



State Solid Waste and Materials Management Plan

Executive Summary

The Solid Waste Management Act of 1989 established policies and goals to promote methods of solid waste management that are alternatives to disposal in landfills and to assist local governments with solid waste management. The law required DENR to develop a comprehensive solid waste management plan and to periodically update the plan with input from local government, regional planning agencies, industry, and the general public.

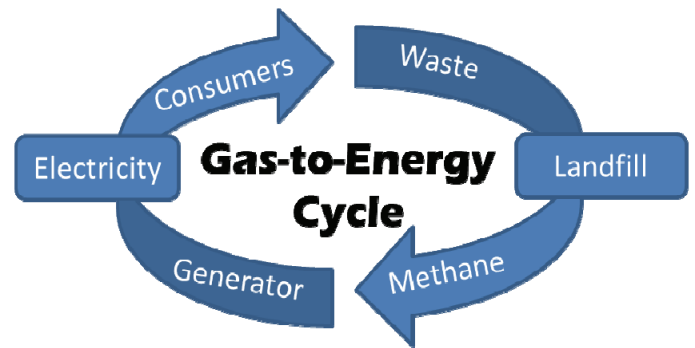
Chapter 1: Introduction

The State Solid Waste and Materials Management Plan (Plan) is a comprehensive plan required by state law which assesses the status of solid waste management in North Carolina while providing new objectives and strategies to achieve environmental and economic benefits for the next ten years. The first plan was adopted in 1990 and updated in 2003. This 2014-2024 state plan represents the third iteration of the state plan.

This plan seeks to maximize the recovery of discarded materials in order to reduce the state’s long-term dependence on final disposal operations while returning salvaged materials into the North Carolina economy, and to assist industry, both private and public, with the technical issues associated with running economically viable, environmentally compliant solid waste management operations. Efficient and effective diversion of recyclable materials (constituting “commodities”) is the best strategy to minimize the long-term environmental liabilities of landfills and to respond to the growing difficulty of siting disposal facilities. That diversion also has both a proven track record and a strong potential of creating jobs and business opportunities in the state. Diversion of commodities from disposal supplies essential feedstocks to North Carolina manufacturers and delivers broad environmental benefits, including emission reductions and energy, water, and resource savings.

However, because not all materials constitute commodities or can be reduced or recycled, this plan also recognizes the long term necessity of disposal facilities and the need to ensure they are safe and protective of public health and the environment. In addition, the plan articulates the need to prepare for the permitting and

deployment of new technologies for managing discarded materials, in particular technologies aimed at capturing the energy value of those materials.



The plan also calls for maintaining a robust ability to respond to the challenge of materials generated by natural disasters.

In general, this plan drives the Department to be responsive to new opportunities, public concerns, and critical issues, and it places responsibility on the Department to exercise leadership, collaboration, strong customer service and transparency.

Developing the Plan

While the Department is responsible for developing and issuing the Plan, the Division of Waste Management’s Solid Waste Section coordinated the development of a draft Plan using information from other agencies within DENR and by surveying stakeholders—including affiliates and organizations, waste managers, industries involved in waste diversion, and the general public.

After completion of the draft plan and survey response period several public meetings will be held across the state to allow for additional input from interested parties.

Chapter 2: 2003-2013 Plan History

This section presents an overview of the 2003-2013 Plan main goals and the progress achieved toward reaching those goals.

Previous Goal: Ensure long-term environmental protection by improving future landfill technology and address public health and environmental concerns associated with closed landfills.

- The Section monitored the development and operation of the state’s sole bioreactor with the goal of adjusting regulations if needed.
- Developed a statutory program to divert electronics materials, include CRTs;
- Implemented legislation requiring state and local agencies to recycle lights-containing-mercury (LCMs);
- Created a grant program to encourage collection of public mercury-containing products;
- Implemented a state-wide ban on oil filter disposal;
- Supplied technical assistance to increase the number of local HHW programs;
- Implemented bans, from C&D Landfills, on source-separated wood, mercury switches and thermostats, lamps and bulbs, lead pipes and flashing, etc.;
- Developed C&D Landfill rules, effective 2007, to increase buffer requirements, vertical separations to groundwater, and modified base requirements;
- Developed a program to address pre-regulatory (1983) landfills implemented by the Inactive Hazardous Sites Branch of the Superfund Section.
- Established a strategy to fund long-term care and cleanup of closed, lined MSW Landfills.

Previous Goal: Substantially increase the amount of waste recycled and composted.

- Implemented disposal bans on wooden pallets, oil filters, plastic bottles, televisions, computer equipment, oyster shells, and ABC permit-holder glass;
- Enacted a statewide surcharge on tipping fees;
- North Carolina’s electronics producer

responsibility legislation was implemented;

- Assisted in negotiating an opt-out program for yellow pages phone book delivery in the state;
- Continued participation in the Carpet America Recovery Effort and in national dialogues addressing other materials;
- Increased public awareness and state commitment to recycling through three outreach programs - Recycle Guys, RE3, and RecycleMore.—along with ongoing technical assistance to local government recycling programs;
- Increased diversion of organic materials by state agencies with new or expanded food waste composting at six state universities and several prisons;
- Increased the number of temporary disaster debris staging sites in order to divert and recover wood wastes generated during storm events;
- Increased grant and loan funds for source reduction, recycling, and composting through disposal tax revenues into the Solid Waste Management Trust Fund.

Previous Goal: Reduce litter and illegal disposal by 50% from 2003-2004 levels

- Documented the extent and nature of littering and illegal dumping in North Carolina.
- Increased illegal dumping penalties from \$5,000 to \$15,000, created the Solid Waste Enforcement Officers Association, and produced educational outreach brochures.
- Required local plans to address litter control.

Previous Goal: Implement policies and procedures to provide information to the public and ensure public participation throughout the decision-making process regarding waste management facilities.

- Statutory changes for the siting of MSW landfills to require new facilities to produce environmental assessment/impact studies.
- Increased public outreach and instituted learning sessions with local officials.

2003-2013 Plan History: continued

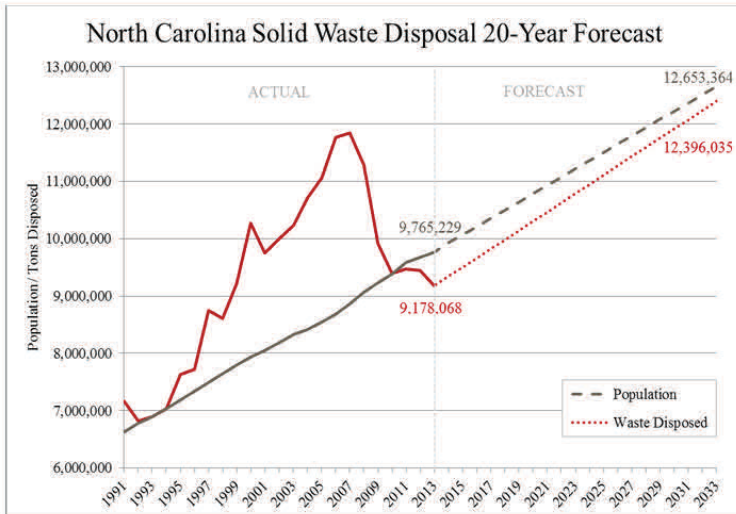
Previous Goal: Create and continually maintain 20 years of landfill capacity in the state.

- Increased waste reduction efforts, partially accomplished through the expansion of local government recycling programs and private sector recycling infrastructure along with DENR grant and technical assistance programs.
- Worked to develop a statewide process to certify operators and identify the needs for additional facilities/ensuring coverage.
- Provided information on landfill capacity needs and facility needs, based on data analysis, Facility Annual Reports, and Local Government Annual Reports.
- Reviewed the public participation process during the development of new C&D rules and improved the efficiency of the permit application review process.

Chapter 3: Overview of Current North Carolina Materials Management System

This section presents summary data and analysis of current generation, disposal, and recycling of materials in the state.

History and Projection of Solid Waste Disposal in North Carolina:



Disposal data, including the recent history of per capita disposal rates relative to North Carolina's disposal benchmark of Fiscal Year 1991-92, indicates a 31% drop in per capita disposal between Fiscal Years 2005-06 and 2012-13.

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
2012-2013	9,178,068	9,765,229	0.94	-12.1%	-4.1%
2011-2012	9,443,380	9,669,244	0.98	-9.0%	-1.0%
2010-2011	9,467,045	9,586,227	0.99	-8.0%	-1.0%
2009-2010	9,395,457	9,382,609	1.00	-6.4%	-6.8%
2008-2009	9,910,031	9,227,016	1.07	0.4%	-13.7%
2007-2008	11,284,712	9,069,398	1.24	16.3%	-6.9%
2006-2007	11,837,104	8,860,341	1.34	24.8%	-1.4%
2005-2006	11,765,183	8,682,066	1.36	26.6%	4.9%
1991-1992*	7,257,428	6,781,321	1.07		
1990-1991	7,161,455	6,632,448	1.08		

* Baseline Year

It is difficult to project future materials disposal rates from this historical record because of the general challenge of predicting economic activity and changes of material usage in products. The North Carolina disposal history has included periods of rapid growth and rapid decline, giving little basis for predictive analysis. Additionally, future material disposal will depend significantly on how successful the state is in diverting recyclable commodities from landfilling. Current trends indicate an increased momentum toward material diversion.

This chapter of the plan outlines specific data and trends regarding the following:

- Disposal facilities, capacity and siting;
- Sources of discarded materials;
- Discarded materials constituting commodities;
- Discarded materials requiring disposal;
- Status of disposal bans;
- North Carolina recycling infrastructure and economy; and
- Basis for plan elements for the future 10-year solid waste and materials management programs.

Chapter 4: 2014-2024 Plan Elements

The four main plan elements were developed on data, analysis, and findings and reflect a path forward for the State to minimize the environmental impacts of disposal, maximize the economic benefits of material recovery, successfully manage a range of special wastes, and ensure effective engagement with stakeholders in solid waste and materials management statewide.

4.1 Plan Element: Facilities, Disposal, Permitting, and Compliance: Ensure continued stewardship of landfills and all other solid waste management activities with the goal of protecting the environment and public health while promoting economic viability.

Objective 4.1.1: Shift from a ‘disposal first’ mentality to one of materials management, beneficial reuse, recycling and energy recovery.

Key Action: Review current Statutes, Rules and definitions for treatment and processing of recycled or recovered materials and beneficial use, and align North Carolina regulations with current national usage.

Key Action: Develop and implement requirements for the recovery and processing of Construction and Demolition materials.

Key Action: Provide legal mechanisms and guidance for the operation of alternative solid waste technologies and material management practices such as energy extraction, anaerobic digestion, gas to energy, and pyrolysis.

Key Action: Evaluate the need for rules governing material recovery facilities, update transfer station facility rules, and clarify requirements for the transport and storage of single stream recyclables.

Key Action: Develop a repository for information on evolving technology and lead the way in recommending state policy and rule changes.

Objective 4.1.2: Continue to evaluate landfill capacity, design, monitoring and performance to maximize protection of public health and the environment and weigh carefully the cost benefit of such actions.

Key Action: Review effectiveness of leachate systems with respect to loading due to age and size, head on liner, and operational factors.

Key Action: Review effectiveness of the design of unlined Construction & Demolition landfills for the management and control of leachate and evaluate the need for revised design requirements.

Key Action: Evaluate landfill capacity, ensure adequate disposal options for the businesses and citizens of the state, and encourage polices for regional cooperation.

Objective 4.1.3: Focus resources on the specific issues facing closed landfills across the state to ensure proper maintenance and management of these permanent disposal sites.

Key Action: Develop and implement initiatives to minimize the known public and environmental health impacts generated by closed landfills.

Key Action: Provide resources for technical assistance, site inspections, and the creation of guidance documents on the post-closure care of landfills.

Key Action: Study and propose options and standards for the reduction, cessation, or extension of environmental monitoring at closed landfills.

Key Action: Investigate options for custodial care of old and abandoned landfills and landfills past the required post-closure care period.

Key Action: Continue to work with potential developers and facility owners to approve post-closure usage of closed landfills while ensuring the protection of both the public and the environment.

4.1 Plan Element: Facilities, Disposal, Permitting, and Compliance: continued

Objective 4.1.4: Assess and allocate resources toward the specific issues facing permitted solid waste management activities in order minimize environmental risk, improve economic viability, and to encourage regional collaboration.

Key Action: Provide resources for technical assistance, site inspections, and the creation of guidance documents for the proper active management of solid waste facilities.

Key Action: Collaborate with the Division of Water Resources, Waste Water Treatment plant owners, local governments, and the septage industry to increase the number of facilities that treat brown grease and septage wastes.

Objective 4.1.5: Reduce illegal solid waste activities, such as littering, unpermitted disposal (including banned materials), and indiscriminate dumping.

Key Action: Collaborate with local governments, regional agencies, and private organizations engaged in cleanup and enforcement activities.

Key Action: Provide continued assistance to local governments in developing solid waste or zoning ordinances and initiating illegal dumping enforcement programs.

Key Action: Encourage regional municipalities and local governments to issue demolition permits which require the proper management, tracking, and disposal of C&D wastes.

Key Action: Evaluate the extent of illegal dumping, identify trends, and target resources to meet state reduction goals.

4.2 Plan Element: Materials Management: Maximize material recovery, program efficiencies, and the expansion of new markets through education, funding, and policy initiatives.

Objective 4.2.1: Identify specific waste streams with the potential for improved material recovery and diversion, and provide technical assistance and funding to support waste diversion and recovery efforts.

Key Action: Maximize material recovery from residential sources.

Key Action: Increase opportunities for North Carolinians to recycle away from home.

Key Action: Increase diversion of food waste from landfill disposal.

Key Action: Increase the recovery of recyclable construction and demolition materials.

Key Action: Support and encourage the adoption of “zero-waste-to-landfill” practices at industrial facilities and other locations.

Key Action: Support development and implementation of State recycling policies.

Key Action: Work to maximize the efficiency of the State’s electronics recycling program.

Key Action: Support the collection of new materials with emerging markets such as agricultural plastics, CFLs, mattresses, and plastic film (residential/non-commercial).

Key Action: Work with state agencies, universities, and colleges to maximize efficiency and effectiveness of waste reduction programs.

Objective 4.2.2: Improve customer service through the collection, analysis, and distribution of information in key areas of waste diversion, and engage with key representative groups outside of North Carolina.

Key Action: Conduct periodic studies and analyses to support the state’s solid waste and recycling planning.

Key Action: Participate in coordinated activities with EPA Region 4, EPA Headquarters, other states and the Southeast Region, and other entities who can improve recycling in North Carolina.

4.2 Plan Element: Materials Management: **continued**

Objective 4.2.3: Support development and streamlining of the North Carolina recycling economy as well as economic initiatives in the material management and waste diversion industries.

Key Action: Work to improve efficiency of material movement from rural areas to Material Recovery (MRF) facilities.

Key Action: Work with industry to expand the private sector material collection infrastructure by supporting the development of independent haulers and by helping larger haulers expand recycling services.

Key Action: Conduct strategically targeted grant programs to develop and enhance key features of the recycling economy.

Key Action: Increase the level of integration between collection, processing, and material end-users within North Carolina.

Key Action: Support the expansion of composting infrastructure throughout the state.

Key Action: Encourage the development of North Carolina based markets for the recycling of scrap tires.

4.3 Plan Element: Special Wastes Management

Promote, educate, and regulate for the safe management and disposal of special wastes with the goal of increased re-use/recovery of these materials.

Objective 4.3.1: Evaluate specific industry waste stream with evolving regulatory requirements and adjust North Carolina regulations to be responsive to the economics and environmental factors associated with these emerging industries.

Key Action: Align state regulations with federal standards while promoting proper management and alternative uses for coal combustion wastes.

Key Action: Evaluate the Exploration & Production Wastes generated from the oil and gas industry with the intent of creating regulations tailored to safeguarding the public from any potential environmental or health hazards with the processing and disposal of those wastes.

Objective 4.3.2: Expand efforts to educate, develop guidance, and increase access to collection sites in order to properly and economically manage wastes with unique environmental and public health hazards.

Key Action: Educate and communicate options for the proper management of pharmaceutical wastes.

Key Action: Clarify and communicate the difference between regulated medical wastes and those wastes which to not require special handling, processing, or disposal.

Key Action: Increase the number of Household Hazardous Waste (HHW) collection locations and events by focusing resources on local governments and regional agencies.

Key Action: Improve outreach and education regarding the hazards of nuisance tire dumps and continue to support local cleanup efforts.

Objective 4.3.3: Improve efficiencies and communications in managing disaster debris sites.

Key Action: Increase education and awareness of local governments, contracting companies, and citizens that participate in clean-up efforts.

Key Action: Improve on post-event communication tools and procedures that will allow staff to better respond to local governments, contractors, FEMA, NCDENR, and local emergency management officials while in the field.

Key Action: Assist local governments in establishing disaster debris management plans and in increasing the number of Temporary Disaster Debris Storage (TDDS) sites that could be utilized during a natural disaster event.

4.4 Plan Element: Customer Service/Training –

Public Engagement: Increase external training and outreach with a focus toward customer service, public awareness, and environmentally sustainable solid waste and materials management.

Objective 4.4.1: Provide technical assistance for the purpose of both promoting waste reduction and ensuring environmentally sound processing and management of solid waste.

Key Action: Continue to work with local municipalities to coordinate efforts on the prevention and management of illegal dumping and pollution prevention opportunities.

Key Action: Maintain the existing emergency management debris program while increasing awareness, conducting training events, and processing additional TDDS sites within the state.

Key Action: Continue efforts to educate local governments, involved agencies, and private industry regarding proper Disaster Debris management and FEMA requirements.

Key Action: Provide individualized assistance to municipal and county recycling programs on technical issues, and provide broader recycling technical assistance through conferences, training sessions, and distribution of information.

Key Action: Continue development of internal training to ensure continual process improvement, regulatory consistency, and strong customer service along with timely and accurate technical advice to both the public and solid waste management facilities.

Key Action: Expand customer service training initiatives and opportunities for staff.

Objective 4.4.2: Evaluate current facility operator certification programs and expand requirements to include additional solid waste management activities in order to improve facility compliance through an

increased knowledge of Solid Waste Management Laws and Rules

Key Action: Establish qualifications and develop policies and protocols related to training procedures for certified solid waste management operator training programs.

Key Action: Implement a program to audit and evaluate existing certified operator training courses approved by the Solid Waste Section.

Key Action: Encourage the development of new certification training for operators of solid waste management facilities.

Objective 4.4.3: Develop external training and outreach programs to support education on solid waste and materials management topics.

Key Action: Work with accredited educational institutions in developing education materials, courses of study, and other such information to be made available for persons seeking to be trained as operators of solid waste management facilities.

Key Action: Identify and modify existing internal training modules for use with external educational institutions.

Key Action: Develop a pilot project for external educational curriculums.

Key Action: Maintain and expand state-level outreach campaigns aimed at increasing public recycling behavior.

Key Action: Collaborate with the solid waste management industry to develop training that is responsive to industry needs.

Key Action: Expand educational venues and develop outreach materials for educating the public on illegal dumping and the benefit of local enforcement programs.

4.4 Plan Element: Customer Service/Training –**Public Engagement: continued**

Objective 4.4.4: Improve communication and online resources, making information and training elements clear and easy to find.

Key Action: Continue with online tracking of application status and processing time of permits issued within the NCDENR (*Permit Application Tracker*).

Key Action: Expand the use of Geographic Information Systems (GIS) and online mapping to make site locations and information available to the public.

Key Action: Continue to improve access to facility history and records utilizing an online document database.

Key Action: Establish web access for training and outreach materials that serve as up-to-date resources for both external customers and staff.

Chapter 5: Conclusion

Solid waste management in North Carolina has changed since the promulgation of the Solid Waste Management Act of 1988. Disposal of solid waste in unlined landfills has progressed to lined landfill disposal. Recycling and diversion have achieved significant footholds in solid waste management.

The solid waste management industry is changing from one of permanent entombment, to one of materials management in ways that expand current recycling and reuse efforts. Many wastes can be diverted from the waste stream and have value as a resource for a new project or for energy recovery.

As the state progresses into the next decade it is again an opportunity for environmental protection and new and exciting business opportunity, both public and private, as well as public-private partnerships.

It will be a challenge for the state and its partners to capture the jobs that can be created by new industry and practices, while ensuring protection of the natural resources and public health that have made North Carolina so successful.

The North Carolina Solid Waste and Materials Management Plan is currently in the process of being updated for the 2014-2024 cycle and feedback is being solicited in order to develop a plan that is action-based, achievable, and inclusive. One significant piece toward achieving this goal is to survey the various stakeholders on elements of the proposed plan, keeping in mind that the North Carolina General Statutes require the plan to focus on education, public participation, and waste reduction goals.

The NCDENR Division of Waste Management (DWM) and Division of Environmental Assistance and Customer Service (DEACS) would like to invite you to participate in a public survey and comment periods—your input is a key element to the success of this development process.

Additionally, there will be three public meeting sessions held across the state to allow for further feedback and potential incorporation of stakeholder input into the plan.

You can access the online survey along with the dates and locations of the public meetings: <http://portal.ncdenr.org/web/wm/state-plan-update-2014-2024>

