



# **The Eighth Annual Report of the Recycling Public Advisory Council**



**Presented to the  
Honorable Jack Markell, Governor of Delaware  
and the  
145th Delaware General Assembly**

**November 2009**





# The Eighth Annual Report of the Recycling Public Advisory Council

November 2009

**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:**

Bill Miller  
Division of Air and Waste Management  
Department of Natural Resources and Environmental Control  
89 Kings Highway  
Dover, DE 19901  
Phone: (302) 739-9403  
Fax: (302) 739-5060  
e-mail: [bill.miller@state.de.us](mailto:bill.miller@state.de.us)  
[www.awm.delaware.gov/info/pages/RPAC.aspx](http://www.awm.delaware.gov/info/pages/RPAC.aspx)

**This entire document is printed on paper made from 100% post-consumer recycled fiber**



**Document #40-09-03/09/09/05**

---

---

## *Executive Summary*

---

---

This report covers the Recycling Public Advisory Council (RPAC) activities for 2009 to date and recycling data for 2008. The RPAC focused its efforts on increasing recycling activities in Delaware. Specific actions other than the discussions and presentations held during monthly public meetings included:

- speaking against the House Bill 201, which would have repealed the Beverage Container Law;
- continuing the Recycling Measurement and Methodology Report for the State of Delaware with input and agreement among the Delaware Solid Waste Authority (DSWA), Department of Natural Resources and Environmental Control (DNREC), and the RPAC – included in this report;
- dialogue with waste haulers (Maryland Delaware Solid Waste Association) regarding their draft recycling legislation;
- keeping abreast of the status of recycling markets; and
- providing input into a new Executive Order.

### **Recycling Legislation**

There was no comprehensive recycling legislation active in 2009. The RPAC did speak against House Bill 201, which would have repealed the Beverage Container Law (a.k.a. Bottle Bill) because House Bill 201 would not have enhanced recycling in Delaware.

### **Recycling Assistance Grant Program**

There was no grant program announced in 2009 due to budget shortfalls. Furthermore, DNREC does not expect to be allocated dedicated funding for the Recycling Assistance Grant Program in the near future. The nearly completed FY2009 program funded eleven projects among eight schools, a civic association, a museum, and a little league.

### **Recycling Diversion**

As directed by Executive Order 90, the RPAC developed an objective, scientific, and auditable methodology for calculating recycling rates in Delaware that is consistent with the U.S. Environmental Protection Agency's guidelines. A summary of the recycling rates produced using the aforementioned methodology is shown in Table 4.3 below:

<b>Table 4.3 Recycling Rate Summary for Calendar Year 2006, 2007 and 2008</b>									
	<b>Residential</b>			<b>Commercial</b>			<b>Total</b>		
	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>
<b>Diverted Recyclables (tons)</b>	122,448	206,856	169,605	125,962	116,540	148,427	248,410	323,396	318,032
<b>Landfilled MSW (tons)</b>	419,602	405,495	377,632	403,878	389,490	363,511	823,479	794,984	741,143
<b>Total Municipal Solid Waste = Diverted Recyclables + Landfilled MSW</b>	542,050	612,351	547,237	529,840	506,030	511,938	1,071,889	1,118,380	1,059,175
<b>Percent Diverted Recyclables</b>	22.6%	33.8%	31.0%	23.8%	23.0%	29.0%	23.2%	28.9%	30.0%

Note: Per DSM's Calendar Year 2008 "Assessment of Municipal Solid Waste Recycling" report (see Appendix I) "Tree & Branch Waste" for calendar year 2007 was over reported by 53,670 tons due to 24,000 tons that should have been classified as C&D and 29,670 tons of tree waste that was over reported by a composting company. As a result of this over reporting, the 2007 diversion rate has been recalculated at 28.9% as opposed to the previously reported 32.2%. Also note that the 53,670 tons which were over reported was split evenly between residential and commercial categories resulting in each diverted recyclables amount being reduced by 26,835 tons as compared with the amount of material reported in the RPAC's 2007 report.

As indicated in the above Note the "Tree and Branch Waste" was over reported in 2007 by 53,670 tons. This has required our first "Correction of Historical Data" and as a result the 2007 diversion rate has been revised downward from 32.2 percent to 28.9 percent.

Taking the 2007 data correction into consideration, the reported recyclable material decreased by 5,364 tons or about 1.7 percent from CY 2007 to CY 2008. However, even though there was a decrease in the recycling tonnage, there was an even larger decrease in the tonnage of waste landfilled. Due to the impact the reduced disposal rate has on the diversion rate calculation denominator (Diversion rate = Recyclables/ MSW + Recyclables) the 2008 diversion rate of 30 percent is actually 1.1 percent higher than the corrected 2007 diversion rate of 28.9 percent.

Both the recycling and disposal tonnage decreases can be directly related to the current state of the economy. There are simply fewer goods being purchased and therefore fewer items available to recycle and dispose. While the declining disposal tonnage is in small part due to an increase in the diversion rate, by far the majority of this decrease in disposal is simply a function of less waste being produced due to a sluggish economy.

By the end of 2008, nearly 82,000 households or about 25% of an estimated 322,000 Delaware households had curbside recycling service in Delaware. While we are making progress, there will need to be a substantial increase in both residential and commercial recycling rates to achieve a 51 percent diversion goal by 2015.

## **Recommendations**

The RPAC's recommendations to Governor Markell and the General Assembly for increasing the recyclables diversion rate are as follows:

1. Enact comprehensive, statewide recycling legislation to increase diversion and improve efficiency.
2. Implement a comprehensive recycling program for state offices and schools.
3. Expand yard waste diversion statewide.
4. Enact legislation to establish a funding source, consistent with Recommendation 1 above, to:
  - establish a permanent, comprehensive recycling grants program,
  - maintain community yard waste demonstration sites, and
  - continue the recycling Measurement and Methodology Report annually.
5. Enact legislation to establish a reporting requirement for waste diversion and recycling activities.

---

---

## *Table of Contents*

---

---

<b>Executive Summary</b>	i
<b>Table of Contents</b>	iv
<b>1.0 Purpose</b>	1
<b>2.0 Introduction</b>	2
<b>Benefits of Recycling</b>	
<b>Recent Recycling Efforts in Delaware</b>	
<b>3.0 RPAC Activities</b>	4
<b>4.0 Measurement and Methodology Report (CY2008)</b>	6
<b>5.0 Recycling Assistance Grant Program</b>	10
<b>6.0 DNREC Activities</b>	12
<b>7.0 DSWA Activities</b>	15
<b>8.0 Recommendations</b>	18
<b>Status of Previous Recommendations</b>	
<b>Appendices</b>	
A Executive Order Number 90	22
B Recycling Public Advisory Council Members	25
C Annual Reporting Date Change Letter	26
D Summary of Recycling Assistance Grant Projects	28
E Recycling Measurement Data	32
F DSWA Measurement Report	37
G DSM Measurement Report	40
H Background of Recycling Efforts in Delaware	45
I Beverage Container Law Letter	49

---

---

## *1.0 Purpose*

---

---

This is the Eighth Annual Report of the Recycling Public Advisory Council (RPAC). The purpose of the report is to fulfill requirements of Executive Order No. 90, which directs the RPAC to prepare an annual report addressing the following:

1. the status of attainment of the 51% municipal solid waste recycling goal;
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 51% recycling goal;
4. an objective, auditable accounting of recycling rates for total solid waste, municipal solid waste, and residential solid waste; and
5. such other recommendations as the RPAC shall deem appropriate.

Executive Order No. 90, issued by then Governor Ruth Ann Minner in September 2006, is attached to this report as Appendix A. It supersedes Executive Order 82 that previously established the RPAC. A list of the current RPAC members can be found in Appendix B.

In February 2008, the RPAC voted to shift the deadline for its Annual Reports to November 1<sup>st</sup> of each year (Appendix C). This change from March 1<sup>st</sup> will allow for more suitable timing to process data and synchronization of the Annual Report with the sub-requirement to account recycling rates.



---

---

## 2.0 *Introduction*

---

---

### ***2.1 Benefits of Recycling***

Many people recycle simply because they believe that “it is the right thing to do”, because they don’t believe in being wasteful, or because they want to preserve our environment for the benefit of future generations. There are many benefits of recycling. Some of these benefits are listed below:

- **Provides over 10 times more jobs than landfilling**
- **Extends the useful life of municipal landfills**
- **Reduces emissions of greenhouse gases**
- **Saves energy**
- **Conserves natural resources**
- **Reduces environmental damage from industrial, residential, and commercial waste**
- **Teaches environmental stewardship to individuals**

For further detail and supporting documentation please reference *The Sixth Annual Report of the Recycling Public Advisory Council*, visit the RPAC website, or contact the Division of Air and Waste Management.

### ***2.2 Recent Recycling Efforts in Delaware***

The Cherry Island Landfill permit was renewed in 2006 with language that required the DSWA to ban yard waste from entering the landfill no later than January 1, 2007. After dozens of community meetings, a legislatively mandated delay in the ban, and the opening of three community yard waste demonstration sites, DNREC and the DSWA began enforcement of the ban on January 24, 2008.

House Bill 159 (HB 159) was introduced in 2007. In May of 2008, HB 159 passed in the House of Representatives but was defeated in the Senate in June of 2008. HB 159 would have encouraged recycling via a comprehensive recycling grants program while discouraging disposal via a \$3 per ton assessment on landfilling.

Starting in January of 2008, Kent County provided recyclables collection service to residents serviced in their trash districts. The County administers a contract for trash collection in a large percentage of unincorporated areas within the County. Single-stream recyclables collection was added to the contract, increasing the number of participating households in Delaware by over 11,000.

In early 2008, the DSWA converted their recyclables collection programs to single-stream. Participants no longer need to separate traditional recyclables (i.e. glass bottles, cans, plastic bottles, mixed papers) by material type. As a result, recycling is more convenient and therefore more people will participate. Other entities, including waste haulers, have also offered single-stream recyclables collection service.

A large, new compost facility broke ground near the Port of Wilmington in May of 2009. Peninsula Compost Company, LLC is planning to open the facility by the end of 2009. It will have the capacity to process 160,000 tons of food and yard waste annually.

House Bill 201 was passed by the General Assembly on the last day of session in June of 2009. It essentially repealed the Delaware Beverage Container Law (or Bottle Bill), removing the deposit and redemption system related to beverage containers. However, Governor Markell vetoed House Bill 201 in July of 2009 on the grounds that it would have a negative impact on recycling and no viable alternative has been proposed.

In the autumn of 2009, about 82,000 households have curbside recycling service in Delaware. That is about 25% out of an estimated 322,000 occupied housing units, or 35% of an estimated 237,000 single-family homes. These curbside services were provided by the DSWA, City of Wilmington, Kent County, City of Delaware City, Town of Newport, and multiple independent haulers. It is noteworthy that an estimated 42,000 households use the DSWA's Recycle Delaware Drop-off facilities statewide, although some portion of that results from businesses. If an assumed 42,000 households were added, about 39% of Delaware households participate in recycling.

The Delaware Solid Waste Authority is currently in the process of updating its Statewide Solid Waste Management Plan. They are gathering input from public groups in addition to the normal public hearing process. A draft of the Statewide Solid Waste Management Plan is expected to be completed in December of 2009 and include of a zero waste component.

A background of previous recycling efforts in Delaware can be found in Appendix H.

---

---

## 3.0 *RPAC Activities*

---

---

During 2009, the RPAC focused its efforts on speaking against House Bill 201, continuing the Recycling Measurement and Methodology Report, maintaining awareness of recycling markets, and looking at other ways to improve recycling in Delaware.

### **3.1 *House Bill 201***

House Bill 201 was introduced in early June 2009. It would essentially repeal the Delaware Beverage Container Law (or Bottle Bill), removing the deposit and redemption system related to beverage containers. During the June RPAC meeting, the Council passed the following statement to be shared at the House Natural Resources Committee meeting on June 18:

*“RPAC recommends that any changes in the Delaware Beverage Container Law should be done only in the context of broader improvements that significantly enhance recycling in Delaware.”*

However, House Bill 201 was passed by the General Assembly on the last day of session in June of 2009. Many interest groups and individuals spoke out to Governor Markell in hopes of a veto. Chairman Vinton, with information from the RPAC’s recycling measurement efforts, helped the Governor understand how removing House Bill 201 would negatively affect waste diversion in Delaware. Later in July, Governor Markell vetoed House Bill 201 because it does not move Delaware forward. The Governor asked the DNREC and the Delaware Economic Development Office to work with groups to address a better solution when the General Assembly returns in January 2010. On November 18, 2009, the RPAC approved a letter to the Legislature in support of the Delaware Beverage Container Law (Appendix I).

### **3.2 *Measurement and Methodology***

The Measurement and Methodology Sub-Committee has developed a methodology for measuring recycling diversion rates based upon EPA guidelines. The Sub-Committee includes representation from the DSWA and DNREC and has developed an objective and auditable approach to recycling measurement and reporting consistent with EPA standards. The third Measurement and Methodology Report is included as section 4.0 of this report. Most importantly, these Measurement and Methodology Reports establish a uniformly accepted approach that will make future recycling measurements consistent and comparable.

### **3.3 *Recycling Markets***

Paul Bickhart (RPAC Member representing the recycling industry) and Michael Parkowski (DSWA) are very connected to the sale of collected recyclables. They have educated the RPAC on the status of recycling markets to better understand current industry circumstances. In late 2008, the markets for recycled commodities declined sharply in response to the national and global economies. The overall drop in manufacturing resulted in a decreased demand for raw materials including scrap recyclables. Prices of scrap recyclables went down significantly. The

DSWA began having to pay to have their scrap recyclables processed. Since the beginning of 2009 prices have very slowly started to improve. The DSWA is still paying to have some of their material recycled.

### ***3.4 Other Activities***

The RPAC is committed to helping Delaware find better waste management practices. Regular meetings provide insight into a variety of topics. Discussions and presentations at the meetings have included draft legislation of the waste haulers' association, Pay-As-You-Throw (a.k.a. SMART – Save Money And Reduce Trash), comprehensive recycling in state offices and schools, a new Executive Order, updating the Recycling Directory, and zero waste.

The Recycling Economic Information Study, which RPAC assisted, was completed in early 2009. This report is available on the Northeast Recycling Council's website, [www.nerc.org](http://www.nerc.org). An important note is that the Delaware recycling, reuse, and remanufacturing industry has a \$346 Million direct impact on our State's economy.

The RPAC participated in the House Resolution 73 Recycling Task Force which called a group to look at various aspects of recycling in Delaware. The Recycling Task Force was initiated in 2008, but recently finished its report in 2009.

A few members of the RPAC are participating in the Zero Waste Working Group. This group formed in August of 2009 in response to comments from Governor Markell and a legislative resolution developed, but not completed, during the last legislative session. The Zero Waste Group meets regularly to construct a plan for increasing Delaware's diversion rate to 85%.

## *4.0 Measurement and Methodology Report*

---

---

Under Executive Order 90, the RPAC is directed to use the U.S. Environmental Protection Agency's definitions of "recycling" and "municipal solid waste" and also to develop an "objective and auditable accounting of recycling rates for total solid waste, municipal solid waste, and residential solid waste." In response to this directive, the RPAC created the Methodology and Measurement Subcommittee comprising members of the RPAC, DSWA, and DNREC. In March of 2008, the Measurement and Methodology Subcommittee produced a report for calendar year 2006, "Recycling in Delaware: Measurement and Methodology" as an addendum to "The Sixth Annual Report of the Recycling Public Advisory Council". Most notably, this initial report and the reports that follow (CY 2007 and 2008 to date) employ a methodology which was developed via an open and transparent process, recorded in such a way that it could be easily understood by members of the general public, was fully endorsed by each organization represented on the Council, and which could be used with little change in subsequent years so that meaningful trends and comparisons could be established. For extensive information on this methodology please see the 2006 report and appendices.

### **4.1 Data Collection**

The M&M Subcommittee obtained data from two sources for CY2008.

- DSWA: The Authority collects "hard data" on diverted recyclables and also on landfilled material; They weigh all materials, recyclable and otherwise, coming into their possession and this information is reported to the RPAC. See Appendix H.
- Third Party Consultant (DSM): DSM Environmental Services, Inc. was contracted to collect data on all recyclable materials which don't enter the traditional waste stream, but which nevertheless get recycled by facilities not operated by DSWA. An example is plastic bottles collected at supermarkets and returned directly to re-processors without any involvement by DSWA. DSM uses a combination of written surveys, phone and face-to-face interviews, and physical spot inspections of vehicle loads. See Appendix I.

The RPAC has worked closely with DSM and the DSWA to insure that both the Authority's and DSM's methodology for data gathering are consistent with EPA guidelines and that there is no double counting of recycling activities. The DSWA plans to continue to fund survey work by DSM in coming years, but has transferred program management responsibility to the RPAC.

### **4.2 Diversion Rate Calculation**

The waste stream can be broken down into two primary categories: Municipal Solid Waste (MSW) and non-Municipal Solid Waste. Put simply, MSW is what most of us think of when we think of "trash" even though it contains a high percentage of valuable resources. The EPA's guidance for calculating recycling rates limits "recycling" to the category of MSW. Additional

detail regarding definitions of recycling can be found in our 2006 report and in EPA document # EPA530-R-97-011, "Measuring Recycling...".

Determining the percent diversion of recyclables from Delaware's solid waste stream involves the following calculation:

$$\text{Diversion rate of recyclables (\%)} = 100 \times \frac{\text{MSW recyclables, tons diverted}}{\text{MSW recyclables, tons diverted} + \text{MSW, tons landfilled}}$$

There is an added layer of complexity per Executive Order 90: we are interested not only in the total MSW landfilled tonnage and percent diverted recyclables from MSW, but we are also interested in the same information just from the residential sector versus just from the commercial sector. Therefore we also divided the total MSW recyclables data, and also total MSW landfilled data, into the portion deriving from the residential sector and the portion deriving from the commercial sector. It should be noted that it is often difficult to determine whether a material was generated by the commercial or residential sector. This allocation, demonstrated in Table 4.3, was developed based upon a comprehensive waste composition studies conducted in 2006, 2007 and 2008 and the best judgment of DSM and the members of the M&M Subcommittee.

### 4.3 Recycling Rates

As directed by Executive Order 90, the RPAC developed an objective, scientific, and auditable methodology for calculating recycling rates in Delaware that is consistent with the U.S. Environmental Protection Agency's guidelines. A summary of the recycling rates produced using the aforementioned methodology is shown in Table 4.3 below:

Table 4.3 Recycling Rate Summary for Calendar Year 2006, 2007 and 2008									
	Residential			Commercial			Total		
	2006	2007	2008	2006	2007	2008	2006	2007	2008
<b>Diverted Recyclables (tons)</b>	122,448	206,856	169,605	125,962	116,540	148,427	248,410	323,396	318,032
<b>Landfilled MSW (tons)</b>	419,602	405,495	377,632	403,878	389,490	363,511	823,479	794,984	741,143
<b>Total Municipal Solid Waste = Diverted Recyclables + Landfilled MSW</b>	542,050	612,351	547,237	529,840	506,030	511,938	1,071,889	1,118,380	1,059,175
<b>Percent Diverted Recyclables</b>	22.6%	33.8%	31.0%	23.8%	23.0%	29.0%	23.2%	28.9%	30.0%

Note: Per DSM's Calendar Year 2008 "Assessment of Municipal Solid Waste Recycling" report (see Appendix I) "Tree & Branch Waste" for calendar year 2007 was over reported by 53,670 tons due to 24,000 tons that should have been classified as C&D and 29,670 tons of tree waste that was over reported by a composting company. As a result of this over reporting, the 2007 diversion rate has been recalculated at 28.9% as opposed to the previously reported 32.2%. Also note that the 53,670 tons which were over reported was split evenly between residential and commercial categories resulting in each diverted recyclables amount being reduced by 26,835 tons as compared with the amount of material reported in the RPAC's 2007 report.

#### ***4.4 Understanding the Data – CY2008***

Reported recycled material decreased by 5,364 tons, or about 1.7 percent from CY2007 to CY2008. However, even though there was a decrease in the recycling tonnage, there was an even larger decrease in the tonnage of waste landfilled. As a result of the impact the reduced disposal rate has on the diversion rate calculation denominator (Diversion rate = Recyclables/MSW + Recyclables) the 2008 diversion rate of 30 percent is actually 1.1 percent higher than the corrected 2007 diversion rate of 28.9 percent. As a result our overall diversion rate is slowly rising. Detailed recycling data for CY2008 can be found in Appendix G of this report.

Both the recycling and disposal tonnage decreases can be directly related to the current state of the economy. There are simply fewer goods being purchased and therefore fewer items available to recycle and dispose. While the declining disposal tonnage is in small part due to an increase in the diversion rate, by far the majority of this decrease in disposal is simply a function of less waste being produced due to a sluggish economy.

While there was a decrease in most fiber, glass, and plastic recycling, this drop was largely offset by a substantial increase in the Single Stream Materials Recycling category. This is representative of the expansion of single stream curbside recycling notably in the Kent County franchise districts, some larger municipalities and services offered by some private sector haulers during this reporting period.

#### ***4.5 Correction of Historical Data***

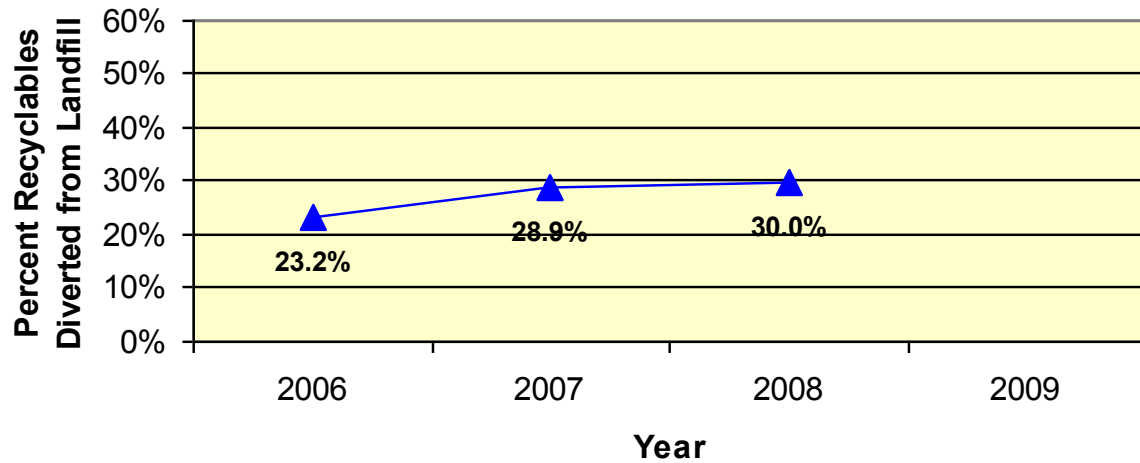
As indicated in the note for Table 4.3 it was necessary to correct the 2007 data due to over reporting in the “Trees and Branches” category. As a result of this data correction the 2007 diversion rate was revised downward from 32.2 % as originally reported to 28.9%.

It must be understood that despite every effort to consistently collect the best data available, the reported recycling rate should only be viewed as an approximation of recycling activities in Delaware. The majority of the data collected is voluntarily submitted and the accuracy is dependent upon the yearly participation of hundreds of recyclers in Delaware. Furthermore, the new methodology has now only been applied three years in a row. In order to reliably identify long-term trends in recycling activities, a data set covering a longer time period is required.

#### ***4.6 Status of the 51% MSW Recycling Goal***

Diversion rates of recyclables for CY2007 are 36.6% of residential solid waste, 26.9% of commercial solid waste, and 32.2% of the total municipal solid waste stream. By maintaining a consistent methodology, reasonably accurate and meaningful trend line analysis can be developed over a period of years. This will require continued analysis and reporting, but it will enable the tracking of progress toward the 51% goal established by Executive Order 90.

**Chart 4.6: Municipal Solid Waste in Delaware  
Percent Diversion of Recyclables**





---

---

## 5.0 Recycling Grants

---

---

### 5.1 Grant Program History and Status

The Recycling Assistance Grant Program was established in 2001. The DNREC developed the grant criteria and selection procedures, with advice from the RPAC. Recipients were required to match 25% of the total project cost. Grant selections were made by the DNREC in consultation with the RPAC.

The chart below summarizes grant statistics for Fiscal Year 2001 through Fiscal Year 2010.

	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
FY 2003	\$68,334	\$99,852	11	10
FY 2004	\$50,000	\$140,146	11	7
FY 2005	\$50,000	\$85,374	9	6
FY 2006	\$50,000	\$90,117	6	5
FY 2007	\$50,000	\$103,609	9	8
FY 2008*	\$50,000*	\$134,659*	13*	0*
FY 2009	\$50,000	\$227,096	19	11
FY 2010	\$0	N/A	N/A	N/A

\*The FY2008 Recycling Assistance Grant Program funding was rescinded due to state budgetary issues

There is no Recycling Assistance Grant Program for FY2010.

### 5.2 FY2009 Grant Summary

The FY2009 grants were announced in early August of 2008. DNREC held workshops in all three counties for interested parties. Completed applications were due to DNREC by September 19, 2008. The amount of funding available for the grants was \$50,000. Like all previous years, the amount of funding requested by eligible groups exceeded the amount available. Over \$227,095 was requested in state funding from 19 applicants. Eleven were awarded; two of which at partial funding. The amount of funding awarded to each grant recipient, and the applicant match, are listed in Table 5.2 below:

**Table 5.2 FY2009 Recycling Assistance Grant Program**

<i>Grant Recipient</i>	<i>State Funding Approved</i>	<i>Applicant Match</i>	<i>Brief Description of Project</i>
Arbour Park Civic Association	\$290.00	\$184.00	Educating the neighborhood and helping households start composting
Caravel Academy	\$1,329.79	\$8,733.70	Establishing a recycling program at the school
Children's House Montessori School	\$11,732.85	\$30,343.37	Establishing a composting program, producing a waste reduction dvd, and recycling educational activities
Delaware Technical and Community College	\$4,768.43	\$10,787.00	Establishing a mixed recyclables collection program on the Stanton and Wilmington campuses
Iron Hill Museum	\$7,000.00	\$2,660.00	Expanding a recycling outreach campaign targeting 40 schools
Midway Little League	\$1,385.00	\$522.00	Implementing a recycling program at their ball fields
North Georgetown Elementary School	\$1,857.42	\$619.15	Implementing a paper recycling program including education
Our Lady of Fatima	\$1,827.28	\$609.09	Establishing a recycling program at the school including education
Sussex Technical High School	\$7,375.80	\$24,000.00	Assisting other schools in establishing recycling program including education
University of Delaware	\$4,768.43	\$1,589.48	Expanding the single-stream recycling program on campus
Wilmington Montessori School	\$7,665.00	\$8,277.00	Implementing a recycling program at the school including education

### **5.3 Recommendations for Future Funding**

The potential of the Recycling Assistance Grant Program has been severely limited by the amount of funding that the state has historically provided. Previous reports and recommendations from industry experts have stated that more grant money would be needed to achieve a higher recyclables diversion rate, with one report by the Institute for Local Self Reliance calling for the creation of a \$3 million/yr recycling fund.

If our primary tool for increasing the recycling rate continues to be the grant program, that program must provide dedicated, sufficient funding to enable a wide variety of organizations to implement sustainable programs that will capture significant quantities of recyclables. It is recommended that a permanent source of funding of at least \$100,000 per year be established for the Recycling Assistance Grant Program.

The RPAC would prefer legislation to create a Recycling Fund of \$3 to \$4 million per year. This is consistent with previously proposed recycling legislation which would have established a \$3 per ton surcharge on all solid waste generated and/or disposed in Delaware to fund the grants. The RPAC strongly supported this design of encouraging recycling while discouraging disposal.

---

---

## *6.0 DNREC Activities*

---

---

DNREC's activities conducted in support of attaining the 51% MSW diversion goal included providing support to the RPAC, administering the Recycling Assistance Grant Program, conducting education and outreach designed to increase diversion, and maintaining the Cherry Island Landfill Yard Waste Ban.

### *6.1 Support to the RPAC*

In fulfillment of its responsibilities under Executive Order No. 90, DNREC continues to work diligently to provide support to the RPAC. The tasks that DNREC carried out in this area included, but were not limited to:

- making meeting arrangements for all RPAC meetings;
- preparing and distributing agendas and minutes for all RPAC meetings;
- publicizing the RPAC meetings, reports, and efforts;
- coordinating work related to the administration of the Recycling Assistance Grant Program;
- participating in the Measurement and Methodology Subcommittee responsible for establishing an agreeable recycling measurement for Delaware;
- drafting and/or producing pertinent products or documents for RPAC meetings and Subcommittees; and
- preparing the RPAC's Annual Report including printing and distribution.

### *6.2 Administering the Recycling Assistance Grants Program*

DNREC takes pride in assisting schools, municipalities, community groups, and non-profit organizations with implementing or improving recycling programs and reducing the amount of waste contributing to our landfills. In administering the Recycling Assistance Grants Program, DNREC:

- develops the grant packet;
- publicizes the grant availability;
- holds workshops for potential applicants;
- works with potential applicants;
- processes the completed applications;
- coordinates with RPAC to score the applications;
- informs applicants not selected for funding and grant recipients;

- prepares grant contracts and related information;
- works with grant recipients on timely submission of contracts and reports;
- processes reimbursements;
- assists recipients as needed in implementing grant activities; and
- closes out all grants after the final deadline.

It is noteworthy that the demand for the grants program significantly exceeds the funding.

### ***6.3 Public Education and Outreach***

DNREC conducted or participated in many activities to increase public awareness of recycling opportunities and to promote the grant program. DNREC distributed outreach materials and information at public events such as the Delaware State Fair, Coast Day, school presentations, and community presentations. The outreach focuses on the opportunities and benefits of recycling and waste reduction. As a result of these activities, tens of thousands of Delaware residents were educated on a variety of recycling issues.

With the support of the RPAC, DNREC is evaluating privatization of the Recycling Directory as a cost-effective means to keep this information current and more broadly distributed.

DNREC continues to improve and augment the recycling information resources available on its website and in its handouts. All of RPAC's Annual Reports, recent meeting minutes and agendas, several studies, information on the Recycling Assistance Grant Program, and general information on recycling and composting can be found on the DNREC recycling website ([www.awm.delaware.gov/Pages/recycling.aspx](http://www.awm.delaware.gov/Pages/recycling.aspx)) and the DNREC-maintained RPAC website ([www.awm.delaware.gov/Info/Pages/RPAC.aspx](http://www.awm.delaware.gov/Info/Pages/RPAC.aspx)).

### ***6.4 Supporting the Diversion of Yard Waste***

The bulk of DNREC's yard waste diversion efforts have been the operations and maintenance of three temporary community yard waste demonstration sites. The DART Mid-County site is located near Bear, the Polly Drummond Hill Road site is located near Newark, and the Brandywine Hundred site is located North of Wilmington. The sites are available for residents to bring yard waste from their own yards for free. The yard waste is periodically ground into mulch. The mulch is made available to the public for free when supplies exist. Most recently the mulch has been taken by the contractor providing the grinding service. While this arrangement significantly reduces the amount of free mulch for the public, it has reduced operational costs by well over \$100,000 per year. There is no dedicated funding source for these sites which have been opened 29 months, 24 months, and 22 months respectively. These sites are estimated to produce 25,000 to 30,000 cubic yards of mulch per year. As a result, these sites alone divert approximately 10,000 tons of material from entering the landfill while creating a useful, environmentally friendly product. Many patrons have shared how happy they are with this program, even declaring it one of the best things the state has ever done, and expressed their desire to see the program continue. Although the sites are extremely popular, DNREC has been

told by the legislature to close the Brandywine Hundred site and efforts are underway to privatize operations of the two remaining sites.

The enforcement of the Cherry Island Landfill yard waste ban has been in place for about a year and individuals and businesses have adjusted well. It is estimated that as much as 50,000 tons of yard waste were diverted from the Cherry Island Landfill in 2009 as a result of the yard waste ban. Banning yard waste has effectively diverted a useful material from entering the landfill while fostering local jobs and businesses.

DNREC also continues to work with groups such as the University of Delaware Cooperative Extension and the Delaware Center for Horticulture to educate residents on composting and other alternatives. DNREC readily presents yard waste management information and options to community and interest groups.

### ***6.5 Other Activities***

For the past several years, DNREC has worked with the Delaware State Fair, Inc. and the DSWA to implement a recycling program during the Delaware State Fair. Over 22,000 pounds of cardboard and beverage containers have been collected to date. Coca-Cola, a sponsor of the Delaware State Fair, took over the collection of the beverage containers in 2009 and is looking to expand their recycling collection in 2010. DNREC believes that this recycling program is not only a great opportunity to divert recyclables, but also a great opportunity to show the public that recycling works. The other large special events in Delaware, including the NASCAR race events and Punkin Chunkin, should be looked at as opportunities to increase waste diversion.

---

---

## *7.0 DSWA Activities*

---

---

### ***7.1 RECYCLE DELAWARE***

#### Drop Off Center Program

The DSWA continues to operate over 180 recycling drop off centers conveniently located throughout Delaware. The drop off center program continues to be one of the most successful and cost-effective voluntary drop-off programs in the nation. Delaware residents can drop off single stream recycling as well as used motor oil, oil filters, corrugated cardboard and textiles. In FY08, approximately 19,366 tons of recyclables were received at the drop off centers. The materials collected at the centers are taken to the Delaware Recycling Center (DRC) and Milford Recycling Center, where they are prepared for market.

#### Curbside Recycling Program

In January 2008, DSWA switched to single stream collection of recycling for all curbside customers in the State of Delaware. Single stream allowed customers to place all their recyclable material in a wheeled cart for collection. Single stream material includes, office paper, plastic bottles, newspaper, metal cans, paperboard, cardboard, junk mail, and glass. The switch to single stream equated to an increase of curbside customers. Curbside recycle participation is at an all time high in Delaware. In FY08 DSWA provided curbside recycling service to over 35,000 households throughout the State of Delaware.

#### Electronic Goods Recycling Program

In FY08, 2,065 tons of electronic goods were recycled through DSWA's electronic goods collection program. In 2008 DSWA expanded the amount of electronic good drop off locations to twenty-four (24) located throughout Delaware. DSWA provides free collection of electronic goods to government agencies and schools each month.

#### Household Hazardous Waste (HHW) Program

In FY08, DSWA held eight (8) HHW events throughout the state. Over 3,000 vehicles dropped off household hazardous waste and electronic goods. The total amount of HHW collected at all events totaled 203,252 pounds, making it a substantial increase from the previous year.

#### Yard Waste

The New Castle County yard waste ban went into effect on January 24, 2008. DSWA realized the concerns that residents in northern New Castle County would have and worked diligently to provide convenient programs at reasonable rates. DSWA developed the curbside Pay-As-You-Throw (PAYT) program, where residents pay \$1.00 for each bag of yard waste they put out at the curb. DSWA collects the bags and recycles the material using the Gore Composting System. This program is available to all Delaware residents and has been a success with over 100,000 bags sold in 2008.

### Oil Filter and Waste Oil Recycling Programs

In FY08, DSWA collected 308 tons of oil filters and 1,360 tons of motor oil from over 700 service stations and businesses throughout the state and from over 60 RECYCLE DELAWARE centers. On average, 1.4 million oil filters are sold annually in Delaware; DSWA collects over 1.2 million of those oil filters.

## ***7.2 Assistance to Communities***

DSWA continues to provide assistance to communities throughout Delaware. In 2008 many municipalities started curbside recycling programs. DSWA not only provides collection service but also provides education and outreach to residents to ensure recycling activities are performed correctly. DSWA works closely with town and city officials to provide excellent customer service. In 2008, municipalities included Dover, New Castle, Arden, Rehoboth Beach, Bellefonte, Odessa, Millville, Milford, Bethany Beach, Lewes, Fenwick Island and South Bethany.

## ***7.3 Public Education and Outreach***

DSWA strongly believes in educating Delaware residents to increase awareness and to establish an interest in protecting the environment. DSWA educates residents about their programs through school and community presentations, attending special events, and developing educational books and program brochures. In 2008, DSWA attended over 80 school and community presentations reaching over 8,500 residents. DSWA distributed educational materials covering multiple topics for children of all ages with emphasis on recycling and composting. One valuable piece of educational material that teachers use is the Newspapers in Education (NIE). This piece is created through the partnership with DSWA and the News Journal. This educational resource reaches over 550 teachers in Delaware.

One of the most important educational tools used by DSWA is Trash Can Dan, the official mascot of DSWA. He appears throughout most of the educational material provided to schoolchildren. Trash Can Dan's mission is to teach children to think about everything they throw away and their role in protecting our environment. He is an important tool for DSWA to promote recycling, composting, and anti-littering. Trash Can Dan is not only a character in the activity and coloring books, but he often attends presentations and events. Each year DSWA has a poster contest for the annual Trash Can Dan and the Clean Up Kids calendar. The theme for the calendar places emphasis on a current environmental topic. DSWA does this to assist teachers to be able to incorporate the theme and poster contest into a lesson they are teaching their students about the environment.

In 2008, DSWA placed an important emphasis on its public outreach effort by attending over 25 different events throughout the state, which reached over 280,000 Delaware residents. DSWA attended events such as Delaware's Great Green Expo in Wilmington, the Delaware State Fair in Harrington, University of Delaware's Coast Day in Lewes, as well as hosting the Annual DSWA Earth Day Event in Felton. DSWA attends events like these to promote environmental awareness throughout the state as well as educate the public on programs and facilities that DSWA provides for residents. This past year DSWA established a program where residents can rent recycling containers for their special events.

DSWA encourages citizens of Delaware to contact them if they are in need of environmental information concerning any DSWA program or facility. DSWA provides a Citizens' Response Line, (800-404-7080) which answers approximately 150 calls a day from residents. In addition, DSWA's website ([www.dswa.com](http://www.dswa.com)) provides even more information for Delaware residents. These resources provide valuable information and keep the personal touch that has helped to establish DSWA as a leader in the environmental community.



## 8.0 Recommendations

The RPAC's recommendations to Governor Markell and the General Assembly for increasing the recyclables diversion rate are as follows:

1. Enact comprehensive, statewide recycling legislation to increase diversion and improve efficiency.
2. Implement a comprehensive recycling program for state offices and schools.
3. Expand yard waste diversion statewide.
4. Enact legislation to establish a funding source, consistent with Recommendation 1 above, to:
  - establish a permanent, comprehensive recycling grants program,
  - maintain community yard waste demonstration sites, and
  - continue the recycling Measurement and Methodology Report annually.
5. Enact legislation to establish a reporting requirement for waste diversion and recycling activities.

### 8.1 Status of Previous Recommendations

Below is a listing of the previous RPAC recommendations as well as those from other groups. Many recommendations, such as providing incentives and resources for recycling and banning yard waste from landfills, are shared among groups.

#### Previous Recommendations from the RPAC Annual Reports

Date	Recommendation	Status
February 2009	Enact comprehensive, statewide recycling legislation to increase diversion and improve efficiency.	House Bill 159 was defeated.
	Maintain the yard waste ban at the Cherry Island Landfill and expand statewide as appropriate.	The Cherry Island Landfill ban is active.
	Maintain the community yard waste demonstration sites and establish a permanent source of funding for these sites.	Sites are active. The Brandywine Hundred site is slated to be closed. Due to a lack of dedicated funding, DNREC is looking into privatizing the sites.

Date	Recommendation	Status
February 2009	Continue the Recycling Measurement and Methodology Report annually. This report is a significant advance in understanding the quantity and details of recycling. Funding will be needed to provide the updates of this critical benchmark.	The Report has continued this year, with DSWA funding. But funding for future reports is not available.
	Enact legislation to require recycled material reporting.	
	Support the completion of the DSWA Recyclables Diversion Plan.	
	Support the completion of the House Resolution 73 report and recommendations by the Recycling Task Force of which the RPAC has representation.	
	Enact legislation to establish a permanent source of funding for the Recycling Assistance Grant Program.	
March 2007	Enact the proposed recycling legislation enabling the creation of a recycling fund that has the ability to substantially increase recycling and waste reduction in Delaware.	Legislation has been drafted but not successfully written into law.
	Maintain the yard waste ban at the Cherry Island Landfill and expand statewide as appropriate.	Senate Joint Resolution 2 directed the DSWA and DNREC to delay enforcement of the ban until January 2008.
April 2006	Enact legislation to permanently establish the RPAC.	
	Maintain the conditions in the Cherry Island landfill permit that are consistent with the provisions contained in S.B. 225.	Senate Joint Resolution 2 (2007) directed the DSWA and DNREC to delay enforcement of the ban until January 2008.
	Create a Delaware Recycling Fund to assist in the establishment and enhancement of recycling programs throughout the state. The source of funding should be an assessment on all solid waste collected and/or disposed of in Delaware except for those materials destined for recycling.	Legislation has been drafted but not successfully written into law.
April 2004	DNREC ban yard waste from the state's landfills to increase yard waste diversion	Yard waste banned from Cherry Island Landfill effective January 1, 2007 as part of the landfill permit
	DSWA develop a Materials Recovery Facility (MRF)	
	Develop a law that establishes a diversion rate and target date for its achievement.	Legislation has been drafted but not successfully written into law.
January 2003	Development of a comprehensive strategy for increasing the RSW diversion rate	
	Completion and evaluation of the cost study for curbside collection of recyclables and construction and operation of a MRF for New Castle County	Report prepared by DSM (October 15, 2003) demonstrating curbside recycling can be implemented cost effectively.

Date	Recommendation	Status
January 2002	Provide grant funding of \$100,000 for 2003 and increase \$25,000 per year through 2005.	Legislature decreased funding from \$75,000 to \$50,000 in FY2004 where it remained until FY2007 before it was eliminated due to budget shortfalls. It was re-implemented in FY2009, but was not included in the FY2010 budget.
	Maintain DNREC's current recycling staff level of one Environmental Scientist and one Community Relations Officer and add a Planner position in fiscal year 2004.	Not only has there not been a planner position added, the Community Relations Officer position was cut.
	Increasing awareness of the 'RECYCLE DELAWARE' program during grant and educational outreach activities, Revisiting the House Bill allowing DSWA easier access to shopping centers, where usage is typically highest, to site new 'RECYCLE DELAWARE' centers, Designing more aesthetic 'RECYCLE DELAWARE' centers to promote their acceptance.	Ongoing
	Support and expand recycled materials markets through DEDO's Green Industries Initiative and DNREC's Recycling Assistance Grant Program.	
	Through legislation provide DNREC with the authority to require waste collectors (municipal and private) to provide DNREC, on a confidential basis, information on the tons of trash and recyclable material collected in Delaware. This could be a requirement imposed as part of the transporter permitting process. It is proposed this legislation be effective July 2002.	
January 2002	Encourage municipal and home composting and divert yard waste from landfill disposal as follows: Encourage municipal composting by state purchase (Parks and Recreation, Administrative Services, Del DOT) of composted material for use in landscaping and, Provide a rebate for the purchase of mulching mowers; double if the mower is battery or electric or, banning yard waste from the active landfill and provide space at the landfill to collect the material for processing.	Yard waste banned from Cherry Island Landfill effective January 1, 2007 as part of the landfill permit. This is consistent with the Yard Waste Management Committee recommendations.
	Fund a study to determine the per-household cost of recycling/composting in different parts of the state. It is estimated such a study would cost at least \$50,000 and take several months to complete. The following recommendations will require major action by the State of Delaware to realistically achieve the thirty-percent diversion rate.	
	Provide franchise district capability to New Castle and Sussex County.	

Date	Recommendation	Status
January 2002	Collect a recycling fee from all waste haulers on a per ton basis as a part of the permitting process to support the building and operation of a Materials Recovery Facility (MRF). A MRF is needed to process commingled recyclables and market materials.	
	Build a MRF in New Castle County and adopt co-mingled curbside collection in the denser population areas.	

**Recommendations from the Solid Waste Technical Working Group report, “Solid Waste Management Alternatives for Delaware” (May 15, 2006) related to source reduction and recycling**

Recommendation	Status
Divert as much material from landfills as possible	
Strive for higher recycling goals and citizen participation which will require providing incentives for households, businesses, and government	Executive Order 90 called for increasing the former 30% of RSW recycling goal to 51% of MSW
Prohibit yard waste from all of Delaware’s landfills	Effective only at Cherry Island Landfill
DSWA provide opportunities for citizens to dispose of yard waste at each landfill and transfer station and convert these materials into compost or mulch	DSWA currently accepts yard waste separately at all facilities to manage as compost or mulch
Explore feasibility of banning other wastes from the landfills	
Further evaluate additional residential, commercial, and government source reduction/waste minimization problems	

**Recommendations from the McCabe and Associates report, “An Assessment of Waste and Dredging Issues Relating to Landfill Capacity in the State of Delaware” (2005)**

Recommendation	Status
General Assembly fund recycling programs and grants significantly like other states do	
General Assembly enact legislation to allow unclaimed beverage container deposit funds to be used to support recycling	

---

---

## *Appendix A. Executive Order Number 90*

---

---

### EXECUTIVE ORDER NUMBER 90 - Establishing The Recycling Public Advisory Council

WHEREAS, the average Delawarean produces 1,200 pounds of solid waste annually and much of that waste can and should be recycled;

WHEREAS, increasing Delaware's recycling efforts will benefit the environment and increase the useful life of the state's landfills;

WHEREAS, the Department of Natural Resources and Environmental Control (the "Department") and the Delaware Solid Waste Authority (the "Authority") promote varying aspects of municipal solid waste recycling in the State of Delaware;

WHEREAS, increasing our recycling efforts over the long-term will require a strong commitment on the part of Delawareans;

WHEREAS, schools, colleges, universities, municipalities, not-for-profit organizations, civic associations, and other community organizations are the entities most able to increase recycling within their borders and need assistance to provide the tools necessary to start recycling programs; and

WHEREAS, Delawareans increasingly recognize the importance of recycling and many Delawareans have expressed an interest in participating in curbside and other recycling programs,

NOW, THEREFORE, I, RUTH ANN MINNER, by virtue of the authority vested in me as Governor of the State of Delaware, do hereby declare and Order as follows:

1. It shall be the goal of this State to achieve a fifty-one percent (51%) diversion rate for recyclables from Delaware's municipal solid waste stream comprised of residential and commercial solid waste.
2. The Recycling Public Advisory Council (Council) is re-established and continued. The Council shall be composed of eleven (11) members who shall be appointed by the Governor as follows:
  - a. One member from the Department;
  - b. One member from the Authority;
  - c. One member representing county governments with such member being recommended by the Delaware Association of Counties;
  - d. One member representing municipal governments with such member being recommended by the Delaware League of Local Governments;
  - e. One member representing the recycling industry to be appointed by the Governor;
  - f. One member representing the waste hauling industry to be appointed by the Governor; and
  - g. Five members representing community-based or public-interest groups to be appointed by the Governor.
3. Members of the Council, except for those appointed pursuant to subparagraphs a, b, and c of paragraph 2 above, shall serve of up to 3 years and may be reappointed. Members of the current Council shall continue in office for the balance of their terms and shall also be eligible for reappointment. Members shall be appointed for staggered terms so that no more than 3 appointments shall expire in any one calendar year. Members may be reimbursed for travel to

and from meetings. The Governor shall appoint a Chairman from among the eleven members. Actions of the Council shall be approved by a majority vote of the Council. At least six (6) members of the Council shall constitute a quorum.

4. The Recycling Public Advisory Council shall:

- a. Advise the Department and the Authority on all aspects of recycling;
- b. Advise the Department in developing grant criteria, including local match requirements, and selection of applications as well as provide an annual assessment of the revenue needed to satisfy the grant requirements;
- c. Develop, in conjunction with the Department and the Authority, a methodology for measuring recycling rates;
- d. Provide advice and recommendations regarding the recycling outreach and education programs conducted by the Authority and/or the Department;
- e. Report to the Governor and the General Assembly annually by March 1 of each year on the status of recycling activities in Delaware. Said report shall include, but not be limited to the following:

- (1) status of attainment of the 51% recycling goal;
- (2) an accounting of the recycling grants program and any recommendations for future funding of the grants program;
- (3) an assessment of the activities of both the Department and the Authority in achieving a 51% municipal solid waste recycling goal;
- (4) an objective, auditable accounting of recycling rates for total solid waste, municipal solid waste, and residential solid waste; and
- (5) such other recommendations as the Council shall deem appropriate.

- f. Use the definitions of 'recycling' and 'municipal solid waste' as stated by the United States Environmental Protection Agency in its document EPA530-R-97-011 dated September 1997. The Council shall be able to adopt changes to these definitions.

5. The Department's Division of Air and Waste Management, in concert with the Authority and the Council, shall:

- a. Monitor the State's recycling initiatives and measure Delaware's achievements toward attainment of the 51% recycling goal;
- b. Implement a grant program for use by schools, colleges, universities, municipalities, not-for-profit organizations, civic associations, and other community organizations in reaching the statewide recycling goal specified herein;
- c. Design and implement public educational efforts aimed at increasing public awareness of recycling opportunities;
- d. Implement a public school recycling initiative whereby our school systems are able to participate in and benefit from increased recycling opportunities;
- e. Provide technical assistance to local entities to assist them in increasing their recycling rates;
- f. Provide administrative support to the Council;
- g. Report to the Governor and the Office of Management and Budget on the need for staff to provide this support; and

- h. Promote any other measures identified by the Council to support the achievement of the 51% recycling goal.
  - 6. The Department shall make matching grants available to schools, colleges, universities, municipalities, not-for-profit organizations, civic associations, and other community organizations to implement programs to reduce the amount of municipal solid waste disposed of in Delaware. Grants may be used for implementing or expanding recycling programs, encouraging composting of yard waste, implementing “pay-as-you-throw” programs, or any other activity that supports the achievement of the 51% recycling goal. The availability of grant money shall be subject to annual appropriations by the General Assembly.
  - 7. Executive Order Number 82 adopted September 14, 2000, is rescinded.
- Approved: September 6, 2006

---

---

## *Appendix B.*

### *Recycling Public Advisory Council Members*

---

---

Brock J. Vinton II, RPAC Chairman  
Citizens Solid Waste Solutions Commission

Patricia Todd  
League of Women Voters of Delaware

Robert A. Mooney  
Mayor of Camden, League of Local Governments

Richard C. Cecil  
Executive Director, Delaware Association of Counties

Pasquale S. Canzano  
Delaware Solid Waste Authority

Paul R. Bickhart  
Recycling Express of Delaware, Inc.

Steve Masterson  
Waste Management of Delaware

Marjorie A. Crofts  
Department of Natural Resources and Environmental Control  
Division of Air and Waste Management

Wallace Kremer  
Del EASI

Dick Fleming  
Delaware Nature Society

Teresa Iris  
Indian River School District



---

---

## *Appendix C. Change in Reporting Date Letter*

---

---



### **RECYCLING PUBLIC ADVISORY COUNCIL**

#### Council Members

Brock J. Vinton II, Chairman  
Paul Bickhart  
Pasquale Canzano  
Richard Cecil  
Richard Fleming  
Ptery Iris  
Wallace Kremer  
Steve Masterson  
Patricia Todd  
James D. Werner  
George C. Wright, Jr.

March 12, 2008

The Honorable Ruth Ann Minner  
Governor, State of Delaware  
Tatnall Building, William Penn Street  
2<sup>nd</sup> Floor  
Dover, DE 19901

Dear Governor Minner,

On behalf of the Recycling Public Advisory Council (RPAC) I wanted to inform you that the RPAC has decided to shift the deadline for its Annual Reports to November 1<sup>st</sup> of each year. This change from March 1<sup>st</sup> will allow for more suitable timing to process data and synchronization of the Annual Report with the sub-requirement to account recycling rates. The first report for this sub-requirement, the Measurement and Methodology Report, will be presented to you shortly as an addendum to the Sixth Annual Report of the Recycling Public Advisory Council (March 2007).

If I can be of service, please do not hesitate to contact me at 302-777-1832.

Sincerely,

Brock J. Vinton II  
Chairman  
Recycling Public Advisory Council

cc: John Hughes, DNREC Secretary  
Lydia Prigg, Governor's Office

---

---

## *Appendix D. Recycling Assistance Grant Project Summaries*

---

---

### **FY 2009 Recycling Assistance Grant Summaries**

(Grant activities still ongoing at the time of this report)

**Grant Recipient:**      Arbour Park Civic Association      **Grant Amount:** \$290.00  
303 Arbour Drive  
Newark, DE 19713  
302-894-0946  
Contact: Bonnie Meredith

**Project Description:** Educating and assisting the neighborhood to start composting.

**Project Accomplishments:**

- Trained two Master Composters
  - Conducted a neighborhood outreach campaign to promote composting
  - The Master Composters have trained seven individuals thus far and have more signed up for the next class
  - Will distribute 16 composting bins to community members
  - Measuring progress with questionnaires
- 

**Grant Recipient:**      Caravel Academy      **Grant Amount:** \$1,329.79  
2801 Del Laws Road  
Bear, DE 19701  
302-834-8938  
Contact: Leann Ferguson

**Project Description:** Establishing a recycling program at the school including education.

**Project Accomplishments:**

- The Environment Club gave an educational presentation to the entire student body and staff
  - Established dedicated recycling containers in the cafeteria
  - Established a recyclables dumpster
  - Student volunteers regularly collect recyclables
  - Conduct ongoing outreach to promote the program
-

**Grant Recipient:** Children's House Montessori School      **Grant Amount:** \$11,732.85  
2848 Grubb Road  
Wilmington, DE 19810  
302-529-9259  
Contact: Karen Feeney/Barbara Lewis

**Project Description:** Establishing a composting and waste reduction program at the school, producing and distributing a DVD on recycling to local schools, and incorporating composting and waste reduction into the curriculum.

**Project Accomplishments:**

- Surveyed families and staff about recycling and composting
  - Ordered books for a composting library
  - Established a composting demonstration site for use on school property
  - Developed a DVD promoting the reduce, reuse, and recycle concept
  - Established computer workstations to help educate students about waste reduction
  - Established a recyclables collection program
  - Set up a worm farm to help educate students about organics recycling
- 

**Grant Recipient:** Delaware Technical & Community College      **Grant Amount:** \$4,768.43  
Stanton and Wilmington Campuses  
333 Shipley Street  
Wilmington, DE 19801  
302-434-5546  
Contact: Jennifer Horning/Jacquita Wright-Henderson

**Project Description:** Establishing a mixed recyclables collection program on campus.

**Project Accomplishments:**

- Established a recyclables collection program
  - Will purchase interior bins, conduct an outreach campaign, and measure diversion.
- 

**Grant Recipient:** Iron Hill Museum      **Grant Amount:** \$7,000.00  
Delaware Academy of Science  
1355 Old Baltimore Pike  
Newark, DE 19702  
302-368-5703  
Contact: Kathryne Larrivee/Laura M. Lee

**Project Description:** Expand a recycling outreach campaign targeting 40 schools.

**Project Accomplishments:**

- Conducted the "Whose Trash Is It Anyways" outreach program in several classrooms of several schools
  - Disseminated information about the program to schools and the media
  - Encouraged recycling and waste reduction
  - Conduct surveys of students and their parents to measure the programs effectiveness
  - Held an essay contest
-

**Grant Recipient:** Midway Little League  
55 South Meadowood Drive  
Newark, DE 19711 (Not a mailing address)  
302-738-3127  
Contact: Dawn Riley

**Grant Amount:** \$1,385.00

**Project Description:** Implementing a recycling program at the ball fields.

**Project Accomplishments:**

- Purchased wheeled-recycling containers and placed them around their fields for recycling collection
  - Purchased locks and chain to secure the containers
  - Volunteers regularly collect recyclables
  - Divert about 40% of the trash from the fields thanks to the recycling program
- 

**Grant Recipient:** North Georgetown Elementary School  
664 North Bedford Street  
Georgetown, DE 19947  
302-855-2430  
Contact: Cathy Showell

**Grant Amount:** \$1,857.42

**Project Description:** Implementing a paper recycling program at the school including education.

**Project Accomplishments:**

- Established a paper recycling program
  - Purchased hand trucks and recycling bins to help collect the material
  - Volunteers regularly collect the recyclables
  - Purchased posters and pencils to promote recycling
  - Held assemblies to educate students and staff on recycling
- 

**Grant Recipient:** Our Lady of Fatima  
801 N. DuPont Highway  
New Castle, DE 19720  
Contact: Beth Lombard

**Grant Amount:** \$1,827.28

**Project Description:** Establishing a recycling program at the school including education.

**Project Accomplishments:**

- Established a recyclables collection program
  - Purchased recycling related books and videos
  - Conducted a school year kick-off to educate students, families, and faculty
  - Student volunteers regularly collect recyclables
  - Over 19,000 pounds of recyclables have been diverted from the waste stream
-

**Grant Recipient:** Sussex Technical High School  
17099 County Seat Highway  
PO Box 351  
Georgetown, DE 19947  
302-228-2571  
Contact: Kristin Carmen

**Grant Amount:** \$7,375.80

**Project Description:** Assisting other schools in establishing recycling programs including education.

**Project Accomplishments:**

- Helped Milford Middle School, Milton Elementary School, and Smyrna Elementary School implement recycling programs
- Educated the students, teachers, and administrators from each school on recycling
- Purchased and distributed 202 recycling bins to the target schools
- Worked with the target schools to ensure that recyclables are collected
- Over 13,000 pounds of recyclables have been diverted from our landfills

---

**Grant Recipient:** University of Delaware  
122 Hullihen Hall  
Newark, DE 19716  
302-831-7039  
Contact: Andrew Knab

**Grant Amount:** \$4,768.43

**Project Description:** Expanding the single-stream recycling program on campus.

**Project Accomplishments:**

- Original launch was postponed but is occurring at the time of this report
- Recycling receptacles will be strategically placed in all major academic and residential buildings
- Recyclables will be collected and measured

---

**Grant Recipient:** Wilmington Montessori School  
1400 Harvey Road  
Wilmington, DE 19810  
302-475-0555  
Contact: Jennifer Burns

**Grant Amount:** \$7,665.00

**Project Description:** Implementing a school-wide single-stream recycling program including education.

**Project Accomplishments:**

- Purchased 71 recycling containers and placed them throughout the school
- Purchased 64 food saver containers to reduce waste and promote reuse in the school
- Established a single-stream recyclables collection program
- Trained staff, students, and volunteers on their program
- Educated students and families on recycling
- Purchased outdoor banners to promote the recycling program
- Purchased and distributed 343 tote bags to promote waste reduction
- Conducted outreach to 13 local media outlets

---

---

## *Appendix E. Recycling Measurement Data*

---

---

### ***G.1 – Diverted Recyclables Spreadsheet (see next page)***

## E.1 – Diverted Recyclables Spreadsheet

RPAC ANNUAL REPORT - CALENDAR YEAR 2008																	
Tons of Diverted "EPA-Recyclables" in MSW - Source of Data: DSWA and DSM																	
"Recyclables" means "those materials recovered from the solid waste stream and transported to a processor or end user for recycling." (EPA530-R-97-011)																	
CATEGORIES OF RECYCLABLES		DSM RECYCLABLES SURVEY DATA				DSWA RECYCLABLES -- WEIGHED UPON RECEIPT									TOTAL RECYCLABLES COLLECTED FOR PROCESSING (TONS)		
		Delaware Businesses (DSM Report, Appendix) **				(DSWA Report, Appendix)											
		Tons of Recyclables				"%R" is Percent Residential; "%C" is Percent Commercial			Drop-off Containers *			Other Collections *			Curbside Collection *		
RESIDENTIAL	COMMERCIAL	TOTAL	Tons (Total)	%R	%C	Tons (Total)	%R	%C	Tons (Total)	%R	%C	Res'l	Comm'l	Total			
Category I. Diverted "EPA-Recyclables" - MSW materials classified by EPA as "recyclables", diverted from landfill (CY2008)																	
PAPER	ONP (old newspapers)		3,735	3,735	0	90	10	0	100	0	0	100	0	0	3,735	3,735	
	OCC (old corrugated containers)		69,517	69,517	0	90	10	1,872	0	100	0	100	0	0	71,389	71,389	
	Mixed Paper		10,509	10,509	0	90	10	0	0	100	0	100	0	0	10,509	10,509	
	Sorted Office Paper		5,496	5,496										0	5,496	5,496	
	Undeliverable Mail from Post Office			0				612	50	50				306	306	612	
PACKAGING	Clear Glass			0	0	90	10	0	100	0				0	0	0	
	Brown Glass			0	0	90	10	0	100	0				0	0	0	
	Green Glass			0	0	90	10	0	100	0				0	0	0	
	Mixed Glass		23					4,729	100	0	0	100	0	4,729	0	4,729	
	Plastic Bottles		23	23	0	90	10	0	90	10	0	100	0	0	23	23	
	Aluminum Cans		49	49							0			0	49	49	
	Pallets, mulched		4,465	4,465										0	4,465	4,465	
	Shrink Wrap		1,983	1,983										0	1,983	1,983	
VEHICLE WASTE	Plastic Grocery Bags and Film			0	0	90	10							0	0	0	
	Oil Filters	321	64	385				405	90	10				686	105	790	
	Automotive Lead-Acid Batteries			0				0	100	0				0	0	0	
	Lead Acid Batteries	1,992	398	2,390										1,992	398	2,390	
	Tires	7,052	1,763	8,815										7,052	1,763	8,815	
SPECIAL WASTE	Carpet and Textiles			0	48	90	10							43	5	48	
	Carpet		15	15										0	15	15	
	Textiles	3,305		3,305										3,305	0	3,305	
	Fluorescent Bulbs		34	34										0	34	34	
	Electronics		295	295										0	295	295	
	Electronic Goods			0				1,588	90	10				1,429	159	1,588	
AG & FOOD WASTES	Fats, Oil, Grease		8,393	8,393										0	8,393	8,393	
	Food waste		5,650	5,650										0	5,650	5,650	
GREEN WASTE,	Leaf and Yard Waste	56,229	4,757	60,986				4,799	50	50	1,324	100	0	59,953	7,157	67,109	
	Trees and Branches	49,110	6,138	55,248										49,110	6,138	55,248	
	Clean Wood (e.g. trees, stumps), mulched		0	0										0	0	0	
METALS	Aluminum & Steel Cans			0	0	90	10				0	100	0	0	0	0	
	White Goods	22,485		22,485				1,189	90	10				23,555	119	23,674	
	Ferrous			0										0	0	0	
	Non-Ferrous, All Other			0										0	0	0	
	Durables, mixed (e.g. small appliances)	0		0										0	0	0	
SINGLE STREAM	"Mixed recyclables": collected mixture of different categories of recyclables; includes City of Wilmington collection	7,044		7,044	17,617			2,625			10,401	100	0	17,445	20,242	37,687	
Subtotals, Category 1 (Tons)		147,538	123,307	270,822	17,665			17,819			11,725			169,605	148,427	318,031	
* NOTE: Drop-off containers commonly known as "Igloos". "Other Collections" are mostly materials delivered to landfill sites by individuals and businesses, not commercial waste haulers. Percentage estimates based on a 2003 DSM study.																	
** DSM Report: "Evaluation of Enhanced Residential Waste and Recyclables Collection and Processing for New Castle County FINAL REPORT OCTOBER 15, 2003"																	



## E.2 – Total Waste Spreadsheet

<b>Category 4A - Delaware's <u>Total</u> Solid Waste To Landfill (CY2008)</b>				
LANDFILL LOCATION	BREAKDOWN - TOTAL SOLID WASTE (%)			TOTAL (%)
	RESIDENTIAL	COMMERCIAL	CONSTRUCTION & DEMOLITION	
Cherry Island	43%	41%	16%	100%
Pine Tree Transfer Station	41%	41%	18%	100%
Central Landfill	34%	30%	37%	100%
Milford Transfer Station (only open one week in FY2006)	41%	44%	15%	100%
Rt. 5 (not open in FY2006)	38%	38%	25%	100%
Southern Landfill	26%	28%	46%	100%
	BREAKDOWN - TOTAL SOLID WASTE (TONS)			TOTAL (TONS)
	RESIDENTIAL	COMMERCIAL	CONSTRUCTION & DEMOLITION	
Cherry Island	207,580	195,553	78,265	481,397
Pine Tree Transfer Station	29,695	29,136	13,078	71,909
Central Landfill	48,568	42,247	52,341	143,156
Milford Transfer Station	20,264	21,905	7,659	49,828
Rt. 5	29,987	30,106	19,523	79,616
Southern Landfill	41,538	44,565	73,452	159,555
<b>Subtotal, Category 4B (Tons)</b>				985,461
<b>Category 4B - Delaware's <u>Municipal</u> Solid Waste To Landfill (CY2008)</b>				
	BREAKDOWN - TOTAL MUNICIPAL SOLID WASTE (%)			TOTAL MSW (%)
	RESIDENTIAL	COMMERCIAL		
Cherry Island	51%	49%		100%
Pine Tree Transfer Station	50%	50%		100%
Central Landfill	53%	47%		100%
Milford Transfer Station (only open one week in FY2006)	48%	52%		100%
Rt. 5 (not open in FY2006)	50%	50%		100%
Southern Landfill	48%	52%		100%
	BREAKDOWN - TOTAL MUNICIPAL SOLID WASTE (TONS)			TOTAL MSW (TONS)
	RESIDENTIAL	COMMERCIAL		
Cherry Island	207,580	195,553		403,132
Pine Tree Transfer Station	29,695	29,136		58,831
Central Landfill	48,568	42,247		90,815
Milford Transfer Station (only open one week in FY2006)	20,264	21,905		42,169
Rt. 5 (not open in FY2006)	29,987	30,106		60,093
Southern Landfill	41,538	44,565		86,103
<b>Subtotals, Category 4B (Tons)</b>	377,631	363,512		741,143

### ***E.3 – Recyclable Diversion Rate Calculation***

Using the data from the previous two pages, the diversion rate of recyclables can be calculated as follows:

$$\begin{aligned}\text{Diversion rate of recyclables (\%)} &= 100 \times \frac{\text{MSW recyclables, tons diverted}}{\text{MSW recyclables, tons diverted} + \text{MSW, tons landfilled}} \\ &= 100 \times \frac{318,032 \text{ tons diverted}}{318,032 \text{ tons diverted} + 741,143 \text{ tons landfilled}} \\ &= 30.0 \%\end{aligned}$$

The exact same calculation can be made for the Commercial and Residential segments\* of the market by substituting the respective segment data from the previous two pages, as follows:

$$\begin{aligned}\text{Diversion rate of Commercial recyclables (\%)} &= \\ &= 100 \times \frac{\text{Commercial recyclables, tons diverted}}{\text{Commercial recyclables, tons diverted} + \text{Commercial MSW, tons landfilled}} \\ &= 100 \times \frac{148,427 \text{ Commercial tons diverted}}{148,427 \text{ Commercial tons diverted} + 63,511 \text{ Commercial MSW, tons landfilled}} \\ &= 29.0\%\end{aligned}$$

$$\begin{aligned}\text{Diversion rate of Residential recyclables (\%)} &= \\ &= 100 \times \frac{\text{residential recyclables, tons diverted}}{\text{residential recyclables, tons diverted} + \text{residential MSW, tons landfilled}} \\ &= 100 \times \frac{169,605 \text{ residential tons diverted}}{169,605 \text{ residential tons diverted} + 77,632 \text{ residential MSW tons landfilled}} \\ &= 31.0\%\end{aligned}$$

**\* Important Note:** Readers and policy makers are cautioned against attributing too much value to the reported sector based diversion rates. In order to calculate specific rates for these market sectors, determinations must be made as to which market segment should be credited for given recycling or land filling activity. This is not a simple or obvious exercise. For example, should a recycled car battery from a personal car, that was recycled at a commercial garage, be considered Residential or Commercial? (If it was delivered by the resident? If it was replaced by the mechanic?) As another example: To what sector should recycled yard waste collected by a landscaping company from a residence be attributed? To address this problem, the Measurement and Methodology Sub-Committee developed a “Generator Rule”, which attributes the recycling activity to the sector which generated the material recycled. Yet even with this rule to guide the sector determinations, many determinations can be reasonably argued either way. It is for this reason that readers of this report and policy makers should be very cautious before drawing conclusions based upon the sector specific information.

## *E.4 – Recycling Trends*

### **Recycling Trends Data: 2006 thru 2008**

<b>Category</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>Δ from 2007 tonnage</b>
	Tons of Recycables			
<b>ONP*</b>	<b>15,133</b>	<b>13,225</b>	<b>3,735</b>	-9,490
<b>OCC*</b>	<b>68,823</b>	<b>78,735</b>	<b>71,389</b>	-7,346
<b>Mixed Paper*</b>	<b>19,943</b>	<b>13,011</b>	<b>10,509</b>	-2,502
Sorted Office Paper	5,900	5,249	5,496	247
<b>Undeliverable Mail*</b>	<b>1,173</b>	<b>825</b>	<b>612</b>	-213
<b>Clear Glass*</b>	<b>1,309</b>	<b>1,125</b>	<b>0</b>	-1,125
<b>Brown Glass*</b>	<b>391</b>	<b>356</b>	<b>0</b>	-356
<b>Green Glass*</b>	<b>1,135</b>	<b>765</b>	<b>0</b>	-765
Mxd Glass	3,804	5,905	4,729	-1,176
<b>Plastic Bottles*</b>	<b>1,481</b>	<b>1,354</b>	<b>23</b>	-1,331
Al Cans	30	16	49	33
Pallets/mulch	8,500	12,412	4,465	-7,947
Shrink wrap	240	1,713	1,983	270
Plas Groc & Film	112	112	0	-112
Oil filters	595	523	790	267
Auto Battery	4	0	0	0
Lead acid battery	900	4,487	2,390	-2,097
Tires	6,800	5,911	8,815	2,904
Carpet & Textiles	96	78	48	-30
Carpet	86	32	15	-17
Textiles	4,000	3,409	3,305	-104
Flourescent Bulbs	20	40	34	-6
Electronics	200	200	295	95
Egoods	1,359	1,943	1,588	-355
Fats,Oil & Grease	3,200	4,716	8,393	3,677
Food Waste	4,600	4,847	5,650	803
Leaf & Yard Waste	42,133	77,516	67,109	-10,407
Trees & Branches <sup>1</sup>	31,600	52,967	55,248	2,281
Clean Wood, Mulch	1,800	0	0	0
Al & Steel Cans	810	667	0	-667
White Goods	19,062	23,154	23,674	520
Ferrous	0	0	0	0
Non-ferrous	0	0	0	0
Durables mixed	200	0	0	0
Single Stream <sup>2</sup>	2,971	8,103	37,687	29,584
<b>Totals</b>	<b>248,410</b>	<b>323,396</b>	<b>318,031</b>	<b>-5,365</b>

\* - Decrease in tonnage likely due to growth in single stream

<sup>1</sup> - The 2007 tonnage was over reported by 53,670 and therefore revised from original reporting sum of 106,637. This change in tonnage resulted in the 2007 diversion rate being revised downward from 32.2 % to 28.9%.

<sup>2</sup> - Tonnage increase is repersentative of the growth in single stream curbside collection.

---

---

## *Appendix F. DSWA Measurement Report*

---

---



### **DELAWARE SOLID WASTE AUTHORITY**

Pasquale S. Canzano, P.E., BCEE  
*Chief Executive Officer*

Richard P. Watson, P.E., BCEE  
*Chief Operating Officer*

October 1, 2009

**Board of Directors**

Richard V. Pryor  
*Chairman*  
Ronald G. McCabe  
*Vice Chairman*  
Theodore W. Ryan  
William J. DiMondi  
Timothy P. Sheldon  
Tonda L. Parks  
Gerard L. Esposito

Mr. Brock J. Vinton II  
DNREC - DAWM  
89 Kings Highway  
Dover, Delaware 19901

Dear Mr. Vinton,

RE: Recycling and Facility Information

The Delaware Solid Waste Authority (DSWA) has enclosed the recycling and facility information requested by the Methodology and Measurement Committee for calendar year 2008. There are two tables that contain the information that was requested. The first table is the recycling data for all DSWA activities in calendar year 2008. The second table shows the tonnage of material processed at all of its solid waste management facilities in calendar year 2008.

Please feel free to contact me if you need any further information or clarification on the data presented by DSWA.

Sincerely,

Michael D. Parkowski  
Manager of Business Services and Governmental Relations  
Delaware Solid Waste Authority

Enclosure

Prw/MDP/M&M Cover letter 08

1128 S. Bradford Street, P.O. Box 455, Dover, Delaware 19903-0455  
Phone: (302) 739-5361 Fax: (302) 739-4287

CITIZENS' RESPONSE LINE: 1-800-404-7080 [www.dswa.com](http://www.dswa.com)

Printed on Recycled Paper

CATEGORIES OF RECYCLABLES		DSWA RECYCLABLES – WEIGHED UPON RECEIPT (DSWA CY 2008) "%R" is Percent Residential; "%C" is Percent Commercial							
		Drop-off Containers		DSWA Facilities		Curbside Collection			
		Tons (Total)	%R	%C	Tons (Total)	%R	%C	Tons (Total)	%R %C
<b>PAPER</b>	ONP (old newspapers)		90	10		100	0		100
	OCC (old corrugated containers)		90	10	1,872	0	100		100
	Mixed Paper		90	10		0	100		100
	Undeliverable Mail from Post Office				612	50	50		
<b>PACKAGING</b>	Clear Glass		90	10					
	Brown Glass		90	10					
	Green Glass		90	10					
	Mixed Glass				4,729	100			100
	Plastic Bottles		90	10		90	10		100
<b>VEHICLE WASTE</b>	Plastic Grocery Bags and Film		90	10					
	Oil Filters				405	90	10		
	Motor Oil	1,289	90	10					
<b>SPECIAL WASTE</b>	Carpet and Textiles	48	90	10					
	Electronic Goods				1,588	90	10		
<b>GREEN WASTE</b>	Leaf and Yard Waste				4,799	50	50	1,324	100
<b>METALS</b>	Aluminum & Steel Cans		90	10					100
	White Goods				1,189	90	10		
<b>SINGLE STREAM</b>	"Mixed recyclables": collected mixture of different categories of recyclables.	17,617			2,625			10,401	100

**DSWA Waste Handling and Landfilling Activities  
CY 2008 by Facility**

<b>Cherry Island Landfill</b>	
Asbestos Friable	5,467
Asbestos Non-Friable #1	242
Asbestos Non-Friable #2	870
C&D Debris	27,817
Household Batteries	67
MSW	446,113
12th Street MSW	11
Tires	630
Transfer Pine Tree	0
Yard Waste Rejects	180
<b>Total</b>	<b>481,397</b>

<b>CSWMC/ Sandtown Landfill</b>	
Asbestos Non-Friable #2	12
C&D Debris	58,834
MSW	83,553
Shredded Tires	420
Tires	333
Transfer from Milford	49,828
Transfer from Pine Tree	71,909
Yard Waste Rejects	4
<b>Total</b>	<b>264,893</b>

<b>SSWMC/ Jones Crossroads Landfill</b>	
Asbestos Non-Friable #2	18
C&D Debris	74,012
MSW	84,102
Shredded Tires	455
Sludge	599
Tires	365
Transfer from RT 5	79,616
Yard Waste Rejects	4
<b>Total</b>	<b>239,171</b>

---

---

## *Appendix G. DSM Measurement Report*

---

---

This appendix contains selections from the report shown below. An online version of the full report can be found on the RPAC website ([www.awm.delaware.gov/Info/Pages/RPAC.aspx](http://www.awm.delaware.gov/Info/Pages/RPAC.aspx)).

**State of Delaware  
Assessment of Municipal Solid  
Waste Recycling  
For Calendar Year 2008**

**Draft Report  
July 2, 2009**



**Prepared for:**  
**Recycling Public Advisory Council**  
c/o DNREC  
89 Kings Highway  
Dover, DE 19901

**Prepared by:**  
DSM Environmental Services, Inc.  
P.O. Box 2  
Windeor, VT 05089-0002  
[www.dsmenvironmental.com](http://www.dsmenvironmental.com)

## Results

Because of the significant changes in green waste totals from 2007 to 2008, DSM has chosen to report the 2008 results side-by-side with the 2007 results. Table 2 below presents DSM's best estimate of quantities of materials recovered for recycling or beneficial use by major material category in calendar year 2008, allocated between included and excluded MSW categories as defined by EPA, and compares 2008 with 2007.

**Table 2. Comparison of Material Recycled, CY 2008 & 2007**

Material	2008		2007	
	Total (tons)	MSW (tons)	Total (tons)	MSW (tons)
<b>Paper</b>				
Corrugated (OCC)	67,191	67,191	73,314	73,314
Newspaper (ONP)	3,735	3,735	3,033	3,033
Sorted Office Paper	5,496	5,496	5,249	5,249
Mixed Paper (1)	10,509	10,509	10,179	10,179
<b>Subtotal:</b>	<b>86,930</b>	<b>86,930</b>	<b>91,775</b>	<b>91,775</b>
<b>Packaging</b>				
Glass	23	23	10	10
Shrink Wrap	1,983	1,983	1,713	1,713
Plastic Containers	23	23	46	46
Aluminum Cans	49	49	16	16
Pallets (2)	4,465	4,465	12,412	12,412
Mixed Recyclables (3)	7,044	7,044	4,680	4,680
<b>Subtotal:</b>	<b>13,585</b>	<b>13,585</b>	<b>18,877</b>	<b>18,877</b>
<b>Metals</b>				
White Goods	22,485	22,485	21,036	21,036
Aluminum	1,305	unknown	3,099	unknown
Ferrous	142,918	unknown	149,259	unknown
Non-ferrous	39,330	unknown	14,345	unknown
Scrap Cars	8,351	0	8,948	0
<b>Subtotal:</b>	<b>214,389</b>	<b>22,485</b>	<b>196,687</b>	<b>21,036</b>
<b>Green Waste</b>				
Leaf and Yard Waste	60,986	60,986	72,494	72,494
Trees and Branches	55,247	55,247	105,648	105,648
Clean Wood	280	0	2,000	0
<b>Subtotal:</b>	<b>116,513</b>	<b>116,233</b>	<b>180,143</b>	<b>178,143</b>
<b>Vehicle Waste</b>				
Tires (4)	10,148	8,815	7,123	5,911
Lead Acid Batteries	1,992	1,992	3,739	3,739
Oil Filters	321	321	91	91
<b>Subtotal:</b>	<b>12,461</b>	<b>11,128</b>	<b>10,953</b>	<b>9,741</b>
<b>Special Wastes</b>				
Textiles (5)	3,305	3,305	3,409	3,409
Electronics	295	295	200	200
Florescent Bulbs	34	34	40	40
Carpet	15	15	32	32
<b>Subtotal:</b>	<b>3,649</b>	<b>3,649</b>	<b>3,682</b>	<b>3,682</b>
<b>Ag and Food Wastes</b>				
Fats, Oil, Grease	8,393	8,393	4,716	4,716
Food Waste	5,650	5,650	4,847	4,847
<b>Subtotal:</b>	<b>14,042</b>	<b>14,042</b>	<b>9,563</b>	<b>9,563</b>
<b>Industrial Waste Recovery</b>				
Mixed Plastics	2,029	1,014	1,862	931
<b>Subtotal:</b>	<b>2,029</b>	<b>1,014</b>	<b>1,862</b>	<b>931</b>
<b>Total Recovery:</b>	<b>463,600</b>	<b>269,066</b>	<b>513,500</b>	<b>333,700</b>



As illustrated by Table 2, total recovery (exclusive of DSWA recycling activity) was down by 64,634 tons in 2008 when compared to 2007. This is almost entirely attributable to changes in the green waste tonnage of 61,909 tons in 2008 when compared to 2007. This is the result of the following factors.

#### ***Yard Waste***

Yard waste totals are down 11,508 tons. This is a combination of a change in estimated quantities by one of the largest organics processors in Delaware for 2008 (see Tree Waste description, below), and, it can be speculated, changes in rainfall amounts (and thus less lawn clippings) given that the summer of 2008 was much drier than average, with the driest August on record. Yard waste tonnages would have been down further except for the increase reported by DNREC for their new yard waste drop-off facilities.

#### ***Tree Waste***

Tree waste totals are down by 50,401 tons. This is due primarily to a classification error by DSM in 2007, and by a significant over-estimation of quantities reported to DSM by one of the largest organics management firms in Delaware.

First, DSM believes that it classified 24,000 tons of tree waste in 2007 as MSW that, upon further review should have been classified as C&D waste. This would have reduced the 2007 green waste total for 2007 by 13.5 percent.

Second, one of the largest recyclers of yard and tree waste reported 29,670 fewer tons of yard and tree wastes for 2008 when compared to 2007. This organics producer purchased a scale in March of 2008. Prior to 2008, they were using volume to weight conversions to report their tonnage. In reviewing their volume to weight conversion factors after the scale was utilized, they realized that they significantly overestimated the amount of tonnage in 2007. This recycler also ground large amounts of pallets in 2007. In 2008 the tonnage they reported for ground pallets was substantially reduced partly due to their volume to weight conversion factor and partly due to accepting less material.

Third, according to the large tree service and mulching companies that DSM surveyed, Delaware experienced some severe storms in 2007 resulting in significant tree damage that it did not experience in 2008.

#### ***Paper Recycling***

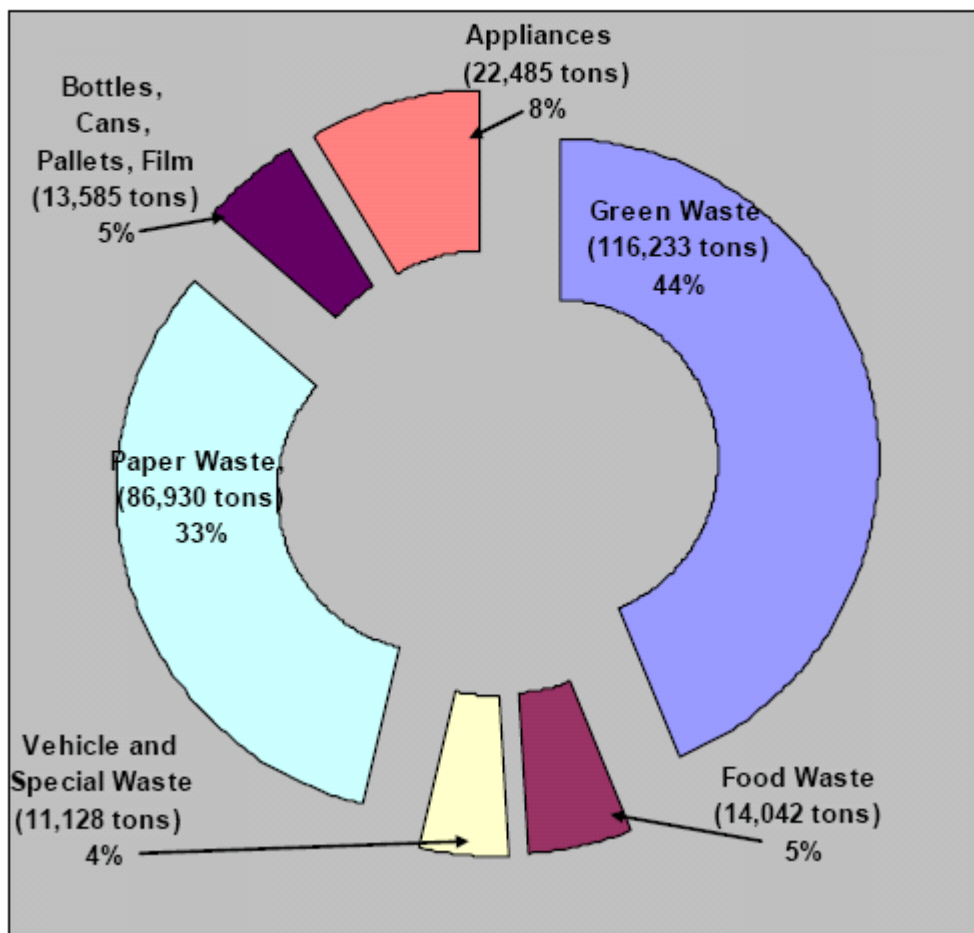
DSM expected that the downturn in the economy would significantly reduce paper recycling (especially OCC and office paper). While there was a small reduction when compared to 2007, it was made up to some extent by better reporting of materials by large generators, especially large retailers, which appear to have more of a corporate commitment to report accurate recycling data on a state-by-state basis.

#### ***Packaging Waste***

Recycling of packaging wastes are down by roughly 5,300 tons (rounded). This reflects significantly lower pallet recycling which may be due to the downturn in the economy. It is partially offset by the increase in mixed recycling reported by Wilmington.

Figure 1, below illustrates the breakdown of MSW materials recovery, by material type, for Delaware for 2008, exclusive of DSWA recycling activity.

**Figure 1: Materials Recovery by General Material Category  
Included in EPA Definition of MSW Recycling  
(State of Delaware, CY 2008)**



### Residential vs. Commercial Recycling Activity

As discussed above, DSM was also asked to estimate the percentage of each material recycled and classified as MSW that was from a residential as opposed to a commercial source. These allocations are shown in Table 3. In some cases, the source of the material was clear, however in other cases DSM was required to make our best professional judgment as to the source of the material. Since EPA does not attempt to quantify residential and commercial recycling separately, generally acceptable guidelines for allocation of materials recycling to the residential and commercial sector are not available. It should be noted when reading Table 3 that while significant amounts of newspaper, corrugated and mixed paper are generated by residential sources, these quantities are being reported to the M&M Subcommittee separately by DSWA, and the Wilmington single stream paper is reported under "packaging" as a separate category called "mixed recyclables" in Table 3.

**Table 3: Estimate of Residential vs. Commercial MSW Recycling Activity (CY 2008), Exclusive of DSWA Materials**

<b>Material Category</b>	<b>Residential (tons)</b>	<b>Commercial (tons)</b>	<b>Total MSW (tons)</b>
<b>Paper</b>			
Corrugated (OCC)	0	67,191	67,191
Newspaper (ONP)	0	3,735	3,735
Sorted Office Paper	0	5,496	5,496
Mixed Paper (1)	0	10,509	10,509
<b>Packaging</b>			
Glass	0	23	23
Shrink Wrap	0	1,983	1,983
Plastic Containers	0	23	23
Aluminum Cans	0	49	49
Pallets	0	4,465	4,465
Mixed Recyclables (2)	7,044	0	7,044
<b>Metals</b>			
White Goods	22,485	0	22,485
<b>Green Waste</b>			
Leaf and Yard Waste (3)	56,229	4,757	60,986
Trees and Branches (4)	49,110	6,138	55,248
Clean Wood	0	0	0
<b>Vehicle Waste (5)</b>			
Tires	7,052	1,763	8,815
Lead Acid Batteries	1,992	398	2,390
Oil Filters	321	64	385
<b>Special Wastes</b>			
Textiles (6)	3,305	0	3,305
Electronics	0	295	295
Florescent Bulbs	0	34	34
Carpet	0	15	15
<b>Ag and Food Wastes</b>			
Fats, Oil, Grease	0	8,393	8,393
Food Waste	0	5,650	5,650
<b>Totals:</b>	<b>147,500</b>	<b>121,000</b>	<b>269,000</b>

**Table 3 Notes:**

(Numbers may not add due to rounding)

(1) Includes some print overruns.

(2) Single stream material from Wilmington curbside recycling program.

(3) Leaf and Yard waste allocations were made using the same percentage from CY 2006 report.

(4) Tree waste allocations were made using the same percentage from CY 2006 report.

(5) Reported source of tires was 80% cars by one major tire recycler. Reported source of oil and oil filters is unknown. DSM assumed 80% of vehicle wastes recycled originated from households, and the balance from commercial vehicles.

(6) Documented source of textiles is unknown, however DSM assumes most textiles came from residential sources. Also textiles reused are excluded under EPA but included here since reuse versus recycling cannot be determined.

---

---

## *Appendix H. Background of Recycling Efforts in Delaware*

---

---

The State of Delaware first began promoting recycling in 1975 with the passage of the Delaware Solid Waste Authority's enabling legislation. This led to the opening of the Delaware Reclamation Plant, which held the title of the largest recycling/reclamation project in the world for nearly 11 years. About 2.5 million tons of municipal solid waste and 0.5 million tons of sewage sludge were processed through this plant. This facility was shut down in 1993 and the plant was modified to operate as the Delaware Recycling Center which processes and markets all the recyclables from the 'RECYCLE DELAWARE' Drop-Off Program.

The next major milestone was the implementation of the Beverage Container Law in 1979 designed to prevent roadside littering.

In 1990, the statewide drop-off recycling program, known as 'RECYCLE DELAWARE', was established by the Delaware Solid Waste Authority. The DSWA currently operates over 140 'RECYCLE DELAWARE' centers and collects about 27,500 tons/year of recyclables. Included are brown, green and clear glass bottles, plastic bottles, newspaper and magazines, aluminum and steel cans (including aerosols), plastic grocery bags, textiles, motor oil and oil filters, corrugated cardboard, and household batteries (the batteries are not recycled, but disposed of properly).

Despite these recycling milestones, Delaware's former Governor, Thomas Carper, received frequent letters and phone calls from Delaware residents requesting implementation of curbside collection of recyclables. These requests spurred Governor Carper to call a meeting in late 1998 with representatives of the DNREC, the Delaware Economic Development Office (DEDO) and the DSWA to discuss the feasibility of implementing curbside collection of recyclables in Delaware. The result of this meeting was the issuance of Executive Order No. 60 establishing the Citizens' Work Group on Recycling to evaluate recycling in Delaware. The work group would also recommend ways to increase recycling in Delaware.

In the spirit of conservation and pursuant to the report "A Course of Action to Increase Recycling in the State of Delaware," which was developed by and contained the recommendations of the Citizens' Work Group on Recycling, Governor Thomas R. Carper signed Executive Order Eighty-Two which:

1. Established the goal of a thirty (30) percent diversion rate for recyclables from Delaware's residential solid waste stream.
2. Required the Department of Natural Resources and Environmental Control (DNREC), Division of Air and Waste Management (DAWM) to work in concert with the Delaware Solid Waste Authority (DSWA) and the Recycling Public Advisory Council (RPAC) to:
  - a) develop a method for measuring recycling,
  - b) establish a recycling grant program,
  - c) establish a public outreach and education program aimed at educating the general public and students on the value of recycling as well as to increase the recycling rate,
  - d) provide technical assistance to local entities to increase the recycling rate, and

- e) provide administrative support to the RPAC.
- 3. Established the nine (9) member RPAC and tasked the RPAC with:
  - a) advising DNREC and DSWA on all aspects of recycling,
  - b) advising DNREC on developing grant criteria,
  - c) advising DNREC and DSWA on outreach activities to increase recycling, and
  - d) developing an annual report due on December 1st of each year detailing the status of recycling activities within Delaware.

Governor Minner appointed the members of the RPAC early in her Administration and the first RPAC meeting was held on February 27, 2001. DNREC also hired an Environmental Scientist and a Community Relations Officer to assist the Council. The Environmental Scientist aided the Council in developing the method for measuring recycling and provided recycling technical assistance to Delaware's communities and local governments.

The RPAC contracted a study on residential curbside recyclables collection in New Castle County. The final report, titled "Evaluation of Enhanced Residential Waste and Recyclables Collection and Processing for New Castle County", was published in 2003 by DSM Environmental Services, Incorporated. The report concluded that curbside collection of recyclables could be done at least as, if not more, cost effectively than trash if the system is properly designed.

In early 2006, Senate Bill 225 (SB 225) was introduced in the Delaware Senate. It established a framework for a statewide curbside recycling system, established a Recycling Fund to help pay for recycling programs, banned yard waste from disposal (providing for development of yard waste management facilities), established statewide recycling goals, and established the RPAC. The Governor's Office, DNREC, DSWA, and the RPAC all supported SB 225. The Bill did pass the Senate with amendments but it was tabled in the House of Representatives.

In October of 2005, DNREC Secretary, John Hughes, established the Solid Waste Management Technical Working Group (SWMTWG) pursuant to a directive from Governor Minner. It was comprised of individuals with technical backgrounds, financial backgrounds, and/or experience with municipal solid waste management systems and technologies. The SWMTWG was tasked to perform a feasibility review of municipal solid waste management alternatives and to recommend a program or programs that would best serve Delaware's municipal solid waste management needs. In April of 2006, the SWMTWG produced a report that recommends the state implement effective source reduction and recycling programs and building a processing facility.

The Citizens Solid Waste Solutions Commission (CSWSC), an organized group of environmentally conscious citizens, also produced a report in 2006. They called for more convenient and cost-effective recycling programs, better processing facilities for recyclables and discards, opposition to incineration, and a more focused recycling agency than the DSWA. They argued that recycling is an issue of resource management rather than one of waste disposal.

The City of Wilmington initiated a single-stream curbside recycling trial for over 6,000 households in the Summer of 2006. The City has partnered with RecycleBank, a recycling company based in Philadelphia, to provide the service. RecycleBank provides wheeled recycling containers, retrofits Wilmington's trucks to service the containers and weigh the material, provides various data reports, and provides outreach and education about the program. Through the RecycleBank program, participating households can earn up to \$35 per month in RecycleBank Dollars which can be redeemed at stores of the customer's choosing. The incentive encourages residents to recycle and helps Wilmington to divert waste from the landfill. The recycling rate in Wilmington's trial areas

went from almost zero to about 35% in about six months. In 2007 the program was expanded citywide.

In September of 2006 Governor Minner signed Executive Order 90 (see Appendix A) which replaced Executive Order 82 and re-established the RPAC. The new Executive Order 90 increases the membership of the RPAC by two public members. It also increases the former recycling diversion rate goal from 30% of residential solid waste to 51% of municipal solid waste.

The Cherry Island Landfill permit was renewed in 2006 with language that required the DSWA to ban yard waste from entering the landfill no later than January 1, 2007. After dozens of community meetings, a legislatively mandated delay in the ban, and the opening of three community yard waste demonstration sites, DNREC and the DSWA began enforcement of the ban on January 24, 2008.

House Bill 159 (HB 159) was introduced in 2007. In May of 2008, HB 159 passed in the House of Representatives but was defeated in the Senate in June of 2008. HB 159 would have encouraged recycling via a comprehensive recycling grants program while discouraging disposal via a \$3 per ton assessment on landfilling.

Starting in January of 2008, Kent County provided recyclables collection service to residents serviced in their trash districts. The County administers a contract for trash collection in a large percentage of unincorporated areas within the County. Single-stream recyclables collection was added to the contract, increasing the number of participating households in Delaware by over 11,000.

In early 2008, the DSWA converted their recyclables collection programs to single-stream. Participants no longer need to separate traditional recyclables (i.e. glass bottles, cans, plastic bottles, mixed papers) by material type. As a result, recycling is more convenient and therefore more people will participate. Other entities, including waste haulers, have also offered single-stream recyclables collection service.

A large, new compost facility broke ground near the Port of Wilmington in May of 2009. Peninsula Compost Company, LLC is planning to open the facility by the end of 2009. It will have the capacity to process 160,000 tons of food and yard waste annually.

House Bill 201 was passed by the General Assembly on the last day of session in June of 2009. It essentially repealed the Delaware Beverage Container Law (or Bottle Bill), removing the deposit and redemption system related to beverage containers. However, Governor Markell vetoed House Bill 201 in July of 2009 on the grounds that it would have a negative impact on recycling and no viable alternative has been proposed.

In the autumn of 2009, about 82,000 households have curbside recycling service in Delaware. That is about 25% out of an estimated 322,000 occupied housing units, or 35% of an estimated 237,000 single-family homes. These curbside services were provided by the DSWA, City of Wilmington, Kent County, City of Delaware City, Town of Newport, and multiple independent haulers. It is noteworthy that an estimated 42,000 households use the DSWA's Recycle Delaware Drop-off facilities statewide, although some portion of that results from

businesses. If an assumed 42,000 households were added, about 39% of Delaware households participate in recycling.

The Delaware Solid Waste Authority is currently in the process of updating its Statewide Solid Waste Management Plan. They are gathering input from public groups in addition to the normal public hearing process. A draft of the Statewide Solid Waste Management Plan is expected to be completed in December of 2009 and include of a zero waste component.



---

---

## *Appendix I. Beverage Container Law Letter*

---

---

### **THE GOVERNOR'S RECYCLING PUBLIC ADVISORY COUNCIL**



#### Council Members

Brock J. Vinton II, Chairman  
Paul Bickhart  
Pasquale Canzano  
Richard Cecil  
Richard Fleming  
Ptery Iris  
Wallace Kremer  
Steve Masterson  
Patricia Todd  
Marjorie Crofts  
Robert Mooney

November 23, 2009

To Members of the 145<sup>th</sup> Delaware General Assembly:

At the June 17<sup>th</sup> meeting, the Recycling Public Advisory Council voted unanimously to submit a written statement to the House Natural Resources Committee recommending that “any changes in the Delaware Beverage Container Law should be done only in the context of broader improvements that significantly enhance recycling in Delaware”. A member of the Council read this statement at the hearing on HB 201, the repeal of the “Bottle Bill” Law.

The Council based its statement on the following information:

- In 2007, the Delaware Beverage Container Law was specifically responsible for the collection and recycling of 5,671 tons of glass containers, while only 234 tons of glass were collected in separated residential curbside collection and 2,246 tons at drop-off igloos. That is to say that **in 2007, 69.5% of all separated glass containers were recycled as a direct result of the Delaware Beverage Container Law.**
- There is no doubt that the HB201 would result in diminished recycling diversion rates, even if some of the glass was captured in the recycling programs available to roughly 30% of Delaware households. To put this impact into perspective, the loss of the bottles recycled uniquely as a result of the Delaware Beverage Container Law in 2007 would have lead to a **decrease in our statewide recycling diversion by 1.75%,**



**reducing the diversion rate from 28.9% to 28.4%.** The total tons of materials recycled statewide were 323,396. (Measurement data can be found in the RPAC Annual Reports.)

- The original purpose of the bill passed in 1982 was to recycle all beverage containers, but some types of containers were excluded by the legislature. However, one of the important benefits of the law was to reduce litter. **The refundable deposit has motivated people to collect hundreds of thousands of beverage containers from our streets, highways, farmlands and beaches.** In this regard, the Delaware Beverage Container Law has been successful. Its repeal will lead to increased litter and broken bottles in our communities and recreational areas.
- Although not intended as an overall recycling policy law, the Delaware Beverage Container Law **has become part of the fragmented set of state recycling policy bills introduced in past sessions. Its repeal should only be considered in a much broader context.** Bills such as SB 225, HB 159 and the Maryland Delaware Solid Waste Associations' bill all excluded the collection of glass at their genesis. If we do away with the Delaware Beverage Container Law we must make a commitment to include glass bottles in all of our recycling programs hence forth.

In conclusion, the Recycling Public Advisory Council wishes to state again any changes to the Delaware Beverage Container Law should significantly enhance overall recycling in Delaware, not remove those designated materials that are already being recycled.

Sincerely,

Brock J. Vinton II  
Chairman  
Recycling Public Advisory Council

cc: Jack Markell, Governor  
Collin O'Mara, DNREC Secretary