

## Waste Management Recommendations

### Goals

- A. Financial and Environmental Benefits of the South Wake Landfill will be extended.
- B. Waste Reduction, Reuse, and Recycling for Construction and Demolition Debris will be increased.
- C. Financial and Environmental Benefits of Other Landfill Resources will be maximized.
- D. Investigations for Next Generation Waste Management System will be initiated.

	Goals			
<i>Strategies</i>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>
1	X			
2	X			
3	X			
4	X			
5	X			
6	X			
7		X		
8			X	
9			X	
10			X	
11			X	
12				X

1. Adjust Tipping Fees.  
Continue to adjust the tipping fee at the South Wake Landfill and East Wake Transfer Station to accurately reflect the full cost of service for disposal, including all necessary reserve funds and future costs to develop the next generation waste management system.
2. Divert High-Volume Waste Materials from Landfill Disposal.  
Identify and implement cost-effective programs to divert high-volume waste materials from the South Wake Landfill.
  - a) Conduct a waste characterization study for all waste received at the South Wake Landfill. Collect waste characterization data for residential, commercial, and public institution sectors. Design the study to identify high-volume materials received at the South Wake Landfill.
  - b) Evaluate the feasibility of implementing waste diversion programs for high-volume materials identified in the waste characterization study. Work with private-sector recycling processors to identify cost-effective options for waste diversion.

- c) Identify the collection and processing infrastructure, education, and institutional changes needed to implement the selected waste diversion programs.
  - d) Implement the cost-effective waste diversion programs for the targeted high-volume materials.
3. Divert Food Waste from Landfill Disposal.
- The 1999 Waste Characterization Study conducted by Wake County identified 12.1 percent of the waste received as food waste. If a portion of food waste can be cost-effectively diverted from the landfill, it will help to extend the life of the South Wake Landfill beyond the currently planned 25-year life.
- a) Review the findings of the waste characterization study to identify the quantity of food waste disposed of at the South Wake Landfill.
  - b) Launch a voluntary residential composting program. The program will include:
    - i. Education for citizens on the methods of compost production and alternative end uses for food waste compost.
    - ii. Subsidies to assist citizens with the purchase of compost production equipment, materials, and supplies such as bins, tumblers, etc.
  - c) Conduct a pilot-scale food-waste diversion composting program for large food related facilities such as grocery stores, food processors, and cafeterias. The objective of the pilot-study will be to accurately define the full-cost of service to implement a food-waste diversion composting program for large food-related facilities.
    - i. Evaluate the feasibility of implementing a food-waste diversion composting program for large food-related facilities. Work with private sector waste haulers and industrial composting companies.
    - ii. Identify the collection and processing infrastructure, education, and institutional changes needed to implement a food-waste diversion composting program for large food-related facilities.
    - iii. Implement the cost-effective food-waste diversion composting program for targeted facilities.
4. Evaluate Pay-As-You-Throw (PAYT) Pricing for Residential Customers.
- With PAYT pricing, waste disposal costs are based on the type of waste, the size of the disposal container, and the frequency of waste collection. The PAYT program offers a financial incentive to voluntarily reduce, reuse, and recycle wastes. Currently, businesses, industries, and public institutions in Wake County are subject to PAYT pricing. Under this recommended strategy, residential customers will have the opportunity to reduce their disposal costs by reducing their waste.

- a) Evaluate the technical, financial, and institutional feasibility of implementing a PAYT pricing program for single-family residential customers.
  - b) Develop an implementation plan, based on the findings of the feasibility study, for a PAYT pricing program for single-family residential customers.
5. Offer Developers Incentives to Provide Recycling Facilities:
- a) Evaluate options to offer incentives (parking counts, housing density credits, etc.) to developers to provide recycling facilities in new or existing (retrofits) commercial, multi-family residential, and mixed-use projects. This recommendation is intended to increase recycling by increasing the convenience to recycle in commercial, multifamily residential, and mixed-use developments.
  - b) Develop design information to guide developers on best practices for including recycling facilities in new and existing projects.
6. Evaluate Converting Waste Cooking Oils and Greases to Biofuels:
- a) Conduct a pilot-scale program to produce biofuels using restaurant grease trap wastes and residential used cooking oils and greases. Work with local governments, private sector waste haulers, and biofuel producers.
  - b) Identify the collection and processing infrastructure, education, and institutional changes needed to implement a biofuel production program using restaurant grease trap wastes and residential used cooking oils and greases.
  - c) Implement the cost-effective biofuel production program using restaurant grease trap wastes and residential used cooking oils and greases.
7. Establish a Construction and Demolition (C&D) Debris workgroup.
- This workgroup will serve as a forum for Wake County staff and industry leaders to identify impediments to C&D material reuse and recycling, and identify opportunities to increase C&D material reuse and recycling in Wake County. The workgroup will be comprised of representatives from the commercial building industry, residential building industry, not-for-profit organizations (Habitat for Humanity, Builders of Hope, etc.), building material manufacturers, and building material disposal and recycling companies.
- a) Identify Potential Pilot Tests. The C&D Work Group will work with County staff to identify pilot tests that can be used to define current impediments to C&D reuse and recycling.
  - b) Conduct Pilot Tests for C&D Reuse and Recycling. The C&D Work Group will oversee the conduct of pilot tests selected for implementation. The data from pilot tests will be used to evaluate the cost-effectiveness of full-scale implementation of C&D material reuse and recycling.
  - c) Develop Education Materials. The C&D Work Group will work with County staff to create fact sheets and other educational materials to inform developers and builders of the benefits, opportunities and resources availability for C&D material reuse and recycling.

- d) Develop an Outreach Plan. The C&D Work Group will work with County staff to develop an outreach plan to distribute education materials related to C&D material reuse and recycling. The outreach plan will include recommendations for printed materials, workshops, webbased tools, and social media tools.
8. Generate Power from Methane Gas Production.  
A by-product of waste decomposition at a landfill is methane gas. It is possible to collect the methane gas at a landfill and use the gas to generate electricity through combustion in an engine-generator. The North Wake Landfill and the South Wake Landfill currently produce sufficient volumes of methane gas to produce electricity which can be sold to electric utilities as renewable energy. In addition, environmental attributes associated with renewable energy generation and greenhouse gas destruction may also be marketed and sold under certain circumstances. Wake County staff will work with private sector companies to develop methane gas resources for maximum financial and environmental benefit.
  9. Evaluate Other Renewable Energy Options.  
The South Wake Landfill and the North Wake Landfill have sufficient land resources available to investigate the feasibility of renewable energy using solar and wind resources. Wake County staff will work with private sector companies and university resources to evaluate the technical, financial, and regulatory feasibility of developing solar power and wind power resources at the County's landfill properties.
  10. Evaluate Opportunities to Attract Private Businesses and Industries to the South Wake Landfill.  
Incentives could include rezoning adjacent properties from residential use to commercial or industrial use. Companies can benefit from the proximity to the landfill's energy resources and material recovery resources. Wake County staff will work with private sector companies and economic development professionals to identify the features and benefits of the County's landfill resources that can be promoted and marketed to attract private sector investment to locate on, or in close proximity to, the South Wake Landfill.
  11. Evaluate Opportunities to Develop Park and Recreation Facilities on Landfill Properties.  
The County's landfill properties provide unique opportunities to preserve open space and develop active recreation facilities. Building on the success of the North Wake Landfill District Park, Wake County staff will work with community groups (public, private, and notfor-profit) to identify opportunities to integrate park and recreation facilities into the County's landfill properties.
  12. Initiate immediate investigations to develop the next generation waste management system due to the long lead time required to develop the system.
    - a) The County partner with research universities, private industry, and regional local governments to conduct the necessary investigations.

- b) Consistent with the selection process for the South Wake Landfill, the investigation of next generation waste management systems should consider landfill disposal versus emerging technologies; and in-county versus out-of-county options.
- c) The evaluation criteria should include environmental compliance requirements, quality of service factors (reliability, redundancy, etc.), level of service factors (i.e., accommodate long-term population growth projections), cost-of-service factors (i.e., retain relatively low unit cost of service), and social factors (i.e., environmental justice).
- d) The evaluation should include an assessment of mitigation measures that can be offered to address potential adverse impacts to property owners. The mitigation measures will be used to address the potential concerns of property owners that are located adjacent to, or in close proximity to, the next generation waste management system.
- e) The evaluation should also include an assessment of technology advances that provide for energy production from waste materials generated in Wake County. Such technologies include, but are not limited to, the following:
  - Advanced landfill design
  - Waste-to-Energy (produce electricity from combustion of waste)
  - Gasification (produces combustible gas, hydrogen, synthetic fuels)
  - Thermal depolymerization (produces synthetic crude oil)
  - Pyrolysis (produces combustible tar/bio-oil and chars)
  - Plasma arc gasification (produces hydrogen and CO usable for fuel cells or generating electricity)
  - Anaerobic digestion (Biogas rich in methane) for organic waste components such as food waste, and wastewater treatment facility sludge.
  - Fermentation production (ethanol, lactic acid, hydrogen)
- f) An implementation schedule should be developed to identify the various steps necessary to bring the next generation waste management system in service.