



North Carolina Department of Environment and Natural Resources

Beverly Eaves Perdue
Governor

Dee Freeman
Secretary

MEMORANDUM

To: Governor Beverly Perdue

JOINT LEGISLATIVE COMMISSION ON GOVERNMENTAL OPERATIONS
The Honorable Phil Berger, President Pro Tempore of the Senate
The Honorable Thom Tillis, Speaker of the House of Representatives

ENVIRONMENTAL REVIEW COMMISSION
The Honorable David Rouzer, Chair
The Honorable Mitch Gillespie, Co-Chair
The Honorable Ruth Samuelson, Co-Chair

REVENUE LAWS STUDY COMMITTEE
The Honorable Bob Rucho, Co-Chair
The Honorable Julia Howard, Co-Chair
The Honorable Danny McComas, Co-Chair

FROM: Kari Barsness *KKB*
Director of Legislative and Intergovernmental Affairs

SUBJECT: 2011 Solid Waste Management Annual Report

DATE: January 20, 2012

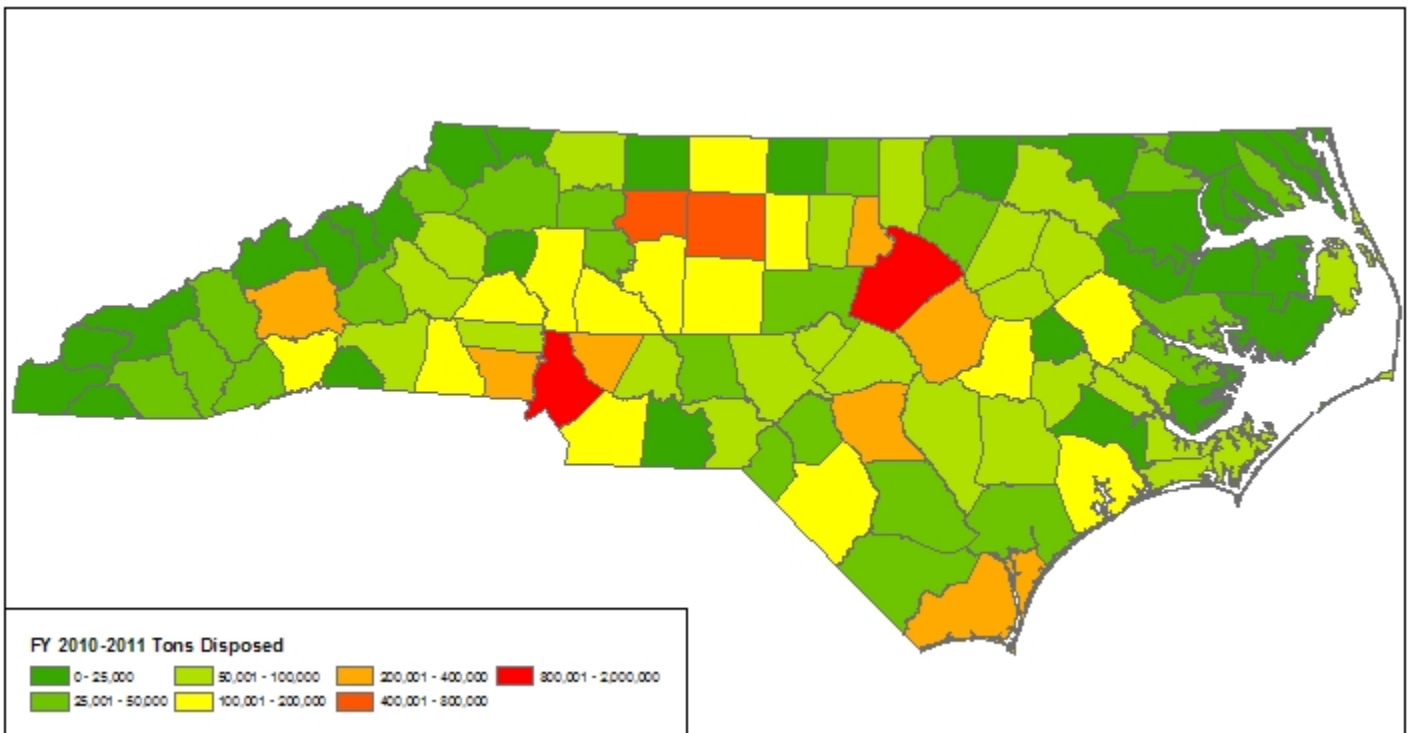
Pursuant to General Statutes 130A-309 (various sub parts), 136-28.8(g) and 143-58.2(f), the department shall submit to the Governor, Environmental Review Commission, the Joint Legislative Commission on Governmental Operations and the Revenue Laws Study Committee a report on Solid Waste Management in the state by January 15th each year. Please consider the attached 2011 Solid Waste Management Annual Report as the formal submission of this report.

If you have any questions or need additional information, please contact me by phone at (919) 707-8618 or via e-mail at Kari.Barsness@ncdenr.gov.

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North Carolina Solid Waste and Materials Management Annual Report

FY 2010- 2011



A comprehensive report outlining the state's efforts regarding solid waste and materials management, recycling and the status of waste management facilities, with additional report contributions from the state departments of Administration and Transportation.



NORTH CAROLINA SOLID WASTE AND MATERIALS MANAGEMENT
ANNUAL REPORT FY 2010-2011

State of North Carolina
Beverly Eaves Perdue, Governor

N.C. Department of Environment and Natural Resources – Dee Freeman, Secretary

N.C. Division of Waste Management – Dexter Matthews, Director

N.C. Division of Environmental Assistance and Outreach – Edythe McKinney, Director

N.C. Department of Administration – Moses Carey Jr., Secretary

N.C. Department of Transportation – Eugene A. Conti Jr., Secretary

ACKNOWLEDGMENTS

The North Carolina Department of Environment and Natural Resources' (NCDENR) divisions of Waste Management (DWM) and Environmental Assistance and Outreach (DEAO) thank the county managers, solid waste directors and recycling coordinators who provided much of this information.

DEAO would also like to thank the North Carolina state agencies that diligently submit reports to their office each year. Their hard work and dedication are much appreciated.

Special thanks to the following staff of DENR, the Department of Administration (DOA) and the Department of Transportation (DOT) for providing data and information for this annual report.

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On the Cover: A map displaying the tons of solid waste generated by counties during FY2010-2011.

North Carolina Solid Waste and Materials Management Annual Report

This consolidated annual report is required by the North Carolina General Assembly.¹ This report combines several annual reports that were once issued separately by the N.C. Department of Environment and Natural Resources. The reports were the Comprehensive Solid Waste Management Report, the Scrap Tire Disposal Account Report, the White Goods Management Report and the Solid Waste Management Trust Fund Report. This report also includes information from the N.C. Department of Transportation regarding its use of recycled materials in contracts and data from the N.C. Department of Administration on bid procedures and purchases.

In addition, this year's report includes a one-time-only required analysis on plastic bags and an associated ban in certain counties and fluorescent lights and mercury-containing thermostats.

Solid waste management information presented comes from 644 (100 county and 544 municipal) local government annual reports and 370 (including 18 out-of-state) solid waste management facilities. These reports represent activities related to the management of solid waste for the period July 1, 2010, through June 30, 2011.

¹ N.C.G.S. 130A-309.06, as amended in 2001

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DIVISIONS OF WASTE MANAGEMENT AND ENVIRONMENTAL ASSISTANCE AND OUTREACH

SOLID WASTE AND MATERIALS MANAGEMENT EXECUTIVE SUMMARY

The divisions of Waste Management and Environmental Assistance and Outreach provide technical assistance to businesses, industries, local governments and citizens to help them reduce and properly manage waste. The divisions' assistance helps protect and improve citizens' public health and the environment.

The Solid Waste program regulates safe management of solid waste through guidance, technical assistance, regulations, permitting, environmental monitoring, compliance evaluation and enforcement. Waste types handled at North Carolina facilities include municipal solid waste, industrial waste, construction and demolition waste, land-clearing waste, scrap tires, medical waste, compost and septage. The Division of Environmental Assistance and Outreach offers environmental sustainability assistance, including recycling, waste reduction and composting, water and energy efficiency, and education on how to prevent waste and pollution.

North Carolina has 40 permitted municipal solid waste landfills that take waste at approximately \$40 per ton – one of the lowest costs for waste disposal on the east coast. North Carolina communities disposed of a total of 9,467,045 tons of municipal solid waste [MSW] and construction and demolition [C&D] waste in waste management facilities located within North Carolina and out-of-state. Owners and operators of North Carolina landfills are required to monitor landfills to detect and respond to releases of contaminants to the environment.

The state per capita disposal rate has fallen below one ton per person per year for the first time since fiscal base year 1991-92. In FY 2010-11 (July 1, 2010 – June 30, 2011), the state disposed of solid waste at a lower rate relative to the last decade, falling 27 percent since fiscal year 2005-06. This is most likely due to continuing recycling efforts, and decreased construction. North Carolina communities disposed of 9,467,045 tons of waste in North Carolina and out-of-state facilities. This represents a small increase of 71,588 tons from the previous fiscal year.

Analysis of the North Carolina MSW landfills indicates a four percent increase in disposal when compared to last year's figures. The increase correlates with a two percent increase in population and a slight upturn in the economy. A linear model suggests that the state will continue to see an increase in waste disposed. As has been seen in the last three years, waste disposal was down because construction and demolition of homes was down, which directly relates to the economy. Historically, good economic growth has lead to increased waste disposal. Landfill bans (such as those for plastic bottles, aluminum and electronics) and an increase in recycling program participation may also keep waste disposal increases to a minimum.

The N.C. Department of Revenue reported Solid Waste Tax collection of \$18,310,171, which equates to 9,155,085 tons of taxable solid waste going into landfills within North Carolina and through transfer stations going to landfills in neighboring states.

North Carolina-permitted solid waste management landfills and an incinerator received a total of 8,994,728 tons of solid waste for FY 2010-11. Waste originating from South Carolina and Virginia equaled 177,770 tons. North Carolina exported 618,017 tons for FY 2010-11, a decrease of 22 percent from the previous year. Exported solid waste was sent to South Carolina, Virginia, Tennessee and Georgia.

Recycling of traditional recyclable materials, such as paper, glass, aluminum and steel cans, and plastic, increased 5.4 percent from FY 2009-10 to FY 2010-11. Plastic bottle recycling in particular increased 23.4 percent last year and has increased by close to 45 percent over the last two years. Electronics materials collected by local programs has almost doubled since FY 2008-09, rising from .84 to 1.55 pounds per capita in FY 2010-11. The number of curbside recycling programs reached a record high of 283 in FY 2010-11, serving more than 1.68 million households across the state. Oil filter collection by local government recycling programs has tripled since FY 2008-09, driven in large part by the filter disposal ban. Prices for recyclable materials were extremely strong in FY 2010-11 before declining slightly at the end of the fiscal year, indicating healthy market demand for recovered commodities.

It is recommended that the department continue to evaluate the effectiveness of the state's disposal bans. The department should coordinate efforts among local governments and industry to ensure disposal capacity is available in all areas within North Carolina. It is also recommended that the department encourage the diversion of identified large solid waste streams, such as food and wood wastes, from large generators of these wastes. Continued work towards expansion of the collection of plastic bottles and other recyclables is advised in order to ensure that capacity of the growing recycling markets in North Carolina is met.

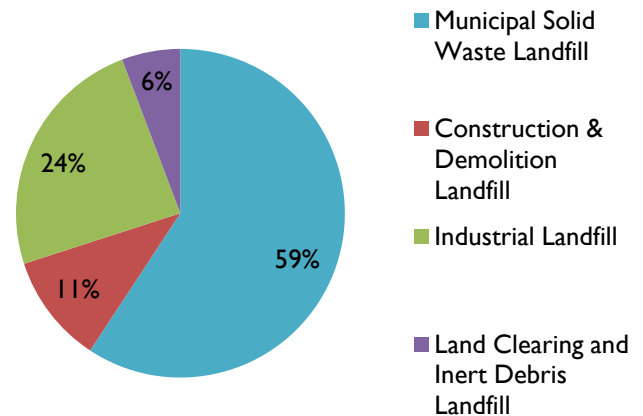
DIVISION OF WASTE MANAGEMENT

SOLID WASTE MANAGEMENT

The mission of the Division of Waste Management is to prevent the harmful release of waste to the environment and to clean up existing contamination. The division provides technical assistance to businesses, industries, local governments and citizens to help them reduce and properly manage waste. The division's assistance helps protect and improve citizens' public health and the environment. To further its mission, the division houses the Solid Waste Section, which manages specific types of waste, including household and industrial wastes.

The Solid Waste Program regulates safe management of solid waste through guidance, technical assistance, regulations, permitting, environmental monitoring, compliance evaluation and enforcement. Waste types handled at North Carolina facilities include municipal solid waste, industrial waste, construction and demolition waste, land-clearing waste, scrap tires, medical waste, compost and septage. North Carolina has 40 permitted municipal solid waste landfills that take waste at approximately \$40 per ton – one of the lowest costs for waste disposal on the east coast. In FY 2010-11, North Carolina communities disposed of a total of 9,467,045 tons of municipal solid waste [MSW] and construction and demolition [C&D] waste in waste management facilities located within North Carolina and out-of-state. Owners and operators of North Carolina landfills are required to monitor to detect and respond to releases of contaminants to the environment.

Waste Disposal in N.C.



Key Findings

- The state per capita disposal rate has fallen below one ton per person per year for the first time since base fiscal year 1991-92.
- The state in fiscal year 2010-11 (July 1, 2010 – June 30, 2011) disposed of solid waste at a lower rate relative to the last decade, falling 27 percent since fiscal year 2005-06. This is most likely due to continuing recycling efforts and decreased construction.
- North Carolina communities disposed of 9,467,045 tons of waste in North Carolina and out-of-state facilities. This represents a small increase of 71,588 tons from the previous fiscal year.
- The N.C. Department of Revenue reported Solid Waste Tax collection of \$18,310,171, which equates to 9,155,085 tons of taxable solid waste going into landfills within North Carolina and through transfer stations going to landfills in neighboring states.
- North Carolina-permitted solid waste management landfills and an incinerator received a total of 8,994,728 tons of solid waste for fiscal year 2010-11. Waste originating from South Carolina and Virginia equaled 177,770 tons.
- North Carolina exported 618,017 tons for fiscal year 2010-11, a decrease of 22 percent from the previous year. Exported solid waste was sent to South Carolina, Virginia, Tennessee and Georgia.
- Recycling of traditional recyclable materials, such as paper, glass, aluminum and steel cans, and plastic, increased 5.4 percent from fiscal year 2009-10 to fiscal year 2010-11. Plastic bottle recycling in particular increased 23.4 percent last year and has increased by close to 45 percent over the last two years.
- Electronics materials collected by local programs has almost doubled since fiscal year 2008-09, rising from .84 to 1.55 pounds per capita in fiscal year 2010-11.
- The number of curbside recycling programs reached a record high of 283 in fiscal year 2010-11, serving more than 1.68 million households across the state.

- Oil filter collection by local government recycling programs has tripled since fiscal year 2008-09, driven in large part by the filter disposal ban.
- Prices for recyclable materials were extremely strong in fiscal year 2010-11 before declining slightly at the end of the fiscal year, indicating healthy market demand for recovered commodities.

Departmental considerations

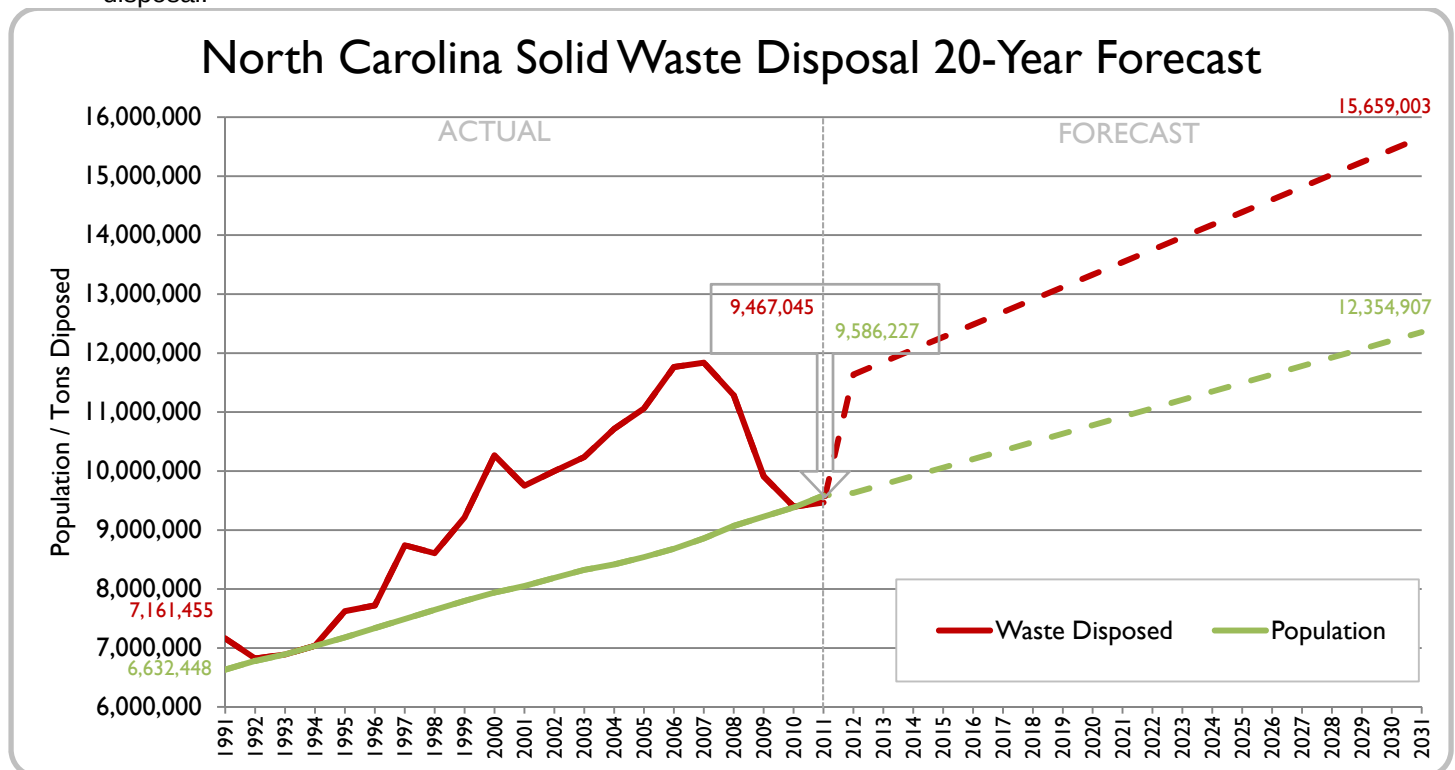
- The department should continue to evaluate the effectiveness of the state's disposal bans.
- The department should coordinate efforts among local government and industry to ensure disposal capacity is available in all areas within North Carolina.
- The department should encourage the diversion of identified large solid waste streams, such as food and wood wastes, from large generators of these wastes.
- The department should work to expand collection of plastic bottles and other recyclables in order to ensure that the capacity of the growing recycling markets in North Carolina are met.

Per capita Disposal of Municipal Solid Waste and Construction and Demolition Waste Generated within North Carolina

Fiscal Year	Tons of waste disposed	NC population	Tons of waste per person in a year	Per capita waste change from Base Year 91-92	Per capita waste change from previous year
2010-11	9,467,045	9,586,227	0.99	-8.0%	-1.0%
2009-10	9,395,457	9,382,609	1.00	-6.4%	-6.8%
2008-09	9,910,031	9,227,016	1.07	0.4%	-13.7%
2007-08	11,284,712	9,069,398	1.24	16.3%	-6.9%
2006-07	11,837,104	8,860,341	1.34	24.8%	-1.4%
2005-06	11,765,183	8,682,066	1.36	26.6%	4.9%
1991-92*	7,257,428	6,781,321	1.07		
1990-91	7,161,455	6,632,448	1.08		

* Baseline Year

- A linear model suggests that the state will continue to see an increase in waste disposed (see graph below). As has been seen in the last three years, waste disposal was down because construction and demolition of homes was down, which directly relates to the economy. Historically, good economic growth has lead to increased waste disposal.



- Landfill bans (such as those for plastic bottles, aluminum and electronics) and an increase in recycling program participation may also keep waste disposal increases to a minimum.
- The total remaining capacity of all North Carolina MSW landfills measures approximately 358 million cubic yards, equating to approximately 221 million tons. The estimate was obtained using 0.62 tons of waste per cubic yard of air space. The capacity does not include waste exported to out-of-state landfills.
- State capacity equals 29 years of waste disposal if North Carolina's rate of landfill use remains steady at approximately 7.6 million tons per year and no new landfills are opened in the state.
- Much of the state's capacity is not available statewide due to permit conditions, franchise arrangements, service areas and distance. Although overall state capacity is sufficient, some regions may experience additional costs and possible disruptions as facilities close or if fuel costs make transport of waste to distant facilities prohibitive.
- See webpage <http://portal.ncdenr.org/web/wm/sw/swmar> and click on FY 2010-2011 for a listing of all active MSW landfills and corresponding disposal figures.

Municipal Solid Waste

- North Carolina has 40 operational municipal solid waste landfills and one municipal solid waste incinerator.
- Waste reported from North Carolina in MSW landfills totaled 7,954,612 tons for FY 2010-11 (7,435,293 in landfills within the state and 519,319 in landfills in Virginia, South Carolina, Georgia, and Tennessee).
- 179,071 tons of waste from other states went to MSW landfills.
- Analysis of the North Carolina MSW landfills indicates a four percent increase in disposal when compared to last year's figures. The increase correlates to an increase in population of two percent and a slight upturn in the economy.

Construction and Demolition Waste

- North Carolina has 52 operational C&D landfills.
- C&D landfills are usually not required to have liners and leachate collection and removal systems, although future C&D landfills at new sites are required to have liners and leachate collection and removal systems.
- All C&D landfills require groundwater and methane monitoring.
- Analysis of the North Carolina C&D landfills shows a four percent increase in disposal when compared to last year's figures. Part of this increase is most likely due to the clean-up from tornadoes in April and a slight upturn in the economy.
- Disposal of C&D waste reported at C&D landfills totaled 1,393,982 tons. C&D waste is also received at MSW landfills in North Carolina.
- See webpage <http://portal.ncdenr.org/web/wm/sw/swmar> and click on FY 2010-2011 for a listing of all active C&D landfills and corresponding disposal figures.

Industrial Waste

- In North Carolina, 12 active industrial landfills and one incinerator received only industrial waste during FY 2010-11. All industrial landfills are constructed with liners and leachate collection and removal systems and are monitored to detect releases.
- Seven of the industrial landfills serve the electric power industry.
- Three of the industrial landfills serve the pulp and paper industry.
- One of the industrial landfills serves the automotive and one serves the battery industry.
- See webpage <http://portal.ncdenr.org/web/wm/sw/swmar> and click on FY 2010-2011 for a listing of all active industrial landfills and corresponding disposal figures.

Household Hazardous Waste Collection

- Household hazardous wastes (HHW) are household chemicals that are poisonous and/or toxic, ignitable, corrosive or reactive with other chemicals. HHW includes items such as pharmaceuticals, household cleaners, pesticides, herbicides, fertilizers, pool chemicals, paints, automotive fluids and batteries, among others. These chemicals are dangerous to human health and the environment. The Solid Waste Section recommends that citizens properly dispose of HHW at a HHW collection site. Local HHW collection sites may be temporary, one-day events or permanent ongoing collection sites.
- Of the 100 counties in North Carolina, only 13 have permanent household hazardous waste collection sites (17 total).
- These 13 counties alone collected 1,930,141 pounds of flammable liquids; 160,164 pounds of flammable solids; 107,000 pounds of poisonous materials; 73,780 pounds of oxidizing substances; 78,082 pounds of various lead-acid, cadmium, lithium and alkaline batteries, and 1,534,624 pounds of electronics containing heavy metals.
- Twenty-eight communities held 48 temporary collection events. An average one-day event costs \$25,468.91, with an average citizen participation rate of 727 citizens. This represents roughly 605 households per event.
- A complete listing of locations of permanent HHW sites as well as one-day events can be found at <http://portal.ncdenr.org/web/wm/sw/hhw>.

Medical Waste Collection and Processing

- North Carolina has experienced a decrease in the number of regulated medical waste treatment facilities in the past several years. An incinerator in Matthews closed in May 2011. The reopening of a facility in Creswell, previously closed in 2007, brings the number of regulated medical waste treatment facilities to three.
- A new medical waste treatment technology was approved for use in the state in January 2011. The technology shreds the medical waste and then applies a chemical disinfectant to treat the waste. This brings the number of available technologies to treat regulated medical waste in the state to 11. Other types of technologies approved can be viewed at website: <http://portal.ncdenr.org/web/wm/sw/medicalwaste/technologies>.
- All of North Carolina's regulated medical waste treatment facilities reported treating a total of slightly less than 33,000 tons of regulated medical waste with about half of the waste originating in North Carolina.

Solid Waste Management Account

- North Carolina Session Law 2007-550 established a Solid Waste Management Permitting Fee Fund effective July 1, 2007. Revenue of the account consists of solid waste management facility permit and operational fees.
- **In FY 2010-11 \$1,110,750 was collected** into the Permitting Fee Fund from the following types of facilities:
 - (1) Municipal Solid Waste Landfill accepting less than 100,000 tons/year of solid waste
 - (2) Municipal Solid Waste Landfill accepting 100,000 tons/year or more of solid waste
 - (3) Construction and Demolition Landfill accepting less than 100,000 tons/year of solid waste
 - (4) Construction and Demolition Landfill accepting 100,000 tons/year or more of solid waste.
 - (5) Industrial Landfill accepting less than 100,000 tons/year of solid waste
 - (6) Industrial Landfill accepting 100,000 tons/year or more of solid waste
 - (7) Tire Monofills
 - (8) Treatment and Processing
 - (9) Transfer Station
 - (10) Incinerator
 - (11) Large Compost Facility
 - (12) Land Clearing and Inert Landfill
- The following types of facilities do not require that a fee be paid but are regulated by the Solid Waste Section, involving action by Field Operations and Permitting staff:
 - (13) Closed Landfills that are not under post-closure care
 - (14) Household Hazardous Waste Collection Sites
 - (15) Notified - Land Clearing and Inert Debris Landfills
 - (16) Notified - Treatment and Processing Facilities
 - (17) Notified - Yard Waste
 - (18) Small Compost Facilities
- Funding from the Solid Waste Management Account was used to fund **staff and administrative costs of \$1,166,426 during FY 2010-11**. It should be noted that the **cash balance covered expenditures spent above revenues**.

Solid Waste Section - Initiative to Process Asphalt Shingles

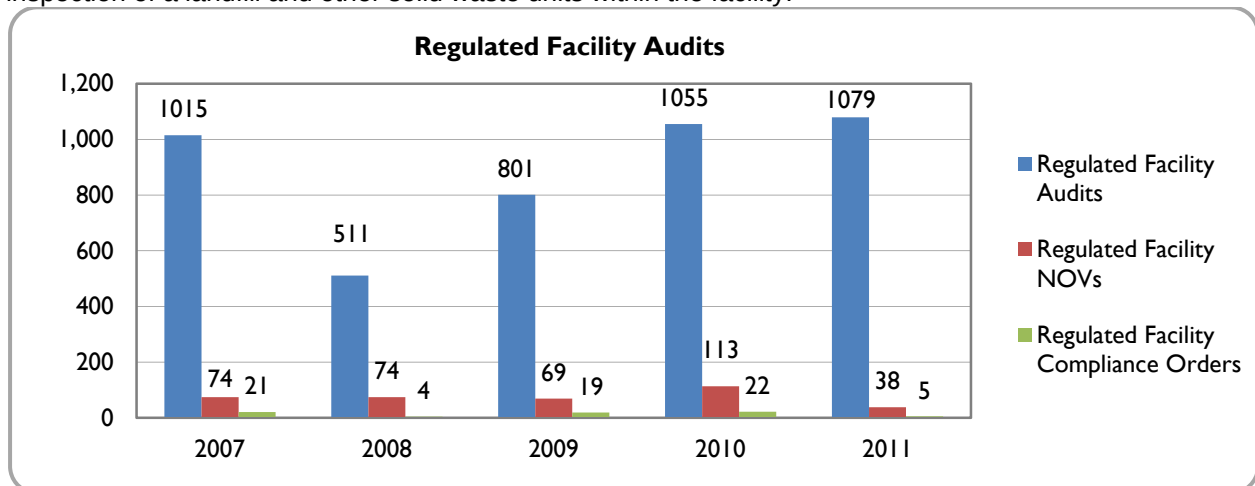
- **Solid Waste Section program staff collaborated with several partners to develop a procedure to consider tear-off shingle recycling as a process, instead** of permitting it as waste management. The partners included: industry representatives, the Carolina Asphalt Paving Association, Division of Air Quality, Division of Health and Human Services- Health Hazards Branch, and North Carolina Department of Transportation (NCDOT). Benefits to the state include:
 - o Shingles reuse is a way for asphalt contractors and shingle recyclers to **reduce their costs** and contribute to the sustainability of the state's transportation infrastructure. The reduced costs can be passed on to NCDOT and ultimately the taxpayers of North Carolina.
 - o The **reduced regulatory burden** will assist new business development.
 - o **Landfill airspace** is preserved and a major source of landfill material is removed from the waste stream and reused.
- The *Best Practices Guide for Post-Consumer Reclaimed Asphalt Shingles in Asphalt Pavement* manual was developed to guide the use of post-consumer reclaimed asphalt shingles in asphalt paving mix destined for state projects.
- This is the first of many initiatives by the Solid Waste Section Program staff to reduce the regulatory burden while continuing to offer environmental protection across the state.

Solid Waste Section – Field Operations Technical Assistance and Oversight

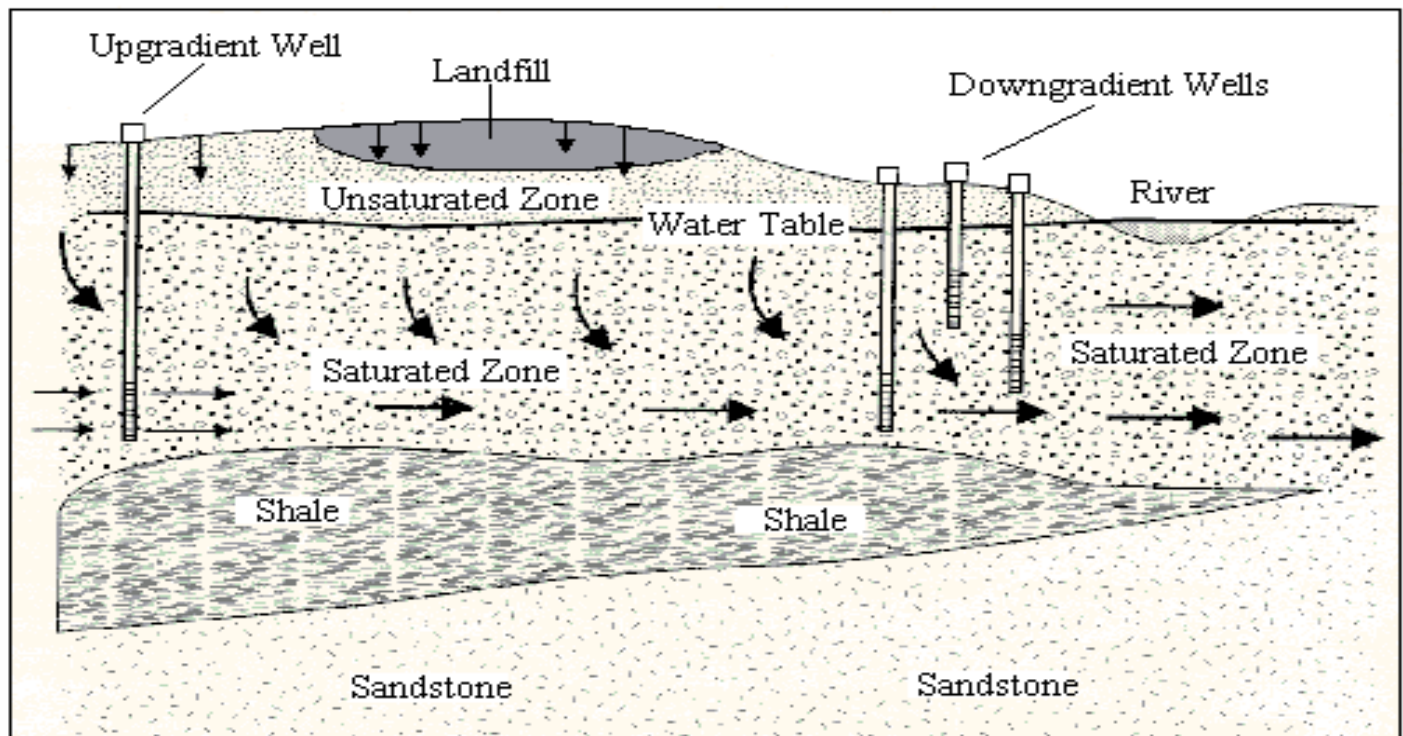
- Solid Waste Section program staff responsibilities include providing technical assistance and/or oversight to the regulated community, private citizens, the media and, if necessary, initiating enforcement action, and disaster and emergency response.
- Facility types inspected by the Solid Waste Section program staff are listed below:

Closed Landfills which require inspection
Coal Ash Structural Fills
Construction & Demolition Landfills
Construction & Demolition Landfills over Municipal Solid Waste Landfills
Household Hazardous Waste Collection Sites
Incinerator - Industrial Waste
Incinerator - Medical Waste
Industrial Landfills
Land Clearing and Inert Debris Landfills
Material Recovery Facilities
Municipal Solid Waste - Waste To Energy Facilities
Municipal Solid Waste Landfills
Notified - Land Clearing and Inert Debris Landfills
Notified - Treatment and Processing Facilities
Notified - Yard Waste
Solid Waste Compost Facilities (4 different types)
Tire Monofills
Tire Treatment and Processing/Collection Facilities
Transfer Stations
Treatment and Processing Facilities - Construction & Demolition Waste
Treatment and Processing Facilities - Medical Waste
Treatment and Processing Facilities - Yard Waste or Land Clearing and Inert Debris

- Staff responsibilities at these facilities include:
 - o inspecting explosive gas and groundwater monitoring systems,
 - o inspecting engineered components of a landfill facility (e.g. stormwater controls, leachate collection systems),
 - o investigating contaminant releases,
 - o overseeing construction and closure of landfills and
 - o ensuring that proper engineering and operational measures are employed at landfills.
- At an active facility, a routine audit requires from half a day at a transfer facility to multiple days for a full inspection of a landfill and other solid waste units within the facility.

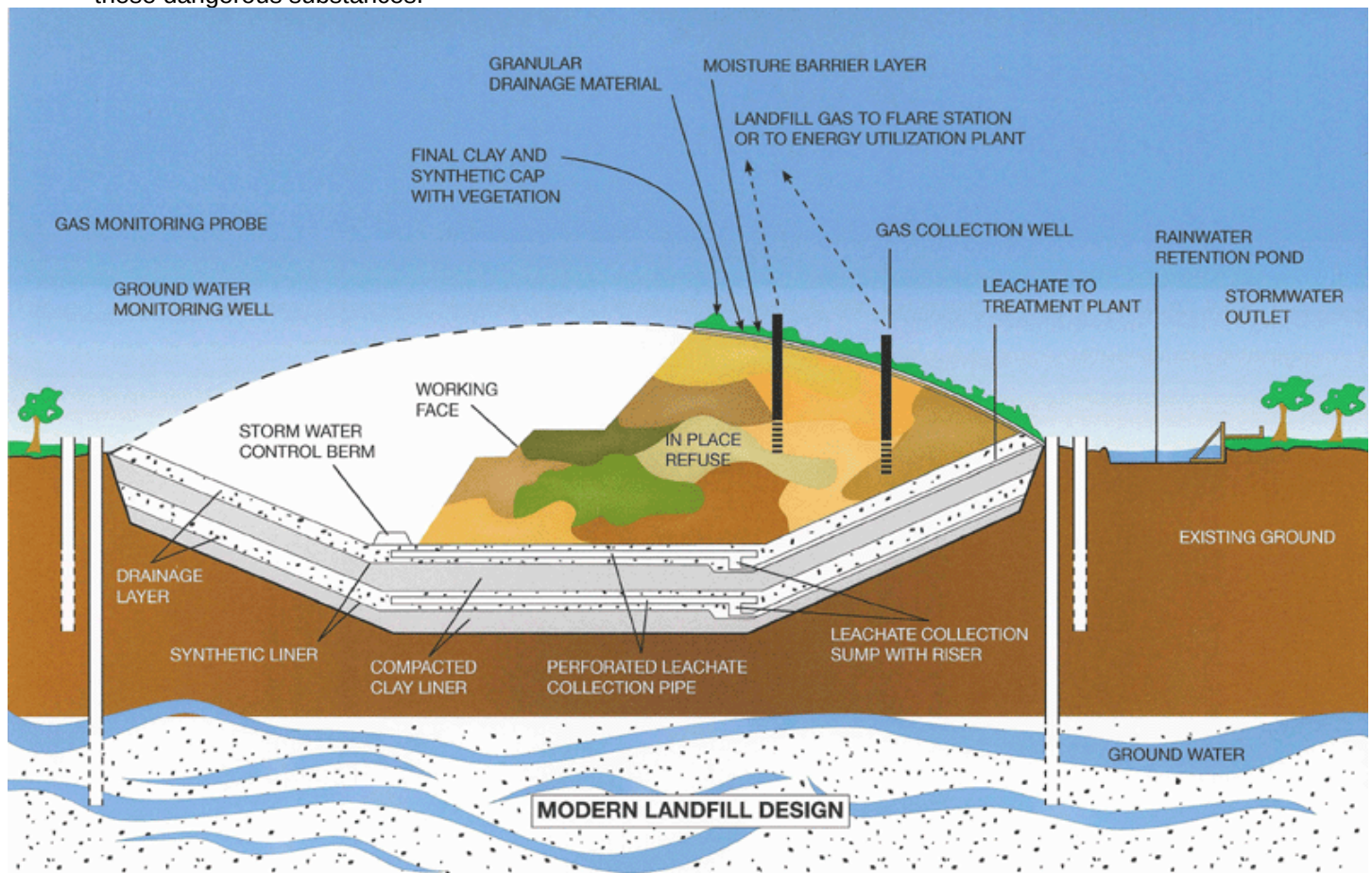


- Landfills contain numerous substances which, if released, could pose a significant threat to human health and the environment. These substances leaking from landfills can migrate, presenting a threat to the environment and to the public.



Environmental Monitoring, Assessment and Remediation

- Modern landfill designs include liners and leachate collection systems to contain waste and prevent the release of these dangerous substances.



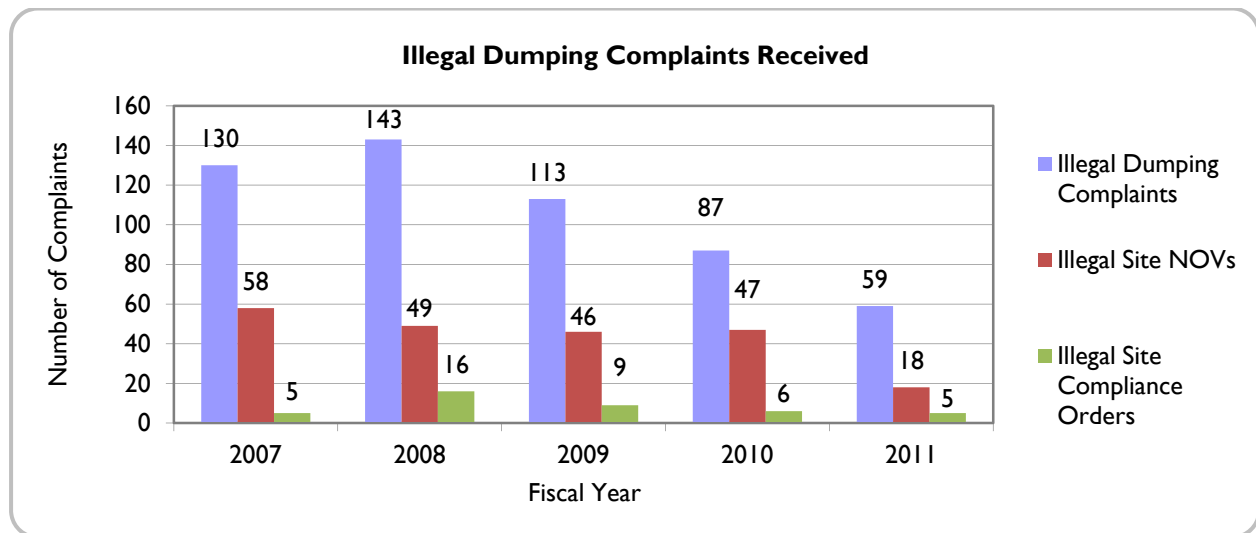
Standard Landfill Design

- Since most landfills that opened in North Carolina prior to 1993 were not constructed with liners and leachate collection systems, groundwater contamination and landfill gas is being detected at a growing number of closed, unlined landfill sites.

- Environmental monitoring is being conducted at 273 solid waste management facilities.
- Solid Waste Section hydrogeologists are assigned to address environmental compliance issues at solid waste management facilities across the state, to oversee the environmental monitoring and if required, assessment and remediation of nearly 300 permitted facilities and large illegal dumps each year.
- Ninety-seven percent of unlined solid waste facilities have reported volatile organic and/or inorganic compound groundwater violations. In addition, three lined solid waste management facilities, and one transfer station had leachate releases where untreated leachate was discharged.
- Groundwater corrective action is ongoing at 42 solid waste management facilities this year.
- Fourteen warning letters and three notices of violations were issued in 2011 for environmental impacts.
- Recent changes in environmental data reporting and subsequent creation of databases allowed staff to review data without investing as much time and resources as was previously required. While conducting routine queries and reviewing historical data, initial indications revealed that statistical analysis may have added only limited benefit in the detection of a release, if any at all. Therefore, two years ago staff began the process of eliminating the mandatory requirement of statistically analyzing environmental data from the rules. The new rules were effective during FY 2010-11.

Solid Waste Section - Illegal Dumps

- Solid Waste Section staff are responsible for dealing with complaints involving illegal dumps across the state because of the public health and environmental threat these sites can pose for many years.
- Illegal dumps are an important compliance issue because these sites have the potential to pose a significant threat to surface and groundwater, cause health-related impacts to drinking water, generate explosive gases, pose fire hazards, increase the vector population, reduce surrounding land values and have a potential negative impact on local tourism.
- For more information about the illegal dumping prevention initiative see: <http://portal.ncdenr.org/web/wm/sw/illegaldumping>.



Solid Waste Section - Tax Certification Program

- The tax certification program encourages resource recovery and recycling by making the reuse of waste materials more economically desirable for businesses.
- Equipment and facilities may be approved for an exemption from ad valorem taxes (*a tax based on the assessed value of real estate or personal property*) if they are used entirely for recycling purposes or resource recovery.
- For more information see <http://portal.ncdenr.org/web/wm/sw/taxcert>.



- Nearly all applications for a tax certification require site inspections/audits, which frequently include facilities with complex industrial processes including: steel production, craft paper production, glass products production or meat rendering facilities.

Solid Waste Section - Disaster Response

- Disaster response and emergency site selection evaluations** are a major component of field operation activities.
- Staff must respond to and assist local governments in the field, in the planning and response to natural and man-made disasters such as tornadoes, hurricanes, ice storms, floods, landfill fires, etc. During emergency response situations staff is on call 24 hours a day.
- 74 sites were evaluated during 2011, bringing the total of approved disaster debris staging sites to 346.
- After a disaster debris site has been approved, counties or communities can request a six-month activation of the site to aid in the cleanup after the occurrence of a disaster. The approval process is required for Federal Emergency Management Administration (FEMA) reimbursement eligibility.
- For more information see: <http://portal.ncdenr.org/web/wm/sw/dds>.

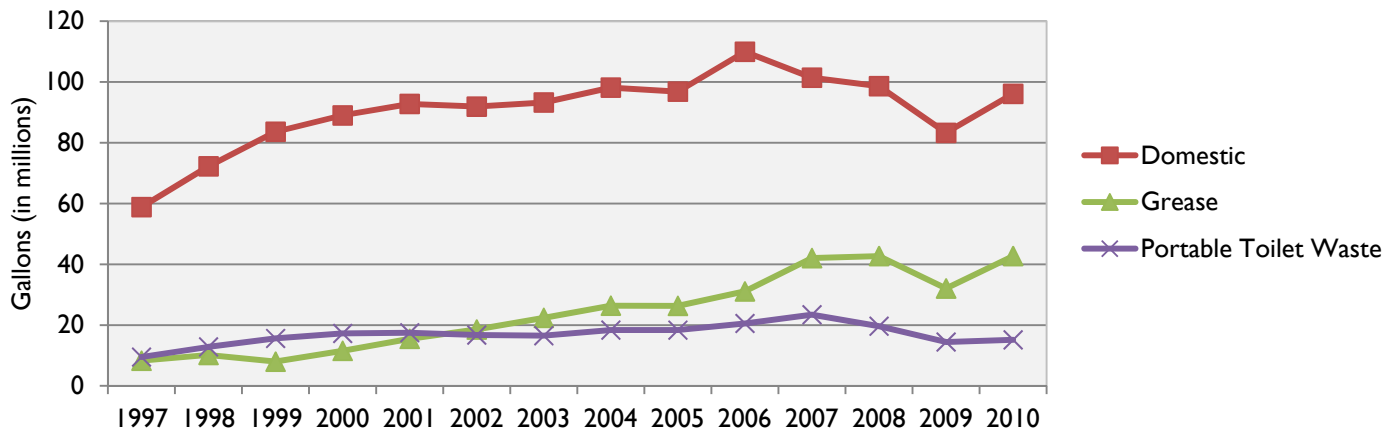
Solid Waste Section – Composting and Land Application

- The major areas of emphasis in the program are permitting septage land application sites, septage detention and treatment facilities, septage management firms, solid waste compost facilities and treatment and processing facilities. Staff are also responsible for determining wastes and byproducts that can be land-applied for beneficial uses and the best management practices to be followed for each byproduct to assure protection of public health and the environment.

CLA Facility Types
Solid Waste Compost Facilities
Yard Waste Notifications
Treatment & Processing Facilities
Treatment & Processing Notifications
Compost Demonstration Projects

- The volumes of **septage** pumped in 2010 (154 million gallons total) continue to show an overall decline in septage managed compared to the industry high figures from FY 2006-07. The decline in volume of septage managed is a direct result of the recent recession resulting in fewer septic tanks being pumped. Portable toilet waste volumes are directly tied to the building market, while domestic septage volumes are influenced by a variety of factors including postponement of preventive maintenance of onsite systems. Grease septage volumes continue to require the industry to look at alternative management options other than discharge at municipal wastewater treatment plants and land application. Grease treatment facilities have been built and permitted to manage this difficult waste stream across the state.

Septage Pumped Per Year



- **Training** of septage management firms and septage land application site operators continues to be a core component of staff activities. Staff participate in 16 training events each year across the state involving personnel from 520 septage firms and 130 land application site operators. Annual training events are coupled with new operator training for individuals who are new to the pumping industry in North Carolina. Advancements in the onsite wastewater sector have introduced new wastestreams to be managed, such as peat and other media types. These new wastestreams have required specific training on the replacement and disposal of these materials.
- **Compost facilities** in FY 2010-11 saw a continued interest in the diversion of organics from the municipal solid waste waste stream. Eleven solid waste compost facilities accepted food waste in FY 2010-11 for a total reported tonnage of 44,905. An additional 18,350 tons of food processing residuals were accepted by solid waste compost facilities. Compost demonstration approvals provide the unique opportunity for individuals to learn additional information about composting to reduce the amount of solid waste in N.C. landfills while having the regulatory oversight for distribution of the finished compost product.

Chapter 2

Solid Waste Management Trust Fund

DIVISION OF ENVIRONMENTAL ASSISTANCE AND OUTREACH

SOLID WASTE MANAGEMENT TRUST FUND ANNUAL REPORT

This report details the activities and expenditures of the Solid Waste Management Trust Fund for FY 2010-11 (July 1, 2010 - June 30, 2011). The trust fund is administered by the N.C. Division of Environmental Assistance and Outreach in the Department of Environment and Natural Resources. The trust fund was created by the Solid Waste Management Act of 1989 (SB 111). It is funded primarily by a portion of the revenues from advanced disposal fees on the sale of new tires and white goods (appliances), the tax on solid waste disposal and a tax on virgin newsprint. Additional revenues can come from appropriations and contributions. The purpose of the trust fund, as detailed in G.S. 130A-309.12, is to support a range of solid waste management activities including: technical assistance to local governments, businesses and other entities on solid waste issues; public educational programs; research and demonstration projects; recycling market development; and support of the operational costs of the Division of Environmental Assistance and Outreach (DEAO).

As noted in the table below, the Solid Waste Management Trust Fund received \$3,849,478 in revenues in FY 2010-11. When added to the beginning balance on July 1, 2010, of \$4,009,350, a total of \$7,858,828 was managed in the trust fund for FY 2010-11. Actual expenditures were \$3,782,694, leaving a fund balance at the end of FY 2010-11 of \$4,076,134. However, a total of \$2,073,024 of that balance was encumbered to cover disbursements for existing grants (grant contracts are paid on a reimbursement basis). The unencumbered balance at the end of FY 2010-11 was \$2,003,110. Additional grant contracts were awarded and in the process of being encumbered at the end of FY 2010-11.

FY 2010-11 Trust Fund Expenditures and Revenues

Sources

Beginning Balance	\$ 4,009,350
+ Revenue	\$ 3,849,478
- Expenditures	\$ 3,782,694
Ending Balance	\$ 4,076,134
Encumbrances	\$ 2,073,024
Unencumbered funds on 6/30/11	\$ 2,003,110

Breakdown of FY 2010-11 Revenue

Tire Tax	\$ 1,249,390
White Goods ADF	\$ 332,950
Newsprint Tax	\$ 312
Solid Waste Disposal Tax	\$ 2,252,545
Appropriations	\$ 0
Contributions and Misc.	\$ 14,281
Total Revenues	\$ 3,849,478

Trust Fund Revenue Sources - FY 2010-11

As noted in the table above, trust fund revenues in FY 2010-11 came from four of the six possible sources identified in the General Statutes. Activity from each revenue source is described below and additional details on the funding sources are available in Attachment A.

- **2% Tire Tax** – Trust fund revenues from the tax on the sale of new tires accounted for \$1,249,390 in FY 2010-11, an increase of nine percent from FY 10. Tire revenue accounted for 32 percent of total trust fund revenues for FY 2010-11.
- **White Goods Tax** – Proceeds from the advanced disposal fee on white goods accounted for \$332,950 or just nine percent of total revenues for FY 2010-11. White goods revenues were up 10 percent in FY 2010-11 from the previous year.
- **Virgin Newsprint Tax** – During FY 2010-11, \$312 was received from the virgin newsprint tax. In 14 years, the annual revenue from the newsprint tax has never been higher than \$3,000.
- **Solid Waste Disposal Tax** – The solid waste disposal tax generated \$2,252,545 in revenues to the Solid Waste Trust Fund in FY 2010-11. The disposal tax revenues accounted for 59 percent of all trust fund income for FY 2010-11 and were down by two percent from FY 10.
- **General Appropriations** - When the trust fund was established in 1989, a one-time appropriation of \$300,000 was allocated to provide an initial fund balance. Since that time there have been no further appropriations to the trust fund.
- **Contributions to the Trust Fund and Miscellaneous Revenues** – In FY 2010-11, the trust fund received \$5,765 in contributions from a small number of private and public sector entities to support

DEAO's recycling education and promotional efforts. More information on the recycling education campaigns is provided below. The trust fund also received \$8,516 in budgetary rebates in FY 2010-11.

Trust Fund Expenditures - FY 2010-11

The majority of trust fund expenditures in FY 2010-11 were grants to municipalities, counties and recycling businesses. Trust Fund resources were also used to continue delivery of technical assistance to communities, recycling businesses and waste generators. As per statutory changes made in 2009, the trust fund was also used to cover operational expenses of the division. These activities are among the explicit purposes noted for the trust fund in G.S. 130A- 309.12, and are described in more detail below.

FY 2010-11 Community Waste Reduction and Recycling Grants

As directed by statute and in particular by provisions of the solid waste disposal tax, the division offers local governments an annual general grant cycle to fund recycling initiatives and program expansions. The Community Waste Reduction and Recycling Grants for FY 2010-11 were initiated by a request for proposals released in December 2010 with a due date for proposals in March 2011.

DEAO received and evaluated a total of 46 proposals requesting \$887,029 in funding, and selected 43 proposals for a total of \$795,885 in grant awards. One community subsequently chose not to proceed with its project. Details on the grantees and their projects are provided under Attachment B to this report.

FY 2010-11 Curbside Rollout Cart Grants

Community recycling programs in North Carolina continue to transition from using bins to using large and more convenient wheeled carts to provide curbside service. To encourage this trend, DEAO maintained its grant program for cart purchases in FY 2010-11. Over the course of the fiscal year, 11 municipalities submitted proposals and all were funded for a total of \$548,000 in grant awards. In many cases, the grants supported the start-up of new recycling programs in small towns. The recipients, funding amounts and project descriptions are detailed in Attachment C to this report.

FY 2010-11 Abandoned Manufactured Home Grants

As directed in statute, DEAO provides grants from the Solid Waste Management Trust Fund toward the clean-up of abandoned manufactured homes (AMH). In FY 2010-11, the second year of the program, the division maintained an open request for proposal for AMH projects. A total of three abandoned manufactured home grant projects totaling \$105,000 were funded in FY 2010-11, which are listed in Attachment D to this report.

FY 2010-11 Recycling Business Grants

DEAO conducts an annual grant cycle open to for-profit and nonprofit recycling businesses to help expand the state's available collection, processing and end-use capacity. The Recycling Business Grant cycle for FY 2010-11 was initiated by the November 2010 release of a request for proposal, with proposals due by February 2011. The grant cycle attracted 57 proposals requesting a total of \$1,787,680 in funding. Twenty-nine of these proposals were awarded grants for \$699,666 in overall funding. Details on the grantees and their projects are provided in Attachment E to this report.

Recycling Guys, RE3 and RecycleMore Outreach Campaigns

To implement the trust fund statutory provisions aimed at public recycling education, the division conducted a range of education and outreach activities statewide during FY 2010-11. Three campaigns intended for different demographic ages groups - Recycle Guys, RE3.org and RecycleMore – were used to boost public recycling participation and to support local government recycling education efforts. Outreach activities covered by the trust fund in FY 2010-11 included coordination of an educational recycling program for the N.C. State Fair, production of promotional materials for use by local government recycling programs, and continued usage of media outlets such as Blogspot, Facebook, Twitter, Flickr and LinkedIn to spread recycling messages to the public.



Technical Assistance Activities

The General Statutes direct the trust fund to be used to promote waste reduction and recycling generally, and specifically to provide technical assistance to local governments and to build recycling markets. The following section lists a number of activities that DPPEA pursued in FY 2010-11 to accomplish these requirements.

Waste Reduction Partners Program

The Waste Reduction Partners (WRP) is a highly successful program using retired engineers and business professionals to provide environmental technical assistance to companies and local governments in North Carolina. Through two ongoing grant contracts, the Solid Waste Trust Fund continued to support WRP in FY 2010-11 at its Land-of-Sky and Triangle J COG offices. With this funding and other matching money, WRP helped North Carolina businesses and other entities reduce or recycle 10,081 tons of solid waste in FY 2010-11.

Staff Support

To accomplish the technical assistance, public education and recycling market development requirements in the General Statutes, the trust fund was used in FY 2010-11 to support staff positions in the Division of Environmental Assistance and Outreach. A total of \$945,057 was expended to pay for salaries, benefits and some limited operational support. Staff activities included:

- Implementation of grant programs for local governments and recycling businesses, including administration of more than 100 individual recycling grant contracts.
- Training and assistance to county and municipal recycling programs.
- Technical assistance, recruitment and business development support for recycling companies.
- Implementation of the statewide recycling outreach campaigns.
- Training and assistance to recycling and environmental education coordinators.
- Completion of statutory data and reporting processes on solid waste and recycling issues.
- Waste assessment and material marketing assistance to business and industrial waste generators.
- Promotion of environmentally preferable and recycled content purchasing, as encouraged by statute and executive order.
- Implementation of new and ongoing recycling legislation, including material disposal bans, North Carolina's electronics recycling law and requirements on local and state agencies to recycle fluorescent lamps.
- Development of infrastructure and programs to divert organic wastes to compost and digestion facilities.
- Implementation of a technical assistance and environmental recognition program for the hospitality and tourism industry in North Carolina.
- Coordination of a construction and demolition conference with the Carolina Recycling Association and ongoing development activities for the C&D recycling infrastructure.

The trust fund was also used to support graduate interns. Student projects in FY 2010-11 focused on research on construction and demolition waste recycling, assistance with the disposal ban on computer equipment and televisions, development of recycling outreach and educational materials, support of the DEAO Website, and providing general assistance to local government recycling programs.

Product Stewardship Initiatives

"Product Stewardship" is a growing movement by state and local governments to increase manufacturer and retailer responsibility for the environmental impacts of products, including the diversion of those products from disposal. Expanding responsibility for end-of-life products is expected to reduce cost and tax burdens on state and local governments. In FY 2010-11, North Carolina participated in product stewardship initiatives by supporting the activities of the Product Stewardship Institute, maintaining involvement in the Carpet America Recovery Effort and joining efforts to address packaging sustainability issues.

Workshops and Training

To encourage the professional development of local recycling coordinators and solid waste directors, trust fund resources supported registration scholarships for county and municipal staff to the 2010 Southeast Construction and Demolition Recycling Conference (held in Charlotte) and the 2011 Carolina Recycling Association conference.

Support of Compost Permit Stakeholder Process

As part of a legislatively directed effort between DENR agencies and outside stakeholders, DEAO provided funding toward the completion of a process to update and modernize permitting parameters on composting facilities operating in North Carolina.

Operational Support for the Division of Environmental Assistance and Outreach

As per a statutory change made in 2009, the General Assembly assigned the general operating costs of the Division of Environmental Assistance and Outreach to the Solid Waste Trust Fund, including payment of office rent, cost of vehicle use and other travel, computer and printing equipment purchase and use, and other miscellaneous costs. Total expenditures to support the division in FY 2010-11 were \$231,037.

Clean-up of the Texfi Industrial Site

A line item in the FY 2010-11 state budget diverted \$50,000 toward clean-up of the Texfi industrial site in Fayetteville. Funds were transferred to the Division of Waste Management for this purpose.

Planned Expenditures and Changes to Trust Fund Revenues for FY 2011-12

In FY 2011-12, the Solid Waste Management Trust Fund will focus grant attention in four main areas: 1) general support for expansion of local recycling programs, 2) cart grants to encourage modernization of curbside recycling programs, 3) local clean-up programs for abandoned manufactured homes, and 4) recycling business grants to grow private sector collection, processing and end-use capacity across the state.

In addition, the trust fund will be used to continue to promote widespread public participation in recycling through the Recycle Guys, RE3 and RecycleMore campaigns. The trust fund will also be used to support the Waste Reduction Partners program and to provide recycling technical assistance to local governments, recycling businesses and waste generators. In addition, North Carolina will continue to participate in national coalitions seeking to promote product stewardship and will work to expand training opportunities for local solid waste and recycling staff. Finally, a portion of the trust fund will support the operations of the Division of Environmental Assistance and Outreach.

Questions regarding the N.C. Solid Waste Management Trust Fund may be directed to Scott Mouw, chief, Community and Business Assistance Section, N.C. Division of Environmental Assistance and Outreach, at 919-707-8114.

ATTACHMENT A: STATUTORY TRUST FUND REVENUE SOURCES

The North Carolina Solid Waste Trust Fund receives the bulk of its revenues from four main sources. Details on these sources are provided below.

Scrap Tire Tax – a two percent fee is levied on the purchase of new tires in North Carolina, with revenues distributed to three main purposes. The tire tax allocation is as follows:

- 72 percent of revenues are distributed to the counties on a per capita basis to pay for the proper management of discarded tires.
- 20 percent of revenues are credited to the Scrap Tire Disposal Account (administered by the Solid Waste Section) for local government grants and nuisance tire site cleanup.
- 8 percent of revenues are credited to the Solid Waste Management Trust Fund.

White Goods Tax - a \$3 fee is levied on the purchase of major appliance in North Carolina, with revenues distributed to three main purposes. The white goods tax allocation is as follows:

- 72 percent of revenues are distributed to the counties on a per capita basis to pay for the proper management of discarded white goods.
- 20 percent of revenues are credited to the White Goods Management Account (administered by the Solid Waste Section) for grants to local governments for managing discarded white goods.
- 8 percent of revenues are credited to the Solid Waste Management Trust Fund.

Solid Waste Disposal Tax - a \$2 per ton fee is levied on disposed solid waste at North Carolina landfills and at transfer stations that send solid waste out-of-state for disposal. The disposal tax revenues are distributed to three main purposes:

- 50 percent is distributed to the Inactive Hazardous Waste Sites program for the clean-up of pre-regulatory orphan landfills.
- 37.5 percent is distributed directly to municipalities and counties for operation of solid waste and recycling programs.
- 12.5 percent is distributed to the Solid Waste Trust Fund for local government recycling grants.

Virgin Newsprint Tax – North Carolina newspaper publishers who fail to meet state-required purchasing goals for recycled content newsprint must pay a \$15 per ton tax on the virgin newsprint they consume. The law allows wide exemptions for companies who are unable to purchase recycled content newsprint due to availability or pricing constraints, or who are actively involved in the recovery of newspaper for recycling.

ATTACHMENT B: 2010 COMMUNITY WASTE REDUCTION AND RECYCLING GRANTS

GRANTEE	AMOUNT	GRANT DESCRIPTION
Brunswick County	\$6,400.00	Brunswick County will purchase and install salvage sheds at four solid waste convenience centers to encourage and facilitate reuse.
Cabarrus County	\$12,860.00	Cabarrus County will construct a storage building and will conduct public outreach to increase collection of electronic materials.
Camden County	\$12,083.00	Camden County will purchase three utility trailers, program signs and promotional materials to implement an electronics recycling program.
Cherokee County	\$4,531.00	Cherokee County will purchase a trailer and recycling containers to start a recycling program at the Murphy Medical Center.
City of Asheville	\$30,000.00	The city of Asheville will purchase recycling containers and outreach materials to implement away-from-home recycling in its city parks.
City of Burlington	\$25,984.00	The city of Burlington will purchase and install recycling receptacles to collect recyclables from its public park system.
City of Charlotte	\$30,000.00	The city of Charlotte will purchase and put into use recycling containers and educational materials at its CATS light rail stations.
City of Greensboro	\$4,000.00	The city of Greensboro will purchase gift cards and bin stickers for a recycling incentive program, as well as a video camera to monitor illegal dumping.
City of Kannapolis	\$18,203.00	The city of Kannapolis will purchase recycling containers for schools and parks as well as t-shirts and gift cards to provide as incentives for residents who participate in its new curbside recycling program.
City of Kinston	\$8,158.33	The city of Kinston will purchase recycling containers for parks and curbside recycling.
City of Locust	\$24,000.00	The city of Locust will purchase a pickup truck and pedestrian recycling stations to implement recycling collection at city parks and in its City Development Center.
City of Rocky Mount	\$30,000.00	The city of Rocky Mount will purchase containers, a truck and other equipment to initiate and expand recycling at sports fields and at a public housing complex.
Edgecombe County	\$3,987.33	Edgecombe County will purchase and install a concrete pad, carport/shelter and hook-on forks for a loader to increase capacity and expand its electronics recycling storage handling area.
Franklin County	\$30,000.00	Franklin County will purchase one stationary compactor to implement single-stream recycling at a convenience center and 22 four yard dumpsters to implement single-stream recycling at county schools.
Gaston County	\$13,620.00	Gaston County will purchase and construct a concrete bunker system, gravel and two 40 yard containers to initiate a construction and demolition recycling program for scrap shingles, cardboard and metal.
Granville County	\$30,000.00	Granville County will purchase and construct a concrete pad, retaining wall and one 30 yard container to initiate a construction and demolition recycling program to include scrap shingles.
Harnett County	\$30,000.00	Harnett County will construct a concrete pad to initiate a construction and demolition recycling program to include scrap shingles.
Henderson County	\$30,000.00	Henderson County, with support from the city of Hendersonville, will purchase two roll-off containers, 11 recycling bins and 48 main street recycling containers to implement its main street recycling program.

GRANTEE	AMOUNT	GRANT DESCRIPTION
Jackson County	\$16,078.00	Jackson County will purchase and put into use eight metal coverings for electronics collection and 250 recycling totes and five sets of recycling containers for recycling fiber and beverage containers.
Land of Sky Regional Council	\$25,000.00	The Land-of-Sky Council of Governments will purchase and retrofit a vehicle to conduct mobile recycling education in its four-county area.
Lee County	\$5,167.00	Lee County will purchase a recycling truck lift gate for handling materials from its electronics recycling program.
Macon County	\$13,886.54	Macon County will purchase a recycling trailer, Clear Stream recycling containers and educational materials to expand its recycling programs.
Madison County	\$16,000.00	Madison County will purchase and put into service four trailers for the collection of electronics.
Mecklenburg County	\$18,749.00	Mecklenburg County will purchase and put into use 200 recycling bins and educational materials for Char/Meck Schools to recycle cartons.
Moore County	\$30,000.00	Moore County will purchase compactors for two convenience sites to convert to single stream and increase program efficiency.
Nash County	\$30,000.00	Nash County will purchase and install stationary compactor systems for single-stream recycling at two convenience centers.
Onslow County	\$13,778.08	Onslow County will purchase and install recycling containers and educational materials at all 12 of the parks in the county, implementing an away-from-home recycling program.
Orange County	\$29,968.00	Orange County will purchase three roll-offs to initiate a shingle recycling program and will purchase a horizontal baler to improve recycling program efficiency.
PCG Landfill Commission	\$19,184.00	Perquimans-Chowan-Gates Landfill Commission will purchase signs, promotional materials and double-walled tanks to improve used oil recycling and cooking oil recycling programs throughout the three counties.
Person County	\$8,744.00	Person County will purchase and install a vertical baler to increase its capacity to manage plastic film and other non-bottle plastics.
Pitt County	\$29,724.00	Pitt County will purchase nine 20 yard roll-off boxes to establish electronics recycling at all of its convenience centers.
Polk County	\$1,354.00	Polk County will purchase containers to initiate a recycling program at a large local medical facility.
Raleigh Department of Parks and Recreation	\$24,000.00	The Raleigh Parks and Recreation Department will purchase recycling containers and educational materials to initiate an internal department-wide recycling program.
Randolph County	\$30,000.00	Randolph County will construct an electronics recycling facility and purchase a forklift to initiate an electronics recycling program.
Richmond County	\$15,901.00	Richmond County will purchase two roll-offs and eight Dumpsters to make recycling services available at two county convenience centers and eight public schools.
Robeson County	\$30,000.00	Robeson County will construct and put into use a materials recovery facility.
Rutherford County	\$9,967.00	Rutherford County will purchase carts and bins for school and athletic field recycling and will install a recycling sign on its collection vehicle.
Town of Chapel Hill	\$13,062.00	The town of Chapel Hill will purchase and install pedestrian recycling stations to serve its central business district.

GRANTEE	AMOUNT	GRANT DESCRIPTION
Town of Fuquay-Varina	\$10,080.00	The town of Fuquay-Varina will construct an electronics recycling drop-off site to initiate an electronics recycling program.
Town of Kernersville	\$24,000.00	The town of Kernersville will purchase and install recycling containers to implement a program to place recycling containers in parks and at businesses.
Town of Morehead City	\$5,541.00	The town of Morehead City will purchase compost bins and sell them to town residents at a reduced cost to encourage the diversion of organic materials from the waste stream.
Town of Wallace	\$10,836.00	The town of Wallace will purchase a compartmentalized 40 yard recycling container and site preparation materials to set up a recycling drop-off site for residents and businesses.

ATTACHMENT C: 2011 CURBSIDE ROLLOUT CART GRANTS

GRANTEE	AMOUNT	GRANT DESCRIPTION
City of Kannapolis	\$75,000.00	The city of Kannapolis will purchase and put into use 18,000, 96-gallon roll-out carts to implement a curbside recycling collection program.
City of Kings Mountain	\$100,000.00	The city of Kings Mountain will purchase 4,500 95 gallon recycling carts to initiate a curbside grant program.
City of Trinity	\$75,000.00	The city of Trinity will purchase and put into use 3,000 95-gallon roll-out carts to implement a curbside recycling collection program.
Town of Elkin	\$42,500.00	The town of Elkin will purchase 1,650 65 gallon roll-out carts to upgrade its curbside recycling program.
Town of Jonesville	\$25,000.00	The town of Jonesville will purchase 1,000 65 gallon roll-out carts to upgrade its curbside recycling program.
Town of Mooresville	\$100,000.00	The town of Mooresville will purchase 6,000 96 gallon rollout carts to initiate a city-wide curbside recycling program.
Town of Red Cross	\$8,750.00	The town of Red Cross will purchase and put into use 350 96-gallon roll-out carts to implement a curbside recycling collection program.
Town of Ronda	\$5,500.00	The town of Ronda will purchase 220 rollout carts to initiate a curbside recycling program for households and businesses.
Town of Stedman	\$20,000.00	The town of Stedman will purchase 800 96 gallon roll-out carts to initiate a new curbside recycling program.
Town of Wingate	\$21,250.00	The town of Wingate will purchase and put into use 850 96-gallon roll-out carts to implement a curbside recycling collection program.
Village of Pinehurst	\$75,000.00	The village of Pinehurst will purchase and put into use 2,800-96 gallon and 200-64 gallon roll-out carts to convert curbside recycling collection program from bins to carts.

ATTACHMENT D: 2011 ABANDONED MANUFACTURED HOME GRANTS

GRANTEE	AMOUNT	GRANT DESCRIPTION
Tyrrell County	\$40,000.00	Tyrrell County will implement an abandoned manufactured homes program.
Robeson County	\$40,000.00	Robeson County will implement an abandoned manufactured homes program.
Iredell County	\$25,000.00	Iredell County will implement an abandoned manufactured homes program.

ATTACHMENT E: 2011 RECYCLING BUSINESS GRANT PROJECTS

GRANTEE	AMOUNT	GRANT DESCRIPTION
Abatement Restoration Services dba M'Powered Waste & Recycling	\$13,000.00	Abatement Restoration will install material processing and cart washing capabilities at a new recycling processing operation in Raleigh.
American Greenz Inc.	\$30,000.00	American Greenz will purchase and install processing equipment to assist in the recycling of e-scrap at its existing recycling facility.
American Recycling of SC LLC	\$40,000.00	American Recycling will open a material recovery facility in Henderson County to serve community recycling programs in western North Carolina.
AOK Sanitations Inc.	\$15,000.00	AOK Sanitation will expand its existing curbside recycling program through the purchase of a recycling collection truck with cart tippers and the purchase of additional roll-out carts and 1 to 2 yard containers.
APAC - Atlantic Inc. Thompson-Arthur Division	\$35,000.00	APAC-Atlantic Inc. will purchase and install a cold feed bin that will optimally incorporate post-consumer asphalt shingles into asphalt mixes at the Winston-Salem plant.
Barham Farms	\$26,666.00	Barham Farms will build a complete-mix anaerobic digester that will turn food and swine waste into electricity, heat and a nutrient-rich marketable fertilizer.
Benfield Sanitation	\$30,000.00	Benfield Sanitation will purchase a baler to equip its newly developed material recovery facility.
Clear Path Recycling LLC	\$25,000.00	Clear Path Recycling will purchase and install plastic flake sorting and conveying equipment to expand post consumer PET bottle recycling.
Danny's Dumpster Inc.	\$22,000.00	Danny's Dumpster will purchase a recycling collection truck to haul its all-in-one (food waste, recycling/cardboard, trash) dump trailer and cart tipper, and will also purchase 100 64-gallon Toter carts for holding food waste and recyclables.
Earth Farms LLC	\$35,000.00	Earth Farms will purchase a front end loader truck to conduct food waste pickup for its commercial compost facility.
eCycleSecure LLC	\$20,000.00	eCycle Secure will purchase a tractor to service electronic recycling collection sites in rural areas.
FCR LLC	\$30,000.00	FCR will purchase and install a mixed plastic dual sort ejection system to assist with sorting aseptic packaging and mixed plastic recyclables.
Foothills Connect Business and Technology Center	\$20,000.00	Foothills Connect will establish a vermiculture training center and implement worm-composting of wood chips and fruit and vegetable wastes.
Goodwill Industries of the Southern Piedmont Inc.	\$10,000.00	Goodwill of the Southern Piedmont will purchase a box body truck with lift tailgate to collect recyclables in underserved suburban and rural areas.
Green Pieces Recycling	\$20,000.00	Green Pieces Recycling will purchase and put into use a recycling collection vehicle that will expand the company's single stream collection services in a number of Stanly County communities.
GreenCycle Materials LLC	\$35,000.00	GreenCycle Materials LLC will purchase and use a front-end loader for post-consumer asphalt shingle recycling processing and for transporting the ground shingles into trucks to be delivered to customer locations.
Greenville Paving & Contracting Inc.	\$35,000.00	Greenville Paving & Contracting Inc. will purchase and install a rap bin feeder system that will be used to optimally incorporate post-consumer asphalt shingles into asphalt mixes at the Greenville plant.
iCan	\$30,000.00	ICAN will construct concrete pads and bins and purchase a trailer and screener to decrease end-product contamination.
Nelon Garbage Service	\$11,000.00	Nelon Garbage Service will provide curbside recycling service to all households in Chimney Rock Village and subscription recycling service for Lake Lure.
P&S Waste Management	\$20,000.00	P&S will purchase a collection truck and carts to assist in the growth of its

GRANTEE	AMOUNT	GRANT DESCRIPTION
		recycling collection business in Warren County.
Roll- Tech LLC	\$35,000.00	Roll Tech will purchase and install a production mold capable of producing a wheel made of recycled plastic and rubber.
Simply Green Recycling	\$15,000.00	Simply Green will purchase new curbside recycling bins, other containers and an additional vehicle for material collection.
Suburban Sanitation	\$12,000.00	Suburban Sanitation will purchase a rear-loading recycling collection truck to increase its current collection operation.
Synergy Recycling LLC	\$20,000.00	Synergy will purchase additional trailers to assist in the collection of e-scrap from county and municipal customers.
Unifi Manufacturing Inc.	\$25,000.00	Unifi will purchase fabric waste collection and processing equipment to improve the quality of recycled chips derived from fabric waste.
Union County Habitat for Humanity Inc.	\$10,000.00	Union County Habitat for Humanity will purchase a box body truck with lift tailgate to collect recyclables at middle schools and high schools in Union County
Wake County Habitat for Humanity Inc.	\$20,000.00	Wake County Habitat for Humanity will develop a customer accessible lumber yard, requiring equipment upgrades and warehouse alterations.
Waste Stream Innovations LLC	\$20,000.00	Waste Stream Innovations will start a service to collect and market agricultural plastics in the western North Carolina region.
Wellmark LLC	\$40,000.00	Wellmark will purchase equipment and install a production line capable of separating the material components within bales of discarded plastic apparel hangers to provide high value feed-streams of recyclable plastics.

Chapter 3

Government Waste Reduction Activities

DIVISION OF ENVIRONMENTAL ASSISTANCE AND OUTREACH

LOCAL GOVERNMENT WASTE REDUCTION ACTIVITIES AND RECYCLING MARKETS

Annual reports received from local governments provide data on source reduction, reuse, recycling and composting activities statewide as well as other aspects of solid waste management. Data from these reports helps to produce a picture of waste reduction efforts in North Carolina. This data offers information that helps to gauge the relative effectiveness of local government programs in diverting materials from disposal and delivering them to industry for reprocessing. It also documents the trends in recycling and reuse program implementation.

Source Reduction and Reuse Programs

The number of local governments with source reduction and/or reuse programs grew slightly during Fiscal Year 11 (July 1, 2010 – June 30, 2011). A core group of local governments has shown continued interest in operating swap shop programs that allow for very cost-effective diversion of reusable products from disposal. During FY 2010-11, local governments reported 85 individual swap shops in place across the state. While reuse programs often involve minimal expense and are easy to promote, they typically require well thought-out ground rules, staff attention and ongoing monitoring and maintenance to remain high-functioning. Source reduction and reuse programs tend to be very popular with citizens in the communities where they are operated, and on a cost per-ton basis are typically one of most efficient diversion efforts a public recycling program can undertake. Despite this, these programs remain generally underutilized in North Carolina.

Local Reduction/Reuse Programs

Program Type	FY 2004-05	FY 2005-06	FY 2006-07	FY 2007-08	FY 2008-09	FY 2009-10	FY 2010-11
Source Reduction Programs							
Backyard Composting	59	55	53	48	53	54	54
Grass Cycling	33	33	32	34	33	33	28
Junk Mail Reduction	59	59	55	59	57	60	62
Enviroshopping	29	25	26	21	23	29	29
Promotion of Non-toxics	30	23	22	17	18	26	24
Other	2	1	3	1	9	14	19
Reuse Programs							
Swap Shop Programs	33	37	32	31	32	29	31
Paint Exchange	18	18	19	18	18	17	17
Waste Exchange	8	3	3	2	2	2	3
Pallet Exchange	9	4	5	3	6	10	9
Other	11	5	4	8	8	6	9
Local Governments with Programs	104	102	95	97	96	105	108

Local Government Recovery

Materials recovery operations by local governments remained strong during FY 2010-11. Net local government recovery as demonstrated in the table below shows an increase in the total number of tons captured in FY 2010-11 versus FY 2009-10, and there was notable growth in the recovery of glass, plastic, electronics and construction and demolition debris. Several of these individual materials categories will be examined more closely later in this chapter. Despite a significant decrease in the number of tires reported as recovered by local governments, there has been an increase in total local government recovery. For the second year in a row, this decrease is the result of a change in the way tire recovery is reported. In past years, tire recovery has included all tires recovered at the privately operated tire facilities in the state, whereas tire recovery reported below for FY 2010-11 includes only that portion of tires generated by N.C. local governments that were recovered.

Local Government Recovery (Tons) and Performance Measures

Material	FY 2001-02	FY 2002-03	FY 2003-04	FY 2004-05	FY 2005-06
Total Paper	267,840	275,538	267,371	303,514	292,641
Total Glass	49,891	51,433	52,117	44,003	45,421
Total Plastics	17,269	16,807	18,679	18,320	18,177
Total Metal*	114,786	109,723	114,097	109,612	108,488
Total Organics**	468,901	689,027	589,124	583,101	619,494
Special Wastes***	5,426	5,926	6,271	6,690	6,955
Construction and Demolition Debris	17,648	20,002	24,084	20,292	24,001
Tires****	N/A	N/A	N/A	113,670	146,177
Other	5,896	4,626	4,773	5,677	7,743
Totals	947,657	1,173,082	1,076,516	1,204,879	1,269,097
Per Capita Recovery (lbs.)	231.47	281.88	255.76	282.13	292.35
Recovery Ratio (Recycling:Disposal)	0.10	0.11	0.10	0.11	0.11

Local Government Recovery (Tons) and Performance Measures (continued)

Material	FY 2006-07	FY 2007-08	FY 2008-09	FY 2009-10	FY 2010-11
Total Paper	305,615	321,019	342,008	343,031	347,622
Total Glass	51,883	56,837	69,446	75,124	86,163
Total Plastics	19,373	22,298	23,947	29,206	36,047
Total Metal*	96,884	84,740	69,242	61,251	57,681
Total Organics**	631,393	554,576	593,323	589,482	635,495
Special Wastes***	8,304	7,195	8,433	7,225	7,085
Electronics and Televisions	N/A	N/A	N/A	4,574	7,452
Construction and Demolition Debris	40,352	59,501	33,209	41,400	48,748
Tires****	187,273	142,160	147,055	119,177	97,323
Other	5,558	6,753	8,474	1,948	1,098
Totals	1,346,635	1,255,079	1,295,173	1,272,416	1,324,716
Per Capita Recovery (lbs.)	303.97	276.77	280.73	271.23	276.38
Recovery Ratio (Recycling:Disposal)	0.11	0.11	0.13	0.14	0.14

* Includes white goods, aluminum cans, steel cans and other metals.

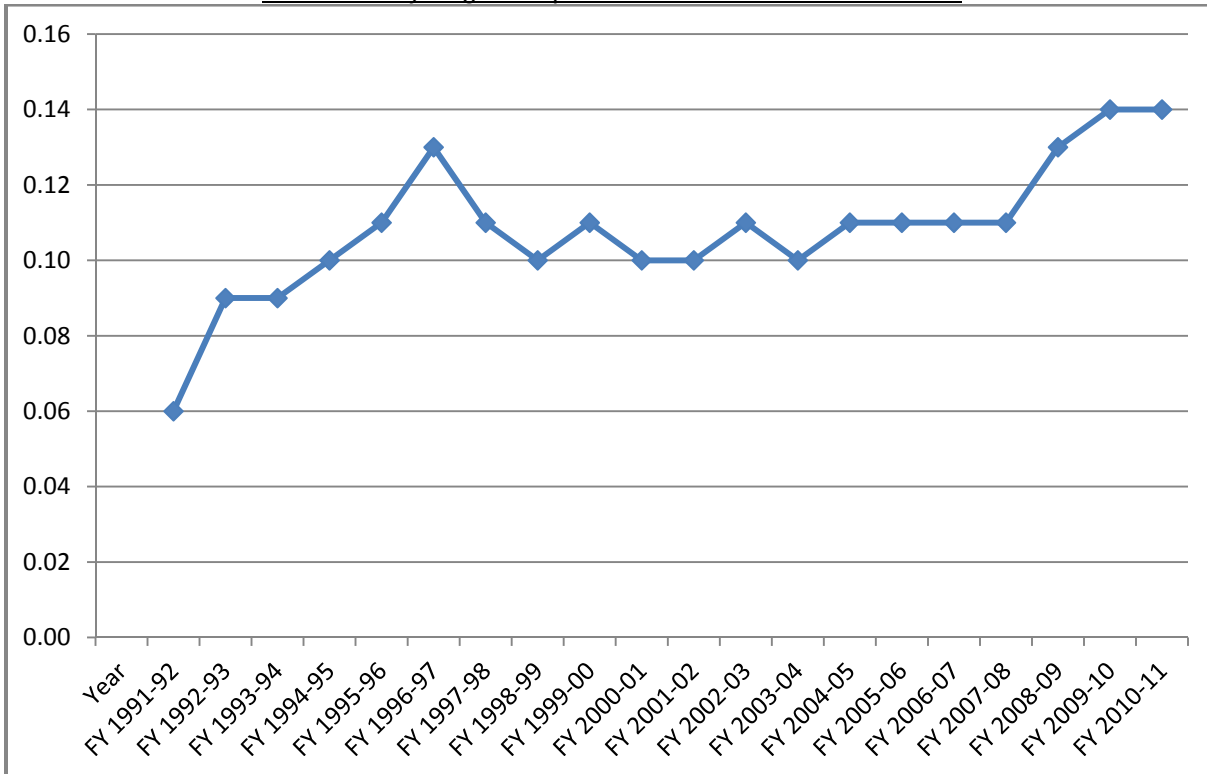
** Includes yard waste, pallets, wood waste and food waste.

*** For FY 2000-01 through FY 2008-09 Special Wastes includes electronics, used oil, oil filters, antifreeze, paint and batteries. Beginning in FY 2009-10 Special Wastes includes recovery from household hazardous waste programs, used motor oil, used oil filters, used antifreeze, lights containing mercury, pesticides and pesticide containers and excludes electronics, which are now are reported separately.

**** For FY 2010-11 the tons of tires recovered include only those tires generated by N.C. local governments. In FY2009-10, this figure inadvertently included some tires from out-of-state sources and in fiscal years prior to FY 2009-10 the Tires figure has included all tires recovered at the private tire facilities in North Carolina, including those tires received at those facilities from sources outside of North Carolina.

The ratio of recycling to disposal remained at its all-time high of 0.14 during FY 2010-11. This ratio is used to examine the success of materials recovery from year to year when compared to disposal, and is determined by comparing the amount of materials recovered by local governments to the amount of total waste disposal during any one year. The following chart demonstrates the increasing success of materials recovery programs in North Carolina over the past several years.

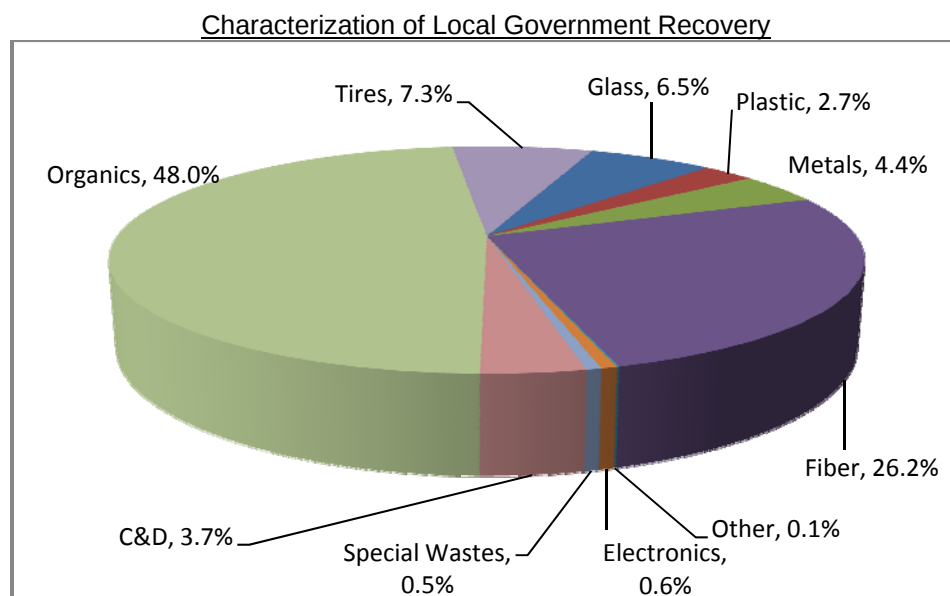
Ratio of Recycling to Disposal – FY 1991-92 to FY 2010-11



Recovery of Particular Materials

A significant demand exists in North Carolina and beyond for recovered materials as feedstock for a wide variety of industries. Although the generation of organic materials is erratic due to annual weather conditions, the recovery of organics (primarily through mulching and composting, though also from the recovery of food waste and food-based oils) remains the single largest component of local government recycling programs. During FY 2010-11 the recovery of organics constituted 48.0 percent of total local government recovery. Fiber and tires were the next two largest categories

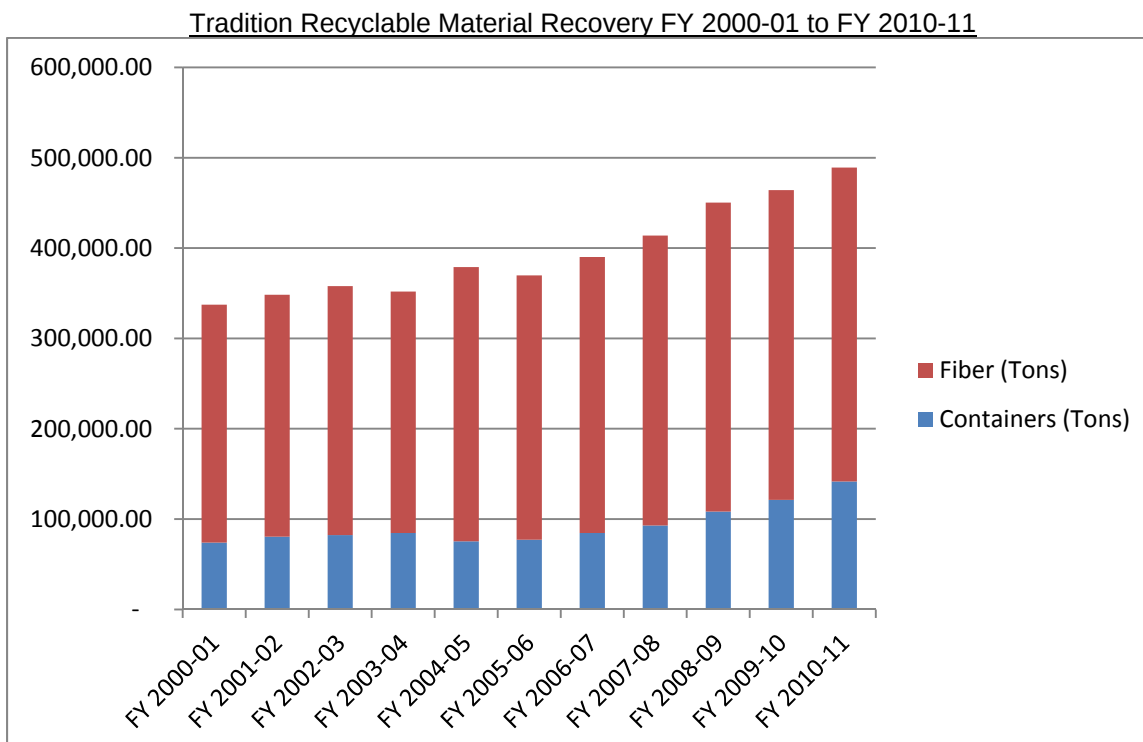
of materials recovered, contributing 26.2 percent and 7.3 percent respectively. Electronics are displayed separately from other special wastes for the second year in a row as a result of the disposal ban on these materials that became effective on July 1, 2011. The following chart provides a material-specific look at local government recovery operations in FY 2010-11.



Recovery of Traditional Materials

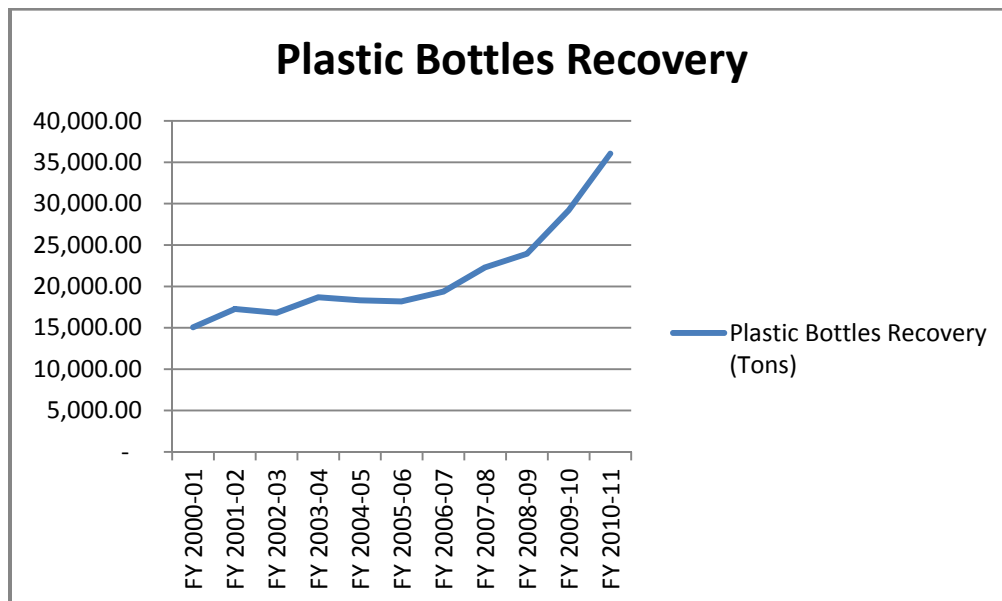
Traditional recyclable materials include fiber or paper (corrugated cardboard, magazines, newspapers, office fiber and residential mixed paper) and containers (aluminum beverage cans, glass bottles and jars, plastic bottles and steel food containers).

FY 2010-11 continued the steady growth in the successful capture of traditional materials with a 5.4 percent increase over FY 2009-10. This increase is significant because it is occurring despite the trend towards decreased weight of packaging like plastic bottles and metal cans, and despite the continued decrease in the circulation of printed newspapers and the downsizing of those papers still in circulation.

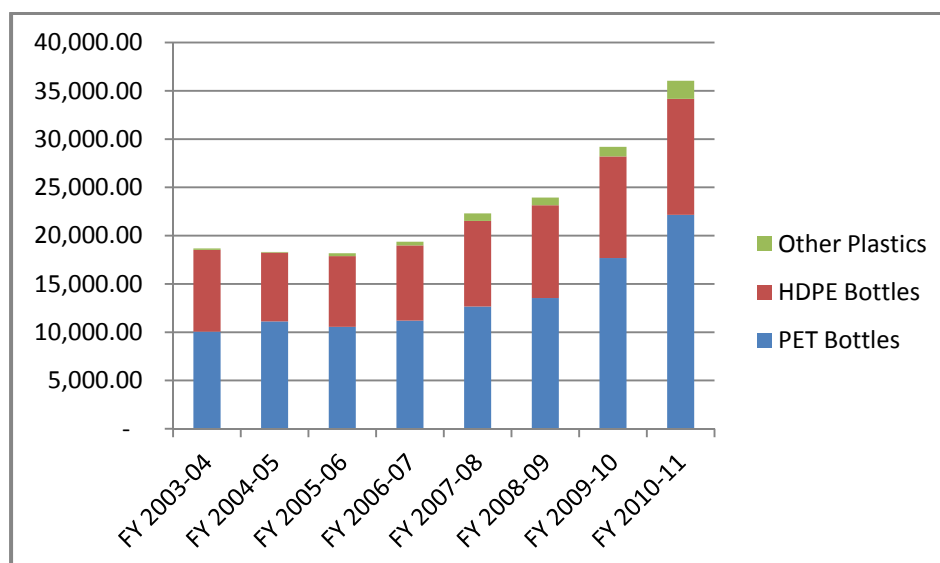


Plastic Bottles - A Continuing Success Story

North Carolina's disposal ban on plastic bottles became effective on Oct. 1, 2009. Plastic bottle recovery has experienced significant growth since the disposal ban took effect. Compared to the previous fiscal years, plastic bottle recovery in North Carolina increased 22 percent in FY 2009-10 and 23.4 percent in FY 2010-11. When this rate of growth is compared to the pre-ban year-over-year average growth in recovery of 6.2 percent, the disposal ban on plastic bottles can be considered a significant success. The increased capture of plastic bottles helps to deliver more HDPE and PET resin to the growing plastics recovery industry in North Carolina and beyond. The following chart illustrates the increased recovery in plastic bottles over the past 11 fiscal years.

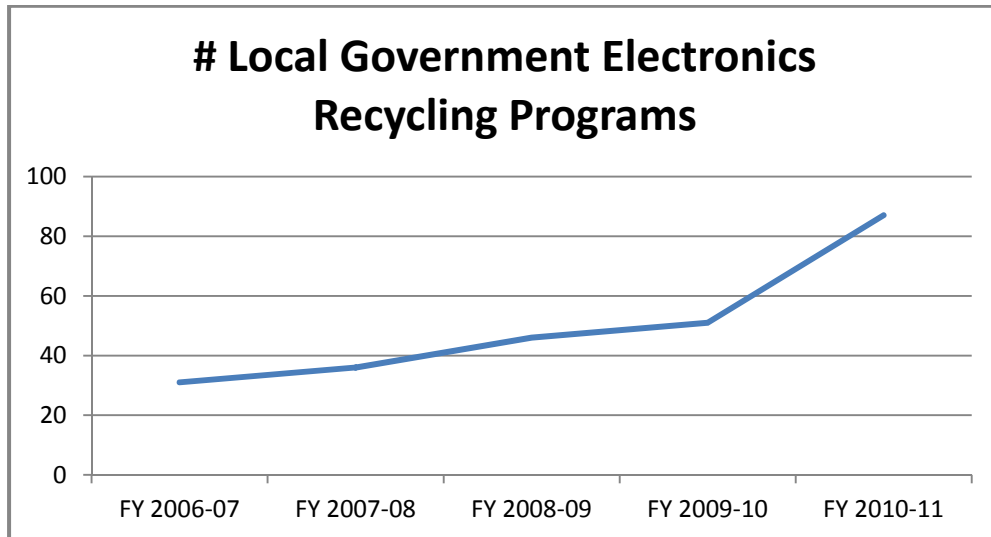


The following table examines total plastics recovered in North Carolina over the same time period as shown above, though this table displays the amount of plastics recovery by resin types. As seen below, PET remains the type of resin that constitutes the majority of recovered plastics, and was 61.5 percent of all plastics recovered in FY 2010-11. It is notable that while "other" plastics still constitute a relatively small proportion of total plastics recovery, the amount of "other" plastics recovered has grown steadily over the past five years and now represents more than 5 percent of total plastics recovered by local governments. It is anticipated that with the growing demand for other resins besides PET and HDPE, and in particular for polypropylene (PP), the amount of other plastics captured in future years and the proportion of other resins recovered in comparison to the amount of HDPE and PET recovered will continue to increase over time.

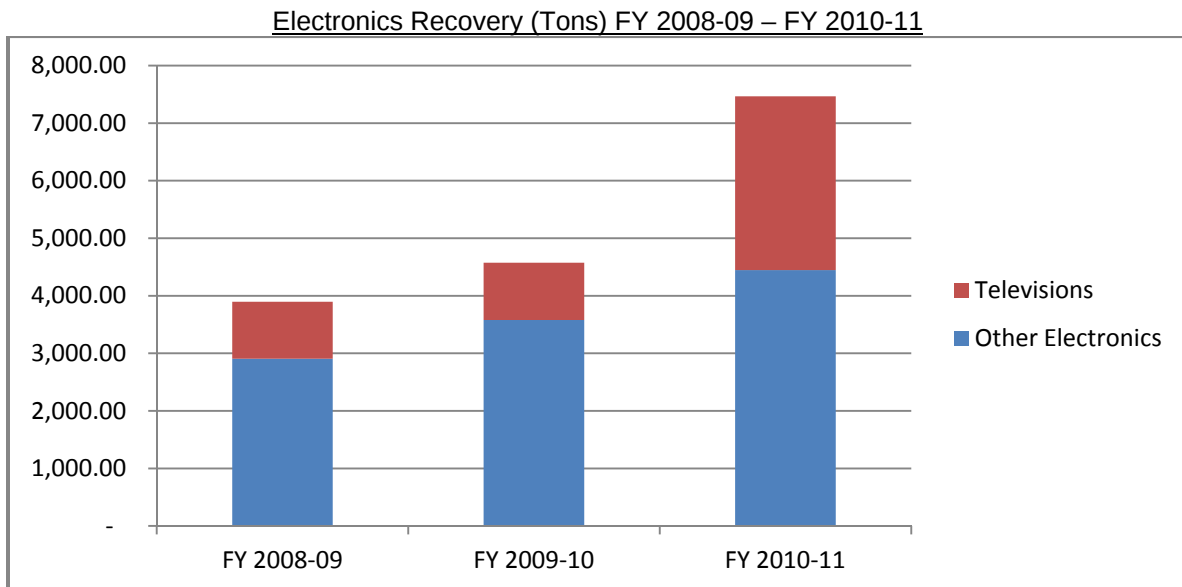


Focus on Electronics

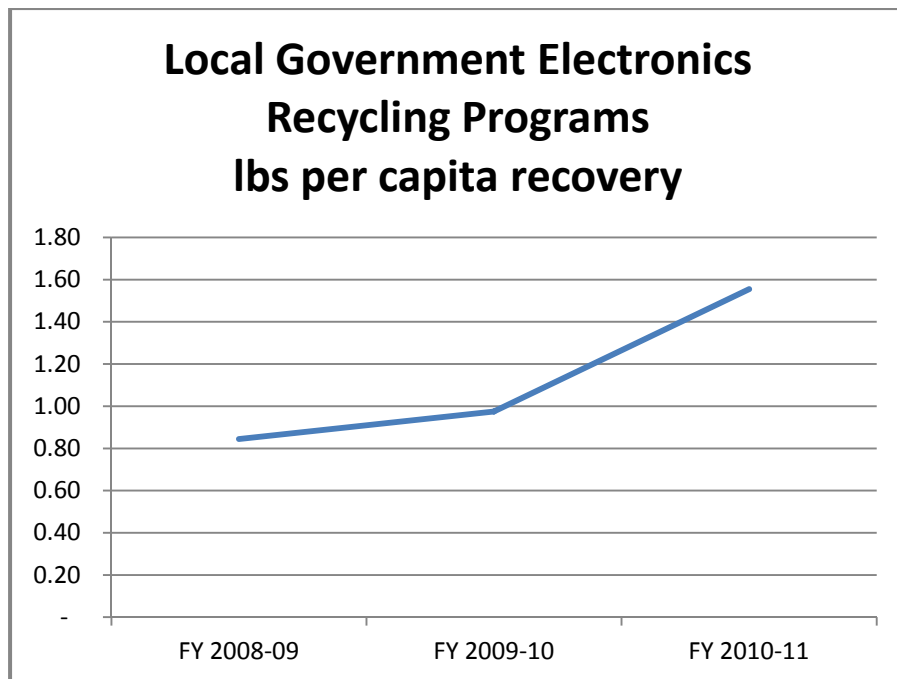
The number of local governments operating electronics recycling programs has more than doubled in the past five years, and it is anticipated that with the implementation of North Carolina's disposal ban on computer equipment and televisions that became effective on July 1, 2011, the number of public electronics recycling programs will continue to increase. The following chart examines the number of public electronics recycling programs over the past five fiscal years:



In addition to the strong growth in the number of programs; the amount of electronics recovered by local governments has continued to increase steadily, with a 17.4 percent rise in the amount of materials recovered in FY 2010-11 over the previous year. Most notable in the electronics recycling data for FY 2010-11 is the more than twofold increase in the amount of televisions recycled compared to the previous year.



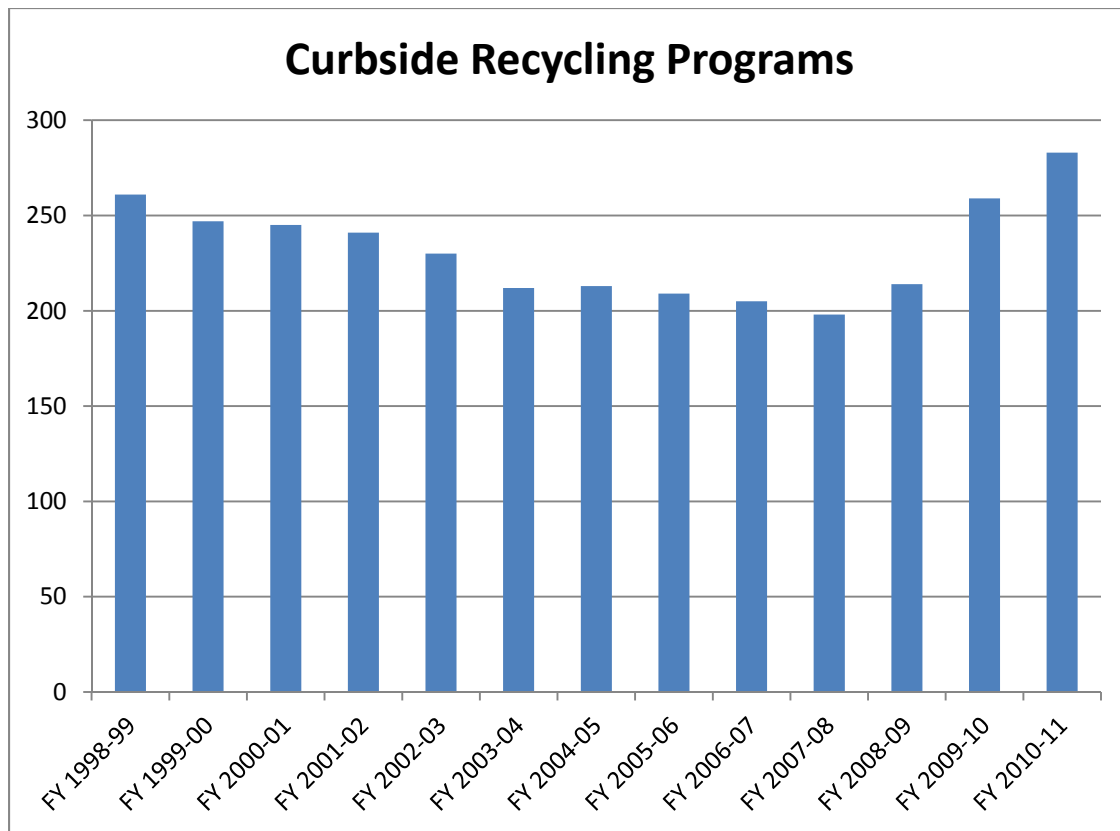
One way to measure the success of publicly sponsored electronics recycling programs is to measure the pounds of electronic goods, including televisions, which are recovered per person. The following table illustrates the growth in per capita recovery of electronics in North Carolina over the past three years.



As illustrated above, local governments in North Carolina have almost doubled their per capita recovery of electronics in the past three fiscal years, increasing from 0.84 pounds per person in FY 09 to 1.55 pounds per person in FY 2010-11. The total recovery of electronics in North Carolina includes local government programs (shown above) plus materials recovered by the private sector through charities such as Goodwill, plus materials recovered through retail and manufacturer take-back programs. Data gathered as a part of North Carolina's Electronics Management program suggests that total recovery of electronics in North Carolina is 2.5 pounds per person. While this is commendable, it should be noted that overall recovery of electronics in North Carolina is still lackluster when compared to recovery efforts in states that have taken leadership roles in managing electronics. For comparison, Oregon reports per-capita recovery of 6.3 lbs in 2010 and Washington reports 5.6 lbs per person in 2010. It is anticipated that with the disposal ban becoming effective on July 1, 2011, North Carolina will see considerable growth in per-capita recovery of these materials again in FY 2011-12.

Local Government Recycling Program Management

In FY 2010-11, publicly operated curbside recycling programs continued to see significant growth for the third year in a row, climbing to 283 total programs from 259 the previous year. This continues last year's trend in the increased number of communities sponsoring curbside recycling programs. Expanded access to efficient recyclable materials processing facilities, coupled with the ease and efficiency of collecting commingled (single-stream) recyclables using carts, has enabled the continued growth of curbside recycling programs in North Carolina. Given these factors along with continued public attention to environmental issues, strong market values for recyclable materials, and a desire to comply with state disposal bans, the trend of growth in curbside recycling programs is expected to continue in the future.

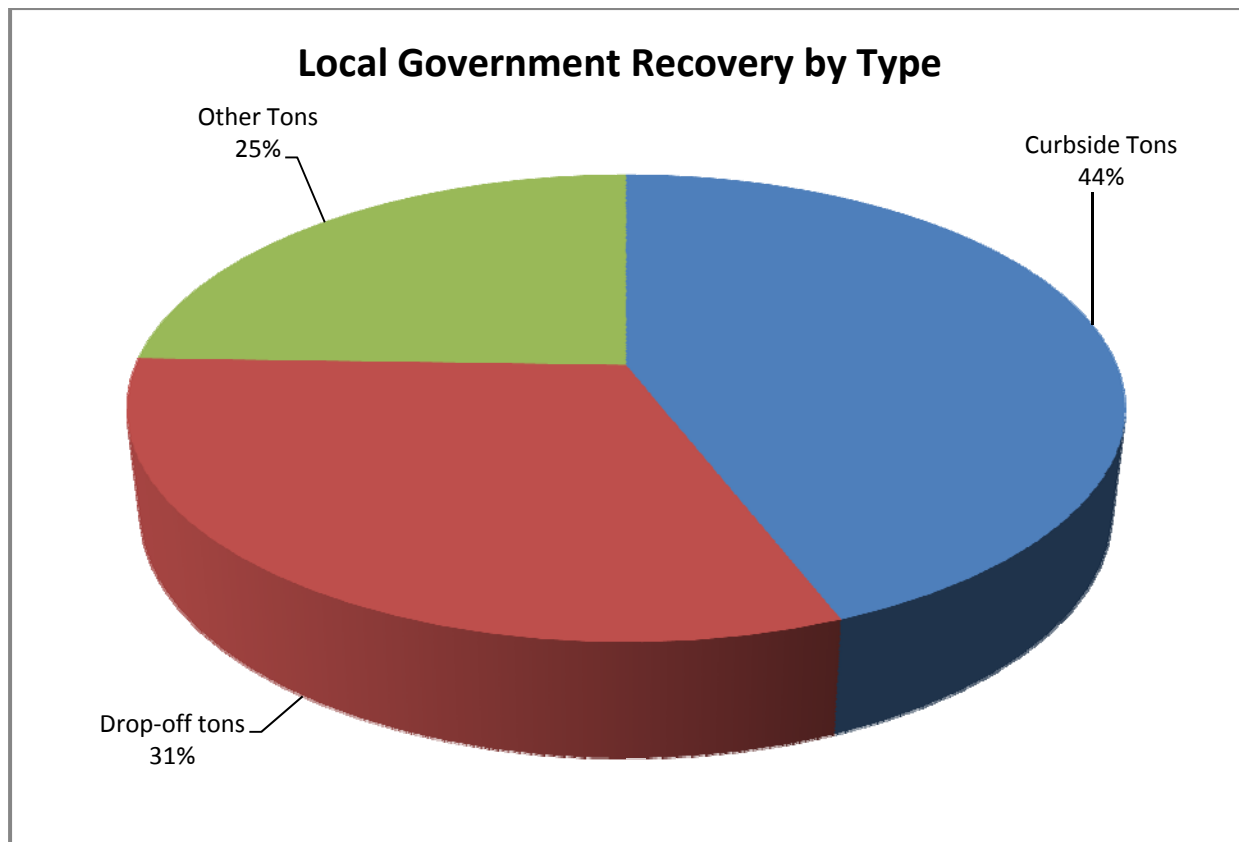


The number of North Carolina households served by curbside recycling in FY 2010-11 grew to 1.68 million, up from 1.62 million during FY 10. According to the U.S. Census 2010 population estimate, there were 4.33 million housing units in North Carolina. Thus, more than a third or 38.5 percent of households in the state have access to curbside recycling service. The continued growth in the number of households served by curbside recycling has been an ongoing trend, even during years when the state has experienced a decrease in the total number of curbside recycling programs operated by local governments.

In FY 2010-11 newly implemented curbside programs contributed to the above-described overall growth in the number of households with access to curbside recycling service. Many of the new programs in FY 2010-11 continued to be programs serving smaller communities, though a portion of the growth in the number of households served by curbside recycling is still occurring at least in part due to annexations and growth in communities with existing curbside recycling programs. Five of the new curbside recycling programs established in FY 2010-11 were implemented with the assistance of the state's Cart Grant Program operated by the Division of Environmental Assistance and Outreach, including the recycling programs in Kings Mountain, Ronda, Saint Pauls, Trinity and Troutman.

Types of Public Recycling Efforts

For the third year in a row, curbside recycling programs contributed more towards the recovery of traditional recyclable materials in North Carolina than any other type of recycling effort. Drop-off recycling programs remain a critical component of waste reduction in the state, but the steady expansion of the number of households with curbside recycling services has again contributed to the decreased reliance on drop-off programs for recycling of traditional materials. During FY 2010-11, 44.1 percent of the traditional recyclable materials recovered by local governments were collected through curbside programs. This compares to 31.4 percent from drop-off recycling programs, 24.5 percent from "other" recycling programs such as multifamily, commercial and school recycling efforts. Reporting on Mixed-Waste Processing (MWP) as a recovery program type was ended in FY 2010-11 because only one government in North Carolina still utilizes this method and it is anticipated that this program will be transitioning away from collecting recyclables mixed with municipal waste due to the inefficiency and ineffectiveness of this method of recovery. The following chart illustrates local government recovery efforts by program sector for FY 2010-11:



Special Waste Management

Local governments increased their collection of some key special wastes in FY 2010-11. In addition to an uptick on oil and antifreeze, recycling programs for oil filters again saw gains, with collection now having tripled since the year they were banned from disposal. However, tonnage for some special wastes actually fell from the previous year. It is thought that the decline in local government-collected lead acid batteries is due to their persistent market value, which in turn drives private recycling activity in lieu of public use of county and municipal drop-off sites.

For the first year, the local government solid waste annual report form requested data from communities on a range of additional specific special wastes, including dry cell batteries, pesticides, pesticide containers, latex paint and lights containing mercury (LCMs) - e.g., fluorescent lights, such as compact fluorescents. The pesticide and pesticide container programs are supported by long-standing assistance from the N.C. Department of Agriculture and Consumer Services, and data shows that 60 separate collection programs were in place for each material in FY 2010-11. The first year of report information shows a healthy 36 communities collecting dry cell batteries and 33 local recycling programs accepting LCMs (note that in this first year of reporting, some local governments may have reported government building pounds and not specifically material collected from the public). Just over 143 tons of paint was accepted through paint exchanges and specific collection programs that are separate from household hazardous waste collection. Six separate local governments accepted just over seven tons of other special wastes, which included a mix of materials such as propane tanks, mercury thermostats and prescription drugs,

Finally, household hazardous waste programs continued to be operated by a minority of local governments in North Carolina. The performance of these programs has been fairly steady, but total tonnage dropped slightly from FY10 to FY 2010-11, while the average per ton costs rose by about eight percent. HHW programs remain, on balance, a relatively expensive collection program for local governments to run.

Local Government Special Waste Management, FY 2006-07 to FY 2010-11

	FY 2006-07	FY 2007-08	FY 2008-09	FY 2009-10	FY 2010-11
Used Motor Oil					
Number of programs	126	124	125	131	129
Gallons collected	872,399	901,565	822,748	845,270	858,389
Oil Filters					
Number of programs	32	32	62	103	106
Tons collected	35.84	37.94	56.29	137.2	167.89
Antifreeze					
Number of programs	61	62	68	74	72
Gallons collected	35,492	33,393	26,482	28,054	39,089
Lead Acid Batteries					
Number of programs	93	90	91	98	96
Tons collected	1,505	1,215	1,201	788	501
Dry Cell Batteries					
Number of programs	NA	NA	NA	NA	36
Tons collected	NA	NA	NA	NA	41.3
Paint					
Number of exchange programs	NA	NA	NA	NA	17
Number of other collection programs	NA	NA	NA	NA	13
Total tons collected	NA	NA	NA	NA	143.27
Pesticide Containers					
Number of programs	NA	NA	NA	NA	60
Tons collected	NA	NA	NA	NA	105.49
Pesticides					
Number of programs	NA	NA	NA	NA	60
Tons collected	NA	NA	NA	NA	7.48
Lights Containing Mercury					
Number of programs	NA	NA	NA	NA	33
Tons collected	NA	NA	NA	NA	28.81
Special Wastes					
Number of programs	NA	NA	NA	NA	6
Tons collected	NA	NA	NA	NA	7.14
Household Haz. Waste					
Number of programs	40	34	40	52	53
Number of permanent sites	17	20	21	24	24
HHW tons collected	2,227.24	2,281.75	2,733.68	3,382.74	3,116.44
Total cost reported	\$2,729,511 \$1,226/ton	\$2,849,781 \$1,249/ton	\$3,123,480 \$1,143/ton	\$3,787,369 \$1,120/ton	\$3,763,970 \$1,208/ton

Conversions: Oil, 1 gal = 7.4 lbs; Antifreeze, 1 gal = 8.42 lbs; Lead Acid Battery, 1 battery = 35.9 lbs; Paint, 1 gal = 11.5lbs

* Note: FY 10 figures for oil, oil filters and lead acid batteries slightly adjusted from FY 10 report due to discrepancies caught in data analysis.

Yard Waste Management

Local government management of yard waste through public mulch and compost programs rose by more than nine percent in FY 2010-11, driving an overall increase in diversion of organic debris. The state's yard waste disposal ban has now kept a cumulative 8.8 million tons out of landfills over the past 16 years. However, also of note is the jump of more than 27 percent in the amount of local government-collected yard waste going to land clearing and inert debris landfills. Although some of this material may in fact be turned into mulch, compost or biomass fuels, it represents more than 15 percent of yard waste still possibly disposed across the state.

To stay consistent in counting yard waste diversion over the years, local governments collected organic materials going to the destination "Private Facility" are not included in the disposal diversion total. However, there is a small, growing trend for some jurisdictions to send their collected yard waste materials to commercial composting and mulching facilities – this material is diverted from disposal but not counted in the directly managed diversion total reported in the table below. Some of the total tonnage is very substantial, including Cary's 16,554 tons, Asheville's 6,364 tons, Wilmington's 11,598 tons, and Concord's 8,256 tons. Just the total from these four municipalities alone increases the amount of successfully disposal-diverted yard waste in FY 2010-11 by more than seven percent.

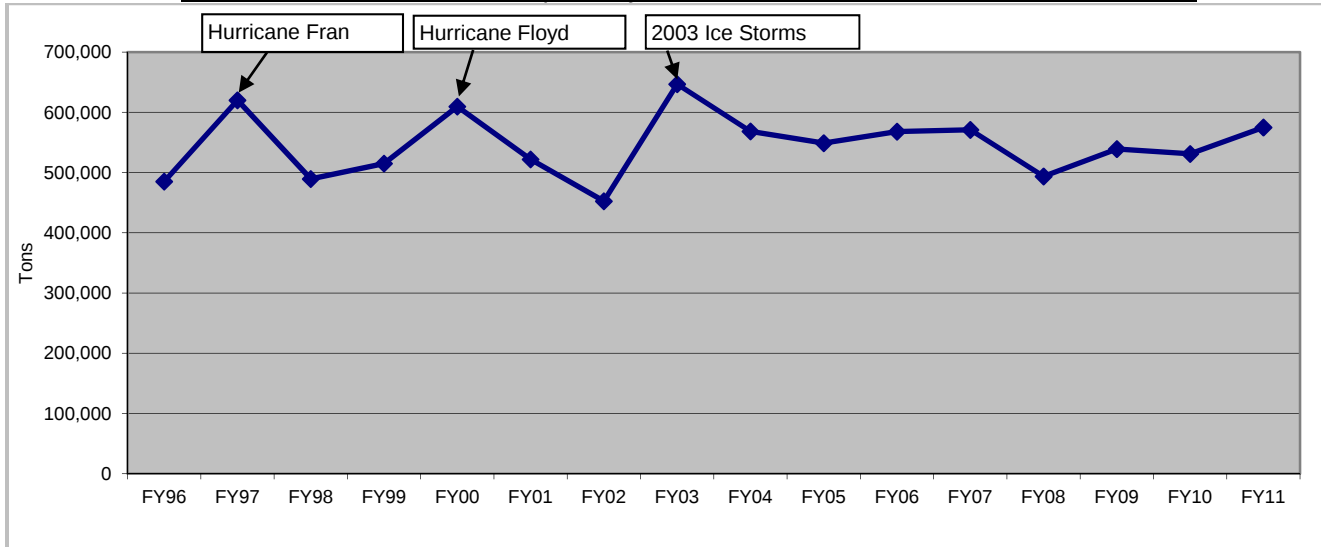
Local Government Yard Waste Management FY 2009-10 and FY 2010-11

Destination of Materials	FY 2009-10 Tons Managed	FY 2010-11 Tons Managed	Percentage Change
End Users (direct delivery)	55,768	55,827	+0%
Local Mulch/Compost Facility	475,284	519,271	+9.3%
TOTAL DISPOSAL DIVERSION*	531,052	575,098	+8.3%
Other Public Facility**	147,390	137,808	-6.5%
Private Facility	95,270	105,688	+10.9%
LCID Landfill	97,482	124,312	+27.5%
YARD WASTE TOTALS	723,805	805,098	+11.2%

* Tonnages under the row for "Total Disposal Diversion" are not included in diversion because of data redundancy, uncertainty about actual disposition of the waste, and actual disposal of noted tonnages.

** Yard Waste Totals exclude tons for "other public facilities" - it is assumed these tons were captured under other categories.

Yard Waste Diverted From Disposal by Local Governments, FY1995-96 – FY 2010-11



Recycling Markets and Prices

Robust market demand for recyclable materials pushed material prices to historic highs in FY 2010-11, as detailed below. The dramatic rebound in commodity values from the precipitous drop in the 2008 recession demonstrates the core position that recyclable materials now hold in global industrial output, and it underscores how closely the fate of material prices is now tied to the fate of the overall economy.

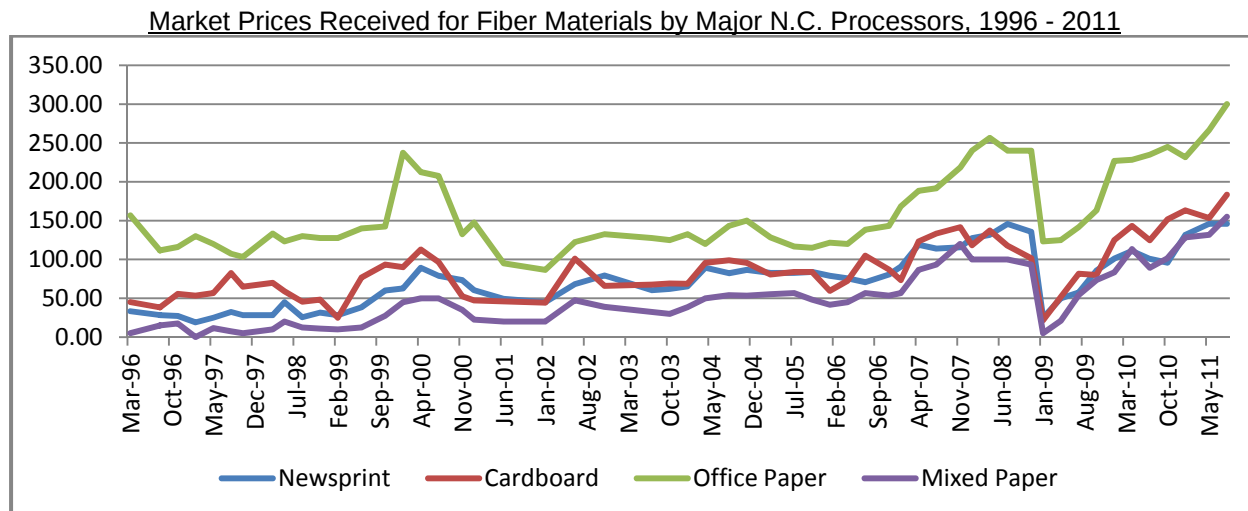
In addition to a very positive pricing picture, North Carolina experienced new developments in the expansion of collection, processing and end-use capacity in FY 2010-11. These developments served to fill critical infrastructure gaps around the state, opening up new recycling opportunities both for different geographical areas and for a range of materials.

The table below, which reports the results of quarterly surveys of material recovery facilities (MRFs) in three regions in North Carolina, shows that prices rose for most commodities through the course of FY 2010-11 before declining slightly in some cases toward the end of the fiscal year. Except for glass, which has not seen an increase in market prices for many years, the combined "basket" of traditional materials recycled in most programs enjoyed one of the highest values in history.

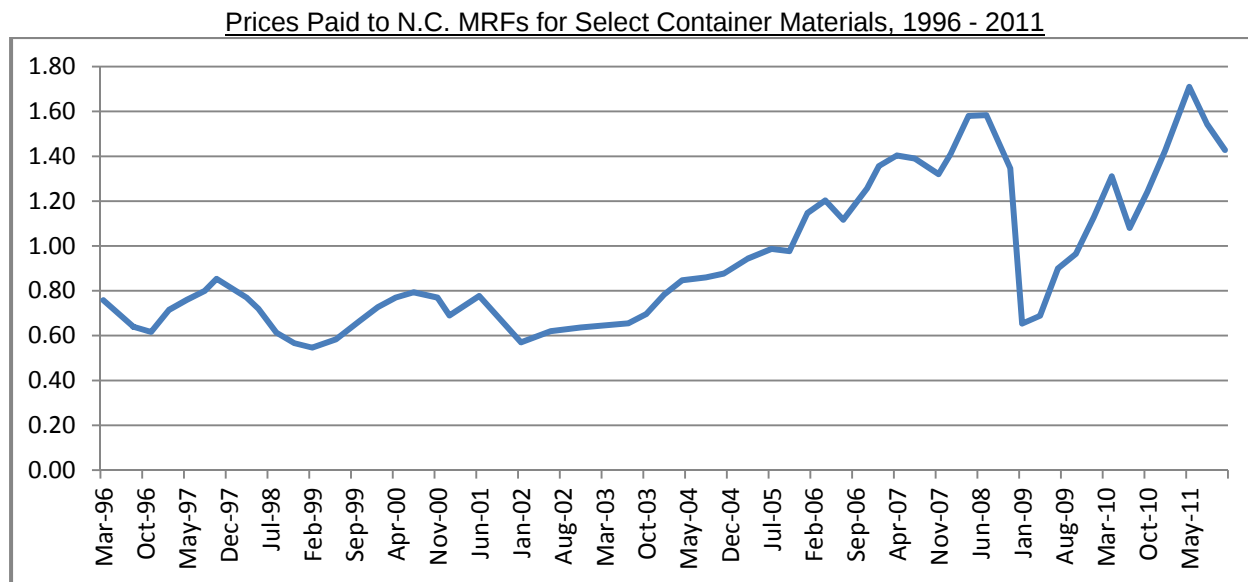
Recycling Market Prices Received by Major N.C. Processors, FY 2010-11

Material	Summer 2010	Fall 2010	Winter 2010/11	Spring 2011	Summer 2011
Aluminum Cans, lbs., loose	\$.70	\$.83	\$.87	\$.95	\$.91
Steel Cans, gross tons, baled	\$188	\$175	\$297	\$267	\$273
PET, lbs. baled	\$.17	\$.18	\$.26	\$.37	\$.30
HDPE Natural, lbs., baled	\$.22	\$.23	\$.31	\$.39	\$.34
Newsprint, ton, baled	\$101	\$96	\$132	\$146	\$146
Corrugated, ton, baled	\$125	\$152	\$163	\$153	\$183
Office paper, ton, baled	\$235	\$245	\$232	\$267	\$300
Mixed paper, ton, baled	\$89	\$102	\$128	\$132	\$155
Clear glass, ton	\$25	\$25	\$25	\$25	\$25
Brown glass, ton	\$18	\$18	\$18	\$18	\$18
Green glass, ton	-\$1	-\$1	-\$1	-\$1	-\$1

The graph below shows prices received for fiber materials by North Carolina MRFs since 1996. The quick rise in fiber prices since 2008 is the third such surge since price data has been collected (including 1999 and 2007) but the latest jump is the most dramatic of all, bringing paper values to their highest recorded levels. The price picture for newsprint, cardboard, office paper and mixed paper has also seen some of its greatest volatility in the past four years, complicated by the extremely negative effects of the 2008 recession but also by robust worldwide demand for recovered fiber. After reaching what may be unsustainable levels in FY 11, paper prices started to see a moderating correction a few months into FY12.



For containers, the situation was very similar. The figure below shows the composite price per pound received by North Carolina MRFs for some key container materials (aluminum cans, PET bottles and natural HDPE) since 1996. After enjoying fairly steady pricing from 1996 through 2005, container values entered a period of whipsawing fluctuation, first in a steep climb through 2008, followed by the recession-caused collapse, and then an even steeper rise through mid 2011. As with paper, container material values reached their highest values before starting to fall toward the end of the fiscal year.



Recycling Market Developments in FY 2010-11

In addition to extremely healthy material prices, FY 2010-11 also saw a number of investments in private recycling facilities that helped improve the overall material processing infrastructure in the state. The trend in the construction of single-stream MRFs, designed to separate fully commingled recyclable materials into marketable individual commodities, continued over the course of the fiscal year. Sonoco opened its Charlotte facility in late 2010, immediately offering processing capacity to new and expanded curbside programs in the greater Mecklenburg County region. Benfield Sanitation also opened a MRF in the summer of 2011 in Mooresville, just north of Charlotte, adding even more single stream capacity to the area. Another hauling company, North Davidson Sanitation, began operation at its own single stream MRF just south of Winston-Salem, making it the fourth MRF serving the Triad region.

Three other significant investments expanded processing and end-use capacity for specific commodities in FY 2010-11. Unifi officially opened its new \$8 million REPREEVE Recycling Center in Yadkinville that will have the capacity to recycle 400 million bottles per year into REPREEVE recycled fiber and add at least 25 new jobs. In Wilson, Reflective Recycling also made an \$8 million investment to construct a state-of-the-art glass beneficiation plant that will feed clean cullet to the nearby Verallia bottle manufacturing facility. In Badin, Electronics Recyclers International, a California-based firm, started up a processing line to recycle computer equipment, televisions and other electronics collected along the East Coast. The ERI facility adds to the already substantial electronics processing capacity in the state, which has seen more than \$50 million in investment in the past three years and now employs more than 300 North Carolinians.

For another commodity, tear-off asphalt roofing shingles, FY 2010-11 was a breakthrough year with new streamlined environmental regulations, favorable market conditions and a rush of interest in using the materials as a feedstock for asphalt pavement. By late in the fiscal year, almost every major paving company in North Carolina was actively developing sourcing and processing operations for shingles, making the collection of adequate supplies a new and rising challenge in the state. Of an estimated annual generation of 260,000 tons, approximately 40,000 tons were recycled in FY 2010-11.

The picture was not all bright for construction-related recyclables during the fiscal year. Although construction and demolition landfills recycled a record amount of incoming material, demand for processed wood material and, in some cases, aggregate materials like concrete, block and brick, remained low. Early into 2012, the singular processing market for gypsum wallboard in the state also seemed to be on the verge of ceasing operations.

Still, for the recycling infrastructure in general, FY 2010-11 was a dynamic period of business development. For one sector in particular – small, independent recycling haulers – the trend remained very positive, with a steady rise in customers and tonnage. The continuing development and expansion of these collection companies started in part with the passage of North Carolina's ABC law and was spurred by the plastic bottle disposal ban. It has been sustained by a growing interest in recycling by waste generators from households to small and large businesses of all kinds. The graph below, from an early 2011 survey of independent haulers, shows their increasing success in attracting new customers.



Additional recycling companies took steps forward to expand their collection and processing capacity in FY 2010-11. Recycling firms invested in equipment and facilities to conduct a range of activities, including food waste composting, collection of residential curbside materials, commercial recycling services, oil filter processing and salvage of construction and demolition materials. As an indicator of the level of entrepreneurial recycling activity in North Carolina, the state's Recycling Business Development Grant program once again received far greater requests for funding than was available for award.

Overall, North Carolina's recycling market infrastructure continued to make strides in FY 2010-11, fueled by very strong commodity pricing, the effects of the state's recycling material disposal bans, and a general growing interest in waste diversion. Although prices for recyclable materials can be expected to weaken somewhat in FY12, the appetite for energy-efficient recovered commodities in industrial manufacturing should be sustained and, barring the effects of another global recession, help increase investment in additional collection and processing market capacity.

Chapter 4

Scrap Tire Management

DIVISION OF WASTE MANAGEMENT

SCRAP TIRE MANAGEMENT

Scrap Tire Disposal Account

The Scrap Tire Disposal Account was created by the 1993 General Assembly.

<u>FY 2010-11 Balances</u>	
Balance of Funds as of July 1, 2010	\$3,411,692.30
Deposit Received other than from tax revenue	\$227.91
Cost Overrun and Cleanup Grants to Counties	-\$1,075,690.45
Processed Tire Material Grants	\$0
Administrative Costs	-\$36,676.34
Balance of Funds as of June 30, 2011	\$2,299,553.42
Obligated funds as of June 30, 2011*	-\$1,800,000.00
Net Balance of Funds as of June 30, 2011	\$499,553.42

* \$1.8 million obligated: \$300,000 for tire cleanup, \$1.5 million for grants to counties

Tire Tax Distribution

Department of Revenue (DOR) Tire Tax Distribution FY 2010-11

Total Collections by DOR	\$16,116,985.34
Dept. of Revenue Cost of Collecting	\$ 257,093.99
Scrap Tire Disposal Account	0.00
Solid Waste Management Trust Fund	\$ 1,268,791.31
Distributed to Counties	\$11,101,923.94
Inactive Hazardous Sites Cleanup Fund	\$ 390,434.46
Bernard Allen Memorial Drinking Water Fund	\$ 390,434.46

Of the state's tire disposal tax revenue, 70 percent is distributed directly from the Department of Revenue (DOR) to counties on a per capita basis. In the past year, the total amount distributed was \$11,101,923.94. The distributions subsidized tire disposal costs for the counties, but did not cover the total expenses of some county programs. The Scrap Tire Disposal Account received no funds for FY 2010-11. The amount of \$2,654,954.29 was appropriated by the General Assembly and went into the General Fund.

Counties whose scrap tire disposal costs exceed the amount they receive in their allocation of the tire tax can apply for a grant from the scrap tire disposal account to cover the deficit. Historically, the amount of grant funds requested by counties has surpassed availability. Scrap tire legislation requires the division to consider county efforts to avoid free disposal of out-of-state tires and other ineligible tires and county program efficiency in using their allocated funds when making decisions about grant awards. Grants awarded during FY 2010-11 included \$442,688.15 to 44 counties in October 2010, and \$539,684.84 to 44 counties in March 2011.

Processed Tire Material Market Development Grants

The goal of the Division of Waste Management's processed tire material market development grant program is to make scrap tire recycling sustainable in North Carolina. Since receiving its first allocation of funds in August 1997, the program has spent \$4,475,883 on nine projects that created new or expanded existing markets for processed tire material. These have included modifications to a boiler system to facilitate the use of tire-derived fuel, expansion of manufacturing capacity of solid rubber wheels, testing for regulatory approval of using tire chips in bed system drain fields, research to increase amount of recycled rubber in manufacture of new tires, expansion of tire-derived fuel production to meet market demand, and assistance in the construction of the first ground-rubber production facility in the state.



The Division of Waste Management continues to look at opportunities that promote sustainable scrap tire recycling. Due to the state budget shortfall, some Scrap Tire Disposal Account funds have been diverted to the General Fund, limiting available funding for potential projects. As the grant program receives future distributions from the scrap tire tax, new projects will be considered.

Tire Cleanup Program

Improper management of scrap tires can result in illegal dump sites. These sites can breed disease-carrying mosquitoes and other illness-causing vectors. Improperly managed tires are a fire hazard and pose a threat to public health. A tire fire can result in release of toxic chemicals harming those with respiratory illnesses. Tire fires also release contaminants into surface water and groundwater, which are the main sources of drinking water for North Carolina's residents.



The law requires the Division of Waste Management to first address nuisance tire sites that pose the greatest threat to public health and the environment. For this reason, the largest identified sites have been cleaned up. As new sites are discovered, prompt investigation leads to a cleanup plan for each site. The plan is implemented as soon as possible to minimize potential threats to human health and the environment. The division is committed to the N.C. Big Sweep program and other countywide cleanup efforts, with reimbursements going to counties that request funds to dispose of scrap tires collected by these events.

In FY2010-11, 52 nuisance tire sites were cleaned up, at a cost of \$93,317.46.

Scrap Tire Generation

The U.S. EPA standard for estimation of scrap tire generation is one tire per person, per year. This includes passenger, truck and tires for special uses, such as off-road equipment and tractors. Counties report tires collected in either tons (most counties report tons collected) or the number of tires. Tons can be converted to number of tires to be compared to the population to determine the state's scrap tire generation rate.

Scrap Tire Collection

All counties are required to provide a facility for scrap tire collection and to report on their management programs. In FY2010-11, North Carolina businesses and individuals disposed of approximately 152,006 tons of tires. These tires were managed by county collection facilities and private processing/disposal facilities as follows:

122,206 tons	Managed by counties and shipped to two N.C. processing firms
1,508 tons	Managed by counties and shipped to out-of-state processors
28,292 tons	Tires taken directly to processing firms (privately-funded cleanups or tire dealers not participating in a county program)

152,006 tons Total tires from citizens of North Carolina

In addition, the two N.C. processors received 37,918 tons of tires from other states.

The tire program's success is illustrated by the number of tires properly disposed at permitted facilities. When free disposal was implemented in 1994 for scrap tires generated in the normal course of business in North Carolina, a potential problem emerged: the illegal free disposal of out-of-state tires at county collection sites. Counties should be diligent in screening scrap tires brought for disposal to identify out-of-state tires and other tires not eligible for free disposal. Those that do not are likely spending a portion of their tire tax revenues for disposal of out-of-state tires.

The Solid Waste Section assists counties in learning how to avoid fraudulent disposal of out-of-state tires. County efforts to deter disposal of out-of-state tires are a factor when awarding grants to cover cost over-runs.

County Tire Disposal

There are 97 county programs and one regional program [Coastal Regional Solid Waste Management Authority includes Carteret, Craven and Pamlico Counties]. The programs reported spending a total of \$11,787,479.39 for scrap tire management and disposal. Of this total, \$11,198,657.28 was for direct disposal costs and \$588,822.11 was for other costs, such as labor or equipment costs. Counties with unusually low costs may be stockpiling tires during the year rather than sending them for processing. Some of the variance is probably due to recordkeeping errors or county reporting errors. Some counties manage tires more efficiently than others. For example, counties that allow citizens to dispose tires at multiple recycling facilities or provide curbside pickup incur increased labor costs to recover and load tires into trailers.

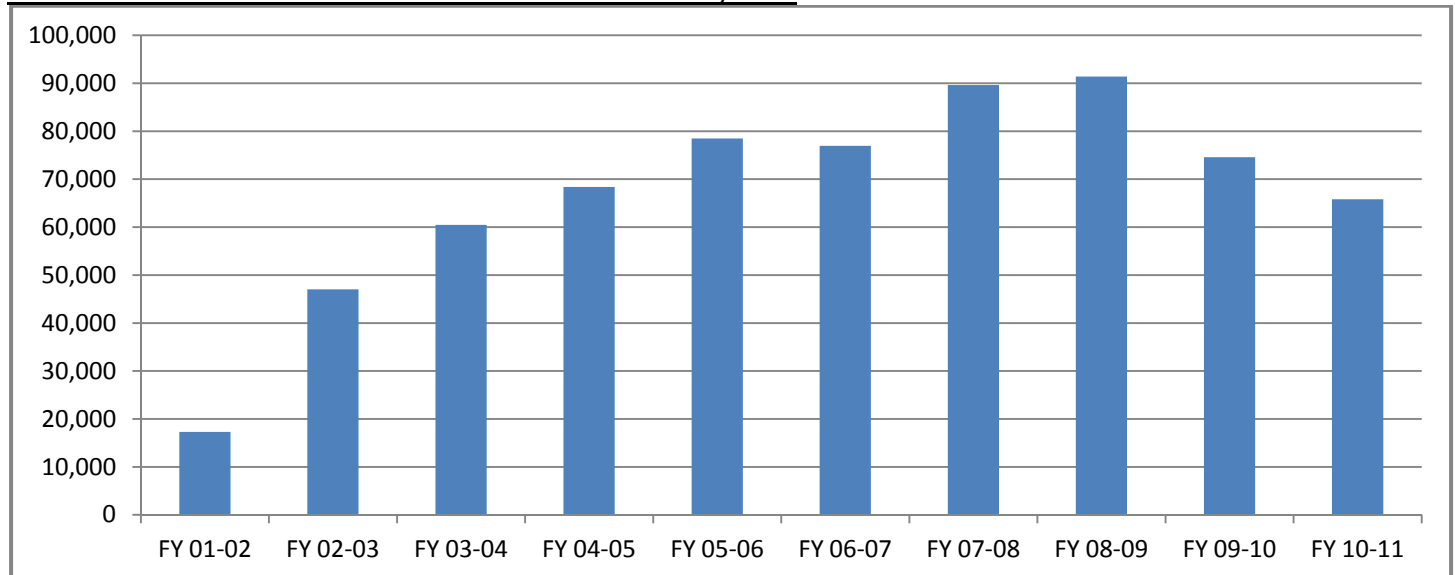
An analysis indicates that cost of disposal is an average of \$103 per ton of scrap tires at recycling/disposal facilities.

County programs annually report the amount of scrap tire tonnages and costs per ton. The costs are reported on the Section website at: [County Reports of Tonnages, Costs, Revenue, Cost per Ton](#). The information on the website was taken from N.C. Department of Revenue reports of tire tax distribution and from the Scrap Tire Management Annual Reports submitted by the counties.

Tire Recycling

In FY 2010-11, 75 percent of scrap tires received by North Carolina tire recycling companies were recycled. In order of weight recycled, the categories are: tire-derived fuel, crumb/ground rubber, civil engineering (including drain field material), recap/resale and other products. The remaining tires go to the two permitted tire monofills in the state. The market for tire-derived fuel (TDF), strong in recent years, saw a 12 percent decrease during FY 2010-11 from the FY 2009-10 amount. The section continues to pursue new opportunities for sustainable scrap tire recycling.

Tons of Tires used as Tire Derived Fuel for the last 10 years.



Chapter 5

White Goods

DIVISION OF WASTE MANAGEMENT

WHITE GOODS MANAGEMENT

"White goods" are defined in General Statute as "refrigerators, ranges, water heaters, freezers, unit air conditioners, washing machines, dishwashers, clothes dryers and other similar domestic and commercial large appliances." In 1993 the North Carolina General Assembly passed the White Goods Management law because white goods were difficult to dispose and contained chlorofluorocarbon refrigerants (CFCs). Counties were mandated to manage them by providing at least one disposal site, at no cost to citizens, and to arrange for the removal of CFCs. To fund this statute, the General Assembly imposed a \$3 tax (advanced disposal fee or ADF) on new white goods purchased.

White Goods Management by County Governments

The ban of white goods from landfills in 1989 has encouraged recycling and better management. Comprehensive white goods management laws enacted in 1993 included an ADF. In 1998, Senate Bill 124 extended the fee for three years, but reduced it from \$10 to \$3. In 2000, the sunset on the fee was removed.

For many decades, appliances could be seen illegally dumped on back roads and down ravines. They provided a breeding place for disease-carrying mosquitoes and other vectors and often attracted other types of waste to be illegally dumped as well. The program's major accomplishment is a drastic reduction in illegal dumping of white goods. The critical factor was requiring local governments to provide collection sites at no cost to citizens. Grant and ADF funding make it possible to clean up illegal dumpsites. Previously, many counties gave white goods a low priority and under-funded their management. The North Carolina white goods account makes it possible for counties to hire and train personnel, obtain the specialized equipment or develop collection and loading areas needed to improve white goods management.

CFC Collection

All counties should continue to implement proper management practices to capture and recycle CFCs. This practice avoids the illegal venting of CFCs into the atmosphere and creates a potential revenue source for counties from the sale of CFCs. The release of CFCs into the atmosphere is illegal under both state and federal law because of the damage it causes to the earth's atmosphere.

The accidental and intentional venting of CFCs due to poor management practices may be more widespread than previously thought. Even though gas venting is prohibited under state and federal law and markets exist for reclaimed CFCs, reports from sources in the field indicate that some counties and metal recyclers contracted by counties accidentally and intentionally vent CFCs on a routine basis into the atmosphere. Proper extraction of CFCs from appliances is considered to be time-consuming, requires trained personnel and specialized equipment and may be given low priority among solid waste programs.

The white goods program actively encourages counties to reclaim more refrigerant gases from appliances. This is being done by emphasizing that the program can provide funding for equipment purchases, personnel training and information supply for private sector sources to help counties find markets for reclaimed CFCs. It is hoped that the net result will be a decrease in the amounts of ozone-depleting CFCs released into the environment, while at the same time providing a new revenue source for counties through the sale of reclaimed CFCs.

Current Trends in White Goods Management

- Even though general economic conditions in the United States have not greatly improved, the value for scrap metal, driven by overseas demand, remains strong. As a result, many counties enjoy good returns on their recycled appliances and other scrap metal when sold.
- Due to sparse populations and small tax bases, a few rural counties will continue to require support of their white goods programs with grants from the program.
- Counties should only use the white goods tax money for its intended purpose. The money should not be deposited into the county's General Fund.

White Goods Management Costs

Counties can use the white goods ADF proceeds disbursed quarterly by the Department of Revenue for daily expenses incurred to recycle white goods. Expenses for these programs include fuel, labor and the cost of associated items.

Funds can also be used for one-time expenses, such as purchasing specialized equipment and making site improvements for better management.

County costs for white goods programs can vary and are dependent on the extent of intra-county collections, the degree of recordkeeping, the existence of a county cost allocation plan and the availability of a local metal recycler.

Due to the value of scrap metal, some counties have metals recyclers willing to provide free pickup from county collection sites and/or provide CFC recovery in exchange for access to the scrap metal. Despite scrap metal having value, a small number of counties continue to pay private contractors to collect and haul scrap metal with little or no financial reward to the county.

White Goods Management Account

The White Goods Management Account (WGMA) was established to help counties whose costs exceed their share of ADF revenue. Although 72 percent of the net disposal fee collections were allotted for distribution, ineligible counties forfeited some of that money. In past years, the white goods management account received 20 percent of net collections as well as these forfeited funds. This year the funds were instead allocated to the General Fund.

White Goods Management Account funds allocations for the four fiscal quarters of FY 2010-11

Regular Income to WGMA	Forfeited Income to WGMA	Net Collections	Trust Fund	DOR Cost Collection	Amount Allocated to Counties
\$0.00	\$0.00	\$1,223,947.49	\$92,089.35	\$72,830.58	\$828,804.18
\$0.00	\$0.00	\$983,351.92	\$73,451.08	\$65,213.42	\$661,059.72
\$0.00	\$0.00	\$920,862.22	\$68,536.88	\$64,151.16	\$616,831.97
\$0.00	\$0.00	\$1,017,450.69	\$75,632.40	\$72,045.69	\$680,691.60

Net white goods ADF collections in FY2010-11 totaled \$4,145,612.32.

Funds were disbursed from the Department of Revenue as follows:

\$3,083,330.75 Allocated for direct distribution to counties
(\$2,787,387.47 distributed to counties plus \$295,943.28 forfeited by ineligible counties)
\$ 0.00 Allocated for the White Goods Management Account
\$ 309,709.71 Solid Waste Management Trust Fund
\$ 274,240.85 N.C. Revenue Department cost of collections

During FY2010-11, two counties admitted to errors on their AFIRs and requested and received their forfeited funds. These forfeited funds totaled \$52,720.87.

For the period of FY2010-11, the White Goods Management Account received no revenues. The funds in the amount of \$774,274.29 for regular income and \$295,943.28 for forfeited income, totaling \$1,070,217.57, went into the General Fund.

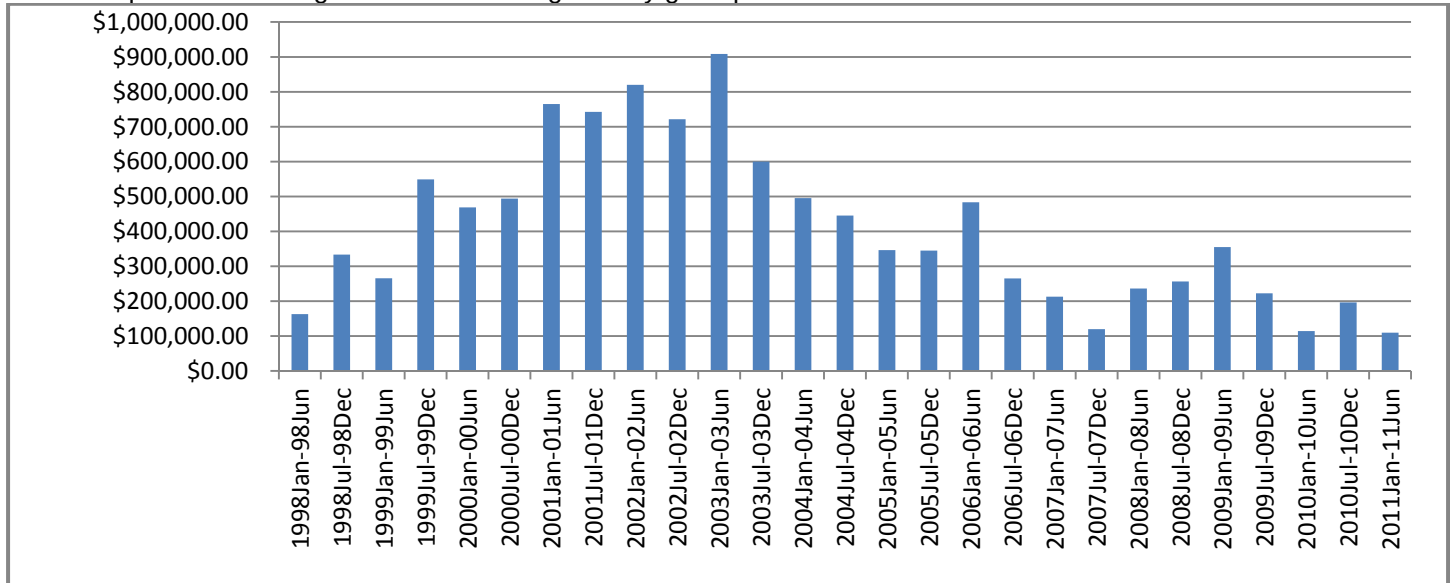
White Goods Management Account Balance FY 2010-11

Beginning Balance July 1, 2010	\$ 2,139,400.38
Funds Received during FY 2010-11*	\$ 0.00
Capital Improvement	\$ -64,549.25
Cost Overrun Grants	\$ -85,181.31
Return of Forfeited Funds	\$ -52,720.87
Subtotal June 30, 2010	\$ 1,936,948.95
Moneys Needed for Future Expenditures**	\$-1,000,000.00
Ending Balance	\$ 936,948.95

* The White Goods Management Account received no funds during the FY 2010-11.

** Reserved for capital improvement grants, overrun grants and disaster cleanup.

Sum of requests for white goods cost overrun grants by grant period.



The above graph shows that the amounts requested by counties during FY 2010-11 have decreased. There are two grant periods each year. As the price of scrap metal rises, counties use the added revenue to pay for operational expenditures. When scrap prices fall, counties require cost overrun grants to meet expenditures.

Utilization of Funds

Counties who are or will be experiencing moderate to high growth rates in the coming years would benefit greatly from upgrades in their facilities in anticipation of the growth in their populations. Improved infrastructure for white goods means that it costs less for counties to manage their white goods, decreases the environmental impact of white goods, and improves the returns the counties receive for the value of their white goods as scrap metal. This has the effect of easing constraints on limited local funding.

Though the white goods program has had many accomplishments, some problems remain. Some counties ignore the white goods law by not allocating white goods tax distributions to their white goods programs. This means that some county white goods programs are underfunded.

Many local governments are privatizing their white goods management. Privatization does not necessarily mean that programs are more efficient. In many instances, privatized white goods management is incorporated into a more comprehensive solid waste contract between a local government and a private firm, making it more difficult to measure program efficiency and accountability.

A grant round was approved during FY 2010-11 that totaled \$85,181.31 to 12 counties. Although two rounds of grants were awarded for the FY 2010-11, the second round of grants was paid in the FY 2011-12 and will be shown in the next annual report.

Grant Requests & Awards from the White Goods Disposal Account

County	Tax Proceeds Reported	Requested Amount	Amount Awarded
Bladen	\$5,216.00	\$7,414.00	\$7,414.00
Chatham	\$9,875.92	\$27,586.31	\$23,448.36
Cleveland	\$15,886.87	\$918.17	\$918.17
Columbus	\$8,882.67	\$1,542.93	\$1,542.93
Cumberland	\$51,408.79	\$32,517.95	\$16,258.98
Graham	\$1,311.84	\$749.56	\$750.16
Northampton	\$3,633.00	\$6,069.00	\$3,034.50
Stokes	\$7,565.00	\$3,912.00	\$3,911.53
Tyrrell	\$694.28	\$5,171.42	\$2,585.71
Warren	\$3,231.04	\$354.39	\$404.39
Washington	\$2,136.72	\$7,009.28	\$7,009.28
Wayne	\$0.00	\$21,062.70	\$17,903.30
Total			\$85,181.31

Capital improvement grants totaling \$64,549.25 were paid to three counties as shown below.

Capital Improvement Grants Paid to Counties for Fiscal Year 2010-11

County	Purpose	Amount
Haywood	Bale Clamp	\$ 5,408.25
Richmond	White goods loading & storage area	\$54,641.00
Stanly	CFC cylinders & storage area	\$ 4,500.00
Total		\$64,549.25

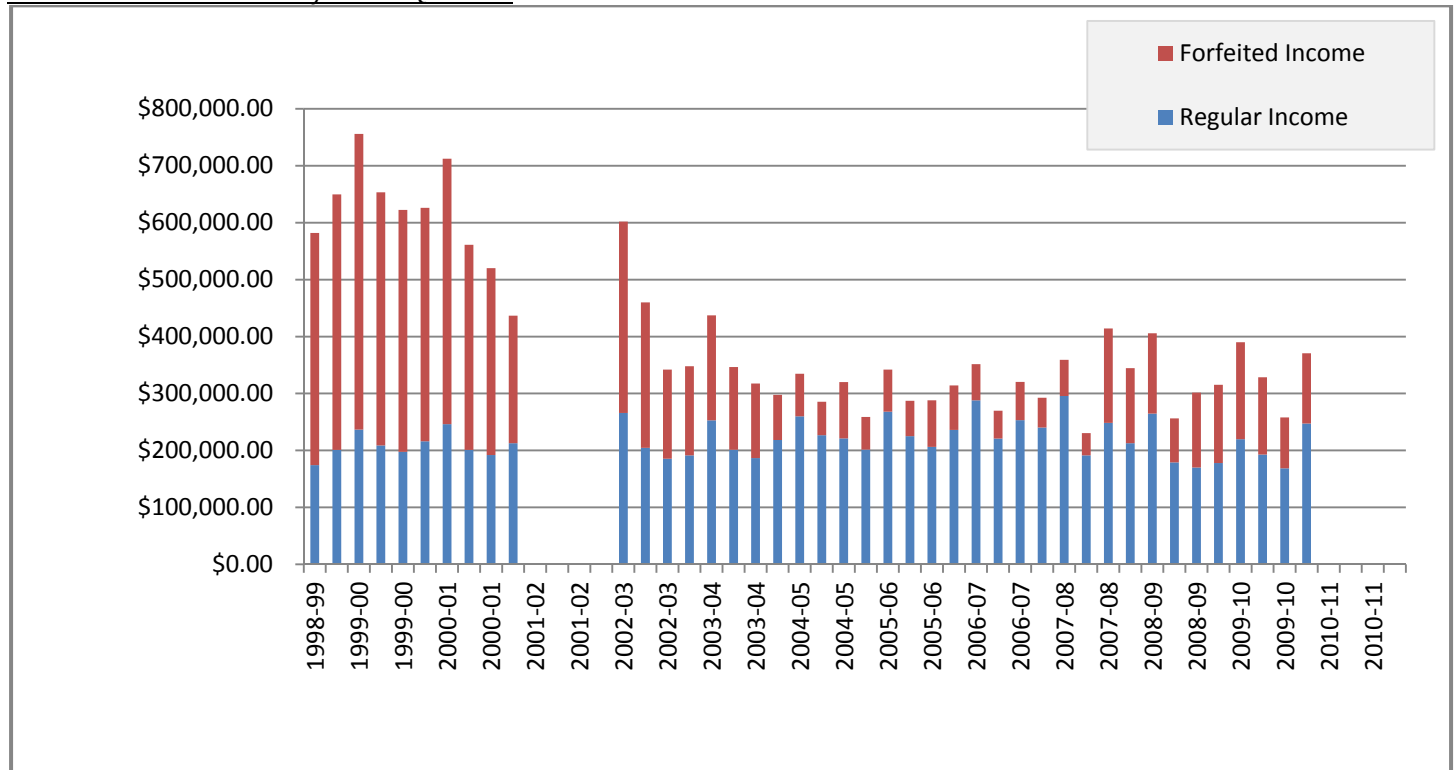
Rough handling of CFC-bearing white goods, before CFCs are extracted, leads to damaged coolant systems - resulting in release of CFCs into the atmosphere. Proper care must be maintained in handling CFC-bearing appliances so as not to rupture coolant system coils before CFCs are reclaimed.

The use of capital improvement grants continues to bring necessary upgrades to county programs. This will help them save money, save the quality of the air and save the aesthetic value of North Carolina's roads and natural settings.

The total of the amounts requested has decreased gradually and steadily over the decade. The amount of available funds has also fallen since the early part of the decade.

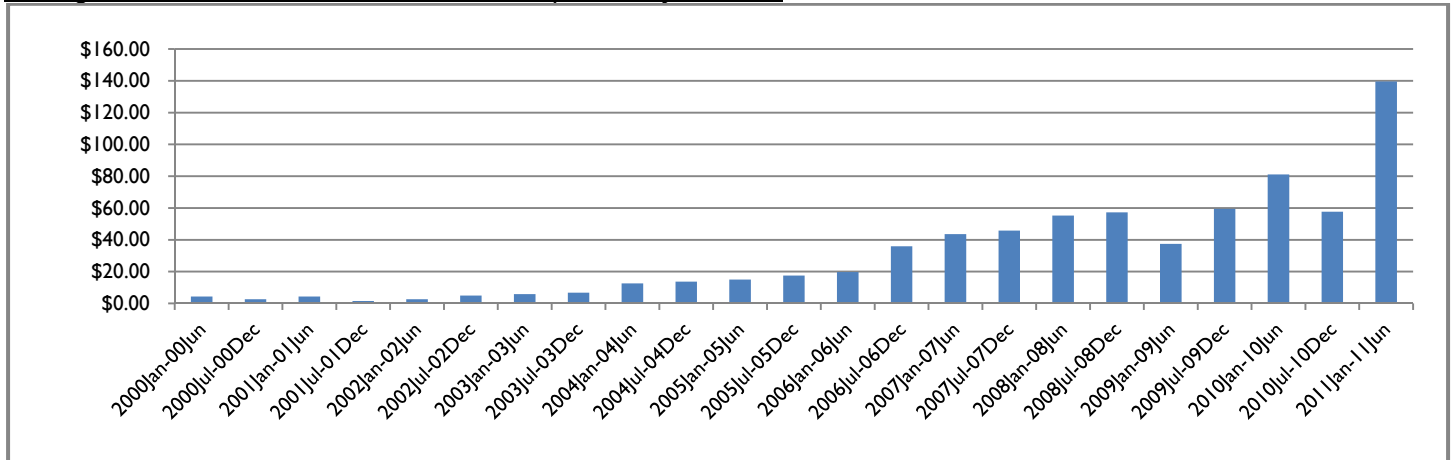


White Goods Revenues by Fiscal Quarters



Note: Blank areas indicate no revenues received

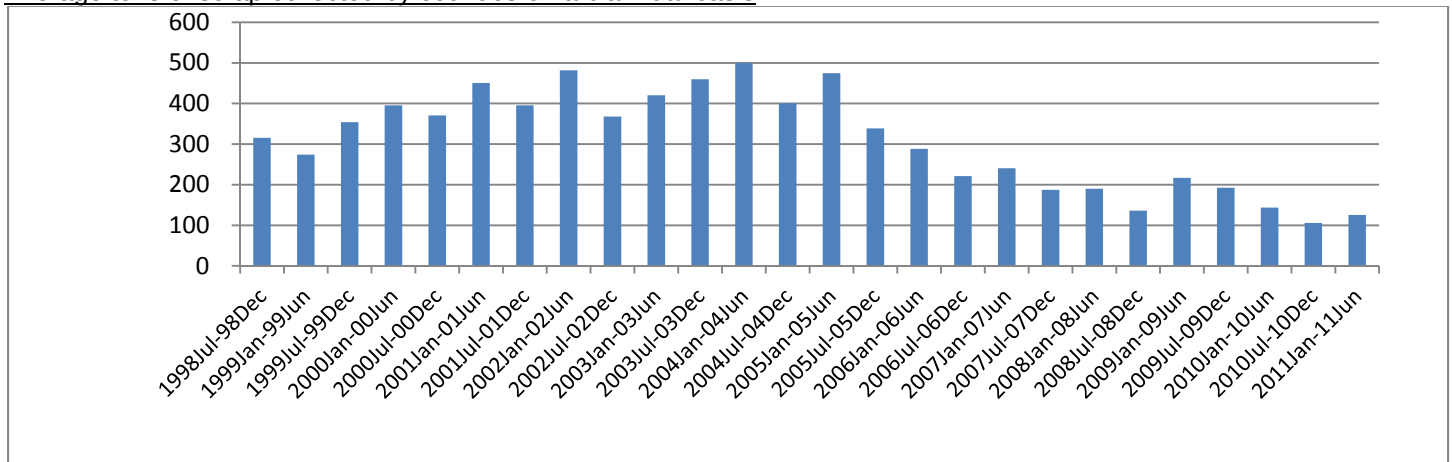
Average revenue from the sale of a ton of scrap metal by counties



The above table shows the average revenues collected by counties on the sale of a ton of scrap metal biannually from FY 2000 to the first half of FY 2010-11. The graph clearly shows a continuous increase in the value of scrap metal through the decade with dips in FY 2001 and FY 2009, coinciding with both national recessions, which occurred during that time. Comparing this graph with Graph 1 shows that as counties have increased revenues from scrap sales, they have also decreased grant requests from the White Goods Management Program over that time.

Other factors that may have influenced the value of the scrap metal sold by counties include the increase in efficiencies counties have seen from improvements in funding and infrastructure. However, the overriding factor influencing the value of scrap metal lies in the demand from overseas markets. Strong and sustained demand from overseas markets drives scrap metal values almost entirely. The question remains as to how long the demand from those markets will be maintained. If the demand begins to wane, it can be expected that the value of the scrap will also diminish.

Average tons of scrap collected by counties on a biannual basis



Graph 4 shows that over the decade, the counties' collection of the amount of scrap has changed. Beginning in about FY 2005-06, counties began to collect roughly 50 percent less scrap even as the value of the scrap they did collect, as shown in Graph 3, had increased in value. The reason for this is believed to be that as the value of scrap metal began to increasingly rise; it became more profitable for citizens to bring their scrap directly to metal recyclers for cash, bypassing county collection sites.

Economic conditions affect costs related to white goods. When economic conditions are poor, such as in FY 08-09, county solid waste departments collect fewer white goods and average per ton costs increase because citizens have less to spend and may put off making new white goods purchases. These costs are tied to the general price paid for scrap metals and to the overall amounts of white goods collected. When economic conditions improve, more money becomes available and citizens look to replace appliances.

Forfeited Funds

Determination of forfeited funds is based on information supplied by counties' Annual Financial Information Reports (AFIRs). AFIRs are submitted to the Office of the State Treasurer. AFIRs are due by Nov. 1. Counties that did not submit their AFIR last year became ineligible to receive tax proceeds in March 2011. The forfeited funds were deposited into the General Fund. (Based on FY 09-10- AFIR Reports)

Alexander	Anson	Avery	Bertie
Bladen	Burke	Clay	Davie
Forsyth	Greene	Harnett	Henderson
Hoke	Hyde	Jones	Lincoln
Martin	Northampton	Pender	Richmond
Robeson	Rowan	Rutherford	Sampson
Stokes	Union	Wilkes	Yadkin
Yancey			

For a summary of the information concerning the counties' white goods management programs view link: [County White Goods Tonnages, Expenditures, ADFs for FY2010-11](http://portal.ncdenr.org/web/wm/sw/whitegoods) at webpage: <http://portal.ncdenr.org/web/wm/sw/whitegoods>.

Chapter 6

Electronics Management Program

DIVISION OF WASTE MANAGEMENT ELECTRONICS MANAGEMENT PROGRAM

Session Law 2010-67 established the Electronics Management Program. The law established that manufacturers of electronics, as well as retailers, consumers and the state must all share accountability for the responsible recycling and reuse of electronic equipment.

Computer equipment includes desktop and laptop computers, monitors and video displays for computers, printers, scanners or combination printer-scanner fax machines, mice, keyboards and other peripherals. Household items such as cell phones, video recorders, cable or satellite boxes and all commercial devices such as printers and data networking systems are not included in the law. The Electronics Management Fund, administered by the Division of Waste Management, consists of computer and television manufacturers' registration and annual fees. The majority of the fund is used to subsidize local governments' electronics recycling programs.

Manufacturers' Responsibilities

Computer equipment and television manufacturers have different kinds of obligations under Session Law 2010-67, as described below. The law is designed to provide electronics recycling opportunities for the "consumer," defined as an occupant of a dwelling who used the equipment for personal or home business use. A nonprofit organization with fewer than 10 employees is also considered a consumer.

Before selling equipment in North Carolina, a manufacturer must register with the state. Equipment manufacturers must also pay a fee:

- o Computer manufacturers pay an initial fee of \$10,000 to \$15,000 and then an annual fee of \$2,500 - \$15,000, depending on the level of their plan.
- o Television manufacturers pay an annual fee of \$2,500.

Each television manufacturer is obligated to recycle or arrange for the recycling of its market share of televisions. TV manufacturers must also annually report to the state on the tonnage of televisions they recycled or arranged to recycle.

Computer equipment manufacturers must provide a plan which, at a minimum, will provide a mechanism through which consumers can recycle their brands of equipment. The related recycling and transportation must be accomplished using environmentally sound management practices. Manufacturers must provide a consumer recycling education program and a toll-free phone number. The plans must provide for free and reasonably convenient recycling.

There are three levels of computer equipment plans.

- o **Level I:** manufacturers must provide one or more methods to take back their equipment. This can be through a mail-back program, a physical collection site or a one-time collection event. Manufacturers operating at this level pay a \$15,000 initial registration fee and \$15,000 annually.
- o **Level II:** manufacturers must take back all manufacturers' equipment, not just its own brands. Manufacturers must provide 10 physical collection sites in North Carolina's 10 largest cities and must host at least two collection events annually. Manufacturers operating at this level pay a \$10,000 initial registration fee and \$7,500 annually.
- o **Level III:** manufacturers must take back all manufacturers' equipment. Manufacturers must provide physical collection sites in 50 North Carolina counties. Ten of the collection sites must be in the 10 largest counties. The manufacturer must host at least two collection events annually. Manufacturers operating at this level pay a \$10,000 initial fee and \$2,500 annually.

Each registered computer equipment manufacturer must also submit an annual final report detailing the total weight of computer equipment collected for recycling and reuse for the previous year and also summarizing the actions it implemented from its specific approved plan.

Both computer and television manufacturers' equipment must display a label that clearly identifies the manufacturer.

Electronics Management Fund

Fees paid into the electronics management fund are used to support approved electronics management within North Carolina counties. The television equipment funds and up to 10 percent of the computer equipment funds may be used to administer the program.

In FY 2010-11, \$77,500 in fees from 31 television manufacturers' and \$497,500 in fees from 35 computer equipment manufacturers' generated a total of \$575,000.

Income generated in future years is forecast to decline as computer equipment manufacturers initiate Level II and Level III plans, which require smaller annual fees. It is also anticipated that additional local governments will have electronics management plans that qualify for the funding from the Electronics Management Fund.

Distributions to Local Governments from the Electronics Management Fund

Local governments, 61 counties and three cities that have eligible electronics recycling plans received their per capita share of a total \$465,500 in distributions from the Electronics Management Fund on Feb. 15, 2011. It is anticipated that additional counties will submit eligible electronics recycling plans before the next distribution of funds in February 2012.



The distributions are used for the collection and recycling of electronics. In October 2011, local governments receiving funding reported to the Division of Waste Management on how these funds were used. Click on this link to see the amounts of the distributions to local governments:

County Distributions

Retailer's Responsibilities

Effective July 1, 2011, retailers in North Carolina may only sell televisions, desktop computers, laptop computers, printers, scanners, printer-scanner-fax combinations, mice, keyboards and other computer peripherals that display the manufacturer label of a registered manufacturer in compliance with the new electronics management law.

State Agencies and Governmental Entities Responsibilities

State agencies and governmental entities in North Carolina may only buy televisions, desktop computers, laptop computers, printers, scanners, printer-scanner-fax combinations, mice, keyboards and other computer peripherals that are produced by registered manufacturers who are in compliance with the electronics management law. A list of manufacturers who are in compliance, updated whenever a change occurs, can be viewed on the webpage:

<http://portal.ncdenr.org/web/wm/sw/electronics>

Recycling Rates within North Carolina

Data on the recycling of computer equipment and televisions comes from two major sources: manufacturer reports and local government solid waste annual reports. The table below presents summary information of tonnage from the manufacturers.

Type of Collection	Computer Equipment Manufacturers	Television Manufacturers
Mail-back program	28.63	13.89
Retail collection	76.73	815.57
Permanent dropoff through local government programs	991.91	1,892.86
Permanent dropoff <u>separate</u> from local government programs	2,790.46	924.77
TOTAL	3,887.73	3,647.09

The following table shares data from local government recycling programs, showing a 63 percent increase in electronics tonnage collected by counties and cities from FY 2009-10 to FY 2010-11.

County and Municipal Collection Programs	FY 2009-10	FY 2010-11
Televisions	993.48	3,019.39
Other Electronics	3,580.15	4,432.15
Total	4,573.63	7,451.54

The following table combines the data from the two tables above to calculate an overall recycling rate for electronic materials. It removes redundant data from manufacturer reports that are also counted in local government reports. Included also is historic data from local government reports from previous fiscal years to help track the progress of electronics recovery (recognizing that manufacturer data was not available until this year).

Overall Recycling of Electronics	FY 2009-10	FY 2010-11
Manufacturer Televisions (non-local government collections)	NA	1,754.23
Manufacturer Computer Equipment (non-local government collections)	NA	2,895.82
Local Government Televisions	993.48	3,019.39
Local Government Other Electronics	3,580.15	4,432.15
TOTAL	4,573.63	12,101.59
Total Pounds Per Capita	.98	2.5

Compliance and Enforcement of Electronics Laws

A small number of companies have not registered or paid their fees. These companies are ineligible to market their products in North Carolina. Citizenry and government agencies can check the Division of Waste Management websites, [Computer Equipment Manufacturer Compliance](#) and [Television Manufacturer Compliance](#), to determine which companies may sell in North Carolina.

Recommendations

The definition for computer equipment in N.C.G.S.130A-309.131 should be changed to include electronic books as covered devices.



Chapter 7

Abandoned Manufactured Homes Program

DIVISION OF ENVIRONMENTAL ASSISTANCE AND OUTREACH

ABANDONED MANUFACTURED HOMES (AMH) PROGRAM

The Division of Environmental Assistance and Outreach (DEAO) operates a grant program available to North Carolina counties as established in G.S. 130A-309.111 for the purpose of funding the proper identification, deconstruction, recycling and disposal of abandoned manufactured homes that are deemed unfit, unsafe and hazardous. The Abandoned Manufactured Homes (AMH) Grant Program request for proposals (RFP) was initially developed and made available to North Carolina counties in October 2009. Prospective program applicants must update their comprehensive solid waste management plans to include information required under GS 130A-309.113 and describe their individual AMH program management intentions. Counties participating in the AMH grant program are required to document the amount of AMH waste disposed of in landfills and the amount recycled in their management of the abandoned manufactured homes and to properly document and recycle any mercury thermostats identified within each of the units. Each grant program participant must submit an annual report about the status of their AMH program to the state in August each year. Based on required August 2011 reports from AMH grantees, the following table shows the total number of AMH units deconstructed and the resulting amount of waste disposed and recycled in FY 2010-11.

Units Deconstructed	217 Units
Materials Landfilled	3,035 Tons
Materials Recycled (percentage of total tonnage)	292 Tons (9.7%)
Mercury Thermostats	58 Thermostats

The amount of funding available to an individual grantee is based on a county's development tier rating as established by the Department of Commerce. Tier 1 and 2 counties are eligible for a maximum of \$40,000 in funding from the state, and Tier 3 counties are eligible for a total of \$25,000 per program year. During the fiscal year ending June 30, 2011, 13 North Carolina counties participated and incurred costs in the AMH Grant Program. Three county programs received grant funding for the first time in FY 2010-11 (Robeson, Iredell and Tyrrell counties). The table on the following page lists the counties that were participating in the grant program during FY 2010-11. Information in this table includes the inception and completion dates of the individual grants, the amount of grant funding awarded by the state, the costs incurred by county programs during the fiscal year, fees (if any) attributed to responsible parties by the programs, and the number of units managed by the county during the fiscal year. Note that during FY 2010-11 seven grantees requested and were granted no-cost time extensions by the AMH Grant Program (Onslow, Nash, Warren, Burke, Franklin, Bertie and Tyrrell counties). The main reasons for these extensions has been the need for additional time to develop high functioning local programs and the desire to bring additional AMH units into those programs in order to fully utilize available grant funding. These grant term extensions are reflected in the completion dates shown for these programs in the following table.

AMH Grant Program Participants during FY 2010-11

County	Inception	Completion	Grant Award	County costs during FY	Responsible Party Fees Collected	# Units Deconstructed
Vance	12/1/2009	11/30/2010	\$40,000	\$28,028.02	\$4,538.70	22
Stanly	12/1/2009	11/30/2010	\$40,000	\$16,483.43	\$2,100.00	9
Onslow	12/1/2009	5/30/2011	\$40,000	\$38,875.00	\$8,322.00	18
Harnett	2/1/2010	1/31/2011	\$40,000	\$49,416.45	\$11,544.22	20
Nash	2/26/2010	10/30/2011	\$40,000	\$28,200.00	\$900.00	33
Henderson	2/26/2010	2/25/2011	\$25,000	\$22,932.56	\$2,496.84	14
Burke	2/26/2010	2/28/2012	\$40,000	\$3,000.00	\$777.00	2
Franklin	2/26/2010	2/28/2012	\$40,000	\$16,732.87	\$5,718.48	7
Warren	2/26/2010	2/28/2012	\$40,000	\$28,638.83	\$3,604.55	13
Bertie	5/3/2010	5/1/2012	\$40,000	\$8,000.23	\$1,651.46	4
Tyrrell	7/1/2010	6/29/2012	\$40,000	n/a	n/a	-
Robeson	7/6/2010	7/5/2011	\$40,000	\$60,066.00	n/a	69
Iredell	11/29/2010	11/30/2012	\$25,000	\$22,932.56	\$2,496.84	6

Additional Information on the AMH Program and Support from the Solid Waste Trust Fund

In addition to providing funding, DEAO has provided technical assistance to county AMH programs on practical aspects of implementing their efforts, including adoption of new contractor bidding processes and forms, conducting publicity and program promotions, establishing program guidelines and AMH identification processes, and recordkeeping and documentation. In July 2011, the department upgraded its guidance related to the AMH grant application process based on the performance of the previous fiscal year's grants. Additional guidance was provided on submittals to minimize the need for information requests from the department and to make sure that counties clearly understand the requirements of the statutes governing the AMH program. It is expected that these procedural changes will make the application process more efficient and effective. AMH grantees are continuing to adapt their county programs and have steadily improved their efficiency and operating procedures. The raw tonnage of materials removed and recycled under the AMH program in North Carolina has increased approximately 3.5 times from the previous fiscal year, and the proportion of materials from managed homes that was recycled is near 10 percent, which is consistent with program performance during FY 10.

In total, DEAO expended \$105,000 from the Solid Waste Trust Fund in establishing the three new AMH grants in FY 2010-11. The fund entered FY 2010-11 with a cash balance of \$ 4,009,350 and ended the fiscal year with an unencumbered balance of \$2,003,110. In addition to funding the AMH program, the Solid Waste Trust Fund is used for a range of other statutory purposes, including providing grant support to general local government recycling programs, recycling outreach and technical assistance and development of recycling markets.

Chapter 8

Environmentally Preferred Purchasing

DEPARTMENT OF ADMINISTRATION

ENVIRONMENTALLY PREFERRED PURCHASING

The Department of Administration continues to promote the purchase and use of sustainable and efficient supplies and products. As the department progresses with this effort, more of these products are being added to statewide term contracts, agency specific term contracts, as well as awarded through open market bids. For more information visit the Purchase and Contract website: <http://www.ncpandc.gov/>

Solicitations advertised by the division to comply with the Session Laws 1993 {G.S. 130A - 309.14(al)}

Presently, the bids advertised in the Division of Purchase and Contract contain a Recycling and Source Reduction paragraph in item #10 of Instructions to Bidders. When developing bid invitation language, requirements and specifications, purchasers are continuing to look at alternative methods and products that result in waste reduction, if their procurement is both practicable and cost-effective.

Recycling and Source Reduction information provided by the contractors on bids received during the 2010 to 2011 fiscal year indicate the sustainable features or criteria of those products. Sustainable attributes include Reduction, More Efficient, More Durable, Longer Lasting, Reusable, Refillable, Repairable, Refurbished, Recyclable, Less Toxic than their traditional counterparts and Washable. Efficient resource use includes Energy Star for electric energy demand and reduced water consumption.

Refer to the Examples of Sustainable Open Market Awards and the listing of the statewide term contracts with the applicable sustainable features identified.

Table 1 lists the purchase awards by the type of purchase executed by the Division of Purchase and Contract.

Table 1

Commodity Purchase Awards by Bid Type	Number Awards by Bid Type	Percentage Awards by Bid Type
Agency RFP	198	41.39%
Consultant Services	1	0.26%
Contractual Services	41	2.19%
Convenience Contracts	266	19.36%
Open Market Purchases	945	7.01%
Quotes	260	4.27%
Recovery Funds	38	1.35%
Term Contracts	108	18.79%
Waivers	215	5.38%
Total	2072	100.00%

NC E-Procurement @ Your Service

NC E-Procurement @ Your Service, now in its ninth year of operation, continues to support the goal of "One North Carolina." As of July 4, 2010, the enterprise-wide system has 65,380 registered vendors, and 15,066 users representing 233 entities across the state. This includes state agencies, hospitals and institutions, community colleges, K-12 public schools, universities and local governments. NC E-Procurement @ Your Service continues to contribute to a sustainable environment through significant reductions in hard copy document reproduction (paper, printers and supplies) through the use of electronic business transactions and electronic documents. NC E-Procurement also continues to support state priorities for environmentally preferable products with more than 18,658 catalog items clearly marked as "Recycled" of the total 89,766 catalog items.

Purchasing Compliance Reviews

North Carolina Administrative Code (01 NCAC 05B .1605) mandates that the Division of Purchase and Contract conduct compliance reviews on purchasing practices of all state agencies (institutions, hospitals, community colleges, universities and state agencies). All compliance reviews, except universities, are conducted utilizing data from the NC E-Procurement System. Electronic data reduces the necessity of conducting most phases of the analysis on-site thereby increasing efficiency, as well as reducing travel costs, fuel emissions and operating expenses.

IPS (Interactive Purchasing System) & Vendor Link NC

The Division of Purchase and Contract continues to promote opportunities for vendors to do business with the state through electronic advertisement of goods, services and design/construction in IPS. The entities using this system consist of state agencies, institutions, universities, community colleges, K-12 public schools and local governments.

Vendor Link allows vendors to register to receive electronic notification of solicitations. Vendor Link had 24,093 registered vendors as of June 30, 2011. The system continues to grow with the addition of users increasing to 424 agencies, schools and institutions with 944 purchasers, who posted 7,025 solicitations using the database from July 1, 2010 to June 30, 2011.

EXAMPLES OF SUSTAINABLE OPEN MARKET AWARDS

Light Fixtures Upgrade – Indoor and outdoor light fixtures were bid for retrofit of facilities at the Piedmont Community College. Inductive fixtures and lamps selected provide long lifespan and minimal lumen depreciation (declining light output with age) compared to other lamp types with traditional filaments. Retrofit system will allow increased capabilities for “Instant-on” and hot re-strike, unlike most conventional lamps used in commercial-industrial lighting applications. Also new fluorescent fixtures were installed that have increased energy efficiency and increased lamp life. This is an example of reduced energy consumption with the reduced maintenance cost of lamp replacement.

Light Fixtures Upgrade – An order for 789 dual lamp and 772 quad lamp high output electronic fluorescent fixtures were purchased for the NC Department of the Ports Authority for an ARRA grant lighting upgrade. Selected T5 size tubular lamps also use amalgam technology to provide more than 90% of their maximum luminous flux in both reduced and elevated ambient temperatures. Fixtures may be used for direct replacement in locations such as outdoors and the high bay building ceilings where traditionally high intensity discharge (HID) fixtures are used that are less energy efficient. Lamps last longer with consistent illumination over lamp life. This is an example of reduced energy consumption with the reduced maintenance cost of lamp replacement.

Vending Machines – Vending machines were purchased for the Department of Health and Human Services that are twice as energy efficient as machines made five years ago. Equipment features high-efficiency refrigeration, foam-injected insulation and LED display lighting. Refrigerated versus chilled storage space allocation is adjustable for varied product dispensing. Wireless monitoring systems boost efficiency with 24/7 communication and report diagnostics including amount of product needed to refill unit. This is an example of reduced energy consumption with the reduced cost of service/refill trips on an as needed basis.

Highway Impact Attenuator Barriers – Two repairable impact attenuators (water-filled plastic crash cushions) were purchased for the N.C. Department of Transportation for work zone or common sites where impacts can be expected due to traffic congestion and highway maintenance. During head-on impacts, the impact attenuator absorbs the energy of impact by crushing a collapsible barrier. When impacted within the design capacity, at least 50 percent of the barrier will be reusable and can be restored by replacing cartridges or inserts and noses. Barriers purchased require fewer replaceable components compared to non-flexible, rigid barriers while increasing highway safety.

Sustainable Ergonomic Chairs – Chairs were purchased for the new Green Square Complex in Raleigh. The complex consists of two “green” buildings that incorporate the most current sustainable design strategies. Green buildings are designed to cost less to operate and maintain by employing energy and water efficiency techniques, as well as providing greater occupant satisfaction through a healthy interior environment that promotes productivity. The Green Square Complex is expected to serve as a national model of environmental efficiency and sustainability. The furniture purchased for the facility is certified for indoor air quality, metal components are recyclable and upholstery fabric contains recycled content and/or natural compostable fiber. Product packaging is also recyclable and reusable.

Used Hydraulic Rescue Tool – A used tool set was purchased for Rockingham Community College that offered a 51 percent savings from the \$50,000 cost for new equipment. The sustainable aspect of this purchase was the reuse of available equipment and the avoidance of purchasing new.

Used Electric Truck with Flat Bed – A 2008 E-Ride EXV2 vehicle purchased for Blue Ridge Technical Community College offered a discount 35 percent for \$6,376 savings compared to new equipment. The sustainable aspect of this purchase was the reuse of available equipment and the avoidance of purchasing new.

Refurbished Medical Beds – Five refurbished beds will be used in the Stanly Community College’s Nursing School. The recommended model beds are identical to the beds used in the local hospital. This is an example of the use of refurbished equipment.

Virtual Reality Fire Extinguisher Training System – A virtual reality fire extinguisher training system was purchased for Surry Community College. A digital fire extinguisher projects a conical laser light to replicate extinguisher discharge. The simulated discharge is aimed to sweep an LED display depicting a simulated flame that automatically varies in response to the simulated extinguisher discharge. System can simulate class A, B and C fires at four difficulty levels while providing an effective indication of trainee performance. Using the system saves the cost of purchasing and refilling numerous extinguishers. With easy set-up and no clean-up required afterward, thorough training of multiple participants is enhanced.

Automated Flagging Assistance Device - Three remotely operated trailers mounted automated flagging assistance device (AFAD) systems were purchased for the NC DOT. Each system includes two AFA devices to enable a single flagger to be positioned out of the lane of traffic or remotely and are used to control motorists through work zones. Units include LED lamps for energy efficiency and system is solar powered and supplemented with a battery backup system that is capable of powering the unit for seven continuous days with no solar power. The solar powered energy efficient system is reusable and provides increased highway and construction worker safety.

Virtual Reality Welding Trainer Unit - Educational training tool that is designed to accelerate welding training of various types of welding equipment through the utilization of virtual reality was purchased for Lenoir Community College. Trainer reduces material waste (base welding material, welding consumables, electrodes, shielding gas, consumable parts) and saves energy from the welding process. There are no welding fumes or exhaust of environmentally conditioned air during the simulated welding process. This is an example of reduction in materials and energy consumed.

Marine Wind Turbine – A 12 foot rotor wind turbine with a rated capacity of delivering 1.8KW of electrical energy was purchased for Martin Community College. System included a power inverter enabled for interface to electrical grid system with a time of use (TOU) net-metering system to document system performance. Equipment provides energy generation for maintenance shop use and serves as a teaching resource for the classes related to the generation of renewable wind energy.

Wind Electrical Generating System - Two wind turbines and a 1kW rated electrical generating capacity were purchased for Cape Fear Community College. System includes battery backup and an integrated option to supply excess energy back to the power company. Turbine and inverters will be used in four separate college classes exploring the generation of renewable wind energy. As of December 2011, a measured wind analysis is complete using an anemometer for wind data over a two month period. An investigative report from the college is nearing completion on the hypothetical installation with the actual 8.1 foot diameter rotors mounted to 60 ft. tower.

Recycled Plastic Lumber - A quantity of 27,000 linear feet of recycled lumber was purchased for the Department of Correction for construction of park benches and trash can holders. Lumber is manufactured with minimum of 95 percent recycled HDPE (high density polyethylene) from both post industrial and post consumer. Material has additives to prevent deterioration from exposure to UV light and is resistant to termites, marine borers, salt spray, oil and fungus. Material is provided with a warranty to not rot, split, crack or splinter for a minimum of 50 years. This is an example of using recycled materials that are longer lasting in an outdoor environment.

Solar Energy Systems - Two solar arrays were purchased for the College of the Albemarle Community College, with systems installed on the Edenton-Chowan campus and Roanoke Island campuses. Units are 6kW and 3kW electrical generating capacity with integrated option to supply excess energy back to the power company. Pole-mounted solar panels include a passive assembly to track the solar path for maximum energy production. Equipment may be used to support college classes and provide a source of electric supply for campus facilities.

NEW OR SIGNIFICANTLY IMPROVED STATEWIDE TERM CONTRACTS

The Division of Purchase and Contract has established new or significantly improved statewide term contracts for the following commodities. These vehicles are considered progressive additions to agency fleets to help meet petroleum reduction goals.

Energy Saving Devices, 285D – New term contract consists of T8 size tubular fluorescent light retrofit kits, LED exit signs, LED exit sign retrofit kits, occupancy/vacancy sensors, electronic dimmable ballasts and controls. Technology utilizes LEDs and dimmable ballasts for energy reduction and savings.

Vacuum Cleaners, 365B - New term contract includes some products certified under the Green Label vacuum program sponsored by the Carpet and Rug Institute for improved indoor air quality. Certified vacuum cleaners feature reduced noise level and a HEPA air filtration system. Green Label certified vacuum cleaners are less polluting than their traditional counterparts.

Aviation Fuels, 405Y - New term contract includes aviation gasoline (avgas) and Jet A fuels. The aviation gasoline provided has a lower lead content of the fuel for which 40,030 gallons of were purchased from the new term contract. Lead from engine exhaust fumes is classified an irreversibly neurotoxin and the lower lead content gasoline would be less toxic than the traditional formulation.

Trailer-Mounted Solar Powered Flashing Arrow Board, 550G - Agency-specific term contract provides availability of a trailer mounted, solar charged 15 lamp LED array arrow board and related parts for the N.C. Department of Transportation. Amber lights on panel board are electronically actuated to form various configurations to signal, control and direct high speed vehicle traffic. Portable solar powered unit includes energy efficient lamps and controls.

Napkins, Bathroom Tissue & Paper Towels, 640A – All products on the contract are certified to Green Seal standards GS-1 or GS-9, or Ecologo CCD-084 or CCD-086. Paper products are manufactured from 100 percent recycled fiber, with 40percent to 80 percent of that recycled content being from post consumer content. Products are manufactured using either elemental chlorine-free or chlorine-free systems. This is an example of the use of recycled materials.

All Trucks and Off-Road Equipment purchased for the Department of Transportation, Individual Agency Specific Contracts – All equipment offered is required to employ engines meeting the current North Carolina and federal EPA and regulations indicated by the EPA Clean Air Act for reduced emissions at the time of delivery.

STATEWIDE TERM CONTRACTS

As existing term contracts are re-bid and new term contracts are developed, the Division of Purchase and Contract continues to improve the contracts by offering a wide range of sustainable or environmentally friendly products. Examples of the sustainable features of these term contracts are listed below.

- **Agricultural Tractors, 020A** - Tractors are provided with a standard compression ignition diesel type, liquid cooled engine designed for operation on commercial diesel fuel and B20 or greater biodiesel. The biodiesel may be derived from plant matter.
- **Air Conditioners, Room, 031A** - Items available through this contract were awarded based on the lowest energy efficiency cost, meeting specifications. The majority of the items awarded are Energy Star compliant, containing recycled materials and packaging.
- **Appliances, Domestic, 045A** – All refrigerators, washers and dishwashers are Energy Star qualified.
- **Automotive, Industrial Parts and Supplies, 060A** - Some products have recycled materials with 10 percent-20 percent post consumer content.
- **Batteries, Storage, 060B** - Battery casings are made from recycled material (96 percent). Batteries are exchanged as a core and picked up by the vendor. In addition the contractor will pick up and properly dispose of junk batteries on quantities less than 10. Core (junk) batteries are considered to be an environmental hazard and are otherwise expensive to properly remove.
- **Tire, Automotive, Recapping and Repairing, 060E** – Retread tires extend the life of the original product. The purchase of retreads saves resources used in the production of new tires. The use of retread tires reduces tire disposal. Retread tires cost less than new tires.
- **2011 Models Passenger Cars, 070A**; More cars with four cylinder engines are offered than V6 engines. One four cylinder model, four door subcompact was also awarded with a bi-fuel capability consisting of compressed natural gas (CNG) and gasoline. Unfortunately, limited availability of some vehicles restricted award of all the AFVs requested for the passenger cars. According to the Steel Recycling Institute, 67.7 percent of a vehicle is steel or iron. Of that steel or iron, 26.6 percent is post-consumer material. Plug-in electric vehicles including a full electric car (Coda) and a plug-in hybrid car (Chevy Volt) were included in the invitation for bids.
- **2011 Law Enforcement Vehicles, 070B** - According to the Steel Recycling Institute, 67.7 percent of a vehicle is steel or iron. Of that steel or iron, 26.6 percent is post-consumer material. For law enforcement vehicles only 25 percent of the users still specify a V8 engine and that decline in demand for the V8 engines contribute to fuel savings.
- **Conventional School and Activity Buses, 070C; Conventional Activity Buses, 070D** – Vehicles typically contain approximately 20 percent post- consumer recycled material by weight and 80 percent of the vehicle by weight is recovered for reuse. Used school buses are usually sold or are used for spare parts.
- **2011 Model Year Trucks, Vans, Utility Vehicles, Crossovers-Conventional Fuels and AFVs, TC # 070G** – All diesel fueled trucks and vehicles are required to additionally operate using B20 bio-diesel fuel. Gasoline fueled vehicles were also bid with flex fuel as an alternative category. Awarded flex fuel vehicles comply with the intent of Senate Bill 2051. Vehicles noted as Flex Fuel or E85 can use both pure gasoline and E85 fuel. A hybrid “carry all” SUV was a new model type awarded for the new contract. Lightweight crossovers (4 and 6 cylinder) and manual transmission compact pickups were also awarded to potentially achieve greater fuel efficiency. User purchases of six cylinder engines have increased compared to V8 engines.

- **Neighborhood Electric Vehicles, 070N** - Neighborhood electric vehicles (NEV) are battery operated vehicles that are "street legal" for use on roads with a posted speed limit of 35 MPH or less. There are eight different NEV models available from this contract from two suppliers offering the GEM, E-Ride and Columbia brand vehicles. Two of the larger Columbia electric vehicles are configured as a drop-side truck and van for maintenance and grounds-keepers. The contract vehicles are offered with a price range of \$11,552 to \$25,893 and include an extended warranty. Because these vehicles do not consume hydrocarbon fuel they produce zero direct emissions. It is estimated that NEVs cost 3 to 5 cents per mile to operate. These vehicles are considered good additions to agency fleets to help meet petroleum reduction goals.
- **Golf Cars, 070P** – Fully electric models available for all categories with two, four and six passenger models. Models are made with components of 85-90 percent recycled steel, plastic and aluminum.
- **Remanufactured Toner Cartridges, 207A** - Currently common use Hewlett Packard and Lexmark cartridges are remanufactured to equivalency with the original OEM performance. New Brother brand drum assemblies and toner hopper assemblies were also added. Product specifications are being transitioned from mandated construction requirements to product and vendor performance requirements. This is expected to allow a wider variety of brands and models to be covered as requested by the contract users. This contract reduces the number of reusable cartridges added to the waste stream.
- **Ballasts, 285B** - Electronic ballasts are more energy efficient, support variable illumination on demand and reduce electro magnetic radiation. A link is provided to the Federal Energy Management Program (FEMP) that illustrates a return on investment for retrofitting with more energy efficient lamps and ballasts. Electronic ballasts contain no PCBs and can be disposed of in the trash. Reduced product shape and size (form factor) also minimizes packaging and metal enclosure requirements.
- **LED Lighting, 285C** – Contract consists of parabolic aluminized reflector (PAR) lamps, cove lighting, area lighting, downlights, troffers and wall packs employing LED illumination for energy savings. Packaging is 60 percent recycled materials. Technology uses LED illumination for energy savings. Electronic lamps and fixture ballasts are more energy efficient, support variable illumination on demand and reduce electromagnetic radiation.
- **Energy Saving Devices, 285D** – Contract includes T8 size tubular fluorescent retrofit kits, LED exit signs, LED exit sign retrofit kits, occupancy/vacancy sensors, electronic dimmable ballasts and controls. Products utilize LED illumination and dimmable ballasts for energy savings.
- **Carpet, 360A** - Recycled content required is either (1) minimum 5 percent post-consumer content except that vinyl-backed and other similar hardbacked products contain 20% by weight of post-consumer recycled content, (2) minimum 15 percent by weight of recovered materials (both preconsumer and postconsumer), or (3) minimum of 25 percent by weight of recyclable content.
- **Paper, Computer and Labels, 395B** - Computer paper contains from 30 percent to 50 percent recycled with 30 percent post consumer content.
- **Propane Tankwagon, 405A** – Contract vendors have reported 2,073,048 gallons were purchased last year of this clean burning fuel.
- **Oils, Lubricants, Greases and Antifreeze, 405H** – The following synthetic, biodegradable and recycled lubricants were reported as supplied under this contract: Synthetic Motor Oil (2,125 gallons), Synthetic/Biodegradable Hydraulic Oil (3,427 Gallons), Synthetic Gear Lubricant (13,535 Pounds), Synthetic Automatic Transmission Fluid (5,864 Gallons), Synthetic/Biodegradable Grease (5,280 Pounds), Recycled Antifreeze 50/50 (55 Gallons), and Recycled Motor Oil (313 Gallons). Additional synthetic type oils and transmission fluids have been added to the contract to allow increased service life to reduce consumption and decrease maintenance cycles. The State Surplus Property disposes of waste oil and antifreeze under contract. This year 10,412 gallons were purchased of diesel exhaust fluid (DEF), an aqueous urea solution used in diesel engines to lower nitrogen oxides concentration in exhaust emissions. Nitrogen oxides, like hydrocarbons, are precursors to the formation of ozone and also contribute to the formation of acid rain.
- **Propane Transport, 405K** – Contract vendors have reported 2,221,688 gallons were purchased last year of this clean burning fuel.
- **B-20 Transport, 405L** - B20 blended fuel contains 80 percent diesel fuel and 20 percent virgin soy or reprocessed vegetable oil. This means that of the reported 9,408,574 gallons of B20 blended fuel purchased, 1,881,715 gallons were produced from plant matter. This results in a reduction of crude oil consumption.

- **Gasohol, E-10 Transport, 405M** - E-10 blended fuel contains 90 percent unleaded gasoline and 10 percent ethanol. This means that of the reported 10,094,226 gallons of E10 blended fuel purchased, 1,009,423 gallons were derived from ethanol. This results in a reduction of crude oil consumption.
- **Pipeline Natural Gas, 405N** – Contract vendors have reported 3,953,627 dekatherms were purchased last year of this clean burning fuel.
- **Ultra-Low Sulfur Diesel Transport, 405P** – Contract offers 15 ppm of sulfur content compared to 500 ppm sulfur content on the previous low sulfur diesel contract. Transport loads are more than 6,000 gallons per delivery, and are typically used heavily by DPI and DOT. Approximately 20,969,733 gallons were purchased. This will help to provide compliance with clean air mandates.
- **Ultra-Low #2 Sulfur Diesel Tankwagon, 405Q** - Identical to the 405P contract except in form of delivery, this offers 15 ppm sulfur content compared to 500 ppm sulfur content on the previous contract. Tankwagon loads are less than 6,000 gallons down to a minimum of 500 gallons. Approximately 1,020,204 gallons were purchased. This will help to provide compliance with clean air mandates.
- **E-85 Flex Fuel, 405R** - E-85 blended fuel contains 15 percent unleaded gasoline and 85 percent ethanol derived from corn production. This alternative fuel is provided in transport quantities of 6,000 gallons or more. This means that of approximately 470,191 gallons of the blended E85 fuel purchased, 339,662 gallons were derived from ethanol, which reduces crude oil consumption.
- **E-10 Tankwagon, 405S** - E-10 blended fuel contains 90 percent unleaded gasoline and 10 percent ethanol. Tankwagon loads are less than 6,000 gallons down to a minimum of 500 gallons. This means that of approximately 442,165 gallons of the blended E10 fuel purchased, 44,216 gallons were derived from ethanol which reduces crude oil consumption.
- **Ultra-Low Sulfur Diesel #2 Emergency Transport, 405T** – Contract offers 15 ppm of sulfur content compared to 500 ppm sulfur. This contract is used in emergency cases when there is a pipeline interruption. The ultra-low sulfur content will help to provide compliance with clean air mandates. No sales were required from this contract during the fiscal year.
- **E-10 Emergency Transport, 405U** – E-10 blended fuel offers 90 percent unleaded gasoline and 10 percent ethanol. This contract is used in emergency cases when there is a pipeline interruption. The ethanol blend can reduce crude oil consumption. No sales were required from this contract during the fiscal year.
- **Bio-Diesel Fuel, B-20 Tankwagon, 405V** – B20 blended fuel contains 80 percent diesel fuel and 20 percent virgin soy or reprocessed vegetable oil. Tankwagon loads are less than 6,000 gallons down to a minimum of 500 gallons. This means that of 80,174 gallons purchased, 16,034 gallons are derived from plant matter. This results in a reduction of crude oil consumption.
- **E-85 Tankwagon, 405X** - E-85 blended fuel contains 15 percent unleaded gasoline and 85 percent ethanol derived from corn production. Tankwagon loads are less than 6,000 gallons down to a minimum of 500 gallons. From the approximately 44,239 gallons reported sold of the blended E85 fuel, 37,603 gallons were derived from ethanol, which reduces crude oil consumption.
- **Furniture, Metal, Folding Chairs, Tables, Storage Units, Wood Library Furniture, 420** - Furniture, Desks (Wood), Credenzas, Conference Tables, Etc. & Bookcases, Furniture, 425B & C - Contractors support sustainability through different practices. Mechanical parts can be recycled or replaced, thereby extending service of item. Packaging is recyclable. Products may be ground up into particleboard. Packaging may contain from 15 percent to 75 percent post-consumer waste and is reusable. Wood, plastic and metal contain recycled post-consumer content and are recyclable. Product offerings are using more sustainable methods because they offer a competitive price advantage over those who use all virgin materials. Soy foam in chair seats and backs are now available and is more environmentally friendly because it is made partly from soybeans, a renewable resource.
- **Furniture, Library, Wooden, 420D** – Packaging is recycled. Wood scraps from the manufacturing process are either mulched for recycled materials or converted into energy. Manufacturing may use a water-based top coat in wood finishing process.
- **Furniture Contracts, 425A & 425D** - Product offerings are using more sustainable methods because they offer a competitive price advantage over those who use all virgin materials. Soy foam in chair seats and backs are now available and is more environmentally friendly because it is made partly from soybeans, a renewable resource.

- **Bedding Mattress Term Contract, 420E** - Mattresses comprised of innersprings (similar to the type used primarily in the residential and hospitality bedding industries) now require successful evaluation to the 16 CFR Part 1633, the Consumer Product Safety Commission's new mattress flammability testing standard, "Standard for the Flammability (Open Flame) of Mattress Sets." Successful evaluation of products offered continue to require the 16 CFR Part 1632, Standard for the Flammability of Mattresses and Mattress Pads (directed toward cigarette ignition of mattresses). The revised specifications promote increased safety and durability to extend product life.
- **Furniture, Chairs, Ergonomic, 425E** – Fabric and chair cushions may contain up to 100 percent post-consumer recycled content. Packaging contains post-consumer waste, is reusable and recyclable after use. Product offerings are using more sustainable methods because they offer a competitive price advantage over those who use all virgin materials. Some are now offering soy foam in chair seats and backs as well as recycled wood components. Fabric and chair cushions contain up to 100 percent post-consumer recycled content and approximately 40 percent total recycled content. Packaging contains up to 100 percent recycled materials and is recyclable.
- **Lateral and Vertical Filing Cabinets, 425F & 425G** - Cabinets contain from 10 percent to 30 percent recycled content. Corrugated boxes have a minimum of 50 percent post-consumer waste and are recyclable.
- **Industrial, Medical and Specialty Gases, 430A** - Are delivered statewide in reusable cylinders and are exchanged when replacement cylinders are needed.
- **Disinfectants, Janitorial Cleaners, Environmental Cleaners, and Odor Counteractants, 435A** – The additions of three common use janitorial products that are certified to the GS-37 (Green Seal), Certified Environmental Standard were awarded to products that have limited toxicity. Premoistened towelettes are available to provide an alternative for chemicals from being aerosoled or dispensed in the indoor air. Disinfectants included contain various active ingredients and end use concentrations to allow proper selection for limiting contact and exposure to amounts required to be efficacious for specific pathogens targeted. All disinfectants are EPA registered for efficacy of pathogens identified by the N.C. Statewide Program for Infection Control and Epidemiology within health care related facilities. Chemical dilution control equipment for designated products is supported to improve sanitation quality, deliver accurate recommended product dilution and control costs. Contractors are required to provide the product use training and MSDS sheets.
- **Maintenance, Repair & Operation Supplies, 445B** – Items that were offered under the following contracts are now covered under this contract: Lamps, Large & Specialty (285A), Material Handling Carts/Trucks (560A), Low-Flow Plumbing Fixtures (670A), and Safety Equipment, Eye/Face Protectors (345A). Lamps may contain up to 65 percent recycled content including glass and mercury delivered in packaging that may contain 73 percent recycled content. Some of the lamps are low mercury (TCLP compliant), non-hazardous. Low-flow plumbing fixtures are offered to reduce water consumption.
- **Locks, Locking Devices & Accessories, 450B** – Product metal content includes 26-31 percent pre-consumer recycled materials and 4-6 percent post-consumer recycled materials.
- **External Defibrillators, 465B** - Defibrillators can be refurbished and packaging materials can be recycled.
- **Incontinent Care Products, Disposable, 475C** - Disposable washcloths (wipes) contain a minimum 50 percent of fully biodegradable paper (cellulose fibers).
- **Indoor And Outdoor Waste Receptacles, Food Prep Containers, Pails, and Related Items, 485F** - Most plastic products contain 15 percent post-consumer recycled content. Packaging contains 10 percent post consumer recycled content. Some containers are sold to customers to assist with sustainability management. For example, the aluminum can recycle bins support recycling procedures recommended to users. Metal parts contain recycled content.
- **Brooms, Mops, Brushes, and Other Cleaning Implements, 485G** - Products may contain up to 30 percent post-consumer recycled content. Packaging may contain up to 20 percent post-consumer recycled waste. All cotton mops are made of cotton waste. Shipping boxes are recyclable. Broom handles can be used as wooden dowels for multiple purposes, such as garden stakes, hanging banners in classroom, etc. Forty-five percent of broom material is biodegradable.
- **LED Vehicle Traffic Signal Modules, 550A** - Traffic signals and crosswalk notification employing the high efficiency light emitting diode (LED) technology consume 90 percent less energy than conventional signals, while providing greater reliability, longer life and low-maintenance performance. Signals are certified for ENERGY

STAR for reduced energy consumption.

- **Musical Instruments and Accessories, 580B** - New designs use recyclable plastics. Band instruments may be traded in to be reconditioned and re-sold. Donations of trade-in instruments to the Links Program for the needy promote music education. Plastic and brass parts may be recycled for future part replacement. Package cushioning contains 94 percent post-consumer material. Cardboard and pallets are recyclable.
- **Traffic Signal Equipment, 550D** - Lenses and signal head hardware are compatible with energy efficient LED lamps.
- **Traffic Cones and Drums, 550F** – Contract includes caution drums and cones with up to 35 percent recycled content in the plastic body and up to 100 percent post-consumer recycled content for the rubber support base for either product.
- **Calculators, 600A** - Packaging material may be recycled.
- **Dictation/Transcription Equipment, 600C** - New digital recorders employ internal electronic storage media for constant reuse without cassette tapes. Voice recordings may be easily downloaded for dictation transcription, copied to disc (CD or DVD) and transmitted to distant or remote locations. Only proofed or edited recordings are archived to (CD or DVD). Archived recordings enhance offline lectures and training events. Electronic storage media has a long lifetime before replacement. Contract also offers voice to text digital transcription software that serves the traditional state users or nonprofits for the physically impaired.
- **Office Supplies, 615A** - Contractors are required to the extent feasible and practical, to offer recycled products, including packaging, especially those having post-consumer waste content. Wherever possible and practical, such products should be identified as such.
- **Office Paper, 645A** - Various products contain both post consumer recycled content from 100 percent to 30 percent and chlorine-free copy paper. Other recycled and virgin paper products including envelopes are supported.
- **Bags, Plastic, Trash, 665B** - Liners contain a minimum of 10 percent post-consumer or 10 percent pre-consumer reprocessed copolymer. All the liners awarded were thoroughly evaluated for strength and performance.
- **Laminators & Laminating Film, 665A** - Some of the film contains 5 percent post-consumer content. Packaging contains 25 percent-80percent post-consumer content.
- **Ammunition, 680A** - Brass shell casings can be saved and recycled and others can be reloaded.
- **Vending Machines And Money Changers, 740B** - Packaging, refrigerant and metal components may contain recycled content and are recyclable.
- **Skid Steer Loaders, 760A** – Contract includes models with 24 percent recycled content.
- **Excavators (20 Metric Ton 143HP), 760C** – The engine must meet the current state and federal EPA and regulations indicated by the EPA Clean Air Act for reduced emissions.
- **Aerial Device, Truck Mounted, 765A** – Contract requires trucks be provided with a standard compression ignition diesel type, designed for operation on commercial diesel fuel and B20 or greater bio-diesel. The diesel engine provided is also compliant with the current EPA Tier requirements for emissions control. The bio-diesel fuel may be derived from plant matter.
- **Paper, Drawing and Construction, Newsprint, 785B** - Various products as indicated typically contain 25 percent to 100 percent recycled paper fiber.
- **Television/Video Equipment, 840A** - Most video products are certified Energy Star to denote efficient energy use.
- **Tires and Tubes, 863A** - Tires depending on manufacturer may contain from 1.55 percent to 2.5 percent of recycled materials based on the product attributes, speed rating and performance criteria.
- **Teaching Equipment, Electricity/Electronics Courses, 924A** - Office paper, cardboard and metal enclosures have recycled content. Documentation may be provided in soft copy instead of hard copy printed materials.

- **Electronic Equipment Recycling Services, 926A** - Assists agencies and local governments with contracted disposal of CRTs. Contract diverts discarded electronic products from landfill disposal.
- **Recycling Services for Fluorescent Lamps, Ballasts & Other Mercury Containing Devices, TC# 926B** – Contract assists agencies and local governments with contracted disposal of discarded electronic products that are diverted from landfill disposal.

Items Aiding Waste Reduction Purchased By State Agencies Through Term Contracts and Open Market Purchases

The following items purchased by state agencies meet the criteria for aiding waste reduction by being reusable, refillable, repairable, more durable and/or less toxic than their traditional counterparts:

Reusable

Refrigerant Recovery System (filters reusable refrigerant)
Musical Instruments
Rechargeable Dry Cell Batteries
Recycled Carpet fiber
Recycled Paper fiber
Recycled Content Furniture (not traditional wood)
Printers
Solvent Degreaser (reuses solvent)
Tire Recapping & Repairing Service
Uniforms, Wiping Cloths

More Durable

Above-Ground Vaulted Fuel Storage Tanks
Classroom Furniture, Electronic Lamps & Ballasts
Vacuum Cleaners, Floor Polish, Grader Blades
Grader Slope Attachment, Kindergarten Furniture
Paint Brushes, Plastic Lumber, Mattresses
Staplers
Vertical File Cabinets, Wood Case goods
Wood library furniture

Energy Star – Reduced Energy Consumption

Audio Visual System,
Changeable Message Signs – Solar Powered
Domestic Appliances
Lighting Fixtures,
Room Air Conditioners,
Television & Video Equipment, Lamps
Traffic Signals – LED,
Warning Lights - Vehicles Safety
Water Coolers

Flow Plumbing Fixtures for Reduced Water Consumption

0.5 GPM lavatory facet nozzles and 1.5 GPM showerheads support the governor's water conservation initiative during severe water restrictions throughout the state.

Used

Automobiles and trucks

Refillable

Ammunition - Cartridge Refills
Batteries - Vehicle & Storage
Drums – Steel, Fire Extinguishers
Cylinders for Welding, Medical & Specialty Gases
Fuel Tanks,
Self-Contained Breathing Apparatus

Repairable

Defibrillators, Musical Instruments
Tire Recapping & Repairing Service

Refurbished/Rebuilt

Aircraft Engines, Ferry Engine Repair Parts
Medical Diagnostic Equipment & Instrumentation
Remanufactured Toner Cartridges,
Scientific Equipment, Sewing Machines

Less Toxic

Alternative Fuel Vehicles, Dry Cell Batteries, Electronic Lamps & Ballasts, Fertilizers/Farm Chemicals, Inks for printing (using non-petroleum based inks) Instructional Art Materials, Markerboard Markers, Mattresses, Scientific Products (eliminating Freon), Refrigeration and A/C Equipment

Longer Lasting

Floor Maintenance Machine Batteries, Library Furniture, Aluminum Nuts and Bolts – non-rusting alloys, Fluorescent electronic ballasts permit longer lamp life

Recyclable

Commodity Packaging, Commodity Metal enclosures & parts, Plastics, Steel & Reinforced Concrete Pipe, Chain Link Fencing, Electrical Wire, Treated Lumber, Motor Oil – refined, HVAC & Refrigeration Equipment - Refrigerants

Washable

HVAC Filters Wiping Cloths

Chapter 9

Plastic Bag Management in North Carolina

DIVISION OF WASTE MANAGEMENT AND DIVISION OF ENVIRONMENTAL ASSISTANCE AND OUTREACH PLASTIC BAG MANAGEMENT IN NORTH CAROLINA

Session Law 2010-31 requires that a report be submitted to the Environmental Review Commission as follows:

"Section 13.10.(c) From funds available to the Department of Environment and Natural Resources, the Division of Waste Management and the Division of Environmental Assistance and Outreach shall:

- (i) monitor plastic bag use reduction resulting from the implementation of Part 2G of Article 9 of Chapter 130A of the General Statutes and shall report to the Environmental Review Commission on or before January 15, 2012, on the impacts the ban enacted by that Part has had on plastic bag litter in coastal waterways adjacent to areas where that Part applies; and
- (ii) provide written notification of the requirements of this section to all affected retailers by September 1, 2010."

Timeline of plastic bag reduction program:

- **Session Law 2009-163** (General Statutes Part 2G *Plastic Bag Management* of Article 9 *Solid Waste Management* of Chapter 130A *Public Health*) was ratified June 23, 2009 and established the following main provisions:
Banned plastic bags unless the bag is reusable or the bag is to hold fish, meat, poultry or produce;
Restricted the types of paper bags to be used;
Required signage;
Applied a disposable plastic bag use ban to "a county which includes a barrier island or barrier peninsula, in which the barrier island or peninsula meets both of the following conditions:
 - o It has permanent inhabitation of 200 or more residents and is separated from the North Carolina mainland by a sound.
 - o It contains either a National Wildlife Refuge or a portion of a National Seashore.
 - o Within any county covered by subsection (a) of this section, this Part applies only to an island or peninsula that both:
 - Is bounded on the east by the Atlantic Ocean.
 - Is bounded on the west by a coastal sound."
- **Assessment of retail stores** October 7 – 9, 2009
The Division of Waste Management conducted a compliance assessment on a sampling of affected retail stores within the applicable area in the fall of 2009 with the following results:

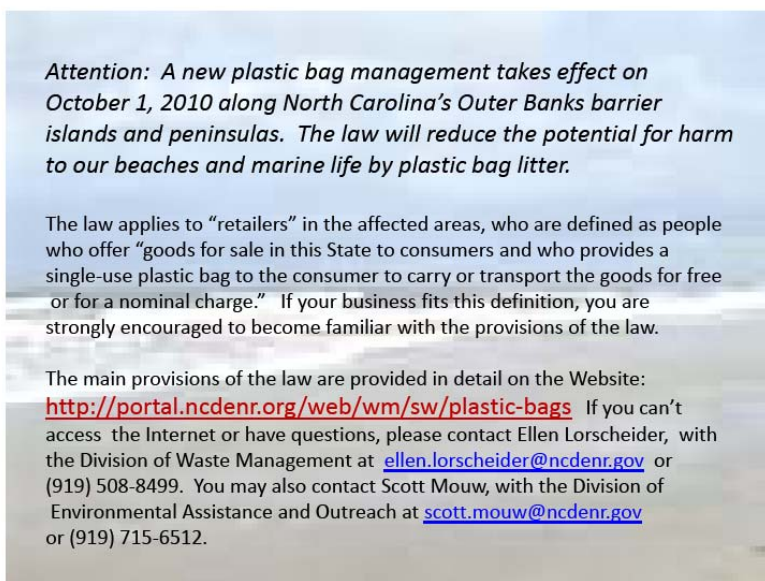
TYPE STORE	IN COMPLIANCE	TOTAL VISITS
Convenience	0	7
Beach Specialty	2	5
Retail	3	10
Department	2	3
Grocery	2	2
Drug	2	2
Specialty	0	1
Hardware	2	2
Auto Parts	0	1
Electronic Supplies	0	1
Office Supplies	1	1
TOTAL	14	35

Compliance may have increased since this initial assessment, especially in the wake of the notice distributed by NC DENR as required in the General Statute (see below).

- **Session Law 2010 -31** ratified June 30, 2010, made changes which:
Defined recycled content and reduced the percent of recycled content in a paper bag from 100 percent to 40 percent;

Enlarged the application of the law to include all retailers, previously limited to retailers with square feet greater than 5,000 or to chain retailers;
 Changed definition of Reusable Bag;
 Changed incentive to use cloth bags to limit it to 'cash refund';
 Required this report be sent to the Environmental Review Commission Jan. 15, 2012.

- **Session Law 2010-123** ratified July 10, 2010 changed incentive to use cloth bags to allow that 'cash refund' to include a 'credit against the cost of goods purchased'.
- NC DENR was directed by statute to send written notification of the requirements to all affected retailers by Sept. 1, 2010. A copy of the text of the notification, sent by postcard, is provided below.



- The full and final changes to the law became effective on Oct. 1, 2010.
- The Division of Waste Management received two complaints in January 2011. However, when the complaints were investigated the stores were found to be in compliance with the law.

Indications of Program Effects

Analysis of Big Sweep data from the past four years allows a glimpse into the effects of the plastic bag legislation on litter. Big Sweep is held the third Saturday of every September. Most, but not all counties send the North Carolina Big Sweep Inc. information with a breakdown of the type of trash that is picked up by volunteers. For more information about Big Sweep see its website at: <http://www.earthsharenc.org/2009/01/north-carolina-big-sweep-inc.html>.

The three counties that are covered by the Plastic Bag Management law are Currituck, Dare and Hyde. Only Dare had Big Sweep data submitted during the years immediately prior to the law and since it became effective.

Dare County	2008	2009	2010	2011
Number of bags recovered	223	3	175	336
Number of volunteers	169	136	172	100
Miles cleaned	41	70	81	25

A correlation between the law and the number of bags collected is not apparent.

To further assess the effects of the legislation, a survey was conducted of local officials and others in the affected areas. The survey (see below) reflects the opinion of the respondents as to the effect of the law and does not represent any specific analysis of the presence of bags as litter. County and city managers, local solid waste staff, local Chamber of Commerce staff, Cooperative Extension staff, tourism bureau staff, local environmental groups and NCDENR divisions of Marine Fisheries, Coastal Management and Aquariums were surveyed. Seventeen polled in Hyde, Currituck and Dare counties responded to the survey as follows:

Questions	Responses
<i>What have you noticed about plastic bag litter in your community in the past two years?</i>	2 An increase in plastic bag litter 13 A decrease in plastic bag litter 2 Plastics bag litter about the same
<i>What have you observed about implementation of the plastic bag use ban at local stores?</i>	16 All or most are in compliance with the law 0 Few to some stores are in compliance 1 No opinion
<i>What effect has the plastic bag law had on public behavior in using and handling bags?</i>	12 Has had a noticeable effect in reducing bag use 0 Has had no effect in reducing bag use 5 No opinion
<i>Other observations on the plastic bag law (open-ended question):</i>	0 Negative responses 16 Positive responses 1 No opinion

Chapter 10

Fluorescent Lights and Mercury-containing Thermostats

DIVISION OF ENVIRONMENTAL ASSISTANCE AND OUTREACH

COMPLIANCE STATUS OF STATE AND LOCAL AGENCIES ON THE MANAGEMENT OF SPENT FLUORESCENT LIGHTS AND MERCURY-CONTAINING THERMOSTATS

Session Law 2010-180 Background

Session Law 2010-180 created N.C. G.S. 130A-310.60, which requires that each state agency, including the General Assembly, the General Court of Justice, universities, community colleges and public schools to establish a program in cooperation with the Department of Environment and Natural Resources and the Department of Administration for the collection and recycling of all spent fluorescent lights and thermostats that contain mercury generated in public buildings owned by each respective entity.

Political subdivisions using state funds for the construction or operation of public buildings are also required to establish a program. This requirement was further updated for counties and municipalities when the General Assembly made changes in the 2011 Session that apply the provisions of Session Law 2010-180 only to local governments that receive state grant funds.

Additionally, Session Law 2010-180 states, effective July 1, 2011, that no person is allowed to dispose of mercury-containing fluorescent lights and thermostats into an unlined sanitary landfill for the disposal of construction and demolition debris waste or in any other unlined landfill. Demolition contractors in North Carolina and/or any owner of a building or structure to be demolished must also remove all fluorescent lights and mercury-containing thermostats from the building or structure prior to demolition.

Implementation Steps

Prior to Session Law 2010-180 going into effect on July 1, 2011, the Department of Natural Resources, Division of Environmental Assistance and Outreach (DEAO) began planning steps to implement the law. These steps started with the updates to its website and the development of factsheets for affected entities. DEAO then worked to establish a primary contact with each entity. Once these contacts were established, information on the law was passed along.

DEAO then partnered with Waste Reduction Partners (<http://wastereductionpartners.org/>) to hold a series of education workshops across North Carolina during May 2011. The workshops focused on the law's requirement that programs established by each entity include procedures for convenient collection, safe storage and proper recycling of spent fluorescent lights and thermostats that contain mercury. Attendees were taught recycling options and contractual and other arrangements with handlers of the recyclable materials. DEAO staff recommended that each entity use the approved vendors in State Term Contract 926B, a statewide convenience contract designed to lower the costs of managing mercury devices. Waste Reduction Partners used the workshops to teach building owners options for reducing lighting demand, adopting fluorescent light alternatives and achieving utility cost savings. Four hundred ninety-two representatives of affected entities attended a series of six, two-hour workshops that were held from May 2 through May 25, in Raleigh, Greenville, Charlotte, Winston-Salem, Wilmington and Asheville. For entities unable to attend one of the workshops, a webinar was conducted on June 1, 2011, for 50 registered attendees.

DEAO also worked with the Division of Waste Management to contact landfills affected by the law. A fact sheet was developed outlining the requirements of Session Law 2010-180 for landfills. Facility operators were advised to screen loads from demolition projects and reject loads with fluorescent lights and mercury-containing thermostats not removed prior to demolition. Letters were also sent to all demolition contractors across North Carolina, making them aware of the requirements of Session Law 2010-180 and directing them to the DEAO website to learn about recycling options.

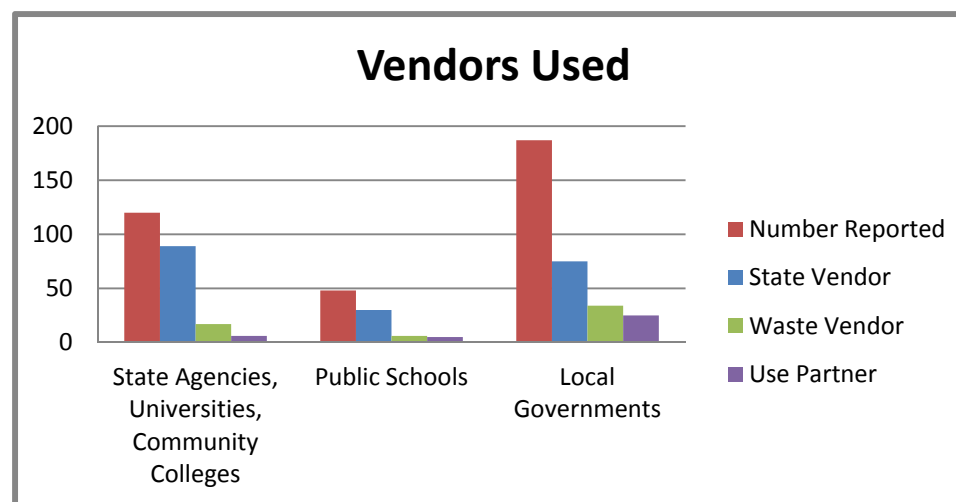
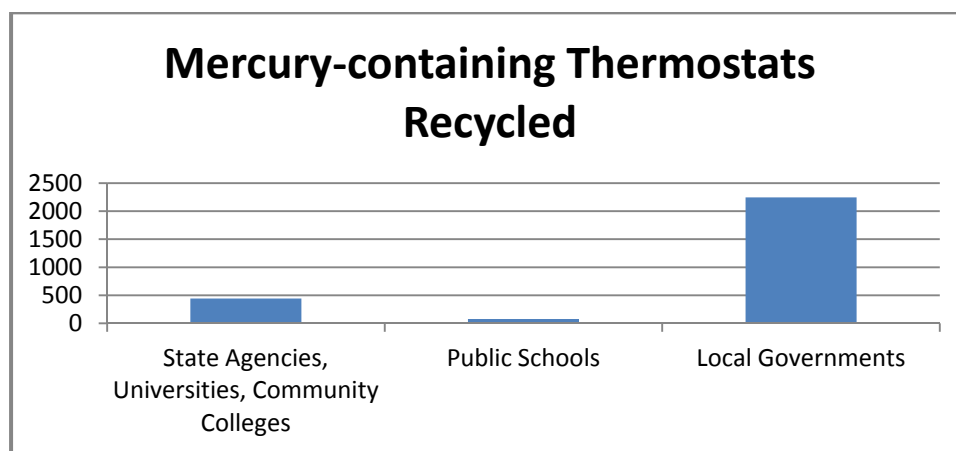
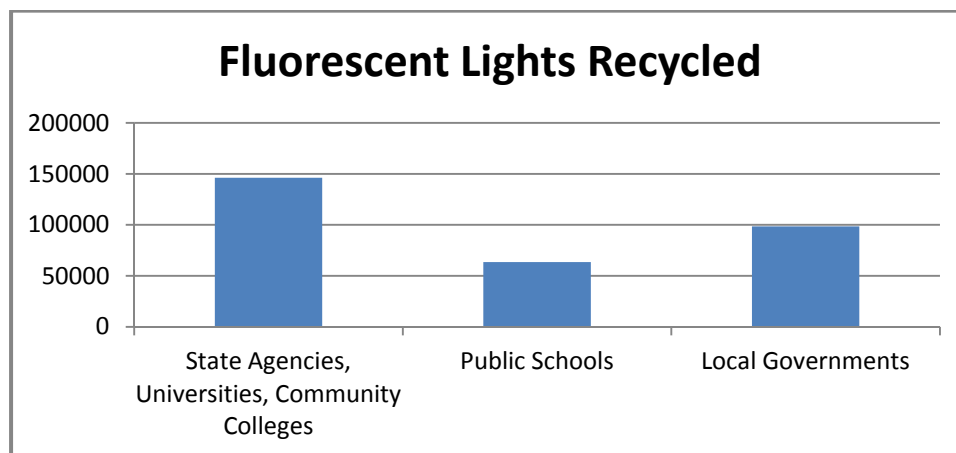
Finally, following the change to Session Law 2010-180 in July 2011, counties and municipalities were advised to determine with their finance office or manager whether or not their community had received, is currently receiving, or is expecting to receive state grant funding for the operation and maintenance of buildings. If so, local governments were advised to complete the mandatory report. If not, local governments were still encouraged to fill out the report and be aware of provisions of the RCRA Universal Waste regulations that apply to their management of fluorescent bulbs, mercury thermostats and other mercury-containing devices.

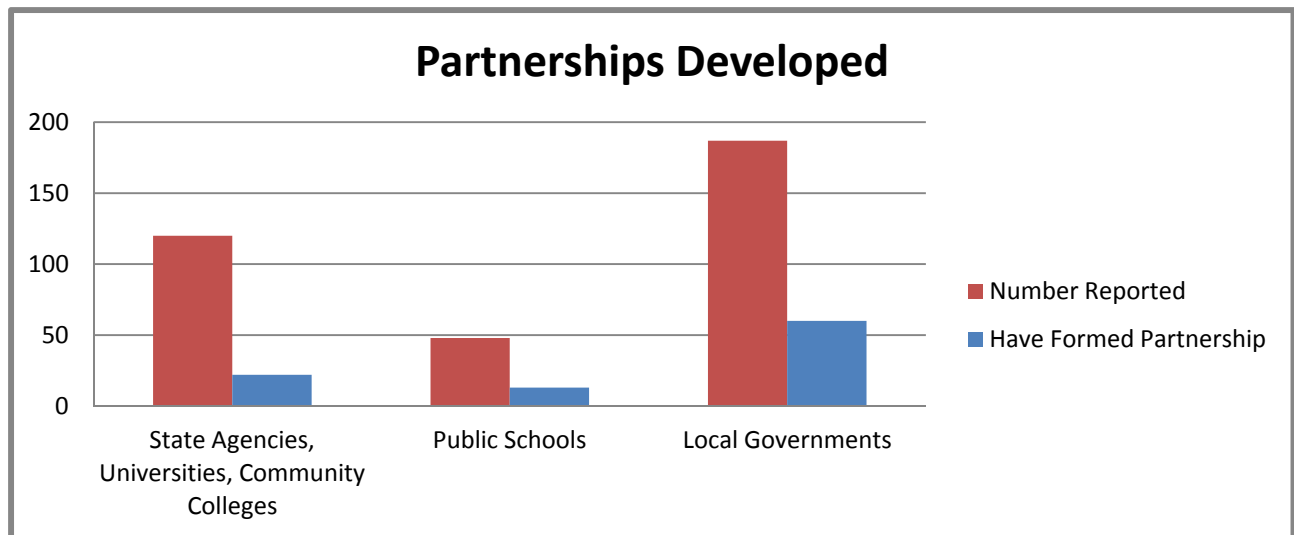
Reporting

Each state agency, including the General Assembly, the General Court of Justice, universities, community colleges, the Department of Public Instruction on behalf of the public schools, and political subdivisions was required to submit a report on or before Dec. 1, 2011, documenting the entity's compliance with the requirements of Session Law 2010-180. In October 2011, DEAO contacted all registered primary contacts to complete the required report information. By the report deadline, all but two state agencies had reported. Forty-nine school districts reported to the Department of Public Instruction, which in turn relayed the information to DENR. All universities reported and 49 of the 58 community colleges reported. Although not all were required to report, 188 counties and municipalities also reported. All reporting entities

appear to be in compliance with the requirement that they establish a program. A list of the non-responding agencies is provided at the end of this report.

The following figures present data on the number of fluorescent lights and mercury-containing thermostats recycled since July 1, 2011, by entities subject to Session Law 2010-180. The data collected demonstrates that more than 300,000 fluorescent lights were recovered for recycling. More than 2,700 mercury-containing thermostats were also recovered, with the majority collected by local governments. The majority of affected entities have selected, as recommended by DEAO, to use one of vendors under the State Term Contract 926B. Finally, the data shows that additional partnerships to help reduce recycling costs to affected entities are needed.





Impact

Session Law 2010-180 has reached its intended effect by increasing the proper management of mercury-containing materials by state agencies, universities, community colleges, local governments and public schools since July 1, 2011. Through outreach and education, entities that were not previously recycling these materials have learned to not only properly comply with Session Law 2010-180, but also comply with federal law that preceded it. Partnerships have been developed among state agencies, counties, public schools and municipalities. These partnerships have helped each entity save on their recycling costs. In addition, the law has had an economic effect on the state of North Carolina. One example is the growth in business of just one of the State Term Contract 926B vendors, Southeast Recycling Technologies (SRT). Between July 1 and Dec. 1, 2011, SRT has added 71 new clients and continues to add new clients everyday. SRT has also partnered with hazardous waste vendors in North Carolina to help grow their businesses as well. Starting in January 2012 SRT looks to expand its business by opening an office in Raleigh to help better service entities in eastern North Carolina. This expansion will create new jobs in North Carolina. The other state contract vendor, Cleanlites, feels 2012 will be an even better year.

Entities Not Reporting

State Departments

N.C. Department of Administration

N.C. Department of Crime Control & Public Safety

Community Colleges

Asheville-Buncombe Technical Community College

Cape Fear Community College

Cleveland Community College

Edgecombe Community College

Mayland Community College

Bladen Community College

Carteret Community College

Coastal Carolina Community College

Gaston College

Public Schools

Alleghany Co.

Asheville City

Beaufort Co.

Bertie Co.

Brunswick

Burke Co.

Cabarrus Co.

Caldwell Co.

Camden Co.

Caswell Co.

Catawba Co.

Chowan Co.

Clay Co.

Cleveland Co.

Clinton City

Craven Co.

Cumberland Co.

Currituck Co.

Dare Co.

Davie Co.

Forsyth Co.

Franklin Co.

Gaston Co.

Gates Co.

Graham Co.

Greene Co.

Guilford Co.

Haywood Co.

Hertford Co.

Hoke Co.

Hyde Co.

Jackson Co.

Jones Co.

Lenoir Co.

Lexington City

Lincoln Co.

Macon Co.

McDowell Co.

Mecklenburg Co.

Mitchell Co.

Montgomery Co.

Mooresville City

Nash/Rocky Mt.

New Hanover Co.

Newton/Conover

Northampton Co.

Onslow Co.

Orange Co.

Pasquotank Co.

Pender Co.

Person Co.

Roanoke Rapids City

Rockingham Co.

Sampson Co.

Scotland Co.

Stokes Co.

Thomasville City

Transylvania Co.

Tyrrell Co.

Warren Co.

Wayne Co.

Weldon City

Whiteville City

Yancey Co.

Chapter 11

Recycle/Reuse/Reduce Report



NCDOT REDUCE/REUSE/RECYCLE REPORT

FISCAL YEAR 2010-2011



**John L. Sharp
Environmental Specialist
Support Services**



EUGENE A. CONTI, JR. SECRETARY

"It is vitally important for all North Carolinians to preserve and protect our environment for future generations. NCDOT has made a strong commitment to recycle, reduce the amount of waste produced in projects and reuse as many materials as possible, and we continue to make this a central focus in our daily operations."





TERRY GIBSON, P.E. STATE HIGHWAY ADMINISTRATOR

"The 3R Program is an important program at NCDOT. Being good stewards of the environment, and keeping a close watch on the larger picture, will help us to be more responsible toward conserving our natural resources today and in the years to come."



MICHAEL D. ROBERTSON DMV COMMISSIONER

"At the Division of Motor Vehicles, one of our key programs is working with the N.C. Division of Air Quality and the U.S. Environmental Protection Agency to reduce the pollutants coming from the vehicles we drive. Our safety and emissions inspections help keep our vehicles operating safely and cleanly. We take great pride in doing all we can to preserve the quality of our environment for future North Carolinians."

NCDOT 3R Program Tree

Source Reduction
New Technology

Source Reduction
New Design

Source Reduction
Procurement

Reuse
Materials

Source Reduction
Planning

Reuse
Composting

Reuse
Items

Reuse
Waste Exchange

Reuse
Swap Shop Surplus

Recycle
Paper/Aluminum
Plastic/Cardboard

Recycle Purchasing
Buy Recycled Items

Benefits: • More Efficient Operation • Cost Savings • Environmental Sustainability • Compliance

REDUCE REUSE RECYCLE

Education on Waste Reduction and Recycling

Effective education is key to a successful waste reduction program.

As of 2010–2011, NCDOT has the following measures in place:

- Top-down support for a recycling program;
- A lead coordinator for waste reduction and recycling efforts;
- Waste reduction and recycling opportunities for visitors at its public facilities such as highway rest stops; and
- Ongoing educational and promotional programs for waste reduction and recycling.

A majority of the information was communicated and distributed electronically through e-mail and online.



Source Reduction of Waste/ Waste Prevention and Reuse



NCDOT places source reduction of waste/waste prevention and reuse at the top of the hierarchy of preferred methods for managing solid waste. Executive Order 156 requires state agencies to practice waste reduction.

The following are actions taken by NCDOT in 2010–2011 to practice waste reduction:

- Most employees practiced at least one technique for reducing waste.
- 80 percent of NCDOT facilities took action to reduce office paper such as copy paper, letterhead, envelopes and packaging.

This was done through:

- Eliminating unnecessary reports and reducing report size;
- Eliminating unnecessary forms or converting to electronic format;
- Making fewer copies;
- Printing or copying documents on both sides of paper;
- Using electronic mail and voice mail;
- Posting announcements on bulletin boards and in break areas;
- Using “two-way” envelopes; and
- Reusing mailing envelopes.

In 2010- 2011, NCDOT Construction & Demolition Waste Reduction/ Recycle Program recycled 3,409 tons of waste such as Metal, Brick/Block and Concrete



NCDOT is dramatically reducing the amount of material it puts into landfills statewide. One of the ways the department is accomplishing this reduction is by reusing and recycling parts of its old buildings through the Construction Waste Reduction and Recycling Program.

"This program is a great example of our commitment to environmental sensitivity in action,"
said Transportation Secretary Gene Conti.

Overall, the program has yielded \$283,100 in avoided hard costs, savings and revenue and has kept 5,780 tons of material out of landfills. For more information about NCDOT's environmental efforts, visit www.ncdot.gov/programs/environment/3R



Recycled Products & Solid Waste Utilization in Construction & Maintenance Projects



Reused Materials 2010-2011	Quantity	Unit of Measure
Aggregate Base Course	10,713	Tons
Concrete Pipe	2,481	Linear Feet
Guardrail	49,355	Linear Feet
Portable Concrete Barrier	44,244	each
Sign Posts	40,545	each
Signal Heads	65	each
Signs	970	each
Steel Beams	2,880	pounds



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

BEVERLY EAVES PERDUE
GOVERNOR

EUGENE A. CONTI, JR.
SECRETARY

**Recycling and Solid Waste Management Report
For Highway Construction and Maintenance Projects
State Fiscal Year 2010 – 2011**

This report is a summary of the recycling and solid waste management efforts on highway construction and maintenance projects within the North Carolina Department of Transportation for fiscal year 2011 (July 1, 2010 - June 30, 2011) as required by G.S. 136-28.8(g). This statute mandates the Department prepare an annual report on the amounts and types of recycled materials specified or used in construction and maintenance operations during the previous fiscal year. The types of recycled materials incorporated into the projects noted would normally contribute to the consumer and industrial waste streams, compounding the problem of declining space in landfills.

Efforts to utilize recycled and solid waste materials are in response to the requirements of G.S. 136-28.8(b) which mandates the Department to use recycled materials in highway projects, specifically:

- (1) Rubber from tires for pavements, subbase materials, and other appropriate applications.
- (2) Recycled materials for guardrail posts, right of way fence posts, and sign supports.
- (3) Recycling technology including but not limited to hot in-place recycling on roads in highway maintenance.

All applications of recycled materials are to be consistent with economic feasibility and applicable engineering and environmental quality standards.

Highway Construction and Maintenance Projects

Specifications now require that many of the products used in highway construction projects, such as guardrail offset blocks and flexible delineator posts, be manufactured from some quantity of recycled materials. Glass beads used for retroreflective pavement markings are manufactured from 100% recycled glass. Reclaimed asphalt pavement (RAP) may constitute up to 50% of the total material used in most recycled mixtures, and RAP mixtures are used on a majority of projects. Fly ash is sometimes used as a concrete component for up to 20% by weight of the required cement content. Some of the notable recycled or solid waste materials utilized this fiscal year are denoted on the following page.

MAILING ADDRESS:
NC DEPARTMENT OF TRANSPORTATION
QUALITY ENHANCEMENT UNIT
1502 MAIL SERVICE CENTER
RALEIGH NC 27699-1502

TELEPHONE: 919-508-1867
FAX: 919-508-1954
WWW.NCDOT.GOV

LOCATION:
RANEY BUILDING
104 FAYETTEVILLE STREET MALL
RALEIGH, NC 27601

Recycling and Solid Waste Management Report For Highway Construction and Maintenance Projects State Fiscal Year 2010 – 2011

1. Over 745,000 tons of Reclaimed Asphalt Pavement (RAP) were used as an asphalt mix additive.
2. About 15,000 cubic yards of clearing and grubbing debris were used as mulch for erosion control and roadside environmental applications.
3. Over 18,000 tons of coal combustion fly ash were used in concrete mixes.
4. Approximately 4,400 tons of recycled glass beads were used in pavement marking.
5. Maintenance personnel across the state continue to reuse products including:
 - Aggregate Base Course
 - Concrete pipe
 - Guardrail
 - Signs and posts
 - Steel Beams

See Attachment 1 for quantities of recycled and solid waste materials used during the 2010 – 2011 state fiscal year. Attachment 2 summarizes total quantities, as well as a rolling average since 1989.

Website

For up-to-date information on NCDOT's use of recycled materials, visit:

<http://www.ncdot.org/doh/preconstruct/altern/value/recycle/default.html>

North Carolina Department of Transportation
Recycled Products & Solid Waste Utilization in Construction & Maintenance Projects
Summary, July 2010 through June 2011

Product Category and Description	Usage	Quantity for SFY 2010-2011	Unit of Measure
1-Asphalt:			
Reclaimed Asphalt Pavement (RAP)	Asphalt Mix Additive	745,647	Tons
Reclaimed Asphalt Pavement (RAP)	Aggregate Base Course (ABC)	5,369	Tons
Reclaimed Asphalt Pavement (RAP)	Shoulder Reconstruction	33,788	Cubic Yards
Reclaimed Asphalt Shingles (RAS)	Asphalt Mix Additive	0	Tons
Hot-In-Place Asphalt Recycling	Pavement	782,000	Square Yards
Full-Depth Reclamation	Pavement	15,850	Cubic Yards
2-Clearing and Grubbing Debris:			
Mulch	Mulch	104	Acres
Mulch	Mulch - Roadside Environmental	13,530	Cubic Yards
Mulch	Erosion Control	1,575	Cubic Yards
3-Coal Combustion Products:			
Fly Ash	Concrete Mix Additive	18,189	Tons
Fly Ash	Embankment Fill	0	Cubic Yards
Fly Ash	Flowable Fill	89	Cubic Yards
Fly Ash	Asphalt Mix Additive	0	Tons
Bottom Ash	Embankment Fill	0	Cubic Yards
4-Concrete:			
Recycled Concrete	Aggregate Base Course (ABC)	0	Tons
Recycled Concrete	Fill Material	466	Tons
Crack and Seat	Base Material	0	Tons
Rubblized Concrete	Base Material	0	Tons
5-Glass:			
Recycled Glass Beads	Pavement Markings	4,396	Tons
Crushed Glass	Subdrain Backfill	0	Tons
Crushed Glass	Pipe Foundation	0	Tons
Crushed Glass	Aggregate Base	0	Tons
6-Plastic:			
Recycled Plastic Offset Blocks	Guardrail Offset Blocks	2,632,675	Each
Recycled Plastic Fence Posts (All Sizes)	Fence Posts	200	Each
Recycled Plastic Pipe (All Types and Sizes)	Pipe	0	Linear Feet
Recycled Plastic Flexible Delineators	Flexible Delineator Posts	0	Each
Recycled Plastic Barricades	Type III Barricades	0	Feet
Recycled Plastic Traffic Separators	Railroad Safety Device	0	Linear Feet
7-Scrap Tires:			
Chipped Tires	Embankment Fill	0	Tires
Chipped Tires	Lightweight Aggregate	0	Tires
Chipped Tires	Sound Wall Panels	0	Tires
Crumb Rubber	Crack Sealant	38,860	Tires
Crumb Rubber	Soil Amendment	0	Tires
Crumb Rubber	Asphalt Mix Additive	31,930	Tires
Rubber Mulch	Mulch	0	Tires
Tire Sidewalls	Traffic Drum Ballast	3,885	Tires
Whole Tires	Retaining Wall	491	Tires
Total Waste Scrap Tires		0	Tires
8-Roadside Environmental:			
Advanced Alkaline Sludge	Soil Amendment	0	Tons
Aged Leaf Mold & Yard Debris	Soil Amendment	0	Tons
Ammonium Sulfate Liquid	Fertilizer/Soil Amendment	0	Gallons
Bark Mulch	Soil Amendment	0	Tons
Bioremediated Petroleum Affected Soils	Soil Amendment	0	Cubic Yards
Cotton Gin Waste	Soil Amendment	0	Cubic Yards
Hog Waste Compost	Fertilizer/Soil Amendment	3	Cubic Yards

North Carolina Department of Transportation
Recycled Products & Solid Waste Utilization in Construction & Maintenance Projects
Summary, July 2010 through June 2011

Product Category and Description	Usage	Quantity for SFY 2010-2011	Unit of Measure
Hurricane Fran Mulch	Soil Amendment	0	Cubic Yards
Hydromulch	Mulch	0	Pounds
Lime-Stabilized Municipal Sludge	Soil Amendment	0	Tons
Municipal Sludge	Soil Amendment	0	Tons
Poultry Litter	Fertilizer/Soil Amendment	3	Tons
Soil Derived from Demolition Debris	Soil Amendment	0	Tons
Compost Material (Ref: AASHTO MP-10)	Compost Blanket	79,000	Cubic Yards
9-Other:			
Steel Slag	Base Aggregate	0	Tons
Processed Silica	Embankment Fill	0	Cubic Yards
Recycled Polyester Resin	Weedmat	0	Square Yards
Recycled Bridge Items	Decking & Beams (wood)	0	Linear foot/ft
Reclaimed Asphalt Pavement (RAP)	Patching	0	Tons
Used Unclassified Structure	Borrow	0	Cubic Yards
Mabey Bridge	Bridge	0	Each
Drainage Ditch Excavation	Borrow	0	Cubic Yards
Corrugated Metal Pipe	Metal Pipe	0	Linear foot/ft
Erosion Control Stone 'B'	Slope Protection	0	Tons
White Roofing Rock	Mulch, Ditch Liner	0	Cubic Yards
Aluminum	Traffic Signal Cabinets	15	Each/ea
Cardboard	Cardboard Boxes	100	Pound/lb
Asphalt Millings	Shoulder Repair	175	Tons
Woven Wire	Fence Reset	246	Linear foot/ft
Orange PVC Safety Fence	Environmental Sensitive Delineation	623	Linear foot/ft
10-Reused Materials:			
Aggregate Base Course	Aggregate Base Course	10,713	Tons
Concrete Pipe	Concrete Pipe	2,481	Linear Feet
Guardrail	Guardrail	49,355	Linear Feet
Refurbished Traffic Signal Heads	Traffic Signal Heads	0	Each
Sign Posts	Sign Posts	40,545	Each
Signal Heads	Signal Heads	65	Each
Signs	Signs	970	Each
Silt Fence and Posts	Silt Fence and Posts	0	Linear Feet
Steel Beams	Steel Beams	2,880	Pounds
Double Faced Concrete Barrier	Concrete Barrier	0	Linear Feet
Wooden Breakaway Posts	Guardrail Offset Blocks	0	Each
40' Signal Pole (wood)	Signal Pole Replacement	0	Each
LED Signal Lamps	Signal Repair	0	Each
Signal Cabinet	Signal Repair	0	Each
1" Rigid Pipe	Signal Repair	0	Linear Feet
Portable Concrete Barrier	Portable Concrete Barrier	44,244	Each
Timber Bridge Deck/Rail	Bridge Deck/Rail	4,200	Linear Feet
Wood Pallets	Wood Pallets	400	Each

North Carolina Department of Transportation
Recycled Products & Solid Waste Utilization in Construction & Maintenance Projects
Summary, January 1989 through June 2011

Product Category and Description	Usage	Quantity	Unit of Measure	1989-2011 Rolling Average
1-Asphalt:				
Reclaimed Asphalt Pavement (RAP)	Asphalt Mix Additive	5,475,189	Tons	248,872
Reclaimed Asphalt Pavement (RAP)	Aggregate Base Course (ABC)	33,198	Tons	1,509
Reclaimed Asphalt Pavement (RAP)	Shoulder Reconstruction	64,820	Cubic Yards	2,946
Reclaimed Asphalt Shingles (RAS)	Asphalt Mix Additive	57,824	Tons	2,628
Hot-In-Place Asphalt Recycling	Pavement	3,199,267	Square Yards	145,421
Full-Depth Reclamation	Pavement	157,074	Cubic Yards	7,140
2-Clearing and Grubbing Debris:				
Mulch	Mulch	633	Acres	29
Mulch	Mulch - Roadside Environmental	52,562	Cubic Yards	2,389
Mulch	Erosion Control	41,326	Cubic Yards	1,878
3-Coal Combustion Products:				
Fly Ash	Concrete Mix Additive	121,082	Tons	5,504
Fly Ash	Embankment Fill	865,186	Cubic Yards	39,327
Fly Ash	Flowable Fill	719	Cubic Yards	33
Fly Ash	Asphalt Mix Additive	40,800	Tons	1,855
Bottom Ash	Embankment Fill	2,707	Cubic Yards	123
4-Concrete:				
Recycled Concrete	Aggregate Base Course (ABC)	6,399	Tons	291
Recycled Concrete	Fill Material	54,553	Tons	2,480
Crack and Seal	Base Material	260,853	Tons	11,857
Rubblized Concrete	Base Material	310,917	Tons	14,133
5-Glass:				
Recycled Glass Beads	Pavement Markings	80,219	Tons	3,646
Crushed Glass	Subdrain Backfill	130	Tons	6
Crushed Glass	Pipe Foundation	333	Tons	15
Crushed Glass	Aggregate Base	203	Tons	9
6-Plastic:				
Recycled Plastic Offset Blocks	Guardrail Offset Blocks	2,974,682	Each	135,213
Recycled Plastic Fence Posts (All Sizes)	Fence Posts	8,300	Each	377
Recycled Plastic Pipe (All Types and Sizes)	Pipe	57,703	Linear Feet	2,623
Recycled Plastic Flexible Delineators	Flexible Delineator Posts	4,838	Each	220
Recycled Plastic Barricades	Type III Barricades	2,091	Feet	95
Recycled Plastic Traffic Separators	Railroad Safety Device	2,922	Linear Feet	133
7-Scrap Tires:				
Chipped Tires	Embankment Fill	11,692,045	Tires	531,457
Chipped Tires	Lightweight Aggregate	50,739	Tires	2,306
Chipped Tires	Sound Wall Panels	8,000	Tires	364
Crumb Rubber	Crack Sealant	42,273	Tires	1,922
Crumb Rubber	Soil Amendment	2,000	Tires	91
Crumb Rubber	Asphalt Mix Additive	156,442	Tires	7,111
Rubber Mulch	Mulch	3,603	Tires	164
Tire Sidewalls	Traffic Drum Ballast	72,385	Tires	3,290
Whole Tires	Retaining Wall	4,212	Tires	191
Total Waste Scrap Tires		12,031,699	Tires	546,895

8-Roadside Environmental:				
Advanced Alkaline Sludge	Soil Amendment	495	Tons	23
Aged Leaf Mold & Yard Debris	Soil Amendment	2,370	Tons	108
Ammonium Sulfate Liquid	Fertilizer/Soil Amendment	420,948	Gallons	19,134
Bark Mulch	Soil Amendment	10,434	Tons	474
Bioremediated Petroleum Affected Soils	Soil Amendment	1,137	Cubic Yards	52
Cotton Gin Waste	Soil Amendment	7,130	Cubic Yards	324
Hog Waste Compost	Fertilizer/Soil Amendment	28	Cubic Yards	1
Hurricane Fran Mulch	Soil Amendment	200,000	Cubic Yards	9,091
Hydromulch	Mulch	89,160	Pounds	4,053
Lime-Stabilized Municipal Sludge	Soil Amendment	704	Tons	32
Municipal Sludge	Soil Amendment	8,610	Tons	391
Poultry Litter	Fertilizer/Soil Amendment	428	Tons	19
Soil Derived from Demolition Debris	Soil Amendment	1,742	Tons	79
Compost Material (Ref: AASHTO MP-10)	Compost Blanket	79,000	Cubic Yards	3,591
9-Other:				
Steel Slag	Base Aggregate	224	Tons	10
Processed Silica	Embankment Fill	46,072	Cubic Yards	2,094
Recycled Polyester Resin	Weedmat	1,152	Square Yards	52
Recycled Bridge Items	Decking & Beams (wood)	1,500	Linear foot/lft	68
Reclaimed Asphalt Pavement (RAP)	Patching	900	Tons	41
Used Unclassified Structure	Borrow	3,180	Cubic Yards	145
Mabey Bridge	Bridge	2	Each	0
Drainage Ditch Excavation	Borrow	200	Cubic Yards	9
Corrugated Metal Pipe	Metal Pipe	2,500	Linear foot/lft	114
Erosion Control Stone 'B'	Slope Protection	340	Tons	15
White Roofing Rock	Mulch, Ditch Liner	250	Cubic Yards	11
Aluminum	Traffic Signal Cabinets	40	Each/ea	2
Cardboard	Cardboard Boxes	210	Pound/lb	10
Aphalt Millings	Shoulder Repair	175	Tons	8
Woven Wire	Fence Reset	246	Linear foot/lft	11
Orange PVC Safety Fence	Environmental Sensitive Delineation	623	Linear foot/lft	28
10-Reused Materials:				
Aggregate Base Course	Aggregate Base Course	65,816	Tons	2,992
Concrete Pipe	Concrete Pipe	13,815	Linear Feet	628
Guardrail	Guardrail	99,087	Linear Feet	4,504
Refurbished Traffic Signal Heads	Traffic Signal Heads	11	Each	1
Sign Posts	Sign Posts	56,954	Each	2,589
Signal Heads	Signal Heads	1,155	Each	53
Signs	Signs	43,815	Each	1,992
Silt Fence and Posts	Silt Fence and Posts	2,550	Linear Feet	116
Steel Beams	Steel Beams	562,532	Pounds	25,570
Double Faced Concrete Barrier	Concrete Barrier	8,041	Linear Feet	366
Wooden Breakaway Posts	Guardrail Offset Blocks	11,409	Each	519
40' Signal Pole (wood)	Signal Pole Replacement	17	Each	1
LED Signal Lamps	Signal Repair	200	Each	9
Signal Cabinet	Signal Repair	3	Each	0
1" Rigid Pipe	Signal Repair	110	Linear Feet	5
Portable Concrete Barrier	Portable Concrete Barrier	55,672	Each	2,531
Timber Bridge Deck/Rail		4,200	Linear Feet	191
Wood Pallets	Wood Pallets	400	Each	18

Recycling provides NCDOT and North Carolina with several major benefits:

- REDUCE REUSE RECYCLE**
- North Carolina Solid Waste and Materials Management Annual Report FY 2010-2011 - Page 92

In 2010-2011, NCDOT recycled 706 tons of paper such as office papers, telephone books and cardboard.

NCDOT has embraced recycling throughout North Carolina.

The growth in recycling programs throughout NCDOT reflects the common-sense instinct of its employees to conserve resources and save on operating costs in their own backyard. Transforming waste materials into useable resources supports our mission of connecting people and places in North Carolina — safely and efficiently, with accountability and environmental sensitivity.



NCDOT 2010–2011 Paper Recycling Program Environmental Impact

- 4,941,440 gallons of water saved
- 2,878,036 kilowatt hours of energy saved
- 59,297 gallons of oil saved
- 2,329.53 cubic yards of land fill space
- 12,001 trees saved

In 2010-2011, NCDOT recycled 54 tons of plastic such as jugs, buckets and bottles.



NCDOT Rest Areas make recycling opportunities easy for the general public. In 2010-2011, NCDOT Rest Areas recycled more than 77 tons of glass and plastic bottles, aluminum cans, newspaper, and cardboard.



**In 2010-2011, NCDOT recycled
747,432 tons of waste such
as oil, concrete, tires and
asphalt.**



In 2010-2011, NCDOT recycled 7,501 tons of organic material such as wood pallets, beams and mulch.



In 2010-2011, NCDOT recycled 67 tons of electronics such as computers, monitors and printers.



NCDOT also recycled 1,613 tons of metal such as highway signs and scrap metal that same year.



NCDOT Rail, Ferry and Aviation Divisions



The NCDOT Rail Division leads the way among alternative modes in reuse and recycling of materials. Rail Division recycle/reuse programs diverted over 190 tons of waste from the landfill as well as provided thousands of dollars in cost savings.



Reuse and Recycle programs in the Ferry and Aviation divisions keep their waste stream to a minimum.

REDUCE

REUSE

RECYCLE

NCDOT Solid Waste Disposal and Cost Information July 1, 2010 - June 30, 2011

SOLID WASTE DISPOSAL AND COST INFORMATION

1. Total tons of solid waste disposed of in land fills or by incineration
87,428
2. Total costs for solid waste collection and disposal
\$ 3,147,426
3. Total tons recycled or composted
757,406
4. Total solid waste collection and disposal costs avoided through recycling and composting
\$ 27,266,616
5. Total revenues from sale of recycled materials and compost products
\$ 505,270

NCDOT's focus on waste management over the past year has moved towards implementing and educating employees on source reduction, reuse, and recycle practices. These practices have resulted in a significant reduction in our waste stream and a large increase in recycling numbers reported.

- **Expanding Facility Construction and Demolition Waste Reduction recycle program statewide.**
- **Increasing specifications to allow more reuse of asphalt, hot in-place recycling and Highway Construction and Materials System (HiCAMS) reporting.**
- **Eliminating mass printing of several manuals, documents and forms by placing them online for customers and employees.**