction of BCC.

Project Accomplishments: The opportunity to subscribe to a curbside recycling service was announced to residents in the targeted communities through community newsletters and outreach meetings. The private partner, IDS, proposed to collect newspaper, clear glass, and aluminum and steel cans. Feedback at a community outreach meeting revealed that more homeowners would subscribe if plastic containers and green and brown glass were added to the collection mix. IDS originally planned to offer the service by January 2003; however, due to exigent business demands they are unable to meet this target, and full implementation of the project is uncertain. DNREC is working with the grantees to get assurances that the terms of the grant contract will be accomplished, in either its original or an amended form, within the grant period, and in a manner acceptable to the DNREC and the RPAC.

Grant Recipient: Town of Camden
2 South Main Street
Camden DE 19934
302-697-2299
Contact: Laura Voshell

Grant Amount: \$10,032

Project Description: Expand the town's curbside recycling service through the purchase of a compartmentalized recycling collection trailer to allow efficient collection and handling of newspaper, aluminum cans, bi-metal cans, and plastic bottles with a goal of increasing the number of participating households to 500 from the current level of 300. Develop and implement a public education and outreach program to inform residents about the benefits of recycling and to encourage participation.

Project Accomplishments: The town announced the program expansion in the town newsletter. Residents enrolled in the service at the Town Hall, where they received two recycling collection bins and instructions on materials accepted, preparation requirements, and set out dates.

The recycling collection trailer was placed into service in early July. Two glitches became apparent. First, the tractor could not clear the top of the container used to store the plastic bottles. This problem was solved by construction of a ramp. Second, the tractor was not able to lift the trailer's newspaper bin after completing the collection round. Pending a permanent solution, the newspaper is being collected in the town's pick up truck. At current collection volume, this does not pose an immediate problem; however, it may in the future.

During the first four months of the grant (June - September 2002) town officials estimate that 78 new subscribers arranged for service, bringing total estimated participation to 378 households. According to estimates provided by the DSWA, about 8,000 lbs of targeted materials were collected for the period July - September 2002.

Recognizing the need to enhance its public education efforts, the town has contacted a marketing firm with experience in community recycling outreach program development. The town is also taking steps to develop a recycling committee comprised of citizen volunteers in conjunction with the marketing effort.

Grant Recipient: City of Delaware City
407 Clinton Street
PO Box 4159
Delaware City DE 19706
302-834-5473
Contact: Paul Morrill

Grant Amount: \$18,099

Project Description: Implement the second phase of the city's curbside recycling program. Purchase a recycling collection trailer to streamline the collection and handling of recyclables to support program expansion with a goal of enrolling an additional 200 subscribers, bringing the total participation rate to 65% of the town's population.

Project Accomplishments: A new trailer especially designed for collecting recyclables was purchased with grant money and entered into service in August. The trailer is achieving its intended objectives of reducing the time required to collect and transport the recyclables and eliminating double handling. The city is now transporting all collected materials except cardboard to the DSWA processing plant at Pigeon Point. The recyclables collection has been outsourced to a private contractor, reducing costs and improving operating efficiencies.

For the grant reporting period June-September 2002, the following information was reported:

- 255 household subscribers at the end of the reporting period (16 added during the reporting period) representing 40% of all households.
- 1,138 lbs (10.57 tons) of targeted materials collected.
- Program operating cost (July-September) of \$1,904.97.
- A cost of \$1.93/month per participating household for weekly curbside recyclables collection, based on the average number of subscribers (247) for the reporting period.

The town is continuing its public education and community outreach program.

Two significant findings are important to note. First, the average weight of recyclables collected on a monthly basis has steadily increased from about 4,000 lbs/month to about 5,250 lbs/month. While it is not possible to attribute this increase to any one factor, household participation (6.7 % increase in the reporting period) alone cannot explain the increase in material capture (31%). Clearly, other factors are influencing the amount of material being collected. Second, the DSWA reports that they have not observed any decrease in the volume of recyclables being deposited at the 'RECYCLE DELAWARE' center in closest proximity to the town. This suggests that the recyclables being captured by the city's curbside program represent an increase in waste diversion and not merely a shift in the point of collection.

Grant Recipient: Fenwick Island Lions Foundation, Inc.
P.O. Box 732
Bethany Beach DE 19930
302-436-2560
Contact: Martin I. Cook

Grant Amount: \$1,000

Project Description: Construct aluminum can collection cages to be provided to other Lions Clubs to replicate the Fenwick Island club's successful aluminum can recycling and college scholarship program.

Project Accomplishments: Implementation of the grant activities is being delayed due to unforeseen family medical needs. The Lions Club Environmental Committee will purchase materials to construct the cages and perform outreach to other Lions Clubs in their zone. In addition, the organization would like to revisit the issue of setting up aluminum can recycling containers on the Fenwick Island beach.

Grant Recipient: Praise Assembly, Inc.
P.O. Box 9025
Newark DE 19714
302-731-9176 x23
Contact: Dwight Walters

Grant Amount: \$ 2993.05

Project Description: Expand and improve the church's existing aluminum can recycling initiative and offer a convenient recycling drop-off location for church attendees and residents of surrounding communities; develop flyers promoting the recycling program and distribute to church attendees and the surrounding communities; educate members of the Royal Rangers Boys Club about the environment and the benefits of recycling.

Project Accomplishments: Prior to the grant, the Praise Assembly Royal Rangers Boys' Club collected only aluminum cans from church members for sale to a local recycling business, using the revenue to support Royal Rangers program activities. The bin being used to store the cans was deteriorating and also was too small to allow for expansion of the program. Grant money was used to purchase a larger, enclosed trailer, enabling the group to collect more cans and to expand its collection to include old newspapers. In addition to providing revenue to the Royal Rangers, the program is used as a tool to teach the children the environmental benefits of recycling and to reinforce resource conservation and environmental preservation principles.

For the reporting period June – September 2002, the following activities were reported:

- Collection of 500 lbs of newspapers, taken to a local 'RECYCLE DELAWARE' center.
- Increased capture of aluminum (420 lbs. this year vs. 275 lbs. during the same period last year).
- Outreach to church attendees through church bulletins and group presentations.
- Educational presentations and distribution of flyers to the Royal Rangers.

Grant Recipient: City of Rehoboth Beach
229 Rehoboth Avenue
Rehoboth Beach DE 19971
302-227-6181
Contact: Gregory Ferrese

Grant Amount: \$9,788

Project Description: Implement a recycling program on the beach targeting aluminum cans and plastic bottles. Establish 125 collection centers, each consisting of one refuse container, one barrel for aluminum, and one barrel for plastic bottles. Label all containers to clearly communicate their purpose; purchase a trailer and two large hoppers for collection and handling of recyclable materials; and promote beach user participation with advertising boats.

Project Accomplishments: A Delaware-based industrial drum reconditioner provided 250 32-gallon containers with lids for the recyclables (125 for aluminum cans; 125 for plastic bottles) and 125 55-gallon containers for trash (purchased with city funds). City workers affixed decals to the recycling containers and placed them at 125 locations along the City's one and one-half mile length of beach. The City purchased a utility trailer and two large hoppers capable of being lifted and dumped into the DSWA storage containers. Receiving wide press coverage, the 'Beach Recycling Program' kicked off on Memorial Day weekend, 2002. Initially, the City's beach maintenance staff emptied the recycling containers every other day; the frequency increased to every day during the peak season to keep up with demand and maintain high beach cleanliness standards. A local recycling processor purchases the aluminum cans, and DSWA collects and processes the plastic bottles.

For the reporting period June - September 2002, City officials report the following achievements:

- 8,840 lbs of aluminum cans collected and sold to a recycler. The City received \$2,102 in revenue from the sale of the aluminum cans.
- Approximately 5,000 lbs of plastic bottles collected.
- A noticeably cleaner beach, according to City officials.
- Total reported operating expenses of \$1,454.95.

Because of the early success of the program, renting advertising time on advertising boats was deemed unnecessary. Consequently, the state's share of total project expenses was reduced to \$8,305 (15% below budget). Building on the success of the program, City officials plan to apply for a grant in FY03 to expand recycling to the boardwalk.

Grant Recipient: The Warrington Foundation
4701 Cliff's City Road
Chestertown MD 21620
410-778-7676
Contact: Herb Brodie

Grant Amount: \$19,000

In partnership with: The Mid-Atlantic Composting Assoc. (MACA)

Project Description: Expand an ongoing educational program that teaches consumers that composting is an environmentally preferred method of treating urban organic waste. Funding will support the following activities: 1) Provide backyard compost bins and instructions to Delaware residents; 2) purchase and distribute educational materials instructing on back yard composting techniques and compost uses; 3) outreach to landscapers with compost information and compost spreading demonstrations; 4) refurbish the MACA's compost educational display; and 5) conduct a survey of Delaware municipalities to determine current yard waste management/composting practices, develop recommendations aimed at improving composting, and provide a report to municipalities and the DNREC.

Project Accomplishments: For the reporting period June - September 2002 the grant recipients conducted the following activities:

- Public Outreach Activities
 - Participated in Old Dover Days and the University of Delaware's Ag Day event.
- Compost Informational Materials
 - Produced a MACA informational brochure for distribution at public events.
 - Purchased and distributed a guide to backyard composting methods. The manual is included in the sale of compost bins and made available to other individuals who express interest in learning more about composting methods.
- Backyard Compost Bin Distribution
 - During the reporting period, the group sold 168 compost bins. MACA has changed vendors, having found one that is selling a comparable product at lower cost than the original vendor. This enables the group to sell the bins at cost. Under these conditions, compost bin sales are self-funded and therefore sustainable after the term of the grant is expired.
 - The names and addresses of compost bin purchasers are being recorded to allow a follow-up evaluation on the use and effectiveness of the bins. Effectiveness of instructional methods (personal instruction at point of sale and printed material) will also be evaluated.
- Compost Educational Display Refurbishment
 - Several photos related to composting were reproduced and frame mounted to allow the educational display boards to be customized to specific audience needs.

Appendix F: Benefits of Recycling

Economic benefits

According to the Northeast Recycling Council's (NRC) 2000 report "Recycling Economic Information Study," the recycling, reuse, and re-manufacturing industries in Delaware employ approximately 2000 people, with an annual payroll of \$56 million and estimated tax revenues of almost \$10 million. These estimates demonstrate that recycling, reuse, and re-manufacturing make a positive contribution to Delaware's economy. On average, jobs in the recycling and reuse industry pay wages that exceed the national average wage (Beck, p. ES-8). In addition, despite the fact that the quantity of material discarded exceeds the quantity recycled, the recycling and reuse industry accounts for more jobs and a significantly greater payroll than the waste management industry. The NRC report attributes this to the value-adding nature of recycling and reuse jobs.

Energy savings

Making products from recycled materials typically requires less energy than making the same products from virgin materials. The most dramatic example of energy savings from recycling is the savings realized by making aluminum cans from used cans, which requires only 5% as much energy as that required to make cans from virgin aluminum ore. The energy saved by recycling most other materials (including plastic, steel, paper, and glass), although less than that saved by recycling aluminum, is nonetheless significant.

Conservation of non-renewable sources of energy and raw materials

Many of the resources that contribute to our high standard of living – such as oil, natural gas, metal ores, and minerals – are present in finite supply and, for all practical purposes, will never renew themselves. By recycling more, we can extend the useful life of these resources while maintaining or even improving our quality of life.

Reduced emission of greenhouse gases

Since most of our energy is generated by the burning of fossil fuels, which produces greenhouse gases, anything that we do to reduce our need for energy will reduce the emission of those gases. In addition, reducing the amount of material that we dispose of in landfills will reduce the generation of methane, a gas that is produced when organic material decays in an anaerobic environment (such as in a landfill) and is a much more potent greenhouse gas than carbon dioxide.

Reduced environmental damage

To the extent that recycled materials replace raw materials as feedstocks in the manufacture of new products, recycling can reduce the need for such activities as strip mining, clear cutting, drilling for oil, and other activities that cause significant degradation of the environment. Environmental damage attributable to the extraction and processing of raw materials also includes emissions of chemicals that may be carcinogenic or toxic or may contribute to acid rain.

Increased landfill life

Everything that is diverted from our landfills will help to extend the useful life of our existing landfills. The more waste we put into our landfills, the sooner we will fill up our existing landfill space and find it necessary to either increase the height of our current landfills (as is now being considered at the Cherry Island landfill) or build new landfills at other locations. All of our present-day landfills, with all of their potential environmental problems, will be a part of the legacy we leave to future generations.

Support of a more sustainable lifestyle

The aforementioned benefits of recycling add up to both a more sustainable way of living and an improvement in the quality of life. Using recycled materials instead of virgin materials will ensure that the raw materials so crucial to our current way of life will still be available for our children and grandchildren. Recycling will contribute to cleaner air and water, benefiting all living things on the earth. Reducing our need for coal, metals, and minerals will lessen the damage caused by mining these materials, leaving the land available for environmentally preferable uses.

Appendix G: Request for Proposals

DELAWARE RECYCLING PUBLIC ADVISORY COUNCIL

Request for Proposal to
Evaluate enhanced Residential Waste and Recyclables Collection and
Residential Recyclables Processing
for New Castle County, Delaware

I. **INTRODUCTION**

This Request for Proposals (RFP) is being issued by the Delaware Department of Natural Resources and Environmental Control (DNREC) on behalf of the Governor's Recycling Public Advisory Council (RPAC). Under Executive Order No. 82, issued by Governor Thomas R. Carper, the State of Delaware has established a recycling diversion goal of 30 percent from the Residential Solid Waste (RSW) stream. Currently the primary means to recycle RSW is through a voluntary drop off program and very limited curbside recycling opportunities available in some small communities. The RSW diversion rate is estimated at 12.7 percent. In order to achieve the 30 percent diversion goal residential recyclables diversion will have to be expanded. This Request for Proposal is specific to an evaluation of curbside collection of RSW and residential recyclables and construction and operation of a Materials Recovery Facility (MRF) in New Castle County (NCC), Delaware.

II. **DEFINITIONS**

"**AGREEMENT**" shall mean the final contract as entered into between RPAC and the selected PROPOSER.

"**CONTRACTOR**" shall mean the firm selected to perform the Work under this RFP.

"**DNREC**" shall mean the Delaware Department of Natural Resources and Environmental Control.

"**DSWA**" shall mean the Delaware Solid Waste Authority.

"**INTERMEDIATE PROCESSING FACILITY (IPF)**" shall mean DSWA's facility located at Pigeon Point near Wilmington, DE for processing source separated recyclable materials.

"**MATERIAL RECOVERY FACILITY (MRF)**" means a facility at which materials, other than source separated materials, are recovered from solid waste for recycling or for use as an energy source.

"**PROPOSER**" shall mean any firm submitting a proposal in response to this RFP.

"**RECYCLABLES**" shall mean the portion of the waste stream which can be separated from the waste stream and managed through the process of recycling.

"RESIDENTIAL/HOUSEHOLD SOLID WASTE" (RSW) shall mean all wastes, including any of a wide variety of discarded solid materials and some containerized liquids, which are discarded in homes. Solid wastes generally consist of consumer goods wastes including newspaper, cardboard, food and beverage cans/containers, plastics, glass and food discards, garden and lawn clippings.

"RFP" shall mean this Request for Proposal.

"RPAC" shall mean the Recycling Public Advisory Council

"WORK" shall mean any and all obligations, duties, and responsibilities necessary to the successful completion of the project assigned to or undertaken by the CONTRACTOR under the AGREEMENT including all labor, materials, equipment, and other incidentals and the furnishing thereof.

III. **PREPARATION, SUBMISSION, AND CONSIDERATION OF PROPOSALS**

Every proposal prepared in response to this RFP shall be prepared at the sole cost and expense of the proposer and shall be prepared by the proposer with the express understanding that any and all claims to reimbursement for the cost and expense of its preparation are waived. Fifteen (15) copies of the proposal shall be submitted to DNREC for its review in response to this RFP. **Proposals must be received in their entirety by DNREC no later than 3:00 p.m. February 21, 2003, at the following address:**

ATTN: James Short
Department of Natural Resources and Environmental Control
Solid and Hazardous Waste Management Branch
89 Kings Highway
Dover, DE 19901

A Pre-Proposal Meeting is scheduled for 10:00 am on January 8, 2003, at DNREC's New Castle Office located on Lukens Drive.

RPAC reserves and holds the following rights and options with respect to each and every proposal submitted in response to this RFP, any such right and/or option to be exercised is at the sole discretion of RPAC:

1. To select and enter into an agreement with the firm whose proposal best satisfies the Work requirements and interests of RPAC.
2. To reject any and all proposals and for any reason whatsoever.
3. To supplement, amend or otherwise modify this RFP, and to cancel this RFP with or without the substitution of another Request for Proposals.
4. To issue additional and subsequent solicitations for statements or for qualifications, and to conduct further investigations with respect to the qualifications of each firm submitting a proposal.
5. To amend or otherwise alter or modify the proposed agreement as contemplated by this RFP.

6. To negotiate with each firm for amendments or other modifications to its proposal.
7. To award the contract to the firm submitting the most responsive proposal which serves the best interest of the RPAC and the citizens of the State and not necessarily at the lowest costs.
8. RPAC may elect at its sole discretion to have the selected PROPOSER perform one or more or all of the tasks and options under Work contemplated in this RFP.

The selected PROPOSER must possess a Delaware Business License before entering into a Contract with RPAC. A Delaware Business License may be obtained from the Delaware Division of Revenue. The Delaware Division of Revenue may be contacted at (302) 577-8200 for details on obtaining a Delaware Business license.

All persons are advised that they must be duly licensed under Part III, Title 30, Delaware Code; registered as foreign corporation, if appropriate, under Subchapter XV, Title 8, Delaware Code.

If any potential PROPOSER is in doubt as to the true meaning of any part of this RFP, they may submit to the RPAC care of the DNREC a written request for an interpretation thereof. Requests for an interpretation received by DNREC less than seven (7) days prior to the proposal submission deadline will not be answered. The PROPOSER submitting the request will be responsible for its prompt and actual delivery. Any interpretation of the request will be made only by an addendum duly issued. A copy of such an addendum shall be mailed or delivered to each person receiving the RFP. The RPAC will not be responsible for any other explanations or interpretations of such requests that anyone presumes to make on behalf of the RPAC.

The consideration of proposals submitted in response to this RFP and any selection of a proposal shall be based on several criteria including but not limited to:

1. Responsiveness and completeness of the proposal with respect to this RFP.
2. Qualifications including: Technical, Management, and Financial.
3. Experience with similar projects.
4. Availability of staff and resources required for this project.
5. Responsiveness to questions at interview (if selected).
6. References

The RPAC's contact concerning the contents of this RFP and the preparation and submission of proposals is:

James Short
Department of Natural Resources and Environmental Control
Solid and Hazardous Waste Management Branch
89 Kings Highway
Dover, DE 19901

IV. **SCOPE OF WORK**

The intent of this Request for Proposal is to implement a two-part analysis of recycling opportunities in NCC. *Part I.RSW and Recyclables Collection* is to determine the cost of collecting household waste and segregated recyclables curbside using various collection systems. The purpose of *Part II. Cost of building and operating a MRF in NCC, DE* is to

determine the cost for constructing and operating a MRF at various capacities with single or dual stream processing capability.

While the RPAC desires to have both parts of the Scope of Work completed, Part I must be completed before Part II. The proposed costs to conduct Part I and Part II of the Scope of Work must be provided separately in response to this RFP. All Proposers are required to submit a proposal for the Part I Work to be eligible for further consideration under this RFP. The submittal of a proposal for the Part II Work is optional, but highly preferred to be fully responsive to this RFP.

A. Basic Information

The following information is for use by the consultant in conjunction with their own information as deemed appropriate to address the Scope of Work.

- (1) According to the 2000 census NCC has a population of about 500,000 residents living in 188,935 dwelling units; 140,318 households were in the unincorporated areas of NCC, and 48,617 were in the incorporated areas. There are approximately 145,240 occupied single family households, duplexes or townhouses (collectively referred to as single family) representing a population of approximately 400,477 residents and approximately 43,695 multi-family units representing approximately 82,260 residents. NCC is in the northern most part of the State of Delaware and consists of approximately 437 square miles.

The curbside program will be assumed to collect the following materials:

- a. ONP (old newspaper)
- b. OCC (corrugated cardboard)
- c. Mixed paper
- d. Narrow neck plastic bottles
- e. Mixed cans
- f. Mixed glass

Based on reports developed by the Delaware Solid Waste Authority (DSWA) for 2000, the estimated quantities of these residential recyclables available for curbside collection are as follows:

Table 1. Recyclable Generation Rates

Recyclable Material	Statewide Tons (DE)	Unincorporated NCC ⁽¹⁾	Incorporated NCC ⁽²⁾	Total Tons NCC
ONP	34210	16079	5474	21553
OCC	9800	4606	1568	6174
Mixed paper	27260	12812	4361	17173
Plastics	3700	1739	592	2331
Cans	9100	4277	1456	5733
Glass	21580	10142	3453	13595
Total Tons	105650	49655	16904	66559

- (1) 47% of Delaware households
- (2) 16% of Delaware households

- (2) Assume that the quantity of individual recyclables recovered per household will be comparable to the recovery rate in similar collection programs with similar demographics, i.e. percent placed at the curb. Table 1 may be used as a guideline in determining the percent of materials.
- (3) To obtain information for the City of Newark and City of Wilmington municipal collection programs contact:
Newark – Mr. Richard LaPointe, Director of Public Works – 302-366-7040.
Wilmington – Mr. Merrit Tappan, Director of Public Works – 302-576-3076.
- (4) Assume all recyclables will go to a MRF and all non-recyclables requiring disposal will go to a landfill operated by the DSWA.
- (5) Currently, residents voluntarily recycle materials through the RECYCLE DELAWARE program. There are 75 RECYCLE DELAWARE drop off centers collecting approximately 12,500 tons of recyclables in NCC.

B. Part I. RSW and Recyclables Collection in NCC

The consultant shall evaluate at a minimum the following scenarios and any other variation deemed appropriate to the evaluation.

Evaluate the existing collection methods employed in both the incorporated and unincorporated areas of NCC, and make recommendations on how those methods should be modified to facilitate more efficient collection of waste and recyclables. This evaluation needs to provide recommendations for both single and dual stream collection of recyclables. For both systems assume haulers can deposit collected materials in the vicinity of Wilmington, DE. In both collection systems assume the waste container is sized to contain waste and encourage separation of recyclables and that the recycling container(s) are properly sized to easily contain the quantity of recyclables generated by a typical household during the collection period.

Using the information provided in Table 1 calculate:

- tons of recyclables that will potentially be collected,
- cost per ton to collect the recyclables,
- the cost per household per month to collect the recyclables,
- the economic benefit added to the hauling industry resulting from the business added by the need to pick up curbside recyclables, including avoided tip fees and,
- the impact on area wide emission from motor vehicles used for collecting recyclables and solid waste
- the cost per ton for RSW collection in both the incorporated and unincorporated areas of NCC under the following conditions:

First Condition: Assume the current open RSW collection system currently in place remains the same but with the RSW collector (municipal and private) required to offer recyclables collection service in both the incorporated and unincorporated areas of NCC. Evaluate participation on the part of homeowners under mandatory and voluntary circumstances. Note - “Open RSW Collection System” is defined as: The RSW collection system as it currently exists wherein municipalities (incorporated areas) either collect their own waste or contract to have it collected and in unincorporated areas each household is responsible for contracting its own waste collection.

Second Condition: For the unincorporated areas assume that the RSW collectors are under contract (franchised) by the county government. Incorporated areas control their own RSW collection and recycling service. Recycling service and RSW collection is mandatory for the RSW collector under contract and municipalities. Evaluate participation on the part of homeowners under mandatory and voluntary circumstances.

Third Condition: RSW collection remains the open competitive system that is currently in place but the collection of recyclables is managed under contract, in other words only recycling is franchised. Evaluate participation on the part of homeowners under mandatory and voluntary circumstances.

After evaluation of the information collected, provide a recommendation regarding the most efficient method for curbside collection of recyclables in NCC. Efficient means maximum quantity of recyclables collected as well as the lowest cost of collection and minimization of vehicular emissions. In addition, an estimate shall be made of the quantity of yard waste potentially collectible at the curbside.

C. Part II. Cost of building and operating a MRF in NCC, DE

The Contractor shall evaluate, at a minimum, the following scenarios and any other variations deemed appropriate to the evaluation.

Assume a combined collection of recyclable materials from the incorporated and unincorporated areas of NCC of 15,000 tons (Case 1), 25,000 tons (Case 2) and 40,000 tons (Case 3) annually. (It is recognized that these numbers may require some adjustment based on estimates in the quantity of material collected.) Assume the residual rates of the dual stream and single stream MRF to be typical of that experienced by similar facilities.

Using the recycled material generation rates from Table 1 and the calculated % of each material contributing to the total (#3 from basic information) determine the following:

1. The cost to build and operate a new MRF to process the materials in Cases 1, 2, and 3 for a single stream and dual stream (fibers and non-fibers) collection system. Make separate calculations for the MRF operated by a private firm and one operated by the DSWA. In the first calculation assume the MRF will be constructed, owned and operated by a private company using their own money and in the second calculation assume the MRF will be constructed, owned and operated by DSWA.
2. The cost to expand and operate the DSWA's Intermediate Processing Facility (IPF) located at Pigeon Point to process the materials in Cases 1, 2, and 3 for a single stream and dual stream collection system. Assume the funds for the expansion will be provided by the DSWA and the MRF will be operated by the DSWA.
3. The cost of using the DSWA's Intermediate Processing Facility as a transfer station and transporting the recyclables to an out of state MRF. (Example: Philadelphia, Chester, Baltimore)
4. For 1 and 2 itemize the cost of processing the recyclables on a per ton basis and the cost per household per month for the processing of the recyclables with and without sales offset.
5. Calculate the:
 - a. estimated range of revenue that would be generated on an annual basis as a result of the sale of the recyclable materials collected over the life of the MRF (20 years).

- b. landfill space that will be saved as a result of diverting these recyclable materials from the landfill over the life of the MRF, the dollar value of the space saved and the loss of landfill revenue as a result of the diverted tonnage.
- c. economic advantages and disadvantages to the State of DE and NCC as a result of the construction of the MRF and the jobs that will be created to operate and maintain the MRF.

After evaluation of the information collected, provide a recommendation regarding the best course of action to be taken to construct a MRF to serve NCC. This recommendation must address construction, operation and marketing.

D. Schedule

All work shall be completed within 60 days of the Contractor's Notice to Proceed under the Agreement. The Agreement shall be a standard form typically used by DNREC.

V. FORM OF PROPOSAL

Fifteen (15) copies of the proposal shall be submitted to the RPAC for its review in response to this RFP. The proposal must include the following:

1. Completed proposal Form A
2. A summary containing:
 - a. Qualifications including: Technical, Management, and Financial.
 - b. Experience with similar projects.
 - c. Availability of staff and resources required for this project.

All proposals shall be valid for 120 days from the submittal date.

PROPOSAL FORM A

I. The Contractor shall complete the Work under Part I for the lump sum amount of \$ _____
(in numbers)

(In words)

II. The Contractor shall complete the Work under Part II for the lump sum amount of \$ _____
(in numbers)

(in words)

III. The Contractor's aggregate amount for completing the Work under Part I and Part II is \$ _____
(in numbers)

(in words)

Signature (Principal of Company)

Date

Company

References

Citizens' Work Group on Recycling, "A Course of Action to Increase Recycling in the State of Delaware," 2000.

Eureka Recycling, "A Comparative Analysis of Applied Recycling Collection Methods in Saint Paul," 2002.

Franklin Associates, "Assessment of Delaware Solid Waste Discards in 2000 and the Potential for Recycling of Materials," Study commissioned by DSWA, 2002.

Franklin Associates, "Assessment of Solid Waste Discards in Delaware and the Potential for Recycling of Materials," Study commissioned by DSWA, 1999.

Northeast Recycling Council, "U.S. Recycling Economic Information Study," February 2000.

Recycling Public Advisory Council, "The First Annual Report of the Recycling Public Advisory Council," 2002.

US EPA, "Cutting the Waste Stream in Half," 1999.

US EPA, "Municipal Solid Waste in the United States: 2000 Facts and Figures," 2002.