Tennessee Department of Environment and Conservation

2015 - 2025 Solid Waste and Materials Management Plan

TN Department of Environment & Conservation

Louis Berger

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STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
NASHVILLE, TENNESSEE 37243-0435

ROBERT J. MARTINEAU, JR.
COMMISSIONER

BILL HASLAM
GOVERNOR

April 22, 2015

Dear Citizens of Tennessee,

I am honored to present to you the newly developed 2015-2025 Solid Waste and Materials Management Plan. Representing a collaborative effort among our many stakeholder groups, this Plan provides a roadmap that Tennesseans will use to effectively manage discarded materials for the next ten years.

Much has changed since Tennessee created its first statewide solid waste management plan 24 years ago. The 2025 Plan marks a new era in sustainable materials management in Tennessee and seeks to promote Tennessee end use markets for material that might otherwise become solid waste. Its eight objectives will ensure environmentally sound solid waste collection, treatment, and disposal practices throughout the state by encouraging strategies like source reduction, reuse, recycling, and composting. The 2025 Plan fulfills the policy statements of the Solid Waste Management Act of 1991 and serves as an outline to guide solid waste and materials management programs and policies into the future.

We appreciate the input provided by all our stakeholders including citizens such as yourselves, local governments, recyclers, end users, waste collectors, and waste haulers, and environmental advocates during the creation of this document through public meetings, surveys, webinars, and comment submittals. Your involvement was essential to the development of the Plan, and your continued engagement will be crucial to the implementation of its objectives, strategies, and tactics.

Sincerely,

Robert J. Martineau, Jr.
Commissioner

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[1] OEA = Office of External Affairs; DSWM = Division of Solid Waste Management, OSP = Office of Sustainable Practices

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Tennessee Solid Waste and Materials Management Plan

2015 - 2025

TDEC

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I. Executive Summary

The 2015-2025 Solid Waste and Materials Management Plan ("the Plan") marks a new era in sustainable materials management in Tennessee. While the 1991 Solid Waste Management Plan's focus was on ensuring adequate collection infrastructure and disposal capacity, the 2015-2025 Plan adopts the concept of sustainable materials management, which incorporates several themes, including:

- Many materials at the end of their useful life still have value, and as such can and should be recovered.
- Decisions about sustainable materials management do not just occur at the end of a product's useful life, but also when a purchasing decision is made.
- The waste management hierarchy establishes a preferred approach to managing materials (reuse, then recovery, processing with energy recovery, incineration without energy recovery, and disposal), but acknowledges that other factors also come into play in making a decision regarding how a material will be managed, including transportation costs and environmental impacts, the use of multiple methods for managing waste, costs, and other factors.
- To the extent that Tennessee manufacturers can use recovered materials from within the state as a feedstock, Tennessee businesses will be able to keep the economic benefits of recycling activity in Tennessee. Recycling is not just beneficial to Tennessee's environment, but is also beneficial to the economy.

The Vision of this Plan is ultimately to fulfill the policy statements of the Solid Waste Management Act of 1991 through protecting public health and safety, enhancing the quality of the environment and to maintain a comprehensive statewide solid waste management system. This Plan seeks to accomplish this through working diligently and closely with stakeholders to accomplish environmental sound solid waste collection, treatment and disposal through source reduction, reuse, recycling, composting and other methods. Further, the Vision is to promote Tennessee end markets for material processing and end use. This Vision will be cast through the eight objectives contained in the Plan. The Plan proposes the following objectives:

Objective 1: Update Goals and Measure Progress – establish more robust solid waste management goals, to more accurately measure the disposition of MSW in Tennessee, and to better assess progress toward achieving those goals.

Objective 2: Increase Access to and Participation in Recycling – expand the breadth of recycling making sure access to convenient recycling programs is available to all Tennesseans, as well as expanding participation in recycling programs.

Objective 3: Enhance Processing and End Markets – facilitate closing the materials processing gaps and increasing the opportunities for end uses of recovered materials in Tennessee, in an effort to incentivize increased diversion and simultaneously strengthen the state's economy.

Objective 4: Increase Diversion of Organics – encourage the reuse, composting, and beneficial use of organics, as well as implement source reduction efforts, to decrease the disposal of these materials.

Objective 5: Support New Diversion Technology – support the adoption of new technologies in the state, as appropriate, that will help Tennessee move closer to reaching its waste reduction and diversion goals.

Objective 6: Expand and Focus Education and Outreach – improve education and outreach in Tennessee regarding the opportunities for source reduction, recycling, and composting, and the benefits of these activities relative to disposal.

Objective 7: Ensure Sufficient and Environmentally Sound Disposal – monitor MSW disposal capacity to be sure it is sufficient, and ensure that disposal facilities are maintained in an environmentally sound manner.

Objective 8: Develop Sustainable Funding Sources for Sustainable Materials Management – ensure that state and local governments have sustainable funding sources in place to develop and support programs to manage municipal solid waste and materials.

TDEC will accomplish the stated objectives using several strategies and tactics, including providing technical assistance to local governments, seeking public/private partnerships, developing partnerships with other agencies and organizations, leveraging existing programs more fully, and providing grants to local governments.

To accomplish these objectives, TDEC will rely on the engagement of the many stakeholder groups listed throughout the Plan and the implementation tables. Without the aid of these stakeholders, it will be difficult to accomplish the objectives and ultimately **the Vision** of this Plan.

II. Introduction

A. Purpose

The purpose of the Plan is to serve as a framework to guide solid waste and materials management programs and policies at the state and local levels in Tennessee. The Plan will serve to provide guidance in terms of goals, objectives for reaching those goals, timeframes and priorities, and roles and responsibilities for implementing programs. Likewise, the plan provides guidance for local governments in developing their solid waste and materials management plans.

B. Methodology

The Tennessee Department of Environment and Conservation (TDEC) hired Louis Berger (formerly Leidos Engineering, LLC) to assist in developing the 2015-2025 Solid Waste and Materials Management Plan. The project team, comprised of Louis Berger and subcontractors, drew on their national experience and expertise in developing strategies to meet certain objectives. Objectives and strategies were developed with TDEC input and after careful and deliberate review of task force proceedings, Tennessee documents and reports, Tennessee statutes pertaining to solid waste management, and public input from a variety of stakeholders throughout the state through various venues, described in more detail below.

C. Public Input

It was important to ensure that all possible stakeholder views and perspectives were considered in developing the Plan. As part of the planning process, therefore, three sets of public input meetings were held throughout the state. They include:

- Special Focus Meetings held in Memphis, Chattanooga, Nashville, and Knoxville in March 2014. The purpose of these meetings was to hear up-front what Tennesseans wished to see included in the Plan. The Nashville meeting was broadcast live via closed-circuit television to the regional offices to expand the potential pool of attendees.
- Public Input Meetings held in Chattanooga, Nashville, Knoxville, and Jackson and via webinar in May 2014. The purpose of this set of meetings was to present certain potential strategy options to stakeholders to solicit their opinion about the desirability of such strategies in Tennessee, and to ascertain information about preferences for certain strategy options and programs over others. This meeting involved a feedback exercise in which such information was solicited. An online survey, available through the TDEC Plan website, solicited the same information from interested parties that could not attend these meetings.
- Public Hearings were held in Memphis, Nashville, and Knoxville in October, 2014 to solicit input on the Draft Plan. During the Nashville meeting, a live feed was sent to the eight field offices across the State to provide further availability. In addition to the Public Hearings, the public were able to submit written comments until November 14. To further encourage and receive input, the Division extended the public comment period until December 15.

After the public hearings, feedback was considered, and edits, as appropriate, were made to the Draft Plan before the revised Draft Plan was submitted to the Underground Storage Tanks and Solid Waste Disposal Control Board ("The Board").

In addition to these rounds of public meetings, a TDEC website was established where information about the sessions and the planning process were posted, and public comments could be submitted directly through an email link, or via a comment card that was provided. This feedback was shared with the project team, and given careful consideration in development of the Draft Plan.

In addition, to solicit additional feedback from groups that seemed under-represented in the public meetings, two online surveys were developed and implemented. The surveys included:

- A survey designed to solicit direct feedback from Tennessee businesses. This survey solicited information regarding 1) barriers to recycling in Tennessee, and 2) barriers to utilizing materials generated within Tennessee as a feedstock in manufacturing.
- A survey designed to solicit feedback from Tennessee cities and counties, targeting solid waste directors, in particular. Where potential respondents had no access to the online survey, an effort was made to fax or mail the survey and receive responses via fax or mail.

A third survey was developed in conjunction with the Public Input Meetings, so that webinar participants could provide feedback on specific policy topics as was solicited from those who were able to be in attendance. Those who could not attend either the webinar or a public input meeting were invited to participate in this third online survey.

Extensive information about public input and feedback received through the public input process, including comments received, survey summary information, and notes from public meetings, will be made available on TDEC's website, by contacting TDEC staff, and through TDEC's e-mail distribution list for stakeholders.

D. Tennessee's Waste Management History, Vision, and Goals

Below is a description of the history of solid waste management in Tennessee. This Section of the Plan is meant to provide general background information. In some instances data is presented. While every effort was made to use the most recent available data, in some cases more recent data was not available, or had not yet been fully vetted at the time the Plan was being drafted. Still, the information presented is reflective of the situation in Tennessee at the time.

1. History

Solid waste management in Tennessee has historically focused primarily on assuring that there is adequate waste collection infrastructure and disposal capacity to serve the residents and businesses of Tennessee. Early solid waste management legislation, some of which is described below, was largely in response to the U.S. EPA's Resource Conservation and Recovery Act, which imposed more strict regulations on municipal solid waste (MSW) landfills. In response, as in most states, Tennessee saw the number of landfills decrease in the state, with publicly owned landfills largely being replaced by large-scale privately owned landfills. A major concern at that time was whether adequate disposal capacity would be available to serve the residents and businesses of Tennessee.

The 1991 Solid Waste Management Plan identified the following solid waste issues:

- Uncertainty regarding solid waste capacity;
- Lack of a materials management approach (including lack of capacity in recycling collection and processing);
- Inadequate garbage collection infrastructure; and
- Lack of information about the cost of solid waste management.

The plan called for nine programs to be implemented in order to address the needs identified. They are detailed below in Section B.1. The Solid Waste Management Act of 1991 and its Amendments.

Significant Progress Since the 1991 Plan was Implemented

TDEC is responsible for the planning of solid waste management in Tennessee, and for permitting solid waste management facilities. Since 1991, solid waste and materials management in Tennessee has evolved in the following broad ways, which are expanded upon later in this Plan:

- The number of MSW landfills has decreased in the state. There were 96 permitted MSW landfills and 3 MSW incinerators in 1991, compared to 34 permitted landfills that are currently operating, and no MSW incinerators, however disposal capacity has increased.
- As in other states, there has been a reduction in the number of publicly owned landfills, and an increase in the number of privately owned landfills. In 1991, 82 percent of all permitted landfills were publicly owned. Currently 56 percent of all permitted landfills are publicly owned, and 50 percent of all operating landfills are publicly owned. The decline in the portion of landfills owned by local governments is a national trend.
- There has been a reduction in the number of unstaffed "green boxes" for the drop off of garbage, which have largely been replaced with staffed convenience centers, many of which also serve as collection sites for recyclables. Unstaffed collection sites can pose an environmental threat as there is no opportunity to identify recyclables or other materials before they are placed in the containers for disposal. Currently there are 107 green boxes operating in 10 counties. There are approximately 500 staffed convenience sites consistently operating in Tennessee.
- Curbside collection of garbage has expanded such that more households have curbside collection of garbage due to population growth in the municipalities, however the percentage of Tennesseans receiving curbside collection of garbage has likely not changed considerably since 1991.

- Curbside collection of recyclables is currently in 44 cities and towns in 26 counties).[2] There are still some locations, primarily rural areas, where curbside collection of recyclables is not available. These communities generally also have access to convenience and/or drop-off sites for recycling.
- The recycling processing infrastructure has expanded in Tennessee, with 55 publicly owned material recovery facilities (often referred to as MRFs)/baling facilities and 21 private material recovery facilities/baling facilities serving the state.
- There are 59 baling facilities without sorting, eight baling facilities with sorting, and nine MRFs (facilities that sort recyclables and prepare for marketing) operating in Tennessee with at least 9 single-stream facilities processing over 265,000 tons of materials annually.[3]
- An online reporting tool has been implemented to help municipal solid waste planning regions/counties report solid waste disposal and recycling data. TDEC is able to obtain Annual Progress Reports (referred to within TDEC as Annual Progress Reports) from all regions annually.
- Household hazardous waste (HHW) collection programs have expanded, with some of the more populated counties establishing permanent HHW sites (with the assistance of TDEC grants), and other counties managing HHW through state-provided HHW collection events and "milk run" collections.
- Scrap tire piles have continued to be identified and removed with the assistance of TDEC grants. Counties collect scrap tires for recycling, funded by an advance disposal fee on tires remitted to them directly through Department of Revenue (no longer via TDEC grants). However, TDEC will continue to receive $0.25 per new tire sold to identify and provide enforcement relative to illegal tire dumps, as well as to clean up legacy scrap tire piles.
- In recent years TDEC has begun to focus on a "hub and spoke" recycling collection and processing program in which recyclables are collected from more remote locations (spokes) and directed to a processing facility (hub). This helps ensure that access to recyclable materials collection and processing is available in a cost-effective manner to all Tennessee communities, including those that are rural.
- TDEC has supported various studies to help gain a better understanding of specific solid waste management issues in Tennessee, and to gain more in-depth knowledge regarding:

[2] Southeast Recycling Development Council, "Characterization of Tennessee's Recycling Economy," January, 2013. https://www.serdc.org/Resources/Documents/SERDC%20-%20TDEC%20Project%20Characterization%20of%20Tennessee%E2%80%99s%20Recycling%20Economy.pdf

[3] Southeast Recycling Development Council, "Characterization of Tennessee's Recycling Economy," January, 2013. https://www.serdc.org/Resources/Documents/SERDC%20-%20TDEC%20Project%20Characterization%20of%20Tennessee%E2%80%99s%20Recycling%20Economy.pdf

- The composition of MSW disposed in Tennessee;
- The quantity and composition of construction and demolition (C&D) materials being disposed in Tennessee; and
- The characterization of Tennessee's recycling economy, to better understand more about the processing and end use available in Tennessee for recovered materials.

2007 - 2008 Waste Reduction Task Force

In 2007, the Solid Waste Advisory Committee, acting on amendments to the Solid Waste Management Act directing a review of the State's waste reduction and diversion goal, established a Waste Reduction Task Force ("Task Force"). Members of the task force included representatives of local governments (solid waste directors, county and municipal mayors, aldermen from rural, urban, and large cities), private industry representatives, representatives from the environmental and energy sectors, as well as member of environmental advocacy groups. The Task Force was organized into four work groups, to allow members to focus on specific topics. An 80 percent consensus of the Task Force was required to move recommendations forward to the Solid Waste Advisory Committee. The Task Force began meeting in September 2007 and concluded their work in late May 2008. The Task Force recommended several reforms, which were incorporated into the suggested recommendations to the Department. The Department drafted rules incorporating the recommendations. The draft rules were presented to the Underground Storage Tanks and Solid Waste Disposal Control Board ("The Board").

Some of the recommendations included:

- A new waste reduction and recycling goal that would make everyone responsible for waste reduction;
- Re-defining of some current diversion methods as disposal;
- Infrastructure improvements;
- Landfill bans; and
- Monetary changes to tipping fees.

The Solid Waste Advisory Committee met to hear the Task Force's recommendations and discuss potential changes in June 2008, and met again in July 2008 to re-hear recommendations and refer potential rule changes to the Department. The concepts were approved, with a few modifications, and recommended to the Department. The Department drafted rules which were presented to the Board. The Board provided comments, and the draft rules were modified once more based on these comments. One major change was the removal of landfill bans.[4]

In 2010, after two and one half years, this rule package failed due to lack of support noting that the package was too comprehensive and should be broken into smaller, more manageable portions to aid in discussion and review. After a time, provisions of this rule were divided into different proposed rule packages to be promulgated separately over the course of the next couple years. The first rule

[4] The SWAC was disbanded in 2011 and duties of the SWAC were assigned to the Underground Storage Tanks and Solid Waste Disposal Control Board ("The Board")..

package was submitted to the Board in August 2012 and was passed. This package focused primarily on housekeeping issues, local regions' solid waste plan contents and the development of a plan to start removal of green boxes. The amended rule became effective January 8, 2013. In October 2013, the Board authorized the Division to proceed in receiving public comment in the public participation process on the next rule amendment package. This package primarily formally laid out the Qualitative Assessment of non-compliant regions and addressed reporting issues. The Board voted to authorize promulgation in August of 2014 and is continuing the promulgation process. The rule will be reviewed by the Secretary of State, the Attorney General's Office, and the Government Operations Committee.

The final portion of the original rule package is a new goal. Pending the adoption of this plan, the Department will start stakeholder meetings in preparation of establishing the new goal through the rule making process.

2. TDEC's Current Solid Waste Management Goal

The Solid Waste Management Act of 1991 required MSW Planning Regions to reduce the amount of waste disposed in Class I (MSW) landfills by 25 percent from a base year measurement taken in 1995, on a per-capita basis. Based on this goal, waste disposed in Class III and Class IV landfills counts toward diversion, as it is not being disposed in a Class I landfill. In 2011, Tennessee's diversion rate, using this methodology, was 31 percent. If regions are not meeting the goal, they need to show that they are making a good faith effort toward meeting the goal. Specific rules were adopted by TDEC in 2006 establishing a method for such an assessment. For regions that do not improve over time, TDEC may issue specific types of directives which are stipulated in the Solid Waste Management Act of 1991.

3. TDEC's Vision for Solid Waste and Materials Management

TDEC's vision for solid waste and materials management includes the following:

- A robust materials collection and processing infrastructure exists, which benefits local businesses, and which residents and businesses alike see as a benefit.
- Tennessee businesses and citizens benefit from a strong recycling economy that allows manufacturing businesses to source feedstock locally, to the extent possible and practicable.
- There is a shift in philosophy toward sustainable materials management – the use and reuse of materials in the most productive and sustainable way across their entire life cycle. This philosophy and associated programs and policies will conserve resources, reduce waste, slow climate change, and minimize the environmental impacts of the materials used in Tennessee. (See Appendix A for a more complete description of Tennessee's integrated solid waste management hierarchy).
- A recycling infrastructure and sustainable materials management focus exists that encourages the six targeted industries in Tennessee to reduce the amount of waste generated, consider lifecycle costs when selecting materials, and select the most environmentally and economically beneficial means of managing waste generated.

- TDEC as an agency works collaboratively with other state agencies, educational institutions, private organizations, and agencies at other levels of government such that goals of each agency support each other, and do not work at cross purposes.
- TDEC serves as a national and state leader in sustainable materials management, and is able to provide technical and other assistance to local governments that need aid in reducing waste and managing materials.
- Local governments are incentivized to strive to achieve waste reduction and materials management goals through programs that suit their communities' needs.
- Local governments have an accurate understanding of the costs associated with providing solid waste management and recycling services to residents.
- Tennesseans have adequate access to knowledge, resources, and infrastructure to use materials responsibly - from purchasing to end-of-life management.
- Tennesseans look to the future to alternative processing technologies that may provide more cost-effective and/or more environmentally-sound options for solid waste management.

E. Statutory History and Authority of the Plan

Tennessee's statutory history relative to solid waste management was spurred by federal landfill requirements promulgated by the Resource Conservation and Recovery Act, which was passed in 1976 (and amended the Solid Waste Disposal Act of 1965). Subtitle D of the Resource Conservation and Recovery Act describes acceptable activities to manage solid waste, and Subtitle C describes acceptable activities to manage hazardous waste. The Hazardous and Solid Waste Amendments of 1984 strengthened the Resource Conservation and Recovery Act's waste management provisions and added Subtitle I, which governs underground storage tanks.

In 1989, the Tennessee General Assembly passed the Tennessee Solid Waste Planning and Recovery Act directing the State Planning Office to establish a comprehensive solid waste management plan for the state. A research team, aided by the State Planning Office, The University of Tennessee's Waste Management Research and Education Institute, representatives from industrial and commercial organizations, and citizens from the private sector adopted a comprehensive solid waste management bill for legislative consideration and, during its 1991 session, the Tennessee General Assembly adopted two pieces of legislation entitled, the Solid Waste Management Act of 1991 and the Solid Waste Authority Act of 1991.

1. The Tennessee Solid Waste Management Planning and Recovery Act [T.C.A. § 68-211-6]

The Tennessee Solid Waste Management Planning and Recovery Act describes the required solid waste management planning processes in Tennessee and provides the authority for TDEC to develop a state plan, and to require Solid Waste Management Planning Regions to also develop plans which support the state plan, and provide TDEC with updates and annual progress reports.

Tennessee Statute requires comprehensive planning for the disposal of solid waste on a local, regional, and state level. The statute also states that "whenever economically and technically feasible, solid waste should be reduced at the source or recycled, consistent with market demand for recyclable materials, to decrease the volume of waste which must be disposed of by incineration or landfilling."

Section 603 provides TDEC with the authority to develop a statewide solid waste management plan. Further, it states that "The state plan shall have as its priority the reduction of the volume of wastes going to incinerators or landfills by means of local and regional recycling programs, mulching and composting of yard trimmings and other suitable materials, and any other means of ensuring that incinerators and landfills operate in an environmentally and economically sound manner." The Statute also stipulates that county-level information about solid waste programs and facilities should be included in the plan, and that "The nine (9) development districts shall prepare and adopt regional solid waste management plans, consistent with the priorities and criteria of the state plan."

Section 606 directs the Department of General Services to purchase paper or paper products manufactured from recycled paper (excluding food storage products). Of the total volume purchased, at least 40 percent must have recycled content (by 1994). In addition, the newsprint purchased by the Department of General Services must contain 40 percent postconsumer recycled content, at a minimum.

Section 697 directs the Department of Transportation to "seek alternative ways to use certain recyclable materials that are currently part of the solid waste stream and that contribute to problems of declining space in solid waste landfills."

2. The Solid Waste Management Act of 1991 and its Amendments [T.C.A. § 68-211-8]

The Solid Waste Management Act ("the Act") [T.C.A. § 68-211-8] was enacted to reduce the volume of municipal solid waste being disposed in Class I (sanitary) landfills, which were rapidly reaching capacity. The Act recommended that the state's counties form multi-county solid waste regions, sharing use of the landfills within those regions, and taking advantage of lower tipping fees and other related costs. The Act called for the initiation of the following nine programs, which would be funded by a landfill surcharge:

1) Have local governments take an active role in solid waste management planning, including;
    a. Assuring a minimum of 10 years of disposal capacity;
    b. Achieving a state-mandated 25 percent waste reduction goal; and
    c. Assuring adequate collection infrastructure.
2) To assure adequate collection systems for all its citizens, counties must provide adequate collection services to all citizens. At a minimum, attended convenience centers should be established. Counties are also strongly encouraged to use convenience centers for the collection and segregation of recyclables and problem wastes.
3) The state should adopt a 25 percent waste reduction goal or target to be achieved by July 1, 1994. (This would be calculated against a 1989 baseline on a per-capita basis). This goal pertains to waste disposed in MSW landfills only.

4) Source reduction and recycling initiatives are to be implemented to assist in meeting the 25 percent goal. These include:
    a. competitive grants;
    b. cooperative marketing; and
    c. education and technical assistance programs.
5) Problem wastes need to be separated from the solid waste stream and managed separately.
6) Public information and education efforts should be made to ensure an informed and dedicated public.
7) Technical assistance should be provided to local government officials and managers of private organizations to assist them in making prudent solid waste management choices.
8) In order to identify and anticipate potential problems and opportunities, research efforts should be supported and data files maintained.
9) Local governments should be required to maintain their solid waste accounts on a full-cost accounting basis.

Further, every solid waste region in the state must appoint a solid waste planning board, composed of representatives of each county and each city, which participates in a solid waste program to plan, advise, and administer the activities of the region.

Regional Solid Waste Planning Boards were mandated to develop 10-year plans for disposal capacity assurance, 25 percent waste reduction, collection assurance, solid waste education, and other aspects of integrated solid waste management. Duties and powers of the Regional Solid Waste Planning Board are spelled out in T.C.A. § 68-211-813 through 816. State lawmakers intended that the board and its plan would guide the activities of those entities implementing that plan. In order for the board to approve the 10-year Plan, they must approve applications for solid waste facilities, and they must approve the Annual Progress Report. Solid waste planning boards are not empowered to actually implement plans because they lack the ability to authorize and provide funding. Thus, the boards recommend appropriate implementation vehicles such as county and city jurisdictions, sanitation boards and committees, inter-local agreements, and Part 9 Solid Waste Authorities (described in more detail below).

Other provisions of the Act and its amendments include:

1) Establishes a Solid Waste Management Fund (the Fund) to provide financial support to help fund waste minimization, recycling, composting, and HHW programs. Funds are generated from a variety of sources including:
    - A $0.90 surcharge on every ton of MSW disposed in Class I landfills (one percent of which can be retained by the landfill for administration costs)
    - A portion ($0.25 per tire) of a $1.35-per tire pre-disposal fee assessed on the sale of all new tires
2) Indicates that local governments can impose an additional surcharge on solid waste to help fund the cost of managing solid waste

3) Requires regions not meeting the waste reduction goal to have their solid waste management programs qualitatively assessed to determine if a "good faith" effort was made.

4) Requires regions to include a management plan for disaster debris

5) Allows TDEC to award grants to establish a permanent HHW collection site to municipalities or counties with large populations or high participation at the mobile events (2007 Amendments).

6) Allows TDEC to provide grants to municipalities and counties that own and previously operated old closed landfills without composite liners that are causing harm to the environment, in order to alleviate such issues

7) Allows for the Fund to be used to properly manage hazardous waste from K-12 schools

8) Allows for the Fund to be used to investigate and clean up scrap tire piles.

9) Allows for a thorough review of the waste reduction and diversion goal to consider incentives to promote recycling and waste reduction

10) Requests that the Solid Waste Advisory Committee review the state's waste reduction goal and make recommendations for updating the goal and identifying waste reduction practices that the state should implement. (In response to this request, the Solid Waste Advisory Committee organized a Waste Reduction Task Force, results of which are described above.)

11) Requires TDEC's Solid Waste Management Department to provide an annual report to the Governor and General Assembly on the state's solid waste management system

12) Establishes an office for cooperative marketing of recycled commodities

13) Establishes planning grants to help development districts provide solid waste management planning assistance to regions

14) Requires the Commissioner to develop a clearinghouse of information about recycling and solid waste management, and to organize and conduct statewide and regional workshops and conferences on solid waste management, source reduction, and recycling

15) Requires the Commissioner to establish a recognition program for colleges and universities concerning waste management, waste reduction, and recycling

3. The Solid Waste Authority Act of 1991 [T.C.A. § 68-211-9]

The Part 9 Solid Waste Authority Act of 1991 authorizes the creation of authorities designed to implement regional solid waste programs. The Act establishes Part 9 Authorities that are different from other solid waste authorities, commissions, boards, cooperatives, committees, etc., formed by county commissions as a result of inter-local agreements or private acts. The legislature wanted counties in the newly formed solid waste regions to have the Part 9 solid waste option available as a tool as they sought to implement mandates under the Solid Waste Management Act.

These authorities respond specifically to the Solid Waste Authority Act, which grants them unprecedented autonomy and responsibility in order that regional solid waste management services be expedited, economized, and consolidated.

A major difference between a solid waste planning board and a Part 9 Authority is that the planning board is mandated by law to develop a regional solid waste plan for disposal capacity assurance, 25 percent waste reduction, collection assurance, solid waste education and other aspects of integrated

solid waste management. A Part 9 Authority is an optional tool for consolidating, integrating, and administering these programs between various county and city jurisdictions.

Part 9 Authorities have certain right unavailable to planning boards: (1) the right to sue and be sued; (2) right to acquire real and personal property, and exercise the power of eminent domain in order to achieve solid waste planning goals; (3) the right to enter into contracts; (4) power to issue revenue bonds on its own authority; (5) borrow money and incur debt; (6) employ agents and pay compensation to employees; and (7) set tipping fees and surcharges. The Authority can operate very independently, especially if the Authority and the planning board have the same board membership. Local governments that are uncomfortable with giving up control of day-to-day operational and funding control over their solid waste programs should not choose the Part 9 Authority option.

Tennessee currently has five Part 9 Authorities: Hickman, Lawrence, Union, Roane, and Interlocal (Bedford, Giles, Franklin, Lincoln, and Moore).

4. Other Relevant Statutes

- The Tennessee Solid Waste Disposal Act [T.C.A. § 68-211-1] – This Act gives the state authority to regulate the disposal of solid waste to ensure that adequate waste disposal capacity exists in the long term, that disposal is efficient and cost-effective, and that disposal facilities protect the environment and human health.
- The Used Oil Collection Act of 1993 [T.C.A. § 68-211-10] – This Act establishes a used oil collection fund. This Act allows for a two cent ($0.02) fee to be collected against every quart of oil sold. Revenue from this fee provides for the administration of the Act as well as providing technical and financial assistance in establishing used oil collection and disposal for do-it-yourselfers.

III. Description of the State

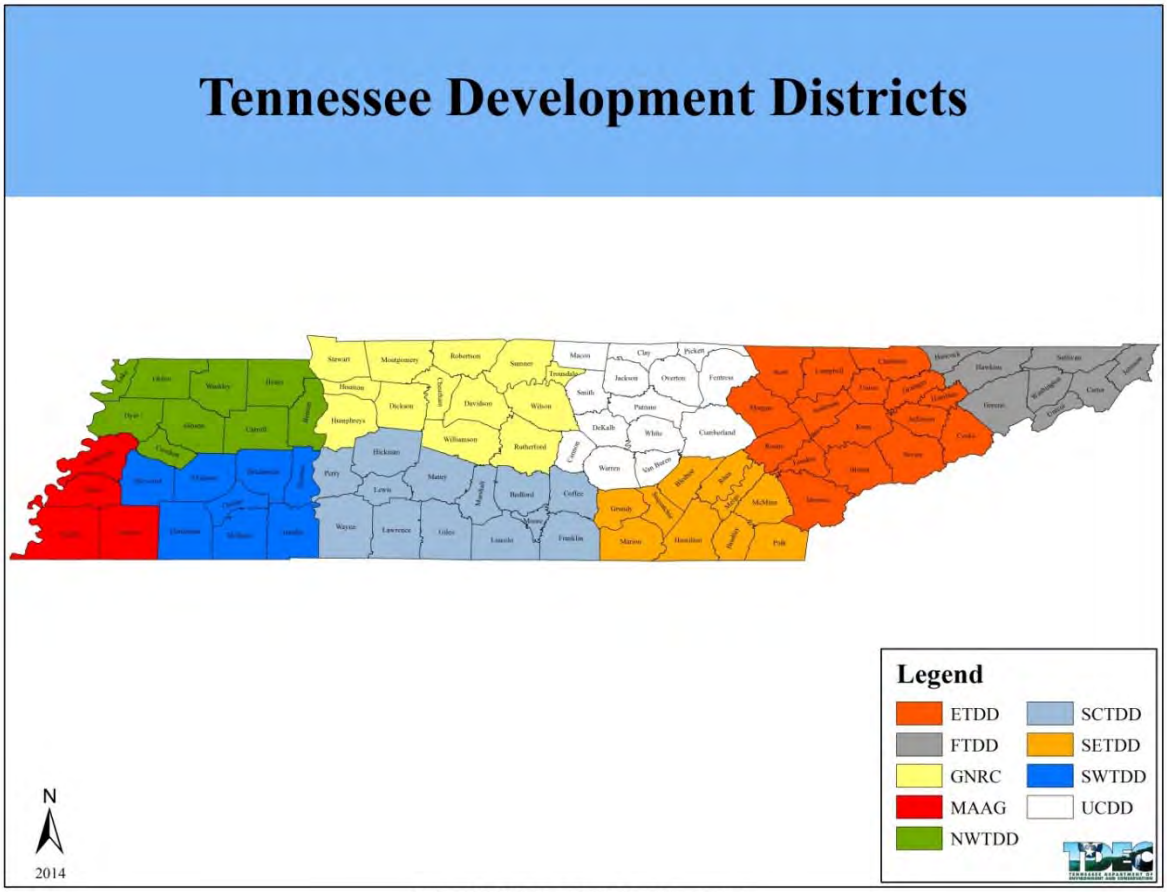
A. Development Districts

The state of Tennessee is comprised of nine (9) development districts. The development districts were formed by the Tennessee Development District Act of 1965. The Districts serve as regional planning and economic development organizations which promote intergovernmental cooperation on growth and development issues, and foster more effective utilization of resources in addressing needs of the region. Development districts are led by Board Members. The Board of each district is comprised of the chief elected officials from member counties and cities, a designated economic development professional from each county, and one senator and one state representative from within each region. Topics addressed by the districts include transportation planning, aging, health and social services, environmental issues, transportation, housing, community assistance, and small business assistance. The districts include (clockwise from the southeast):

- The Southeast Tennessee Development District (SETDD);
- The South Central Tennessee Development District (SCTDD);
- The Southwest Tennessee Development District (SWTDD);
- The Memphis Area Association of Governments (MAAG);
- The Northwest Tennessee Development District (NWTDD);
- The Greater Nashville Regional Council (GNRC);
- The Upper Cumberland Development District (UCDD);
- The Eastern Tennessee Development District (ETDD); and
- The First Tennessee Development District (FTDD).

Figure III-1 shows the nine Districts.

Figure III-1
Development Districts



Source: TDEC Division of Solid Waste Management

The Districts, through grants provided by TDEC, assist with the districts' solid waste management needs assessments, development of 10-year plans, completion of annual reports, and provide technical assistance to local governments. Districts also provide training for solid waste directors and solid waste boards.

B. Planning Regions

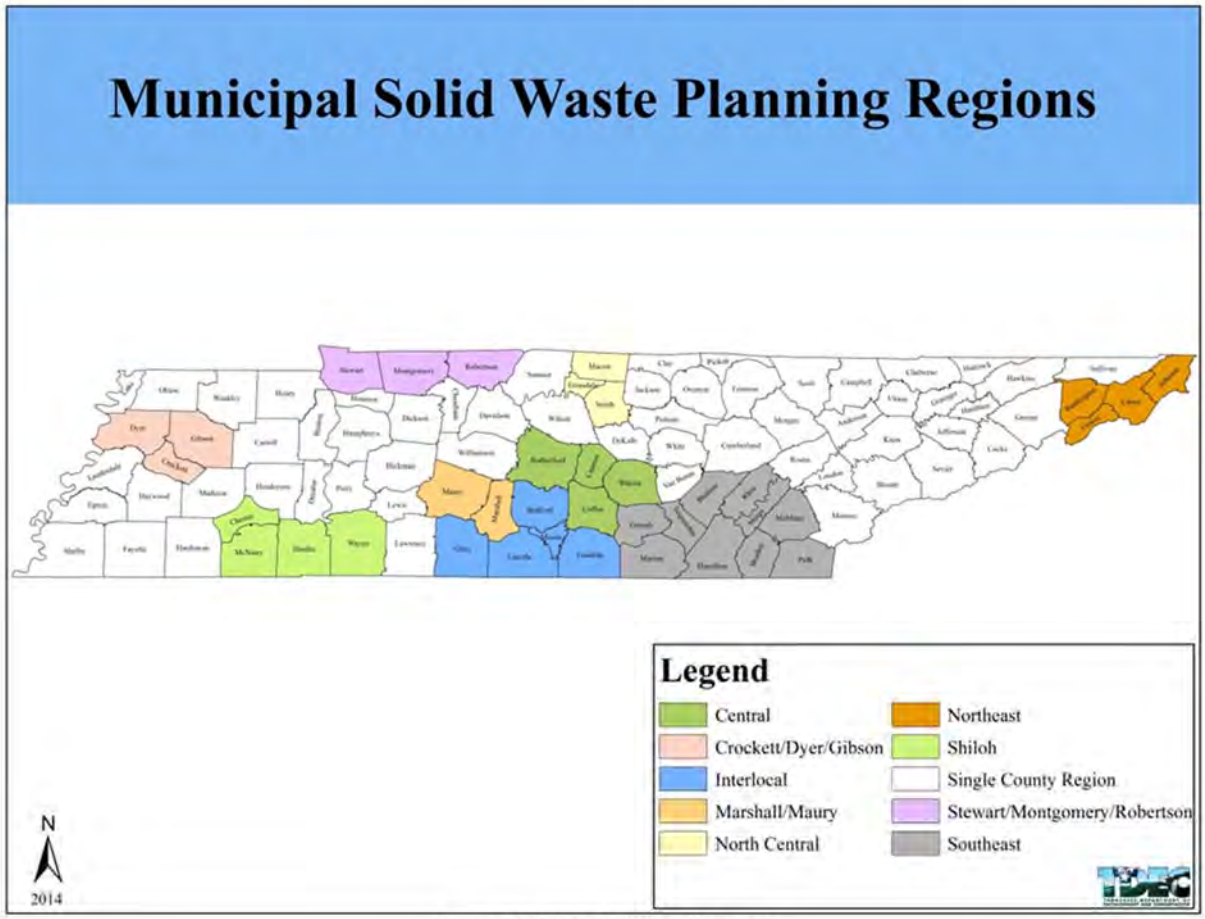
As is described in Section I of the Plan, The Solid Waste Management Act encouraged contiguous counties to form Municipal Solid Waste Planning Regions, and to work together to develop solid waste management plans. There are 95 counties in Tennessee, and 66 regional planning districts. Under the Act, the planning regions are responsible for developing 10-year solid waste disposal plans and five-year updates, as well as to submit Annual Progress Reports that project foreseeable solid waste disposal requirements and proposed solutions. The legislature amended the Act in 2004 to allow the Annual Progress Report to be used in lieu of the regional five-year capacity update. Each region now uses its Annual Progress Report to project changes in solid waste generation and to modify its 10-year plan. As part of the reporting process, planning regions report tons recycled, by commodity and generating sector. This information is obtained through phone calls and emails with businesses, cities,

and landfills. The level of effort expended to obtain such information and the level of detail and accuracy with which the APRs are completed varies by county. The county or county's representative (such as a development district or County Technical Assistance Service (staff member) generally collects all information and inputs that information into to report it to the state.

To help the planning regions complete their solid waste management planning requirements, TDEC provides the regional planning districts with resources in the form of grants and contracted services.

Figure III-2 provides a map showing the 66 Solid Waste Planning Regions in Tennessee, which are comprised of nine joint planning regions and 57 single-county planning regions.

Figure III-2
SWM Planning Regions

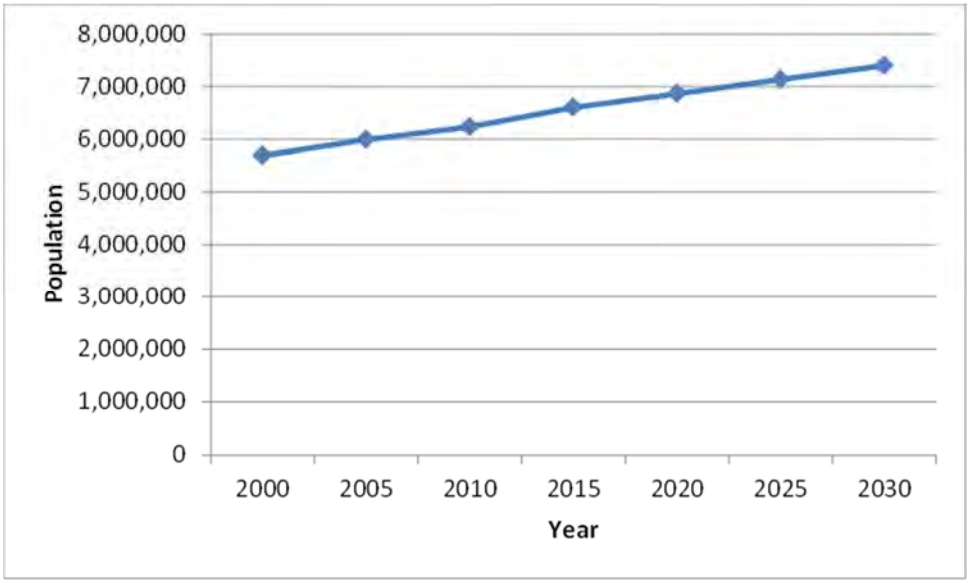


Source: TDEC Division of Solid Waste Management

C. Demographics

Tennessee has a current population of approximately 6.5 million (2013 estimate)[5], and spans approximately 42,144 square miles. The state is divided into 95 counties. The state's six largest cities (Memphis, Nashville, Knoxville, Chattanooga, Clarksville and Murfreesboro) comprise almost 30 percent of the state's population. Shelby County (home of Memphis) has a population of 939,465, which is approximately 14 percent of the state's population. The state's population is expected to increase to 7.13 million by 2025 and nearly 7.4 million by 2030. Figure III-3 is a graphical representation of Tennessee's population projected through 2030.

Figure III-3
Tennessee Population Projections Through 2030



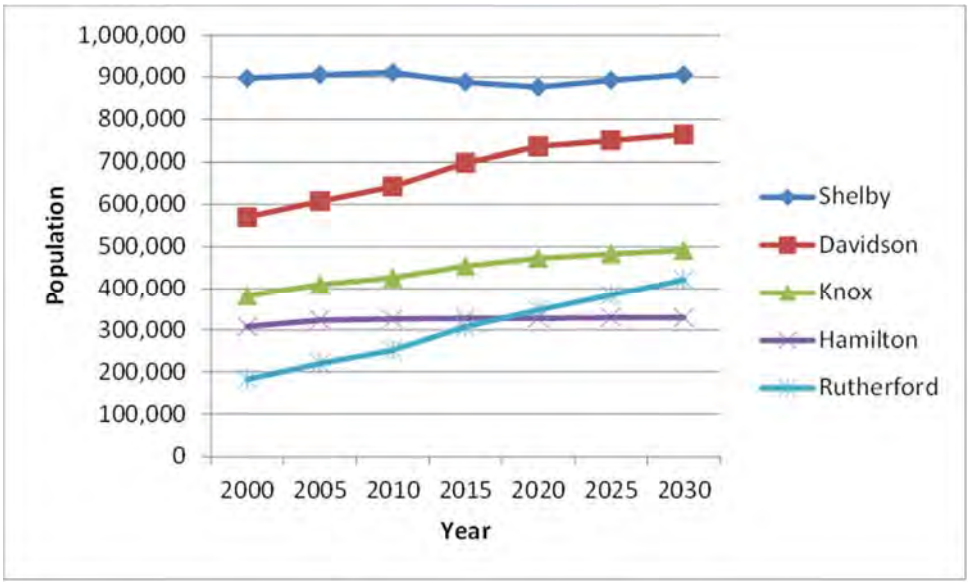
Data Source: The University of Tennessee Center for Business and Economic Research, Population Projections for the State of Tennessee, 2010-2030," June 2009.

The five most populous counties (Shelby, Davidson, Knox, Hamilton and Rutherford) comprised approximately 41.0 percent of the state's population in 2010. This is projected to decline slightly to 39.4 percent by 2030.[6] Figure III-4 shows the projected population for these five counties. Note that Rutherford County, although the least populated of the top five, is projected to surpass Hamilton County's population in 2020.

[5] U.S. Census Bureau, http://quickfacts.census.gov/qfd/states/47000.html

[6] The University of Tennessee Center for Business and Economic Research, Population Projections for the State of Tennessee, 2010-2030," June 2009.

Figure III-4
Tennessee's Five Most Populous Counties' Population Projections through 2030



Data Source: The University of Tennessee Center for Business and Economic Research, Population Projections for the State of Tennessee, 2010-2030," June 2009.

There is significant variation in population among Tennessee's counties. Table III-1 provides a listing of the counties with given population ranges.

Table III-1
Population Ranges of Tennessee Counties

Population Range (Projected 2015)	Number of Counties	% of Population in this Category	Counties in Given Population Range
> 500,000	2	24.0	Shelby, Davidson
300,001 – 500,000	3	16.5	Hamilton, Knox, Rutherford
100,001 – 300,000	9	19.6	Blount, Bradley, Madison, Montgomery, Sullivan, Sumner, Washington, Williamson, Wilson
50,001 – 100,000	19	18.7	Anderson, Bedford, Carter, Coffee, Cumberland, Dickson, Greene, Hamblen, Hawkins, Jefferson, Loudon, McMinn, Maury, Monroe, Putnam, Roane, Robertson, Sevier, Tipton
25,001 – 50,000	26	13.3	Campbell, Carroll, Cheatham, Claiborne, Cocke, Dyer, Fayette, Franklin, Gibson, Giles, Grainger, Hardeman, Hardin, Henderson, Henry, Hickman, Lawrence, Lincoln, McNairy, Marion, Marshall, Obion, Rhea, Warren, Weakley, White
25,000 or Less	36	8.0	Benton, Bledsoe, Cannon, Chester, Clay, Crockett, Decatur, DeKalb, Fentress, Grundy, Hancock, Haywood, Houston, Humphreys, Jackson, Johnson, Lake, Lauderdale, Lewis, Macon, Meigs, Moore, Morgan, Overton, Perry, Pickett, Polk, Scott, Sequatchie, Smith, Stewart, Trousdale, Unicoi, Union, Van Buren, Wayne

Data Source: U.S. Census Bureau

According to the 2010 U.S. Census, 69.9 percent of households in Tennessee were owner-occupied in 2010, and 18.2 percent of residents lived in multi-family dwellings.[7]

Population density varies considerably throughout different counties in Tennessee. The most densely populated counties include Davidson County (1,951.5 people per square mile) to 18.7 people per square mile in Perry County. Only two counties (Davidson and Shelby) have a population density of greater than 1,000 people per square mile. Twelve counties have between 200 and 1,000 people per square mile, and 28 counties have a population density of less than 50 people per square mile.[8]

In terms of solid waste management, the variability in population density means that:

- It may not be realistic or cost-effective for rural communities to provide the same level of solid waste and materials management programs and services as the more densely populated areas; and

[7] U.S. Census Bureau, http://quickfacts.census.gov/qfd/states/47000.html

[8] USA.com, http://www.usa.com/rank/tennessee-state--population-density--county-rank.htm

- Focusing on the more densely populated regions will likely result in more cost-effective results, and capture a relatively large portion of recoverable materials in the state. The 14 counties with populations over 100,000, for example, are estimated to comprise 60 percent of the state's population.

D. Topography

Topographically, Tennessee is essentially comprised of six sections, as described below.[9]

- The easternmost portion of the state – the Unaka Mountain Range, including the Great Smoky Mountains. This portion of the state is the highest, with several mountains having peaks over 6,000 feet high. This region spans about 2,600 square miles.
- Due west of the Unaka Mountain Range is the Great Valley of East Tennessee. This region is comprised of long narrow ridges with valleys in between them, and spans about 9,000 square miles. This area is home to several man-made lakes and dams which provide power through the Tennessee Valley Authority.
- The Cumberland Plateau comprises about 5,400 square miles in middle Tennessee, and includes the Cumberland Mountains, which have peaks reaching 3,500 feet. It is also home to the Sequatchie Valley, which dips to about 1,000 feet below the surface. Much of this plateau is comprised of sandstone.
- The Highland Rim is also in Central Tennessee, and includes 12,500 square miles of the state. It is the largest natural area in the state, and encircles the Central Basin.
- The Central Basin, with its rich soil, is the most densely populated region of the state.
- The westernmost part of the state is referred to as the Gulf Coastal Plain, and includes about 9,000 square miles of the state. It is a broad plain that slopes gently westward. This portion of the state is relatively flat.

With significance to solid waste and materials management, the topography of Tennessee can present challenges in transporting materials through and around mountains. It may also make some locations less suitable for siting landfills, which is considered in the facility permitting process. Much of Tennessee has a significant portion of limestone. Over time, caves and sinkholes have developed in the limestone. Groundwater can therefore become spring water. Tennesseans are therefore sensitive to the importance of protecting groundwater and aquifers. Topography can also impact the cost of transporting waste and recovered materials across the state.

E. Economics and Industry

According to the 2014 Economic Report to the Governor of the State of Tennessee,[10] Tennessee's economy showed signs of improvement in 2013 over 2012. Inflation-adjusted gross domestic product (GDP) grew by 2.6 percent for the year and nonfarm employment increased by 1.5 percent. Despite

[9] City-data.com, http://www.city-data.com/states/Tennessee-Topography.html

[10] University of Tennessee Center for Business and Economic Research, "An Economic Report to the Governor of the State of Tennessee, 2014," http://cber.bus.utk.edu/erg/erg2014.pdf

this job growth, the annual unemployment rate increased slightly from 8.0 percent in 2012 to 8.2 percent in 2013. Nominal personal income increased by 2.7 percent for the year, which was slightly behind income growth for the U.S. Tennessee is expected to experience a slightly faster pace of economic growth in 2014 and 2015. Unemployment is projected to decline to 7.5 percent in 2014 and 7.0 percent in 2015, which will be the first time since 2008 that unemployment in Tennessee has fallen below 8.0 percent. Nominal personal income is projected to increase by 4.2 percent in 2014 and 4.5 percent in 2015. In the longer term, it is expected that the labor market is likely to continue to struggle until 2020, due to still-elevated unemployment rates and the unprecedented lows of the labor force participation rate. It is projected that employment gains in manufacturing will be realized through 2017, but then jobs will begin to contract again. Professional and business services, education and health services are fields that are expected to see strong growth over the next 10 years. By 2020 it is expected that the unemployment rate will reach 6.0 percent, which is an improvement, but still higher than the 4.8 percent unemployment of 2007.

According to the Tennessee Department of Economic and Community Development (ECD), the most significant job growth in 2012 was from expanding existing businesses in Tennessee and domestically owned projects.[11] In 2012, 52 percent of the ECD projects were in rural communities versus 48 percent in urban areas. Focus on job growth in Tennessee involves targeting industries that tend to have supply synergies. Therefore when one business expands, others also benefit. The 2012 ECD projects spanned all nine regions of the state. The ECD is focusing its business development efforts on the following six key industry sectors in which Tennessee enjoys a competitive advantage:[12]

- Automotive
- Chemical products and plastics
- Transportation, logistics, and distribution services
- Business services
- Healthcare
- Advanced manufacturing and energy technologies.

It will be important to ensure that existing and future businesses in Tennessee, particularly those in the targeted industries, incorporate waste reduction and materials management strategies into their operations. This goal can be enhanced through excellent access to rail, barge, international ports, etc. in the state. Such activity will benefit the businesses directly (as some of have Zero Waste plans or sustainability plans in place which require waste minimization). Waste minimization also can increase profitability and simultaneously help expand the state's economy by directing Tennessee's recovered materials to Tennessee manufacturers, to the extent possible.

[11] Tennessee Department of Economic and Community Development, "Building on Success, Annual Report, 2012," http://www.tn.gov/ecd/multimedia_center/pdf/2012ECDAnnualReport.pdf

[12] Tennessee Department of Economic and Community Development, Jobs4TN Plan (Presentation), http://www.tn.gov/ecd/pdf/Jobs4TN_PowerPoint.pdf

The Southeast Recycling Development Council completed a study in 2013 entitled "Characterization of Tennessee's Recycling Economy[13]." The study states that a "dependable network of MRFs and baling operations" exists in the most populated areas of the state, but that there is opportunity to expand processing to some rural areas. Also, there is an opportunity for the residential sector to drive the recycling economy through increased diversion, and as recycling activity increases, investment will be made in processing facilities across the state, which will grow single-stream recycling opportunities. According to the study, strong markets exist across the state for plastic, paper, aluminum (including the largest aluminum can sheet mill in the world, Alcoa), and steel. Secondary processing in some cases is not available (or is not available in all regions) for certain types of materials. Although the study presents some good information, it is considered to be an excellent first step at identifying the recycling economy in Tennessee, as there is still a need to fill gaps in knowledge about secondary processors and end user markets in Tennessee, and the economic benefits they bring to the state.

In particular, the Southeast Recycling Development Council study notes that there are some mills and several conversion facilities for various paper products in Tennessee, including newsprint, tissue, linerboard, boxboard, and corrugated medium. RockTenn, International Paper, and Sonoco Products are the more prominent companies in this industry. Aluminum mills include Alcoa and Bonnell Aluminum. These plants serve as end markets for multiple grades of aluminum, including structural scrap and cans. There are multiple steel mills in Tennessee, including Nucor and Gerdau Ameristeel mills. the plastics industry has strong end markets, particularly as related to the automotive market.

Secondary processing for plastics, however, are lacking in Tennessee. Filling this gap could allow Tennessee-generated plastic scrap to remain in state, rather than being shipped out of state for secondary processing. The glass industry is another market where secondary processing (or "beneficiation") is lacking. While Strategic Materials, Inc. (SMI) has a facility in Ashland City, it accepts industrial glass for consolidation only, and does not serve as a market for post-consumer glass bottles. The report authors recommended that TDEC encourage SMI to initiate bottle collection at their Ashland City operation. There is also a glass recycling facility located in Jackson, which accepts all forms of glass. The report also indicates that end markets for bottle glass are not very strong in Tennessee, and recovered glass is shipped out of state to bottle manufacturing plants in North Carolina, Virginia, Indiana, or Georgia. As a result of poor markets for glass, many programs do not accept glass in their programs. While glass is inert in landfills and is relatively low value, it is also a relatively dense material, and can therefore be impactful to program success on a weight basis.

[13] SERDC, "Characterization of Tennessee's Recycling Economy," 2013. https://www.serdc.org/Resources/Documents/SERDC%20-%20TDEC%20Project%20Characterization%20of%20Tennessee%E2%80%99s%20Recycling%20Economy.pdf

F. The Economic Impact of Recycling in Tennessee

In 2013, the Institute for Scrap Recycling Industries conducted a study of the economic impacts of recycling in the U.S. and on a state-by-state level.[14] The study revealed that, in Tennessee:

- The scrap recycling industry provided 3,325 direct jobs, $247 million in wages, and an overall economic impact of $884 million in 2013.
- When indirect benefits were included, there were 12,145 jobs attributable to scrap recycling in Tennessee, $690 million in wages, and a total economic impact of $2.2 billion.
- The scrap recycling industry generated $90.7 million in tax revenues for Tennessee and its local governments.

There are limited economic benefit studies for Tennessee, however other studies conducted in the region, such as in South Carolina, show the growth of recycling in recent years. For example:

- There are more than 520 recycling-related companies in South Carolina, employing 22,403 people directly.
- There was an estimated 44 percent increase in recycling employment from 2006 to 2014 – a 4.7 percent annual growth rate.
- The industry's total annual economic impact has doubled since 2006, from $6.5 billion to $13 billion.
- For every 1,000 tons recycled, 1.68 jobs are created.[15] [16]

There is much less data available on the economic benefits of composting, however a Connecticut report indicates that in 2010 it was estimated that:

- Composting created 257 direct jobs in Connecticut (by comparison, the study estimated that there were 2,697 direct jobs from recycling), and 139 additional indirect jobs, for a total impact (recycling and composting) of 5,122 jobs across the state.

[14] Institute for Scrap Recycling Industries, "Economic Impact Study – Executive Summary," 2013, http://www.isri.org/docs/default-source/recycling-analysis-(reports-studies)/economic-impact-study-u-s-based-scrap-recycling-industry-2013.pdf?sfvrsn=8

[15] Hefner, Frank and Blackwell, Calvin, Update to "The Economic Impact of the Recycling Industry in South Carolina, 2014. http://recyclonomicssc.com/UserFiles/screcyc/Documents/RECY%20Economic%20Impact%20Study%202014%20WEB%20DIGITAL%20Report%2020140529.pdf

[16] Hefner, Frank and Blackwell, Calvin, "The Economic Impact of The Recycling Industry in South Carolina," 2006. http://www.epa.gov/epawaste/conserve/tools/localgov/docs/economic-impact-of-recycling-sc.pdf

- Composting contributes $284 million in direct impacts, and $490 million in total impacts.[17] Note that Connecticut's population is about 3.6 million, approximately 55 percent of the population of Tennessee.

Another recent study about the economic benefits of composting conducted for the state of Maryland indicates that:

- For every 10,000 tons of material composted per year, between 2.8 (for large facilities) and 13.6 (for small facilities) jobs are created.
- For every million tons of organics composted, 1,360 jobs are created in the state – 740 for compost processing and 620 for compost use. By contrast, if the same million tons of organics were burned, only 120 jobs would be created, and if landfilled, 220 jobs would be created.[18]

[17] Connecticut Economic Research Center, Inc., "Executive Summary: The Economic Impact of the Recycling Industry on Connecticut," 2012. http://www.ct.gov/deep/lib/deep/waste_management_and_disposal/solid_waste/transforming_matls_mgmt/gov_recycling_work_group/appendix_i.pdf

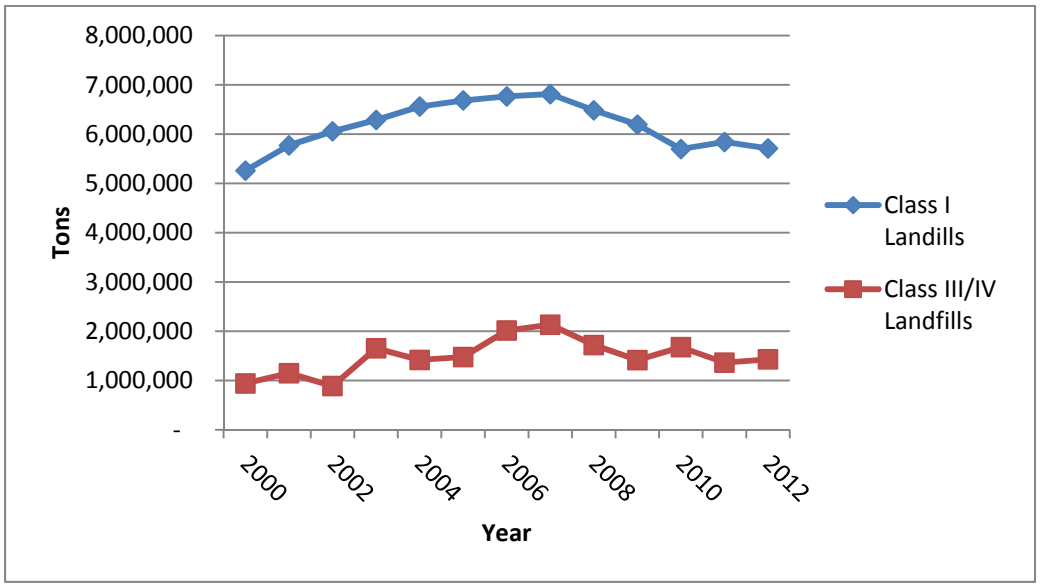
[18] Platt, Brenda, Bell, Bobby, and Harsh, Cameron, "Pay Dirt: Composting in Maryland to Reduce Waste, Provide Jobs, & Protect the Bay," 2014. http://www.ilsr.org/wp-content/uploads/2013/05/ILSR-Pay-Dirt-Report-05-11-13.pdf

IV. Solid Waste and Materials Management

A. Quantity of Solid Waste Disposed

In 2012, Tennesseans disposed of 5,710,987 tons of MSW. This equates to 4.85 pounds per person per day. In 2012, 1,429,956 tons of waste were disposed in Class III/IV landfills. This equates to an estimated 1.2 pounds of MSW per person per day disposed in Class III/IV landfills. Figure IV-1 shows the trend in the quantities of total MSW (Class I) and C&D/yard trimmings (Class III/IV) disposed from 2000 through 2012.

Figure IV-1
Waste Disposed 2000 - 2012

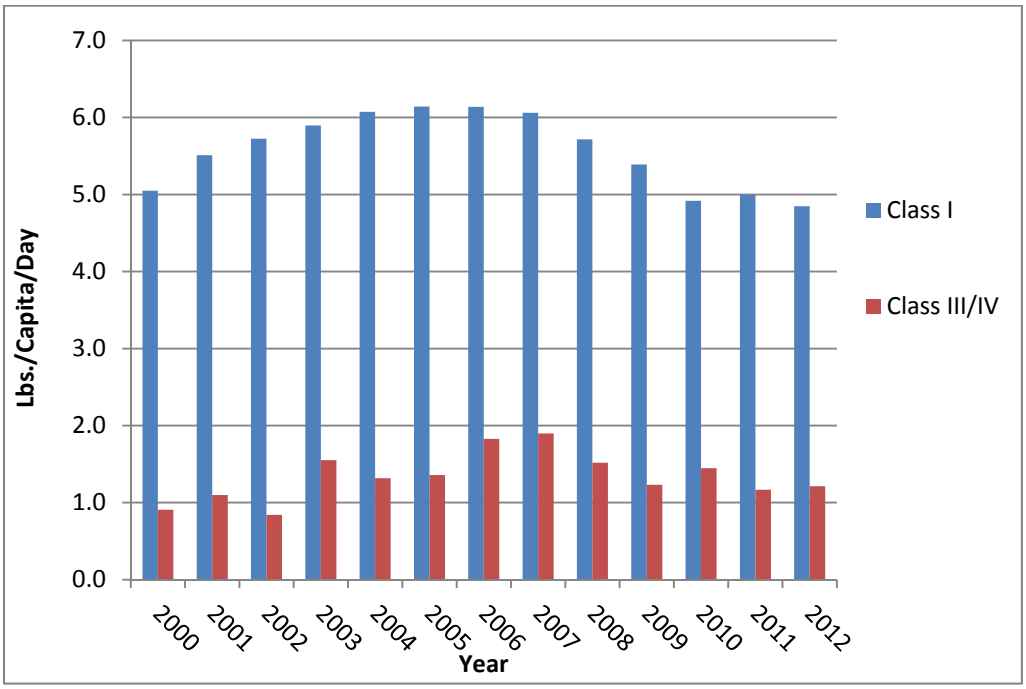


Data Source: TDEC, As submitted by counties in Annual Progress Reports.

As Figure IV-I shows, total waste disposed in Class I landfills increased steadily through 2007, then began to decline in 2008. This may be due in part to the overall U.S. economic decline, as construction and demolition activity, in particular, tends to decline when the economy declines. There was a slight increase in the quantity of MSW disposed in 2011, which dipped again slightly in 2012. Class III/IV waste disposal quantities declined through 2009, then increased slightly in 2010, followed by a dip in 2011, and a slight increase in 2012.

Figure IV-2 shows total waste disposed in Class I and Class III/IV landfills on a per-capita-per-day basis from 2000 through 2012.

Figure IV-2
Disposal Per Capita Per Day
2000 - 2012



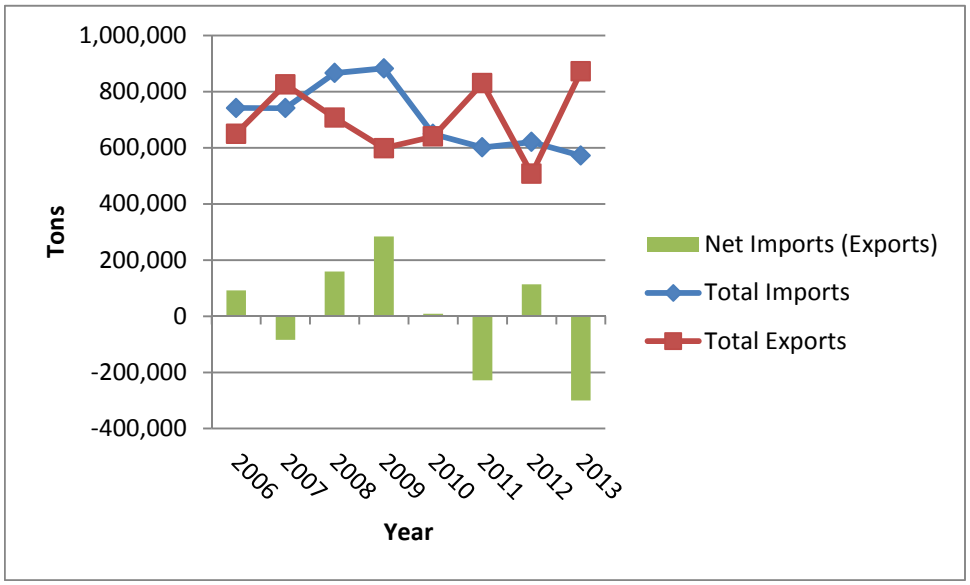
Data Source: TDEC, as reported by counties in Annual Progress Reports.

As Figure IV-2 shows, the per-capita trends for MSW and Class III/IV waste largely followed the overall trends. Notably, per-capita disposal in MSW landfills was lower in 2012 than it had been in 2000. This again may be due to the general decline in the U.S. economy, which suppresses consumption and therefore waste generation and disposal, but may also be due, at least in part, to waste reduction/lightweighting of packaging and products.

B. Imports and Exports

Tennessee has been both a net exporter (in 2011 and 2013) and importer (in 2012) of waste in recent years. Figure IV-3 shows the quantity of waste imported into and exported from Tennessee annually since 2006.

Figure IV-3
Annual Waste Imports and Exports 2006 - 2013



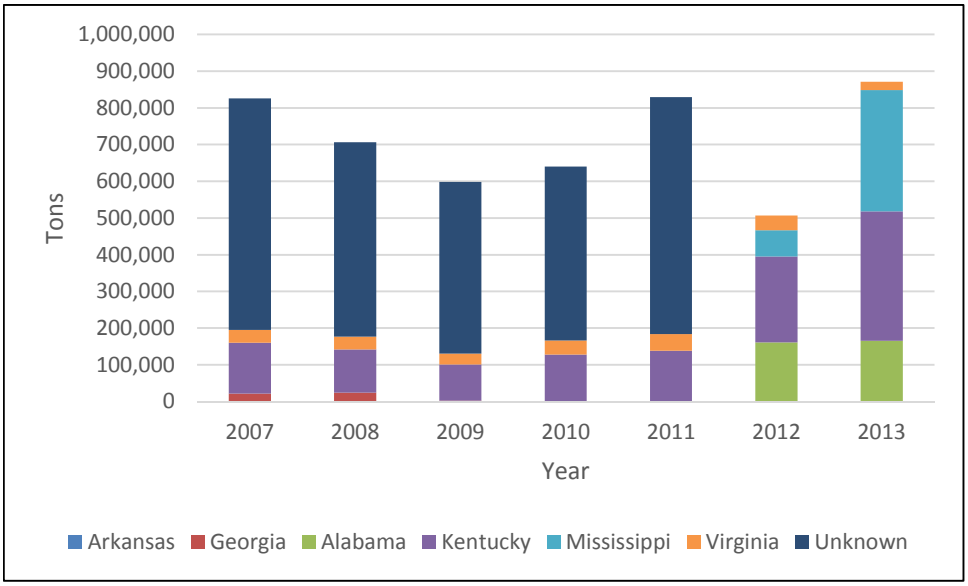
Data Source: TDEC, as reported by landfills on Solid Waste Origin Reports (imports), and as reported by counties in Annual Progress Reports (exports).

As Figure IV-3 shows, Tennessee has been a net importer of waste more frequently than a net exporter, although in recent years net exporting has been more predominant than importing. In general, the difference between net imports and net exports has been 200,000 tons per year or less, representing approximately 3 percent or less of waste disposed. It is not surprising that waste would cross boundaries, into and out of Tennessee, as Tennessee borders eight states. The primary factors that drive the export of waste is geographic proximity and low disposal costs. This is particularly true when transportation costs are relatively low due to close proximity (e.g., for communities located near states that have low-cost disposal options). Other likely drivers for waste generators in Tennessee is the desire to send waste to a waste-to-energy facility. This may be for security purposes (e.g., the need for assurance of destruction), or in the instance of special wastes that cannot be landfilled, as well as no-landfill company policies. Because there are no waste-to-energy facilities in Tennessee, this material is exported, typically to the nearest waste-to-energy facility in Alabama. Waste is free to flow between states, as protected by the Interstate Commerce Clause.

The primary states where waste was exported in recent years are shown in Figure IV-4. Figure IV-5 shows the states to which Tennessee has exported waste in recent years. This data is provided as submitted from the regions in their Annual Progress Reports to the Department. Note that in some years (2007 through 2011) the destination of some exported waste was unknown. Since 2011, regions have been more thorough in including destination information in their Annual Progress Reports. In earlier years, some waste was exported to Georgia and North Carolina. Currently, waste is not exported to those states, but is exported to Mississippi, Kentucky, and Alabama primarily, with small quantities also being exported to Virginia. For the most part, the counties from which waste is exported are located in close proximity to those states to which the waste is sent for disposal. In some cases private waste management companies have transfer stations which consolidate waste for export to a landfill they own in another state. This data is relatively accurate and complete, as MSW landfills must submit origin reports indicating the county/state from which waste was delivered. However, data

pertaining to waste exports is obtained through Annual Progress Reports and reporting by transfer stations, and it is possible some waste, particularly waste not under county or city control, could be exported without being included on a report. Class III/IV landfills do not have to submit waste origin reports to TDEC.

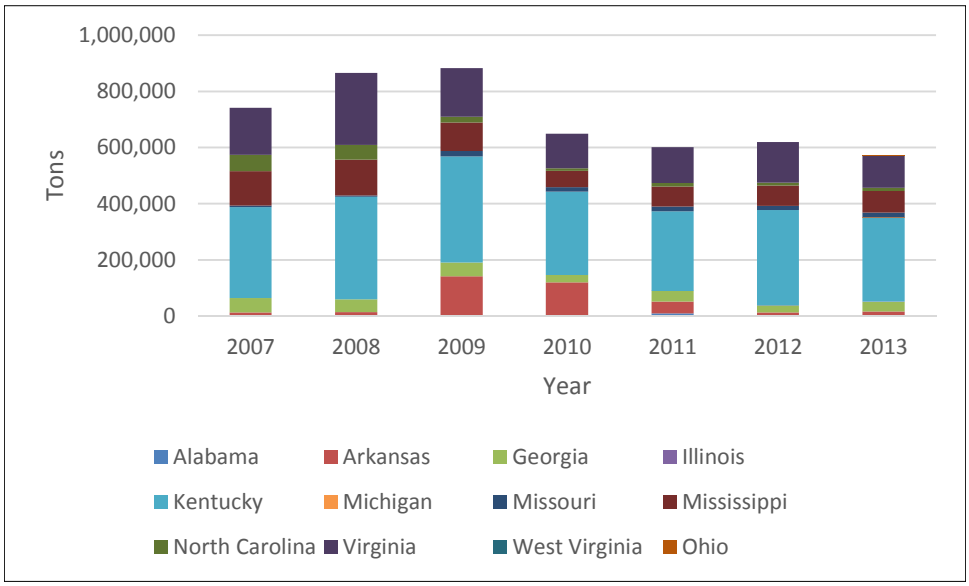
Figure IV-4
Annual Waste Exports 2007 - 2013



Data Source: TDEC as reported by counties in Annual Progress Reports.

Figure IV-5 shows the states from which waste was imported into Tennessee annually from 2007 through 2013.

Figure IV-5
Origin of MSW Imported for Disposal 2007 - 2013



Data Source: TDEC, as reported by landfills in Origin Reports

As Figure IV-5 shows, Kentucky is the state from which most waste is imported, followed by Virginia then Mississippi. Relatively small amounts of waste are imported for disposal from other states, including North Carolina, Missouri, Georgia, Arkansas and Alabama. Extremely small amounts have been imported from Illinois, and most recently Ohio and Michigan. Waste generators in states consistently sending waste to Tennessee, particularly those sending large quantities, are likely incentivized by low disposal costs.

C. Waste Disposed By Source

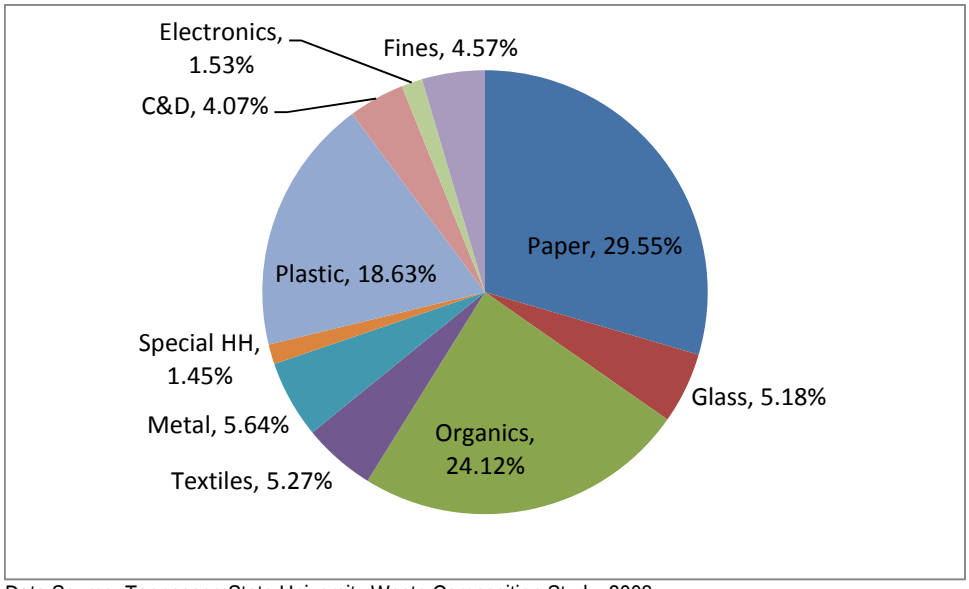
While the Annual Progress Reports request information by residential, commercial, and industrial generators, not all counties/regions are able to provide this information. Therefore, Tennessee does not have current reliable information pertaining to the portion of waste generated, disposed, or recovered by sector. The 2008 Tennessee State University Waste Characterization Study did not estimate the portion of waste generated by commercial versus residential generators, as there was not enough data to do so with a significant degree of certainty. The 1991 Solid Waste Management Plan indicated that in Tennessee, at that time, survey data from landfill operators indicated that 29 percent of the waste was from industrial sources, 37 percent from residential sources, 27 percent from commercial sources, and 3 percent each from “special and other” sources. The U.S. EPA estimates that 35 to 45 percent of the MSW generated in the U.S. is from commercial sources and 55 to 65

percent is from residential sources,[19] however, this applies strictly to municipal solid waste as defined by the U.S. EPA, which may not align with the type of landfill in which material is disposed (e.g., C&D is often disposed in MSW landfills). By comparison, the 2008 Georgia Statewide Waste Characterization Study indicates that the ratio of commercial to residential waste generation varies from 40:60 percent to 60:40 percent.[20] TDEC uses this study as a secondary source of information, along with the Tennessee State University Study, due to its geographic proximity.

D. Composition of Disposed Municipal Solid Waste

Based on the 2008 Tennessee State University Waste Characterization study (2005 data) which was conducted at Bi-County and Cedar Ridge Landfills, the most prevalent material in the disposed waste stream in Tennessee was paper, which comprised 32 percent of the combined (residential and commercial) disposed MSW stream. The next most prevalent material disposed, by weight, was organics, which comprised 21.6 percent of the combined waste stream. The third most prevalent material disposed in the MSW stream was plastic, which comprised nearly 14 percent of the combined disposed waste stream. Figure IV-6 shows the composition of the residential waste stream disposed.

Figure IV-6
Composition of Disposed Residential MSW, 2005



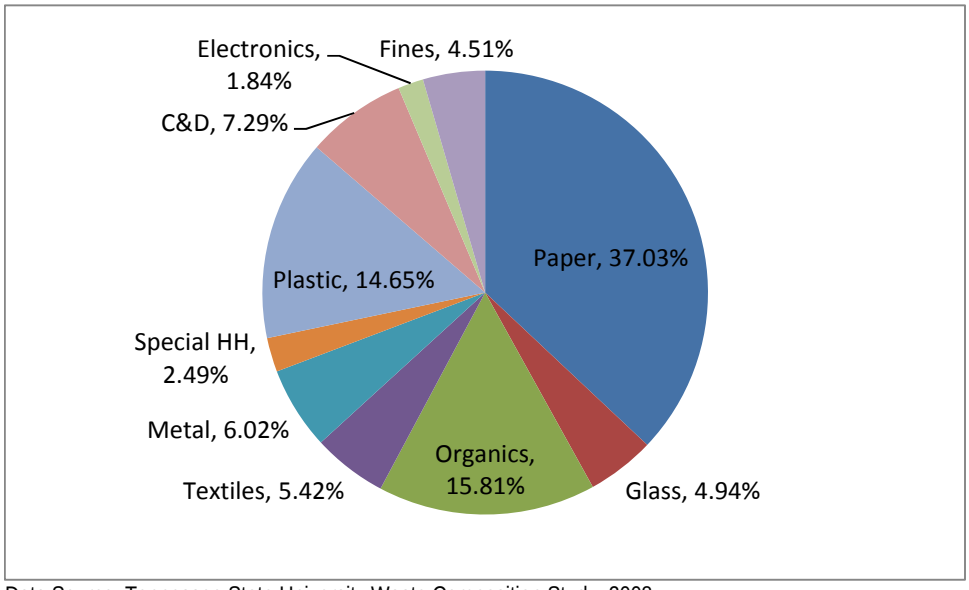
Data Source: Tennessee State University Waste Composition Study, 2008.

[19] U.S. EPA, "Municipal Solid Waste Generation, Recycling and Disposal, Facts and Figures, 2010." (2010 is most recent year in which U.S. EPA provided an estimate of the portion of MSW from the commercial/residential sectors.), http://www.epa.gov/osw/nonhaz/municipal/pubs/msw_2010_rev_factsheet.pdf

[20] Georgia Department of Community Affairs, "Georgia Statewide Waste Characterization Study," 2005. http://www.dca.state.ga.us/development/EnvironmentalManagement/publications/GeorgiaMSWCharacterizationStudy.pdf

Figure IV-7 shows the composition of disposed commercially generated waste, per the 2008 waste characterization study.

Figure IV-7
Composition of Disposed Commercial MSW, 2005



Data Source: Tennessee State University Waste Composition Study, 2008.

As Figures IV-6 and IV-7 show, both generator types had the same top three most prevalent materials – paper, organics, and plastic. Paper was slightly more prevalent in the commercial waste stream, and plastics and organics were less prevalent in the commercial stream compared to the residential waste stream. Metals were slightly more prevalent in the commercial MSW stream, and there was almost twice as much C&D debris in the commercial waste stream as the residential, although C&D debris in general made up a relatively small portion of the overall waste stream disposed at the MSW landfills.

E. Value of Recovered Materials Currently Disposed

Table IV-1 shows the amount of each commodity category disposed in the combined (residential plus commercial) waste stream, assuming the results of the 2008 Tennessee State University Waste Characterization Study are still relevant. The portion of waste disposed has been applied to 2012 MSW disposal figures to estimate the quantity of each material type currently disposed in Tennessee. Values of commodities are estimated based on current third-party published pricing.

Table IV-1
Estimated Quantity and Value of Commodities Currently Disposed

Commodity Category	Estimated Tons Disposed	Estimated Total Value
Paper	1,832,656	$149,649,276
Organics	1,237,000	NA
Plastics	784,119	$57,963,663
Fines/Other	461,447	NA
Metals	327,240	$121,319,924
Textiles	305,538	NA
Glass	288,976	$0.00
C&D Debris	278,125	NA
Special Household (batteries, paint, etc.)	101,084	NA
Electronics	94,802	NA
TOTAL	5,710,987	$328,932,863

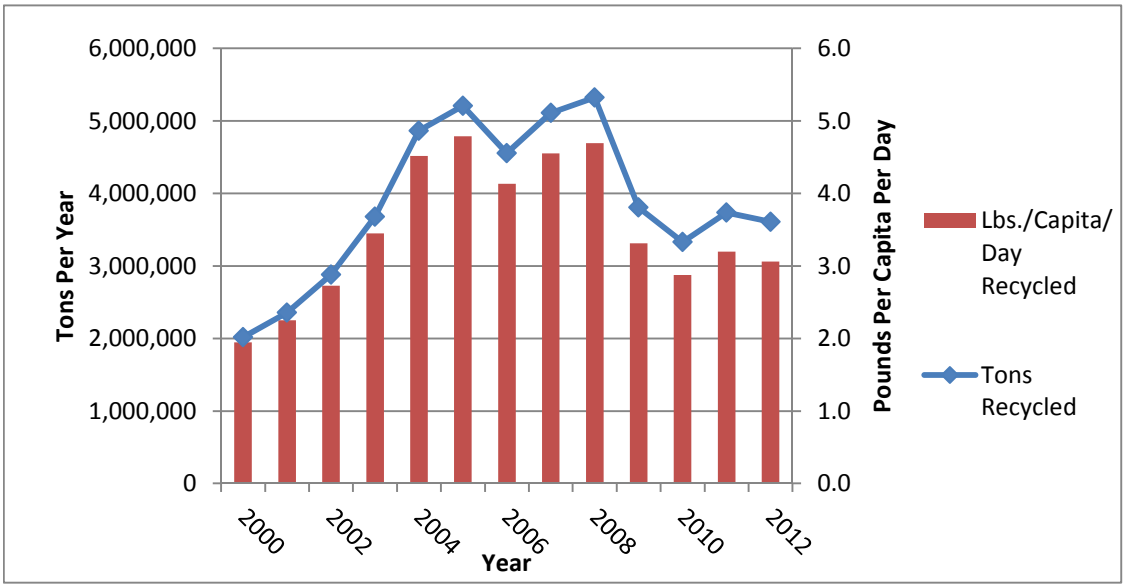
Data Sources: Pricing from PPI Pulp & Paper Week, June 5, 2014, Secondary Materials Pricing.com, June 23, 2014.
Some components of "metals" from web site that provides pricing – lower value pricing used to be conservative.

As Table IV-1 shows, the materials disposed in MSW landfills in Tennessee have an estimated current market value of at least $323.5 million. Published glass pricing is for delivered glass, and end markets for Tennessee glass are located out-of-state, therefore a value of $0.00 was assumed.

F. Quantity of Materials Recycled/Diverted

In 2012, Tennesseans recycled an estimated 3,609,241 tons of MSW. This data included commercially and privately generated waste. This equates to an average of 3.1 pounds per person per day. This data included program recyclables reported on county Annual Progress Reports, HHW, paint, automotive fluids, scrap tires collected for recycling/diversion, as well as recycled materials that county representatives were able to obtain for their Annual Progress Reports, which may have included agricultural waste or other types of materials that are not considered to be MSW per the U.S. EPA definition, or that might not have been disposed in an MSW landfill, but a Class III/IV landfill, if disposed. The recycled data does not include waste diverted and disposed in Class III/IV landfills. Figure IV-8 presents the quantity of MSW recycled/diverted from 2000 through 2012, in terms of total annual tons and average pounds per capita per day.

Figure IV-8
Quantity of MSW Reported as Recycled*
2000 - 2012



Data Source: TDEC as reported by counties in Annual Progress Reports.
*Includes all generating sectors

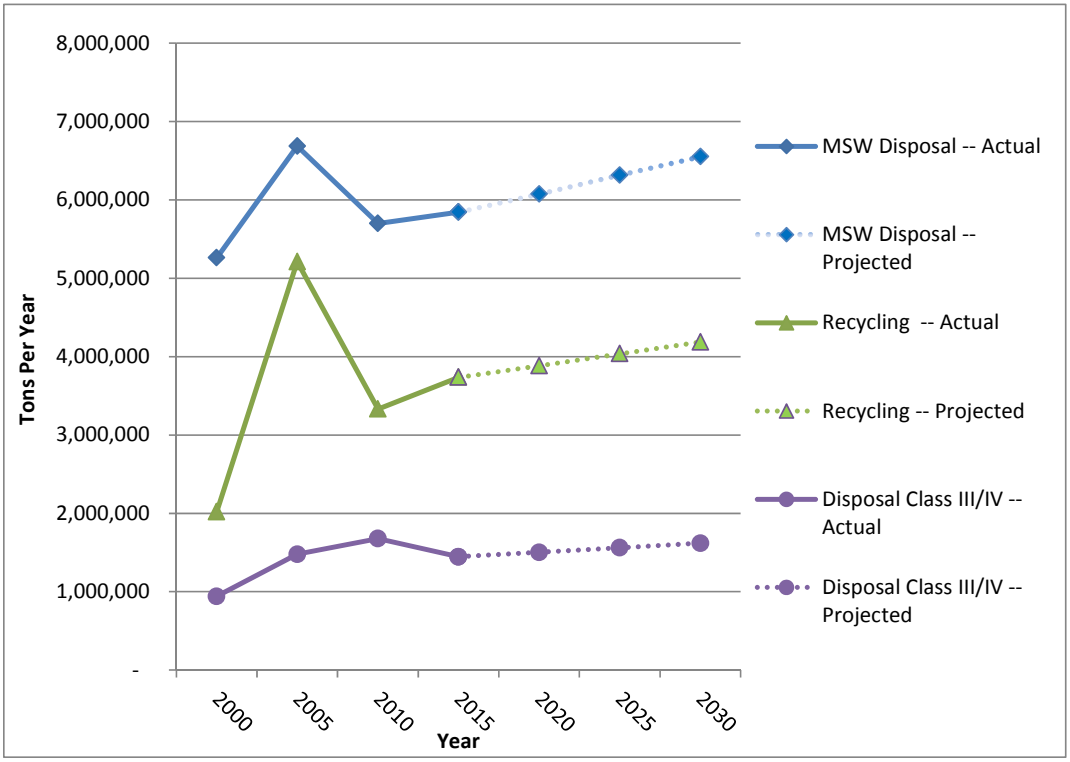
TDEC does not require MRFs to report tonnage data, therefore it is almost certain that more materials are recycled in Tennessee than the data shows. Also, the data reported in the Annual Progress Reports is not accurate enough to identify what portion of reported recyclables are generated from commercial versus residential generators. Recycled tons also may include some materials that are not actually MSW. Industrial recycling would generally not be included in these figures, but could be included by some counties. An example of industrial recycling would be industrial scrap plastic that is sold to brokers or secondary processors. It should be noted that some changes in the data over time are more reflective of reporting practices versus actual recycling practices.

G. Solid Waste and Materials Projections

If Tennesseans continue to generate waste at the same rate (on a per-capita basis) as they did in 2012, it is anticipated that by 2025 Tennesseans will generate an estimated 11,907,505 tons of waste, with 6,311,628 tons disposed in Class I landfills, 1,561,604 tons disposed in Class III/IV landfills, and 4,034,237 tons recycled/diverted from disposal from all landfills/incinerators. These estimated increases are strictly due to projected population increases. It is possible, however, that economic conditions will improve in the state, which would likely increase the quantity of MSW generated and disposed, and even more significantly impact the quantity of C&D waste generated and disposed. There is, however, an opportunity for Tennessee to increase the portion of waste recycled, as well as decrease the amount of waste generated by implementing and incentivizing waste reduction and recycling programs.

Figure IV-9 shows actual and projected quantities of MSW disposed and recycled as well as waste disposed in Class III/IV landfills from 2000 through 2030.

Figure IV-9
Actual and Projected MSW Disposed, Recycled and Waste Disposed in Class III/IV Landfills*
2000 - 2030



Data Sources: Disposal and recycling data from TDEC; as reported by counties in Annual Progress Reports, Population projections from the University of Tennessee Center for Business and Economic Research
*From all generating sectors

As Figure IV-9 shows, if 2012 MSW disposal and recycling levels are kept constant on a per-capita basis, Tennessee will require over 6,500,000 tons per year of disposal capacity by 2030. Similarly, recycling is projected to exceed 4 million tons per year, which would still be lower than total tons recycled in 2005.

H. Solid Waste Disposal Infrastructure

Below is a description of the existing solid waste disposal infrastructure in Tennessee. Appendix A provides a county-by-county listing of MSW and materials management facilities. Additional information about county facilities is provided on TDEC's website.

1. Class I Landfills

Class I landfills in Tennessee are those that accept non-hazardous MSW such as household waste, approved special waste, and commercial waste. They are generally referred to as MSW landfills. Some C&D and yard trimmings are disposed at MSW landfills, although waste generators can often save on the cost of disposal by delivering such material to a Class III/IV landfill. There are currently 48 permitted Class I landfills, but only 34 that are constructed and operating. Of the operating landfills, 16 are privately owned and 18 are publicly owned. There is an estimated 6.78 million tons of permitted and constructed annual disposal capacity currently at Class I landfills in Tennessee. The capacity is distributed throughout the state as summarized in Table IV-2.

Table IV-2
Summary of Landfill Capacity by Development District

District Number	District Name	Number of Operating Landfills in District	Total Annual Capacity (Tons)	% of Total LF Capacity in District	% of Total Population in District
1	Memphis Area Association of Governments (MAAG)	2	1,119,768	16.5%	16%
2	Northwest Tennessee Development District (NWTDD)	4	566,280	8.3%	4%
3	Southwest Tennessee Development District (SWTDD)	3	133,146	2.0%	4%
4	Greater Nashville Regional Council (GNRC)	2	1,404,000	20.7%	29%
5	South Central Tennessee Development District (SCTDD)	1	496,080	7.3%	7%
6	Upper Cumberland Development District (UCDD)	5	86,196	1.3%	5%
7	Southeast Tennessee Development District (SETDD)	6	1,141,920	16.8%	9%
8	Eastern Tennessee Development District (ETDD)	8	1,230,871	18.1%	19%
9	First Tennessee Development District (FTDD)	3	606,154	8.9%	8%
Total		34	6,784,415	100.0%	100%

Data Sources: Landfill capacity data from TDEC; Population data from U.S. Census Bureau

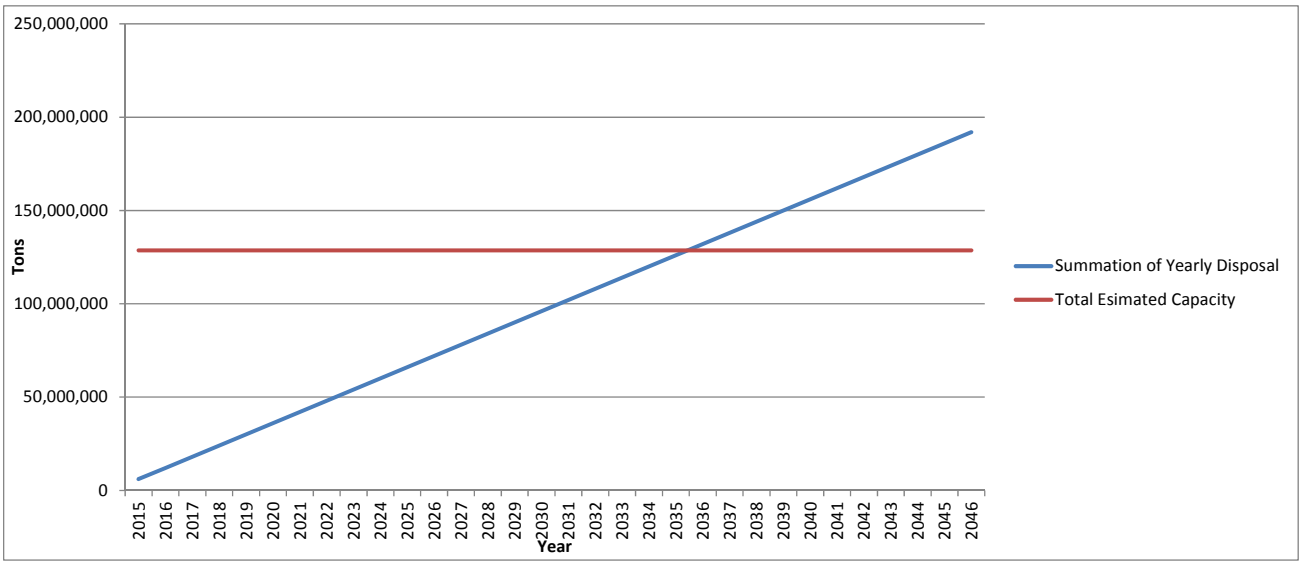
Total currently available permitted and constructed MSW disposal capacity in Tennessee equates to just over one ton per person per year in Tennessee, or enough capacity to dispose 5.6 pounds per capita per day in Tennessee. In terms of capacity by region relative to population, the regions that appear to have disproportionately less capacity than population (assuming generation is equal per-capita throughout the state), are the Southwest Tennessee Development District, the Greater Nashville Regional Council, and the Upper Cumberland Development District. The districts that appear to have more than their needed capacity, proportion-wise under the same assumptions, are the Northwest Tennessee Development District and the Southeast Tennessee Development District.

Landfill capacity is constantly changing, as landfills close, new landfills are permitted, and currently operating landfills do not fill at the rate expected, therefore capacity projections need to be updated. Besides the operating permitted landfills, there are several landfills in Tennessee that have permits but are not yet developed or operational. There are three additional permits in the Memphis Area Association of Governments, one each in the Northwest Tennessee Development District, Southwest Tennessee Development District, and the South Central Tennessee Development District, and three additional permitted but not yet constructed MSW landfills in the Eastern Tennessee Development District, as well as four additional permitted in the Memphis Area Association of Governments.

There is no information regarding the capacity of these undeveloped landfills or the timeframe in which they will become operational. Development will likely be in response to market forces.

Figure IV-10 shows currently permitted MSW landfill remaining disposal capacity in all operating Tennessee landfills and the rate of landfill capacity usage, statewide.

Figure IV-10
Estimated MSW Disposal Versus Available Disposal Capacity
2015 - 2030



Data Sources: Permitted landfill capacity survey data and MSW disposal data as reported from landfills to TDEC.

As Figure IV-10 shows, assuming approximately 6 million tons of MSW continues to be disposed annually in Tennessee, and if no additional MSW landfills are constructed, MSW disposal capacity in Tennessee is expected to be exhausted in 2036. This also assumes that MSW is capable of traveling anywhere in the state, and that the net quantity of MSW imported/exported does not change over time. However, in reality, as previously stated, there are additional landfills that are permitted but not yet operational, which will extend the state's capacity outward as the landfills become operational.

Table IV-3 shows the MSW landfills by county and District, and their anticipated closure date, under current permitted capacity.

Table IV-3
Tennessee MSW Landfills and their Estimated Closure Dates

Landfill Name	County	Annual Capacity (Tons)	Estimated Fill Year
District 1 – Memphis Area Association of Governments (MAAG)			
BFI South Shelby	Shelby	683,280	Beyond 2034
BFI North Shelby	Shelby	436,488	Beyond 2034
Earth Complex	Shelby	Not Operating	NA
Fayette County	Fayette	Not Operating	NA
Western Tenn Enterprises	Lauderdale	Not Operating	NA
District 2 – Northwest Tennessee Development District (NWTDD)			
Northwest TN Disposal	Obion	241,800	Beyond 2034
West Camden	Benton	240,240	Beyond 2034
ECM of Ridgely LLC	Obion	46,800	Beyond 2034
Dyersburg City	Dyer	37,440	Beyond 2034
Milan City	Gibson	Not Operating	NA
District 3 – Southwest Tennessee Development District (SWTDD)			
Decatur County	Decatur	93,600	Beyond 2034
Madison County Dev LLC	Madison	24,991	Beyond 2034
Boliver/Hardeman County	Hardeman	14,555	Beyond 2034
Chester/Henderson County	Chester	Not Operating	Beyond 2034
District 4 – Greater Nashville Regional Council (GNRC)			
Northside (Middlepoint)	Rutherford	1,092,000	2027
Bi County Balefill	Montgomery	312,000	2017
Robertson County	Robertson	Not Operating	NA
Highland/Custom Land Dev.	Robertson	Not Operating	NA
Williamson County	Williamson	Not Operating	NA
Wilson County	Wilson	Not Operating	NA
District 5 – South Central Tennessee Development District (SCTDD)			
Cedar Ridge	Marshall	496,080	2018
Maury County	Maury	Not Operating	NA
District 6 – Upper Cumberland Development District (UCDD)			
Smith County	Smith	33,384	2025
Upper Cumberland	Clay	18,720	2019
DeKalb County	DeKalb	14,015	2015
Pickett County	Pickett	3,354	Beyond 2034
White County	White	16,723	2016
District 7 – Southeast Tennessee Development District (SETDD)			
Meadow Branch	McMinn	414,960	2020

Landfill Name	County	Annual Capacity (Tons)	Estimated Fill Year
Bradley County	Bradley	343,200	Beyond 2024
Rhea County	Rhea	208,416	2029
City of Chattanooga	Hamilton	94,848	2018
Marion County	Marion	47,736	Beyond 2034
McMinn County	McMinn	32,760	Beyond 2034
District 8 – Eastern Tennessee Development District (ETDD)			
Volunteer Regional	Scott	343,200	Beyond 2034
Chestnut Ridge	Anderson	325,104	Beyond 2034
Loudon County	Loudon	287,976	2020
Lakeway Recycling and Sanitation	Hamblen	148,200	Beyond 2034
Alcoa-Maryville/Blount County	Blount	62,400	2028
Hamblen County/Morristown	Hamblen	39,000	2021
Jefferson County	Jefferson	24,991	Beyond 2034
Sevier Solid Waste Inc.	Sevier	1,560	Unknown
Roberta Phase II	Scott	Not Operating	NA
Roane County	Roane	Not Operating	NA
Union County	Union	Not Operating	NA
District 9 – First Tennessee Development District (FTDD)			
Carter Valley	Hawkins	248,040	Beyond 2034
Iris Glen Environmental	Washington	214,968	2020
Ecosafe Systems LLC	Sullivan	143,146	Beyond 2034

Data Source: TDEC, as obtained through permit information and landfill remaining capacity survey information submitted by landfills

1. Class II Landfills

Class II landfills in Tennessee are industrial solid waste landfills. These landfills can accept non-hazardous industrial wastes, commercial wastes, and fill. Although TDEC permits Class II landfills and inspects these lined landfills regularly, TDEC has very little information about the quantity of waste disposed in them, but estimates that approximately 500,000 tons per year are disposed in the 45 active industrial landfills throughout the state. Class II landfills typically are used for the disposal of materials such as paper sludge and coal ash and are often owned by private companies to dispose of their own waste stream or manufacturing by-product. There are also 69 inactive and two pending Class II landfills. Class II landfills are a significant part of the waste management infrastructure in Tennessee, and are permitted and monitored by TDEC. However, by statutory definition the waste types disposed in Class II landfills are excluded from the definition of municipal solid waste, and therefore are beyond the scope of this Plan.[21]

[21] TN Rule 0400-11-01-.09 specifically excludes industrial waste from MSW, and specifically directs solid waste management and plans and goals do not include "individual disposal facilities and incinerators."

2. Class III Landfills

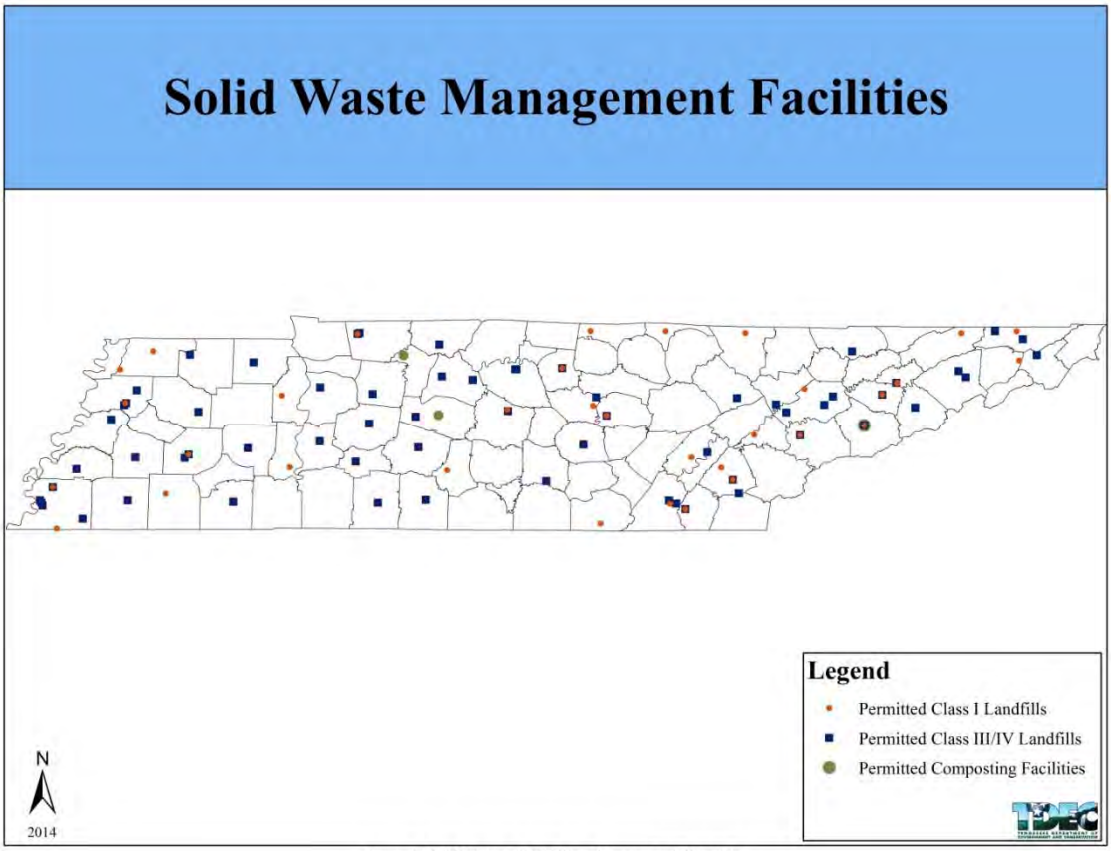
Class III landfills in Tennessee are for the disposal of construction and demolition wastes, shredded tires, and wastes with similar characteristics, but they can also accept landscaping, land clearing debris, and farm wastes. There are 57 permitted C&D landfills in Tennessee. 55 of which are active and two of which are not operating. Most Class III landfills do not have scales. Class III landfills do not have to be lined, and do not require leachate control systems. However, C&D landfills are required to have a geologic barrier to protect groundwater and are required to monitor groundwater. These landfills are typically therefore less costly to construct and operate than MSW landfills, so tip fees at these landfills are often lower than those at MSW landfills. Also, there is no disposal surcharge applied to waste disposed at Class III Landfills in Tennessee.

3. Class IV Landfills

Class IV landfills accept construction and demolition wastes, shredded tires, and waste with similar characteristics. There are 11 permitted active Class IV landfills in Tennessee. Three of these facilities are privately owned, the rest are publicly owned, including three federally owned facilities. Class IV landfills are no longer permitted in Tennessee, although those in operation before 2008 are "grandfathered in" and can continue to operate, but any expansions must be permitted as Class III. TDEC does not have data regarding remaining capacity at Class III and IV landfills.

Figure IV-11 shows the location of all active landfills in Tennessee, by type, as well as the state's permitted composting facilities.

Figure IV-11
Active Landfills and Compost Facilities in Tennessee



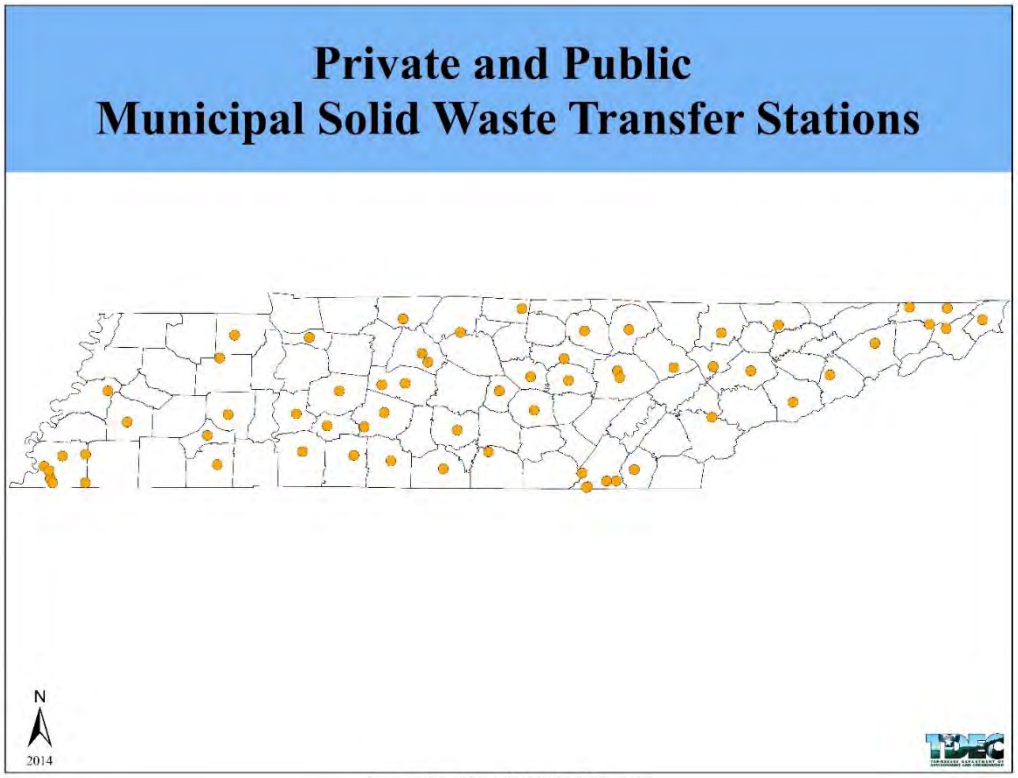
Source: TDEC Division of Solid Waste Management's WasteBin

4. Transfer Stations

Transfer stations are facilities where waste, and sometimes source-separated recyclable materials, are delivered for consolidation and transfer into a larger vehicle (usually a transfer trailer) for delivery to a more remote disposal or processing facility. In Tennessee, however, there are no transfer stations currently operating that accept separate loads of source-separated recyclables. It is common to see transfer stations in cities, and they can also be sited in remote areas if there are no landfills in close proximity. Many transfer stations are not open to the public, but are intended for the use of the transfer station owner's collection vehicles, which allows for more efficient collection and disposal of garbage. There are 84 transfer stations in Tennessee with active permits. Approximately 60 of these transfer stations are for MSW, which could include both garbage and recyclables. Of the 60 MSW transfer stations, 40 are publicly owned and 20 are privately owned. The 24 other active transfer stations in Tennessee are for the collection, consolidation, and transport of other types of waste such as industrial, medical, or C&D debris. Most of these transfer stations are privately owned.

Figure IV-12 shows the location of the 62 active public and private permitted MSW transfer stations in Tennessee.

Figure IV-12
Active MSW Transfer Stations in Tennessee



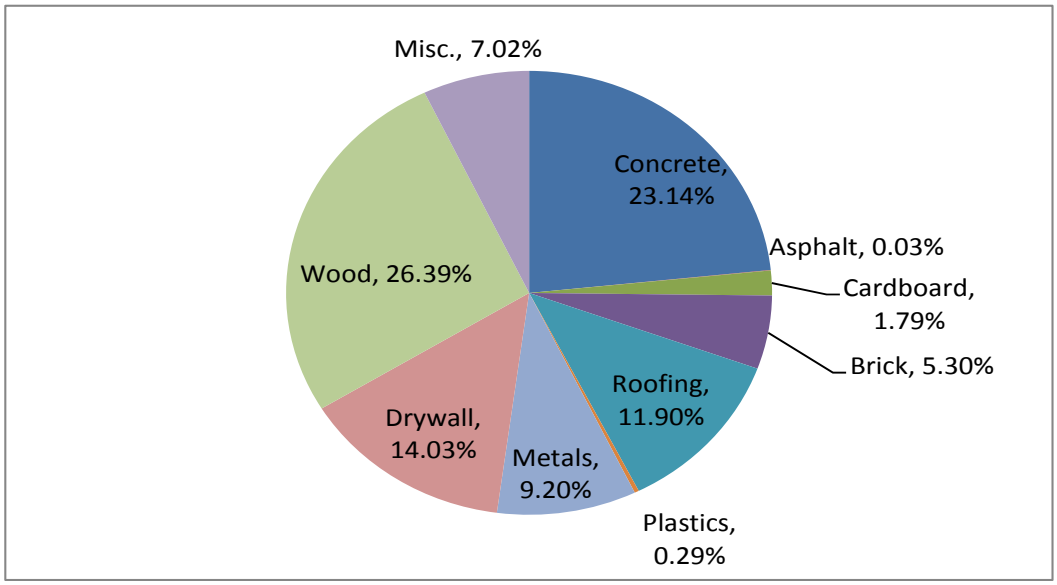
Source: TDEC Division of Solid Waste Management

I. Composition of Construction and Demolition Debris

The 2007 Tennessee State University /Middle Tennessee State University construction and demolition study[22] indicated the following composition of Tennessee's C&D waste:

[22] TSU Department of Civil and Environmental Engineering and Middle Tennessee State University Center for Environmental Education, "Solid Waste Management in Tennessee: Diversion of Organic, Construction, and Demolition Material Wastes from Tennessee Class I and Class IV Landfills," February 15, 2007.

Figure IV-13
Composition of Tennessee's Construction and Demolition Waste



Data Source: Tennessee State University Department of Civil and Environmental Engineering and Middle Tennessee State University Center for Environmental Education.

The Study further indicated that at the time of the Study, 57 percent of the C&D waste generated in Tennessee was disposed, 2 percent was recovered, and 1 percent was managed in other ways. The disposition of the remaining 40 percent was unknown, because the authors indicated that the 40 percent (an estimated 1 million tons in 2005) was disposed at MSW landfills, Class III/IV landfills, and through open burning and onsite disposal.

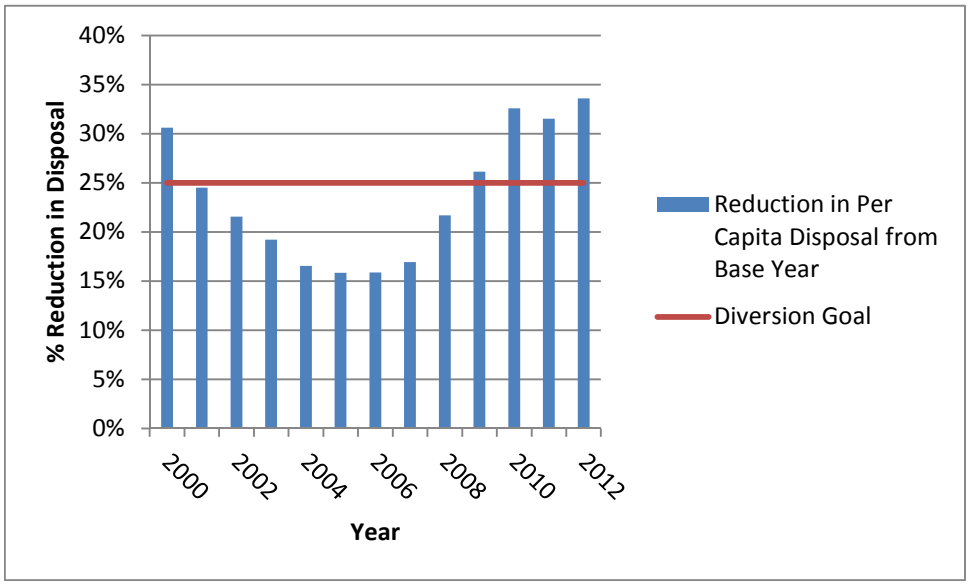
In 2007 (2005 data), the Tennessee State University/Middle Tennessee State University study provided an estimate of 2.6 million tons of C&D debris generated per year. It is likely that the quantity of C&D waste generated in recent years has declined, based on the general economic decline and the decline seen in MSW generation/disposal since that time. There are three C&D processors known to be operating in Nashville, and several shingle recyclers throughout the state.

J. Progress Toward Achieving Waste Reduction and Diversion Goal

Tennessee's current waste reduction and diversion goal pertains to reducing the amount of waste disposed at Class I Landfills on a per-capita basis, relative to a base year. The original base year was 1991, however solid waste planning regions were allowed to select their own base year due to concerns about data reliability. Most selected 1995 as the base year. Based on 1995 data, the state reached the diversion goal of 34 percent in 2012. When looking at the portion of MSW recycled/diverted relative to disposed, the state achieved a waste reduction/diversion rate of 47 percent in 2012.

Table IV-14 shows the state's reduction in MSW disposal on a per-capita basis relative to the base year (and hence its progress toward reaching the diversion goal) annually since 2000. As Figure IV-14 shows, the state achieved the diversion goal in 2000, and has achieved it annually from 2009 through 2012.

Figure IV-14
Statewide Progress Toward Diversion Goal



Data Source: TDEC, as reported by the counties on the Annual Progress Reports.

In recent years, approximately half of the counties within the regions have not reached the annual diversion goal, per their submitted Annual Progress Report data. Additional research, analysis of "real time" (using current MSW diversion and disposal data) and qualitative assessments are then made. Approximately one to four regions per year do not achieve the goal via these methods. Recommendations for program improvement are then made by TDEC.

K. State Waste Reduction and Environmentally Preferable Purchasing Initiatives

TDEC's Office of Sustainable Practices is the primary coordinator of recycling activities for State offices. The Office has several initiatives in place that aim to reduce waste and increase recycling at state facilities, as well as to encourage government agencies to purchase recycled-content products. In addition, there are several recycling efforts that take place outside of the Office of Sustainable Practices, however complete data is not compiled for such efforts.

1. The State Employees Recycling Program

The State Employees Recycling Program provides recycling opportunities in 114 state facilities, for use by 24,500 state employees. A key feature is the coordination of a vendor-serviced recycling program in the Nashville area that operates a dedicated recycling route. This is the central focus of the State Employee Recycling Program, as this is where the majority of state employees are located. The program collects approximately 65 tons of paper and 2 tons of beverage containers monthly (for a total of approximately 804 tons per year). Outreach is conducted through informational booths and special events like the Great American Cleanup and America Recycles Day. An electronic newsletter has been developed in response to survey feedback from program users.

2. State Facilities Recycling Program

The Office of Sustainable Practices also assists facilities outside of the State Employees Recycling Program, with finding low-cost recycling solutions. These services are often provided by local counties and municipalities. Bins and support infrastructure are provided by the Department through the Solid Waste Management Fund. Non-profit organizations like Orange Grove in Chattanooga as well as for-profit businesses like Spectra in Knoxville and Recycle-It in Memphis also provide recycling services free of charge to facilities including offices, Welcome Centers, State Parks, and State special schools. Because these facilities are often services as part of a non-dedicated route, the Office of Sustainable Practices has been unable to obtain data from these efforts.

3. Waste Reduction and Recycling Education

The Office of Sustainable Practices holds events for America Recycles Day in several Nashville buildings and in each of the TDEC field offices. Community and school participants for America Recycles Day and Recycle Bowl are also promoted. The Office of Sustainable Practices also helps promote ReycleMania to college and university partners. Over 60 Tennessee colleges and universities participate in the program. The Office also awards the Governor's Environmental Stewardship Awards which recognize environmental excellence. The Materials Management Award, in particular, focuses on waste reduction and recycling. Bridgestone's Tire4Ward program was the most recent recipient in this category. The Tennessee Green Star Partnership is a leadership and recognition program for Tennessee businesses and communities. Waste reduction is a central component of pollution prevention for this program. In addition, the Office supports the Good Sports Always Recycle competition. Direct outreach to students is also provided through university presentations and participation in conservation camps, as well as outreach efforts directed to the general public, schools, and business and industry. Examples include participation at the Living Green Expo, Tennessee School Physical Plant Managers' Conference, and the Tennessee Environmental Conference, as well as WasteWise partner recruitment.

4. Unwanted Pharmaceuticals Program

In 2011, the Office of Sustainable Practices launched a program to collect unwanted pharmaceuticals in response to emerging concerns from the U.S Geological Survey and the U.S EPA regarding the growing levels of pharmaceutical and personal care products found in many of the nation's drinking water supplies. Prior to the program, flushing and/or landfilling unwanted medicines and personal care products were the suggested disposal methods. The Office of Sustainable Practices provided secure bins and guidance on collection and safe disposal to allow local law enforcement to provide new options for disposal to citizens. Other state and federal agencies have partnered to help the program grow including the Drug Enforcement Agency, and Safety, Health, and Mental Health and Substance Abuse Prevention. Bins are currently placed in 54 of the 95 counties in Tennessee, which includes 11 new counties that entered the program in FY 13/14. To date, a total of 41,900 pounds have been collected.

5. Other Efforts

There are also additional programs outside of the services coordinated by the Office of Sustainable Practices. Some programs generate revenue from the sale of the commodities, including cardboard and grease, and some are simply operated at no cost. Additional known recycling programs at state facilities include the following:

- **Tennessee Department of Corrections** – Recycle materials generated on site, but no central repository of information is available.
- **State Colleges and Universities** – Most of the University of Tennessee and Board of Regents colleges have formal recycling programs in place. The Office of Sustainable Practices provides support to these programs. Smaller, more rural colleges often do not have recycling programs in place.
- **Tennessee Department of Transportation (TDOT)** – Recycle materials generated in each of the four regions, but no central repository of information is available. All of the regions recycle toner cartridges, tire weights, lead-acid batteries and used oil. Recycling of paper, cardboard and beverage containers is coordinated through the Office of Sustainable Practices. Table IV-4 shows additional materials recycled by the TDOT regions:

Table IV-4
Additional Materials Recycled by TDOT Regions

TDOT Region	Scrap Metal	Pallets	Circuit Boards	Used Tires	Other Hazardous and Non-Hazardous Materials
TDOT Region 1	X				
TDOT Region 2		X			X
TDOT Region 3	X		X	X	
TDOT Region 4				X	

6. Environmentally Preferable Purchasing and Recycling Services through the Department of General Services

Tennessee's Department of General Services is responsible for purchasing and for engaging in statewide contracts. The Division of General Services has a buy recycled program in place for paper, which supports T.C.A. § 68- 211-606 and § 68-211-865. T.C.A. § 68- 211-865 gives additional directive to the Department of General Services to: a) revise product specifications to require, to the extent economically feasible, the procurement of recycled products or products with recycled content, and b) encourage all departments of state government to purchase products with recycled content or recycled products from state contracts. Per T.C.A. § 68- 211-606, at least 40 percent of the paper products purchased by the Department of General Services (other than food packaging) must be made with recycled content. The newsprint purchased must contain at least 40 percent recycled content.

The statute does not specify the percent recycled content or post-consumer content required for other paper products.

.Scrap metal recycling contracts are procured through the Department of General Services Surplus Property Utilization Division. All state agencies are able to use these contracts for recycling metals. The Division also coordinates electronics recycling, the repurposing of items like furnishings, vehicles, and equipment. The Department of General Services Central Procurement Office also establishes statewide contracts for the recycling of mercury-containing lamps.

The Office of Sustainable Practices, in conjunction with the TDEC Office of Policy and Planning, has worked with the Central Procurement Office to draft a request for proposals for statewide recycling services which would allow for the collection of more accurate and consistent data, provide services to additional facilities, and create greater program uniformity. The uncertainty of the future of certain state buildings has resulted in stalling this effort.

L. Local Government Planning and Reporting

As is described in Sections II and III, solid waste planning regions are responsible for planning for solid waste and materials management and providing this information to TDEC. Regions are responsible for providing a 10-year plan when they initially form, which was initially to be followed by a five-year plan update, and an Annual Progress Report, which is provided by entering data into an online reporting tool. Need assessments are also done every five years by planning regions, but not on the same schedule as five-year plans. Since 2004, however, the five-year updates have been replaced with the Annual Progress Reports. If a region were to dissolve, however, and a new region formed, a new 10-year plan would have to be submitted. The majority of solid waste management planning regions are comprised of a single county, however several multi-county regions also exist. County personnel obtain data from cities and businesses, and their own county-level data through landfills and contracted haulers.

Because material recovery facilities are only required to have a solid waste processing permit in Tennessee if at least 10 percent of residue is disposed, there is no mechanism in place to require material recovery facilities to report recycling data. Some counties are more motivated than others to obtain recycling data and are known to obtain data from commercial and industrial entities regarding material that would likely never have gone to a landfill. Also, the counties are obtaining information regarding the amount of material recovered from some commercial entities, but not the amount of waste they disposed. In theory, the reverse could also occur, although it is likely that overall this results in inflated diversion data for some regions.

M. Existing Recycling Infrastructure

Below is a description of the existing recycling infrastructure in Tennessee. Appendix B provides a county-by-county listing of materials management and MSW disposal facilities. Additional information about County facilities is provided on TDEC's website.

1. Drop-Off and Curbside Collection of Recyclables

There are approximately 500 permitted staffed convenience centers located throughout Tennessee. Approximately 75 percent of these centers provide recycling opportunities. TDEC estimates that there are 107 unstaffed MSW collection sites across Tennessee. These sites are referred to as "green boxes" and are usually open-top dumpsters. About 70 percent of the green boxes are in Haywood County. Only green boxes established prior to January 1, 1996 may continue to operate. There is an environmental concern regarding green boxes because there is no monitoring of what is placed in them. Also, there is no attendant or infrastructure to encourage recycling of materials. A new rule (0400-11-01.10(5)(a)) requires counties to develop a plan for the elimination of collection receptacles or conversion of these unmanned collection sites to manned convenience sites in the future.

TDEC estimates that approximately 600,000 Tennesseans (about 8 percent) have access to curbside recycling provided to them by their local government at no extra direct cost to the resident (i.e., the cost of garbage collection includes the cost of curbside recycling, which tends to encourage participation). Many other residents are offered curbside recycling for an extra fee, often by private service providers. There is currently no data, however, regarding the number of Tennesseans that opt to have curbside recycling services for an extra fee. Nationwide, it is estimated that 63 percent of Americans have access to curbside recycling.[23]

2. Commercial, Institutional, and Industrial Programs

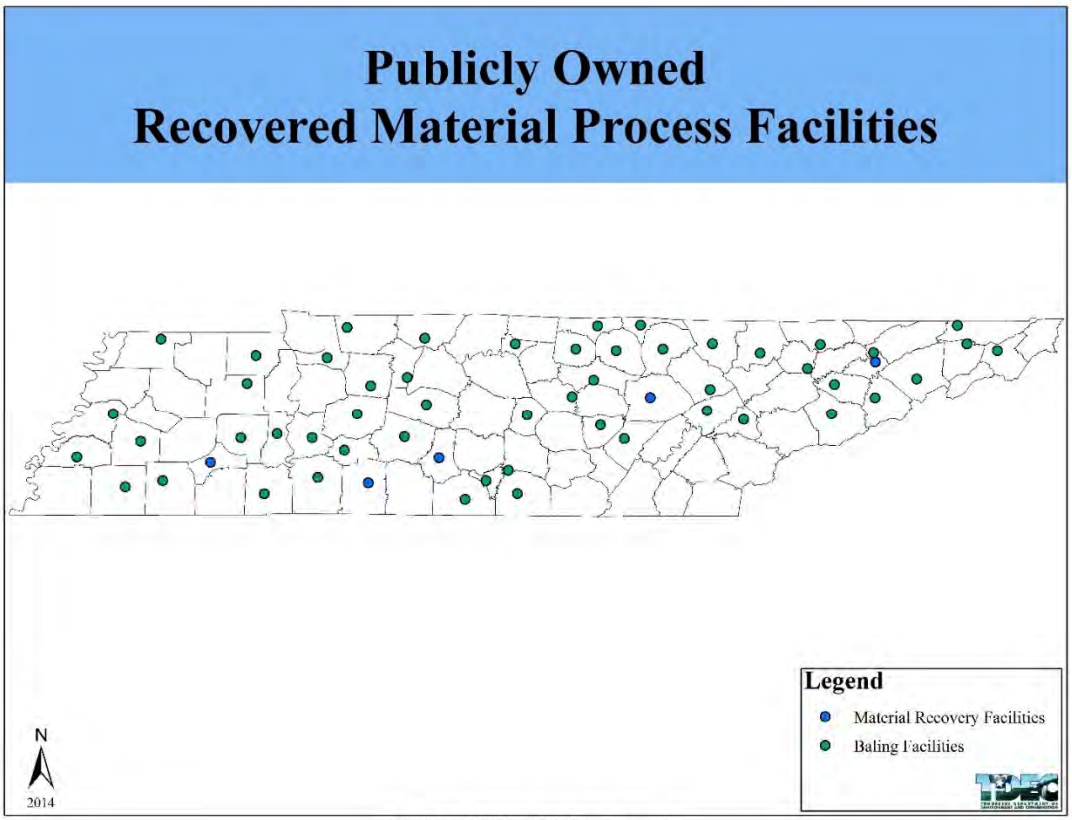
TDEC has very limited information about commercial, institutional, and industrial recycling programs, and little authority to obtain data. Many private businesses see recycling data as proprietary. Some, however, are willing to share data with MSW Planning Regions so that the data can be included in the Annual Progress Report. Some larger companies in particular track this information closely, to monitor how they are performing toward their own corporate sustainability goals. Some commercial entities rely upon primarily private material recovery facilities and other recyclers and haulers to provide recycling services, and others have their own backhaul programs in place whereby recyclable materials are baled on site and backhauled to distribution centers from where they will be transported to secondary processors to be recycled.

3. Material Recovery and other Processing Facilities

TDEC does not have any statutory authority to register material processors as solid waste facilities unless at least 10 percent of incoming material is disposed as residuals. In addition, TDEC considers some facilities to be baling facilities, and others to be material recovery facilities, however many states do not make this distinction, or do not include baling facilities as recycling facilities at all. Therefore, TDEC does not have complete information about privately owned recycling facilities. Figure IV-15 shows the locations of the publicly owned material recovery facilities and baling facilities in Tennessee.

[23] American Forest and Paper Association, "Community Recycling Survey," 2010. http://www.paperrecycles.org/news/2010/03/06/af-pa-releases-community-recycling-survey-results

Figure IV-15
Tennessee Publicly Owned Material Recovery Facilities and Baling Facilities



Source: TDEC Division of Solid Waste Management

4. End Markets

As is described in Section III of this Plan, there are many end users of recyclable materials in Tennessee. Some processors, however, sell materials to out-of-state markets as well. While it may seem that all recyclables should remain in state as a feedstock for manufacturers, there are market factors that come into play, including:

- established contracts and long-term supplier relationships with end markets, including vertical integration;
- quality and pricing issues;
- lack of intermediate processing in state; and
- distance to markets/transportation costs.

The Southeast Recycling Development Council Report (January 2013) indicates that strong end markets exist across the state for plastic, paper, aluminum, and steel. Adequate secondary processing for polyethylene terephthalate (PET), other plastic resins, and glass is lacking in Tennessee. Nearby secondary markets for PET include Custom Polymers in Alabama and Clear Path Recycling in North Carolina. A secondary high-density polyethylene (HDPE) processor is Envision Plastics in North Carolina, and a polypropylene secondary processor is KW Plastics in Troy, Alabama.

After secondary processing, some converted materials (such as plastic pellets and flake, rolls of corrugated cardboard and other types of paper shapes and forms, and aluminum sheet rolls) are used by Tennessee manufacturers (as well as others) to manufacture end products such as furniture, consumer products, and consumer and industrial packaging such as corrugated cardboard boxes, cereal boxes, and aluminum beverage cans.

5. Problem Wastes Management

In Tennessee the term "problem wastes" refers to waste tires, household hazardous waste (HHW), used motor oil, and lead acid batteries. These waste require specialized collection infrastructure either because of landfill restrictions or their potential for negatively impacting human health and the environment.

HHW is managed largely by TDEC in Tennessee. There are four permanent HHW facilities in the four most densely populated counties (they are located in Knoxville, Memphis, Nashville, and Chattanooga. These facilities serve the entire county in which they are located, therefore 36 percent of the state's population has access to a permanent HHW facility. Construction grants were awarded to Clarksville and Franklin for HHW facilities to serve the cities of Clarksville and Franklin, however it appears that the Franklin facility will not move forward at this time due to funding limitations. The operating costs for these permanent facilities are covered by TDEC. The state also provides HHW collection events for counties. In order to be eligible for the HHW collection program, counties must collect batteries, oil, paint (oil-based), antifreeze and electronics ("BOPAE") on an ongoing basis. Counties must staff and advertise the HHW events, although one TDEC employee is present to oversee the event. TDEC also covers the cost of the contracted service provider. There are more than 40 counties that collect "BOPAE" on an ongoing basis. There are less than 10 counties that collect these materials but do not request HHW events. Some counties request HHW events annually, and others are on an every-other-year cycle. TDEC will also provide a "milk run" collection of oil-based paint and lamps collected and stored at county locations. In recent years, for example, TDEC would provide approximately 30 milk run collections, and around 40 collection events, resulting in the collection of over 315,000 pounds of HHW.

Every county has a collection location for used motor oil, though some counties rely on retailers to provide this service to residential "do-it-yourself" oil changers. Some also accept oil filters. There is a re-refiner in Peachtree, Georgia, but none are known to be located in Tennessee. Some used oil is used beneficially in oil-burning space heaters. This practice is included in the Annual Progress Reports as recycling.

The management of scrap tires is funded through a $1.35-per-tire pre-disposal fee charged on the sale of new tires sold in Tennessee. Funds are remitted to the Tennessee Division of Revenue. Until 2014, TDEC funds were deposited into a waste tire management fund and TDEC distributed grants to counties for recovery of scrap tires, based on the number of tires sold in the County. As of July 1, 2014, funds ($1.00 per new tire sold in the county) will be distributed directly from the Department of Revenue to counties to help them manage their scrap tires. Retailers retain $0.10 and TDEC receives $0.25 per tire to administer the tire remediation program. Counties receive $1.00 per new tire sold in the county (the fee is not assessed on tires on new cars or on used tires). Every county is required to have at least one location where residents can deliver scrap tires. Counties can charge an additional fee beyond the funds they receive from the state if the costs associated with managing the tires exceed the revenues received. This is reportedly the case for many counties, as they receive more tires than

are sold within the county. This may be due to tires being imported from other counties or states, or because some people purchase used tires, on which a fee is not levied, and because some tires that are delivered to the county sites may be from new vehicles which were not assessed a fee. Counties/regions are asked to enter the quantity of tires collected into the online reporting system as part of their Annual Progress Reports.

Much of the state lacks scrap tire processing infrastructure, and tires are reportedly shipped out of state for processing. This increases tire management costs to the counties, as transportation is costly. Tire shreds are imported into Tennessee for use as a fuel source by manufacturers in their cement kilns and steel furnaces. It is illegal to landfill unprocessed tires in Tennessee, but some counties that have landfills minimally process (cut) and landfill the tires they receive. In recent years approximately 65,000 tons of tires have been recycled annually.

6. Organics Collection

Many haulers, particularly in the more populated areas, provide separate collection of yard trimmings and brush, as part of the bulk collection program. Most residents in the urban areas of Tennessee have access to curbside collection of yard trimmings. In more rural communities, some landfills and convenience centers offer containers for recyclables. Some residents in rural areas choose to dump yard trimmings in wooded areas or burn wood waste through pit-burner and air curtain destructor. Commercial landscapers collect this material from residential and commercial/institutional generators and usually deliver to compost facilities, mulch processing sites, or Class III/IV landfills.

7. Organics Processing Facilities

There is only one permitted compost facility in Tennessee. This is the Sevier County compost facility, which composts the organic portion of the disposed waste stream. There are two other compost facilities in Tennessee that are permit-by-rule compost facilities. One is privately owned, The Compost Company in Ashland City, which composts food and yard trimmings, and the second is the City of Franklin Compost Facility, which composts yard trimmings and landscaping waste. There are many mulching facilities in Tennessee as well, many of which are publicly owned and provide free mulch to residents and/or use mulch in public projects. Some land clearing and inert debris (e.g., concrete, rock, uncontaminated soil) is also disposed at land clearing and inert debris Class III/IV landfills. There are also some institutional compost facilities in the state, however many are not permitted by TDEC due to their size and the fact that they only process materials generated on site. Therefore, TDEC lacks data from many of these facilities.

V. Looking Into the Future – Introduction to Plan Objectives

A. Assessment of State Needs

The project team analyzed the current status of solid waste management in Tennessee, TDEC's vision for solid waste and materials management, and identified certain needs relative to solid waste and materials management. Needs identified include:

1) Increased incentive, education, and outreach for Tennesseans (individuals, businesses, and state government) to participate in recycling and waste reduction efforts
2) Improved access to recycling programs for standard recyclable materials (and information about those programs) to ensure that such programs are convenient
3) Increased infrastructure for organics recovery, particularly food recovery in population-dense areas
4) Increased infrastructure for C&D debris recycling
5) Updated goals that are clear, understandable, and for which progress can be measured, and which encourage residents, businesses, and institutions to reduce the amount of waste they generate and dispose
6) Goals that take into consideration the fact that not all communities have the same needs and resources
7) More standardized methods and guidelines for reporting recycling activity
8) More standardized and clear definitions regarding solid waste and materials management
9) Standardized method for ensuring that disposal capacity is adequate and will be adequate in the future, and that waste and materials management facilities are environmentally sound
10) More coordination, incentives, and information-sharing among state agencies regarding opportunities and programs to reduce waste generated and disposed, as well as to purchase items with recycled content
11) Enhanced end markets within Tennessee for products and materials made from Tennessee-generated materials to benefit the environment, as well as enhance the economy
12) Improved sustainable long-term funding to promote and develop local government systems and administration of programs,

B. Development of Objectives

Considering the needs identified and public input obtained during the Plan development process, the project team organized the needs into eight primary objectives. Strategies were identified to accomplish the objectives, and more specific tactics were developed to implement the strategies. The objectives include:

- Objective 1: Update Goals and Measure Progress
- Objective 2: Increase Access to and Participation in Recycling
- Objective 3: Enhance Processing and End Markets

- Objective 4: Increase Diversion of Organics
- Objective 5: Support New Diversion Technology
- Objective 6: Expand and Focus Education and Outreach
- Objective 7: Ensure Sufficient and Environmentally Sound Disposal
- Objective 8: Develop Sustainable Funding Sources for Sustainable Materials Management

The objectives are described more fully below, and strategies and tactics that will be implemented to achieve the objective are also presented.

VI. Objective 1: Update Goals and Measure Progress

A. Description of Objective

The purpose of this objective is to establish more robust solid waste management goals, to more accurately measure the disposition of MSW in Tennessee, and to better assess progress toward achieving those goals. As part of this objective TDEC will also develop and conduct training to help local governments understand how to accurately measure and report.

Nearly all states have historically established numerical goals for waste reduction or recycling, and required regional or local governments to demonstrate their progress toward these goals (see example in box below on page 58). Tennessee's Solid Waste Management Act of 1991 required MSW planning regions to reduce the amount of waste disposed in Class I (MSW) landfills by 25 percent, on a per-capita basis, from a base year measurement taken in 1995. Recognizing that solid waste management is dynamic, Tennessee's Solid Waste Management Act of 1991 was amended in 2007 to charge a Solid Waste Advisory Committee (SWAC)[24] with recommending an updated goal for the State and a Waste Reduction Task Force was created to provide a broader range of input on this topic.

TDEC believes that the proposed Statewide Goals set forth in this Objective can be achieved through waste reduction, recycling, composting, and reuse activities. TDEC supports the U.S. EPA's waste management hierarchy in the sense that, all things being equal, it is preferable to reuse or reduce waste at its source (i.e., avoid generating waste in the first place), with recycling, then composting being the next most preferred means of reducing the amount of waste disposed, followed by processes like waste-to-energy and other technologies that convert materials to energy, and lastly by disposal or processes (like incineration without energy recovery) that do not result in beneficial outputs.[25]

However, TDEC realizes that economic considerations must also be applied to the materials management decisions. In an integrated solid waste management system, for example, the full lifecycle of MSW is considered, from the moment material becomes waste, to when it ceases being waste and becomes useful product, emissions, or energy. In an integrated materials management system, we think of "inputs" (waste, energy, and raw materials) and "outputs" (useful energy, useful products in the form of reclaimed materials, compost, emissions to air and water and residual landfill material). Decisions regarding the optimal means of managing materials at the end of their useful life (i.e., when they become waste) therefore take into consideration all inputs and outputs, and considers local costs and availability of markets for outputs. A more thorough description of this waste management hierarchy is provided in Appendix A.

[24] The Solid Waste Advisory Committee was a fifteen (15) member committee representing different sectors of the solid waste interests appointed by the Commissioner to advise the Department on solid waste management ad waste reduction related issues. This role is now under the Underground Storage Tank and Solid Waste Disposal Control Board ("The Board").

[25] For example, if a material, such as paper, is suitable for either recycling or composting, and both options are available, it should be recycled, as that is a more preferred end use according to the waste management hierarchy.

Examples

- South Carolina updated its goals in 2011 to recycle 40 percent of the state's MSW and reduce disposal to 3.25 pounds per person per day by 2020. Counties, state agencies, and state-supported colleges and universities are required to report on their recycling activities and permitted solid waste facilities report on disposal. The State also collects recycling data from municipalities, businesses, and the recycling industry and allocates all information to the County of origin.
  http://www.scdhec.gov/HomeAndEnvironment/Docs/intro.pdf
- Georgia eliminated its 25 percent waste reduction goal and instituted numerical goals to reduce the amount of paper, plastic, metal, and glass disposed between 2004 and 2017. However, local governments are no longer required to report and without this information and/or an updated waste characterization study, there is no way to determine whether goals are met.
- In 2008, Florida passed a goal to achieve a 75 percent recycling rate by 2020. The state's earlier goal was to recycle 30 percent of MSW, passed in 1998. Florida uses many factors to calculate their goal that other states may not use.
  http://www.dep.state.fl.us/WASTE/recyclinggoal75/default.htm
- North Carolina has had a goal in place to reduce the amount of MSW disposed statewide by 40 percent per capita. However, the State's draft solid waste management plan for 2014 to 2024 moves away from a quantitative goal toward measuring progress by determining whether specific programs and policies are implemented.

B. Strategies to Achieve the Objective

1. Update Statewide Numerical Goals for Waste Reduction and Recycling

Background

- Existing numerical waste reduction and recycling goals in Tennessee have not been updated and are no longer relevant to the planning process.
- Before establishing goals for local governments or generators in the State, it is important to establish statewide goals to serve as a framework for all other goals.
- Solid waste management terms are not always used in exactly the same manner, but the following meanings are relatively standard in the waste and recycling industry, and how these terms are used in the Plan, unless otherwise specified:
  - **Source reduction (also referred to as waste prevention)** – reducing waste so it is not generated in the first place.
  - **Waste diversion** – The prevention and reduction of generated waste through source reduction, recycling, reuse, or composting. (In some states diversion includes waste processed at waste-to-energy facilities).

- **Recycling** – The recovery of useful materials, such as paper, glass, plastic and metals, to use to make new products, reducing the amount of virgin raw materials needed. (In recycling, the physical form of an object or material is changed).
- **Reuse** – Reusing an item in its current state (it is not used as a feedstock in manufacturing) – generally not considered to inter the waste stream.
- **Beneficial use** – Using or reusing a material that would otherwise be considered waste. Examples include landfill cover, aggregate substitute, fuel substitute, or the feedstock in a manufacturing process. Often the term beneficial use connotes that the material has very low market or product value and is essentially being used as a filler material.

- Although numerical goals are proposed in this Plan, ultimately, the final numerical goals must be considered by all of Tennessee and ultimately promulgated as a rule by the Board. Tactics to achieve the strategy are described below..

Tactics

1. ***TDEC will promulgate a rule to reduce disposal of municipal solid waste statewide and measure progress.***

   A waste reduction goal encourages a variety of approaches to reducing dependence on landfill disposal including source reduction, reuse and the development of new technologies for recovery of energy or materials from MSW. All of these activities would contribute to the achievement of a waste reduction goal.[26]

   In 2013, an estimated 5.17 pounds per person per day of MSW was disposed from Tennessee in Class I landfills. Based on historic data, waste reduction goals set in other states, and deliberations by the former Waste Reduction Task Force in Tennessee, a recommended starting point for a statewide waste reduction goal for Tennessee is *to reduce the amount disposed from Tennessee in Class I landfills to 3.5 pounds per person per day or less by 2025.* To help ensure progress toward the 2025 goal, the Board may want to consider an interim goal to be included during the promulgation process, for example to reduce the MSW disposed to 4.0 pounds per person per day by 2020. The Board may also want to consider a long-term goal to reduce the amount of MSW disposed from Tennessee to 3.25 pounds per person per day by 2035. The long-term goal may be revisited in 2025.

   This waste reduction goal only addresses solid waste disposed at a Class I landfills, since the tonnage data from Class I landfills is more robust than tonnage data from Class III/IV landfills at this time (reduction in solid waste disposed at Class III/IV facilities is addressed in the next tactic). To estimate progress toward a waste reduction goal, it will be necessary to deduct the tons of MSW imported for disposal from other states and add the tons of MSW exported to other states for disposal. The recommended approach to a waste reduction goal is to measure the pounds disposed per person per day. This approach has the advantages of allowing for population growth and eliminating the need for a comparison to a base year (which penalizes those who made significant progress in earlier years).

[26] If MSW is delivered to a waste-to-energy facility for processing prior to disposal, only the resulting residue disposed at a landfill would be counted toward disposal, so any reduction in waste resulting from the process would contribute to a waste reduction goal.

2. ***TDEC will set a goal to reduce the amount of solid waste disposed from Tennessee in Class III/IV landfills and measure progress.***

   Setting a statewide waste reduction goal for disposal in Class III/IV landfills (as well as Class I landfill addressed in the previous tactic) encourages diversion of materials such as construction and demolition debris, yard trimmings and land clearing debris from all types of landfills in the State, not just Class I landfills. Because current data regarding the quantity of solid waste disposed in Class III/IV landfills in Tennessee is not as comprehensive or consistently collected as that for Class I landfills, it is not possible to establish a current baseline for pounds disposed per person per day at this point in time. Without a baseline estimate, it is not possible to establish a quantitative goal for the future. Thus, to implement this tactic, TDEC would develop approach to gather data necessary to establish a baseline for tons disposed per person per day in Class III/IV landfills and then the Board would promulgate a rule, based on a recommendation from TDEC staff, which establishes a quantitative goal for 2025 based on that estimate. TDEC will incorporate measurement opportunities, like scales at Class III/IV landfills, in future planning and grant initiatives in support of this tactic.

3. ***TDEC will promulgate a rule that establishes a statewide recycling goal and measures progress.***

   Although it is more challenging to measure progress toward a recycling goal than a waste reduction goal, the purpose of this goal is to encourage the development of programs and facilities that support recycling specifically. This not only reduces the dependence on landfill disposal but also supports the robust recycling industry in the State and provides feedstock to processors and end users in the State. Currently, an estimated 34 percent of the MSW generated in the State is recycled across all sectors or diverted away from all landfills, including Class III/IV, as reported in Annual Progress Reports (APRs) from local governments. Based on current recycling estimates, recycling goals in other states, and deliberations by the former Waste Reduction Task Force in Tennessee, a recommended starting point for a recycling goal is to *recycle 40 percent of the materials in MSW generated by residents, commercial businesses, institutions, and industries in Tennessee by 2025*. To help ensure progress toward the 2025 goal, the Board may also want to establish an interim goal of 35 percent and to encourage a long-term view, the Board may want to consider a long-term recycling goal of 45 percent, to be revisited in 2025.

   A statewide recycling goal would have to focus on the MSW that falls "under local government control", since generally only recycling of material under local government control is reported to the State. This typically includes material and recycled by residents or at local government facilities. The data necessary to measure progress toward a statewide recycling goal could be aggregated from the data currently reported to TDEC on Annual Progress Reports and from MSW landfill origin reports but TDEC would need to establish a protocol for local governments to identify material recycled and MSW disposed that fall under the definition of "MSW under local government control."

Progress toward a recycling goal would be calculated using the following equation:

$$\frac{\text{Tons of Material from MSW } \textit{Recycled}}{\text{Tons of MSW } \textit{Generated}}$$

where Tons of MSW Generated = Tons of Materials from MSW that is *Recycled* + Tons of MSW *Disposed* (at landfills, waste to energy facilities, etc.)

Tons recycled would exclude source reduction, reuse, and the generation of energy from MSW but would include mulching or composting of yard trimmings and food scraps.

4. ***TDEC will review its methodology in reporting and measuring progress toward achieving goals, and identify opportunities for improvement.***

   It is important that a consistent process that is as accurate as possible be implemented to measure and track progress toward waste reduction and diversion goals. TDEC will consider this to be a cross-sector analysis, considering all MSW streams from all generator types, including residential MSW (and specifically identifying which waste streams fall under local government control and how that data should be obtained and reported), and institutional and commercial waste streams. TDEC will attempt to identify data gaps and ways to address them.

5. ***TDEC will conduct research to measure progress and inform future goals***

   In addition to measuring progress toward these goals through Annual Progress Reports and other reports, TDEC will conduct periodic research to glean more detailed information about current progress and what can be done to increase waste reduction and recycling as well as achieve the other objectives established in this Solid Waste and Materials Management Plan. Such research may include periodic characterization studies to determine the amount and type of recoverable materials still being disposed from Tennessee. This information could target existing programs and education efforts. Such studies could also provide information about potential feedstock to processors and end users of recoverable materials that may be interested in expanding or locating a facility in Tennessee. TDEC may also support periodic studies of incoming recovered materials and residue at Tennessee material recovery facilities. This information may allow TDEC, local governments, and others to target education more effectively to reduce the amount of contamination in recyclables. Information about the type and amount of residue from MRFs may also interest developers that could use MRF residue as a feedstock for facilities using alternative technologies. Finally, TDEC will support targeted surveys of citizens, local governments, recyclers, end users, waste collectors, waste haulers and other stakeholders in the state to determine how to improve waste reduction and recycling.

Summary of Statewide Goals

Table VI-1 summarizes proposed statewide goals for promulgation by the Board.

Table VI-1
Proposed Statewide Goals

GOALS	Current (2012/ 2013)	2020	2025	2035
Goal 1. Statewide Waste Reduction Goal for Class I (pounds per person per day)	5.17	4.0	3.5	3.25
Goal 2. Statewide Waste Reduction Goal for Class III/IV (pounds per person per day)	N/A	Qualitative until TDEC procedures in place to determine current baseline and goal based on baseline		
Goal 3. Statewide Recycling Goal	33.9%	35%	40%	45%

2. Update Local Government Waste Reduction and Recycling Goals and Measurement

Background

- Although only a fraction of the MSW generated in the State is controlled by local governments, this is the MSW on which state and local governments can have the most influence.
- For the purposes of these goals, the MSW "under local government control" is defined as MSW disposed by residents and the local government agencies themselves.
- If local governments successfully meet local waste reduction and recycling goals for MSW under their control, then significant progress will be made toward the statewide MSW waste reduction and recycling goals.

Tactics

1. ***TDEC will promulgate a rule that establishes an updated goal to reduce the amount of solid waste disposed that is under the control of local government and measure progress.***

   Currently, the amount of MSW disposed that falls under "local government control" is not known. However, because residential MSW typically comprises somewhere between 40 to 55 percent of the total MSW disposed in most places, and a 3.5 pound per person per day (or less) goal is proposed for all MSW, a preliminary goal of 2 pounds per person per day or less is proposed as a starting point for MSW controlled by local government. TDEC will revisit the Annual Progress Report format to determine what is required to gather data to better estimate the amount of MSW disposed that is generated by residents and government entities. Once these data are gathered for a couple of years, a waste reduction goal for MSW controlled by local government can be revisited.

   Local governments will encourage waste reduction of MSW generated by businesses and institutions within their jurisdictions through policies, education, infrastructure, and financial incentives/disincentives based on their particular situation. TDEC will provide technical assistance and other resources to assist local governments in these efforts.

2. ***TDEC will promulgate a rule that establishes a recycling goal for material under local government control and measure progress.***

   Local governments shall demonstrate through Annual Progress Reports that they are progressing toward a 40 percent recycling rate of the materials they control by 2025. Only the materials recycled or disposed that originated from residents and local government facilities would be counted in this calculation. The equation to be used to calculate the local government recycling rate is as follows:

   $$\frac{\text{Tons of Material } \textit{Recycled} \text{ that is under local government control}}{\text{Tons of MSW } \textit{Generated} \text{ that is under local government control}}$$

   where "Tons of Material Recycled that is under local government control" is equal to tons of material recycled from residents and local government facilities and "Tons of MSW Generated that is under local government control" is equal to tons of material recycled from residents and local government facilities plus tons of materials disposed from residents and local government facilities (at Class I and III/V landfills,).

   Given the type of materials residents and local government facilities are likely to generate, the recycling rate for materials controlled by local governments is likely to be achieved by reducing the amount of paper and metal, plastic, and glass containers disposed. In addition, local governments will institute policies, programs, and facilities that contribute to achievement of a 40 percent recycling goal for MSW generated in their jurisdiction that falls outside of their control.

3. ***TDEC will set goals to divert yard trimmings and other organics from disposal.***

   Local governments will divert yard trimmings (and, where feasible, other organic materials) through source reduction, mulching, composting, and other uses under their control from disposal in Class I or Class III/IV landfills. Local governments will encourage other generators within their jurisdictions to eliminate disposal of yard trimmings and reduce the disposal of other organics through policies, education, infrastructure, or financial incentives or disincentives.

4. ***TDEC will include qualitative measures of progress toward waste reduction and diversion goals for certain local governments.***

   Rather than being required to meet the quantitative goals for waste reduction and diversion, local governments with a population below 25,000 for counties and 20,000 for cities (as recommended by the Waste Reduction Task Force) will be permitted to demonstrate that they have sufficient programs and/or facilities underway to progress toward the waste reduction and diversion goals. All local governments that are unable to demonstrate adequate progress toward the quantitative goals will be allowed to demonstrate that they have implemented programs and/or facilities that should be sufficient to achieve these goals. TDEC will provide guidance for local governments regarding what constitutes progress toward these goals for the purposes of a) local governments that cannot demonstrate that they have achieve quantitative goals and b) local governments that fall below the size threshold. It is anticipated that this guidance will be similar to the existing Qualitative Assessments currently being conducted by the Division.

5. ***TDEC will provide technical assistance to local governments to help them better understand goals and understand waste that is considered to be under their control, and to accurately report data.***

   In order for data pertaining to waste generation, disposal, and recycling to be accurate, TDEC will develop training materials to clearly convey information to local governments regarding the goals, what "counts" toward MSW under their control, in terms of both "disposed" and "recycled" data. Technical assistance could take the form of printed/online guidance documents, webinars, and workshops. Staff will also be available to answer individuals' questions as needs arise.

3. Establish Goals for State Agencies and Measure Progress

Background

- The Office of Sustainable Practices oversees and helps implement recycling programs at many state agencies and facilities.
- Other state agencies and facilities, such as the Tennessee Department of Transportation, make efforts to recycle materials, however different TDOT regions have different types of programs in place.
- There is no one reporting mechanism or data collection procedure to track the recycling progress being made by state agencies, and in some cases within individual agencies.

Tactics

1. ***TDEC will set a recycling goal for all state agencies.***

   To lead by example and serve as a model for local government facilities and other institutions and businesses in the state, state facilities and state funded educational institutions will recycle at least 40 percent of the materials in the MSW they generated by 2025. Progress toward this goal will be calculated annually using the following equation.

   $$\frac{\text{Tons of Material } \textit{Recycled} \text{ from state agencies}}{\text{Tons of MSW } \textit{Generated} \text{ from state agencies}}$$

   where "Tons of MSW Generated from state facilities" is equal to tons of material recycled from state government facilities plus tons of materials disposed from state government facilities (at landfills, waste to energy facilities, etc.). To help ensure progress toward the 2025 goal, the Board may also want to establish one or more interim goal(s) to ensure continual progress toward the final goal. This recycling goal would apply to all state facilities, regardless of the size or type of the facilities, where the facilities are located, and whether the spaces are leased or owned.

TDEC will develop a methodology for reporting, including who reports to TDEC and in what format as well as how to report when facilities house multiple agencies. Each agency will determine the materials they will recycle from each facility they manage to achieve this goal. The materials may include paper, containers, and mulching or composting of organic materials, as well as other types of materials such as scrap metal, electronic equipment, etc. Most state agencies have very little data about the total tonnage disposed from their facilities. Thus, one of the first steps in accomplishing this goal is to develop and implement a protocol for consistently tracking the tons of material recycled and disposed from each State agency. For agencies that can only identify the volume of MSW disposed, TDEC will provide a weight-to-volume ratio that can be utilized to convert to tons. If needed to assist state agencies in achieving the recycling goal, TDEC may propose policies requiring state agencies to submit recycling plans specifying how an agency will achieve recycling goals, recycle certain materials if generated on site, or conduct certain activities. The Surplus Property Utilization office is to report quarterly to TDEC on materials recycled, reused and repurposed. Central Procurement Office will provide quarterly reporting for related contracts (e.g., trash hauling, grease removal and disposal, lamp recycling, etc.). Also, General Services will direct the Facilities Revolving Fund building management vendor to provide recycling and trash data.

Example

- In South Carolina state agencies and state-funded colleges/universities are required to have waste reduction and recycling programs in place, and to report annually (electronically) to the South Carolina Department of Health and Environmental Control the quantity and types of materials recycled and a list of products they purchase with recycled content. This information is presented in the Annual Solid Waste Report. http://www.scdhec.gov/HomeAndEnvironment/Docs/section6.pdf

2. ***TDEC will provide technical assistance to state agencies to help them clearly understand how to measure progress toward reaching the waste reduction and recycling goals.***

   In order for data pertaining to waste generation, disposal, and recycling in state agencies to be accurate, TDEC will provide guidance and technical assistance to state agencies to help them track and report data. Technical assistance could take the form of printed/online guidance documents, webinars, and workshops. Staff will also be available to answer individuals' questions as needs arise.

VII. Objective 2: Increase Recycling Access and Participation

A. Description of Objective

The purpose of this objective is to expand the breadth of recycling – making sure access to convenient recycling programs is available to all Tennesseans, as well as expanding participation in recycling programs, so that individuals maximize the quantity and quality of material they recycle.

TDEC will work to expand recycling access and participation in Tennessee to residential, commercial/industrial, and government sectors. Recycling should be at least as convenient as disposal. Nearly all Tennesseans have access to drop-off recycling programs, although not of equal degrees of proximity. TDEC estimates that 8 percent of households have access to curbside collection at no extra direct cost. An unknown portion of households request curbside collection of recyclables directly from their private haulers. Curbside collection of recyclables is not always cost-effective, particularly in rural areas. In addition to increasing recycling access for residents, access to and participation in recycling programs must also be improved for Tennessee businesses and institutions, such as schools. It is also important to improve recycling access and participation in state government facilities, allowing state government to serve as a leader in waste minimization and sustainable materials management. In addition, there are some specific materials (other than organics, which are addressed elsewhere in this Plan) that have been identified as requiring enhanced opportunities for collection and recycling, such as construction and demolition C&D materials and electronics. Below are strategies TDEC will undertake to work toward achieving this objective.

Along with the strategies described in this objective, access to and participation in recycling and waste reduction programs will be enhanced through additional education and outreach and by enhancing materials processing end markets, which are described elsewhere in the Plan.

B. Strategies to Achieve the Objective

1. Develop a Recycling Grants Plan

Background

- TDEC provides grant funding to local governments to help them implement and improve various recycling programs.
- Grants have been used in Tennessee to help local governments purchase equipment, establish HHW management programs, develop Hub and Spoke Programs, purchase equipment, and more.
- There is a need to review grant funding programs and align them to ensure that grants are being used as effectively as possible to help local governments move toward reaching waste reduction and diversion goals.

Tactic

1. ***TDEC will develop a Recycling Grants Plan to ensure that funding is prioritized to provide maximum assistance to local governments, and that this funding assistance is targeted in a way that achieves the objectives of the Plan without competing with privately owned facilities.***

   TDEC will establish a Recycling Grants Plan that maximizes the amount of money that is distributed to local governments, and prioritizes funding for grants to uses that will be most effective in assisting local governments make progress toward meeting their waste reduction and diversion goals. The funding levels/ceilings, structure, types, eligibility criteria and other requirements of grants will be considered. Grants will support equipment and programs for collecting and processing traditional recyclables, HHW/BOPAE, organics composting and C&D materials management.

2. Support Drop-Off Sites for Residential Collection Where Curbside Collection is Not Feasible

Background

- Many Tennessee communities that have developed public landfills have begun to realize that landfill space can fill, and it is important to minimize the quantity of waste disposed to prolong the life of landfills.
- There are many communities in Tennessee in which, due to their rural nature, curbside collection of recyclables is not economically feasible or is not offered by private haulers.
- Current statute mandates that every county have at least one drop-off site for the collection of recyclables. All counties are in compliance with this statute, however, there is still opportunity to increase the convenience, use and efficiency of these sites.
- In general, communities that only have drop-off recycling vs. curbside collection service tend to have lower rates of participation.

Tactics

1. ***TDEC will provide technical assistance to communities whose drop-off sites appear to be under-performing, based on population and tons recovered.***

   TDEC will also provide technical assistance, upon request, to other communities to enhance the performance of their drop-off recycling programs. Potential enhancements may include site improvements, assistance with access to markets, implementation of a fee structure for waste disposal that encourages recycling, and cost-benefit analyses.

2. ***TDEC will include information about all recyclable drop-off sites on the TDEC Solid Waste Division's website, or provide convenient access to such information.***

   This will help ensure that residents are aware of the location, hours, and materials accepted at all drop-off recycling locations. Because these sites can change fairly frequently, TDEC will ensure that local governments are aware of how to update the information.

3. ***TDEC will continue to provide grants to enhance or add drop-off recycling sites.***

TDEC currently offers Equipment, Waste Reduction, and Hub and Spoke, and Recycling Infrastructure grants. In the future TDEC will continue to support drop-off recycling sites through the grant programs offered as described in the Recycling Grants Plan established under Strategy 1.

4. ***Depending upon progress toward achieving goals, TDEC will consider revising the requirements for convenience centers.***

   This may include requiring more convenience centers, or requiring that local governments accept more types of postconsumer packaging materials at convenience sites. The requirements would likely allow for consideration if specific hardships are faced by counties, such as lack of access to markets for materials.

Examples

- The Appalachia Ohio Zero Waste Initiative has developed a document presenting case studies of successful rural recycling programs, with the intent of assisting other Ohio rural communities. http://ruralaction.org/wp-content/uploads/2013/03/CASE-STUDIES-FINAL-REPORT.pdf.
- The Mississippi Department of Environmental Quality has developed a tip sheet of ways to improve participation in drop-off recycling programs, to help rural communities in Mississippi. https://deq.state.ms.us/MDEQ.nsf/pdf/Recycling_DropoffRecyclingTips/$File/DropoffProgramTips.pdf?OpenElement

3. Support Enhancement of Curbside and Local Government Recycling Programs

Background

- TDEC has a Recycling Equipment Grant and a Recycling Rebate Program in place that help fund the purchase of key pieces of recycling equipment needed by local governments to support recycling.
- There are still many public buildings including schools and municipal/county buildings in Tennessee that do not participate in recycling programs.
- Many organizations in Tennessee, including TDEC, the Tennessee Recycling Coalition, Tennessee Solid Waste Directors Association, the Tennessee Volunteer Chapter of the Solid Waste Association of North America, and the Southeast Recycling Development Council, provide opportunities for local governments to enhance their experience and knowledge regarding waste minimization and recycling programs.

- Workshops, webinars, and other training and tools can provide local governments with tools and strategies to address barriers. Examples might include implementing single-stream recycling, implementing volume-based waste collection or pay-as-you-throw, event recycling, recycling on-the-go, conducting waste characterization studies, and auditing and enforcement.
- Some communities will not meet stated goals, or will not be able to measure goals, due to their lack of direct involvement in (and therefore control over) the MSW stream. This strategy will provide those communities with the means to help the state move closer to reaching its numeric goals, and local governments progress in reaching their quantitative and qualitative goals.

Tactics

1. ***TDEC will continue to provide local governments, with grant funding to help them improve their curbside recycling programs***.

   In the past, TDEC has provided various recycling grants to help local governments, non-profits, and state agencies with their recycling programs. TDEC will continue to support curbside recycling to help local governments, state agencies, and non-profits by providing grants in accordance with the Recycling Grants Plan described in Strategy 1.

2. ***TDEC will provide technical assistance to help support local governments in developing and improving their curbside recycling programs***.

   Examples include:

   - TDEC will provide technical assistance in the form of developing a tool kit to help communities that are interested in implementing volume-based (pay-as-you-throw) programs. These programs have been implemented with great success in many regions, resulting in significant increases in recycling and waste reduction. TDEC will also consider holding a webinar or workshop on pay-as-you-throw, and will provide technical assistance to communities wishing to implement such programs.
   - TDEC will develop tools to help interested communities develop a permitting program for waste haulers that operate in their jurisdiction. Permitting haulers allows local governments to have a certain level of control over the level of service provided in the jurisdiction, as well as to limit risk and liability. For example, permits have traditionally been used to ensure that haulers have acceptable levels of insurance and adhere to certain operational guidelines that ensure safety and sanitation. In more recent years permits have also been used to ensure that a certain level of service is provided to customers. Some communities also use permit requirements to ensure that universal service is provided (i.e., if a hauler collects waste, the hauler must also collect recyclables, and/or collect recyclables at no additional direct cost to the customer); and/or that haulers implement variable rate pricing (and some communities stipulate that a certain percentage of price increase must coincide with a doubling of cart size). Submission of data to the local government may also be a requirement of some permits. (Note: this tactic could potentially help increase industrial and commercial diversion as well as residential).

- TDEC will develop a tool kit to help communities enhance recycling services provided to multi-family dwellings. There are many barriers that inhibit the provision and use of multi-family dwelling recycling, however tools and strategies can help local governments and building owners/managers to enhance programs and increase their effectiveness. Model ordinances and best management practices will be included in the tool kit.
- TDEC will develop technical assistance to help local governments conduct cost-benefit analyses when considering developing or enhancing a recycling program.
- TDEC will identify other technical assistance needs and develop training materials/events to enhance recycling and waste minimization programs for residents and municipalities' facilities. Information will be included on TDEC's web site and may also be disseminated via email, at meetings, through webinars and workshops, as well as at conferences. TDEC will also provide specific technical assistance requested to help local governments address their unique issues in implementing waste reduction and recycling programs.

Examples

- Mecklenburg County, North Carolina has developed a document entitled "Best Practices for Local Government Solid Waste Recycling, Diversion from Landfill and Waste Reduction."
  http://charmeck.org/mecklenburg/county/solidwaste/managementplan/documents/bestpracticesrecyclingstudy.pdf
- The South Carolina Department of Health and Environmental Control provides certification training for county recycling coordinators. This training is typically provided every other year, and covers all aspects of being a recycling coordinator, including markets, contracting, and organics management.
- Massachusetts has developed several tools to help local governments implement pay-as-you-throw programs. Examples include tip sheets, an implementation guide, sample bag contracts, and case studies for both curbside and drop-off programs. The Massachusetts Department of Environmental Protection indicates that 24 percent of the state's population reside in pay-as-you-throw communities, and the state had a goal to increase that percentage to 50 percent, as pay-as-you-throw communities are shown to, on average, dispose of 31 percent less MSW per capita.
  http://www.mass.gov/eea/agencies/massdep/recycle/reduce/pay-as-you-throw-payt.html
- In South Carolina, the Department of Commerce interviews incoming businesses about their business needs such as employment and other resources, as well as their materials management needs. The Department helps businesses find non-disposal outlets for the waste materials they generate. In addition, the Department is pro-active about visiting businesses and identifying opportunities for waste reduction, and shares information pertaining to the economic benefits of recycling and reducing the amount of waste disposed. The Department also issues a recycling newsletter on a weekly or bi-weekly basis.
  http://www.recyclinginsc.com/
- Florida Department of Environmental Protection has a Recycling Recognition Program that recognizes businesses and institutions that achieve a specific recycling rate. Businesses are visited by a leader in FL DEP and presented with a plaque, and a press release is issued describing the success the business has achieved.
  http://www.dep.state.fl.us/waste/categories/recycling/pages/recognition.htm

Future Considerations

Tennessee might consider requiring each county to have a recycling coordinator and developing a similar certification program to ensure that recycling coordinators stay current on topics in the industry. This might involve seeking a statutory requirement to require each county to have a certified recycling coordinator, much like the Landfill Operators Certification Training. The state may partner with or reciprocate certification with organizations that have certification and/or education programs in place, such as the Solid Waste Association of North America, Tennessee Recycling Coalition, County Technical Assistance Service, and the Tennessee Solid Waste Directors' Association .

4. Work with Partners to Increase Sustainable Materials Management by Businesses and Industry

Background

- Tennessee has a relatively strong manufacturing economy. The Southeastern Recycling Development Council's 2013 "Characterization of Tennessee's Recycling Economy" study identified at least 25 in-state end users for recovered materials such as paper, steel, and aluminum. Some manufacturers, however, have to source materials from well beyond Tennessee, for a variety of reasons.
- Currently The Department of Economic and Community Development does not work cooperatively with TDEC to encourage businesses that locate in Tennessee to manage materials in accordance with the integrated waste management hierarchy, or to source materials from Tennessee generators/processors when possible.
- The Department of Economic and Community Development has identified six key industry clusters that are targeted for development under the Governor's Jobs4TN plan. TDEC will work with the Department of Economic and Community Development to develop waste minimization strategies for these industries (automotive; chemical products and plastics; transportation, logistics and distribution services; business services; healthcare; and advanced manufacturing and energy technologies), and make them aware of the recovery and processing infrastructure available in Tennessee. The relationship will also help encourage the development of processing and end use infrastructure that are currently lacking in Tennessee, which is described elsewhere in this Plan.
- Many businesses have corporate sustainability programs and goals in place which include waste minimization goals. Some businesses have indicated that there are gaps in markets or collection that inhibit the recycling of materials generated at their facilities.
- Some businesses in Tennessee lack incentive to participate in recycling and waste minimization programs. Small businesses in particular have expressed constraints, particularly cost and space constraints, as well as lack of knowledge about available markets for some material types.

Tactics

1. ***TDEC will develop a liaison program with Economic and Community Development (ECD).***

   TDEC and ECD staff will meet and discuss options for ensuring that key industries in Tennessee have knowledge about existing recycling infrastructure, and to express Tennessee's commitment to ensuring materials are managed in accordance with the integrated materials management hierarchy. This is critical both before and after establishing a business in Tennessee. Options for incentivizing waste minimization and recycling will also be explored.

2. ***TDEC will strengthen its relationships with The Tennessee Chamber of Commerce and Industry (TCCI) and its regional affiliates.***

   Strengthening this relationship will allow TDEC to identify/develop venues to provide information to members about the benefits of recycling, and to provide information and resources to members to incentivize them to reduce waste and seek reuse and recycling opportunities. This may include identifying outlets for recyclable materials, providing

information about waste reduction methods, and providing access to materials/waste exchanges.

3. ***TDEC will implement or improve an existing recognition program to incentivize the adoption of sustainable materials management practices among businesses.***

   TDEC will analyze the Green Star Partnership Program to assess its level of effectiveness and research other recognition programs in an effort to ensure that a waste minimization recognition program resonates with Tennessee businesses. Potential partners will be identified, and businesses' successes will be shared to help other businesses. If the Green Star Partnership program does not succeed in incentivizing additional recycling and waste reduction efforts, TDEC will consider other options.

4. ***TDEC will work with local governments to support the sustainable materials management efforts of small businesses.***

   By identifying barriers to business recycling and providing technical assistance to interested parties to address such barriers. Examples include providing sample ordinances that local governments can implement to ban the disposal of certain materials, or ordinances for including space for recycling containers in building codes.

Examples

- WasteWise is a program by the U.S. EPA that assists businesses and organizations in applying sustainable materials management to reduce MSW and some industrial waste. Organizations can be endorsers or partners of the program. WasteWise provides public recognition, technical assistance, and outreach and educational materials. http://www.epa.gov/epawaste/conserve/smm/wastewise/index.htm
- The Zero Waste International Alliance also has a Zero Waste Business Recognition Program in place. It is geared for businesses with a goal of zero waste, that have reduced the amount of waste they dispose by 90 percent or more. http://zwia.org/standards/zw-business-principles/b/
- The South Carolina Department of Health and Environmental Control is a partner of the WasteWise program. Benefits of businesses joining include technical assistance and a mentoring program. South Carolina also has a SmartBusiness program, which provides businesses with free, confidential, non-regulatory assistance in implementing and improving recycling programs. http://www.scdhec.gov/HomeAndEnvironment/BusinessesandCommunities-GoGreen/SmartBusiness/

5. Increase Recycling Access and Participation in State Government Facilities

Background

- State agencies are in a unique position to provide leadership in sustainable materials management. As such, waste minimization and recycling programs should be offered in as many state buildings and facilities as is feasible to illustrate Tennessee's commitment to environmental sustainability.
- In some cases, state agencies in Tennessee recycle materials and have some recycling data, but statewide data is not compiled.
- The tactics below, combined with enhanced centralized reporting of state agency recycling and the establishment of state agency recycling goals (which are described more fully in other Objectives of this Plan), will further enhance state agency recycling.

Tactic

1. ***TDEC will identify opportunities for expanding recycling and waste minimization at state agencies and facilities.***

   TDEC will also provide guidance and technical assistance to state agencies to help them set up or enhance programs to increase diversion and minimize costs, as needed. Priority will be placed on larger-scale generators of high-value and/or difficult-to-manage materials. TDEC will also continue to work with the Department of General Services to identify, obtain, and advertise state contracts for recycling services.

6. Increase Diversion of Construction and Demolition Materials

Background

- Historically there has not been a focus on diverting C&D debris in Tennessee because "diversion" has meant diversion from Class I landfills, not from Class III/IV landfills.
- Many C&D debris materials are recyclable, but developers may lack incentive to recycle materials, or may simply be in the habit of placing all materials in one dumpster for disposal. Local governments can adopt policies and/or ordinances to incentivize recycling of C&D materials.
- C&D recycling infrastructure is largely undeveloped in Tennessee.
- Some states also require the use of "green" building products in state buildings, and/or require new state buildings to achieve a certain level of Leadership in Energy and Environmental Design (LEED) or other green building certification. At least 34 states and the federal government have green building standards in place.
- Along with the tactics below, strategies to enhance processing and end markets of C&D debris in Tennessee described elsewhere in the Plan (such as through the development of market directories and a processor database, among other tactics), will also help increase the diversion of C&D materials.
- Historically Middle Tennessee has had some C&D Recycling activity, including processing of asphalt shingles for use in road construction. There is a need, however, to expand the array of materials recovered, and the geographic area in which C&D recycling is available.

Tactics

1. ***TDEC will develop/provide local governments with tools to help them promote and encourage the recovery of C&D materials.***

   Examples of technical assistance include model C&D ordinances/policies that encourage recycling of C&D materials that they can modify/adopt.

2. ***TDEC will provide grants to local governments to support the development of C&D recycling.***

   TDEC will maximize funding returned to local governments through grants, and distribute grants based upon the Grants Recycling Plan**.**

3. ***As infrastructure for C&D processing develops, TDEC will consider drafting legislation to require state construction and demolition projects of a certain size to adopt certain policies or programs to encourage developers to recycle C&D materials.***

   Examples of the types of policies and programs that would be considered include requiring local governments to:

   - Develop a recycling plan;
   - Recycle a certain portion of waste generated;
   - Recycle certain materials generated during the project; and/or
   - Achieve a specified minimum level of LEED or other green building certification for construction, renovation, and/or management of state facilities, which encourages recycling, as well as the use of local and recycled content building products, among other sustainable practices.

Examples

- Orange County, North Carolina requires the recycling of certain C&D materials: corrugated cardboard, clean wood (wood that has not been painted or treated), and scrap metal. The ordinance states that construction and demolition projects must have a waste management plan in place, waste haulers must be licensed, and that these requirements will be enforced by requiring the applicant of a building permit to also apply for and obtain a recyclable material permit. Applicants must describe project tasks, material types to be generated during different tasks, how the materials will be managed, and how the materials will be transported.
  http://www.co.orange.nc.us/recycling/candd.asp
- Minnesota has a B3 program (Buildings, Benchmarks & Beyond) which requires B3 guidelines to be followed on all state-funded construction projects, incorporating sustainability goals for site, water, energy, indoor environment, materials and waste. Among other things, this requires the recycling of certain types of material, including concrete and masonry, land clearing debris, metals, untreated wood, paper and cardboard, and gypsum wallboard scrap.
  http://www.b3mn.org/
- King County, Washington has a website where generators of C&D materials can search for outlets for material by material type. Users must indicate whether the material is from a residential or commercial project.
  http://your.kingcounty.gov/solidwaste/wdidw/category.asp?CatID=17

7. Increase Diversion of Electronics

Background

- Electronics can contain lead, mercury, cadmium and other potentially harmful chemicals. Many states have banned the disposal of certain specified types of electronic scrap, which has spurred the development of a recycling infrastructure, as well as kept potentially harmful materials out of landfills.
- Eighteen states ban the disposal of specific types of e-scrap from landfills. Most of these bans include televisions, laptops, computer monitors/CRTs, and some include peripherals, printers, and DVD players.[27]
- Many states have landfill bans on electronics that are embedded in the state's e-scrap recycling legislation. Massachusetts and New Hampshire have separate landfill bans.

[27] https://maps.google.com/maps/ms?msa=0&msid=209058973814149527142.0004e1517adbd62c5916f&hl=en&ie=UTF8&ll=39.592236,-95.097656&spn=11.735791,51.855469&t=m&source=embed

- Many states register electronics recyclers in an effort to ensure that the potentially hazardous materials in electronic scrap are managed properly to protect human health and the environment. Also, many states want to ensure that electronics are managed properly after they leave the recycling facility, therefore only registered entities that have received third-party certification are eligible for state permits.
- States that require electronics recyclers to register often also register collection and consolidation points, again to be sure that material is stored properly to safeguard human health and the environment. The process also helps to ensure that only reputable recycling companies operate in the state, not "fly by night" facilities that do not actually recycle the materials they collect.
- Many states have additional requirements (besides having electronics recyclers register) such as requiring manufacturers/brand owners of electronics sold in the state to recycle or provide for the recycling of their products at the end of their useful life; requiring retailers to present information about electronics recycling (often provided by the manufacturers) to the customer; and requiring manufacturers to clearly label their products with their name.

Tactics

1. ***TDEC will continue to conduct compliance visits to processors.***

   One of the challenges faced by generators of electronic scrap is the ability to have assurance that electronics are properly managed at the end of their useful life. TDEC will continue to conduct compliance visits to Tennessee electronics processors to gain direct insights regarding the management of e-scrap, and to assess whether electronics recyclers should be required to obtain permits by rule.

2. ***TDEC will educate recyclers and the public about third-party certification services and best management practices for recyclers.***

   TDEC will help convey information to the public so they can make informed decisions when selecting e-scrap processors.

3. ***TDEC will provide e-scrap technical assistance to the Tennessee Department of General Services and lead by example in e-scrap recycling.***

   TDEC will work with DGS to promote the responsible management of e-scrap at the end of its useful life, including providing input on state contracts. TDEC will also provide technical assistance to state departments, as needed, to assist them in managing e-scrap at the end of its useful life. TDEC will also lead by example in ensuring that the e-scrap generated by the Department is managed in an environmentally safe manner.

For Future Consideration

In future plans, TDEC might consider implementing extended producer responsibility extended producer responsibility for electronics recycling. Currently 20 states have extended producer recycling laws in place for electronics. These laws generally call for manufacturers/brand owners of electronics to take responsibility for ensuring that their products are managed at the end of their useful life. For example:

- Most programs call for manufacturers/brand owners to pay a registration fee and pay for or recycle a certain number of covered electronic devices based on the quantity of electronic devices sold in the state.
- Many state extended producer responsibility (referred to as "EPR") laws are coupled with a disposal ban.
- Typically electronics collectors and processors must register with and report data to the state.
- Most states offer flexibility in the types of programs that are acceptable under the law, such as permanent collection sites, collection events, and/or manufacturer takeback programs.
- Brand owners often contract directly with collectors/recyclers.
- Manufacturers/brand owners may have to pay a fee if they do not recycle their obligated quantity/weight of electronics.

As recommended by the Waste Reduction Task Force, TDEC will explore landfill bans or redirection of e-scrap after a collection and recycling infrastructure and extended producer responsibility is in place.

Examples

- Alabama requires all recycling processors (not just processors of electronic scrap) to register with the state and provide bi-annual reports to the Alabama Department of Environmental Management.
  http://www.alabamaadministrativecode.state.al.us/docs/adem/335-13-3.pdf
  http://www.adem.state.al.us/programs/land/landforms/DRAFTForm015.pdf
- As part of New York State's Electronic Equipment Recycling and Reuse Act, all electronics recycling facilities, electronic scrap collection sites, and electronic scrap consolidation sites must register with the New York Department of Environmental Conservation .
  http://www.dec.ny.gov/docs/materials_minerals_pdf/ewastelaw2.pdf
- North Carolina SB 887 (2009), "Discarded Computer Equipment and Television Management," established an electronics recycling program for the State of North Carolina with shared responsibility between different market participants, and banned televisions, computers, monitors, printers, scanners, and computer peripherals such as keyboards and mice from disposal in landfills.
  http://www.ncleg.net/Sessions/2009/Bills/Senate/PDF/S887v6.pdf

8. Increase Diversion of Household Hazardous Waste and Batteries, Oil, Paint, Antifreeze and Electronics

Background

- TDEC's Household Hazardous Waste (HHW) program provides collection service to counties in the form of collection events and "milk runs" to pick up oil-based paint, provided by the state's HHW contractor. The state also has a separate contract to pick up mercury-containing lamps in "milk runs." . The four permanent household facilities, however, provide service to 36 percent of the state's population.
- The state HHW program requires local governments to provide regular collection of batteries, oil, paint, antifreeze, and electronics (BOPAE) to be considered for HHW service. TDEC has determined that there are ample markets for these items such that this requirement is not overly burdensome.
- The state continues to fund the disposal costs for solvent-based paint collected by the local governments as well as household mercury-containing lamps. In general, batteries and used oil are either cost-neutral or generate revenue. Antifreeze collection is generally cost-neutral or low-cost. Electronics recycling costs vary by county.
- Chattanooga, Knoxville, Nashville, and Shelby Counties manage HHW collection through permanent facilities, with the assistance of operation and maintenance grants from TDEC.

- Some local governments indicate that their residents would like more frequent collection of HHW, to enhance convenience.
- Improving education and outreach pertaining to HHW and BOPAE (as described elsewhere in the Plan) will also enhance participation in the HHW/BOPAE programs.

Tactics

1. ***TDEC will enhance the use of permanent HHW facilities by providing additional training and technical assistance.***

   Technical assistance and training will be geared toward educating facility technicians, and will focus on improving operations, safety and cost effectiveness.

2. ***TDEC will encourage the use of HHW facilities by a broader population.***

   TDEC will work to increase participation in permanent HHW programs by working with counties to develop a program that allows out-of-county residents to use the permanent facilities.

3. ***TDEC will consider accepting materials from Conditionally Exempt Small Quantity Generators***.

   TDEC will work with counties and other stakeholders to consider allowing Conditionally Exempt Small Quantity Generators (CESQGs) to use permanent HHW facilities and participate in HHW collection events, if they pre-register. Examples of such generators might include small businesses and institutions, such as colleges and universities. These generators would likely be charged a fee to participate, which would help make the facilities and events more cost-effective.

4. ***TDEC will seek opportunities to establish public/private partnerships for household hazardous waste/conditionally exempt hazardous waste management facilities.***

   TDEC will seek opportunities such that local governments may be able to contract with a private entity for services, while commercial entities pay to use the services. This model can enhance the cost-effectiveness of managing these materials.

For Future Consideration

TDEC might consider implementing extended producer responsibility for a number of materials, including difficult-to-manage items such as mattresses and paint.

Examples

- The Winston-Salem/Forsyth County (North Carolina) City/County Utility Commission contracts with a private entity, 3RC, to allow residents to deliver HHW and electronics to "the EnviroStation" at no cost. Businesses can also deliver materials to the facility, but are charged a fee.
  http://www.cityofws.org/departments/sanitation/collections/recycle-today/3rc-hazardous-waste
- The Minnesota Pollution Control Agency offers technical assistance to operators of HHW sites, including program design, administration of contracts, safety and education training, and an HHW marketing tool kit.
  http://www.pca.state.mn.us/index.php/waste/waste-and-cleanup/waste-management/household-hazardous-waste/program-manager-information/information-for-hhw-program-managers.html
- In Pennsylvania some communities, like Montgomery County, have a regional partnership, which allows residents of any of the counties to attend any HHW collection event in any county within the region.
  http://www.montcopa.org/?nid=706

VIII. Objective 3: Promote Material Processing and End Use in Tennessee

A. Description of Objective

The purpose of this objective is to facilitate closing the materials processing gaps and increasing the opportunities for end uses of recovered materials in Tennessee, in an effort to incentivize increased diversion and simultaneously strengthen the state's economy.

There are several regions in the state that indicate that there are gaps in processing infrastructure, either for a specific material type or for curbside recyclables in general, as well as a lack of end markets. TDEC will work to identify and address gaps in processing infrastructure and end markets for materials in Tennessee. In many cases the gap will likely be filled by a private entity, however there are strategies TDEC can take to help facilitate the process.

B. Strategies to Achieve the Objective

1. Develop Regional Recycling Hubs where Collection and Delivery to Processors or End Users Remains Cost Prohibitive

Background

- Hub and Spoke recycling collection/processing is designed to efficiently pull recyclables from more remote locations and direct them to processing hubs. The system works best when collection programs are fully utilized. Such programs minimize duplication of processing capacity, leverage resources of all participants, and provide for economies of scale. They also engage communities in recycling more fully.
- TDEC has a Hub and Spoke Grant Program in place. In 2011 Chester County was awarded a grant from TDEC to become a recycling "hub,", receiving recyclables from surrounding cities and counties in Tennessee. The project, The West Tennessee Regional Recycling Hub, fills a recyclables processing gap that existed in the region.
- The Southeastern Recycling Development Council and Curbside Value Partnership have launched the Recycling Partnership as part of the "SERDC 120," which aims to "engage industry in voluntary public/private partnerships to make strategic, one-time, leveraged investments that sustain higher levels of material recovery through the adoption of proven best practices in municipal recycling programs."
- TDEC will continue to offer the Hub and Spoke Grant Program to address gaps in processing infrastructure. TDEC will focus on communities that are committed to maximizing participation in their recyclables collection programs, and where the location of a Hub and Spoke Grant Program can make the greatest impact in total material recovery.

Tactic

1. ***TDEC will continue to offer the Hub and Spoke Grant program to further establish recycling collection and processing opportunities in underserved areas of Tennessee.***

   TDEC will develop a plan and establish criteria for the identification of underserved areas relative to recycling collection and processing for future grant eligibility in the recycling Hub and Spoke Grant Program. The plan to identify underserved area will target funds to maximize effectiveness of recycling collection or processing across Tennessee. In developing the Recycling Grants Plan, efficiency and cost-effectiveness will be highlighted. Examples include utilizing, to the extent possible, privately owned and operated MRFs, and considering having relatively long "spokes" for delivering recyclables from rural areas to processing facilities.

Examples

- Colorado has implemented a Hub and Spoke Grant Program to increase recycling, particularly in rural parts of the state. https://www.colorado.gov/pacific/cdphe/hub-and-spoke-recycling-model
- New Mexico also implemented a Hub and Spoke Program through the New Mexico Recycling Coalition. The Department of Energy provides grants for recycling equipment. http://www.recyclenewmexico.com/hub_and_spoke_resources.htm
- Georgia Department of Community Affairs implemented a Hub and Spoke Program, with the goals of expanding single-stream processing, increasing recycling participation, promoting regional efforts, and locating a processing facility within 50 miles of every community in Georgia. http://sccommerce.com/sites/default/files/all/sccommerce/Documents/Business%20Services/Recycling/Georgia's%20Statewide%20Recycling%20Strategy.pdf

2. Seek and Facilitate Opportunities for Public-Private Partnerships for the Collection and Processing of Recyclable Materials

Background

- Because single-stream recycling facilities are generally more capital-intensive facilities than dual-stream facilities, they are often owned by private entities. Many communities find that single-stream recycling programs, which are compatible with cart collection, often yield increased participation. Tennessee could potentially benefit from the promoting and siting of additional single-stream recycling facilities in underserved areas.
- Increasingly brand owners are interested in ensuring that their products and packaging are recycled. This may pose opportunities to partner with brand owners in collecting materials at events or other locations where large quantities of their product are consumed.

Tactics

1. ***TDEC will form relationships with targeted organizations within Tennessee to help encourage and support the expansion of processing and end uses of materials.***

   TDEC will develop and strengthen relationships with the Tennessee Department of Economic and Community Development (ECD), Tennessee Chamber of Commerce and Industry (TCCI) and its regional affiliates, and other Tennessee entities, as appropriate, to identify and support businesses and public entities with an interest in developing or expanding recycling.

2. ***TDEC will identify and work with national organizations to help facilitate processing and end use in Tennessee.***

   Organizations such as the Carton Council, the American Chemistry Council , the American Forest & Paper Association), the Sustainable Packaging Coalition, the American Institute for Packaging and the Environment, and similar groups, all have an interest in increasing recycling. TDEC will work to identify opportunities to work with these organizations to increase recycling of materials in Tennessee.

Examples

- Georgia Department of Community Affair's Hub and Spoke Program (mentioned in the prior text box) involved the development of public-private partnerships. Many of the state's recycling facilities (or hubs) are owned by a local government and operated by (and sometimes designed and equipped by) a private processor/end user.
- The Southeast Recycling Development Council is an example of a public/private partnership. The Southeast Recycling Development Council is working with private companies, such as brand owners and product/packaging manufacturers, to identify ways in which recycling can be improved.
- The Wisconsin Department of Natural Resources, the American Chemistry Council's Flexible Film Recycling Group, and GreenBlue's Sustainable Packaging Coalition have signed a Memorandum of Understanding to develop and implement a three-part program to increase the recycling of post-consumer plastic bags, wraps and other film packaging throughout Wisconsin. The Program will focus on film plastic generated by small- to medium-sized businesses.
  http://www.americanchemistry.com/Media/PressReleasesTranscripts/ACC-news-releases/New-Public-Private-Partnership-to-Boost-Plastic-Film-Recycling-in-Wisconsin.html

3. Support the Development or Enhancement of Online Tools to Facilitate Materials Processing/Marketing

Background

- Many state governments have or provide for multiple types of materials directories (for different types of end users and materials) and/or provide links to third-party directories that allow for users to find end markets for materials they generate, or find recovered materials they or their business requires. Examples include:
    - Materials reuse exchanges for materials that can be reused;
    - Materials exchanges for industrial byproducts; and
    - Materials exchanges or marketing cooperatives for processed recycled commodities (such as baled paper and containers).
- TDEC had supported the Recycling Marketing Cooperative for Tennessee (RMCT) for several years but ceased contracting with them to implement Hub and Spoke efforts. In FY 2011-2012, the cooperative marketed just under 4,000 tons of material.
- The Tennessee Materials Exchange, through the University of Tennessee Center for Industrial Services, has been providing an online exchange for industrial byproducts for several years. The database received 3,683 visits from industrial/commercial entities in FY 2011/2012.
- Some Tennessee businesses and local governments indicate that they do not collect certain materials for recycling because they do not have a market for them. Examples include glass and certain types of plastic.
- Even if businesses and local governments have end markets for materials they collect, having knowledge about markets provides additional, perhaps more cost-effective, options.
- Tennessee has a relatively strong manufacturing base with certain specified industries that have been targeted for growth.
- Keeping recovered materials in Tennessee for processing and manufacturing will enhance Tennessee's recycling and manufacturing economy.
- TDEC has an online database of materials processors, however there are opportunities to make it more useful and more complete.
- Local governments and other generators/consolidators of recyclable materials indicate that they are often unable to find in-state markets for their materials.
- Some businesses have been reticent to provide information to TDEC.

Tactics

1. ***TDEC will facilitate the development/enhancement of online materials exchanges and/or opportunities for cooperative marketing of recycled materials.***

   These material exchanges will help both generators of materials, and those in need of materials. TDEC will also promote the exchanges at conferences, webinars, and workshops, as well as via the TDEC website.

2. ***TDEC will develop or oversee the development of a user-friendly online tool/website to help generators identify materials processors in Tennessee.***

   Such a tool will be of benefit to both public and private MRFs/baling facilities and material generators.

3. ***TDEC will research and, as appropriate, provide information about third-party organizations that provide recycling on the TDEC website.***

   Such third-party organizations might include recyclers of difficult-to-manage materials such as mattresses, carpeting, ceiling tiles, and other materials.

Examples

- North Carolina's Department of Environment and Natural Resources has a "North Carolina Waste Trader" website which allows generators and end users/processors to post materials generated or desired. There is also a link to "Freecycle" which allows generators to post items that others might like to reuse.
  http://www.ncwastetrader.org/ and https://www.freecycle.org/
- South Carolina's Department of Health and Environmental Control has an online materials exchange where generators and end users/processors can connect.
  http://www.scdhec.gov/apps/environment/scme/
- Habitat for humanity has Re-Store sites where C&D materials can be donated. Items are then made available to the public at reduced costs.
  http://www.habitat.org/restores
- Many state solid waste and materials management agencies provide links to organizations to facilitate reuse. Additional organizations provide information about recycling opportunities for hard-to-manage materials, such as the Carpet America Recovery Effort (CARE) and specific ceiling tile manufacturers.

4. Support the Expansion of Scrap Tire Processing and End Markets for Tire-Derived Materials

Background

- Many local governments in Tennessee indicate that they do not have cost-effective access to the processing of scrap tires.
- The current per-tire fee was established to assist counties in covering the costs of scrap tire management, but not necessarily completely cover costs. Some tires for which tire fees are not assessed (used tires, tires on new cars, imported tires, and accessory tires) are managed through the collection systems, adding a cost burden. Another factor impacting costs is the distance some tires have to travel for processing.

Tactics

1. ***TDEC will work with TDOT to encourage the use of tire-derived aggregate for use in TDOT applications.***

   State Departments of Transportation use tire-derived materials as lightweight backfill material, as a road base, as well as the use of crumb rubber in road construction. Currently there is no state-required minimum amount of rubber asphalt usage in Tennessee, and TDOT does not use crumb rubber in the manufacture of asphalt products. TDOT does, however, use asphalt shingles in manufacturing hot-mix asphalt.

2. ***TDEC will continue to work with landfills to promote the use tire-derived aggregate in landfill applications.***

   Although use in landfill applications can be sporadic, usage can be significant at times. Landfills can use tire shreds in the construction of leachate collection systems and as a road base, for example. Some landfills also use tire shreds as alternative daily cover.

3. ***TDEC will consider initiating a grant program for the use of material from Tennessee-generated scrap tires.***

   Such grants would be available to public governments and institutions purchasing tire-derived products and material made from Tennessee-generated scrap tires, if funds are available. This grant program will be explored during the development of the Grant Program Plan described in Objective 2, Strategy 1

For Future Consideration

TDEC will investigate the potential to form a partnership with a Tennessee university (likely an engineering department) to develop a program that would conduct research and testing, and enhance the end use of tire-derived aggregate and crumb rubber in Tennessee.

Examples

- CalRecycle implemented a "Green Roads" program that encourages CalTrans and local governments to use tire-derived paving products to pave roads. CalRecycle has assisted in product testing, research and development, and grants for local governments to help them develop and install rubberized asphalt roadways. CalRecycle has provided education and outreach about such products through conferences, workshops, and direct technical assistance. Tire-derived aggregate is used by CalTrans in various applications, including retention wall lightweight backfill, vibration attenuation, and slope stabilization. By state law, CalTrans is required to use a specified minimum portion of crumb rubber in various asphalt products. http://www.calrecycle.ca.gov/tires/GreenRoads/default.htm
- Clemson University's Asphalt Rubber Technology Services (ARTS) was created for the purpose of promoting, designing, and testing the use of recycled scrap tires in rubberized asphalt and in other civil infrastructure applications. It is a partnership between the South Carolina Department of Health and Environmental Control and Clemson University, and has resulted in demonstration projects and ongoing research for various uses for scrap tires in South Carolina, ranging from tire chips in septic systems to the use of cryogenic crumb rubber in asphalt applications. http://www.clemson.edu/ces/arts/index.html

5. Facilitate the Consideration of Sustainable Materials Management in Public Purchasing Decisions

Background

- Current recycled-content purchasing regulations in Tennessee are relatively lenient, outdated, and only pertain to a limited number of product types.
- The National Association of State Purchasing Officers reports that many products that may be considered to be environmentally preferable are also available at a lower cost than competing products, such as retread tires, remanufactured toner cartridges, and remanufactured office panels.
- Many state departments of transportation and local public works departments are able to use products from recovered materials that are processed in state, such as mulch and asphalt that contains tire-derived crumb rubber. This helps increase demand for in-state processing, contributing directly to the recycling economy.

- TDEC's Office of Sustainable Practices (OSP) has begun to expand the concept of green purchasing and provide education about environmentally friendly products, with the cooperation of the Department of General Services (DGS)/Central Purchasing Office (CPO). The OSP has been sharing this information with other state agencies.

Tactics

1. ***TDEC will continue to work with state leadership, including the Governor's Office, to develop more comprehensive environmentally preferable purchasing requirements.***

   Such requirements will incentivize state agencies to increasingly include environmental impacts in their purchasing decisions. Requirements will likely go beyond postconsumer recycled content to also consider characteristics such as recyclability, pollution and/or toxicity, greenhouse gas emissions, consumption of resources (e.g., energy, water, and transportation requirements), and waste minimization.

2. ***TDEC will, as appropriate, facilitate information sharing between CPO and local governments regarding state contracts.***

   Many local governments may be unaware of the state contracts that are available to them, and the economic and environmental benefits that may be associated with them. TDEC will make this information available on their website and through workshops, conferences, and other means, as appropriate.

Examples

- The South Carolina Department of Environmental Control, in conjunction with multiple other state agencies, has adopted a Green Purchasing Initiative. The Materials Management Office (MMO) oversees the implementation of the policy, and a Green Purchasing Initiative Workgroup is in place to help coordinate and implement the policy. Each state agency provides a Green Purchasing contact to MMO. In South Carolina there is a 5 percent price preferential, which means that an environmentally preferable product can cost as much as 5 percent more than its traditional counterpart and still be considered preferable.
  http://procurement.sc.gov/PS/agency/PS-agency-green-purchasing.phtm
- New York State's Executive Order No. 4, "Establishing a State Green Procurement and Agency Sustainability Program," was signed into law in April 2008. The Order directs state agencies, public authorities, and public benefit corporations to "green" their procurements and to implement sustainability initiatives. The Order established an Interagency Committee on Sustainability and Green Procurement that is co-chaired by the Commissioner of General Services and the Commissioner of the Department of Environmental Conservation.
  http://www.ogs.ny.gov/bu/pc/Green.asp

For Future Consideration

TDEC will consider working with the ECD to establish recycling market development zones, which are areas that are prime for locating recycling facilities, particularly in industry-rich areas. Businesses that locate in these zones typically receive tax incentives/breaks, such as a hiring tax credit, and often are eligible for low-interest loans.

TDEC will consider establishing a Recycling Business Assistance Center which can serve as a "one stop shop" to assist businesses with sustainable materials management needs, from starting a recycling facility to identifying markets for materials to sourcing recovered materials.

TDEC might consider requiring local governments to implement Environmentally Preferable Purchasing policies in order to be eligible for Recycling Equipment Grants in the future.

IX. Objective 4: Increase Diversion of Organics

A. Description of Objective

The purpose of this objective is to encourage the reuse, composting, and beneficial use of organics, as well as implement source reduction efforts, to decrease the disposal of these materials.

According to the U.S. EPA,[28] organics comprise approximately 28 percent of the MSW generated in the U.S.; 14.5 percent is food residuals and 13.5 percent is yard trimmings. There are also other compostable materials generated, such as soiled paper (that is not recyclable) and wood (6.3 percent of the MSW stream generated). It is estimated that only 2 percent of food residuals generated in the U.S. is composted, while 22.6 percent of yard trimmings, and 2.8 percent of woody material is composted. The 2008 Tennessee State University Waste Characterization study showed that organics comprise 24.2 percent of the disposed MSW stream. Therefore, diverting organics from disposal can result in a significant decrease in the quantity of waste disposed, as well as reduced methane emissions from landfills. Outlined below are strategies TDEC will employ to reduce the disposal of organics in Tennessee.

B. Strategies to Achieve the Objective

1. Provide Information to Tennessee Businesses and Citizens about Opportunities to Reduce Food Residual Disposal

Background

- Disposal of food is not only a loss in resources that could be otherwise beneficially used, but also becomes a source of methane when landfilled.
- Leftover or extra food is often disposed because individuals are unaware of options available for food recovery, or other beneficial uses.
- Some citizens, businesses, and non-profits may be unaware of the "Good Samaritan" laws which protect them from liability in donating food.
- In some cases food scraps, particularly from food processing and manufacturing operations, can be used beneficially in manufacturing animal feed, or even for direct animal feed.
- Donating food for human consumption and for animal consumption are uses that are higher on the waste management hierarchy than composting of food scraps.

[28] http://www.epa.gov/osw/nonhaz/municipal/pubs/2012_msw_fs.pdf

Tactics

1. ***TDEC will provide information and links to appropriate organizations' websites regarding food recovery/donation.***

   Information will include information about what organizations will typically accept, and information about Good Samaritan laws. TDEC will also provide information about the U.S. EPA's Food Recovery Challenge Program and the U.S. Department of Agriculture's Food Waste Challenge. TDEC will also develop education and outreach materials for large generators of food scraps regarding best management practices to minimize the generation of food scraps.

2. ***TDEC will ensure that food scraps are included as a category in the materials exchange that is developed for Tennessee.***

   This will help potential generators of food scraps identify beneficial end uses for the material, and help those that could use food scraps identify those materials, reducing the amount of food disposed.

Examples

- Washington's Department of Ecology provides information on their website about the benefits of minimizing the disposal of food residuals, and links to additional information, including U.S. EPA's Food Recovery Challenge, as well as education and outreach developed by the U.S. EPA.
  http://www.ecy.wa.gov/programs/swfa/organics/prevent.html
- CalRecycle provides information about managing food scraps on their website, providing separate portals for different types of generators, such as residents, healthcare facilities, stadiums/events, hotels/motels, and colleges/universities.
  http://www.calrecycle.ca.gov/organics/food/

2. Dedicate Resources to Expand the Collection, Processing, and End Use of Organics from Residents

Background

- Currently there is only one compost facility in Tennessee that accepts food residuals.
- TDEC does not have reliable data regarding the portion of Tennessee households that have access to separate curbside collection of yard trimmings, but indicates that the service is widely available in more densely populated areas.

Tactics

1. ***TDEC will continue to provide an Equipment Grant Program and other grants to local governments to support programs to process yard trimmings and/or other organic materials.***

   A reasonable plan for the operation of the facility, site plan, and end use of material will be required. Specifics and priorities will be visited as TDEC develops a Recycling Grants Plan.

2. ***TDEC will provide information and tools to citizens to manage residential organics in a more effective manner at home.***

   For example, TDEC will help facilitate the purchase of low-cost backyard composting bins and develop a web site regarding backyard composting for residents. This allows residents to reduce the amount of food residuals set out for disposal and understand the benefits of composting. TDEC will also provide information about "grasscycling" on its website to provide residents with information about the benefits of allowing grass clippings to mulch on the lawn, allowing nutrients to go back into the soil.

3. ***TDEC will provide technical assistance to local governments to support organics diversion.***

   Technical assistance will include identifying and sharing best management practices regarding managing organics, including for adding food residuals to yard trimmings organics processing.

Examples

- Massachusetts Department of Environmental Protection has developed education and outreach for backyard composting and grasscycling and offers residents low-cost (subsidized) compost bins.
  http://www.mass.gov/eea/agencies/massdep/recycle/reduce/home-composting-and-green-landscaping.html
- The North Carolina Department of Environment and Natural Resources provides Organics Recycling Waste Grants for local governments and private entities to improve composting infrastructure.
  http://portal.ncdenr.org/web/deao/recycling/composting/grants
- Connecticut Department of Energy & Environmental Protection has developed a web site with information about composting at home, in the workplace, etc., and includes information on grasscycling and links to other helpful websites.
  http://www.ct.gov/deep/cwp/view.asp?a=2718&q=325344&deepNav_GID=1645

3. Increase Composting and/or Other Processing of Organics Generated at State Government Facilities

Background

- Tennessee employs over 85,000 people annually, and has over 5,200 facilities (excluding the University of Tennessee and Board of Regents facilities). Many of these facilities generate large quantities of organic wastes, including yard trimmings and food residuals.
- State facility recycling programs currently focus on cardboard, office paper, and in some cases scrap metal, batteries, and beverage containers, but not organics.

Tactics

1. ***TDEC will implement organics recovery and processing programs at one or more selected TDEC facilities.***

   Such programs will illustrate TDEC's leadership and commitment to reducing the disposal of organics, and can serve as a demonstration project(s).

2. ***TDEC will develop demonstration projects at state agencies/facilities and provide technical assistance to other state agencies.***

   TDEC and other state agencies will lead by example, developing organics processing on site, or providing source separated organics to other processing facilities. These projects can be used as demonstration projects, and can help local governments learn about composting best management practices..

3. ***TDEC will implement or support the implementation of different technologies and/or processing of food residuals to showcase their feasibility.***

   Such efforts can serve as demonstration projects and provide information to public and private entities considering implementing different technologies.

Examples

- The Connecticut Department of Energy and Environmental Protection has had a food scrap composting program in place at its headquarters' office in Hartford since 1997. Through the program, about 3 tons of food residuals are composted annually. Food residuals are composted on site using an in-vessel system. The program provides an opportunity to provide education to employees and visitors, and is consistent with the Department's goals.
  http://www.ct.gov/deep/cwp/view.asp?a=2718&q=535104&deepNav_GID=1645
- Clemson University in South Carolina has a food residuals composting program that collects pre-consumer food residuals from their kitchen and post-consumer food residuals (that has been processed through a food pulper). Food residuals are mixed with carbon material (such as leaves) and processed with the organic material in an in-vessel composter.
  http://www.clemson.edu/facilities/energy-awareness/projects/composting.html

4. Provide Financial, Technical, and/or Regulatory Support for On-Site Processing of Organics at Institutional and Commercial Generator Sites

Background

- Many colleges and institutions have open windrow or in-vessel composting facilities on campus to compost food residuals, yard trimmings/leaves, and agricultural organics. Such programs can save on collection and disposal costs, and serve as demonstration/pilot projects and hands-on learning experiences.
- It may be possible to develop programs that benefit multiple institutions, by identifying multiple facilities in close proximity.
- School composting programs provide hands-on experience that teach students about the benefits of "recycling" food residuals and yard trimmings.
- TDEC cannot provide direct financial support to private entities, but could provide technical and regulatory assistance, as needed.

Tactics

1. ***TDEC will provide assistance to implement an organics processing program (or demonstration program) at one or more institutions or commercial sites.***

   Such assistance may include technical, financial, and/or regulatory assistance.

2. ***TDEC will develop and share information about the project(s).***

   TDEC will highlight projects on the TDEC web site, which will serve as a source of best management practices and tips for implementation.

Examples

- CalRecycle sponsored several demonstration projects for composting, including studies that examined the retention of soil health and minimization of erosion using compost and/or mulch.
  http://www.calrecycle.ca.gov/organics/farming/agdemos/Default.htm
- North Carolina has developed a separate permitting process for demonstration and pilot projects to encourage such projects at camps and other venues.
  http://portal.ncdenr.org/c/document_library/get_file?uuid=31812226-9db0-4f78-b50f-84498c2c33f4&groupId=38361

5. Support Organics Recovery with Updated Policy

Background

- Several states have realized that their compost regulations discouraged the development of compost facilities by placing unnecessary regulatory and financial burdens on potential facilities or having a "one size fits all" approach that created unnecessary barriers to composting in certain situations (e.g., on-farm or on-site processing).

Tactic

1. ***TDEC will develop new composting regulations based on the U.S. Composting Council's model compost rule template (MCRT).***

   This template provides for the protection of the environment and human health and safety and for the development of high-quality product, but presents less stringent permitting options for different types of facilities – providing a tiered approach depending upon the size of the facility and type of feedstock processed. TDEC will provide education and outreach to stakeholders about the new regulations, and update as needed to ensure unnecessary barriers do not inhibit organics diversion in the future.

Examples

- In 2006 Florida began the process of examining other states' composting regulations to better identify potential changes to Florida's regulations. In 2010, Florida revised their regulations to make regulatory oversight less burdensome, particularly for smaller facilities.
  http://www.dep.state.fl.us/waste/quick_topics/publications/shw/solid_waste/62-709_Notice_of_Change.pdf
- In 2007 Minnesota studied the composting of source separated organics at facilities that had previously only processed yard trimmings, in order to show that composting source separated organics could be done with minimal operational and regulatory change. New rules were ultimately proposed for facilities accepting source separated organics. The state is still in the process of finalizing the rules.
  http://www.biocycle.net/2007/12/19/source-separated-residential-composting-in-the-u-s/
  http://www.pca.state.mn.us/index.php/waste/waste-permits-and-rules/waste-rulemaking/proposed-changes-to-compost-rules.html
- South Carolina recently revised and clarified the state's composting regulations. The hopes are that this will spur development of more compost facilities.
  http://www.scdhec.gov/Agency/docs/lwm-regs/R61-107_4.pdf

For Future Consideration

As processing infrastructure matures, TDEC will consider implementing a disposal ban on or redirection of commercial/institutional yard trimmings and/or organic materials.

X. Objective 5: Support New Waste Reduction and Recycling Technology

A. Description of the Objective

The purpose of this objective is to support the adoption of new technologies in the state, as appropriate, that will help Tennessee move closer to reaching its waste reduction and diversion goals.

Technologies available to divert materials and energy from MSW are constantly evolving. More recycling facilities are accepting materials single-stream (all recyclables mixed together) rather than separated at the source. An increasing number of mixed waste processing facilities that extract recyclables from unseparated MSW are proposed and operating across the United States as are facilities that recover energy from all or a portion of MSW.

As these technologies develop, some may have the potential to contribute to achievement of State waste reduction and recycling goals over the next 10 years while others may fall by the wayside. The State can remain up-to-date and well-informed about the status of these technologies and, as they evolve, support the ones that help the state and local governments meet their goals.

B. Strategies to Achieve the Objective

1. Ensure State Policy Supports (or Does not Unnecessarily Discourage) the Development and Implementation of New Technology

Background

- As technology evolves, legislation, rules and regulations related to particular types of technology, such as composting or generating energy from MSW, may become outdated.
- In some cases policies guiding the development and permitting of solid waste management facilities have timeless purposes, such as protecting the environment, however, in other cases, the policies may need to be revisited to ensure that they don't unnecessarily inhibit recycling and waste reduction.

Tactics

1. ***Periodically identify and, where feasible, eliminate barriers in State policy that hinder waste reduction and recycling progress.***

   TDEC will attempt to identify and improve state rules and regulations that inadvertently hinder achievement of waste reduction and recycling goals using new or emerging technology.

2. ***Consider and, where feasible, implement State policies that encourage using new technology to help achieve waste reduction and recycling goals.***

   New policies considered will also support Tennessee's materials management hierarchy and other environmental and economic objectives.

Example

- Both South Carolina and Georgia passed new composting rules in spring of 2014. The new rules base design and operating requirements on the feedstock accepted. This allows composting facilities accepting relatively straightforward feedstock, for example yard trimmings only, to operate with minimal requirements while those accepting a broader range of material, such as food scraps or biosolids, must meet requirements sufficient to protect the environment and public health. With the new rules in place, the permitting process is more clear and predictable; therefore more facilities of all types are likely to be developed to handle organics.
  http://www.scdhec.gov/Agency/docs/lwm-regs/R61-107_4.pdf

2. Provide Guidance to Local Governments as They Consider New Waste Reduction and Recycling Technologies

Background

- Local governments often are approached by proponents of new waste reduction and recycling technologies but may have little information to help them evaluate the potential of the technology or its applicability to a particular local governments goals.
- Since many local governments in Tennessee and around the country may have considered similar technologies, the State can provide guidance to local governments by providing information about related projects and steps that may be needed to evaluate, and possibly, to implement new waste reduction and recycling technologies.

Tactics

1. ***Provide assistance to local governments that are considering projects using new technologies.***

   TDEC will provide assistance to local governments that are considering proposals for waste reduction or recycling projects by providing objective information about the status of the technology, costs and benefits, and suggested considerations when reviewing particular proposals.

2. ***Provide local governments with guidance regarding local zoning ordinances and siting requirements.***

   Such assistance will help ensure that local policy does not necessarily inhibit new waste reduction and recycling technologies but that they remain protective of local land use goals.

3. Work with Partners to Identify and Support Waste Reduction and Diversion Technologies that May Help the State Achieve its Materials Management Goals

Background

- Organizations in Tennessee such as the Tennessee Department of Economic and Community Development (ECD), may be approached by businesses interested in developing waste diversion/recycling facilities in Tennessee.
- Such projects may help Tennessee close identified infrastructure gaps, thus helping the state move closer to reaching waste reduction and diversion goals, while simultaneously enhancing the economy.
- Having a strong relationship with ECD will help TDEC understand potential developers, what some of their barriers may be. TDEC can then consider appropriate steps to assist with needs, such as data needs, and address any unnecessary and unintended regulatory barriers, as appropriate.

Tactics

1. ***TDEC will work with Tennessee ECD to help identify waste reduction and diversion partners and projects.***

   Through working with ECD, TDEC will identify and support projects that use new technology that could create jobs and reduce waste disposed.

2. ***TDEC will identify opportunities to assist with developing or promoting demonstration projects that use new technologies that could have a positive economic impact in Tennessee.***

   An example is providing stakeholders with information regarding the amount of specified materials estimated to be in the disposed waste stream, which would be suitable feedstock for a particular technology. Such assistance can help developers determine project feasibility and obtain funding.

Example

- In an effort to capture a portion of the estimated $200 million worth of recyclables being disposed annually, the State of Georgia contributed nearly $4 million to public-private partnerships to provide transfer and processing operations for single-stream recyclables. The shift to single-stream collection was a relatively new technology at the time. The contribution by the state made it financially possible for more rural areas to implement recycling programs.

http://www.dca.state.ga.us/DCANews/PressReleaseDetailnet.asp?view=834

For Future Consideration

In the future TDEC might consider allocating a portion of grant expenditures for new technologies, such as food residuals composting. Alternatively, TDEC might consider reducing the grant match requirement for grant applicants wishing to implement a new technology.

XI. Objective 6: Expand and Focus Education and Outreach

A. Description of Objective

The purpose of this objective is to improve education and outreach in Tennessee regarding the opportunities for source reduction, recycling, and composting, and the benefits of these activities relative to disposal.

Education and outreach are vital parts to any recycling and materials management program. Education serves to promote waste reduction, recycling and compost programs, provide instruction about how to participate in programs, and educate individuals about the environmental and economic benefits of recycling, composting, and avoiding waste disposal. Promoting recycling, composting and materials management is often considered to be a form of social marketing, as it involves encouraging individuals to change their behavior. Because programs change over time, individuals move to different communities, material specifications change, and due to human nature, there is an ongoing need for education and outreach.

B. Strategies to Achieve the Objective

The strategies to achieve the objective were selected based largely upon feedback from surveys and public input meetings, as well as interviews with TDEC staff regarding current levels of education and outreach being conducted in Tennessee.

1. Develop a Statewide Recycling Brand Campaign

Background

- There has not been a statewide campaign aimed at recycling in Tennessee since the Pathways to Education campaign more than 10 years ago.
- Although programs may vary in different regions, broad messaging is applicable to all residents.
- Some states and local governments have had success in partnering with corporate sponsors to fund recycling campaigns.
- Tennessee currently lacks a long-term, consistent brand that connects all sustainable materials management programs and creates a culture of recycling.
- A statewide recycling brand campaign will provide TDEC with the opportunity to tout the importance of recycling, and set the general expectation that citizens and businesses are expected to recycle.

Tactics

1. ***TDEC will work with a professional advertising agency to develop and launch a brand campaign for recycling in Tennessee.***

As part of this campaign a logo will be created, which can be used on publications and the TDEC website. Education and outreach methods may include television commercials, billboards, posters, radio public service announcements (PSAs), and more.

2. ***TDEC will develop education and outreach materials in an adaptable format that can be tailored and used by local governments.***

   This will allow local governments to directly promote their specific programs to their residents in a cost-effective manner.

Examples

- In South Carolina, the Department of Health and Environmental Control develops posters, pamphlets, flyers, and other materials that can be adapted to suit local governments' needs, and offers activity books, newspaper ads and billboards as well as custom artwork to the county recycling programs. The Department also provides information about opportunities for recycling on their website. South Carolina is also in the process of developing a statewide campaign to promote recycling in the state, called RecycleMoreSC. This campaign is being done in partnership with several organizations, including non-profits and private businesses.
  http://recyclemoresc.org/about.htm
  http://www.scdhec.gov/HomeAndEnvironment/Docs/lexington_bro.pdf
  http://www.scdhec.gov/HomeAndEnvironment/Recycling/WheretoRecycleLocally/
- Georgia's Department of Community Affairs launched a statewide "You Gotta Be Kidding" recycling campaign in 2009/2010. The ad campaign targeted 25- to 34-year olds that proclaim to not recycle. The campaign focused on "the absurdity of mis-perceptions about recycling." The Department solicited sponsors for the campaign, which consisted of online and print advertisements, outdoor signage, printed materials, and icon giveaways. Social media (Facebook and Flickr) were also used. Coca-Cola was one of the campaign's sponsors.
  http://clatl.com/freshloaf/archives/2009/06/01/gas-you-gotta-be-kidding-recycling-campaign-features-odd-atlantan
- California implemented a multi-year statewide campaign to increase plastics recycling. The campaign, "Plastics. Too Valuable to Waste. Recycle™" was a partnership with the American Chemistry Council and CalRecycle. The campaign included several programs, such as "Recycle. Goal," a partnership with the Los Angeles. Galaxy soccer team, "Read, Write, Recycle," a campaign for school districts, and Green Gardens. The campaign had several other corporate and state agency sponsors, including Caltrans and California State Parks.
  http://www.americanchemistry.com/Media/PressReleasesTranscripts/ACC-news-releases/Recycling-Campaign-Yields-Impressive-Results-Statewide.html

2. Promote Sustainable Materials Management in Schools and Other Public Institutions

Background

- Many representatives of school systems have indicated that there is a need for enhanced materials management/recycling programs in school districts.
- Often children learn about recycling and waste minimization, develop positive, sustainability habits in school, and are the impetus for household recycling.
- Schools have little time to dedicate to education and outreach about recycling, so programs must be simple, straightforward, and consistent.
- Tennessee has implemented recycling education programs in the past, but they were discontinued. The Tennessee Solid Waste Education Program) provided in-service workshops, curriculum workshops, and assistance in planning environmental education events as well as grade-appropriate activity guides. TDEC sponsored the program, which was carried out by contractors initially, and responsibilities for the program were assumed by TDEC in more recent years.

Tactics

1. ***TDEC will conduct research to identify elements of school recycling education programs that work, and those that do not, and develop program with stakeholders.***

   Research will include Tennessee and out-of-state programs. TDEC will then work with stakeholders to develop a plan for implementing an education and outreach program for schools, and implement that program.

2. ***As recycling becomes more commonplace in Tennessee schools, TDEC will investigate developing a recognition and/or competition program among K-12 schools.***

   Such a program may be implemented by TDEC directly, or through other organizations such as Keep Tennessee Beautiful.

3. ***TDEC will promote sustainable materials management to other public institutions, including colleges and universities.***

   TDEC will start with promoting and encouraging participation in existing programs (RecycleMania, Green Star, etc., Good Sports Always Recycle). TDEC will work with public institutions to develop and implement a strategy for measuring progress on an ongoing basis.

Example

- As part of South Carolina's Smart Business program, businesses are not only provided with technical assistance to implement recycling programs, but also have the opportunity to participate in an incentive program. The Department of Health and Environmental Control shares success stories on the program's website, including information about avoided disposal fees and revenues earned from the sale of recyclable materials. http://www.scdhec.gov/HomeAndEnvironment/BusinessesandCommunities-GoGreen/SmartBusiness/Awards/

3. Conduct Education and Outreach Efforts to Promote Sustainable Materials Management to Businesses and Inform them of Available Resources and Goals

Background

- As is described elsewhere in this Plan, TDEC will develop programs to incentivize businesses in Tennessee to reduce the amount of waste they generate and dispose.
- In conjunction with those programs, TDEC will develop and disseminate education and outreach materials to promote recycling, its economic and environmental benefits, and inform businesses about available programs and tools, as well as state goals.
- As appropriate, TDEC will work through ECD and Chambers of Commerce to promote recycling to businesses, with a focus on the six key industries identified as core industries in Tennessee: automotive; chemical products and plastics; transportation, logistics and distribution services; business services; healthcare; and advanced manufacturing and energy technologies.

Tactic

1. ***TDEC will educate businesses about sustainable materials management opportunities and benefits through networking opportunities with ECD and Chambers of Commerce.***

   As part of these efforts TDEC will also inform businesses of the new state goals, and of available sustainability recognition programs, as well as the economic benefits of recycling.

4. Promote HHW Services to Local Governments, and Assist them in Promoting HHW and BOPAE Collection Services

Background

- As is described elsewhere in this Plan, TDEC provides HHW collection services to larger municipal areas through permanent HHW collection programs, and to other communities through HHW collection events and "milk runs" for oil-based paint and mercury-containing lamps. In order to be eligible for HHW collection events, local governments must provide collection of BOPAE to residents.

- Many counties have not provided HHW collection or "milk run" events to residents for several years.
- HHW collection events and HHW "milk run" collections are important to keep hazardous materials out of the landfill.
- Improper management of HHW (pouring wastes down the drain, on the ground, into storm sewers, or putting it out with the trash) can negatively impact human health and the environment. Certain types of household hazardous waste have the potential to cause physical injury to sanitation workers; contaminate ground water at landfills; contaminate septic tanks or wastewater treatment systems, and pose a risk to children and pets if left around the house.

Tactics

1. ***TDEC will encourage local governments to participate in programs targeting HHW and BOPAE.***

   TDEC will reach out to local governments directly on a regular basis to encourage them to participate more fully in HHW collection programs and to provide BOPAE collection.

2. ***TDEC will develop education and outreach materials for local governments.***

   TDEC will develop materials that that local governments can adapt to suit their needs to promote HHW and BOPAE collection programs.

3. ***TDEC will continue to provide information about HHW collection events on the TDEC website and via email.***

   The website information will be user-friendly, allowing users to easily find management options for HHW and BOPAE nearest to them. The email notification will be for citizens that have signed up for such notification. TDEC will also consider alternative media formats for reaching additional citizens.

XII. Objective 7: Ensure Sufficient and Environmentally Sound Disposal

A. Description of Objective

The purpose of this objective is to monitor disposal capacity to be sure it is sufficient, and ensure that disposal facilities are maintained in an environmentally sound manner.

TDEC will ensure the fulfillment of the policy statements in T.C.A. § 68-211 through adequate and environmentally sound disposal systems for MSW and C&D in Tennessee. Historically, ensuring adequate collection and disposal capacity for solid waste (and MSW, in particular) has been the driver of solid waste management planning in Tennessee. Waste reduction and recycling programs are also important in extending the life of Tennessee's landfills. T.C.A. § 68-211 Part 1 (Tennessee Solid Waste Disposal Act) is the primary law under which TDEC has responsibility and authority for overseeing solid waste disposal as it relates to environmental protection, including permitting solid waste disposal and processing facilities and overseeing their operation. T.C.A. § 68-211-Part 6 (Tennessee Solid Waste Management Planning Act) is the primary legislation that describes the state's role in terms of planning, and Part 7 (The Jackson Law) describes local governments' role in approving the development of landfills and other waste management facilities, but excludes on-site processing of a business's own materials. Part 8 (The Solid Waste Management Act of 1991) provides for regional planning efforts and disposal assurance.

B. Strategies to Achieve the Objective

1. Continue to Monitor Class I (MSW) Landfill Development, Usage, and Remaining Permitted Capacity

Background

- TDEC's solid waste management program aims to promote waste minimization and reuse, while ensuring safe and effective handling and disposal.
- As such, part of TDEC's role is to permit and monitor the usage of MSW (Class I) landfills.
- TDEC permits Class III/IV landfills as well, however, historically these landfills have not reported data regarding the quantity of waste disposed.
- The type of waste that can be disposed in a Class I landfill is primarily dictated by U.S. EPA's Resource Conservation and Recovery Act (RCRA). Similarly, aspects of landfill design and operation that protect the environment are set forth in RCRA. The types of materials that can be accepted at Class III/IV landfills and their design and operation requirements are dictated by state rule.

Tactics

1. ***TDEC will continue to annually assess the usage and remaining permitted MSW disposal capacity of Tennessee landfills.***

   TDEC will make this assessment in each of the planning districts, identifying and analyzing annual MSW disposal capacity used and remaining, and MSW disposal capacity used and remaining on a statewide basis.

2. ***TDEC will provide information to local governments about remaining disposal capacity at Class I landfills.***

   TDEC will collect and distribute to local governments information pertaining to annual landfill usage and estimated remaining permitted MSW disposal capacity to assist in adequate planning for the disposal of waste under their control.

For Future Consideration

TDEC might consider developing a methodology to monitor C&D landfill remaining capacity. This would help the state ensure more adequate capacity. Some states do monitor C&D landfill capacity (such as Maryland and Georgia), however in Tennessee, while C&D landfills were constructed with a certain volumetric capacity, the quantity of waste going to the C&D landfills has not been monitored. C&D debris is generally managed by the private sector, in the sense that municipalities and counties do not contract for the collection and disposal of this type of material.

Examples

- New York, and Washington are among the states that publish their landfill remaining capacity on their websites. https://epd.georgia.gov/permitted-solid-waste-facilities
  http://www.ecy.wa.gov/programs/swfa/solidwastedata/disposal/RemaingCapacity.pdf
  http://www.dec.ny.gov/docs/materials_minerals_pdf/capchart11.pdf
- Georgia reports the remaining capacity of both MSW and C&D landfills. In Georgia it was deemed that C&D landfills are a subset of MSW landfills.
  https://epd.georgia.gov/permitted-solid-waste-facilities

2. Review and Consider Strengthening Environmental Regulations/Policies Pertaining to Solid Waste Management Facilities

Background

- TDEC is committed to ensuring that waste that is disposed in Tennessee is done so in facilities that are designed, built, and managed in a manner that protects human health and the environment.
- TDEC will continue to make non-proprietary information about solid waste disposal facilities available on TDEC's website.

Tactics

1. ***TDEC will review specific policies and protocols regarding solid waste management facilities, and suggest enhancements.***

   TDEC will review policies and protocols such as permitting requirements, inspections, responding to environmental incidents, and public notification processes related to environmental incidents, responses, and special waste disposal, and types of materials that can be disposed in different types of facilities. TDEC will suggest improvements to the Commissioner.

2. ***TDEC will continue to review, expand, and make information about solid waste management facilities available to the public, data through online data viewers on the TDEC website to promote transparency to the public.***

   TDEC will remind local governments, as appropriate, about the solid waste management facility data that is available online, and how to access such information.

3. Continue to Address Illegal Disposal of Waste and Materials

Background

- Counties continue to indicate that illegal disposal and litter are issues in their communities as reported in their Annual Progress Reports.
- Illegal dumping can stem from the following:
  - lack of convenient, affordable access to disposal;
  - lack of knowledge regarding disposal sites;
  - unwillingness to pay for disposal;
  - lack of support by law enforcement and judges;
  - low fines for illegal dumping/littering; and
  - lack of awareness of the ill-effects of litter/illegal dumping grounds.
- As Tennessee works to enhance end markets for materials derived from scrap tires, it is anticipated that collection programs for scrap tires will become more convenient and less costly.

Tactics

1. ***TDEC will continue to work with local governments and other organizations to encourage proper management of waste and materials.***

   TDEC will work with local solid waste management departments, law enforcement, Tennessee Department of Transportation Beautification Office, and organizations like Keep Tennessee Beautiful to encourage Tennesseans to manage waste properly.

2. ***TDEC will provide technical or other assistance to local governments that have an issue with illegal dumping.***

   Assistance might include providing a seminar to local law enforcement or judges, developing education and outreach materials regarding the ill-effects of litter/illegal dumping, ensuring that information about locations for proper, legal disposal is on the TDEC website, and technical assistance.

3. ***TDEC will continue to identify and remediate scrap tire piles in Tennessee and provide enforcement against unpermitted tire disposal sites.***

   This is an ongoing effort, which will continue through the Plan timeframe.

Example

- In South Carolina the State and local governments consider solid waste management on a 20-year timeframe. The state develops solid waste disposal projections and conducts an analysis of the types of facilities what will be needed to manage solid waste, as well as an estimate of the current capacity in the state. Local governments also estimate the amount of waste and type of waste projected to be disposed from the region, and conducts an analysis of existing and new facilities that might be needed to manage the waste. In SC a Demonstration of Need (DON) must be shown for Class 3 landfills, commercial Class 2 landfills, and commercial solid waste incinerator to be sited. The South Carolina Department of Health and Environmental Control is responsible for making an independent consistency determination before a solid waste management facility can be permitted. The DON regulation stipulates that where there are at least two commercial solid waste management facilities of the same type within a planning area, no new facility is allowed.
  http://www.scdhec.gov/HomeandEnvironment/docs/2013AP/section11.pdf

For Future Consideration

In the future, as the types of materials disposed changes and knowledge about these materials is enhanced, TDEC might consider the need to ban the disposal of certain materials in Class I landfills, to continue to ensure that landfills are safe, and that groundwater and the environment are protected. Currently Tennessee bans the disposal of liquid wastes, lead acid batteries, motor oil, mercury-containing devices from identified generators, and whole tires. Materials that are banned from disposal in other states include computers, televisions and computers containing cathode ray tubes, untreated infectious waste, mercury-containing materials, rechargeable batteries, nickel-cadmium batteries, yard trimmings, medical waste, mercuric oxide batteries, and certain recyclable materials.

XIII. Objective 8: Develop Sustainable Funding Sources for Sustainable Materials Management

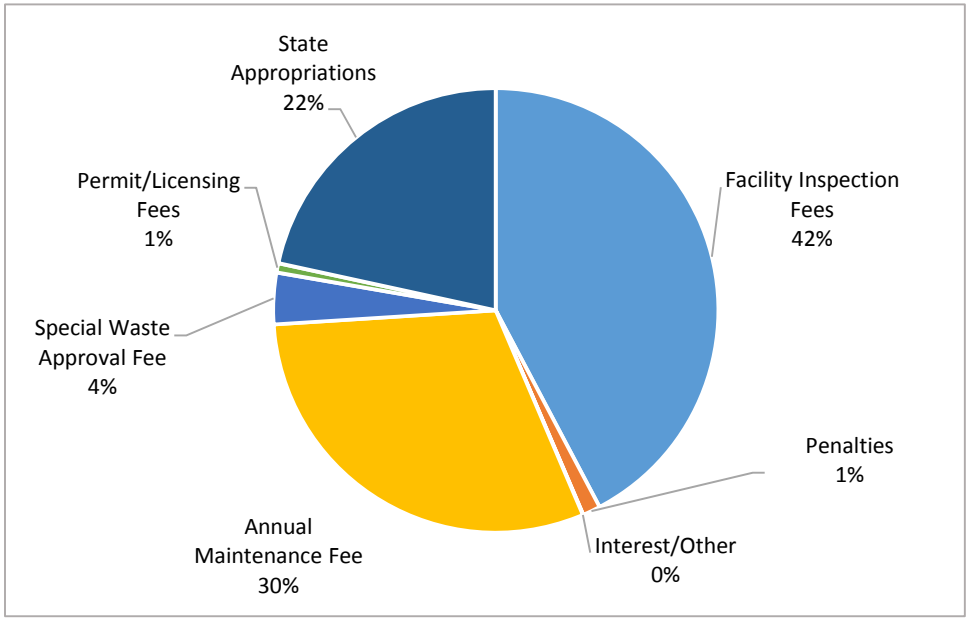
A. Description of Objective

The purpose of this objective is to ensure that state and local governments have sustainable funding sources in place to develop and support programs to manage MSW and materials.

In order to advance recycling and materials management, it is important to be able to ensure that the revenues that fund state programs to assist local governments, and businesses, as well as to promote recycling and waste minimization, are sustainable. The Division of Solid Waste Management (DSWM) implements the State of Tennessee's solid waste and materials management efforts. Within the DSWM there are essentially two programs that primarily support the planning and proper management of MSW – The Solid Waste Regulatory Program and the Solid Waste Assistance Program.

The Solid Waste Regulatory Program (SWRP) is responsible for permitting and inspecting solid waste management facilities in Tennessee, and ensuring that issues with facilities are resolved. The activities of the SWRP are funded in part by a $0.35-per-ton tipping fee surcharge on municipal solid waste disposed in Class I landfills in the State and annual maintenance fees, which are paid by permitted facilities, based on the size of the facility. Another $1 million annually, approximately, comes from the State. State general funds, fees paid by regulated facilities and penalties assessed for violations of the SWMP regulatory program also fund the program. Figure XIII-1 shows the sources of revenue for the Solid Waste Regulatory Program's $4.6 million annual budget.

Figure XIII-1
Projected FY 2014-2015 Funding Sources
Solid Waste Regulatory Program

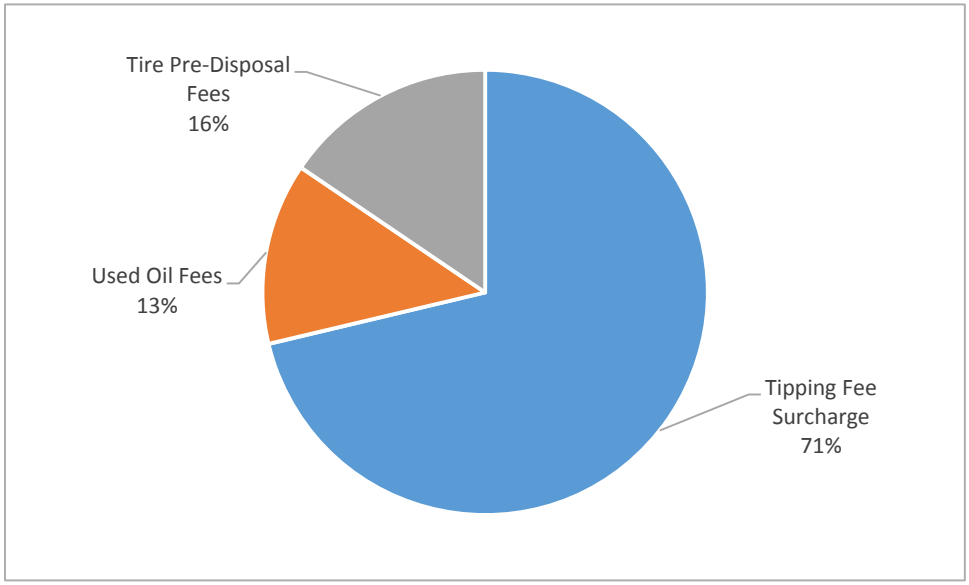


Data Source: TDEC Fiscal Services.

As Figure XIII-1 shows, the Solid Waste Regulatory Program receives more than 40 percent of its revenues from the surcharge on MSW disposal. If the quantity of MSW disposed in Tennessee is reduced, total revenues will also be reduced, all else being equal.

The Solid Waste Assistance Program (SWAP) is the program within the Division of Solid Waste Management responsible for solid waste management planning and sustainable materials management planning, education and outreach. The primary funding source for the Solid Waste Assistance Program is a $0.90-per-ton tipping fee surcharge on municipal solid waste disposed in Class I landfills in the State (1 percent of all fees collected are retained by the landfills to cover administrative costs associated with the fee). In addition, $0.25 of the $1.35 pre-disposal fee on the sale of new tires is allocated to the Solid Waste Assistance Program to monitor and clean up unpermitted tire disposal sites. Figure XIII-2 shows the expected sources of revenues for the 2014/2015 Solid Waste Assistance Program anticipated budget of $7.6 million, much of which is provided to local governments and other entities in the form of grants. Additional funds to support the SWAP are received through a portion of the $0.02 surcharge on each quart of motor oil sold in the State. These funds are used to recycled used oil generated by “do it yourselfers” and are placed in the Used Oil Fund to effectuate these projects.

Figure XIII-2
Project FY 2014-2015 Funding Sources
Solid Waste Assistance Program



Data Source: TDEC Fiscal Services.

As the Figure XIII-2 shows, the Solid Waste Assistance Program relies even more heavily on MSW disposal for revenues, receiving approximately 71 percent of its budget from the per-ton surcharge on tipping fees. Sixteen percent of the SWAP budget is from tire pre-disposal fees, and 16 percent is from used oil fees. Again, relying heavily on disposal for revenues can be viewed as being at odds with a program designed to reduce the amount of waste disposed. Further, it can be fiscally risky in the long run, particularly as programs become more successful.

This objective considers additional ways to fund solid waste management, and a strategy for pursuing more sustainable funding mechanisms in the long run.

B. Strategies to Achieve the Objective

1. Consider Increasing Tipping Fee Surcharges on Disposed Solid Waste

Background

- Mechanisms and amounts of per-ton fees vary considerably around the nation, though there are an estimated 35 of 50 states with landfill disposal surcharges/taxes on disposed waste.
- As recycling and waste reduction efforts increase, the amount of MSW disposed in Tennessee may decline, therefore total funding available for programs may not increase by $2.1 million.
- Raising per-ton disposal charges can serve as a disincentive to dispose of waste, particularly to the extent the waste generator sees a direct connection between the amount of waste disposed and the cost of managing that waste.

- Historically, in Tennessee, disposal of material in C&D disposal facilities has been considered to be "diversion" because when the 1991 Tennessee Solid Waste Management Plan was developed and initial statutes developed, the goal was to minimize the quantity of waste going to MSW landfills.

Tactics

1. ***TDEC will study the potential impacts of increased surcharges at landfills.***

   TDEC will examine the potential impacts increased surcharges at Class I and Class III/IV landfills could have on local governments, as well as citizens at large. TDEC will also explore mechanisms to ensure that as much of the surcharges obtained as possible are refunded back to communities that pay those surcharges, to improve recycling, composting and waste reduction programs. Such considerations will also be considered as part of the development of the Recycling Grants Plan.

2. ***Depending on the findings of the study in Tactic #1, TDEC will increase the tipping fee surcharge on MSW disposed at Class I landfills.***

   As an example, if an additional $0.40 per ton were levied on the disposal of MSW, it would result in an additional $2,133,840 in revenues per year, if quantity of MSW remained unchanged. A benefit of this tactic is that the mechanism for collecting this surcharge is already in place, therefore the collection of the additional revenue would be relatively efficient in terms of administrative burden. Another potential benefit is that increased total disposal costs can place pressure on generators of waste to reduce the amount of waste they dispose.

3. ***Depending on the findings of the study in Tactic #1, TDEC will establish a tipping fee surcharge on waste disposed at Class III/IV landfills.***

   If a $1.00-per-ton tipping fee surcharge were imposed on waste disposed at Class III/IV landfills, as an example, the surcharge would generate an estimated $1.28 million per year based on 2013 quantities (assuming 1 percent is retained by each landfill for administration). This additional funding could be directed to continuing to improve waste reduction infrastructure, composting operations, and possibly new technology or to provide industry seed money. It should be noted that some Class III/IV landfills do not have scales, so an equivalent volumetric fee would have to be established.

Examples

Examples of state-level fees on the disposal solid waste include:

- North Carolina – Charges $2.00 per ton excise tax on MSW and C&D disposed at disposal facilities, as well as on the waste delivered out-of-state waste from North Carolina transfer stations. Note: excise tax applies to all waste disposed, even that for which no tip fee is charged, such as county or school district waste.
  http://www.dor.state.nc.us/taxes/sales/solidwastefaq.pdf
- Minnesota – Charges a state excise tax on solid waste collected for disposal at a rate of 17 percent for commercial generators and 9 percent for residential generators. The tax applies to C&D as well as MSW, however the rate is 60 cents per cubic yard for both residential and commercial generators of C&D debris that is disposed. The fee is $0.60 per cubic yard if there is no scale at the disposal facility.
  http://www.revenue.state.mn.us/research_stats/research_reports/2012/2012_handbook_links_2_on_a_page.pdf
- Kentucky – Charges $1.75 fee on each ton of MSW disposed in landfills.
  http://waste.ky.gov/RLA/grants/Documents/recycling%20and%20hhw/2014/2014-15%20Press%20Release%20for%20Recycling%20and%20HHW%20Grant%20Recipients.pdf

2. Raise Revenue for Waste Reduction, Recycling, and Integrated Solid Waste Management from New Sources

Background

- States and local governments across that nation have seen that, as they become more successful in reducing the amount of waste disposed, ironically, revenues can decline. Therefore, relying on disposal to raise revenues for solid waste management is not viewed as a sustainable funding mechanism.
- Some state and local governments have tried to implement policy and/or funding mechanism to reduce reliance on disposal fees/surcharges, or at least have taken an in-depth look at alternative funding strategies. Many funding strategies have pros and cons, however, and implementing alternative or new funding mechanisms can have its own challenges.
- Twenty-five states have passed legislation mandating extended producer responsibility for electronics. In most cases this involves the manufacturers, consumers, and retailers of electronics sharing in the responsibility for the management of electronics at the end of their useful life. Typically consumers do not have to pay for proper management of the item at the end of its useful life, as it has been paid for through an advance disposal fee or through a fee charged to the brand owner/manufacturer of the product, which is a more common funding mechanism for electronics extended producer responsibility programs. Extended producer responsibility programs have also been implemented in various states for thermostats, auto switches, pesticide containers, batteries, paint, fluorescent lighting, gas cylinders, phone books, tires, and most recently, mattresses.

- Some states (like New York, see text box below) and Pennsylvania have established environmental funds, where monies are dedicated to an array of environmental projects. Pennsylvania's fund, however, is levied upon waste disposed. In New York, the funding mechanism is not dependent upon the quantity of waste disposed.
- One potential strategy that might be considered is having a solid waste processing fee surcharge on recovered materials, when they are delivered to a processing facility. The benefit of this fee is that it does not become reduced as recycling becomes more commonplace. The drawback is that it could provide a financial disincentive to recycle, and does not provide a disincentive to dispose of materials.

Tactic

1. ***TDEC will consider and implement alternative state-level funding strategy(ies).***
   These alternatives will emphasize strategies that incentivize sustainable materials management.

Example

- New York state funds municipal waste reduction and recycling programs (as well as other environmental initiatives) through an Environmental Protection Fund that is financed primarily through a dedicated portion of real estate transfer taxes. The state legislature and the governor appropriate funds annually. Over the past 20 years the fund has provided more than $2.7 billion for a variety of environmental projects.
  http://www.imapinvasives.org/media/EANY_EPF_SuccessStory.pdf
  http://www.nynjtc.org/issue/new-york-environmental-protection-fund-epf-2013

3. Support the Development of Sustainable Funding Strategies for Local Programs

Background

- As local governments become less involved in the solid waste collection and disposal business, due to privatization, certain planning and waste and materials management programs may "fall through the cracks" if sustainable funding mechanisms for such programs are not planned and implemented.

Example

- The Michigan Department of Environmental Quality developed a committee to examine long-term funding strategies for the state's solid waste management fund, as well as to assess the viability of outsourcing inspections of closed landfills. Alternative funding strategies considered include: a sustainability fee (charged on the purchase of goods), restructuring of the state's bottle bill (such that only half of the deposit would be refunded), dedicated income or sales tax (requiring an increase in that tax), and general fund appropriation.
  http://www.michigan.gov/deq/0,4561,7-135-3312_4123-261534--,00.html

Tactics

1. ***TDEC will continue to encourage local governments to track program costs and revenues on a full cost accounting basis.***

   TDEC will provide guidance to local governments regarding how to track costs and revenues.

2. ***TDEC will develop information to be presented to local jurisdictions regarding strategies local governments can implement to minimize costs and increase revenues.***

   Such strategies are particularly important in the face of declining waste quantities. Focus will be made on strategies that encourage waste reduction (or do not discourage waste reduction).

3. ***TDEC will work with counties/local governments to help them identify potential disposal cost savings by increasing waste reduction and diversion.***

   When communities reduce the amount of waste disposed due to increased source reduction and recycling efforts, they can often pay for a significant portion (or all) of their recycling program. TDEC will develop a cost-benefit analysis tool to assist local governments in determining and projecting system cost.

XIV. State Implementation Strategy

The Tennessee Solid Waste and Materials Management Plan for 2015 through 2025 focuses on the following eight objectives.

1. Update Goals and Measure Progress
2. Increase Recycling Access and Participation
3. Promote Material Processing and End Use in Tennessee
4. Increase Diversion of Organics
5. Support New Waste Reduction and Recycling Technology
6. Expand and Focus Education and Outreach
7. Ensure Sufficient and Environmentally Sound Disposal Capacity
8. Ensure Sustainable Funding Sources for Materials Management

Each of the objectives are supported by detailed strategies and tactics, shown in Table XIV-1 through Table XIV-8.

A. Implementation Strategies

The Tennessee Solid Waste and Materials Management Plan is an actionable plan. The Plan is accompanied by a detailed action plan that lists nearly 250 individual actions to fulfill the eight objectives and covers all facets of solid waste and materials management in the State of Tennessee.

Table XIV-1
Tennessee Solid Waste and Materials Management Plan 2015 – 2025 Objectives, Strategies, and Tactics
Objective 1

STRATEGIES		TACTICS
Objective 1 - Update Goals and Measure Progress	Update statewide numerical goals for waste reduction and recycling	Promulgate a rule to reduce disposal statewide and measure progress
		Set a goal to reduce the amount of solid waste disposed from Tennessee in Class III/IV landfills and measure progress
		Promulgate a rule that establishes a statewide recycling goal and measures progress
		Review measuring and reporting methods and identify opportunities for improvement
		Conduct research to measure progress and inform future goals
	Update local government waste reduction and recycling goals and measurement	Promulgate a rule that establishes an updated goal to reduce the amount of solid waste disposed that is under the control of local government and measure progress
		Promulgate a rule that establishes a recycling goal for material under local government control and measure progress
		Set goals to divert yard trimmings and other organics from disposal
		Include qualitative measures of progress toward waste reduction and diversion goals for certain local governments
		Provide technical assistance to local governments to help them understand goals, waste that is under their control, and how to report data
	Establish goals for state agencies and measure progress	Set a recycling goal for all state agencies
		Provide technical assistance to state agencies to help them understand goals and measure progress

Table XIV-2
Tennessee Solid Waste and Materials Management Plan 2015 – 2025 Objectives, Strategies, and Tactics
Objective 2

STRATEGIES		TACTICS
Objective 2 - Increase Recycling Access and Participation	TDEC will implement a Recycling Grants Plan	Review grant programs and develop a Recycling Grants Plan that considers priorities, maximizing funds provided to local governments, and helping local governments progress toward reaching goals without competing with privately owned facilities
	Support drop-off sites for residential collection where curbside not feasible	Provide technical assistance to enhance drop-off recycling
		Provide drop-off site information on TDEC website
		Continue to provide grants to enhance drop-off site programs
		Consider increasing drop-off site requirements if current infrastructure insufficient.to progress towards goals
	Support enhancement of curbside and local government recycling programs	Continue to offer financial support to local governments for residential and local government recycling programs
		Provide technical assistance to local governments to enhance residential and municipal facility recycling and waste minimization programs
	Work with partners to encourage sustainable materials management by businesses and industry	Develop a liaison program with the Department of Economic Community Development
		Strengthen relationships with the Tennessee Chamber of Commerce and Industry and affiliates and work through chambers to promote recycling/waste minimization
		Implement/expand recognition program to encourage sustainable materials management practices among businesses
		Work with local governments to support sustainable materials management efforts of small businesses
	Increase recycling access and participation in state government facilities	Identify opportunities for program enhancement and provide technical assistance/state contracts
	Increase diversion of construction and demolition materials	Provide local governments with technical assistance to help them promote and encourage C&D recovery
		Provide grants to help local governments implement C&D recycling
		Consider requiring state construction projects to adopt specified C&D recycling activities
	Increase diversion of electronics	Continue to conduct compliance visits and assess whether electronics recyclers should be required to obtain permits by rule
		Educate recyclers and the public about third-party certification services and best management practices for recyclers
		Provide technical assistance to the Tennessee DGS and lead by example in e-scrap recycling

STRATEGIES		TACTICS
	Increase diversion of HHW and BOPAE	Provide technical assistance to permanent HHW facilities to enhance the safety and cost-effectiveness of their operations
		Increase participation at permanent HHW facilities/events by allowing participation by out-of-county residents
		Increase participation at permanent HHW facilities/events by allowing Conditionally Exempt Small Quantity Generators to use facilities, by appointment
		Seek opportunities for public/private partnership such that a private facility owner would contract with TDEC or a local government to allow residents to deliver HHW and/or BOPAE to their facility

Table XIV-3
Tennessee Solid Waste and Materials Management Plan 2015 – 2025 Objectives, Strategies, and Tactics
Objective 3

	STRATEGIES	TACTICS
Objective 3 - Promote Material Processing and End Use in Tennessee	Develop regional recycling hubs where collection and delivery to processors or end users remains cost prohibitive	Continue to operate the Hub and Spoke Grant Program to expand infrastructure
	Seek and facilitate opportunities for public/private partnerships for the collection and processing of recyclables	Work with Economic and Community Development, Tennessee Chamber of Commerce and Industry and its regional affiliates and other Tennessee organizations, as appropriate, to identify and support entities that have an interest in initiating or expanding recyclables collection or processing
		Identify and work with national organizations that have an interest in recycling, such as The Carton Council, the American Institute for Packaging and the Environment, The American Chemistry Council, etc. to expand recycling with their assistance
	Support the development or enhancement of online tools to facilitate materials processing/marketing	Develop/enhance/provide access to online material exchanges and/or opportunities for cooperative marketing of recovered materials
		Develop or oversee the development of a user-friendly tool to help connect material generators, processors and end users in Tennessee
		Research and provide information about third-party organizations that provide recycling services or information about recycling services on the TDEC website
	Support the development of scrap tire processing and end markets for tire-derived materials	Work with TDOT to encourage the use of tire-derived aggregate for use as a lightweight backfill material, road base, and the use of crumb rubber in road construction
		Encourage the use of tire-derived aggregate in landfill construction applications
		If funds are available, consider initiating a grant program for public agencies and institutions to purchase tire-derived material/products made from Tennessee-generated scrap tires
	Facilitate the consideration of sustainable materials management considerations in public purchasing decisions	Work with the Governor's Office, Department of General Services, and other state agencies to develop and implement more comprehensive policies for environmentally preferable purchasing for state agencies
		Ensure local governments are aware of green purchasing opportunities available to them, including state contracts

Table XIV-4
Tennessee Solid Waste and Materials Management Plan 2015 – 2025 Objectives, Strategies, and Tactics
Objective 4

STRATEGIES		TACTICS
Objective 4 - Increase Diversion of Organics	Provide information to businesses and citizens about ways to reduce disposal of food residuals	Provide information and links to appropriate organizations' websites, regarding food recovery/donation
		Ensure that food scraps are included as a category in the materials exchange that is developed for Tennessee
	Dedicate resources to expand collection, processing, and end use of residential organics	Continue to provide grants to local governments to support organics recovery programs
		Provide information and tools to help residents increase diversion of organics at home
		Provide technical assistance to local governments to support the diversion of organics
	Increase composting/processing of organics generated at state facilities	Implement organics recovery at one or more state facilities
		Develop demonstration projects at state facilities, and provide technical assistance to state agencies to implement composting/organics processing
		Implement or support the implementation of different technologies/processing of food residuals to showcase their feasibility
	Provide financial, technical, and/or regulatory support to implement organics processing at one or more institutions/ commercial locations	Provide financial, technical, or regulatory support for organics processing at institutions and commercial establishments
		Follow progress of project/program and develop and share information about the project, to assist other projects
	Support organics recovery with updated policy	Finalize/develop new streamlined organics processing regulations

Table XIV-5
Tennessee Solid Waste and Materials Management Plan 2015 – 2025 Objectives, Strategies, and Tactics
Objective 5

STRATEGIES		TACTICS
Objective 5 - Support New Waste Reduction and Recycling Technology	Ensure State policy Supports new waste reduction and recycling technologies	Periodically identify and, where possible, eliminate barriers that inadvertently hinder use of new technologies to achieve goals
		Consider and, where feasible, implement new state policies that encourage achievement of waste reduction and recycling goals using new technology
	Provide guidance to local governments as they consider new waste reduction and recycling technologies	Provide information to local governments considering projects for new technology for waste reduction and recycling
		Provide local governments with guidance regarding zoning ordinances and siting considerations associated with new technologies for waste reduction and recycling
	Work with partners to identify and support projects using new technology that may help achieve its materials management goals	Work with Tennessee Economic and Community Development to identify and support projects that use new technology that could create jobs and reduce waste disposed
		Identify opportunities to assist with developing or promoting demonstration projects that use new technologies that could have a positive economic impact.

Table XIV-6
Tennessee Solid Waste and Materials Management Plan 2015 – 2025 Objectives, Strategies, and Tactics
Objective 6

STRATEGIES		TACTICS
6. Expand and Focus Education and Outreach	Develop a statewide recycling campaign	Develop professional statewide recycling education campaign
		Develop other adaptable education and outreach materials for local governments
	Promote sustainable materials management in schools and public institutions	Conduct research, then work with stakeholders to develop a waste reduction/recycling program for schools
		Consider developing a competition and/or recognition program among K-12 schools
		Promote sustainable materials management at other public institutions, including public colleges and universities
	Promote sustainable materials management to Tennessee businesses	Promote the environmental and economic benefits of sustainable materials management to Tennessee businesses and inform them of opportunities, tools, and goals
	Promote HHW services to local governments and assist them in promoting HHW and BOPAE collection services	Encourage local governments to participate in HHW collection programs
		Provide education and outreach materials that local governments can adapt to promote HHW and BOPAE collection
		Continue to provide information about HHW collection events to the public via TDEC website and e-mail.

Table XIV-7
Tennessee Solid Waste and Materials Management Plan 2015 – 2025 Objectives, Strategies, and Tactics
Objective 7

STRATEGIES		TACTICS
7. Ensure Sufficient and Environmentally Sound Disposal	Continue to monitor Class I landfill development, usage, and remaining capacity	Monitor Class I landfill usage and remaining capacity
		Make Class I landfill usage and remaining capacity data readily available to local governments for local planning efforts
	Review and consider strengthening environmental regulations/policies relative to solid waste management facilities	Review specific policies and protocols regarding solid waste management facilities for potential improvements in requirements and notification protocols
		Continue to review, expand, and make data about the status of solid waste and processing facilities in the State available to the public
	Continue to address illegal disposal of materials	Continue to support agencies and organizations to encourage proper management of waste and materials
		Provide technical and/or other support to assist local governments address illegal disposal
		Continue to work to eliminate unpermitted tire disposal sites in Tennessee

Table XIV-8
Tennessee Solid Waste and Materials Management Plan 2015 – 2025 Objectives, Strategies, and Tactics
Objective 8

STRATEGIES		TACTICS
8. Develop Sustainable Funding Sources for Sustainable Materials Management	Consider increasing tipping fee surcharges on disposed solid waste	Conduct a study to identify potential impacts of disposal surcharge increases on Class I and Class III/IV landfills
		Depending on results of study, increase the tipping fee surcharge on MSW disposed at Class I landfills
		Depending on results of study, establish a tipping fee surcharge on waste disposed at Class III/IV landfills
	Raise revenue for waste reduction, recycling, and integrated solid waste management from new sources	Consider and implement alternative state-level funding strategy(ies)
	Support the development of sustainable funding strategies for local programs	Continue to encourage local governments to track program costs and revenues on a full-cost accounting basis
		Develop information and tools for local governments to help them implement sustainable funding mechanisms, increase revenues and decrease costs
		Work with local governments to identify potential cost savings local governments can realize through increasing waste reduction and diversion

B. Roles and Responsibilities

Although the TDEC Division of Solid Waste Management is charged with overseeing the implementation of the Solid Waste and Materials Management Plan, and most of the strategies and tactics are primarily efforts TDEC will undertake, many strategies and tactics will also rely on the participation and support of other entities. It is incumbent on local governments, private haulers, recyclers, and end users to ensure that the policies, programs, and infrastructure are in place to achieve the objectives established in the Plan. Schools, school districts, Keep Tennessee Beautiful and its local affiliates, the State and local Chambers of Commerce, the Tennessee Recycling Coalition, as well as local governments have a large role to play in educating their constituencies about why and how to reduce, reuse, recycle, and manage solid waste. The TDEC Division of Solid Waste Management is responsible for providing or identifying the guidance, technical assistance, and other resources to enable this to happen.

The Plan also relies on the participation of other agencies and authorities within State government. Any changes to the rules must be approved by the Underground Storage Tank and Solid Waste Disposal Control Board. The Tennessee Department of Economic and Community Development plays an important role to help maximize and promote the economic benefit of diverting materials from disposal and reusing them in Tennessee. All state agencies and facilities are expected to participate in achieving state agency recycling goals and maximize the purchase of products made from recycled content.

Perhaps most critically, successful implementation of the Tennessee Solid Waste and Materials Management Plan relies on those that generate recoverable materials and solid waste every day in their homes, at their schools, in their workplace, and in their communities. It is the responsibility of TDEC, local governments, haulers, processors, disposal facilities, and manufacturers to make sure that the opportunities are available to divert materials from landfills. But ultimately, it is the decisions made by each citizen of Tennessee that determine whether waste reduction and recycling goals, and other objectives of the Plan, are met.

C. Policy and Resource Considerations

Many of the items included in the action plan are likely to require changes to state policy or a significant dedication of financial resources. These are often two of the most significant hurdles to overcome and so the action plan clearly identifies which actions are likely to face these challenges. Those that are likely to require changes in state policy include:

- New waste reduction or recycling goals;
- Changing the definition of diversion to exclude disposal in a Class III/IV landfill;
- Expanded reporting requirements for disposal facilities;
- New requirements for management of electronics at the end of useful life;
- Updated (environmentally preferable) purchasing guidelines for state agencies;
- Possible requirements for C&D recycling on state projects;
- Changes, if needed, to permit requirements for organics processing facilities;
- Changes, if needed, to encourage new waste reduction and recycling technologies;

- Changes, if determined necessary after review, to construction permits and inspections for solid waste management facilities;
- Changes, if determined necessary after review, to requirements for notification and response pertaining to environmental incidents and solid waste management facilities; and
- Change, if determined necessary after review, to public notification requirements associated with the disposal of special waste at MSW landfills.

Those that are anticipated to require significant funding for success include:

- Continued grant funds for collection and processing of recyclables, including Hub and Spoke infrastructure;
- Statewide recycling education campaign;
- Potential grants for researching and expanding the market for tire-derived products;
- Potentially, costs to develop infrastructure and monitor compliance with any new electronics diversion requirements;
- Expansion of online tools for material exchanges, cooperative marketing, and other tools to connect generators with processors and processors with end users;
- Demonstration composting/food residuals processing technology at state facilities; and
- Recognition programs for businesses, schools, etc.

Table XIV-9 shows the objectives and strategies with broad timeframes for when implementation of the strategy is expected to begin, as well as potential partners for each strategy.

Table XIV-9
Strategies, Timeframes, and Potential Partners by Objective

Strategy	Timeframe		Potential Partners
	First Five Years of Plan	Second Five Years of Plan	
Objective 1: Update Goals and Measure Progress			
1) Update statewide numerical goals	X		The Board, Local Governments, Development Districts, Solid waste and recycling facilities
2) Update local government waste reduction and recycling goals and measurement	X		The Board, Local Governments, Development Districts, Solid waste and recycling facilities
3) Establish goals for state agencies and measure progress	X		The Board, Other State Agencies
Objective 2: Increase Recycling Access and Participation			
1) Implement a Recycling Grants Plan	X		Local Governments, Other State Agencies
2) Support drop-off sites for residential collection where curbside not feasible	X		Local Governments, Development Districts, Solid waste and recycling facilities, Universities, Tennessee Solid Waste Directors Associations, Tennessee Solid Waste Association of North America, Nonprofit Organizations
3) Support enhancement of curbside and local government recycling programs	X		Local Governments, Development Districts, Universities
4) Work with partners to encourage sustainable materials management by business and industry	X		Local Governments, Development Districts, Solid waste and recycling facilities Department of Economic and Community Development, Tennessee Chamber of Commerce and Industry, Nonprofit Associations
5) Increase recycling access and participation in state government facilities	X		Other State Agencies
6) Increase diversion of construction and demolition materials		X	Local Governments, Development Districts, Universities

Strategy	Timeframe		Potential Partners
	First Five Years of Plan	Second Five Years of Plan	
7) Increase diversion of electronics		X	The Board, Solid waste and recycling facilities, Nonprofit Organizations
8) Increase diversion of HHW and BOPAE	X		Local Governments, Development Districts, Solid waste and recycling facilities, Department of Economic and Community Development, Tennessee Chamber of Commerce and Industry, Tennessee Solid Waste Association of North America
Objective 3: Promote Material Processing and End Use in Tennessee			
1) Develop regional recycling hubs where collection and delivery to processors or end users remains cost prohibitive		X	Local Governments, Development Districts, Solid waste and recycling facilities
2) Seek and facilitate opportunities for public/private partnerships for the collection and processing of recyclables	X		The Board, Solid waste and recycling facilities, Department of Economic and Community Development, Tennessee Chamber of Commerce and Industry, Nonprofit Organizations
3) Support the development or enhancement of online tools to facilitate materials processing/marketing		X	Local Governments, Development Districts, Solid waste and recycling facilities, Tennessee Chamber of Commerce and Industry, Nonprofit Organizations
4) Support the development of scrap tire processing and end markets for tire-derived materials		X	Local Governments, Development Districts, Solid waste and recycling facilities, Other State Agencies, Universities
5) Facilitate the consideration of sustainable materials management considerations in public purchasing decisions		X	Local Governments, Development Districts, Other State Agencies, Universities

Strategy	Timeframe		Potential Partners
	First Five Years of Plan	Second Five Years of Plan	
Objective 4: Increase Diversion of Organics			
1) Provide information to businesses and citizens about ways to reduce disposal of food residuals	X		Local Governments, Development Districts, Tennessee Chamber of Commerce and Industry, Nonprofit Organizations
2) Dedicate resources to expand collection, processing, and end use of residential organics	X		Local Governments, Development Districts, Solid waste and recycling facilities, Universities, Tennessee Solid Waste Association of North America
3) Increase composting/processing of organics generated at state facilities		X	Solid waste and recycling facilities, Other State Agencies, Universities
4) Provide financial, technical, and/or regulatory support to implement organics processing at one or more institutions/ commercial locations		X	Solid waste and recycling facilities, Tennessee Chamber of Commerce and Industry, Universities
5) Support organics recovery with updated policy	X		The Board
Objective 5: Support New Waste Reduction and Recycling Technology			
1) Ensure state policy supports new waste reduction and recycling technology		X	Local Governments, Development Districts, Solid waste and recycling facilities, Department of Economic and Community Development, Tennessee Chamber of Commerce and Industry, Tennessee Solid Waste Directors Association, Tennessee Solid Waste Association of North America, Universities, Nonprofit Organizations
2) Provide guidance to local governments as they consider new waste reduction and recycling technologies		X	The Board, Local Governments, Development Districts, Solid waste and recycling facilities, Universities

Strategy	Timeframe		Potential Partners
	First Five Years of Plan	Second Five Years of Plan	
3) Work with partners to identify and support projects using new technology that may help achieve state waste reduction and diversion goals.		X	Department of Economic and Community Development, Universities, Tennessee Solid Waste Association of North America, Universities, Nonprofit Organizations
Objective 6: Expand Education and Outreach			
1) Develop a statewide recycling campaign	X		Local Governments, Development Districts, Solid waste and recycling facilities, Department of Economic and Community Development, Other State Agencies, Tennessee Chamber of Commerce and Industry, Nonprofit Organizations
2) Promote sustainable materials management in schools and public institutions		X	The Board, Local Governments, Development Districts, Solid waste and recycling facilities, Universities, Nonprofit Organizations
3) Promote sustainable materials management to Tennessee businesses		X	Department of Economic and Community Development, Tennessee Chamber of Commerce and Industry, Nonprofit Organizations
4) Promote HHW services to local governments and assist them in promoting HHW and BOPAE collection services	X		Local Governments, Development Districts, Solid waste and recycling facilities, Nonprofit Organizations
Objective 7: Ensure Adequate and Safe Disposal			
1) Continue to monitor Class I landfill development, usage, and remaining capacity		X	Local Governments, Development Districts, Solid waste and recycling facilities
2) Review and consider strengthening environmental regulations/policies relative to solid waste management facilities		X	Local Governments, Solid waste and recycling facilities, Tennessee Chamber of Commerce and Industry
3) Continue to address illegal disposal of materials		X	Local Governments, Development Districts

Strategy	Timeframe		Potential Partners
	First Five Years of Plan	Second Five Years of Plan	
Objective 8: Ensure Sustainable Funding			
1) Consider increasing tipping fee surcharges on disposed municipal solid waste		X	The Board, Local Governments, Development Districts, Solid waste and recycling facilities, Other State Agencies
2) Raise revenue for waste reduction, recycling, and integrated solid waste management from new sources		X	The Board, Local Governments, Development Districts, Solid waste and recycling facilities, Other State Agencies
3) Support the development of sustainable funding strategies for local programs	X		The Board, Local Governments, Development Districts, Solid waste and recycling facilities, Other State Agencies

D. Plan Progress

TDEC will track progress in implementing each of the tactics under each strategy in the Plan, and share this information on a TDEC website dedicated to the Plan. This information will be updated at least on a quarterly basis. The aim of these updates will be to apprise citizens, local governments, and other stakeholders of progress being made in a cost-effective, transparent fashion. TDEC will also provide information pertaining to the number of processing facilities (such as material recovery facilities, convenience sites, and organics composting facilities) and changes in the number of facilities. TDEC will make an effort to show data, to the extent possible, in terms of objectives and strategies described in the Plan. This means showing diversion for specific material types identified in the plan, such as C&D, electronics.

TDEC will consider providing stakeholders with a "year in review and look ahead" session, in a webinar, workshop, meeting or conference session, to provide updates and an opportunity to provide feedback and ask questions.

An Annual Report on the Solid Waste Management Act is prepared by TDEC's Division of Solid Waste Management, Solid Waste Assistance Program, as is required by Tennessee Code Annotated § 68-211-873. This report will be developed in a new format, largely structured around the 8 objectives, to provide an annual update. Similarly, the Annual Progress Reports provided to TDEC will be redesigned so that progress being made by local governments will "roll up" into the state annual report.

TDEC's Office of Solid Waste Assistance Programs and others, as appropriate, will include the importance of achieving the objectives of the Plan in their job performance plan. TDEC will consider moving toward reaching objectives and goals in a steady manner a success. Implementing tactics and action items will also be regarded as progress. However, the need for additional tactics will be addressed as the Plan is updated and amended.

E. Plan Amendments and Updates

This Tennessee Solid Waste and Materials Management Plan covers the period from 2015 to 2025. It is anticipated that the action plan will be reviewed in 2020 and adjusted as needed at that time. The planning process for the next ten year update is anticipated to begin in 2024 for a final Plan Update to cover the time period through 2035.

XV. Guidance for Local Governments

A. Introduction

TDEC aims to help local governments develop and sustain successful solid waste and materials management programs by providing local governments with resources such as grants (i.e., planning, equipment, scrap tire remediation) technical assistance, regulatory assistance, and other assistance as appropriate and feasible. It is appropriate for counties as well as cities to be pro-active in helping their communities achieve established solid waste reduction and recycling goals.

B. Local Government Requirements

Below is a description of the requirements of local governments regarding solid waste and materials management in the state of Tennessee.

1. Regional Solid Waste Management Plans

Each solid waste planning region is required to plan for "disposal capacity and waste reduction." Plans shall include:

- A Plan for 10 years of waste disposal capacity; and
- A Plan for achieving compliance with the waste reduction and recycling goal.

According to Tennessee Code Annotated, § 68-211-811 through § 68-211-815, Plans need to be consistent with the State Plan and all laws and regulations promulgated by the Department. Plans and plan revisions must include:

1) Demographic information
2) A current system analysis of:
   - Waste streams, including data concerning types and amounts generated
   - Collection capability, including data detailing the different types of collection systems and the populations and areas which receive and do not receive such services
   - Disposal capability, including an analysis of the remaining life expectancy of landfills or other disposal facilities
   - Costs, using a full-cost accounting model developed by the commissioner, including costs of collection, disposal, maintenance, contracts and other costs
   - Revenues, including cost reimbursement fees, appropriations and other revenue sources;
3) Adoption of the uniform financial accounting system
4) Anticipated growth trends for the next ten-year period
5) Anticipated waste capacity needs
6) Planned capacity assurance, including descriptions of planned or needed facilities

7) A recycling plan, including a description of current public and private recycling efforts and planned efforts to enhance recycling within the county or region
8) A plan for the disposal of household hazardous wastes
9) Adoption of uniform reporting requirements as required by this part
10) A description of waste reduction and recycling activities designed to attain the state goal required by § 68-211-861
11) A description of education initiatives aimed at businesses, industries, schools, citizens and others, which addresses recycling, waste reduction, collection and other goals
12) An evaluation of multi-county solid waste disposal region options with an explanation of the reasons for adopting or failing to adopt a multi-county regional approach
13) A timetable for implementation of the plan
14) A description of the responsibilities of the various participating jurisdictions
15) A certification from the region's Part 9 solid waste authority, if such an authority has been formed, or if no such authority has been formed, the county legislative body of each county in the region that they have reviewed and approved of the region's plan and/or revised plan
16) A plan for managing solid waste generated as a result of disasters or emergencies
17) Any other information as the commissioner may deem relevant to the implementation of this part

2. District Needs Assessments

T.C.A. § 68-211-811 requires solid waste planning development districts to submit a Needs Assessment which is to be updated every five years. The assessment is to be completed by Development District staff. The first Needs Assessments were due on April 1, 1999, and the Districts are required to submit an update every five years. The schedule of these assessments has changed, however, such that they are staggered. The Needs Assessment shall identify rational waste disposal areas within the district and include the following:

1) Demographic information and projections for a ten-year planning period
2) An analysis of economic activity within the district
3) A characterization of the solid waste stream
4) Projections of solid waste generation for the 10-year planning period
5) An evaluation of the collection systems for every municipality and county within the district
6) An evaluation of existing solid waste capacity and management facilities within the district and evaluation of any planned new or expanded facilities
7) A statement of district goals that are consistent with the state plan
8) An analysis of existing or potential waste flows within the district and between adjacent districts
9) A comparison of projected demands from waste generation and importation of waste with available and projected capacity and an identification of potential shortfalls in capacity
10) Any additional information as the commissioner may require

Districts are to plan a districtwide meeting, along with the Commissioner, to present the Needs Assessment.

3. Annual Progress Reports

Regions are required to submit data to TDEC annually, by March 31 for the preceding calendar year. The types of data requested on the Annual Progress Reports (APR) include:

- Contact information
- Description of solid waste planning region
- Convenience site and Green Box information
- Diversion activities related to management of disaster debris
- Description of source reduction activities
- Information regarding pay-as-you-throw (PAYT) programs
- Information regarding roadside dumps
- Communities with curbside collection of garbage
- Communities with curbside collection of recyclables
- Processing facilities to which recyclables are delivered
- Financial information (by activity type) including costs, revenues, as well as assets and liabilities
- Information about program complaint management and education and outreach
- Changes in solid waste policy
- Description of obstacles to achieving objectives in regional plan
- Description of setbacks and successes toward achieving objectives in regional plan
- Anticipated facility and programmatic needs to move closer to achieving objectives in regional plan
- Estimate of portion of waste stream from residential, commercial, industrial and institutional sources
- Description and analysis of solid waste system and waste reduction strategies and programs
- Description of growth trends, waste projections and anticipated waste and materials management system needs in the future
- Current waste collection and transportation systems
- Expected changes in plan
- Current disposal capacity for waste in the region
- Public education and outreach strategy
- Description of waste management strategy, including for household hazardous waste (HHW) and batteries, oil, paint, antifreeze and electronics (BOPAE)

- Current level of staff and how program is funded
- Information about publicly owned facilities, such as landfills, recycling facilities, etc., as well as publicly owned equipment used for solid waste and materials management and funding source for the facilities/equipment
- Description of future education/marketing efforts, including targeted audience, cost, and number of repetitions
- Information about disaster debris planning – whether a plan is in place, whether there are staging areas established, and whether there are pre-event contracts in place

TDEC may adapt the questions posed in the APR to streamline the process, clarify questions, reduce data duplication, and obtain data that would help TDEC more accurately measure progress toward goals.

C. Best Management Practices to Consider

TDEC acknowledges that the specific approach to minimizing the quantity of solid waste disposed and increasing the quantity of materials recycled in each county and municipality depends on many factors, and there is no one approach that would be optimal for all communities. However, there are certain best management practices that have been proven to enhance program success in most cases, and may be worthy of consideration. Some general best management practices include:

1. General Waste Reduction Policies

- Goal setting (goals should be measurable and have a timeframe)
- Public participation in planning process
- Commitment and support of elected officials
- Mandatory programs with enforcement
- Requiring haulers to provide a minimum level of recycling service and report results
- Knowledgeable and committed staff
- Mandatory recycling at events, often municipalities provide service and/or guidance
- Mandatory use of recyclable/compostable containers/cutlery/plates at events
- Educational partnerships, often with food or beverage vendors
- Pay-as-you-throw (PAYT)
- Informing/encouraging residents and businesses to “opt out” of phone book and junk mail distributions
- Reuse/exchange centers for reusable items
- Green purchasing requirements (low toxicity, recycled content, recyclability)
- Ongoing education and outreach

2. Convenience Center Sites/Recycling Drop-Off Locations

- Well lit with good signage
- Convenience center sites staffed with trained, helpful employees
- Clean, clear of loose debris, ample walking area if residents get out of car
- Pedestrian traffic separated from vehicle traffic
- Residential vehicle traffic separated from commercial vehicle traffic
- Drop-off recycling location clearly states how materials should be sorted/prepared

3. Residential Curbside Garbage and Recycling

- Mandatory participation in curbside recycling (i.e., everyone pays whether they recycle or not)
- Food residuals collected with other organic waste
- Variable rate pricing for trash (particularly when recycling carts are large enough, and pricing differentials are substantial enough)
- Tagging garbage (and/or not collecting it) if recyclables are included in it (including yard trimmings, if applicable)
- Tagging recyclables and not collecting them when contaminated
- Increased education and outreach, monitoring and tagging/notification for residents when program changes occur
- Simple and convenient collection (single-stream recycling collection is often perceived as more convenient for residents as well as businesses, particularly when implemented using a wheeled cart with ample capacity)

4. Multi-Family Garbage and Recycling

- Recycling to be as convenient as garbage collection
- No extra direct cost for recycling for the resident (i.e., “universal recycling,” where residents receive both garbage and recycling collection for one fee)
- Local governments mandate that recycling is provided at all multi-family dwelling buildings
- Municipalities mandate universal service (e.g., recycling and garbage both provided at one cost)
- Site designs for new/remodeled multi-family dwellings include space allotment for garbage and recycling containers

5. Commercial Garbage and Recycling

- Mandatory commercial recycling
- Disposal bans on certain materials (e.g., cardboard, Styrofoam™)
- Requirement of recycling plan and/or annual reporting of materials recycled, by type and quantity

- Recycling service provided by local government at no additional charge to the household beyond the cost of base-level solid waste management services

6. Construction and Demolition Debris

- Economic incentive and/or expedited permitting if in compliance/recycle a certain portion of materials generated
- Recycling plan required, often as part of permit application, and with deposit. Deposit refunded when proof of recycling presented
- Certain percentage (or material types) required to be recycled
- Require delivery of materials to facility where percentage recycled can be verified

7. Disaster Debris

- Identify any special considerations, such as historic sites, environmental issues, and if any such conditions are present consult with Tennessee Emergency Management Agency (TEMA) prior to issuing bids or executing contracts.
- For guidance on historic properties or areas, contact the Tennessee Historical Commission.
- Establish Temporary Debris Management Sites (DMS) , and prioritize them. Have the sites demarcated on a hardcopy map, as appropriate. Review and update list and map annually.
- Develop debris removal zone maps that identify road maintenance responsibility and areas where debris will be removed.
- Identify all transfer stations and landfills in the county or region.
- Establish guidelines with local landfills and alternate landfills for types of debris accepted and current versus maximum capacities.
- Have ordinances in place to handle emergency condemnation procedures.
- Develop procedures to ensure cooperation with local and state government officials including real estate offices; law and/or code enforcement; state historic preservation office; qualified contractors to remove HHW, asbestos, and lead-based paint; and field teams to photograph the sites before and after demolition.
- Identify whether debris will be removed from private properties. While that is only done in very limited cases, if debris is removed from private property, be sure a right-of-way agreement and a hold harmless agreement are in place.
- Establish debris monitors that are separate from the contractor's monitors employees to monitor and document contractor work.
- Establish a staff person to oversee contract activities.
- Submit contracts prior to execution to TEMA/FEMA for review of eligibility.
- Create a list of key contacts for managing disaster debris. Ensure list is kept up to date, and a hardcopy is available at all times in case of power failure.

- To be eligible for reimbursement under the Public Assistance Program, ensure contracts for debris removal meet rules for Federal grants, including but not limited to[29:]
  - Use competitive bidding process for debris removal services. Complete and demonstrate a cost analysis to demonstrate price reasonableness on any contract or contract modification where adequate price competition is lacking.
  - Provide a clear and definitive scope of work in the RFB/RFP.
  - Require bidders to provide copies of licenses, references, financial records, and proof of insurance and bonding.
  - Keep accurate, complete records of all costs incurred.
- Use only abbreviated emergency contracting practices that include an expedited competitive bid process if time does not allow for more stringent procedures, and if they are allowed under state and local codes, laws and ordinances.
- Ensure that debris removal or monitoring costs are reasonable and necessary as defined by OMB Circular A-87 and 44 CFR Part 13. Competitively bid contracts that comply with federal, state and local procurement regulations and procedures will establish reasonable costs for the work.

D. Tiered Approach to Increase Diversion

As stated above, and described in Objective 1 more thoroughly, TDEC acknowledges that all local jurisdictions are not the same, and that all local governments will not wish to take the same approach to achieving the state's solid waste reduction and diversion goals. To that end, TDEC has also allowed for regions with smaller populations to focus on qualitative goals rather than quantitative goals, which involve improving the policies, programs and systems in the jurisdiction to help achieve higher levels of waste reduction and diversion. Under Objective 1 TDEC proposes to establish and update qualitative goals for certain local governments. Specifically, TDEC proposes to apply qualitative goals to counties with populations of less than 25,000 and cities with populations of less than 20,000. Also, for other jurisdictions that have been unable to achieve their quantitative goals, TDEC will examine their progress toward achieving progressive qualitative goals. The specific qualitative goals have yet to be established, but Table XV-1 provides an example of what such qualitative goals might look like.

[29]From FEMA Recovery Division Fact Sheet "Debris Removal - Applicant's Contracting Checklist"

Table XV-1
Four Tiers of an Integrated Waste Management System

Tier 1 – Small Rural Counties									
	Population Served	Collection Systems	Disposal Systems	Waste Reduction	Problem Waste Management	Education/ Awareness	Staff	Composting/ Mulching	Economic and Mgmt.
Target - Minimum Level of Solid Waste/ Materials Management	▪ Very rural counties ▪ Population of 25,000 or less	▪ At least one staffed convenience center	▪ At least one Class I (MSW) disposal facility available to the county either locally or regionally ▪ At least one Class III/IV disposal facility available to the county either locally or regionally	▪ Recycling program includes at least two material types ▪ Preferred materials include cardboard and metals (steel and/or aluminum)	▪ Maintain/secure public or private sites to manage batteries, tires, oil, and other automotive fluids	▪ Adequate signage provided at convenience center(s) ▪ Handouts/ mailers provided to user of Center(s) and/or by mail/email ▪ Provide K-12 education and promotion on core message	▪ A solid waste director or recycling coordinator oversees materials management ▪ Duties are at least 55% solid waste/ waste reduction related	▪ Some composting or mulching may take place at county or residential level ▪ Website with information and references to composting methods	▪ Full cost accounting approach through a county enterprise fund for all waste and materials management services

Tier 1 – Small Rural Counties									
	Population Served	Collection Systems	Disposal Systems	Waste Reduction	Problem Waste Management	Education/ Awareness	Staff	Composting/ Mulching	Economic and Mgmt.
Preferred Level of Solid Waste/ Materials Management	▪ Same as above	▪ Same as above	▪ Same as above	▪ Recycling program includes at least **three** materials ▪ Preferred materials include cardboard and metals (steel and/or aluminum) plus any of the following: newspaper, magazines, mixed paper, plastic (#1 and #2 bottles), or glass	▪ Maintain/secure public or private sites to manage batteries, tires, oil, and other automotive fluids ▪ At least one mobile HHW collection event provided every other year sponsored by the State	▪ Same as above plus county Website contains up-to-date information on recycling drop-off sites and HHW collection events and BOPAE	▪ Same as above	▪ Same as above ▪ Website includes information about grasscycling and backyard composting	▪ Same as above

Tier 2 – Larger Rural Counties									
	Population Served	Collection Systems	Disposal Systems	Waste Reduction	Problem Waste Management	Education/ Awareness	Staff	Composting/ Mulching	Economic and Mgmt.
Targeted - Minimum Level of Solid Waste/ Materials Management	▪ More developed rural counties with low to moderate populations ▪ Population of 25,001-50,000	▪ More densely populated areas of county have additional convenience center sites	▪ At least one Class I (MSW) disposal facility available to the county either locally or regionally ▪ At least one Class III/IV disposal facility available to the county either locally or regionally	▪ Recycling program includes at least three recyclable commodities ▪ Preferred materials include cardboard, metals (steel and aluminum) Plastics (#1 and #2)	▪ Maintain/secure public or private sites to collect/ manage batteries, tires, oil, and other automotive fluids ▪ Host at least one mobile HHW collection event every other year, sponsored by the State ▪ Implement program to manage BOPAE	▪ Adequate signage provided at convenience centers ▪ Handouts/mailers with core materials management/ recycling information distributed ▪ K-12 education/ promotion on core message provided ▪ County website provides recycling information	▪ A solid waste director or recycling coordinator oversees materials management ▪ Duties are at least 75% solid waste/ materials management-related	▪ Some county/municipal composting/ mulching occurs ▪ County and/or municipal websites have information about backyard composting and grasscycling	▪ Full cost accounting approach employed through a county enterprise fund for all waste and materials management services

Tier 2 – Larger Rural Counties									
	Population Served	Collection Systems	Disposal Systems	Waste Reduction	Problem Waste Management	Education/ Awareness	Staff	Composting/ Mulching	Economic and Mgmt.
Preferred Level of Solid Waste/ Materials Management	▪ Same as above.	▪ Convenience Centers located throughout county, with higher level of service available in more densely populated areas	▪ At least one Class I (MSW) disposal facility available to the county either locally or regionally ▪ At least one Class III/IV disposal facility available to the county either locally or regional	▪ Recycling program includes at least four materials ▪ Preferred commodities include cardboard, metals (steel, and aluminum) plus any of the following: newspaper, magazines, mixed paper, plastic (#1 and #2 bottles), glass, and white goods	▪ Maintain/secure public or private sites to collect and manage batteries, tires, oil, and other auto fluids ▪ Implement a program to manage BOPAE ▪ Counties host at least one mobile HHW collection event per year, sponsored by the State	▪ As above, plus increased usage of media materials, multimedia presentations, and social media ▪ BOPAE education and outreach provided ▪ Website includes up-to-date information on drop-off recycling locations, HHW and BOPAE	▪ Same as above	▪ At least one composting /mulching facilities operating in county	▪ Same as above

Tier 3 – Suburban/Rural Counties									
	Population Served	Collection Systems	Disposal Systems	Waste Reduction	Problem Waste Management	Education/ Awareness	Staff	Composting/ Mulching	Economic and Mgmt.
Targeted - Minimum Level of Solid Waste/ Materials Management	▪ More developed rural counties transitioning to suburban ▪ Population of 50,001-100,000	▪ Minimally required number of County Convenience Center (based on SWMA of 1991) ▪ Additional County Convenience Centers located throughout county, with higher level of service available in more densely populated areas ▪ Curbside collection in more densely populated communities	▪ At least one Class I (MSW) disposal facility available to the county either locally or regionally ▪ At least one Class III/IV disposal facility available to the county either locally or regional	▪ Recycling program includes full spectrum of fiber, metals, multiple types of plastics, and glass recycling ▪ Some non-traditional recyclables like textiles, and pallets recovered	▪ At least one Mobile HHW collection event per year ▪ Gas cylinder management program provided ▪ BOPAE collection provided ▪ Cooperative marketing of materials, or strong markets independently	▪ Adequate signage at convenience centers ▪ Convenience center staff trained to actively engage public on waste reduction ▪ Handouts/mailers with core information distributed ▪ K-12 education and promotion on core message provided ▪ BOPAE education provided to those using the center ▪ Website up-to-date and provides materials management information including importance of recycling/waste minimization as well as drop-off locations and HHW/BOPAE information ▪ Multi-media used	▪ Full-time solid waste director/ public works director oversees materials management dept. ▪ Full time recycling coordinator actively promotes waste reduction/ recycling	▪ At least one composting/mulching facility operating in county ▪ Promote backyard composting/ grasscycling ▪ At least one demonstration/ pilot compost program including food residuals	▪ Full cost accounting approach through a county enterprise fund for all materials management services

Tier 3 – Suburban/Rural Counties									
	Population Served	Collection Systems	Disposal Systems	Waste Reduction	Problem Waste Management	Education/ Awareness	Staff	Composting/ Mulching	Economic and Mgmt.
Preferred Level of Solid Waste/ Materials Management	▪ Same as above	▪ Provide higher level of MSW and recycling collection service ▪ Mandate countywide collection service as growth dictates ▪ Curbside collection of yard trimmings offered where density/waste generation dictates	▪ May use transfer stations to consolidate and transfer materials to improve economics of disposal ▪ Use pit burners or air curtain destructors to reduce bulk and improve economics of disposal management	▪ Recycling program includes full spectrum of fiber, metals, multiple types of plastics, and glass recycling ▪ Some non-traditional recyclable materials such as textiles and pallets also recovered	▪ Expand BOPAE program to include gas cylinders ▪ Market e-scrap through cooperative marketing and industry provided programs	▪ Increased frequency of K-12 education programs ▪ Actively target residents and businesses with waste reduction messages ▪ Increase use of multimedia, PSAs, and social media for BOPAE message ▪ City/County provide information to businesses/ public about recycling non-traditional materials ▪ Website provides information about drop-off sites, HHW and BOPAE	▪ Same as above	▪ At least two composting facilities in County ▪ Promote back yard composting ▪ Multiple demonstration/pilot composting projects including food residuals ▪ Supporting establishment of food residuals composting facility, as appropriate	▪ Same as above ▪ County and some municipalities have some green purchasing guidelines/contracts in place

Tier 4 for Urban Counties									
	Population Served	Collection Systems	Disposal Systems	Waste Reduction	Problem Waste Management	Education/ Awareness	Staff	Composting/ Mulching	Economic and Business
Targeted - Minimum Level of Solid Waste/ Materials Management	▪ Large to very large suburban and urban areas ▪ Population over 100,001	▪ Mandatory, countywide curbside collection service for MSW ▪ Curbside collection of recyclable materials at no extra cost to residents in more densely populated areas	▪ At least one Class I (MSW) disposal facility available to the county either locally or regionally ▪ At least one Class III/IV disposal facility available to the county either locally or regional ▪ Alternative technologies explored	▪ Full spectrum of fiber, metals, multiple types of plastics, and glass recycling available ▪ Some communities have financial incentives to minimize waste (PAYT, Rewards) ▪ Non-traditional materials recycled, e.g., textiles, pallets, mattresses, etc. ▪ Some communities implement pro-recycling ordinances	▪ At least one and preferably 2 mobile HHW collection events per year ▪ Work with the state to determine cost effectiveness of local permanent HHW facility ▪ Comprehensive BOPAE management program operated by County. ▪ County may manage more difficult problem wastes through an advanced problem waste management system	▪ County and municipalities provide a comprehensive K-12 and adult education/out-reach program ▪ County and/or municipalities fully utilize multi and social media outlets to deliver message directly to targeted audiences	▪ A full-time solid waste/public works director oversees materials management department ▪ One or more full time recycling coordinator(s) employed	▪ At least one composting and mulching operation ▪ County and municipalities promote back yard composting ▪ At least one pilot or demonstration food residuals compost project in County	▪ Full cost accounting approach through a county enterprise fund for all materials management services ▪ Coordination/ communication between municipal and county staff, shared programs where mutually beneficial ▪ Actively seek opportunities for public/ private partnership ▪ County and larger municipalities have some green purchasing contracts/guidelines in place

Tier 4 for Urban Counties									
	Population Served	Collection Systems	Disposal Systems	Waste Reduction	Problem Waste Management	Education/ Awareness	Staff	Composting/ Mulching	Economic and Business
Preferred Level of Solid Waste Management	▪ Same as above	▪ Most residents have economic incentive to reduce amount of waste disposed (through PAYT, rewards programs, etc.) ▪ Explore Curbside collection of organics provided where population density and generation dictate	▪ Exploration of alternative disposal system technologies	▪ Implement one or more advanced waste reduction strategy such as landfill bans, PAYT collection service, local product stewardship, waste exchanges, LEED construction, etc. ▪ Consideration given to food residuals collection, particularly in areas with large quantities of commercial generators	▪ County has permanent HHW facility which accepts materials from other counties within the region for a fee ▪ Market e-scrap through cooperative marketing and industry provided programs. ▪ County may manage more difficult problem wastes through an advanced problem waste management system	▪ Public education materials are available in multi-lingual formats as needed ▪ County and municipalities educate businesses/in-situations on waste reduction strategies including WasteWise, LEED construction, etc.	▪ Work with local college or university to hire part-time interns to assist with waste reduction and recycling activities	▪ At least two composting and mulching operations ▪ At least one non open-windrow facility or pilot/demonstration project in County ▪ County and municipalities promote back yard composting ▪ Public facilities explore feasibility of bagging and selling finished compost and/or mulch	▪ Same as above ▪ County and municipalities have environmentally preferable purchasing program in place

E. Resources Available from State

TDEC provides or has historically provided the following resources for local governments:

1. Cooperative marketing for recyclables
2. Grants such as:
    - Planning grants for local governments and development districts
    - Grants to upgrade convenience centers
    - Grants to purchase recycling equipment
    - Grants to agencies/universities – to assist with solid waste and materials management planning and implementation of programs
    - Competitive grants for the collection of HHW and the development of a permanent HHW facility for larger counties, or mobile HHW collection events for smaller counties and municipalities
    - Funding for mobile HHW collection vehicles/equipment and milk runs
    - Hub and Spoke and waste reduction grants to develop recycling collection and processing infrastructure where it is lacking
    - Grants to implement education programs as described in approved Solid Waste Management Plans. Matching requirements are based on an economic index
    - Grants for investigation and corrective action at landfills for contaminated groundwater
3. Identification and cleanup of unauthorized waste tire disposal sites
4. Enforcement associated with unauthorized disposal sites
5. Assistance to state agencies for implementing recycling programs and initiating green purchasing programs
6. Disposal of HHW generated in public schools
7. Technical assistance for convenience centers
8. Other technical assistance
9. Education and outreach
10. Permitting and inspection of solid waste management facilities

As the Objectives Sections of this Plan indicate, in the next 10 years TDEC intends to provide specific, targeted technical assistance and information to local governments on various topics including:

- Policies to encourage and provide incentives for waste reduction and diversion of MSW
- Policies to encourage diversion of C&D waste
- Policies to encourage diversion of yard trimmings

Tennessee Department of Environment and Conservation

2015 - 2025 Solid Waste and Materials Management Plan

Appendices to Plan

APPENDIX A
Tennessee's Integrated Solid Waste Management Hierarchy

U.S. EPA's Waste Management Hierarchy

The U.S. EPA's Waste Management Hierarchy for non-hazardous waste is presented in Figure A-1.

Figure A-1
U.S. EPA Waste Management Hierarchy

Source: U.S. EPA, http://www.epa.gov/solidwaste/nonhaz/municipal/hierarchy.htm

In this hierarchy, **source reduction** (avoiding generating waste in the first place, through using washable items, electronic newspapers, or long-lasting goods, for example), and **reuse** (reusing a good or packaging, without requiring physically changing the item), are considered the most preferred means of managing waste.

Recycling (where materials are collected, often sorted, processed, and re-manufactured into new goods) and **composting** (the conversion of organic matter into compost through decomposition) are considered the next most preferred means of managing waste.

The next most preferred method of managing waste is **energy recovery**. This is the conversion of non-recyclable waste materials into useable heat, electricity, or fuel through a variety of processes, including combustion, gasification, pyrolysis (the thermal decomposition of organic material at high temperatures in the absence of oxygen), anaerobic digestion (the non-thermal decomposition of organic material in the absence of oxygen), and landfill gas (LFG) recovery. These processes are often referred to as waste-to-energy (WTE).

Treatment and disposal are the least preferred methods of managing waste. The most common means of disposal in the U.S. is landfilling. In some cases landfill gases are captured and converted into usable energy. Incineration without energy recovery would also fall into this category.

While TDEC supports the U.S. EPA waste hierarchy in general, it acknowledges that the hierarchy is accurate when "all things are equal." TDEC also acknowledges that every management method has costs and benefits, which are not included in the U.S. EPA hierarchy. Therefore, TDEC supports the use of an integrated solid waste management system approach for managing Tennessee's waste.

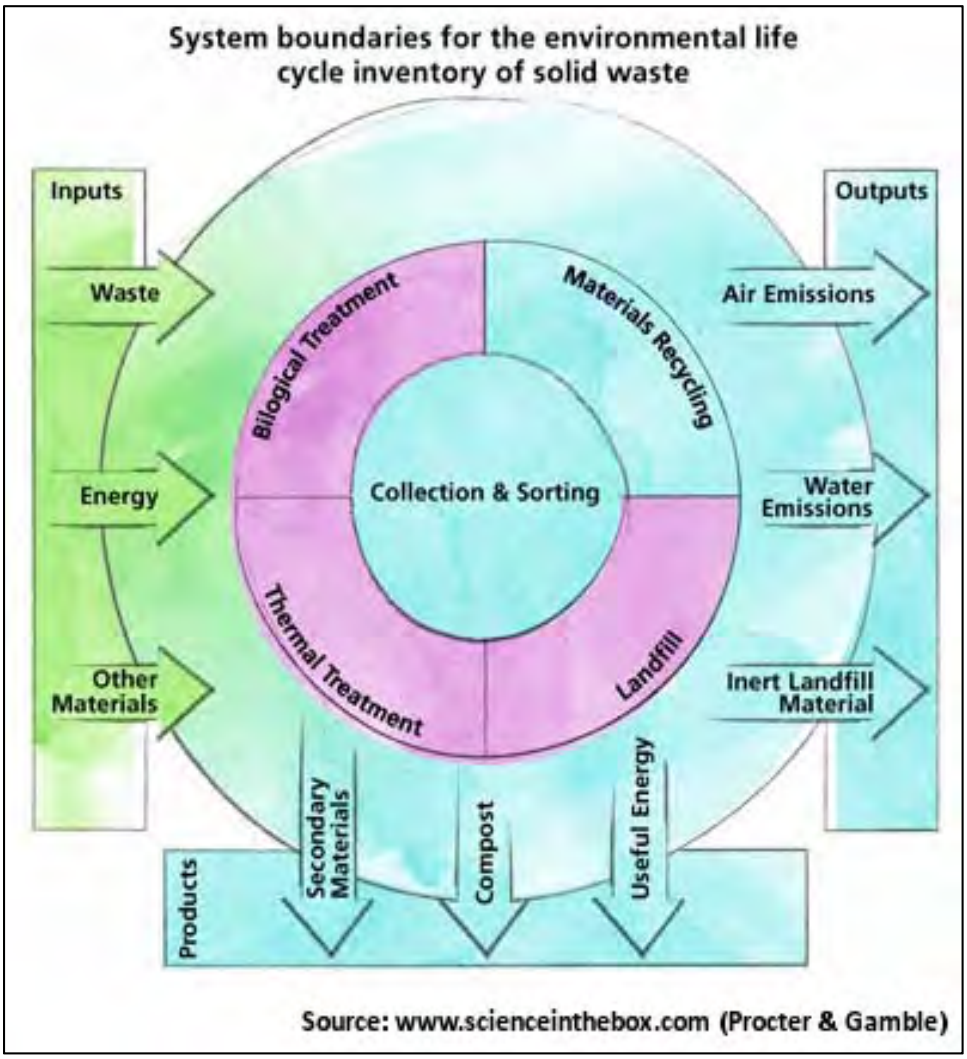
Integrated Solid Waste Management

An integrated waste management (IWM) system generally uses all of the methods described above for managing waste. Integrated solid waste management also takes into account the fact that there are costs and benefits associated with the processes which must be taken into account when selecting a waste or materials management method. Also, there are situations when multiple processes may be used for the same material stream (for example, waste-to-energy with disposal of resulting ash). Therefore, TDEC acknowledges that waste minimization and reuse, for example, may not always be the most preferred management strategy. Consideration must be given to the life cycle costs and benefits of the product or good and the management of it at the end of its useful life.

An integrated solid waste management approach uses the U.S. EPA waste management hierarchy as a foundation, but then also considers the performance and costs (environmental, monetary, and any others, such as social), that may occur, as well as the benefits and products. A lifecycle cost analysis can be helpful to more accurately assess costs and benefits. The process involves weighing the inputs (such as waste, energy, and other materials), and the waste management processes themselves, with the resulting outputs such as products, secondary materials, air and water emissions, and residual waste.

Figure A-2 provides a graphical interpretation of an integrated solid waste management approach, which considers all costs and benefits of waste management processes.

Figure A-2
Integrated Solid Waste Management System



APPENDIX B
Summary of County-Level Infrastructure

Table B-1 provides a summary of the solid waste and materials management infrastructure in place in Tennessee's counties as reported to TDEC on annual Progress Reports and facility reports. More detailed information about individual facilities is available on TDEC's Website.

Table B-1
Summary of Solid Waste and Materials Management Infrastructure by County

County	Class I LF	Class III/IV LF	Conv. Center	Transfer Station	HHW Facility	MRF	Baling
Anderson	1	1	6	0	0	0	0
Bedford	0	0	8	0	0	0	0
Benton	1	0	1	0	0	0	0
Bledsoe	0	0	5	0	0	0	1
Blount	1	1	1	0	0	0	0
Bradley	1	1	1	0	0	0	0
Campbell	0	0	9	1	0	0	1
Cannon	0	0	1	1	0	0	1
Carroll	0	0	1	1	0	0	1
Carter	0	1	3	1	0	0	1
Cheatham	0	0	5	0	0	0	1
Chester	0	0	5	1	0	1	0
Claiborne	0	1	8	0	0	0	1
Clay	1	0	1	0	0	0	1
Cocke	0	1	10	1	0	0	1
Coffee	0	1	10	0	0	0	1
Crockett	0	0	4	0	0	0	0
Cumberland	0	0	15	2	0	1	0
Davidson	0	2	3	3	1	0	0
Decatur	1	0	5	0	0	0	1
DeKalb	1	0	7	0	0	0	1
Dickson	0	1	10	0	0	0	1
Dyer	1	3	3	0	0	0	0
Fayette	0	1	1	0	0	0	1

County	Class I LF	Class III/IV LF	Conv. Center	Transfer Station	HHW Facility	MRF	Baling
Fentress	0	0	8	1	0	0	1
Franklin	0	0	16	1	0	0	1
Gibson	0	1	1	0	0	0	0
Giles	0	1	1	1	0	0	0
Grainger	0	0	8	0	0	0	0
Greene	0	2	17	1	0	0	1
Grundy	0	0	9	0	0	0	0
Hamblen	2	1	1	0	0	1	0
Hamilton	1	2	6	6	1	0	0
Hancock	0	0	1	0	0	0	0
Hardeman	1	0	12	0	0	0	1
Hardin	0	0	13	0	0	0	1
Hawkins	1	0	9	0	0	0	1
Haywood	0	2	1	0	0	0	1
Henderson	0	1	8	0	0	0	1
Henry	0	1	1	1	0	0	1
Hickman	0	1	4	1	0	0	1
Houston	0	0	1	0	0	0	1
Humphreys	0	1	7	0	0	0	0
Jackson	0	0	7	2	0	0	1
Jefferson	1	1	9	0	0	0	1
Johnson	0	0	1	1	0	0	0
Knox	0	3	7	3	1	0	0
Lake	0	0	1	0	0	0	0
Lauderdale	0	1	1	1	0	0	1
Lawrence	0	1	1	1	0	1	0
Lewis	0	1	1	1	0	0	1
Lincoln	0	0	3	1	0	0	1
Loudon	1	0	3	1	0	0	1
McMinn	2	2	1	0	0	0	0
McNairy	0	1	1	1	0	0	0
Macon	0	0	1	1	0	0	0
Madison	1	2	11	0	0	0	0

County	Class I LF	Class III/IV LF	Conv. Center	Transfer Station	HHW Facility	MRF	Baling
Marion	1	0	10	0	0	0	0
Marshall	1	0	4	0	0	1	0
Maury	0	1	9	3	0	0	1
Meigs	0	0	3	0	0	0	0
Monroe	0	0	4	1	0	0	0
Montgomery	1	4	10	0	0	0	1
Moore	0	0	1	0	0	0	1
Morgan	0	1	3	1	0	0	1
Obion	2	0	0	0	0	0	1
Overton	0	0	9	1	0	0	1
Perry	0	1	1	1	0	0	1
Pickett	1	0	2	0	0	0	1
Polk	0	0	6	0	0	0	0
Putnam	0	1	8	3	0	0	1
Rhea	1	1	7	0	0	0	0
Roane	0	0	13	0	0	0	1
Robertson	0	1	9	1	0	0	1
Rutherford	1	1	15	0	0	0	0
Scott	1	0	1	0	0	0	1
Sequatchie	0	0	5	0	0	0	0
Sevier	1	2	10	1	0	0	1
Shelby	2	5	1	7	1	0	0
Smith	1	1	6	0	0	0	1
Stewart	0	0	7	0	0	0	0
Sullivan	1	2	2	2	0	0	1
Sumner	0	0	2	1	0	0	0
Tipton	0	1	1	0	0	0	1
Trousdale	0	0	1	0	0	0	0
Unicoi	0	0	3	0	0	0	0
Union	0	0	6	0	0	0	1
Van Buren	0	0	3	0	0	0	1
Warren	0	1	13	0	0	0	1
Washington	1	0	6	0	0	0	1

County	Class I LF	Class III/IV LF	Conv. Center	Transfer Station	HHW Facility	MRF	Baling
Wayne	0	0	1	1	0	0	1
Weakley	0	1	1	0	0	0	0
White	1	1	11	1	0	0	0
Williamson	0	1	9	2	0	0	1
Wilson	0	2	7	0	0	0	0
Statewide Total	34	67	505	62	3	5	53

Appendix C
Disaster Debris Management

Introduction

Disasters such as tornadoes, high-wind events, and floods can result in the generation of large quantities of solid waste. It is important for responsible parties to plan in advance how the materials will be managed. This requires the identification of staging areas for debris, as well as contractors that may help in managing the debris. The amount of debris generated will vary, depending upon the situation, but having a plan in place will save money and time, and will help ensure roadways and waterways are clear of debris as soon as possible, which is important for the safety of all citizens.

Overview of the Public Assistance Program

The Public Assistance Program is a grant program provided by the Federal Emergency Management Agency (FEMA) (under the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended by Public Law 93-288, April 2013) and administered by the Tennessee Emergency Management Agency (TEMA). This is a reimbursement program that is available to local governments, state agencies and some eligible private non-profit organizations, following a Presidential declared disaster. These funds are only available for the repair and/or restoration of public facilities belonging to public entities recovering from a natural or manmade disaster. Funding is limited to debris removal, emergency protective measures such as police overtime or sheltering costs, and the repair/replacement of public infrastructure, such as: roads and bridges, water control facilities, public buildings and equipment, and public utilities. Under the authority of the Stafford Act, the Federal government will pay not less than 75 percent of a community's eligible costs. The balance of costs is borne through a cost-sharing agreement between the State and the local government. All Federal funding will be reduced by actual or anticipated insurance proceeds. To facilitate the processing of public assistance program grants, FEMA has divided disaster-related work into two broad categories of work, "Emergency Work," and "Permanent Work." These categories are further divided into the seven categories shown below and described in more detail elsewhere in this digest under the appropriate subject. Debris Recovery is considered to be "Emergency Work," and is Category A. Emergency Work also includes Emergency Planning, which includes measures taken before, during, and after a disaster to eliminate or reduce an immediate threat to life, public health, or safety, or to eliminate or reduce an immediate threat of significant damage to improved public and private property through cost-effective measures.

Disaster Debris History in Tennessee

The State of Tennessee has been plagued with natural disasters ranging from tropical storms, winter/ice storms, severe flooding to tornados, which have resulted in 26 disaster declarations since 1999. Table C-1 provides a summary of the more recent (since 2009) presidential declarations for disaster relief that Tennessee has been awarded from FEMA. These declarations total approximately

$317.8 million with $38.6 million (12 percent) being allocated for debris removal. Regardless of the event, debris removal costs are a significant cost to local and state agencies. Debris removal operations are also the most time consuming which demands the time and attention of local jurisdictions.

Table C-1
FEMA Presidential Declarations for Disaster Relief Awarded to Tennessee
2009 - 2014

Date	Disaster Number/Name	Debris Removal	Total Obligated	% Debris Removal
4/11/2014	4171 – Severe Winter Storm	$2,129,175.66	$5,796,980.72	36.7%
7/20/2011	4005 – Severe Storms, Straight-line Winds, Tornados, and Flooding	$963,261.91	$6,784,151.51	14.2%
5/9/2011	1978 – Severe Storms, Flooding, Tornados, and Straight-line Winds	$1,663,746.29	$7,285,346.59	22.8%
5/9/2011	1979 – Severe Storms, Tornados, Straight-line Winds, and Flooding	$3,492,992.07	$20,431,094.86	17.1%
5/1/2011	1974 - Severe Storms, Tornados, Straight-line Winds, and associated Flooding	$11,031,786.57	$52,471,456.13	21.0%
3/31/2011	1965 – Severe Storms, Tornados, and Flooding	$383,518.22	$8,032,716.24	4.8%
9/15/2010	1937 – Severe Storms and Flooding	$25,868.63	$4,049,168.24	0.6%
5/4/2010	1909 – Severe Storms, Flooding, Straight-line Winds, and Tornados	$11,884,346.76	$190,526,759.17	6.2%
8/21/2009	1856 – Severe Storms and Flooding	$86,037.89	$2,242,291.86	3.8%
7/13/2009	1851 – Severe Storms, Tornados, Straight-line Winds, and Flooding	$3,201,287.36	$9,212,171.01	34.8%
5/15/2009	1839 – Severe Storms, Tornados, and Flooding	$2,032,084.85	$4,641,841.27	43.8%
2/17/2009	1821 – Severe Winter Storms and Flooding	$1,675,179.86	$6,265,363.25	26.7%
	Totals	$38,569,286.07	$317,739,340.85	12.1% (Avg.)

Types of debris typically generated in a disaster, for which state and local governments should plan in advance for the proper management of and disposal of, include:

- Appliances;
- Branches, trees and brush;
- Construction and demolition debris (including asbestos);
- Hazardous waste;
- Other household and commercial waste (including bulk items, such as furniture);
- Flood sediment cleanup; and
- Used sandbags.

Purpose of Document

This Section summarizes the responsibilities of local jurisdictions, the Tennessee Emergence Management Agency (TEMA), and the Federal Emergency Management Agency (FEMA), based on current criteria and policy developed by FEMA, following a Presidential declaration. These guidelines are to supplement current publications from FEMA, including the Debris Management Guide and the Debris Operations Job Aid.

TEMA and TDEC encourage all local governments eligible for the Public Assistance Program grant to construct pre-event contracts for debris removal operations and to generate a debris management plan. In light of recent disasters that have triggered massive debris removal efforts in the United States, past experience shows that having a solid debris removal plan, a pre-event contract/agreement in place and a collaborated agreement with partnering agencies before an event will expedite recovery in areas devastated by disastrous events.

It is recommended that communities and counties complete at least the minimal debris removal plan based on the plan found in Appendix C to provide a framework for debris removal operations. Any assistance needed in the preparation of these plans or general concerns can be forwarded to the appropriate TEMA regional coordinator or the TEMA Public Assistance Division.

Responsibilities

1. Local Jurisdiction Responsibilities

Because local governments are the first to respond to a disaster directing initial activities to protect lives, public health and safety, which include debris removal, and because debris costs differ in each region of the state based on local characteristics, it is recommended that each local government develop a debris management plan. Each plan should be prepared on the local government level to account for local characteristics, such as landfill capacity, availability of equipment and experience of contractors, environmental characteristics, types of debris, etc. Further, T.C.A. § 68-211-815 stipulates what must be included in a solid waste region's plan. One of the requirements is "A plan for managing solid waste generated as a result of disasters or emergencies."

The Example Debris Management Plan (Exhibit A in this Appendix) can be used as a starting point for each of the local jurisdictions. Activities local governments should include in their plan are:

- Estimate the quantity of debris
- Establish site selection priorities
- Identify pre-designated Debris Management Sites (DMS)
- Obtain approval by the Department (TDEC) before using site
- Conduct site preparation
- Identify existing landfills
- Remove emergency debris from local roadways
- Remove debris from public rights-of-way
- Remove debris generated on private property if needed
- Remove household hazardous waste
- Provide information about and facilitate debris reduction methods
- Provide administration and logistics services
- Provide information to the public

In the event of a disaster that generates a tremendous amount of debris on public roadways and private property that presents a danger to health and safety, it is first the local government's responsibility to remove debris from public roads to provide access for emergency vehicles. Most local governments have the ability to open roads and remove debris. When using the current local government work force and equipment (force account), only overtime labor and equipment use costs are eligible. In the event additional assistance is needed for labor and to use government owned equipment, temporary hires may be used. In addition to temporary hires, if a Mutual Aid agreement is in place with other local governments, aid from these jurisdictions may be used as well. Local governments may also contract for debris removal according to their emergency or regular bid procedures. In the event of a Presidential disaster declaration, federal reimbursement costs will be limited to the reasonable, necessary costs to remove eligible debris.

In the event of a much larger disaster that generates debris on public roads and improved public property where the removal is beyond the capability of the local government, contractors can be used or Direct Federal Assistance can be requested. Direct Federal Assistance is often carried out by Federal agencies such as the U.S. Army Corps of Engineers (USACE) under the control and direction of FEMA through a mission assignment. Additional information can be found in a later section, *Requesting Direct Federal Assistance for Debris Management Operations*.

It is the local governments' responsibility to coordinate with other Federal agencies for debris removal activities that fall under other Federal agencies' respective authorities, such as the Natural Resources Conservation Service (NRCS) for streams and waterways; the U.S. Army Corps of Engineers (USACE) for flood control works; or the Federal Highway Administration (FHwA) for roads on the Federal-Aid system. In some cases, FEMA may provide assistance for disaster-related emergency work, such as debris removal, when the other Federal agencies will not.

Table C-2 provides a summary of typical roles and responsibilities within the local government (or FEMA grant applicant's) purview.

Table C-2
Typical Roles and Responsibilities for FEMA Public Assistance Grant Applicants

Department	Roles and Responsibilities
Administration	▪ Personnel policies ▪ Labor and equipment timesheets and summaries ▪ Safety procedures ▪ Contracts and contract procurement procedures ▪ Billing invoices, including debris hauler load tickets ▪ Environmental permits ▪ Right-of-way and hold harmless agreements for private property debris removal and demolition, when applicable ▪ Public information announcements (pick-up schedules, disposal methods, curbside separation instructions, materials allowed at public drop-off locations, process for answering questions, penalties for creating illegal dumps, etc.) ▪ Debris salvage value information
Finance	▪ Emergency response and recovery budget ▪ Track expenses ▪ Ensure funds are available for personnel, equipment, supplies, contract service costs
Contracting and Procurement	▪ Develop contract requirements and contractor qualifications ▪ Distribute instructions to bidders ▪ Advertise bids ▪ Establish pre-disaster list of pre-qualified contractors ▪ Manage the contract scope of work ▪ Establish a posts-disaster contracting procedure, if necessary
Legal	▪ Review all contracts ▪ Review/establish land acquisition process for temporary debris management sites (DMS) ▪ Review all insurance policies ▪ Ensure environmental and historic preservation compliance before, during, and after operations ▪ Ensure that site restoration and closure requirements are fulfilled ▪ Review/establish a building condemnation process. ▪ Review/establish a legal process for private property demolition and debris removal ▪ Review right-of-entry and hold harmless agreements
Operations	▪ Position equipment and resources for the response and recovery debris removal operations ▪ Develop staff schedules and strategies ▪ Provide communication, facilities, services, equipment, and materials to support the response and recovery activities ▪ Monitor and direct force account and contract labor ▪ Distribute response and recovery resources

Department	Roles and Responsibilities
	▪ Operate and manage the collection, debris management site, and disposal strategies ▪ Create a demolition strategy for structures, if necessary ▪ Report progress for distribution to the debris management planning staff
Planning/Engineering	▪ Forecast debris volume based on assumed disaster type ▪ Develop an estimating strategy for post-disaster debris quantities ▪ Strategize and map debris haul routes ▪ Select debris management sites and design site layout ▪ Determine reduction and recycling methods ▪ Identify and coordinate environmental issues ▪ Assess available landfill space and determine if additional space is needed ▪ Develop the debris collection strategy ▪ Write contract scopes of work, conditions, specifications ▪ Coordinate with other local and state jurisdictions for road clearance and operations ▪ Establish a process for building damage assessment and condemnation (public and private properties) ▪ Issue permits

2. State of Tennessee Responsibilities

A. Tennessee Department of Transportation

In the State of Tennessee, the Tennessee Department of Transportation (TDOT) is responsible for the following tasks as they relate to debris removal:

- Plan, build, and maintain the state owned highway and Interstate system.
- Remove debris on state maintained roads and in the state right-of-way.
- Prepare and distribute city, county, and state road maps, aeronautical charts, and airport directories.
- Promote safe driving behaviors on highways.
- Maintain state park roads.
- Provide aerial photography and mapping services to all state agencies.
- Coordinate with FEMA Emergency Support Function #3 - Public Works & Engineering for debris removal operations on state maintained roads and in the state rights-of-way.

TDOT is organized into four regions of the state: Knoxville (Region 1), Chattanooga (Region 2), Nashville (Region 3), and Jackson (Region 4). Each region is subdivided into five or six districts and those districts are further subdivided into county facilities. TDOT has at least one facility in each of Tennessee's 95 counties.

B. Tennessee Emergency Management Agency

In the State of Tennessee, the Tennessee Emergency Management Agency (TEMA) is responsible for the following tasks as they relate to management of debris and debris removal:

- Maintain a comprehensive statewide program of emergency management which includes coordination with efforts of the federal government with other departments and agencies of state government, county governments, municipal governments and school boards, and private agencies that have a role in emergency management.
- Prepare a Tennessee Emergency Management Plan which include post disaster response and recovery component that includes management and disposal of debris generated from an event.
- Establish the structure of the state's post disaster response and recovery organization.
- Set forth policies used to guide post-disaster response and recovery activities.
- Describe the chain of command during the post-disaster response and recovery period.
- Describe initial and continuous post-disaster response and recovery actions.
- Provide for assessment teams.
- Assign lead and support responsibilities to state agencies and personnel for emergency support functions and other support activities.
- Coordinate federal, state, and local emergency management activities and take all other steps, including the partial or full mobilization of emergency management forces and organizations in advance of an actual emergency, to ensure the availability of adequately trained and equipped forces of emergency management personnel before, during, and after emergencies and disasters.
- Periodically review emergency operating procedures of state agencies and recommend revisions as needed to ensure consistency with the TEMP and program.

The Tennessee Emergency Management Agency is charged, via T.C.A. § 58-2-106, with developing the Tennessee Emergency Management Plan (TEMP). This Plan provides the foundation for all disaster and emergency response plans and operations conducted within the state of Tennessee. The Plan, which is signed by the Governor, can be used to declare a state of emergency, rather than a proclamation. The TEMP describes Emergency Support Functions (ESFs). ESF-3 – Infrastructure, describes roles and responsibilities for debris removal.

C. Tennessee Department of Environment and Conservation (TDEC):

- Advise state and local officials on proper management of disaster debris.
- Convey that the state's objective is to reuse as much waste as possible, recycle/mulch/compost is the second most preferred method of management, followed by waste-to-energy processing, then landfilling in a Class III/IV landfill, then landfilling in a Class I landfill. The least preferred is incineration without energy recovery. However, in cases where health and safety are at risk, incineration without energy recovery, including open burning, may be the most expeditious means of managing debris.

- Have database of processing operations – keep contact information up-to-date, and have a printed copy in case of power outages.
- Remove debris from all TDEC-owned land and waterways.
- Make determinations for open burning, if rapid management of debris required.
- Identify/approve sites for temporary debris management.
- Ensure sites are returned to pre-event condition after event.
- Support debris management operations of other state agencies and local governments (with coordination through TEMA).

3. Contracting for Debris Removal Operations

In the event of a Presidential disaster declaration, local governments may receive reimbursement, subject to cost-share provisions, for the cost they incur for emergency clearance of debris from roadways and other public access facilities, and for the costs of removal and disposal of debris that poses an immediate threat to life, public health and safety. To be eligible for reimbursement under the Public Assistance Program, contracts for debris removal must meet rules for Federal grants, which mean they are subject to the Common Rule specifying uniform administrative requirements for grants to states and local governments. FEMA's common rule provisions can be found in 44 CFR Part 13, and specific subsections, such as 13.36, describe procurement and other requirements. Public Assistance applicants should comply with their own procurement procedures in accordance with applicable State and local laws and regulations, provided that they conform to applicable Federal laws and standards identified in Part 13.

It is important to remember, if the local government contract for debris removal does not comply with Federal grant requirements, then the local government runs the risk of a determination by FEMA that the costs are not eligible for federal reimbursement. Two critical points are:

- Be careful to avoid entering into contracts, whether pre-event or post-event, that bypass or expedite the normal competitive procurement process. FEMA may only reimburse for what is reasonable, and sole-source contracts may result in unreasonable pricing or terms.
- Be cautious of contractors that may jeopardize reimbursements due to contract provisions, pricing or practices that are not reasonable and do not conform to Federal, state and local law.

If there is a need to contract for debris services, and a pre-event contract is not in place, please consider the following:

- Follow the local government's emergency or regular bid procedures for contracting services (Fact Sheet/Checklist found in Exhibit C).
- Develop a specific scope of work.
- Identify any special considerations, such as historic sites, environmental issues (i.e. removing debris around areas with endangered species, hazardous waste, etc.) and if any such conditions are present consult with TEMA prior to issuing bids or executing contracts. The Tennessee Historic Commission can provide additional guidance regarding historic properties.

- Identify if the need exists for debris removal on private property and establish guidelines. If debris removal from private property is anticipated (which is uncommon), contact TEMA for assistance. A Hold Harmless agreement should be in place.
- Identify whether debris removal is the responsibility of another federal agency, i.e. Federal Highway Administration (FHwA), Natural Resource Conservation Service (NRCS), or the USACE. Costs may not be reimbursed for work that is under the authority of another Federal agency. For example, FHwA has responsibility for debris clearance and some of the debris removal, through the State Department of Transportation, from roads on the Federal-Aid System.
- Establish debris monitors that are separate from the contractor's monitors and provide training for these monitors. Monitoring of debris removal operations is the responsibility of the local government contracting for the service or using the applicant's resources. Failure to adequately monitor debris removal operations against contractor fraud, removal and disposal of ineligible debris, contract work is unauthorized areas, overstatement of debris volumes, and other ineligible activities, may result in a loss of Federal funding.
- Establish a staff person that will oversee contract activities.
- Establish Debris Management Sites (DMS).
- Submit contracts prior to execution to TEMA/FEMA for review of eligibility. TEMA and FEMA cannot approve contacts, but can provide advice on potential contract terms that could possibly jeopardize reimbursement. No contractor has the authority to determine eligibility.
- Identify transfer stations if landfills are a considerable distance from your jurisdiction.
- Establish guidelines with local landfills and alternate landfills for types of debris accepted and current vs. maximum capacities.

Table C-3 identifies MSW landfills in the state of Tennessee and shows their approximate fill rate as well as capacity. These quantities are only an estimated as of January 1, 2014. Therefore, more detailed information should be maintained for each local jurisdiction on landfills in their area that will be available for disposal at the time of a disaster. Furthermore, information pertaining to local Class III/IV landfills and yard debris processing facilities should also be obtained. Information on existing landfills throughout the state is available through the Tennessee Department of Environment and Conservation's website[30]. Additional information regarding environmental concerns surrounding debris removal and storage is available through the Tennessee Department of Environment and Conservation.

[30] http://environment-online.state.tn.us:8080/pls/enf_reports/f?p=19035:34001:0:::::

Table C-3
MSW Landfills and their Anticipated Closure Dates

County	Facility Name	Total Tons Per Year	Domain (Public or Private)	Remaining Life Years[31]	Avg. Daily Tons	Estimated Closure Year[32]
Anderson	Chestnut Ridge	325,104	Private	> 25	1,042	> 2034
Benton	West Camden	240,240	Private	> 25	770	> 2034
Blount	Alcoa-Maryville/Blount County	62,400	Public	15	200	2028
Bradley	Bradley County	343,200	Public	> 25	1,100	> 2034
Chester	Chester/Henderson County	0	Public	Not Operating	NA	NA
Clay	Upper Cumberland	18,720	Private	6	60	2019
Decatur	Decatur County	93,600	Public	> 25	300	> 2034
DeKalb	DeKalb County	14,015	Public	1	45	2015
Dyer	Dyersburg City	37,440	Public	> 25	120	> 2034
Fayette	Fayette County	0	Public	Not Operating	NA	NA
Gibson	Milan City	0	Public	Not Operating	NA	NA
Hamblen	Hamblen County/Morristown	39,000	Public	7	125	2021
Hamblen	Lakeway Recycling and Sanitation	148,200	Private	20	475	> 2034
Hamilton	City of Chattanooga	94,848	Public	4	304	2018
Hardeman	Boliver/Hardeman County	14,555	Public	24	47	> 2034
Hawkins	Carter Valley	248,040	Private	>25	795	> 2034
Jefferson	Jefferson County	24,991	Public	24	80	> 2034
Lauderdale	Western Tenn Enterprises	0	Private	Not Operating	NA	NA
Loudon	Loudon County	287,976	Public	6	923	2020
Madison	Madison County Dev LLC	24,991	Private	24	80	> 2034
Marion	Marion County	47,736	Public	19	153	> 2034
Marshall	Cedar Ridge	496,080	Private	5	1,590	2018
Maury	Maury County	0	Public	Not Operating	NA	NA
Montgomery	Bi County Balefill	312,000	Public	3	1,000	2017
McMinn	McMinn County	32,760	Public	20	105	> 2034

[31] Based upon currently permitted capacity and current fill rates.

[32] Per TDEC, as of January 1, 2014. Anticipated closure dates may change over time.

County	Facility Name	Total Tons Per Year	Domain (Public or Private)	Remaining Life Years[31]	Avg. Daily Tons	Estimated Closure Year[32]
McMinn	Meadow Branch	414,960	Private	6	1,330	2020
Obion	Northwest TN Disposal	241,800	Private	24	775	> 2034
Obion	ECM of Ridgely LLC	46,800	Private	>25	150	> 2034
Pickett	Pickett County	3,354	Public	>25	10.75	> 2034
Rhea	Rhea County	208,416	Public	15	668	2029
Roane	Roane County	0	Public	Not Operating	NA	NA
Robertson	Robertson County	0	Public	Not Operating	NA	NA
Robertson	Highland/Custom Land Dev.	0	Private	Not Operating	NA	NA
Rutherford	Northside (Middlepoint)	1,092,000	Private	13	3,500	2027
Scott	Volunteer Regional	343,200	Private	>25	1,100	> 2034
Scott	Roberta Phase II	0	Private	Not Operating	NA	NA
Sevier	Sevier Solid Waste Inc.	1,560	Private	Unknown	5	Unknown
Shelby	BFI South Shelby	683,280	Private	>25	2,190	> 2034
Shelby	BFI North Shelby	436,488	Private	>25	1,399	> 2034
Shelby	Earth Complex	0	Public	Not Operating	NA	NA
Smith	Smith County	33,384	Public	11	107	2025
Sullivan	Ecosafe Systems LLC	143,146	Private	>25	459	> 2034
Union	Union County	0	Public	Not Operating	NA	NA
Washington	Iris Glen Environmental	214,968	Private	7	689	2021
White	White County	16,723	Public	2	55	2016
Williamson	Williamson County	0	Public	Not Operating	NA	NA
Wilson	Wilson County	0	Private	Not Operating	NA	NA

There are 60 Class III active or pending permitted Class III landfills in Tennessee, and 11 Class IV landfills as well, which are also suitable disposal locations for disaster debris. Note that locations of these landfills are available on TDEC's website, but information regarding capacity and expected closure date is not available.

Table C-4 provides a listing, by County, of Class III and IV Landfills that are active or pending. It should be noted that some Class III/IV landfills are for the owners' use only.

Table C-4
Active Class III/IV Landfills in Tennessee

Landfill Name	County	Landfill Name	County
Doe Y-12 Construction Demolition Landfill VII	Anderson	Tennessee Waste Movers, Inc. Demolition Landfill	Loudon
Alcoa/Maryville/Blount Co. Class III Landfill	Blount	Jackson-Madison Co. Class III Landfill	Madison
Bradley County Class III Landfill	Bradley	A1 Waste and Recycling	Madison
Carter County/Elizabethton Class IV Landfill	Carter	Maury County Demolition Landfill	Maury
Claiborne County Class III Landfill	Claiborne	J.M. Huber Corporation Demolition Landfill	McMinn
Cocke County Class IV Landfill	Cocke	McMinn County Landfill	McMinn
Cocke County Class III Landfill	Cocke	McNairy County Demolition Landfill	McNairy
AEDC Demolition Landfill	Coffee	Ft. Campbell Demolition Landfill	Montgomery
Central Pike Class IV Landfill	Davidson	Bi-County Demolition Landfill	Montgomery
Southern Services Landfill	Davidson	Bi-County Solid Waste Management System Class IV Landfill	Montgomery
DeKalb County Landfill	DeKalb	Bi-County Solid Waste Class III Landfill	Montgomery
Dickson County Demolition Landfill	Dickson	Morgan County Class Iii Landfill	Morgan
City Of Newbern Class Iii Landfill	Dyer	Perry County Demolition Landfill	Perry
City Of Dyersburg Demolition Landfill	Dyer	Putnam County Demolition Landfill	Putnam
West Tennessee Landfill, Inc.	Dyer	TVA Watts Bar Nuclear Plant Demolition Landfill	Rhea
Fayette County Environmental Center	Fayette	Robertson County Class III/IV Landfill	Robertson
Milan City Demolition Landfill	Gibson	Rutherford County Demolition Landfill	Rutherford
Pulaski Demolition Landfill	Giles	Ridge Road Class IV Landfill	Sevier
Mountain Laurel Environmental Corporation	Greene	Sevier Solid Waste Class III Landfill	Sevier
Greeneville/Greene County Class III/IV Landfill	Greene	Sevier Solid Waste Class III - South Landfill	Sevier
Lakeway Sanitation & Recycling C&D	Hamblen	Frayser Business Center Demolition Landfill	Shelby
TVA Sequoyah Demolition Landfill	Hamilton	BFI North Shelby Landfill Class III	Shelby
Environmental Materials, LLC	Hamilton	Blaylock Brown Construction, Inc.	Shelby
Haywood County Class III Landfill	Haywood	Chandler Demolition Company, Inc.	Shelby
Haywood County Landfill	Haywood	North Memphis Landfill, Inc.	Shelby
City Of Lexington/ Henderson County Class III Landfill	Henderson	Smith County Class III Landfill	Smith
Paris Henry Co Landfill	Henry	Kingsport Demolition Landfill	Sullivan
Hickman County Demolition Landfill	Hickman	Bristol Demolition Landfill	Sullivan
Humphreys County Class III Landfill	Humphreys	Tipton County Landfill	Tipton
Jefferson County Demolition Landfill	Jefferson	City Of McMinnville Class III Landfill	Warren
Riverside C&D Landfill, LLC	Knox	Martin City Demolition Landfill	Weakley

Landfill Name	County	Landfill Name	County
Poplar View Class III Landfill	Knox	White County Landfill	White
Yarnell Demolition Landfill	Knox	Williamson County Demolition Landfill	Williamson
Lauderdale County Landfill	Lauderdale	Wilson County Class IV Landfill	Wilson
Lawrenceburg Demolition Landfill	Lawrence	Wilson County Demolition Landfill	Wilson
Lewis County Demolition Landfill	Lewis		

Most counties also have processing facilities for debris, which may be able to assist in managing some material, and private processors with mobile equipment often travel to storm/disaster sites to provide processing services after events occur.

4. Requesting Direct Federal Assistance for Debris Management Operations

In catastrophic events, direct federal assistance can be provided by FEMA to support the local government. It is important to remember, the response capabilities of both the local and state government must be exceeded before this request is made by the local government to TEMA and FEMA. The request is made by TEMA to FEMA if circumstances justify the need for Direct Federal Assistance. Policy #9523.9 has been issued by FEMA to detail the requirements and scope for Direct Federal Assistance, including provisions for funding at 100 percent federal share for a limited period. FEMA may use its authority under the Stafford Act to mission assign other federal agencies, such as the U.S. Army Corps of Engineers or the U.S. Coast Guard, to execute debris removal operations. If assistance is needed by FEMA to provide debris management operations, please consider the following:

- The assistance provided by FEMA is subject to the cost share provisions, including any administrative costs.
- Direct Federal Assistance for debris operations should only be used for emergency clearance for immediate lifesaving issues. Beyond emergency clearance, debris contracts should be established by the local governments if the need exists.
- If the disaster is catastrophic and Direct Federal Assistance is needed beyond emergency debris clearance, FEMA may provide the assistance needed, which may be subject to the cost share provisions by TEMA and FEMA.

Once the disaster has been declared by the President, and eligible jurisdictions are established, then Applicant Briefings will be conducted, as well as kick-off meetings regarding the specifics of the event. At this time, debris planning teams will be established which will be comprised of local, state and federal representatives. The teams will primarily be located in the Joint Field Office and will deploy to local jurisdictions as the need arises. The debris teams will assist local governments with activities ranging from establishing eligibility guidelines to assisting the completion of project worksheets. Depending on the severity of the disaster, other state and/or federal agencies will recommend actions pertaining to debris management and removal operations.

In addition, TEMA may contract for management services to assist local governments in the administration of the Public Assistance Program. The scope of services needed will be determined at the time of the disaster. The scope may range from debris specialist in the field to overall management of debris removal operations. The contract for assistance must be consistent with FEMA Policy#9525.11.

5. Federal Responsibilities of the Federal Emergency Management Agency

In disasters that present a tremendous impact to the state following a Presidential Declaration, FEMA can provide Direct Federal Assistance (DFA) to support the state and local jurisdictions. DFA can be provided for activities related to debris clearance, removal and disposal. The DFA is limited to emergency work under Sections 402(4), 403 and 407 of the Stafford Act. The assistance provided under DFA will be subject to the cost share requirements found in the FEMA-State Agreement. Refer to FEMA Policy #9523.9 for additional information.

Should the need arise, FEMA may choose to use its mission assignment authority to allow the US Army Corps of Engineers (USACE) or another Federal agency to contract for and/or manage the debris clearance and removal operations. The USACE or another Federal agency may also be used as technical advisors to the state or local government. FEMA will work directly with USACE or another Federal agency on these assignments and will monitor all task orders based on a defined scope of work.

USACE Concept of Operations

A successful debris management mission requires close coordination and partnership with FEMA, state and local governments, and other Federal agencies. USACE assets are employed when a mission is assigned and funded by FEMA. A lead division and district are responsible for mission execution, but are assisted initially by a Debris Planning and Response Team (PRT) and one or more Subject Matter Experts (SME). At an appropriate time, mission execution and closeout is transitioned to the lead division / district office. Contractor support from the private sector, USACE assets only, or some combination of the two may be employed to execute dependent upon the nature of the mission assigned by FEMA.

FEMA and USACE have reached agreement on pre-scripted mission assignments for both pre and post declaration conditions. Pre-declaration mission assignment for debris is classified as Federal Operations Support and generally provides for activation and pre-positioning of the PRT Management Cell, and as required, a contractor representative to do advance planning for mission execution. Post declaration mission assignment may include debris oversight, or direct Federal assistance for debris removal, reduction, and disposal. Debris oversight may include the provision of technical assistance in the form of staffing of a debris hotline to provide assistance to state and local governments, estimation of debris quantities, assistance in instituting a quality assurance program to monitor contractor performance, or other services as required by FEMA. When direct Federal assistance is assigned to USACE, a Debris PRT is engaged, and as is often the situation – a pre-awarded debris contract referred to as ACI, Advance Contract Initiative is employed.

There are currently seven Debris PRTs located in the following district offices: Baltimore, Ft. Worth, Louisville, Mobile, New Orleans, Portland, and Sacramento. The team for Tennessee would typically respond out of Louisville as they are in closer proximity to the state of Tennessee. Each team is comprised of a Management Element and Support Element with the Management Element deploying first as an advance party, and the Support Element following as the mission matures. The initial responsibility of the Management Element is to effect coordination with FEMA and local and state governments, scope the mission requirements, and prepare a mission Management Plan and Execution Plan. The Management Plan delineates agency or governmental entity responsibilities for each aspect of the debris/demolition process, and the Execution Plan provides details on how USACE will execute its piece of the mission as defined by the Management Plan to include definition of End State. Debris SMEs are listed in the USACE All Hazards Contingency Plan.

There are three contract types generally employed in debris operations. They are Equipment Rental, Unit Price – either ton or cubic yard, and Lump Sum. FEMA does not favor Equipment Rental contracts as they are generally costly, and require intensive quality assurance. These contracts, however, provide a quick method of initiating debris clearance or removal operations when the mission scope is not well defined. Unit Price contracts are more common, while lump sum contracts are effectively utilized when requirements are well defined.

In addition to the above, FEMA can provide technical assistance to the state or local jurisdictions with debris management and removal issues. Such technical assistance may be provided by FEMA staff, mission-assigned debris subject-matter experts, or technical assistance contractors (TAC). FEMA debris specialists may be assigned to each county or jurisdiction having significant debris operations to assist with eligibility issues.

FEMA will advise State and local governments and provide assistance with respect to issues such as demolition of unsafe structures or in connection with replacement of eligible facilities; debris on private property; removal of tree limbs and leaning trees; removal and disposal of hazardous tree stumps and root balls; removal of sediment from engineered channels; removal and disposal of hazardous materials, etc.

FEMA may advise state and local governments on issues related to compliance with Federal environmental and historical preservation laws, regulations and executive orders, especially when work is in waterways or when dealing with hazardous materials. Reimbursement requested by a local government for any project that is not in compliance with environmental/historical preservation laws is not eligible. Furthermore, it is the responsibility of the local government applicant to satisfy all necessary permitting and compliance issues before commencing with any federally-funded project.

EXHIBIT A

The following outline can be used to develop a Debris Management Plan

(Insert Name of Jurisdiction)

EXAMPLE DEBRIS MANAGEMENT PLAN

Provided herein is an example of a debris management plan that local governments can use as guidance in developing a plan that suits their own needs. All plans need not look exactly like The Example Plan. It is not intended to be a mandatory model, but to provide guidance for local governments to prepare and plan in advance of a disaster in order to maximize efficiency and order during the event of an actual disaster. Specific provisions about maximizing FEMA funding are provided herein, and presented in Section XIV of this Plan, and are provided in great detail in the FEMA Public Assistance Applicant Handbook.[33]

PURPOSE

- To provide policies and guidance to (insert jurisdiction name) for the removal and disposition of debris caused by a major disaster.
- To facilitate and coordinate the management of debris following a disaster in order to mitigate against any potential threat to the lives, health, safety, and welfare of the impacted citizens, expedite recovery efforts in the impacted area, and address any threat of significant damage to improved public or private property.

SITUATION AND ASSUMPTIONS

SITUATION

- Natural and manmade disasters precipitate a variety of debris that include but are not limited to, such things as trees, sand, gravel, building construction material, vehicles, personal property, and hazardous materials.
- The quantity and type of debris generated from any particular disaster will be a function of the location and kind of event experienced, as well as its magnitude, duration, and intensity.
- The quantity and type of debris generated, its location, and the size of the area over which it is dispersed will have a direct impact on the type of collection and disposal methods utilized to address the debris problem, associated costs incurred, and how quickly the problem can be addressed.

[33] http://www.fema.gov/pdf/government/grant/pa/fema323_app_handbk.pdf

- In a major or catastrophic disaster, many state agencies and local governments will have difficulty in locating staff, equipment, and funds to devote to debris removal, in the short-term as well as long-term.

ASSUMPTIONS

- A natural disaster that requires the removal of debris from public or private lands and waters could occur at any time.
- The amount of debris resulting from an event or disaster could exceed the local government's ability to dispose of it.
- If the natural disaster requires, the Governor would declare a state of emergency that authorizes the use of State resources to assist in the removal and disposal of debris. In the event Federal resources are required, the Governor would request through FEMA a Presidential Disaster Declaration.
- Private contractors will play a significant role in the debris removal, collection, reduction and disposal process.
- The debris management program implemented by the local government will be based on the waste management approach of reduction, reuse, reclamation, resource recovery, incineration and landfilling. The only type of material that would be incinerated is natural, untreated wood. Construction of the incineration areas should be approved by Air Pollution Control.

CONCEPT OF OPERATIONS

Emergency Operations Center Activation

- Define how the County Emergency Management Agency will activate the Emergency Operations Center (EOC).
- Define who will make up the Debris Management Team (DMT) and their specific duties and responsibilities.
- The EOC Director or his/her designated representative in conjunction with the DMT will determine the extent of damage and resulting debris and issue appropriate directives to implement this annex/plan.
- Create an appendix that contains a listing of key points of contact.

Estimating the Type and Amount of Debris

- Designate public works department personnel to determine the estimated amount of debris generated as soon as possible.
- Define the estimating methods to be used in estimating the amount of debris generated. One method to estimate debris is to conduct a drive-through "windshield" damage assessment and estimate the amount of debris visually. Another method is an aerial assessment by flying over

the area using air assets available to do reconnaissance flights. The damaged area can be assessed either visually or using aerial photography. Once the area has been assessed, actions can be taken to implement debris clearing procedures and institute requests for additional State or Federal assistance.

Site Selection Priorities

- Determine the number of Debris Management Sites (DMS) and location of these sites for the collection and processing of debris.
- Prioritize which sites will be opened based on the amount of debris estimated.
  - First Priority – Pre-determined DMS sites
  - Second Priority – Public property within the damaged area
  - Third Priority – Private property

Pre-Designated Temporary Debris Management Sites

- Pre-identified temporary debris management sites (DMS) should be identified on county maps.
- Pre-identified DMS should be approved by the Department before staging activities begin.
- Either Solid Waste Authority or Public Works should maintain detailed information pertaining to each of these sites. Designated which agency has responsibility.
- Detailed information should include location, size, available ingress and egress routes and results of an environmental assessment and initial data samples.
- Baseline data should include documentation of physical and biological features, photographs, and soil and water samplings.
- The list of DMS should be reviewed annually and updated as necessary as part of the normal maintenance plan.

DMS Site Preparation

- Identify the preparatory actions that need to be accomplished after a pre-designated DMS has been selected.
- Develop a Memorandum of Understanding or a Memorandum of Agreement if required.
- Identify who would be responsible for updating the initial base line data and develop an operation layout to include ingress and egress routes.

Existing Landfills

- Identify location of county and private landfills.
- Identify any restrictions, limitations or tipping fees.

DEBRIS REMOVAL

General

- Natural disasters can generate unprecedented amounts of debris in a few hours or a few minutes. The debris may be equally heavy in both urban and rural areas depending on the magnitude of the debris blown down and associated structural damage such as homes, businesses, utilities and signs. This section provides guidelines on debris removal issues, including emergency roadway clearance, public rights-of-way removal, mobile home park removal, private property removal, navigation hazard removal, and Household Hazardous Waste (HHW) removal.
- Debris removal, regardless of source, becomes a high priority following disaster. Debris management strategy for a large-scale debris removal operation divides the operation into two phases.
- Phase I consists of the clearance of the debris that hinders immediate life-saving actions being taken within the disaster area and the clearance of that debris which poses an immediate threat to public health and safety.
- Phase II operations consist of the removal and disposal of that debris which is determined necessary to ensure the orderly recovery of the community and to eliminate less immediate threats to public health and safety.

Emergency Roadway Debris Removal (Phase I)

- Identify critical routes that are essential to emergency operations.
- Define how efforts will be prioritized between local agencies.
- Identify areas that State and Federal assistance is needed.
- Define what actions take place during Phase I.
    - Example: Roadway debris removal involves the opening of arterial roads and collector streets by moving debris to the shoulders of the road. There is no attempt to physically remove or dispose of the debris, only to clear key access routes to expedite the:
        - Movement of emergency vehicles,
        - Law enforcement,
        - Resumption of critical services, and
        - Assessment of damage to key public facilities and utilities such as schools, hospitals, government buildings, and municipal owned utilities.
- Define the type of debris that may be encountered such as tree blow-down and broken limbs, yard trash such as outdoor furniture, trash cans, utility poles, power, telephone and cable TV lines, transformers and other electrical devices, building debris such as roofs, sheds and signs, and personal property such as clothing, appliances, boats, cars, trucks and trailers.

- Define priority to open access to other critical community facilities, such as municipal buildings, water treatment plants, wastewater treatment plants, power generation units, and airports.
- The requirement for government services will be increased drastically following a major natural disaster. Develop procedures to determine the damage done to utility systems. Activities involving these facilities should be closely coordinated with their owners and/or operations.

Local, Tribal, State and Federal Assistance

- Identify local, tribal, State and Federal government assets that may be available such as:
  - Local government workers and equipment.
  - Local and State Department of Transportation (DOT) workers and equipment National Guard
  - Local contractors
  - U.S. Department of Agriculture (USDA) Forest Service chain saw crews
  - Local U.S. Army Corps of Engineers (USACE) workers and equipment

Supervision and Special Considerations

- Immediate debris clearing (Phase I) actions should be supervised by local public works or TDOT personnel using all available resources. Requests for additional assistance and resources should be made to the State Emergency Operations Center (SEOC). Requests for Federal assistance will be requested through the State Coordinating Officer (SCO) to the FEMA Federal Coordinating Officer (FCO).
- Special crews equipped with chain saws may be required to cut up downed trees. This activity is hazardous and common sense safety considerations are necessary to reduce the chance of injury and possible loss of life. When live electric lines are involved, work crews should coordinate with local utility companies to have power lines de-energized for safety reasons.
- Front-end loaders and dozers should be equipped with protective cabs. Driveway cutouts, fire hydrants, valves, and storm water inlets should be left unobstructed. All personnel should wear protective gear, such as hard hats, gloves, goggles, and safety shoes.
- The USDA Forest Service and other State and Federal land management agencies are equipped for fast responses to debris-generating events. Assistance would be requested through the State SCO to the FCO according to standard procedures.
- **Contaminated soil and contaminated debris** will not be transported to debris management sites. This material will be handled on a case-by-case basis at the point of generation with direction from TDEC.

- If **radiological waste** or suspected radiological waste is generated, local governments should contact TDEC's Division of Radiological Health to determine how licensees should be handled during an event.

Public Rights-of-Way Debris Removal and Disposal (Phase II)

- Debris is simply pushed to the shoulders of the roadway during the emergency opening (Phase I) of key routes. There is little time or concern for sorting debris. The objective is to provide for the safe movement of emergency and support vehicles into and out of the disaster area. As removal operations progress, the initial roadside piles of debris become the dumping location for additional yard waste and other storm-generated debris, such as construction material, personal property, trash, white metals such as refrigerators, washers, dryers and water heaters, roofing and even household, commercial, and agricultural chemicals.
- Determine how the DMT will coordinate debris removal operations.
- Determine how local government force account employees will transition from Phase I to Phase II operations.
- Determine if mutual aid agreements exist.
- Determine if local contractors will be needed to assist in Phase II operations
- Determine if additional state and/or federal assistance will be required.
- Develop local field inspection teams. The teams become the "eyes and ears" for the DMT.
- Coordinate through local agencies to establish a contracted work force capable of expeditious removal of the debris.
- Coordinate with local, tribal and State DOT and law enforcement authorities to ensure that traffic control measures expedite debris removal activities.
- Establish a proactive public information plan. Emphasis should be placed on actions the public can perform to expedite the cleanup process, such as separating burnable and non-burnable debris; segregating HHW; placing debris at the curbside; keeping debris piles away from fire hydrants and valves, reporting locations of illegal dump sites or incidents of illegal dumping; and segregating recyclable materials.
- The public should keep informed of debris pick-up schedules, disposal methods and ongoing actions to comply with State and Federal Environmental Protection Agency (EPA) regulations, disposal procedures for self-help and independent contractors, and restrictions and penalties for creating illegal dumps. The Public Information Officer (PIO) should be prepared to respond to questions pertaining to debris removal from the press and local residents. The following questions are likely to be asked:
  - *What system is being used for pick-up?*
  - *When will the contractor be in my area?*
  - *What materials, like scrap metal and white goods, may have scrap value and therefore may be collected for no charge?*

- *What other materials can be diverted from the landfill by separating them out for recycling, and how should I set them out?*
- *Who are the contractors/service providers and how can I contact them?*
- *How do I handle Household Hazardous Waste?*
- *What if I am elderly?*

Private Property Debris Removal

- Dangerous structures should be the responsibility of the owner or local government to demolish to protect the health and safety of adjacent residents. However, experience has shown that unsafe structures will remain because of the lack of insurance, absentee landlords, or under-staffed and under-equipped local governments. Consequently, demolition of these structures may become the responsibility of the Debris Management Team (DMT).
- Develop procedures to ensure complete cooperation with numerous local and state government officials to include the following: real estate offices, local law and/or code enforcement agencies, state historic preservation office, qualified contractors to remove HHW, asbestos, lead-based paint, and field teams to photograph the sites before and after demolition.
- Include a copy of Demolition of Private Property checklist (see Exhibit C – FEMA 19 Point Demolition Checklist).
- Include copies of sample ordinances that can be activated when a "state of emergency" is implemented, eliminating any unnecessary waiting period.
- The most significant building demolition problem will be that local governments do not have proper ordinances in effect to handle emergency condemnation procedures. Moreover, structures will be misidentified or have people or belongings in them when the demolition crews arrive, necessitation removal by local law enforcement. Close coordination is essential, and it is recommended that at least one FEMA staff person be on site to work directly with the local government staff to ensure that all required legal actions are taken.

Household Hazard Waste Removal

- Household hazardous waste (HHW) may be generated as a result of a major natural disaster. HHW may consist of common household chemicals, propane tanks, oxygen bottles, batteries, and industrial and agricultural chemicals.
- Determine if the volume of HHW generated by the disaster can be handled by local government resources or existing local government HHW collection agreements.
- If the volume exceeds the local government's capacity, consider activating a debris removal contractor to collect and disposal of HHW debris.
- Public information releases should advise residents to separate HHW from other debris streams when placed at the curb for collection.

- The final disposal sites for HHW debris should be documented.
- There is a state contract for HHW collection services that is available to local governments.

TEMPORARY DEBRIS MANAGEMENT SITES

- Once the debris is removed from the damaged area, it will be taken to temporary debris management sites (DMS).
- Removal and disposal action should be handled at the lowest level possible based on the magnitude of the event. It follows the normal chain of responsibility, i.e. local level, county level, State level, and when resources are exceeded at each level of responsibility, Federal assistance may be requested according to established procedures. Because of the limited debris removal and reduction resources, the establishment and operation of DMS are generally accomplished by contracts.
- Emphasis is placed on local government responsibilities for developing debris disposal contracts. Local, tribal, county and/or State governments may be responsible for developing and implementing these contracts for debris removal and disposal under most disaster conditions.
- The DMT should review all debris disposal contracts. There should be a formal means to monitor contractor performance to ensure that funds are being used wisely.
- **Site Preparation**. The topography and soil conditions should be evaluated to determine best site lay out. Consider ways to make remediation and restoration easier when planning site preparation.
- **Site Operations.** Site preparation and operation are usually left up to the contractor, but guidance can help avoid problems with the final closeout.
- Require that the contractor establish lined temporary storage areas for incidental HHW, fuels, and other materials that can contaminate soils, groundwater and surface water. Set up plastic liners, when possible, under stationary equipment such as generators and mobile lighting plants. Include this as a requirement of the contract scope of work.
- If the site is also an equipment staging area, monitor fueling and equipment repair to prevent and mitigate spills such as petroleum products and hydraulic fluids. Include clauses in contract scope of work to require immediate cleanup by the contractor.
- Be aware of and mitigate things that will irritate the neighbors such as:
  - Smoke – proper construction and operation of incineration pits. Do not overload air curtains.
  - Dust – employ water trucks.
  - Noise – construct perimeter berms, if possible.
  - Traffic – proper layout of ingress and egress procedures to help traffic flow.

DEBRIS REDUCTION METHODS

- There are several incineration methods available including uncontrolled open incineration, controlled open incineration, air curtain pit incineration, and refractor lined pit incinerator. The DMT should consider each incineration method before selection and implementation as part of the overall volume reductions strategy. TDEC's Division of Air Pollution Control should approve the construction of any incineration facility.
- **Uncontrolled Open Incineration:** Uncontrolled open incineration is the least desirable method of volume reduction because it lacks environmental control. However, in the haste to make progress, TDEC's Division of Air Pollution Control may issue waivers to allow this method of reduction early in a disaster. See the text box below for more information on exceptions to Tennessee's ban on open incineration.
- **Controlled Open Incineration:** Controlled open incineration is cost-effective method of reduction clean woody debris in rural areas. This option must be terminated if mixed debris such as treated lumber, poles, nails, bolts, tin and aluminum sheeting enters the waste flow. Clean woody tree debris presents little environmental damage and the resulting ash can be used as a soil additive by the local agricultural community. Department of Agriculture and county agricultural extension personnel should be consulted to determine if and how the resulting ash can be recycled as a soil additive. Responsible agencies and telephone numbers should be provided.
- **Air Curtain Pit Incineration:** Air curtain pit incineration offers an effective means to expedite the volume reduction process by substantially reducing the environmental concerns caused by open incineration. Specifications and statements of work should be developed to expedite the proper use of the systems, because experience has shown that many contractors and subcontractors are not fully knowledgeable of the system operating parameters. Air Curtain Pit Incineration may be subject to permitting and, depending on the amount of materials to be processed, type of material and duration of disposal time, may require additional permitting.
- **Refractor Lined Pit Incineration:** Pre-manufactured refractory line pit burners are an alternative to air curtain open pit incineration. The units can be erected on site in a minimal amount of time. Some are portable and others must be built in-place. The units are especially suited for locations with high water tables, sandy soil, or where materials are not available to build above ground pits. The engineered features designed into the units allow for a reduction rate of approximately 95 percent with a minimum of air pollution. The air curtain traps smoke and small particles and re-circulates them to enhance combustion that reaches over 2,500 degrees Fahrenheit. Manufacturers claim that combustion rates of about 25 tons per hour are achievable while still meeting emission standards. Refractor Lined Pit Incineration may be subject to permitting and depending on the amount of materials to be processed, type of material and duration of disposal time, may require additional permitting.
- Local officials, environmental groups, and local citizens should be thoroughly briefed on the type of incineration method being used, how the systems work, environmental standards,

health issues, and the risk associated with each type of incineration. PIOs should take the initiative to keep the public informed. A proactive public information strategy to include press releases and media broadcasts should be included in any operation that envisions incineration as a primary means of volume reduction. There are four local air pollution control programs in Tennessee and each may have their own requirements as to use and or operation of ACD's or pit burning equipment.

Environmental Controls

Environmental controls are essential for all incineration methods, and the following should be considered:

- A setback of at least 1,000 feet should be maintained between the debris piles and the incineration area. Keep at least 1,000 feet between the incineration area and the nearest building. Contractors should use fencing and warning signs to keep the public away from the incineration area.
- The fire should be extinguished approximately two hours before anticipated removal of the ash mound. The ash mound should be removed when it reaches 2 feet below the lip of the incineration pit.
- The incineration area should be placed in an above ground or below ground pit that is no wider than 8 feet and between 9 and 14 feet deep.
- The incineration pits should be constructed with limestone and reinforced with earth anchors or wire mesh to support the weight of the loaders. There should be a 1-foot impervious layer of clay or limestone on the bottom of the pit to seal the ash from the aquifer.
- The ends of the pits should be sealed with dirt or ash to a height of 4 feet.
- A 12-inch dirt seal should be placed on the lip of the incineration pit area to seal the blower nozzle. The nozzle should be 3 to 6 inches from the end of the pit.
- There should be 1-foot high, unburnable warning stops along the edge of the pit's length to prevent the loader from damaging the lip of the incineration pit.
- Hazardous or contaminated ignitable material should not be placed in the pit. This is to prevent contained explosions.
- The airflow should hit the wall of the pit about 2 feet below the top edge of the pit, and the debris should not break the path of the airflow except during dumping.
- The pit should be no longer than the length of the blower system, and the pit should be loaded uniformly along the length.

Incineration methods may be subject to permitting and depending on the amount of materials to be processed, type of material and duration of disposal time, may require additional permitting.

Regulation 1200-3-4-.04 Exceptions to Prohibition of Open Burning

Fires consisting solely of materials resulting from a natural disaster, and when conducted in conformity with the following conditions:

1. Fires disposing of structural and household materials and vegetation are allowed only when those structures or materials are destroyed or severely damaged by natural disaster. Input from Emergency Management personnel may be requested in determining qualification with this criterion. The provisions of Rule 1200-3-4-.03(4) pertaining to structural and household materials may be waived if the persons seeking to open burn under this provision make a reasonable effort to remove all expressly prohibited material from the structural remains before ignition. The Technical Secretary reserves the right to inspect the proposed materials to be burned before ignition. The alternative use of chippers and grinders, landfilling, or on-site burial of waste in lieu of burning, if lawful, is encouraged;

2. If a governmental collective burn site for disposing of structural and household materials and vegetation damaged by a natural disaster is planned, the person responsible for such burning must notify the Division of Air Pollution Control of the proposed location. The notification must be delivered to the Division of Air Pollution Control at the appropriate regional Environmental Field Office at least three (3) days prior to commencing the burn. The Division may request that alternate sites be identified to minimize impact to air quality. The alternative use of chippers and grinders in lieu of burning is encouraged;

3. A traffic hazard will not be caused by the air contaminants generated by the fire;

4. No fire shall be ignited while any air pollution emergency episode is in effect in the area of the burn; and

5. Open burning conducted under this exception is only allowed where no other safe and/or practical means of disposal is available.

(2) The Technical Secretary reserves the right to require a person to cease or limit open burning if emissions from the fires are deemed by the Technical Secretary or his designee to jeopardize public health or welfare, create a public nuisance or safety hazard, create a potential safety hazard, or interfere with the attainment or maintenance of the air quality standards.

(3) Any exception to the open burning prohibition granted by this Rule Chapter does not relieve any person of the responsibility to obtain a permit required by any other agency, or of complying with other applicable requirements, ordinances, or restrictions.

Volume Reduction by Grinding and Chipping

- High wind events may present the opportunity to employ large-scale grinding and chipping operations as part of the overall debris volume reduction strategy. Strong, sustained winds can blow away scarce topsoil in the agricultural areas and cause extensive tree damage and blow-down. This two-fold loss, combined with local climatic conditions, may present an excellent opportunity to reduce clean woody debris into suitable mulch that can be used to replenish the topsoil and retain soil moisture.
- Grinding and chipping woody debris is a viable reduction method. Although more expensive than incineration, grinding and chipping is more environmentally friendly, and the resulting product, mulch, can be applied to beneficial uses. In some locations the mulch will be a desirable product because of shallow topsoil conditions. In other locations it may become a landfill product.
- Grinding and chipping woody debris reduces the large amounts of tree blow-down. Chipping operations are suitable in urban areas where streets are narrow or in groves of trees where it is cheaper to reduce the woody vegetation to mulch than to move it to a central grinding site and then returning it to the affected area. This reduces the costs associated with double handling.
- The DMT should work closely with local environmental and agricultural groups to determine if there is a market for mulch. Another source for disposal of ground woody debris may be as an alternative fuel for industrial heating or for use in a cogeneration plant.

Volume Reduction by Recycling

- Recycling reduces mixed debris volume before it is hauled to a landfill. Recycling is attractive and strongly supported by (insert supporting agency/department) because there may be an economic value to the recovered material if it can be sorted and sold. Some culling of recyclable materials can potentially be done on site, however it should be noted that worker safety is the first priority, therefore proper self-protection gear should be used, adequate space from others should be made available, and handling of any potentially hazardous or radiological waste avoided.
- Specialized contractors should be available to bid on disposal of debris by recycling, if it is well sorted. Contracts and monitoring procedures should be developed to ensure that the recyclers comply with local, tribal, State and Federal environmental regulations.
- Recycling should be considered early in the debris removal and disposal operation because it may present an opportunity to reduce the overall cost of the operation. The following materials are suitable for recycling.
- **Metals.** High wind events may cause extensive damage to mobile homes, sun porches, and green houses. Most of the metals are non-ferrous and suitable for recycling. Trailer frames and other ferrous metals are also suitable for recycling. Metals can be separated using an electromagnet. Metals that have been processed for recycling can be sold to metal recycling firms.

- **Wood.** Woody debris can be either ground or chipped into mulch. The resulting mulch can be used at biomass facilities or used for other beneficial uses such as landfill cover or land applied to add nutrients to the ground.

DISASTER MATERIAL SITE CLOSE-OUT PROCEDURES

- **Each Debris Management Site (DMS) will eventually be emptied of all material and be restored to its** previous condition and use. The contractor should be required to remove and dispose of all mixed debris, construction and demolition (C&D) debris, and debris residue to approved landfills. Quality assurance inspectors should monitor all closeout and disposal activities to ensure that contractors complied with contract specifications. Additional measures will be necessary to meet local, tribal, State and Federal environmental requirements because of the nature of the staging and reduction operation.
- The contractor must assure the Debris Management Team (DMT) that all sites are properly remediated. There will be significant costs associated with this operation as well as close scrutiny by the local press and environmental groups. Site remediation will go smoothly if baseline data collection and site operation procedures are followed.
- The basic close-out steps are to remove all debris from the site; conduct an environmental audit or assessment (this will be done on a case-by-case basis – field office staff will offer guidance); develop a remediation or restoration plan approved by the appropriate environmental agency; execute the plan; get acceptance from the landowner; and terminate lease payments, if applicable. The key to timely closeout of the mission is the efficient scheduling of the above activities for multiple sites. Therefore, critical path scheduling of all the activities as far in advance as possible will minimize down time between steps.
- Environmental Restoration. Stockpiled debris will be a mix of woody vegetation, construction material, household items, and yard waste. HHW and medical wastes should be segregated and removed prior to stockpiling. Activities at the debris disposal sites will include anyone or a combination of the following activities: stockpiling, sorting, recycling, incineration, grinding, and chipping. Incineration is done in air curtain pits and generally only woody debris is incinerated; however, the efficiency of the incineration and the quality of incineration material is highly variable. Contamination may occur from petroleum spills at staging and reduction sites or runoff from the debris piles, incineration sites, and ash piles.
- Site Remediation. During the debris removal process and after the material has been removed from each of the debris sites, environmental monitoring will be needed to close each of the sites. This is to ensure that no long-term environmental contamination is left on the site. The monitoring should be done on three different media: ash, soil, and groundwater.
- The monitoring of the ash should consist of chemical testing to determine the suitability of the material for landfilling.
- Monitoring of the soils should be by portable methods to determine if any of the soils are contaminated by volatile hydrocarbons. The contractors may do this if it is determined that hazardous material, such as oil or diesel fuel was spilled on the site. This phase of the monitoring should be done after the stockpiles are removed from the site.

- The monitoring of the groundwater should be done on selected sites to determine the probable effects of rainfall leaching through either the ash areas or the stockpile areas.
- Consider the following requirements to closeout a DMS:
  - Coordinate with local and State officials responsible for construction, real estate, contracting, project management, and legal counsel regarding requirements and support for implementation of a site remediation plan.
  - Establish a testing and monitoring program. The contractor should be responsible for environmental restoration of both public and leased sites. Contractors will also be required to remove all debris from sites for final disposal at landfills prior to closure.
  - Reference appropriate and applicable environmental regulations.
  - Prioritize site closures.
  - Schedule closeout activities.
  - Determine separate protocols for air, water and soil testing.
  - Develop cost estimates.
  - Develop decision criteria for certifying satisfactory closure based on limited baseline information.
  - Develop administrative procedures and contractual arrangements for closure phase.
  - Inform local, tribal and State environmental agencies regarding acceptability of program and established requirements.
  - Designate approving authority to review and evaluate contractor closure activities and progress.
  - Retain staff during closure phase to develop site-specific remediation for sites, as needed, based on information obtained from a closure checklist.

ORGANIZATION AND RESPONSIBILITIES

Local Government Agencies and Departments

- Identify each government agency or department that has debris clearing, removal or disposal actions.
- Define their responsibilities in detail.

Supporting Agencies

- Identify each government agency or department that has debris clearing, removal or disposal actions.
- Define their responsibilities in detail.

ADMINISTRATION AND LOGISTICS

- All agencies will document personnel and material resources used to comply with this plan/annex.
- Documentation will be used to support any Federal assistance that may be requested or required.
- Requests for support and/or assistance will be up-channeled from the county level EOC and then to the State EOC. Requests for Federal assistance will be made by the State EOC through established procedures, as outlined in the Federal Response Plan.
- All agencies will ensure 24-hour staffing capability during implementation of this plan/annex, if the emergency or disaster requires.
- Define who will be responsible to initiate an annual update of this annex. It will be the responsibility of each tasked agency to update its respective portion of the plan/annex and ensure any limitations and shortfalls are identified and documented, and work-around procedures developed, if necessary.

AUTHORITIES AND REFERENCES

- Develop a listing of authorities and references identified in this plan/annex.

APPENDICES

- Develop a listing of appropriate appendices that support this plan/annex.

FEMA Policy #9523.9 – 100% Funding for Direct Federal Assistance and Grant Assistance

1. **Date Published:** June 9, 2006
2. **Recovery Division Policy Number:** 9523.9
3. **Title:** 100% Funding for Direct Federal Assistance and Grant Assistance
4. **Purpose:** To provide guidance and establish procedures for providing 100% funding for Direct Federal Assistance and Grant Assistance
5. **Scope and Audience:** This policy applies to all major disasters declared on or after the publication date of this policy. It is intended for all states eligible to receive assistance under sections 403 and 407 0of the Stafford Act, and all Federal agencies that may be directed by FEMA to provide such assistance.
6. **Background:** FEMA's regulations at 44 CFR 206.208, Direct Federal Assistance, state, "When the State and local government lack the capability to perform or contract for eligible emergency work and/or debris removal under sections 402(4), 403 or 407 of the Act, the Grantee may request that the work be accomplished by a Federal agency." This assistance is subject to the cost share provisions contained in the FEMA/State agreement and the Stafford Act. In addition, 44 CFR 206.47(d) states, "If warranted by the needs of the disaster, we recommend up to one hundred percent (100%) Federal funding for emergency work under section 403 and section 407, including direct Federal assistance, for a limited period in the initial days of the disaster irrespective of the per capita impact." Generally, a "limited period in the initial days of a disaster" means the period of 100% funding will be limited the first 72 hours following the disaster declaration, or an applicant's selected 72 hour period. This period may be extended based on the gravity and scope of the disaster, as determined by the President.
7. **Policy:**

A. Terms Used in this Policy:

- **Mission Assignment:** Work order issued by FEMA to a Federal agency directing completion by that agency of a specified task. 44 CFR 206.2(a)(18).
- **Mission Assignment Task Order:** Specific instruction given to a Federal agency under a mission assignment directing it to perform work of certain quantity or in a certain area under that mission assignment.
- **Emergency Work:** All activities eligible under section 304 of the Stafford Act, including such activities when performed by a Federal agency as direct Federal assistance.
- **Debris Clearance and Removal:** Clearance, pick up, hauling, processing and disposal of all manner of debris generated by the declared event on public property. This includes woody debris, sand and gravel, and components of buildings or other structures. This may also include debris on private property, when FEMA has approved such removal.

- **Consumable Commodities:** Food, ice, water, and other items not requiring installation, such as small plastic tarps and small generators.
- **Emergency Protective Measures:** Actions (other than debris removal) eligible as Category B measures, including installation of plastic sheeting for temporary roofing, generators requiring installation, and shoring or demolition of unsafe structures.
- **Designated Period:** For Direct Federal Assistance: The period from 12:01 a.m. of the date of the Presidential declaration to 11:50 p.m. of the third full day after the date of the declaration.

  For Grant Assistance: The period selected by an applicant for eligibility for 100% Federal share assistance. The period will be 72 hours within a window from 12:01 a.m. of the date of a Governor's or City or County Official's declaration of emergency through 11:59 p.m. of the seventh full day after the date of the Presidential declaration of a major disaster. The period may be different for Category A and Category B work.
- **Purchase Order:** Any unconditional agreement, contract or other commitment by a state or local government under state and local law for the acquisition of goods and services.

B. Direct Federal Assistance

FEMA will provide direct Federal assistance through a mission assignment to another Federal agency (upon request from the State) when the State and local government certify they lack the capability to perform or contract for the requested work. The duration of mission assignments for debris removal will be limited to 60 days from the disaster declaration date. The Federal Coordinating Officer may approve extensions of up to an additional 60 days, if a State or local government demonstrates a continued lack of capability to assume oversight of the debris removal mission. Additional extensions will require approval by the Recovery Division Director at FEMA Headquarters. If the President has also authorized 100% Federal funding for emergency work and/or debris removal under sections 403 or 407 of the Stafford Act for the disaster, the Federal share of work mission-assigned by FEMA will be as follows:

- **Debris Clearance and/or Removal:** When FEMA directs another Federal agency to accomplish debris clearance and/or removal, FEMA will provide at 100% Federal share the cost of actual debris clearance and/or removal work accomplished, not mission assignment task orders initiated, during the designated period. This work includes whatever clearance, pick up, hauling, processing and disposal activities FEMA authorizes but only during the designated period. After the designated period, if further direct Federal assistance for debris clearance or removal is necessary, it will be provided at the prevailing Federal cost share rate for the particular disaster. The State shall agree in advance to reimburse FEMA for the appropriate non-Federal share of the work including the overhead of the Federal agency assigned the task of debris removal.
- **Food, Water, Ice and Other Consumable Commodities:** For a mission assignment task order approved during the designated period, such commodities and the work necessary to distribute them, but no including installation or set-up, shall be provided at 100% Federal share regardless of the work or project completion date. For task orders approved after the designated period, the commodities shall be provided at the

prevailing Federal cost share rate for the particular disaster. The State shall agree in advance to reimburse FEMA for the appropriate non-Federal share of the work including the overhead of the Federal agency assigned the task.

- **Other Emergency Protective Measures:** For a mission assignment task order approved during the designated period, FEMA will provide at 100% Federal share the cost of the work actually completed during the designated period. Examples of these measures include: installation of generators, installation of large plastic sheet roofing, and shoring or demolition of unsafe structures. After the designated period, the work or supplies shall be provided at the prevailing Federal cost share rate for the particular disaster. The State shall agree in advance to reimburse FEMA for the appropriate non-Federal share of the work including the overhead of the Federal agency assigned the task.

C. Grant Assistance

When the President authorizes 100% Federal funding for emergency work under sections 403 and 407 of the Stafford Act for a limited period in the initial days of the disaster, the Federal share for Grant Assistance will be as follows:

- **Debris Clearance and/or Removal:** FEMA will reimburse applicants 100% of the costs for the debris removal work accomplished during the designated period. This includes all clearance, pick up, hauling, processing and disposal activities, but only during the designated period. For work accomplished after the end of the designated period, assistance will be provided at the prevailing Federal costs share rate for the particular disaster.
- **Food, Water, Ice, and Other Consumable Commodities:** FEMA will reimburse applicants 100% of the costs of eligible work for reasonable purchase orders approved and finalized pursuant to state and local law during the designated period, regardless of the work or project completion date. This includes expenses to distribute commodities, but does not include installation or set-up. For purchase orders approved and placed after the end of the designated period, assistance will be provided at the prevailing Federal cost share rate for the particular disaster.
- **Other Emergency Protective Measures:** FEMA will reimburse applicants 100% of the costs of eligible work accomplished during the designated period. Examples of these measures include: installation of generators, installation of large plastic sheet roofing, and shoring or demolition of unsafe structures. For work accomplished after the designated period, assistance will be provided at the prevailing Federal cost share rate for the particular disaster.

8. **Supersession:** Response and Recovery Directorate Guidance No. 4150-E, September 26, 1995, Direct Federal Assistance at 100% Federal Funding, Unnumbered Guidance, October 6, 2004, Eligibility for 100% Federal Share Assistance; Recovery Division Policy 9523.9, March 10, 2006, 100% Funding for Direct Federal Assistance and Grant Assistance.
9. **Authorities:** Sections 403 and 407 of the Robert T. Stafford Disaster Relief and Assistance Act, 42 U.S.S. 5121-5206, as amended.
10. **Originating Office:** Recovery Division (Public Assistance Branch)
11. **Review Date:** Three years from date of publication
12. **Signature:**

    Joseph Nimmich, Associate Administrator
    Office of Response and Recovery
    Federal Emergency Management Agency
13. **Distribution:** Regional Directors, Regional and Headquarters Division Directors, Federal Coordinating Officers

FEMA Policy 9525.11 – Payments of Contractors for Grant Management Tasks

1. **Date Published:** April 22, 2001
2. **Response and Recovery Policy Number:** 9525.11
3. **Title:** Payment of Contractors for Grant Management Tasks
4. **Purpose:** This policy is to provide guidance on the eligibility of costs when a Grantee or subgrantee employs contractors to manage the Public Assistance (PA) Program in place of Grantee or subgrantee employees.
5. **Scope and Audience:** This policy is applicable to all major disaster and emergencies declared on or after the publication of this policy. This policy is intended for Federal Emergency Management Agency (FEMA) personnel in making eligibility determinations for the PA Program.
6. **Background:**
   - **A.** Most grantees and subgrantees have the personnel capacity to respond to a disaster. The personnel are either located within the emergency management office or they are available from other state agencies or local government departments. However, some State, Tribal, and local governments are finding it necessary to outsource work as their resources continue to shrink. Several have indicated an interest in using contracts and similar instruments to secure a workforce to administer or assist with the PA Program.
   - **B.** This new policy recognizes the trend toward Grantee use of contractors for grant management work and streamlines the payment procedures by defining the contract costs as eligible under "State Management Administrative Costs" *PW* (also known as the Grantee Management Costs Project Worksheet or management *PW*). Under previous procedures, Grantees have been denied management contractors' expenses for overtime, travel and per diem. In the past, FEMA treated the contractor expenses as though they were Grantee employee expenses and held that all overtime, travel and per diem expenses were covered by the "Statutory Administrative Costs" allowance (also known as the Grantee's Administrative Allowance or sliding scale).

FEMA will no longer treat the contractors as State employees and all eligible contractor costs will be reimbursable through the State Management Administrative Costs. Therefore, all reasonable contractor costs, including overtime, travel and per diem, will be allowed as State Management Administrative Costs. There is no similar provision for subgrantees because all of their grant management and administrative costs are required by statute to be considered under the Statutory Administrative Costs allowance (also known as the subgrantee's Administrative Allowance or sliding scale).

C. The term "State Management Administrative Costs" is used in 44 CFR 206.228(a)(3). The paragraph permits the payment of some Grantee costs. This includes the payment of some Tribal government costs when the Tribal government is operating as the Grantee.

D. The criteria for allowable State Management Administrative Costs are included in Office of Management and Budget (OMB) Circular A-87.

E. In the course of research on the subject of payment of contractor assistance in Grantee management tasks, FEMA determined that I, incorrectly, had been providing a Statutory Administrative Costs allowance on State Management Administrative Costs *PWs*. The statutory definition of "associated expenses" and the use of OMB Circular A-86 as the guidance for paying State Management Administrative Costs preclude adding the Statutory Administrative Costs allowance onto the State Management Administrative Costs *PW*. While the sum typically is not large, it still should be deducted manually from a NEMIS generated *PW*, if it is included.

F. The Disaster Mitigation Act of 2000 provides for the establishment of management cost rates that will include "any indirect cost, any administrative expense, and any other expense not directly chargeable to a specific project…." When those rates are published, appropriate portions of this policy will be superseded.

7. Policy:

A. Grantee. Reasonable costs of contractors performing eligible Grantee functions in managing the Public Assistance Program are eligible as State Management Administrative Costs.

1. The eligible Grantee management functions are identified in 44 CFR 206.228. They include expenses such as costs associated with the preparation of *PWs*, project applications, reports, audits, and related field inspections.

    a. Reasonable regular time, supplies, materials and equipment costs of contractors necessary to manage the Public Assistance Program in accordance with the regulations and State or Tribal Public Assistance Administrative Plan are eligible as State Management Administrative Costs. Since only reasonable costs will be eligible, the States and Tribes are encouraged to negotiate cost rates and contract duration with FEMA prior to disaster declarations and prior to the hiring of contractors.

    b. The contractor's expenses for overtime work, per diem and travel are eligible as a direct charge of State Management Administrative Costs. They are **not** considered a part of Statutory Administrative Costs.

2. In order for any significant amount of contractor assistance to be used in a disaster, the basic State or Tribal Public Assistance Administrative Plan must assess State or Tribal capability to manage an infrastructure disaster recovery grant and must acknowledge any potential need for a significant level of contractor assistance. **In addition, the amendments to the State or Tribal Public Assistance Administrative Plan for each disaster (submitted in accordance with 44 CFR 206.207(b)) must include all proposed uses of contractors as part of the staffing plan for that disaster.** The staffing plan must identify specific contractor functions, costs rates, and contract duration. It also must include Grantee staffing at a reasonable level, and provide for sufficient Grantee staffing to assure adequate contractor oversight and program management. The contractor's expenses will not be an eligible cost unless FEMA approves the staffing plan and finds it reasonable.
3. Contracts must adhere to the requirements of 44 CFR 13.36.
4. For the purposes of this policy in distinguishing between Grantee employees and contractors, a Grantee employee is any person directly employed by the Grantee (i.e., the Grantee executes payroll deductions for benefits and taxes). The employees may be regular full time, regular part time or extra hires for management purposes. The employees may be from another State agency or department. Regardless of their employment source, such employees will be subject to this policy as Grantee employees.
5. The State Management Administrative Costs PWs are not part of the base for calculating additional Grantee Statutory Administrative Costs (also known as the Administrative Allowance or sliding scale). The PW designation for Management PWs covering Grantee management and contractor costs is category Z code 852.
6. Grantee costs associated with developing work plans for contractors or managing contractor work are eligible State management Administrative Costs.

B. Subgrantee. The costs of subgrantee contractors performing subgrantee functions in managing and administering the Public Assistance grants are to be paid from the subgrantee's Administrative Allowance.

C. Project Management. Eligible project management costs directly related to specific eligible projects can be included in the PW's for the eligible projects.

D. Multiple Tasks – Single Contractor. In very rare cases, the same contractor may be employed to perform grant management functions for the Grantee, and also perform subgrantee administrative or construction management functions. In such cases, there must be separate contracts, or the costs for each function must be clearly delineated in the contract and separated in the billing and payment process. Separate contracts generally will be the clearest basis for separating costs. Contractors on one contract may not oversee their own work performed under another contract, nor oversee other work, which may create a conflict of interest situation.

E. Contractor costs for performing management duties of the Grantee will be approved using a State Management Administrative Costs PW. Contractor costs for performing management and administrative duties of the subgrantee are covered in the subgrantee's Statutory Administrative Costs. Construction management costs either will be approved using a separate PW or be part of a construction PW.

8. Supersession: This policy updates and replaces relevant provisions of previous public assistance policy documents.

9. Reference: Office of Management and Budget Circular A-87.

10. Authorities: Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended, Section 406; 44 CFR 206.44, 206.207 and 206.228.

11. Originating Office: Infrastructure Division, Response and Recovery Directorate.

12. Review Date: Five years, except for the provisions that will be superseded with the implementation of Section 324 ("Management Costs") of the Disaster Mitigation Act of 2000.

13. Signature:

Lacy E. Suiter
Executive Associate Director
Response and Recovery Directorate

14. Distribution: Regional Directors, Regional and Headquarters R&R Division Directors

FEMA RECOVERY

FACT SHEET RP9580.201

Debris Contracting Guidance

Overview

Debris removal and monitoring contracts must meet rules for Federal grants, as provided for in Title 44 Code of Federal Regulations (CFR) §13.36, **Procurement** in order to be eligible for reimbursement under the Public Assistance Program. This fact sheet assists Public Assistance applicants with meeting procurement requirements established in 44 CFR Part 13, as well as other Public Assistance Program eligibility requirements, when procuring debris removal and monitoring contracts. Public Assistance applicants should comply with their own procurement procedures in accordance with applicable State and local laws and regulations, provided that they conform to applicable Federal laws and standards identified in Part 13.

Contract Procurement

To be eligible for Federal funding, applicants must comply with federal procurement standards as outlined in 44 CFR, §13.36, **Procurement**. Essential elements of the procurement process for debris removal and monitoring contracts include: competition; a clear and definitive scope of work; qualified bidders (documented by licenses, financial records, proof of insurance, and bonding, as applicable); a cost analysis to demonstrate cost reasonableness; compliance with all relevant local, State, and Federal requirements, laws and policies; and, clear documentation of the process/rationale followed in making procurement decisions. Federal regulations require applicants for Public Assistance grants to take the necessary steps to ensure there are opportunities to award contracts to minority, women-owned, and Labor Surplus Area businesses and firms whenever possible. This includes contracts with local organizations, firms, and individuals that support response and recovery activities in a declared major disaster or emergency area. Applicants' legal representatives should review their procurement process and any contract to be awarded to ensure they are in compliance with all Federal, State, and local requirements. Procurement policies must include procedures to handle protests and disputes related to contracts awarded. ***FEMA will, when requested by applicants, assist in the review of debris removal contracts. However, such a review does not constitute approval.***

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DEBRIS CONTRACTING GUIDANCE

In order to ensure that debris removal and monitoring contracting costs are eligible, applicants should:

☐ Use competitive bidding procedures to meet procurement requirements for Federal grants, as established in 44 CFR § 13.36, *Procurement*.

☐ Only use abbreviated emergency procurement procedures that include an expedited competitive bid process if time does not allow for more stringent procedures and if they are allowed under State or local laws, codes, or ordinances.

☐ Provide a clear and definitive scope of work in the request for proposals/bids.

☐ Require bidders to provide copies of references, licenses, financial records, and proof of insurance and bonding.

☐ Ensure that debris removal or monitoring contract costs are reasonable and necessary as defined and required by OMB Circular A-87 and 44 CFR Part 13. *Competitively bid contracts that comply with Federal, State, and local procurement regulations and procedures will establish reasonable costs for the work.*

☐ Complete and document a cost analysis to demonstrate price reasonableness on any contract or contract modification where adequate price competition is lacking, as detailed in 44 CFR § 13.36(f). See Attachment 1, *Debris Removal Contract Cost Analysis*, for guidance on completing a cost analysis.

Cost Analysis

Pursuant to 44 CFR § 13.36, **Procurement**, Public Assistance applicants must complete a cost analysis for *any contract or contract modification where price competition is lacking*. Failure to complete a cost analysis may jeopardize FEMA Public Assistance grant funding. Applicants are encouraged to complete a cost analysis using the attached *Debris Removal Contract Cost Analysis*. Applicants are also encouraged to file documentation supporting the cost analysis with all associated contract documents.

Upon request, FEMA will provide guidance as necessary in the cost analysis process. Such a review does not constitute approval when determining the eligibility of costs for reimbursement under FEMA's Public Assistance Program.

Pre-Disaster and Standby Contracts

Applicants are encouraged to pre-qualify debris removal contractors prior to an event and solicit bid prices from this list of contractors once an event has occurred to ensure competitive bidding and obtain reasonable market prices at the time of work performed. The solicitation for pre-qualifying contractors

should adequately define in the proposed scope of work all potential debris types, anticipated haul distances, and size of events for which a contract may be activated.

Debris Removal Contract Provisions

All debris removal contracts must contain the following provisions:

☐ All payment provisions must be based on unit prices (volume or weight).

☐ Payments based on time and material costs are limited to work performed during the first 70 hours of actual work following a disaster event.

> *Note:* FEMA will typically only reimburse applicants for a time and materials contract for eligible debris clearance during the first 70 hours following a declared disaster. After 70 hours of work, the applicant should have sufficient information on the scope of work necessary to complete debris collection and disposal, and a basis for estimating a reasonable cost for the contract work to effectively solicit a lump sum or unit price contract. For some types of debris work time and materials contracts may be the most cost-effective and best suited to the type of work. Applicants should work closely with the State and FEMA when awarding such contracts to ensure eligibility requirements are met.

☐ Payment will be made only for debris that FEMA determines eligible. (This is an optional provision to protect the applicant.)

☐ Contractors must submit invoices regularly and for no more than 30-day periods.

☐ A "Termination for Convenience" clause allowing contract termination at any time for any reason.

☐ A time limit on the period of performance for the work to be done.

☐ A subcontract plan including a clear description of the percentage of the work the contractor may subcontract out and a list of subcontractors the contractor plans to use.

☐ A requirement that the contractor use mechanical equipment to load and reasonably compact debris into the trucks and trailers.

☐ A requirement that the contractor provide a safe working environment.

☐ A requirement that all contract amendments and modifications will be in writing.

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DEBRIS CONTRACTING GUIDANCE

☐ A requirement that contractors must obtain adequate payment and performance bonds and insurance coverage.

Debris Monitoring Contracts

Applicants must monitor all debris removal operations. Applicants must document all eligible debris removal expenses as a condition of receiving Public Assistance funding. Applicants may use contractors to monitor their debris removal operations. In addition to the guidance provided above, applicants should consider the following when procuring debris monitoring contracts:

☐ Debris monitoring contracts must be competitively procured as required by 44 CFR § 13.36, **Procurement**.

☐ Debris monitors should not be employed by or affiliated with the debris removal contractor.

☐ Debris monitoring contracts are typically time and materials contracts and must contain a not-to-exceed clause, pursuant to 44 CFR § 13.36, **Procurement**.

☐ The contract should include a requirement that the contractor provide a safe working environment, including properly constructed monitoring towers.

☐ Use of a load ticket system to record with specificity (e.g., street address, GPS coordinates) where debris is collected and the amount picked up, hauled, reduced, and disposed of.

☐ Debris monitors should be trained and possess skills adequate to fulfill the duties of the job. Labor rates should be commensurate with the skill level required by the job function. **Professional engineers and qualifications are not required to perform monitoring duties.**

☐ The contractor should demonstrate that its staff is familiar with FEMA debris removal eligibility criteria.

Avoidance Checklist

☐ **DO NOT:** Award a debris removal or debris monitoring contract on a sole-source basis.

☐ **DO NOT:** Sign a contract (including one provided by a contractor) until your legal representative has thoroughly reviewed it.

☐ **DO NOT:** Allow any contractor to make eligibility determinations; only FEMA has authority to make final eligibility determinations.

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DEBRIS CONTRACTING GUIDANCE

☐ **DO NOT:** Accept any contractor's claim that it is "FEMA certified." FEMA does not certify, credential, or recommend debris contractors.

☐ **DO NOT:** Award a contract to develop and manage debris management sites, unless the debris sites are part of your approved debris management plan or you contact the State or FEMA for technical assistance concerning the need for such an operation. Temporary Debris Storage and Reduction sites are not always necessary.

☐ **DO NOT:** Allow separate line item payment for stumps 24 inches and smaller in diameter; you should treat these stumps as normal debris.

☐ **DO NOT:** "Piggyback" or utilize a contract awarded by another entity. "Piggybacking" may be legal under applicable state law; however, the use of such a contract may jeopardize FEMA funding because these contracts do not meet requirements for competition established in 44 CFR § 13.36. If an applicant requests reimbursement for costs it incurred from a piggyback contract, FEMA will determine the reasonable cost for the performance of eligible work.

☐ **DO NOT:** Award pre-disaster/stand-by contracts with mobilization costs or unit costs that are significantly higher than what they would be if the contract were awarded post-disaster. Such contracts should have variable mobilization costs depending upon the size of the debris work that may be encountered.

☐ **DO NOT:** Allow for markups due to errors in volume calculations.

☐ **DO NOT:** Allow for miscellaneous items, or for contract contingencies of any kind, including "unknowns."

See Attachment 2, *Debris Operations Contract Bid Sheet*, for additional guidance on debris contracts.

Deborah Ingram
Acting Assistant Administrator
Recovery Directorate

9/27/10
Date

Attachments (2)

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ATTACHMENT 1:
Debris Removal Contract Cost Analysis

This guidance is intended to assist Public Assistance applicants in complying with the requirements of 44 CFR Part 13.36, **Procurement**, for debris operation contracts or contract modifications where adequate price competition is lacking.

When to Conduct a Cost Analysis

Applicants should complete a cost analysis when one of the following conditions applies:

- The applicant has not received two or more priced bids from responsible bidders after soliciting a number of sources;
- Services can only be provided by a single source;
- The awarding agency authorizes noncompetitive proposals;
- The public exigency or emergency for the requirement will not permit a delay resulting from competitive solicitation; or
- The procurement is a contract modification or change order.

General Contract Review

In order to conduct a cost analysis, applicants should request cost documentation from their debris contractors. This documentation should contain a detailed breakdown of costs for each item of work activity and information on how the contractor arrived at its costs, including, but not limited to:

- Number of labor hours,
- Labor rates,
- Materials (types, quantities, and costs),
- Equipment hours,
- Equipment rates, or
- Unit costs

Applicants are encouraged to verify the mathematical accuracy of the cost documentation by recalculating the contractor's cost figures. Applicants should also review the proposed contract's scope

of work for cost reasonableness to ensure that the proposed scope does not fall under an existing contract.

Applicants should ensure that the contract does not use prohibitive contracting methods per 44 CFR § 13.36(f)(4), including:

1. Cost plus a percentage of cost – this is a contract that provides a specified percentage profit over and above the actual costs of construction; and
2. Percentage of construction cost.

Labor Rate Analysis

Applicants may determine the reasonableness of labor rates by:

1. Comparing the proposed labor category rates with the labor rates in another contract that was competitively bid;
2. Matching rates for each labor category to an acceptable source (e.g. RS Means);
3. Verifying that the classification of each worker and skill level proposed in the contract are reasonable and necessary for the scope of work. For example, a contractor should not propose using an experienced supervisor rate or worker with professional qualifications for work that can be done by a low skilled laborer (e.g., using a professional engineer for debris monitoring). In this case, the supervisor labor classification is unreasonable and should be adjusted to the appropriate labor classification that is more commensurate with the type of work being performed; and
4. Verifying that the proposed number of labor hours are reasonable for the scope of work.

Equipment Rate Analysis

Applicants may determine the reasonableness of equipment rates by:

1. Comparing the proposed equipment rates with the equipment rates in another contract that was competitively bid (if a change order, compared rates to the original contract);
2. Comparing the proposed equipment rates to FEMA's Schedule of Equipment Rates, available at www.fema.gov;
3. Matching equipment rates for each piece of equipment to an acceptable source (e.g., EquipmentWatch);
4. Verifying that the type of equipment proposed is reasonable and necessary for the scope of work;
5. Verifying that the number of units (normally hours) of equipment usage necessary to complete the work is reasonable considering the specific scope of work; and
6. Verifying that there are no contract provisions for the following items with regard to the

RECOVERY FACT SHEET RP9580.201

ATTACHMENT 1: Debris Removal Contract Cost Analysis

proposed equipment costs:

- Mobilization costs
- Standby costs

Unit Rate Analysis

Applicants may determine the reasonableness of unit rates by:

1. Verifying that the unit of measurement (i.e. cubic yard, weight, each, etc.) is appropriate for the scope of work (if the contractor quoted a unit rate price); and
2. Comparing the proposed unit rates with similar rates in another contract that was competitively bid (if a change order, comparing rates to the original contract).

Materials and Supplies Analysis

Applicants should review the materials and supplies included in the contract proposal and ensure that all costs are reasonable.

(Scope of Work) Volume Estimates

In some circumstances, a contractor will include debris volume estimates in support of its proposed costs. Contractors develop these estimates using aerial and ground assessments, forecasting and estimating models (e.g., USACE hurricane debris models and photographs), side scan sonar and other methodologies.

Applicants should request hard copies of volume estimates and all supporting documentation in order to determine if the methodology that the contractor used to estimate debris was an acceptable and reasonable methodology. Applicants should also verify that the volume estimates are reasonable and accurate.

Price Analysis for Competitively Bid Contracts

Applicants are required by 44 CFR Part 13.36(f)(1) to perform a price analysis in all other instances (i.e., for competitively bid contracts when price competition is adequate), to determine the reasonableness of the proposed contract price. Price analyses may incorporate an evaluation of: historic documentation for similar work; average costs for similar work in the area; published unit costs from the national cost estimating databases; and FEMA cost codes, equipment rates, and engineering and design service curves. Upon request, FEMA will assist applicants in the review of these contracts and provide guidance as necessary.

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ATTACHMENT 2:
Debris Operations Contract Bid Sheet

Overview

Public Assistance applicants may use the following debris operations bid sheet as a template when issuing requests for proposals and soliciting contract bids for debris removal work. Use of a standard bid sheet will help Public Assistance applicants to compare and analyze bids, resulting in a more effective procurement process. **The bid sheet serves only as a guide for soliciting requests for debris removal services; use of the bid sheet is not a requirement for Public Assistance funding.** Please refer to the *Debris Operations Contracting and Cost Analysis* (Attachment 1) for guidance on complying with procurement requirements established in 44 CFR Part 13, **Procurement**.

Debris Operations Bid Sheet

The debris operations bid sheet is presented on the next three pages. The remainder of this section is intentionally left blank.

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ATTACHMENT 2:
Debris Operations Contract Bid Sheet

SAMPLE Debris Bid Sheet

SAMPLE Category	SAMPLE Field Name and Description	SAMPLE Unit	Cost per Unit	Estimated Total Units	Total
Vegetative Collect and Haul	0-15 Miles Veg from Right of Way (ROW) to Debris Management Site (DMS) *Vegetative collect and removal for a haul distance up*	CY	999999	999999	99,999,999.00
	16-30 Miles Veg from ROW to DMS *Vegetative collect and removal for a haul distance up between 16 and 30 miles*	CY	999999	999999	99,999,999.00
	31-60 Miles Veg from ROW to DMS *Vegetative collect and removal for a haul distance between 31 and 60 miles*	CY	999999	999999	99,999,999.00
	60+ Miles Veg from ROW to DMS *Vegetative collect and removal for a haul distance greater than 60 miles*	CY	999999	999999	99,999,999.00
	Single Price Veg from ROW to DMS *A single price vegetative collect and removal for any haul distance*	CY	999999	999999	99,999,999.00
Management and Reduction	Grinding *Grinding/chipping vegetative debris*	CY	999999	999999	99,999,999.00
	Air Curtain Burning *Air Curtain Burning vegetative debris*	CY	999999	999999	99,999,999.00
	Open Burning *Open Burning vegetative debris*	CY	999999	999999	99,999,999.00
	Compacting *Compacting vegetative debris*	CY	999999	999999	99,999,999.00
	Debris Management Site Management *Preparation, management, and segregating at debris management site*	CY	999999	999999	99,999,999.00
C & D Collect and Haul	0-15 Miles C&D from ROW to DMS *C&D collect and removal for a haul distance up to 15 miles*	CY	999999	999999	99,999,999.00
	16-30 Miles C&D from ROW to DMS *C&D collect and removal for a haul distance between 16 and 30 miles*	CY	999999	999999	99,999,999.00
	31-60 Miles C&D from ROW to DMS *C&D collect and removal for a haul distance between 31 and 60 miles*	CY	999999	999999	99,999,999.00
	60+ Miles C&D from ROW to DMS *C&D collect and removal for a haul distance greater than 60 miles*	CY	999999	999999	99,999,999.00
	Single Price C&D from ROW to DMS *A single price C&D collect and removal for any haul distance*	CY	999999	999999	99,999,999.00

THIS SAMPLE BID SHEET IS INTENDED FOR INFORMATIONAL PURPOSES ONLY. IT SHOULD NOT BE SUBMITTED TO FEMA.

Prepared By: Public Assistance Division Page 2 of 4

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ATTACHMENT 2: DEBRIS OPERATIONS CONTRACT BID SHEET

Final Disposal	0-15 Miles from DMS to Final Disposal *Transport processed debris from DMS to final disposal 0-15 Miles*	CY	999999	999999	99,999,999.00
	16-30 Miles from DMS to Final Disposal *Transport processed debris from DMS to final disposal 16-30 Miles*	CY	999999	999999	99,999,999.00
	31-60 Miles from DMS to Final Disposal *Transport processed debris from DMS to final disposal 31-60 Miles*	CY	999999	999999	99,999,999.00
	60+ Miles from DMS to Final Disposal *Transport processed debris from DMS to final disposal 60+ Miles*	CY	999999	999999	99,999,999.00
	Single Price from DMS to Final Disposal *A single price transport of processed debris from DMS to final disposal*	CY	999999	999999	99,999,999.00
	Tipping Fees (Vegetative) *Fee includes negotiated contract price or pass through amount for vegetative*	CY	999999	999999	99,999,999.00
	Tipping Fees (Mix) *Fee includes negotiated contract price or pass through amount for Mix*	CY	999999	999999	99,999,999.00
	Tipping Fees (C&D) *Fee includes negotiated contract price or pass through amount for C&D*	CY	999999	999999	99,999,999.00

Tree Operations	Hazardous Trees 6"-12" *Hazardous tree removal for a 6-12 inch trunk diameter*	Tree	999999	999999	99,999,999.00
	Hazardous Trees 13"-24" *Hazardous tree removal for a 13-24 inch trunk diameter*	Tree	999999	999999	99,999,999.00
	Hazardous Trees 25"-36" *Hazardous tree removal for a 25-36 inch trunk diameter*	Tree	999999	999999	99,999,999.00
	Hazardous Trees 37"-48" *Hazardous tree removal for a 37-48 inch trunk diameter*	Tree	999999	999999	99,999,999.00
	Hazardous Trees 49"+ *Hazardous tree removal for a 49+ inch trunk diameter*	Tree	999999	999999	99,999,999.00
	Trees with Hazardous Limbs >2" *Hazardous hanging limb removal*	Tree	999999	999999	99,999,999.00
	Hazardous Sumps >24"-36" *Hazardous stump removal for a 24-36 inch stump diameter*	Stump	999999	999999	99,999,999.00
	Hazardous Sumps >37"-48" *Hazardous stump removal 37-48 inch stump diameter*	Stump	999999	999999	99,999,999.00
	Hazardous Sumps >49"+ *Hazardous stump removal 49+ inch stump diameter*	Stump	999999	999999	99,999,999.00
	Stump Fill Dirt *Fill dirt for stump holes after removal*	CY	999999	999999	99,999,999.00

THIS SAMPLE BID SHEET IS INTENDED FOR INFORMATIONAL PURPOSES ONLY. IT SHOULD NOT BE SUBMITTED TO FEMA.

FEMA 19 POINT DEMOLITION CHECKLIST

Property Address: _____ GPN: _____

	Action	Initial	Date	Notes
1	Establish property management file for each parcel of private property. One (1) copy each for local and State records management			Take photographs before demolition
2	Provide Notice of Condemnation			
3	Complete Environmental and Historic Preservation Reviews			
4	Obtain Right of Entry and Hold Harmless Agreements			
5	Verify property description and ownership (i.e., tax assessment, legal description)			
6	Document property owner's insurance coverage for future recovery			
7	Notify lienholder(s) of intent to demolish, as needed			
8	Conduct building inspection, as needed			
9	Conduct public health inspection, as needed			
10	Conduct fire inspection, as needed			
11	Provide public notification of condemnation/ demolition			
12	Verify personal property removal			

I, the authorized applicant official, certify that the above items have been completed, and the corresponding documentation is contained in the Property Management File.

Name (Print) Title Signature Date

13	Verify structure is unoccupied			
14	Cap well, water, sewer and septic lines. Disconnect electrical service. Remove propane tanks.			
15	Mark easements and underground utilities			
16	Identify/remove/dispose of asbestos, lead-based paints and other hazardous materials per State environmental and EPA requirements			
17	Identify/remove/dispose of all HHW per State environmental agency/EPA requirements			
18	Record GPS coordinates. Photograph site before and after demolition.			
19	Document actual demolition and removal of debris			

Complete documentation is compiled within the project file for each individual structure/property.

I, the authorized applicant official, certify that all processes and documentation referred to in this checklist are complete (except item 19) prior to the demolition of the referenced structure.

Name (Print) Title Signature Date

Public Assistance Alternative Procedures Pilot Program Guide for Debris Removal

FEMA

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Department of Homeland Security
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PART I. OVERVIEW

On January 29, 2013, President Obama signed into law the Sandy Recovery Improvement Act of 2013 (P.L. 113-2). This law amends Title IV of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5121 et seq.) (Stafford Act). Specifically, the law adds section 428, which authorizes alternative procedures for the Public Assistance Program under sections 403(a)(3)(A), 406, 407 and 502(a)(5) of the Stafford Act. It also authorizes the Federal Emergency Management Agency (FEMA) to implement the alternative procedures through a pilot program. The program will remain in place for one year, at which point FEMA will assess the pilot's effectiveness at achieving its goals. Based on the evaluation of the pilot, FEMA may elect to discontinue the program, extend the pilot for an additional performance period, or issue regulations that would institute the program changes authorized by the law.

The law identifies the following goals for these procedures:

- Reducing the costs to the Federal Government of providing Public Assistance.
- Increasing flexibility in the administration of such assistance.
- Expediting the provision of assistance to a State, Tribal or local government, or nonprofit owner or operator of a private nonprofit facility.
- Providing financial incentives and disincentives for timely and cost-effective completion of projects with such assistance.

Public Assistance Program Features Included in the Alternative Procedures

The alternative procedures authorized under the law pertain to debris removal (emergency work) and repair, restoration, and replacement of disaster-damaged public and private nonprofit facilities (permanent work). This guide outlines the alternative procedures for debris removal only.

Alternative Procedures for Debris Removal

For debris removal, the law allows for, and FEMA is currently piloting:

- The use of a sliding scale for determining the Federal share for removal of debris and wreckage based on the time it takes to complete debris and wreckage removal;
- The use of program income from recycled debris without offset to the grant amount;
- Reimbursing base and overtime wages for the employees of State, Tribal or local governments, or owners or operators of private nonprofit facilities performing or administering debris and wreckage removal; and

- Providing incentives to a State or Tribal or local government to have a debris management plan approved[1] by the FEMA Administrator and have pre-qualified one or more debris and wreckage removal contractors before the date of declaration of the major disaster.

The law also authorizes the FEMA to make grants for debris removal on the basis of fixed estimates, and to allow Subgrantees to use excess funds from those grants for approved purposes. FEMA is not implementing these procedures as part of this pilot. FEMA continues to work to improve debris estimating methodologies and will consider implementing these procedures in the future.

A. Applicability

In accordance with the law, State, Tribal, and local governments, and the owners and operators of certain private nonprofit facilities may participate in the alternative procedures during the pilot performance period.[2] Participation in the pilot program and use of the alternative procedures for specific projects is voluntary. If Subgrantees use any of the alternative procedures, they will sign an acknowledgement regarding these procedures, which FEMA will attach to the Subgrant Application (Project Worksheet) for the project(s) in question. A sample acknowledgement is provided in the Appendix.

The alternative procedures for the debris removal pilot program is available to any State, or Tribal government, upon request, for any major disaster or emergency declared on or after the date of the issuance of the pilot program guide and until the end of the pilot program period. The alternative procedures contained in this document are for large projects with the exception of reimbursement for straight time force account labor which can be applied to both small and large projects.[3] (See **Debris Removal Straight Time Force Account Labor** section.)

B. Compliance With Applicable Laws, Regulations, and Policies

The law authorizes FEMA to carry out the alternative procedures via this guidance as a pilot program. Accordingly, FEMA has developed this document to provide the framework for implementing the alternative procedures as a pilot program and to establish acceptable requirements for those elements of existing regulations that are excepted by the provisions of the

[1] FEMA will review debris management plans as described in the **Debris Management Plan** section of this document.
[2] A Grantee is defined as a State or tribal government that has chosen to serve as a Grantee. A Subgrantee is defined as a State agency, local government, Indian Tribe, authorized tribal organization, Alaska Native village or organization, or certain Private Nonprofit organization that submits a request for disaster assistance under the Presidentially declared major disaster or emergency.
[3] A large project is a project with a total estimated cost that exceeds the monetary threshold established in section 422 of the Stafford Act and 44 CFR §206.203(c). For major disasters and emergencies declared in Fiscal Year 2013, the threshold is $67,500. A small project is any project below the large project threshold.

law. This guidance document addresses exceptions to regulations in 44 CFR §206.203(c)(1), §206.204(e), §206.206, and §206.253(a).

Subgrantees participating in this pilot program must abide by the elements of this guidance document for applicable components of the Public Assistance Program; and FEMA will approve projects to which the alternative procedures apply in accordance with this document. However, all other statutory, regulatory and policy requirements of the Public Assistance Program apply and are not affected by the alternative procedures. The alternative procedures also do not affect requirements for compliance with other Federal requirements, including environmental and historic preservation (EHP) laws, regulations, and executive orders.

C. Purpose of this Guidance Document

This document provides guidance to FEMA, Grantees, and Subgrantees for implementing the alternative procedures for the debris removal pilot program. This guidance document pertains only to procedures authorized under the law. FEMA, Grantees, and Subgrantees will implement all other aspects of the Public Assistance Program in accordance with standard procedures. It describes the scope and limitations of the alternative procedures; describes changes to the aspects of the Public Assistance Program to which these procedures apply; identifies responsibilities for certain activities; and identifies timelines for key actions and decisions.

As described above, FEMA is implementing the alternative procedures initially through a pilot program. The pilot will allow FEMA to gather meaningful information on the effectiveness of the alternative procedures, to establish controls for the proper use of Federal funds, and to inform a potential future proposed rulemaking.

PART II. ALTERNATIVE PROCEDURES FOR DEBRIS REMOVAL

These procedures contain provisions intended to increase the effectiveness of debris removal operations and reduce Federal administrative costs. Although some provisions are most effective when used together, such as employing a debris removal plan in an accelerated debris removal operation, Subgrantees may elect to use one or more of the procedures for their debris removal projects. Utilizing multiple debris removal alternative procedures is not required for any given debris removal project in order to receive the incentive for any of the other provisions. These alternative procedures are addressed in greater detail below.

A. Requesting Alternative Procedures for Debris Removal

Upon the declaration of a major disaster or emergency by the President authorizing FEMA to provide debris removal assistance, FEMA will provide eligible Public Assistance Subgrantees within the declared area the opportunity to make a request to participate in the alternative procedures for the debris removal pilot program.

B. Accelerated Debris Removal--Increased Federal Cost Share (Sliding Scale)

The pilot program authorizes an increased Federal cost share for the collection, hauling, processing and disposal of debris when Subgrantees complete removal operations within a specified time frame (Table 1). To participate in this procedure, debris removal projects must include all debris for which a Subgrantee will be requesting FEMA assistance.

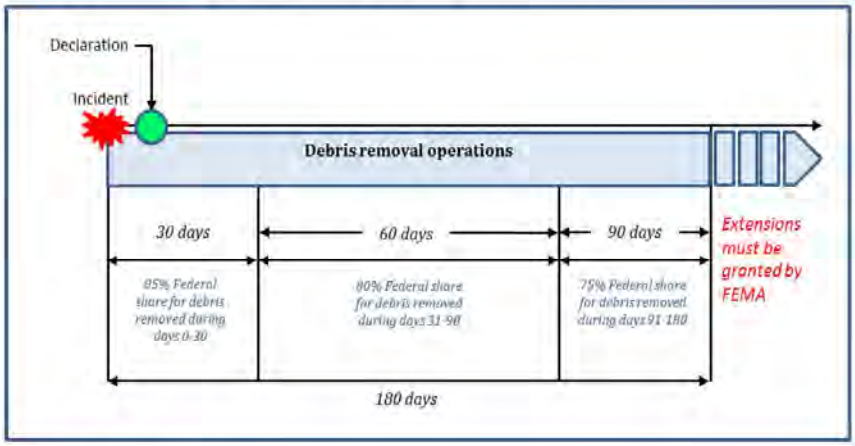
Table 1. Alternative Procedure Federal Cost Share

Debris Removal Completed (Days from Start of Incident Period)	Federal Cost Share
0-30	85%
31-90	80%
91-180	75%
Federal dollars will NOT be provided for debris removal after 180 days (unless an extension is granted)	

Reimbursement provided to Subgrantees will be based on the Federal cost share percentages shown in Table 1 for debris removal work completed within the specified time frames. The subgrant shall reflect actual costs for the quantity of debris removal completed from the incident's start date until the ending time frame specified in the table. The increased Federal cost share for accelerated debris removal is available only for grant assistance provided to a Subgrantee for the debris removal it performs. It does not apply to debris removal conducted under Direct Federal Assistance (DFA).

A subgrant will be prepared at the appropriate cost share to reflect the amount of debris removal work completed during each operational time frame. If the Subgrantee agrees to this alternative procedure, no costs associated with debris removal that occur after 180 days from the start of the incident period will be funded, unless an extension is granted. The Grantee must make any request for an extension of the 180-day timeframe and extensions may be granted only by FEMA. See 44 CFR 206.204(d) for further information on requesting extensions. Additional debris removal beyond the 180 days cannot be funded through DFA. After agreeing to this alternative procedure, and once the first subgrant is prepared and obligated at the increased Federal share, the Subgrantee cannot revert back to standard procedures for the remaining debris removal costs. Figure 1 describes the overall timeline for use of the sliding scale.

Figure 1. Timeline for use of the sliding scale for debris removal.



C. Recycling Revenues

Subgrantees may retain revenues received through recycling eligible disaster debris. The Subgrantee shall provide the Grantee written notification of the revenue received as part of its final accounting of actual costs. This should include the completion date of the debris removal operations and a brief description of the quantity and types of debris recycled, the cost for processing debris for recycling, and whether the community's rebuilding projects used any portion of the recycled debris. The Grantee will forward this information to FEMA in the accounting of the final project costs. The cost of establishing and managing the recycling program or process and additional sorting and processing of the debris for recycling purposes cannot be claimed as a direct project cost on the debris removal subgrant. This alternative procedure can be used in combination with any other alternative procedure or on its own.

Subgrantees can use revenues from debris recycling only for the following approved purposes: to meet the cost sharing requirements of Public Assistance grant funding for debris removal; to develop comprehensive disaster preparedness and assistance plans, programs, and capabilities; to conduct activities that reduce the risk of future damage, hardship or suffering from a major disaster; or to improve future debris removal operations or planning. Activities that improve future debris removal operations and planning may include:

- Developing disaster debris management plans
- Updating or revising existing plans
- Enhancing Subgrantee landfill-management sites
- Installing mechanisms such as debris trash racks, K-Rail debris guards and silt fences to control the flow of disaster debris in future events
- Buying equipment such as street sweepers, shredders, backhoes, balers and sorting conveyors that would facilitate sorting, volume reduction, or removing disaster debris
- Purchasing debris recycling equipment
- Purchasing software and hardware products to facilitate quantifying disaster debris
- Buying onboard weight measurement systems for debris-collection trucks
- Purchasing software systems for debris load management to assist in tracking trucks, drivers and routes

If revenues are not used for an authorized purpose, grant funding will be reduced by the amount of that revenue as program income.

D. Straight Time Force Account Labor

When Subgrantees use their own labor forces to perform all or part of debris removal operations, FEMA will reimburse, at the appropriate cost share level, the base and overtime wages for existing employees and hiring of additional staff. FEMA will calculate labor costs based on the appropriate labor classifications and skills for the work necessary to accomplish each type of removal and monitoring operations. Subgrantees shall track labor hours for each employee and additional staff. Subgrantees also shall keep accurate hourly records for each employee and additional staff assigned to removal activities. This alternative procedure can be used with any other alternative procedure or on its own. This alternative procedure can be applied to both large and small projects for Subgrantees participating in the pilot.

E. Debris Management Plans

A Subgrantee with a FEMA-reviewed debris management plan at the time of an event can increase the effectiveness of its debris management operations. Specifically, a debris management plan should improve a Subgrantee's ability to complete debris removal within the timelines associated with the sliding scale.

When the Subgrantee has a FEMA-reviewed debris management plan before the date of the disaster declaration incident period, FEMA will provide a one-time incentive of a 2 percent cost

share adjustment applied to debris removal work completed within 90 days. This one-time incentive will not be available to the same Subgrantee again during the course of the pilot. This procedure can be used with any of the other pilot procedures or on its own. FEMA will review plans presented through the Grantee. Plans should include all of the following elements:

- Debris management overview
- Events and assumptions
- Debris collection and removal plan
- Debris disposal locations and debris management sites
- Debris removal on private property
- Use and procurement of contracted services
- Use of force account labor
- Monitoring of debris operations
- Health and safety requirements
- Environmental considerations and other regulatory requirements
- Public information

The legislation also requires a Subgrantee to have at least one or more pre-qualified contractors.[4] Any debris contract award must comply with Federal procurement requirements, as outlined in 44 CFR §13.36. Federal procurement compliance may have more stringent requirements than State or local requirements.

In addition, the content of the plans will vary and depend highly on State and local ordinances and zoning, as well as the location of critical infrastructure, emergency services, disposal locations, and other localized factors. FEMA will review the plans to ensure that Subgrantees have considered the elements listed above. FEMA review of the plan does not mean it is approving any operational component of the plan and does not commit the Federal government to funding any aspect of the plan.

[4] A pre-qualified contractor is one that has been identified and evaluated by a local government and has been determined to be capable to perform debris removal work (e.g., capabilities, bonding, insurance, availability). Identification of these qualifications should be done in conjunction with the drafting of a debris management plan, which should include specific contract requirements and explain how contractor qualifications are established. A pre-qualified contractor does not constitute a "stand-by" contract.

PART III. GRANTS MANAGEMENT REQUIREMENTS

The process for monitoring and closing projects is streamlined under the alternative procedures. The grants management requirements are outlined in the sections that follow.

A. Grants Management Activities

For projects funded under the alternative procedures, major activities conducted during the Grants Management phase are as follows:

- The Subgrantee must complete work within established regulatory time frames and request time extensions as appropriate, pursuant to 44 CFR §206.204(d) *Requests for time extensions.*
- The Subgrantee must submit quarterly progress reports to the Grantee for large projects in which the work is not completed and financially reconciled, pursuant to 44 CFR §206.204(f) *Progress reports.*
- The Grantee will provide funds to the Subgrantee in accordance with Federal and State requirements.
- The Grantee will ensure that Subgrantees understand and adhere to Federal procurement requirements as well as other requirements of 44 CFR Part 13, 2 CFR Part 215, and the appropriate Office of Management and Budget circulars.
- The Grantee will ensure that Subgrantees comply with EHP requirements, notify FEMA of any work that requires EHP compliance reviews, and provide necessary documentation to conduct EHP reviews.
- The Subgrantee must not deposit grant funds in an interest-bearing account. If that occurs, the Subgrantee must remit any interest earned to FEMA.
- The Subgrantee will submit to the Grantee a final report of project costs. This report will be used to track and monitor the success of the pilot (see Standard Operating Procedures 9570.14, *Program Management and Closeout* for information on closeout processes and requirements). The final report should include the following components as documented on the Project Worksheet (FEMA Form 90-91):
    - Total actual costs to complete the subgrant
    - Actual quantities of debris removed
    - Time frames for full removal of debris
    - Compliance with Federal procurement requirements
    - Documentation of compliance with all subgrant conditions
    - Compliance with EHP conditions

B. Subgrant Closure

Alternative procedures subgrants are closed when the approved scope of work is completed, and the Subgrantee provides the Grantee an accounting of the subgrant in accordance with the above requirements. The Grantee will provide the accounting of project costs to FEMA and will request the project be closed.

C. Appeals

For subgrants funded using the alternative procedures, the Subgrantee can submit an appeal, in accordance with 44 CFR §206.206, only for the following:

- Subgrant approval and obligation
- Corrective actions resulting from compliance reviews such as an audit

D. Audits and Compliance Reviews

The Office of Inspector General may audit any Subgrantee and/or subgrant. FEMA also can conduct compliance reviews of grants and subgrants. Any corrective actions the Agency takes as a result of these audits or compliance reviews may be appealed in accordance with 44 CFR §206.206. For alternative procedures subgrants, a compliance audit will review subgrants and costs to ensure that the Subgrantee complied with the guidelines contained within this document and other applicable requirements.

PART IV. REPORTING AND PERFORMANCE MEASURES

FEMA will review and evaluate the alternative procedures pilot program to determine if the pilot met the objectives of the Sandy Recovery Improvement Act. FEMA will assess if the pilot achieved the objectives for the alternative procedures outlined in the law, namely:

- Reducing the costs to the Federal Government of providing Public Assistance.
- Increasing flexibility in the administration of such assistance.
- Expediting the provision of assistance to a State, Tribal or local government, or nonprofit owner or operator of a private nonprofit facility.
- Providing financial incentives and disincentives for timely and cost-effective completion of projects with such assistance.

FEMA will implement a comprehensive assessment based on performance measures and metrics that are identified to measure the success of the pilot in meeting these objectives. If the pilot is determined to be effective, the data will be used to inform the development of future proposed rulemaking.

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