Metropolitan Solid Waste Management Policy Plan 2010-2030

Prepared by the Minnesota Pollution Control Agency
in consultation with the Metropolitan Counties

A Minnesota family of five generates approximately six tons of garbage per year.

Minnesota Pollution Control Agency

March 2011

Legislative Charge

Minn. Statutes § 473.149
A metropolitan long range policy plan for solid waste management, prepared by the Pollution Control Agency, sets goals and policies for the metropolitan solid waste system, including recycling consistent with section 115A.551, and household hazardous waste management consistent with section 115A.96, subdivision 6. The MPCA shall include specific and quantifiable metropolitan objectives for abating to the greatest feasible and prudent extent the need for and practice of land disposal of mixed municipal solid waste and of specific components of the solid waste stream.

Authors

Tina Patton
Paul Smith
Sigurd Scheurle
Johanna Kertesz
Don Kyser
Susanne Spitzer
David Cera

Contributors

Solid Waste Management Coordinating Board's (SWMCB) Regional Analysis Committee
SWMCB Staff
Scott County Staff

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Minnesota Pollution Control Agency

520 Lafayette Road North | Saint Paul, MN 55155-4194 | www.pca.state.mn.us | 651-296-6300
Toll free 800-657-3864 | TTY 651-282-5332

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Summary

This Metropolitan Solid Waste Management Policy Plan (Plan) establishes the Plan for managing the Twin Cities Metropolitan Area's (TCMA) solid waste through 2030. The Plan was adopted by the Commissioner of the Minnesota Pollution Control Agency (MPCA) on April 6, 2011. The Solid Waste Management Coordinating Board (SWMCB) and Scott County participated in the development of the Plan.

> *The overarching message of this Plan is that fundamental change in the form of accountability and effective tools is necessary among the stakeholders responsible for solid waste management in the TCMA, if the region is to continue to move beyond current trends and meet the needs of the Waste Management Act (WMA). The activities of these stakeholders must be aligned so that overall system goals are achieved in a cost effective manner and reach state goals and objectives. This Plan provides framework for change to assist state and local leadership and all stakeholders to meet these challenges and advance the TCMA solid waste system.*

Minn. Stat. §473.149 requires that the Plan be followed in the TCMA. All stakeholders, including the MPCA, will be accountable for implementing the Plan. The Plan is comprised of four parts that describe the responsibilities of stakeholders. Stakeholders include: product producers; all levels of government; waste generators; and waste management businesses. Part One describes the WMA hierarchy, the purpose of the Plan and the role stakeholders have for solid waste management in the TCMA. This section describes challenges facing the TCMA system and opportunities for contributing to resource conservation and greenhouse gas reduction.

Part Two of the Plan provides the framework for change. This section articulates a vision for a regional system that contributes to sustainable communities. The vision's building blocks are described in the key themes, goals and policies.

Part Three is the Metropolitan System Plan for 2010-2030. The System Plan includes numerical objectives for solid waste management and strategies to achieve the objectives. The System Plan promotes aggressive goals that support the upper end of the waste hierarchy. The System Plan estimates system costs and where specific stakeholder actions are necessary to implement the objectives and strategies.

Part Four describes the tools that the MPCA and metropolitan counties will use to implement the Plan and monitor the progress toward meeting the system objectives. The Plan places emphasis on a regional approach. The Plan calls for an analysis of how accountability can be enhanced in the solid waste system, including an analysis of regional governance options.

The metropolitan solid waste planning process is comprised of two parts: 1) the Plan as prepared by the MPCA in consultation with the metropolitan counties; and 2) the more detailed County Master Plans, to be completed after adoption of the Plan that addresses the specific projects and programs to be implemented within the counties. During the preparation of the Plan, the MPCA actively sought public input through a public meeting on October 14, 2010 and a 60-day public comment period (September 13 through November 15, 2010), as required in Minn. Stat. 473.149. Changes were made to the plan based on public input and these are documented in the Response to Public Comments report issued by the MPCA. This Plan replaces the Plan adopted by the former Office of Environmental Assistance (OEA) Director on January 15, 2004. The responsibilities of the OEA were transferred to the MPCA on June 30, 2005. This Plan varies significantly from the previous OEA Policy Plan in that it contains specific numerical objectives against which to benchmark progress and calls for much more accountability on the part of stakeholders. This Plan also calls for a stronger regional approach. More specifically, the Plan focuses on aggressive objectives for waste reduction, recycling,

and organics: waste management methods at the upper end of the waste management hierarchy. The Plan does not call for building additional resource recovery facilities and places a ceiling on landfilling.

Part One:
Introduction and Background

Introduction

In 1980, the Minnesota Legislature recognized the importance of waste management with the passage of the Waste Management Act (WMA) (Minn. Stat. §115A). This statute's purpose is to improve integrated solid waste management (ISWM) to protect the state's natural resources and public health. It establishes the following hierarchy of preferred solid waste management practices:

(1) waste reduction and reuse
(2) waste recycling
(3) composting of yard waste and food waste
(4) resource recovery through mixed municipal solid waste composting or incineration
(5) land disposal which produces no measurable methane gas or which involves the retrieval of methane gas as a fuel for the production of energy to be used on-site or for sale
(6) land disposal which produces measurable methane and which does not involve the retrieval of methane gas as a fuel for the production of energy to be used on-site or for sale

Purpose of this Plan

This Plan establishes the framework for managing the TCMA's solid waste for the next 20 years (2010-2030) and was prepared in accordance with the requirements of Minn. Stat. §473.149. This Plan will guide the development and activities of solid waste management and must be followed in the TCMA. The Plan supports: the goals of the WMA hierarchy; improving public health; reducing the reliance on landfills; conserving energy and natural resources; and reducing pollution and greenhouse gas emissions.

Unless otherwise specified, "solid waste" refers to both municipal solid waste and non-municipal solid wastes (construction waste, demolition debris and industrial wastes).

The Twin Cities Metropolitan Area (TCMA) includes Anoka, Carver, Dakota, Hennepin, Ramsey, Scott, and Washington Counties, but not the cities of Northfield, Hanover, Rockford and New Prague.

Participants in the process

The MPCA worked with the SWMCB, the SWMCB's six metropolitan member counties, and Scott County in the development of this Plan. In addition, the MPCA used materials developed by the Integrated Solid Waste Management (ISWM) Stakeholder Workgroup, which was formed to address the goals established by the Minnesota Climate Change Advisory Group.

How the Plan will be used by stakeholders

The Plan will be used by the following stakeholders:

- Product Producers. The Plan will guide product producers, including manufacturers and retailers, because they have a role in product stewardship and extended producer responsibility initiatives.
- Waste generators (residents, businesses, public entities). The Plan will 1) inform all waste generators about their roles and responsibilities in waste management; 2) educate generators about solid waste issues and services (both public and private) available to them; and 3) identify and direct state agencies and county governments who provide assistance.
- Waste industry. The Plan will outline the responsibility of the waste industry in providing future solid waste facilities and services. For the purposes of this Plan, the "waste industry" includes all entities, public or private that collect and/or manage solid waste in some form, including recyclables, household hazardous waste and problem materials.
- Government. The Plan will: 1) guide the counties and regional governmental entities in developing solid waste master plans, ordinances, work plans and budgets; 2) guide the MPCA metropolitan oversight responsibilities, including administration of the Metropolitan Landfill Abatement Account program, county plan reviews, and the Agency's approval of solid waste facility permits and landfill certificates of need; 3) guide the MPCA in its regulatory, enforcement, and technical assistance functions that affect the TCMA; 4) contribute to policy discussions regarding solid waste legislation affecting the TCMA; and 5) guide local jurisdictions in the planning and provision of services to residents and businesses.

Accomplishments and Challenges

The TCMA solid waste system is the result of planning and development that began with the 1980 WMA. Since 1980, much has been accomplished.

- The TCMA recycles 41 percent of the Municipal Solid Waste (MSW), an almost three-fold increase since 1980 (based on a statewide average recycling rate at that time).
- Recycling contributes to the economy of the region.
- Waste to energy facilities manage 28 percent of the MSW generated – creating enough energy for 92,000 households.
- Problem materials, such as major appliances, mercury containing products, and electronic waste are banned from the MSW stream, and infectious wastes are separately managed.
- A system to collect and manage household hazardous waste is available to all residents, regardless of county of residence.

It's difficult to compare Minnesota and the TCMA to other regions in the country, since state goals and measurement are generally different. However, when broad state to state comparisons have been done,

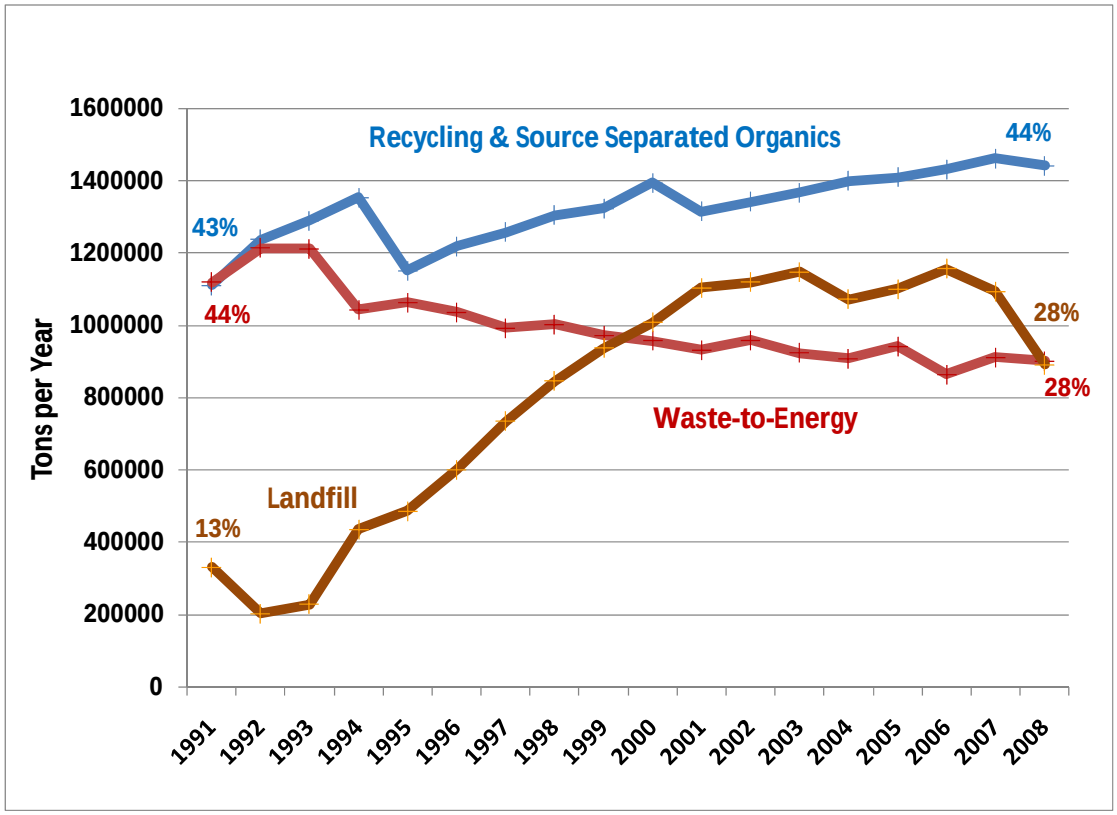
Minnesota usually fares quite well. A 2006 survey by BioCycle showed Minnesota in the top four in the nation for a combined recycling/composting rate.

Despite the accomplishments in the last ten years, TCMA MSW generation grew by eight percent and the region's solid waste system struggled.

- Recycling has not increased enough to keep up with the MSW generation increases.
- The use of resource recovery capacity declined by 15 percent.
- Land disposal increased by 15 percent.

Figure 1 shows the percent of MSW managed from 1991 to 2008 in the TCMA by recycling and organics recovery, resource recovery and land disposal. Higher percentages of abatement occurred in the early years, because four of the seven metro counties used waste flow designation as a primary tool to direct MSW to facilities and to pay for all services that benefited the entire system. This past level of control and accountability doesn't exist in the system today.

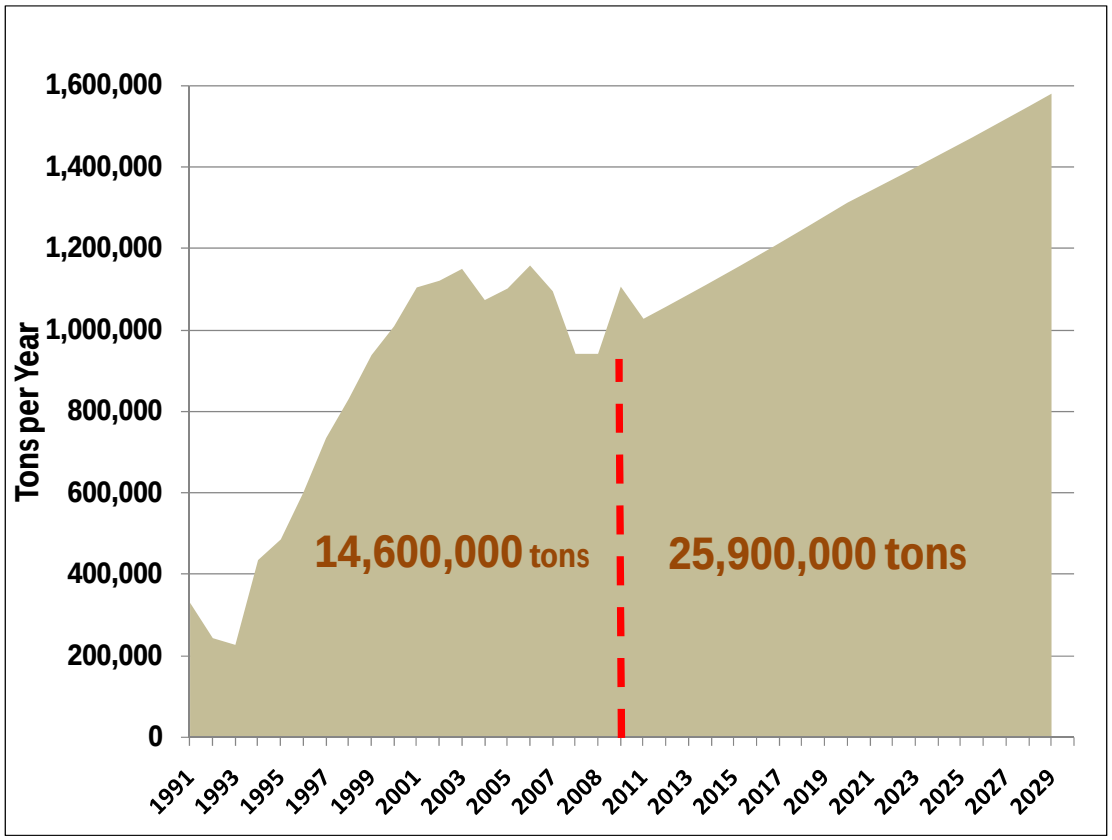
Figure 1. TCMA MSW management method percentages from 1991 to 2008



If the current trends continue, it will result in an additional 79 million tons to landfills over the 20 year period of this Plan, a 46 percent increase in landfilling (Figure 2). Over 30 percent of MSW sent to landfills today could be recycled; this "lost opportunity" results in the loss of valuable metals, plastics, paper and other commodities. Inevitably, the state, citizens, and businesses will be left with additional costs for siting new landfills, hauling MSW long distances, and cleanup at disposal facilities.

The TCMA generates approximately 60 percent of Minnesota's MSW and, therefore, has a tremendous impact on the state as a whole. The entire state has experienced a stagnation of performance.

Figure 2. Metro MSW tons to landfills if current trends continue



One example of the seriousness of this situation is the under-utilized resource recovery capacity that currently exists in the region. The region is potentially facing the permanent loss of resource recovery capacity, because the MSW is being diverted to landfills by private haulers. This loss would result in a reduction of: renewable energy capacity; ferrous and nonferrous recovery capacity; and pollution and resource savings.

State and local government subsidies have been necessary to support the movement of solid waste up the WMA hierarchy. Continuing these subsidies in the present hard economic times has become extremely difficult, and will likely remain so for some time.

To improve performance, all TCMA stakeholders will be challenged to find new ways of doing business. New expectations must be defined; roles and responsibilities outlined; and performance verified. All stakeholders must be willing to accept responsibility to remedy failures and deficiencies. Restoring accountability in the solid waste system will be critical.

The private sector has a significant role, and it should be recognized for its ability to foster innovation and efficiencies through competition. More needs to be done to ensure that the activities of the private sector and the public sector are aligned to reach state goals.

Part Two:
Framework for Change

This section of the Plan lays out a Framework for Change built around a regional vision, key themes, goals and policies. This framework will guide all decisions of the MPCA, regional governing entities, metropolitan counties, and other stakeholders with respect to the TCMA solid waste system.

Vision

This Plan is designed to assist all the stakeholders in producing the change necessary that moves beyond barriers and exceeds the benchmarks established in state law. In doing that, the TCMA will continue to reduce its reliance on landfills, prevent pollution, reduce the toxicity of waste, conserve natural resources and energy, improve public health, support the economy, and reduce greenhouse gases.

The Plan sets forth a vision for sustainability for the TCMA solid waste management system:

> *A sustainable community minimizes waste, prevents pollution, promotes efficiency, reduces greenhouse gas emissions, saves energy and develops resources to revitalize local economies. The integrated waste management system is an essential component of the infrastructure of a sustainable community. Solid waste must be managed by technologies and methods that support sustainable communities and environments. The solid waste management hierarchy, with its associated goals of protecting the state's air, land, water, and other natural resources and the public health, is central to attaining the twin objectives of sustainability and solid waste management, because it emphasizes source reduction and reuse over land disposal.*

Key Themes

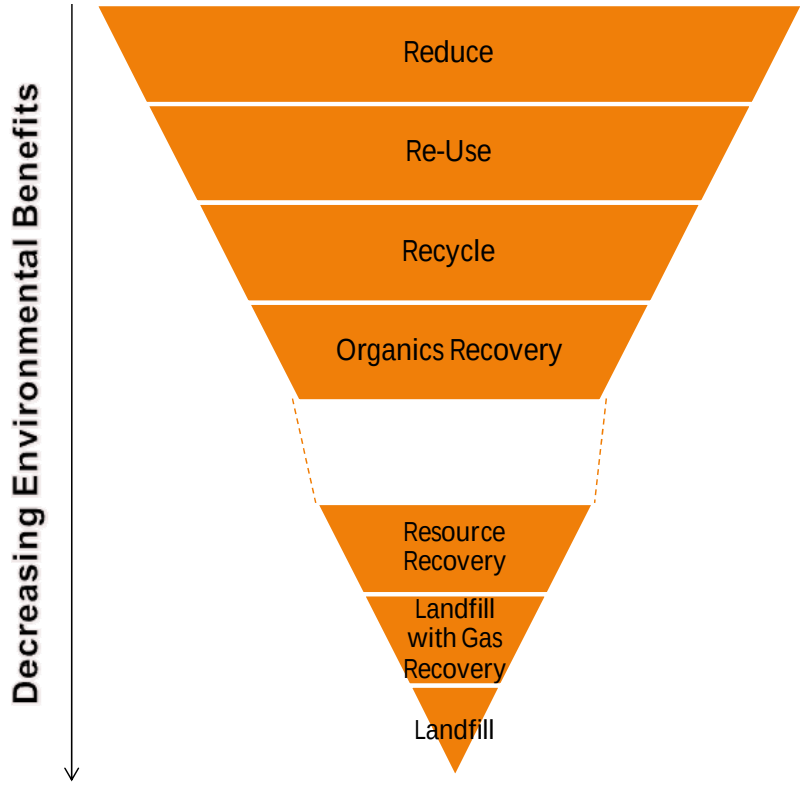
The following key themes underlie all elements of the Plan.

Accountability. This Plan places great emphasis on accountability. Many entities, public and private, have the responsibility for implementing this Plan, including state and local governments; private waste and recycling businesses; citizens; manufacturers of products; retailers and other businesses; and environmental groups. All must be held accountable. The WMA gives the state agencies and counties primary oversight for holding the parties accountable. The MPCA has primary oversight responsibilities under the Metropolitan Solid Waste Statutes and is accountable to the legislature, which is reflected in its biennial legislative report. The MPCA has various tools, such as plan approvals, financial assistance, permit and Certificate of Needs (CON) approvals and enforcement actions to hold various parties accountable. Likewise, counties have similar tools available for holding parties accountable within their jurisdictions. However, the authorities granted to the state and counties may not be sufficient, and this issue will have to be monitored, and possible changes in authority sought. In the complex metropolitan solid waste system, accountability is not necessarily a linear top-down relationship, and all parties must also voluntarily hold themselves accountable.

Waste as a resource. Vast amounts of materials are thrown away in the TCMA - materials that could be designed to reduce waste or to be reused, recycled, or recovered for resource value. This Plan advocates a transition to a new way of thinking about waste, based on principles of sustainability and resource management and conservation. Treating waste as a resource reduces pollution. Cost savings can be realized by using resources more efficiently. Considering waste as a resource allows greater flexibility to deal with challenges facing the TCMA's solid waste system.

Solid waste management hierarchy. This Plan stresses the need to manage waste in an ISWM system in accordance with the hierarchy of preferred waste management practices, with an emphasis on reduction and recycling to promote resource conservation and environmental protection. Scientific research has pointed out the environmental benefits of the hierarchy, such as reduced greenhouse gas emissions resulting primarily from waste reduction and recycling. Figure 3 shows the solid waste management hierarchy, and emphasizes the need to focus efforts at the top, where environmental benefits are most significant, by depicting a benefits "gap" that exists between the upper end of the hierarchy (waste reduction, reuse, recycling, and organics recovery) and the lower end (resource recovery and landfilling).

Figure 3. The solid waste management hierarchy of preferred methods



Generator responsibility. This Plan contains policies to aggressively foster and encourage responsibility at multiple levels (personal, corporate, government). Surveys show that most generators (a person or entity that produces waste) believe that their responsibility ends once the waste is hauled away. This Plan clearly states that generators are responsible for the waste they produce. That means generators must make wise purchasing and wise disposal decisions—accounting for the external costs of managing waste and evaluating the effects of their waste disposal decisions.

Government as a leader. Government provides health care, feeds and houses people, manufactures goods, provides a variety of services, builds structures, and more. In all of these activities, waste is generated. The goals and policies in this Plan are designed to steer the TCMA toward a new vision for solid waste management, with government leading the way.

Product stewardship. Product stewardship means that all parties involved in designing, manufacturing, selling, and using a product take responsibility for environmental impacts at every stage of that product's life. In particular, product stewardship requires manufacturers to share in the financial and physical responsibility for collecting and recycling products at the end of their useful lives.

Private sector initiative. In the TCMA, there has been a long history of solid waste services provided by private businesses and nonprofits. The private sector has a significant role to play in implementing the Plan, and has a major responsibility for meeting the goals of the WMA hierarchy.

Greenhouse gas reduction. Solid waste management has an important role to play in reducing greenhouse gases and minimizing climate change. Although it is a small contributor to the state's production of greenhouse gases, it has considerable potential to reduce more than its share because of its effect on many sectors of the economy, including manufacturing and transportation. Although these reductions may not always be realized in Minnesota, it is nevertheless an important consideration due to the global nature of the problem.

Goals and Policies

The following goals and policies provide the basis for improving solid waste management in the TCMA.

Goal 1: Protect and conserve. Manage waste in a manner that will protect the environment and public health, reduce greenhouse gas emissions, and conserve energy and natural resources.

The goal of WMA is to protect the state's land, air, water, and other natural resources, and the public health by improving waste management to: reduce the amount and toxicity of waste generated; increase the separation and recovery of materials and energy from waste; and coordinate the statewide management of solid waste and the development and financial security of waste management facilities, including disposal facilities. This goal recognizes a prevention-based approach to waste management, to reduce, to the extent feasible, adverse effects on human health and the environment.

Policy 1: Reduce greenhouse gases and conserve energy and resources. Reduce greenhouse gas emissions and promote energy and resource conservation through integrated solid waste management.

Policy 2: Promote toxicity reduction. Reduce the hazardous character of waste and assure proper management of hazardous waste.

Policy 3: Promote renewable energy and conservation. Promote actions that conserve energy, and will encourage the use of renewable energy, which includes recovering energy from waste.

Policy 4: Manage waste now. Manage solid waste in a manner that will minimize environmental, financial, and public health burdens on future generations.

Policy 5: Protect public health. Ensure public health is protected by reducing waste, recycling and composting (or other organics management) a majority of the waste, and through the proper disposal of what remains.

Goal 2. Integrate the parts. Manage waste in an integrated waste management system in accordance with the hierarchy to minimize landfilling, while emphasizing reducing waste generation and toxicity and increasing reuse, recycling, and source-separated organic waste management.

This Plan emphasizes the importance of fostering an ISWM system appropriate to the characteristics of the waste and in accordance with the hierarchy. The Plan seeks to minimize land disposal, recognizing the environmental and resource issues associated with that technology. It emphasizes toxicity reduction, waste volume reduction, reuse, recycling, and source-separated management of organic wastes.

Policy 6: Support the waste management hierarchy. Manage waste in accordance with the preferred methods in the waste management hierarchy.

Policy 7: Implement regional waste management goals. Manage solid waste in accordance with the numerical targets identified in the Metropolitan System Plan, Part Three.

Policy 8: Hold parties accountable for results. Whether public or private, hold the operators of any solid waste system segment responsible for meeting the goals of this Plan.

Goal 3. Manage waste cost-effectively and internalize future costs. Manage waste in a cost-effective manner that maximizes environmental benefits and minimizes long-term financial liability and be priced to provide incentives that encourage waste to be managed as high as possible on the waste hierarchy.

The State's Landfill Cleanup Program and other programs to clean polluted land are this and future generations' price for past disposal practices. Some waste management practices are less expensive than others, but carry greater long-term or unknown risk. Some methods appear to cost more, but have measurable and significant economic value to the state. This goal is about balance: to maintain a sustainable system of managing waste; to keep costs of our solid waste system affordable; and to recognize the market is an important driver in waste management decisions.

Policy 9: Promote efficiencies and cost effectiveness and reduce environmental costs. Promote efficiencies and cost effectiveness and reduce environmental costs in the delivery of integrated solid waste management services, including minimizing risk and managing for long-term care of landfills.

Policy 10: Promote effective governance. Promote governance of solid waste management that results in the implementation of the WMA, resulting in: pollution prevention and decreased land disposal; the fair allocation of costs and liabilities; the efficient provision of services; the promotion of innovation; the fostering of private initiative and new technologies; and the provision of services that meet the diverse needs within the region.

Goal 4. Share responsibility. Allocate responsibility and costs for the environmentally sound management of waste equitably among those who use or benefit from the system, including producers, retailers, consumers, government, citizens, and the waste industry.

Generator responsibility is an important concept. Since 1980, the government's role is no longer a "caretaker" for waste produced by residents and businesses, but one of allocating responsibility for waste to those who produce it. In 2009, the ISWM Stakeholder Process determined that the costs of proper management must be reflected in the prices paid for services, incorporating the true costs of waste management and thereby encouraging more environmentally sound options. Research and experience have shown that environmentally sound, up-front management decisions are cost-effective for businesses.

Product stewardship is a strategy through which manufacturers and others along the product chain share in the financial and physical responsibility for collecting and managing products in an environmentally sound manner at the end of their useful lives. Manufactured goods and packaging are about three-fourths of the material that becomes mixed MSW. Products and packaging may contain hazardous materials, and some can be expensive to manage as waste. Product stewardship spreads the responsibility for products that become waste beyond government, to the manufacturer and consumer. Ultimately, product stewardship is about facilitating movement of materials up the management hierarchy.

Policy 11: Promote generator and producer responsibility. Generators and product producers share responsibility for waste produced, and costs for waste disposal should be borne in the present by producers and generators and not deferred to future generations.

Policy 12: Drive better waste management through incentives, visible costs and effective pricing signals. Provide incentives for waste reduction and recycling, separate management of organic wastes, and resource recovery through pricing of solid waste management services. Costs should be visible to, and understandable by those paying for system services.

Part Three:
Metropolitan System Plan 2010-2030

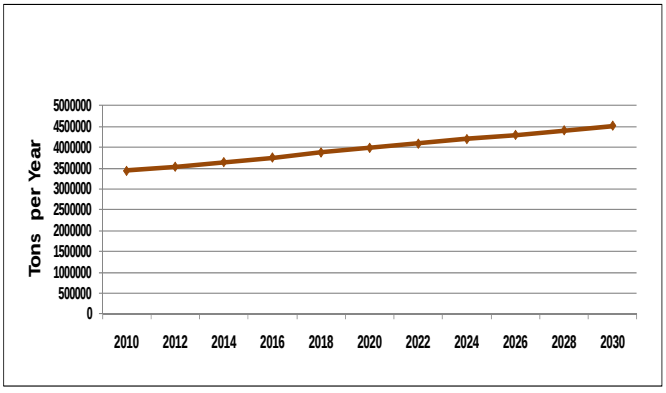
The Metropolitan System Plan provides guidance to all stakeholders responsible for TCMA solid waste management and was developed in accordance with the requirements of Minn. Stat. § 473.149 subd. 2d. for a land disposal abatement plan. It describes broad regional system objectives, a landfill diversion goal, and the strategies necessary for solid waste programs and services to meet the region's needs for the next twenty years. The System Plan recognizes the inter-county complexity of the TCMA solid waste system and the value of and need for regional approaches. Specific details associated with implementing the System Plan on a local level will be refined in the County Master Plans and any Regional Master Plan developed by the metropolitan counties. The System Plan identifies where specific stakeholder actions are necessary to implement the objectives and strategies. The System Plan:

1) Places emphasis on the upper end of the hierarchy (source reduction, reuse, recycling and organics recovery).
2) Establishes a minimum floor objective for waste management methods above resource recovery.
3) Maintains existing installed resource recovery facility capacity and implements the metro mandatory processing requirement.
4) Establishes a ceiling on the amount of metro MSW land disposal that will be allowed to occur.

Regional Waste Generation Forecast

In 2008, the MSW generated in the TCMA was 3.3 million tons. Metro MSW generation is projected to grow to 4.5 million tons by 2030 (see Figure 3). During the 20-year period, a total of 79 million tons of MSW will be generated, based on the region's population growing from between 0.79 percent to 1.04 percent per year and per capita MSW growing at almost 1.5 percent per year. [Note – In order to be conservative, this forecast is based on a high growth scenario. Also, the forecast does not include the non-MSW waste stream – construction, demolition and industrial wastes. In 2008, approximately 1.1 million tons of non-MSW was generated in the TCMA.]

Figure 4. Projected MSW tonnage growth in the TCMA 2010-2030



Statutory Goals

Minn. Stat. § 115A.55 established a statewide source reduction goal to be achieved by December 31, 2000, of a minimum ten percent per capita reduction from the 1993 MSW generation. Per capita MSW generation has instead increased by 20 percent since 1993. In recent years, however, it has remained essentially flat, except for the past two years, during which it has declined because of the national and regional economic decline.

Minn. Stat. § 115A.551 establishes a 50 percent recycling goal for the metropolitan counties (this goal includes credits for yard waste and source reduction, which can add up to eight percent to the base recycling rate). Although recycling rates have leveled out for several years, the TCMA counties have by in large met the statutory goal, which has been in place since 1995.

Although not a statutory goal, the Minnesota Climate Change Advisory Group (MCCAG) in 2008 recommended a statewide goal of 60 percent recycling and 15 percent organics recycling by 2025 to help reach greenhouse gas reduction goals set by the legislature. Since the TCMA produces more than half of the state's waste, increases in the region's recycling rate and waste reduction efforts will contribute significantly to reaching the MCCAG goal. As part of the MPCA's ISWM Stakeholder Process, which was a follow-up to the MCCAG effort, in the summer of 2009, the TCMA counties and Wright County (termed the "metro centroid") worked together to identify interim goals and strategies for reaching the MCCAG goals. Two of the three scenarios that met or exceeded the greenhouse gas reduction goal of 43.5 million metric tons of carbon dioxide equivalent (MMTCO2e) for the metro centroid included recycling rates of 55 percent, and three to seven percent organics recycling rates, by 2025.

Solid Waste Abatement Objectives

Pursuant to Minn. Stat.§ 473.149 subd. 2d. Tables 1a set specific quantifiable objectives for abating the need for and practice of land disposal for the TCMA region over the next 20 years. Landfill abatement is best achieved through an integrated solid waste management system; therefore, the statute requires "objectives for waste reduction and measurable objectives for local abatement of solid waste through resource recovery, recycling, and source separation programs." Table 1a defines the objectives by percentages of waste generated, and Table 1b defines the objectives in tons. Table 1b shows the objectives in tons based on the current waste forecast in this Plan and is subject to change as the forecast is updated. Several factors were considered when setting the objectives, including:

- current statutory goals
- the regional waste generation forecast
- the 2025 targets set by the metro centroid group during the ISWM Stakeholder Process
- the 2008 Minnesota Legislature's request to the MPCA for options to achieve 60 percent recycling and 15 percent diversion of source-separated compostable materials by 2020 (Minn. Law 2008, ch. 363, art. 5, sec. 3, subd. 3)
- the implementation of mandatory processing before disposal in the TCMA

Meeting the objectives will: reduce greenhouse gas emissions; support the production of renewable energy; conserve natural resources; and reduce land disposal.

Source reduction and reuse

Source reduction and reuse serve to reduce the amount of waste that is available for management and, therefore, are not included in the calculation of total MSW generation (i.e., the percentages of Recycling, Organics Recovery, Resource Recovery, and Landfill add up to 100 percent). This is reflected in Table 1a as a cumulative percentage and in Table 1b as cumulative total tonnages reduced over time, because the waste is assumed to be eliminated once it is reduced. Yearly, the source reduction and reuse ranges from approximately 0.1 percent to less than 0.5 percent additional MSW reduced (a 20-year cumulative total of about 164,000 to 241,000 tons). Even so, these are aggressive source reduction and reuse objectives and will depend upon aggressive statewide initiatives to achieve. If the source reduction and reuse objectives are not met, the tons required to meet the other MSW management method objectives will increase, because the MSW generation will be higher.

[Note: The numbers in Table 1a do not reflect the yard waste and source reduction credits allowed in the SCORE reporting, which can add up to eight additional percentage points toward the recycling rate (five percent for source reduction and three percent for yard waste). The current recycling rate for the TCMA, without credits, is 41 percent. Accordingly, recycling would need to increase by almost one-third to attain the Plan's highest recycling rates in 2030.]

Table 1a. MSW Management System Objectives in Percentages (2010-2030)

Management Method	Current System (2008)	2015	2020	2025	2030
Floor – The lower range of the percentages below represent the minimum amount of MSW that must be managed by these methods.					
Source Reduction & Reuse (cumulative)[1]		1 - 2%	2 - 4%	3 - 5%	4 - 6%
Recycling[2]	41%	45 - 48%	47 - 51%	49 - 54%	54 - 60%
Organics Recovery[3]	2%	3 - 6%	4 - 8%	6 - 12%	9 - 15%
Mandatory Processing – The percentages below represent the amount of resource recovery expected to occur after maximizing reduction, recycling and organics recovery. Restrictions on the land disposal of processible MSW will be enforced.					
Resource Recovery[4]	29%	32 - 34%	32 - 33%	30 - 31%	28 - 24%
Ceiling - The percentages below represent the maximum amount of MSW land disposal that will be allowed.					
Max Landfill[5]	28%	20%	17%	15%	9%

[1]The source reduction percentages are cumulative because once source reduction occurs it is assumed to occur each year thereafter. To avoid double-counting, the source reduction percentages cannot be added with the other MSW management method percentages lower on the hierarchy.
[2]Does not reflect SCORE source reduction and yard waste credits. This does include residue after processing that cannot be recycled and is sent to a landfill.
[3]Organics may include: food to people, food to animals, composting of source-separated compostable materials and anaerobic digestion. Anaerobic digestion is an example of an emerging technology that may be able to process source separated organic waste into energy (in the form of biogas) and compost. For the purposes of this Plan, anaerobic digestion is considered a source-separated composting technology. As other technologies emerge, and when necessary, the MPCA will make a determination of their place with respect to the WMA hierarchy.
[4]Resource recovery through mixed municipal solid waste composting or incineration; Includes residue before and after processing that is sent to a landfill.
[5]This objective refers to TCMA generated MSW that is disposed at all landfills that serve the TCMA.

Table 1b. MSW Management System Tonnages Based on Objectives in Table 1a in Thousands of Tons (2010-2030)

Management Method	Current System (2008)	2015	2020	2025	2030
Floor – The lower range of the percentages below represent the minimum amount of MSW that must be managed by these methods.					
Source Reduction & Reuse (cumulative)[1]	0	8 – 15	29 – 59	74 – 131	164 - 241
Recycling[2]	1,361	1,672 – 1,780	1,871 – 2,015	2,053 – 2,230	2,327 – 2,535
Organics Recovery[3]	81	111 – 222	159 – 356	251 – 495	388 - 634
Mandatory Processing – The percentages below represent the amount of resource recovery expected to occur after maximizing reduction, recycling and organics recovery. Restrictions on the land disposal of processible MSW will be enforced.					
Resource Recovery[4]	974	1,183 – 1,270	1,270	1,270	1,210 – 1,000
Ceiling - The percentages below represent the maximum amount of MSW land disposal that will be allowed.					
Max Landfill[5]	941	749	681	615	384
Total Tons Generated (Low and High Source Reduction)	3,357	3,716 – 3,708	3,981 – 3950	4,189 – 4,129	4,309 – 4,225

[1]The source reduction tonnages are cumulative because once source reduction occurs it is assumed to occur each year thereafter. To avoid double-counting, the source reduction amounts cannot be added with the other MSW management method amounts lower on the hierarchy.
[2]Does not reflect SCORE source reduction and yard waste credits. This does include residue after processing that cannot be recycled and is sent to a landfill.
[3]Organics may include: food to people, food to animals, composting of source-separated compostable materials and anaerobic digestion. Anaerobic digestion is an example of an emerging technology that may be able to process source separated organic waste into energy (in the form of biogas) and compost. For the purposes of this Plan, anaerobic digestion is considered a source-separated composting technology. As other technologies emerge, and when necessary, the MPCA will make a determination of their place with respect to the WMA hierarchy.
[4] Resource recovery through mixed municipal solid waste composting or incineration; Includes residue before and after processing that is sent to a landfill.
[5]This objective refers to TCMA generated MSW that is disposed at all landfills that serve the TCMA.

Emphasis on the upper end of the hierarchy

The system objectives are intended to maximize the upper end of the hierarchy (above the "gap"), including an emphasis on product stewardship and achieving the MCCAG goals for source reduction, recycling and organics recovery to the extent feasible.

A floor for source reduction and reuse, recycling and organics recovery

For each MSW management method above resource recovery, the lowest percentage within the range given will be considered a "floor." All stakeholders, including the MPCA, will be held accountable for meeting these minimum floor objectives. The MPCA believes the floor objectives are achievable with current tools available. However, to reach the long-term objectives and those objectives at the high-end of the range, the TCMA will need significant changes to current tools, new tools and increases in funding.

Maintaining existing resource recovery facility capacity

The system objectives are intended to fully utilize existing permitted and installed TCMA resource recovery capacity. If the system objectives are met for the upper end of the hierarchy and existing resource recovery capacity is maximized, it will not be necessary to build new resource recovery facilities because of the associated

increases in source reduction, recycling, and organics recovery objectives. However, new refuse-derived fuel (RDF) combustion capacity may be necessary because much of the resource recovery facility capacity in the TCMA consists of processing MSW into RDF. In other words, if the existing RDF preparation facilities (Newport and Elk River) are to operate at full capacity, there may be a need to expand the RDF combustion capacity at the GRE and/or Xcel facilities. Expanding the RDF combustion capacity does not expand the resource recovery system – it merely fully utilizes the existing system.

In order to meet the objectives for resource recovery, the MPCA will need to effectively use its authorities with respect to mandatory processing under Minn. Stat. § 473.848 and CON for new MSW landfill capacity. This authority applies only to solid waste management and landfilling within Minnesota.

A ceiling on landfilling

The landfill objectives will be considered a "ceiling," and landfilling will be limited to the amounts listed. The system objectives strive to reduce land disposal to a 17 percent level within the next ten years, recognizing that some MSW disposal will always be necessary. If the MSW cannot be reduced, reused, recycled, or composted first, it should then go to a resource recovery facility and only to landfills as a last resort.

To assure compliance, the MPCA will use its authorities with respect to mandatory processing under Minn. Stat. § 473.848, issuances of CON for new MSW landfill capacity, and enforcement of state laws, such as the Public Entities law (Minn. Stat. § 115A.471).

Evaluation of the system objectives

The MPCA will annually evaluate progress toward achieving all the system objectives. The MPCA recognizes the challenges associated with measuring the progress. The MPCA will continue to work with local governments to assure that the data collected is appropriate to the need for evaluation, and will take responsibility to collect data on a statewide or regional basis when appropriate. For each biennium, the Agency will reassess the objectives in this Plan in light of the progress, system and technological changes, and the available tools. If the Agency determines that the objectives are not being met, it will report to the legislature on actions that could affect change. These actions could include a wide range of initiatives.

Additional capacity for recyclables and organics

In order to meet the MSW management system objectives, additional new materials recycling facilities and organics processing capacity may be needed (Table 2). In addition to potential new capacity and/or facilities, the availability of markets for the collected and processed material will be important. While it is difficult to determine how much recyclable material the market can absorb, given the current trends, the local, national and international markets should be able to handle the extra material. Market prices, however, are often difficult to predict. If prices decline significantly, this could render marketing of materials more difficult and costly. Local markets are usually less volatile and more cost effective than foreign markets, like China and India, and support the local economy and provide jobs.

Table 2. Potential Additional Materials Recycling and Organics Processing Facility Capacity in Thousands of Tons (2010-2030)

Facility Type	2008 Base	2015	2020	2025	2030
Materials Recycling	1,361	+419	+235	+215	+305
Composting/Anaerobic Digestion	81	+141	+134	+139	+139

Non-MSW management

Although there is no statutory goal for non-MSW materials reduction and recycling, proper management of non-MSW is also a priority. An estimated 1.5 million tons of C&D waste is disposed of each year in Minnesota. Of that total, approximately 73 percent or 1.1 million tons is collected and delivered to 19 transfer stations and 10 landfills serving the metro area. This is the equivalent of one-third of the total MSW generated. Non-MSW, and C&D waste in particular, has not been given as much attention as MSW for various reasons, including difficulties in managing larger, heavier materials, the inert nature of construction and demolition (C&D) compared to MSW, and the lack of statutory requirements for recycling non-MSW as compared to MSW. Although there is some overlap of MSW and non-MSW, more focus is important for non-MSW management to increase recycling of non-MSW and its associated benefits.

The *2007 Minnesota Construction Demolition and Industrial Waste Study* completed by the MPCA and the SWMCB identified asphalt shingles, wallboard, and clean and mixed biomass (wood waste) materials as possessing the greatest potential for recovery in terms of tons generated, recycling and recovery potential, collection and processing capacity, and available markets. Aside from establishing aggressive recycling goals, the report also examined existing challenges and future opportunities of either preventing the generation of or promoting the recycling or recovery of C&D materials.

The TCMA should focus its waste reduction and recycling efforts, particularly in the area of market development, on these three materials: asphalt shingles, biomass fuel and wallboard. The following targets for 2012 identified in the 2007 study and recommended in the MPCA's report to the legislature, *2008 Metro Area Construction and Demolition Waste Recycling Report*, should serve as a guide:

- **Tear-off asphalt shingles: 90 percent recycling.** The TCMA has adequate collection and processing facilities in place to handle most of the tear-off shingles generated each year. In addition, the Minnesota Department of Transportation (MNDOT) recently adopted a permissive specification for tear-off shingle use in hot mix asphalt.
- **Clean biomass fuel (includes only tree waste and non-treated wood): 25 to 90 percent**. It is believed that most clean biomass fuel is currently being utilized, but recovery is undocumented, so a potential target range is given. More needs to be understood, and reporting strategies and monitoring at job sites may be necessary to learn more and develop reporting strategies.
- **Mixed biomass fuel (includes some paper, plastic, yard waste and some types of wood, including plywood, particle board, painted wood, wood furniture, and composite furniture): 90 percent.** Mixed municipal solid waste (MMSW) combustors are capable of combusting mixed biomass fuel, but capacity to burn this material does not currently exist in the metropolitan area. Therefore, this Plan does not recommend sending additional non-MSW to these facilities at this time. Necessary modifications to other types of combustors, additional permitting requirements, and low tipping fees at landfills are significant barriers to reaching this target. When C&D-based biomass is added to a scenario where C&D recycling is maximized and the remainder is sent to a landfill with gas venting, energy savings and greenhouse gas reductions are maximized; however, there is a significant increase in cost.
- **Wallboard: 50 percent recovery.** Currently, the only anticipated use for wallboard is as a soil amendment, but product stewardship discussions with manufacturers should be pursued to begin to develop other options.

In order to track progress toward these targets, mechanisms for measurement will need to be developed and based on the baseline data from the 2007 report. The MPCA will be considering reporting mechanisms for non-MSW management in the future, after SCORE and other existing reporting requirements are improved. The

MPCA worked closely with the MNDOT for the past several years on the permissive specification for tear-off shingle use in hot mix asphalt to develop an important market for tear-off asphalt shingles. In the future, the MPCA will focus its market development efforts for non-MSW on product stewardship initiatives and market opportunities for wallboard and will continue its work on product stewardship and markets for discarded carpet. The MPCA will also continue its efforts to promote construction materials recycling and deconstruction for salvaging materials for reuse and recycling from demolition sites. In 2010, the MPCA began conducting a statewide Building Materials Reuse/Recycling Survey in order to develop a database of deconstruction, reuse, recycling, and biomass recovery services offered by private, public and non-profit entities. The database will ultimately serve as the foundation for developing a web-based directory/tool-kit available on the MPCA's website in the fall of 2011.

Additional Benefits of Attaining the MSW System Objectives

Achieving the MSW waste management system objectives in this Plan will not only serve to abate the use of landfills, but will also have a direct effect on achieving the state's environmental and energy goals. In 2030 alone, reaching the system objectives would:

- Reduce air pollution by two million tons
- Reduce water pollution by almost 6,000 tons.

The following two sections identify cumulative benefits, both in the short-term, based on the next five years until a new policy plan may be prepared, and in the long-term for the 20 year period of the plan. Economic benefits were calculated using the Regional Economic Models, Inc. (REMI) model. Greenhouse gas emissions reductions and energy savings information were calculated using the U.S. EPA's Waste Reduction Model (WARM). It is important to note that the majority of these reductions and savings are contributable to waste reduction and recycling objectives; previous studies conducted by the MPCA indicate this could be by as much as 90 percent.

Short-Term objectives – 2010 to 2015

If the highest system objectives are achieved:

- Greenhouse gas emissions could be reduced by an estimated 7 million metric tons of carbon dioxide equivalents over a "business as usual" approach, representing the equivalent of taking 1.6 million cars off the road.
- Energy savings of an estimated 54 trillion BTUs will occur, providing enough energy to power over 480,000 households, or over 40 percent of the households in the TCMA.
- Approximately 17 million tons of MSW will be diverted from landfills.
- Economic benefits would occur in the form of approximately 380 jobs in solid waste management, manufacturing and supporting industries and increase economic activity by $160 million.

Long-Term objectives – 2010 to 2030

- If the highest system objectives are achieved:
- Greenhouse gas emissions could be reduced by an estimated 97 million metric tons of carbon dioxide equivalents over a "business as usual" approach.
- Energy savings of an estimated 744 trillion BTUs will occur.
- Approximately 76 million tons of MSW over the 20-year period will be diverted from landfills.

Improving the Reliability of the Data

The complexity of the TCMA solid waste system makes it difficult to measure how MSW is managed according to the system objectives. Some data is more verifiable, such as the waste volumes delivered to waste facilities, because that material is weighed and records are kept. Other data is not as easily measured, such as the volume of material recycled by commercial establishments. Minn. Law 2009, ch. 37, art. 1, sec. 62, subd. 2, requires the MPCA to evaluate SCORE data collection and management and to make recommendations to the legislature for its improvement. It is expected that work will serve to improve the reliability of the measurement tools that will be used to assess the progress in attaining the Plan's system objectives.

Strategies to Reach the Objectives

There are various approaches to meet the system objectives of this Plan. The TCMA waste management system is governed by multiple entities, public and private, and a variety of strategies provides the flexibility to meet the needs of each program or situation. The state, counties, cities, businesses, nonprofits, communities, and citizens all have specific roles and responsibilities for improving solid waste management. In order to minimize conflict and inefficiencies, it is important to select strategies that align public and private objectives and to work together to identify necessary changes to existing strategies and where new ones are needed.

As part of the ISWM Stakeholder Process in 2009, the metro centroid counties determined three overarching needs to support the scenarios that were developed to reduce greenhouse gases through solid waste management. Those were: 1) restoring flow control or otherwise gaining more control over the flow of waste, 2) extended producer responsibility or product stewardship legislation and initiatives, and 3) strong state leadership in the form of a Legislative Commission on Waste Management and state mandates for waste management. Some of these needs are reflected in the list of strategies in Table 3.

The following strategies are meant to generate discussion and should not be viewed as mandatory or exhaustive. In addition, costs and how these strategies rank compared to other priorities have not been analyzed for all of these potential strategies.

The Plan remains flexible to accommodate change in the system structure and the marketplace. Some strategies may require action on the part of the legislature, either to establish a new tool or to modify an existing one in order to improve its implementation. Table 3 also specifies approximate timing to implement each strategy.

Table 3. Potential Strategies and Implementation Guide

Strategy	Management Method Affected	How to Implement	Responsible Parties	Timing
Extended Producer Responsibility/ Product Stewardship	Source Reduction, Recycling, Organics	If national or statewide product stewardship legislation is passed, the TCMA could participate in the identification of products for a framework and in the development of the product stewardship plans. Would require legislation.	MPCA – research, policy assistance, implementation of initiatives, enforcement, planning Private sector – compliance with law, planning Counties – implementation of law as appropriate, research, planning	>5 years

Table 3. Potential Strategies and Implementation Guide

Strategy	Management Method Affected	How to Implement	Responsible Parties	Timing
Improved Volume-based Pricing	Source Reduction, Recycling, Organics	Identify the most effective ways to implement improved volume-based pricing (i.e. organized collection, licensing changes, ordinance changes) that influences generator behavior; select and implement; conduct waste reduction education campaigns. May require legislation.	MPCA – research, implementation assistance, policy recommendations, as appropriate, enforcement as authorized Counties – planning, policy implementation, education, regulation as authorized Private Sector – implementation, education, compliance with law	3-5 years
Waste Management Education	Source Reduction, Recycling, Organics	Continue to develop pertinent waste reduction, recycling, and organics education messages through "Rethink Recycling"; coordinate messages through appropriate forums such as Cities & Counties Involved in Source Reduction & Recycling group coordinated by the MPCA. Private sector plays a role in recycling education through its service contracts with residents.	MPCA – assistance, research and evaluation, coordination with county and regional activities, statewide efforts Counties – research, evaluation, planning, implementation and coordination of outreach efforts Private Sector – coordination with government messages, communication with customers as appropriate Other Local Units of Government – coordination with county plans, cross- messaging opportunities University of Minnesota – Extension Service partnership with counties, participation in outreach planning and research as appropriate	1-2 years
Mandatory recycling	Source reduction, recycling	Research potential recycling increases and source reduction achieved through mandatory recycling. Pass state law or county or city ordinances requiring that residents and businesses recycle traditional commodities like paper, cardboard, glass and aluminum.	MPCA – Research, enforcement of law, model ordinance preparation, enforcement assistance to counties Counties – implementation of ordinances and enforcement Private Sector – assistance with information necessary for research and potential solutions; implementation assistance; compliance with regulations, if necessary	3-5 years
Mandatory Opportunity to Recycle for Commercial, Industrial, and Institutional (CII) Sectors	Recycling, Organics	Research need for statewide regulation. May require legislation. Pass county ordinances that require a minimum of three materials be collected (e.g., corrugated cardboard, office paper, and containers)	MPCA – Research, enforcement of public entities law and mandates, model ordinance preparation, enforcement assistance to counties Counties – implementation of ordinances Private Sector – assistance with information necessary for research and potential solutions; implementation assistance; compliance with regulations, if necessary.	3-5 years
Incentives for Recycling in the Commercial, Industrial, and Institutional (CII) Sectors	Recycling, Organics	Develop a plan for providing incentives to recycle; incentives could include, but are not limited to: increases in the solid waste fee on garbage and decreases or elimination of fees for recycling, technical assistance	MPCA – Economic research, research of need for statewide incentives Counties – planning Private Sector – implementation assistance	3-5 years

Table 3. Potential Strategies and Implementation Guide

Strategy	Management Method Affected	How to Implement	Responsible Parties	Timing
		for setting up a recycling program, rebates for CII entities participating in recycling programs		
Increase Landfill Disposal Fees	Source Reduction, Recycling, Organics	Conduct research on the increase necessary to create behavior change; designate that funds be spent on projects related to source reduction, recycling, and organics collection; increase disposal fee to necessary level; expand metropolitan solid waste landfill fee to metro waste going to landfills outside the region.	MPCA – research and policy assistance Legislature –consider legislation Counties – planning and implementation assistance Haulers – collect fee	3-5 years
Target commercial organics	Organics	Develop necessary organics management capacity, with permitting and siting assistance from the State; develop a regional commercial organics collection program that includes intensive outreach and education to commercial entities; if voluntary programs prove ineffective, implement ordinances requiring participation by large commercial generators	MPCA – rule revisions, research, evaluation of need for statewide regulation, rule enforcement Counties –program development, potential ordinance Haulers – assistance Private sector - participation	3-5 years
Residential source separated organics collection (including co-collection of food and yard waste)	Organics	Develop necessary organics management capacity, with permitting and siting assistance from the State; develop a regional program for co-collection of yard and food waste that includes intensive outreach and education to residents served by the program.	MPCA – rule revisions, research, evaluation of need for statewide regulation, rule enforcement Counties –program development and operation or contracting Haulers – assistance with planning; providing service Residents - participation	7-10 years
Include organics recycling in existing “opportunity to recycle” law	Organics	Research need for statewide regulation. Would require legislation. Pass county ordinances that require collection of organics	MPCA – Research, enforcement, model ordinance preparation, enforcement assistance to counties Counties – implementation of ordinances Private Sector – assistance with information necessary for research and potential solutions; implementation assistance; compliance with regulations, if necessary.	5-7 years
Preprocessing of MSW prior to waste-to-energy (WTE) and landfilling	Recycling	Conduct a cost-benefit analysis, including a review of technologies, for preprocessing prior to WTE and landfilling	MPCA – conduct analysis Counties – assistance WTE and Landfill facilities – assistance Waste Industry – assistance with study	1-2 years

Table 3. Potential Strategies and Implementation Guide

Strategy	Management Method Affected	How to Implement	Responsible Parties	Timing
Flow Control	Recycling, Organics, WTE	Develop a plan for waste flow within the region, allowing for market-driven solutions, with flow control as a last resort.	MPCA – assistance with waste flow options, evaluation of possible law changes, assessment of potential for enforcement Counties – planning	3-5 years
Maintain WTE capacity and increase efficiency	WTE	Implement mandatory processing law to use and maintain existing WTE facilities; complete efficiency upgrades wherever possible	MPCA – compliance and enforcement Counties – assistance Transfer stations and Landfills – compliance with state law WTE facilities – implement upgrades	1-2 years
Increase methane capture at landfills	Landfill	Consider requiring that all landfills receiving TCMA waste capture methane (for flaring or gas-to-energy) at a minimum of 75% efficiency and perform continuous monitoring.	MPCA – permitting requirements and enforcement Counties – compliance and enforcement assistance Landfills – comply with permit conditions	1-2 years
Contracting for waste and recycling services	Recycling, Organics, WTE	Determine the best approach for contracting for services both between businesses and waste haulers and between local governments and waste haulers, and implement.	MPCA - technical assistance, potential policy initiatives to remove barriers Counties – assistance to other local units of government, planning and implementation Other Local Units of Government - planning and implementation Private Sector – planning and negotiations Waste Industry - participation in contract negotiations	1-2 years
Implement mandatory processing requirements (Minn. Stat. §473.848)	Recycling, Organics, WTE	Establish new certification methods for mixed MSW, new solid waste reporting and facility licensing requirements that require reporting of waste flow. Enforce facility permit conditions.	MPCA – compliance and enforcement Counties – assistance Facilities – compliance with permit conditions	1-2 years
Regionalize household hazardous waste (HHW) programs and regulation	Recycling, Toxicity Reduction	Create a regionally owned and operated HHW program that would coordinate regulatory approaches, industry compliance and ordinance language development as well as provide consistent messages, materials, and costs across the region for residents and small businesses.	MPCA – technical assistance, coordination with counties Counties - implement regional program	1-2 years
Grants program	Source reduction, recycling, organics, toxicity reduction	Develop a list of priority projects that would advance the objectives in this plan. Prepare and develop a request for grant projects that identifies and gives preference to listed projects. Review and award projects fitting priorities, manage and evaluate outcomes.	MPCA – technical assistance, if necessary Counties - implement grants program	1-2 years
Regional Solutions	All MSW management methods	Individual county approaches may be more effective in a regional approach, including:	MPCA – assistance; coordination with inter-county and regional entities.	2 years

Table 3. Potential Strategies and Implementation Guide

Strategy	Management Method Affected	How to Implement	Responsible Parties	Timing
		waste designation; mandatory recycling and/or organics management for residential and commercial waste generators; regional hauler-collected fees; regional HHW management; and education and social marketing campaigns. May require legislation.	Counties – address regional governance; inter-county regional coordination	

Regional System Costs

Achieving the system objectives will lead to changes in solid waste management costs. Although it is not possible to precisely calculate the costs associated with implementing the Plan, a projection can be made based on estimates of the current MSW system costs. The cost per ton for each management method was estimated using real examples from within Minnesota (Table 4). These cost estimates include: facility tip fees; transport from transfer stations; collection and other costs, including the cost of bins and program administration. The cost estimates also take into account commodity revenues and profits. The costs per ton estimates, in effect, reflect the price of MSW management. The cost estimates do not always include the costs for MSW regulation; planning or program administration by state and local government; problem materials management; and the costs to generators to physically separate waste. The cost estimates also do not include the fees and taxes imposed by local government. This assessment does not account for the external costs and benefits that can significantly change the costs per ton used to calculate the system costs. Although the costs in Table 4 represent a range, the costs may vary by municipality and by year, since commodity values fluctuate and economies of scale change.

Table 4. Estimated Costs per Ton

Management Method	Total Cost per ton[1]	Tip fee	Collection and other costs
Recycling (residential)	$110 -$143	Not applicable	Unable to separate these costs
Recycling (CII)	$85 - $90	Not applicable	Unable to separate these costs
Organics (Food to animals)	$0 - $49	Not applicable	Unable to separate these costs
Organics (SSO)	$80 - $193	$40 - $45	$40 - $148
Waste to Energy	$168 - $207	$49 - $84	$119 - $123
Landfill	$130 - $162	$39 - $43	$91 - $119

[1] Cost per ton sources: recycling (residential) – City of St. Paul 2009, City of Plymouth 2009, Hennepin, Ramsey and Anoka County 2007 – 2009 averages; recycling (CII) – Anoka County, Eureka Recycling; organics (food to animals): Endres, Hennepin County, Washington County; organics (SSO) – Western Lake Superior Sanitation District, City of Medina, Hennepin County; waste to energy – Hennepin County, Anoka County; landfill – Ramsey County, Hennepin County, Department of Revenue tax receipts

Using the estimated costs per ton, system costs for the solid waste management system can be estimated. In 2009, the TCMA spent an estimated $386 - 471 million on MSW solid waste management, broken down as follows:

- $121 - 138 million on recycling;
- $880,000 - $7 million on organics;
- $165 - 203 million on waste to energy;
- $99 - 123 million on land disposal.

If the objectives for 2015 are not met, the annual MSW management costs would increase by an estimated $69 - 82 million between 2009 and 2015 (Table 5). Attaining the objectives could save the TCMA an estimated $10 - 12 million in MSW management costs in 2015 alone.

Table 5. Potential changes in MSW management costs

Management Method	Status Quo 2015 Cost ($ million)	Goal 2015 Cost ($ million)	Difference in Cost ($ million)
Recycling	$140 - $160	$166 - $189	$26 - $29
Organics	$0.7 - $6	$5 - $21	$4.3 - $15
Waste to Energy	$163 - $201	$214 - $263	$51 - $62
Landfill	$150 - $187	$57 - $71	($93 - $116)
Total	**$454 - $554**	**$442 - $544**	**($10 - $12)**

The savings associated with reducing and reusing waste are not fully captured in this assessment. Approximately $1.6 - 2 million in savings can be attributed to reducing waste by more than 15,000 tons by 2015 (Figure 4). These savings are reflected in the total system costs since fewer tons must be managed in each management method. In addition to reducing costs by reducing the number of tons managed, reuse programs can generate revenue and source reduction leads to savings in many areas.

Figure 5. Cost savings (in millions) achieved through source reduction

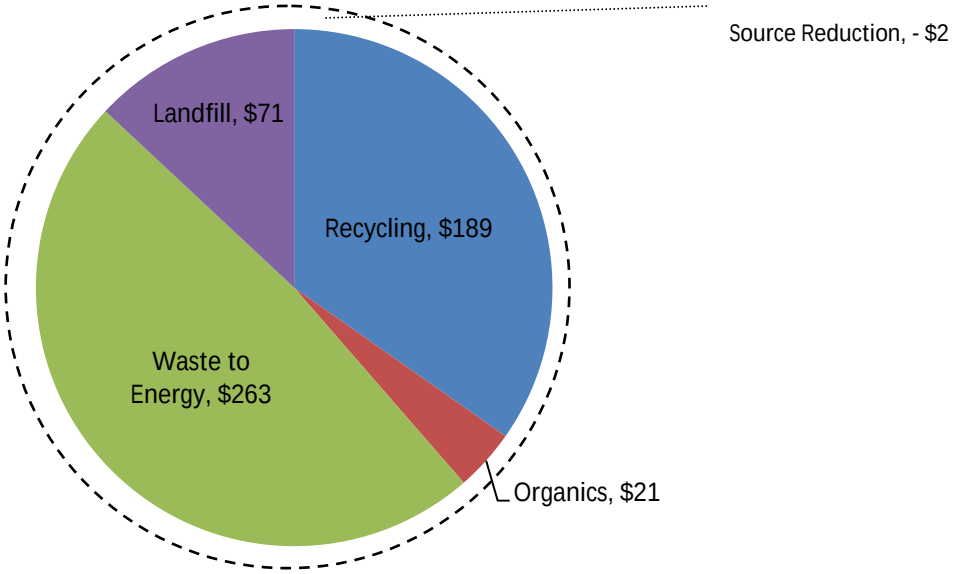


Table 5 compares projected solid waste management costs in 2015 associated with maintaining the current system (status quo) and with implementing the Plan (goal). This assessment demonstrates that implementation of the Plan, achieving the upper end of the objectives for 2015 as outlined in Table 1, could reduce MSW management costs. Additional savings could be achieved through system optimization of recycling, residential and commercial MMSW collection, waste-to-energy (WTE), and land disposal. For example, source separated organics (SSO) collection is a relatively new system in Minnesota. Optimizing the collection of SSO could reduce the total cost per ton for organics management since the bulk of the total cost currently lies in collection and other administrative costs. In addition, households and CII entities that increase the separation of recyclables and organics from their trash may be able to reduce their trash service by opting for a smaller container size or reducing the number of pickups, thereby reducing their costs.

Part Four:
Implementing the Plan

Metropolitan Governance

To implement the Plan, new roles and responsibilities must be defined and expectations set for the state, region, local governments, the private sector and citizens. Waste generators should behave in response to pricing signals that take into account the true costs of waste management. Counties, municipalities and waste businesses should work together to find and implement the proper pricing signals and provide education. The state will work to provide adequate tools for the region-wide system that meet the goals set in this Plan.

All stakeholders should consider ways to improve solid waste management in the region and gain efficiencies. As an example, a TCMA-wide solid waste system may reduce the costs and risks of solid waste management because of regional economies of scale. In addition, a TCMA-wide solid waste system would have more ability to manage the flow of waste and to spread economic risks over a larger generator base.

The MPCA and SWMCB will evaluate the ways in which solid waste is currently governed regionally to determine if and what changes are needed. The MPCA and SWMCB will work together and solicit the active involvement of state legislators to engage in an analysis to refine the vision for a regional solid waste system. The analysis will identify the actions necessary and prioritize various roles and responsibilities. The analysis will consider all relevant economic, legal, regulatory, and governance factors.

To ensure the most efficient, practical, and beneficial approach to any TCMA-wide governance system, the regional analysis study will evaluate and recommend key issues for consideration:

- Identify, review, and consider the system goals from Minnesota Statutes, the MPCA Integrated Waste Management Stakeholder process, the Plan, and other system plans to clearly articulate a solid waste system vision.
- Prioritize system changes to achieve goals in waste and toxicity reduction, recycling, organics management, processing, and landfilling of MSW and non-MSW.
- Define roles and responsibilities for the private sector, municipalities, counties, regional entities, and the State to implement the system changes.
- For actions best taken on a regional level, explore several geographic and governance options within and beyond the SWMCB region and nationally.
- Conduct research to determine the most efficient TCMA-wide area, services, and financing mechanisms that support the new policy initiatives.

Minn. Stat. §473.149, subd.6 requires the MPCA Commissioner to report to the legislature on the need to reassign metropolitan solid waste responsibilities, if the goals of the metropolitan statutes are not being met. Upon completion of the governance-regional analysis, the MPCA, in consultation with the SWMCB and metropolitan counties, will consider whether any reassignment of responsibilities is likely to improve the area's ability to reach statutory goals, how that should be structured, or whether modifying existing tools or instituting new ones would be more efficient and/or successful.

Solid Waste Master Plans

Minn. Stat. §473.803 requires the TCMA counties to prepare master plans that implement this Plan. Any solid waste activity within the seven-county region must be consistent with the Policy Plan and the County master plans. Several options exist for the development of county solid waste master plans, including the development of a regional implementation plan, development of some aspects of the county master plans by the SWMCB or other regional entity, or the development of individual county master plans. The approach taken will be decided in discussions between the MPCA and counties.

The counties must submit master plans to the MPCA in accordance with the schedule specified in this Plan. The master plans must be comprehensive and describe the relevant policies and implementation plans and strategies. The master plans must describe the activities to be implemented at a regional level and by counties, cities, and townships and the private sector. Integral to the metropolitan planning process will be the completion of the regional analysis-governance study.

Components of a regional master plan

1. Set specific, quantifiable objectives and establish measures and timeframes to meet the system objectives identified in Part Three, Table 1.
2. Incorporate all elements of individual county master plans as required by Minn. Stat. §473.803
3. Geographical scope to influence and consult with stakeholders in the seven-county region, and counties adjacent to the TCMA that impact the metro system; provide guidance at a sub-regional level where appropriate, i.e., the Ramsey-Washington Project Board.
    a. Sub-regional approaches may be appropriate (i.e., an inter-county processing system comprised of the largest MSW-generating metro counties).
4. Identify and prioritize strategies that best implement the MSW system objectives; give preference and identify which strategies best promote inter-county regional implementation, such as regional designation, organized collection, and hauler collected fees. Identify where other stakeholders' assistance and what type of assistance is necessary.

The MPCA will review regional and county master plans in accordance with the requirements of Minn. Stat. §§473.149, 473.803, and 473.848. The master plans must conform to and implement the Plan and be compatible with each other. If the MPCA Commissioner does not approve a master plan, the county must submit a revised master plan within 90 days. County master plans and any regional master plans shall be completed and submitted to the MPCA within nine months after the adoption of this Plan (see Appendix D).

MPCA Initiatives that will be used to Support the Plan

The MPCA intends to implement the Plan with the following initiatives:

1. Enforce all laws and rules where the Agency has the authority, including:
    a. The metropolitan mandatory processing law, Minn. Stat. § 473.848, as part of solid waste facility permit decisions.
    b. The Public Entities law, Minn. Stat. § 115A.471 to require all levels of government comply with County Solid Waste Plans.
    c. The Certificate of Need (CON) law, Minn. Stat. §§ 115A.917 and 473.823, that restrict landfill capacity as part of (CON) decisions.

d. Solid waste rules including permits and operating requirements.

e. Other statutes in the waste management act that the MPCA is charged with enforcing.

2. Consider eligible projects in the centroid areas, when making recommendations on financial assistance decisions.
3. Prioritize solid waste rule-making to advance the needs of the metropolitan area to meet the goals of this plan, in consultation with the counties.
4. Consider policy initiatives that implement the Plan, with particular emphasis given to regional solutions and new tools, as well as modification of existing tools, that restore accountability in the system. This may include identifying policy initiatives in consultation with the counties.
5. Provide research, support and technical assistance to clarify and remove barriers and provide clear and consistent direction.
6. Work to develop markets for recyclable and compostable materials to ensure adequate infrastructure for the increase in recycling and composting rates.
7. Review and adapt the methods used to evaluate the regional solid waste system, including the types of data collected and methods of collection.
8. Initiate discussions with the Department of Commerce on waste-to-energy and landfill gas-to-energy issues, so that the state's energy and waste policies are in synchrony.

Implementation of these initiatives may require additional funding.

Implementation Monitoring

County annual reports

TCMA counties are required to submit annual solid waste reports to the MPCA for approval (Minn. Stat. § 473.803, subd. 3). The reports must provide information on waste generation and management activities, as well as progress in achieving the policies and objectives in the Plan. If the MPCA finds that the reports indicate that the counties are achieving the landfill abatement results required under law, the reports will be approved. Any report that does not demonstrate compliance with the criteria will be disapproved (see Appendix D).

Legislative reports

The MPCA must submit a Metropolitan Abatement Progress Report to the Legislature by July 1 of each odd-numbered year that describes the progress made in implementing the Plan, including an assessment of whether the objectives of the TCMA abatement plan have been met and whether each county and each class of city within each county have achieved the objectives set for it in the Plan. The report must recommend any legislation that may be required to implement the plan.

If in any year the MPCA reports that the objectives of the Plan have not been met, the MPCA must evaluate and report on the need to reassign governmental responsibilities among cities, counties, and TCMA agencies to assure implementation and achievement of the TCMA and local abatement plans and objectives (Minn. Stat. § 473.149, subd. 6).

Metropolitan Landfill Abatement Account (MLAA)

Minn. Stat. §473.844 authorizes the MPCA to award grants in the TCMA for landfill abatement activities. Funding for the MLAA programs is generated from a $2 per cubic yard or $6.66 per ton surcharge on MSW disposed of at the two landfills in the TCMA.

The MLAA program is designed to assist the TCMA in meeting region-wide goals for landfill abatement. The MLAA program is intended to assist in establishing an integrated and coordinated solid waste management system in the TCMA, consistent with the WMA hierarchy (Minn. Stat. §115A.02), and implement the policies and programs outlined in the Plan.

The Local Recycling Development Grant (LRDG) program provides grants to the seven TCMA counties. The LRDG program is designed to implement new, enhanced, or more effective source reduction, yard waste composting, and recycling programs for commercial, industrial, institutional, and residential generators of MSW. TCMA counties are required to support and maintain effective municipal recycling as a condition of receiving LRDG funds. All activities funded through the LRDG program must be consistent with this Plan and the county's master plan.

Appendix A: Overview of the current Twin Cities Metropolitan Area (TCMA) solid waste management system

In 2008, the TCMA generated an estimated 3.3 million tons of municipal solid waste (MSW). Residential waste is estimated to make up 45 percent of the MSW and commercial, industrial, institutional waste (CII) makes up the remaining 55 percent. In addition, approximately 340,000 tons of industrial waste and contaminated soils were sent to MSW landfills serving the TCMA. Another 1.7 million tons of non-MSW (such as construction and demolition waste (C&D), industrial waste, and medical waste) was managed in the TCMA and surrounding counties and sent to C&D and/or industrial waste landfills. The TCMA solid waste infrastructure is comprised of private and public entities that collect, transport, recycle, recover and land dispose the materials generated by homes, businesses, and institutions.

Description of the System

Minn. Stat. Chs. 115a and 473 mandate a two-fold strategy: 1) pursue the highest methods of solid waste abatement through source reduction, recycling, organics recovery and resource recovery; and 2) minimize the use of landfills and ensure landfills are environmentally sound. The metropolitan counties have the primary responsibility for planning and managing an integrated solid waste system. Over the past 10 years, that system has had an MSW recycling rate of approximately 40 percent; increased the recovery of demolition and construction wastes; provided support to a system of resource recovery facilities that turned solid waste into renewable energy; implemented organics recycling programs and capacity; and initiated source and toxicity reduction and public awareness activities.

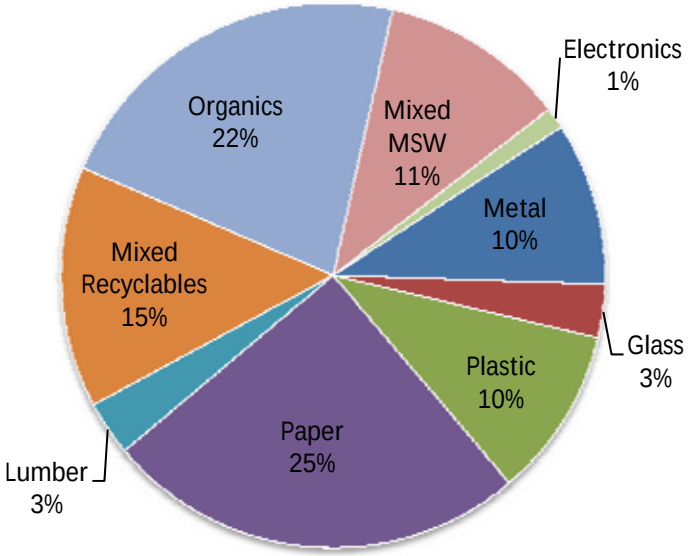
Waste composition

In 1999, an analysis of the composition of MSW deposited at landfills and resource recovery facilities was conducted. In 2009, the results of the 1999 study were combined with waste composition studies at three TCMA resource recovery facilities. The studies showed no significant changes in waste composition over the past ten years (Figure A-1).

Collection

The metropolitan counties license approximately 240 waste hauling businesses, with about 1,600 vehicles to collect and transport MSW. Waste haulers that collect and transport of non-MSW, recycling or organic waste are not licensed. State law requires waste haulers to provide volume-based service. Most TCMA communities allow residents and businesses to choose the waste hauler that provides their service, referred to as “open collection.” Some TCMA cities and townships (including Minneapolis) arrange for the service by contract or provide their own service, referred to as “organized collection.” Communities with organized collection represent 30 percent of the households in the TCMA (although not all multi-family residences in these cities are included in these services). There are no organized collection arrangements for commercial waste, although some communities allow small businesses access to organized collection services.

Figure A-1. TCMA MSW composition



Residential recycling collection services are provided by either contract with an individual hauler or by municipal contract. In the TCMA, 94 municipalities contract for service which represents 67 percent of the households in the region. Commercial recycling collection services throughout the region are provided by subscription service.

After source separation the remaining waste is hauled directly to a resource recovery facility or land disposal facility, or may be taken to a transfer station for compaction and transport to facilities located farther away. In the TCMA, there are 19 transfer stations, of which 14 are licensed to accept MSW and five to accept only C&D waste. One transfer station is publicly owned and the remaining privately owned.

Toxicity reduction

Waste that is hazardous as defined by federal and state laws and local ordinances pose environmental and public health and safety risks. Toxicity reduction is an effort to manage the risks associated with the hazardous character of waste.

The TCMA addresses the hazardous character or toxicity of waste in two ways. The first is aimed at residents and consists of efforts to encourage reduction of wastes with hazardous character, coupled with a network of household hazardous waste (HHW) programs operated by counties. The second is aimed at commercial generators of hazardous waste and includes regulating under the federal Resource Conservation and Recovery Act (RCRA) standards for businesses in the TCMA.

Household hazardous waste collection programs play an important role in removing toxic materials from the waste stream. Each of the metropolitan counties has at least one year-round site for the collection of HHW, and most augment that site with seasonal, temporary, satellite, or special one-day collections. These sites operate pursuant to an agreement between the counties and the MPCA that addresses financial risk. A Reciprocal Use Agreement allows residents to use any of the HHW collection sites located in the six SWMCB counties.

Of the waste received by HHW facilities, a high percentage is recycled or fuel-blended, or taken from product exchange shelves for reuse. Approximately 10 to 15 percent of the HHW cannot be reused, recycled, or fuel-blended and is managed at hazardous waste incinerators or landfills.

Recycling

Residential recycling programs consist of curbside collection and drop-off sites, and include recycling services for both single-family and multifamily housing. Curbside recycling programs in the TCMA are provided by haulers through a contract with a municipality or are provided through subscription service. Most counties provide some funding for municipal programs. The private sector, municipalities, and two counties provide numerous public drop-off locations for one or more types of recyclables.

Many businesses have active recycling programs, and commercial recycling accounts for most of the recycling in the region. The success of the region's recycling program is not only a result of county and city efforts, but of the significant contribution the private sector has made through the development of markets; provision of drop-off locations; and the many elements needed to develop the recycling infrastructure.

Recyclables collected are taken directly to a recycling market, a recycling broker, or to a materials recovery facility (MRF). Materials commonly recovered for recycling include:

- paper/fiber (including corrugated, mixed paper, newspaper, office paper, magazines, phone books, boxboard)
- glass bottles
- metals
- plastic bottles and film
- food waste (to animal feed)
- wood pallets
- tires
- used oil
- appliances
- certain batteries

Presently, five businesses operate MRFs that manage residential recyclable materials: Waste Management in Minneapolis; Allied in Minneapolis (with a partial MRF in Inver Grove Heights); Eureka Recycling in Minneapolis, E-Z Recycling in St. Paul, and Tennis Sanitation in Saint Paul Park. In 2008, the materials recycled came from these sources: 73 percent from CII recycling; 23 percent from residential recycling; and four percent from mechanical / hand-sort recycling. Historically, 20 to 25 percent of the residential waste and about 50 percent of CII waste is recycled.

Yard waste

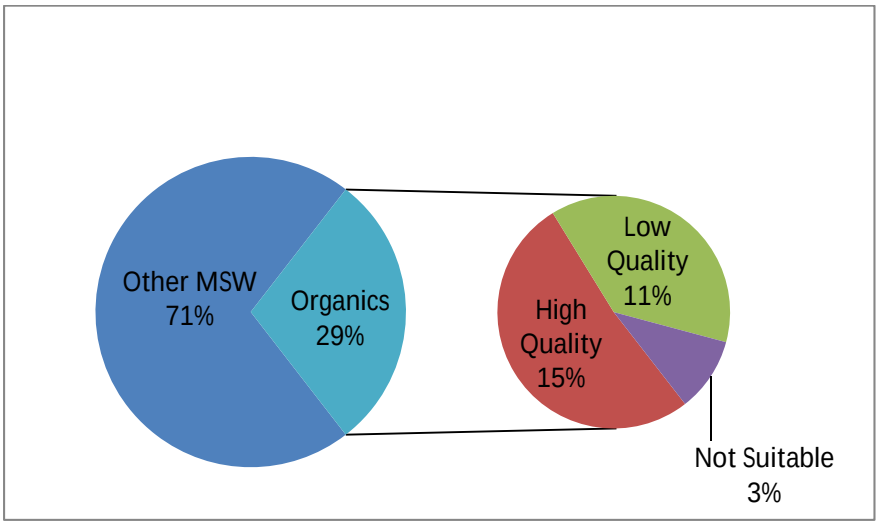
Yard waste is prohibited by state law from being mixed with the MSW, landfilled, or processed at resource recovery facilities. Yard waste is collected either by MSW haulers using separate collection vehicles, special yard waste collectors (such as lawn services), or by residents who drop off yard waste at collection sites. Yard waste is managed through county, municipal, and private programs. Two counties operate yard waste collection sites that allow citizens to drop off yard waste and pick up compost. However, municipalities or private firms sponsor most yard waste sites. Yard waste volumes are not reported, so specific data is

unavailable on yard waste quantities managed in the region. Roughly, 500,000 cubic yards of yard wastes may be managed in the TCMA via yard waste composting programs.

Organic waste management

On a statewide basis, the 1999 Composition Study showed that approximately 29 percent of the MSW sent to resource recovery facilities or landfills is organic materials. Of that 29 percent: approximately 52 percent is high quality organics (food and soiled paper); 38 percent is lower quality material that has some contamination or would be more suitable for other reuse/recycling markets (such as diapers, wood furniture, untreated wood, etc.); and 10 percent is treated wood not suitable for composting (see Figure A-2).

Figure A-2. Breakdown of organics in MSW



A 15 percent organics recovery rate could be reached, if approximately 50 percent of the organics in the total waste stream was diverted. A high percentage would be materials capable of being separated at the source and, therefore, relatively free of contamination.

Over the past five years, the number of programs collecting source separated organic materials (SSOM) has risen as the markets have expanded. At least ten school districts, seven institutions, 30 to 40 businesses, and four cities offer SSOM programs. This does not include the many Food-to-People and Food-to-Animal/Animal Feed programs. RRT operates a source-separated composting site in the TCMA that is permitted for 150 tons per day of food waste and yard waste, but is currently operating at well-below capacity (see Figure A-3).

The organic materials collected from 2006 to 2008 in the TCMA ranged from 150,000 to 180,000 tons per year, representing approximately 2.6 to 2.9 percent of the MSW. Food-to-livestock was 144,000 to 167,000 tons, followed by SSOM collection programs at 7,700 tons, and food-to-people at 1,700 to 4,400 tons per year.

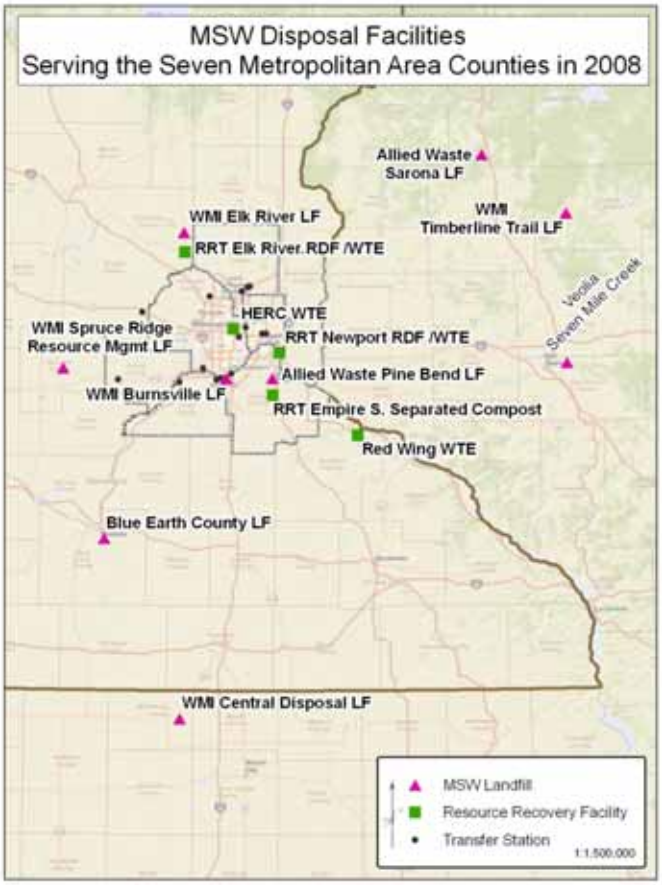
Resource recovery

Four MSW resource recovery facilities serve the TCMA (see Figure A-3). The Hennepin Energy Recovery Center (HERC) facility in Minneapolis uses a mass-burn technology to produce steam for use in making electricity and recovers ferrous metal for recycling from the ash. HERC is limited by its state permit to burning 365,000 tons annually.

The Ramsey/Washington County Resource Recovery Facility (RRT-Newport) converts 85 percent of the MSW received into refuse-derived fuel (RDF). The facility is owned and operated by RRT. The MSW is delivered, shredded, and separated into three waste streams: RDF, recyclable metal and residue. The RDF is transported for combustion to Xcel Energy power plants in Red Wing and Mankato, where it is burned to generate electricity. The ferrous and non-ferrous metals are recycled, and the residue is delivered to a landfill. RRT-Newport's permitted capacity is 500,000 tons per year with a maximum RDF production of about 390,000 tons per year.

The Elk River Resource Recovery Project (GRE-Elk River) is an RDF processing plant owned by Great River Energy (GRE). The RDF is burned to create electricity at the GRE combustion facility at its Elk River electric power station. GRE-Elk River's permitted capacity is 547,000 tons per year with an estimated maximum RDF production of 425,000 tons per year. Currently, Anoka and Sherburne Counties have separate service agreements with GRE.

Figure A-3. Resource recovery facilities, transfer stations and MSW landfills



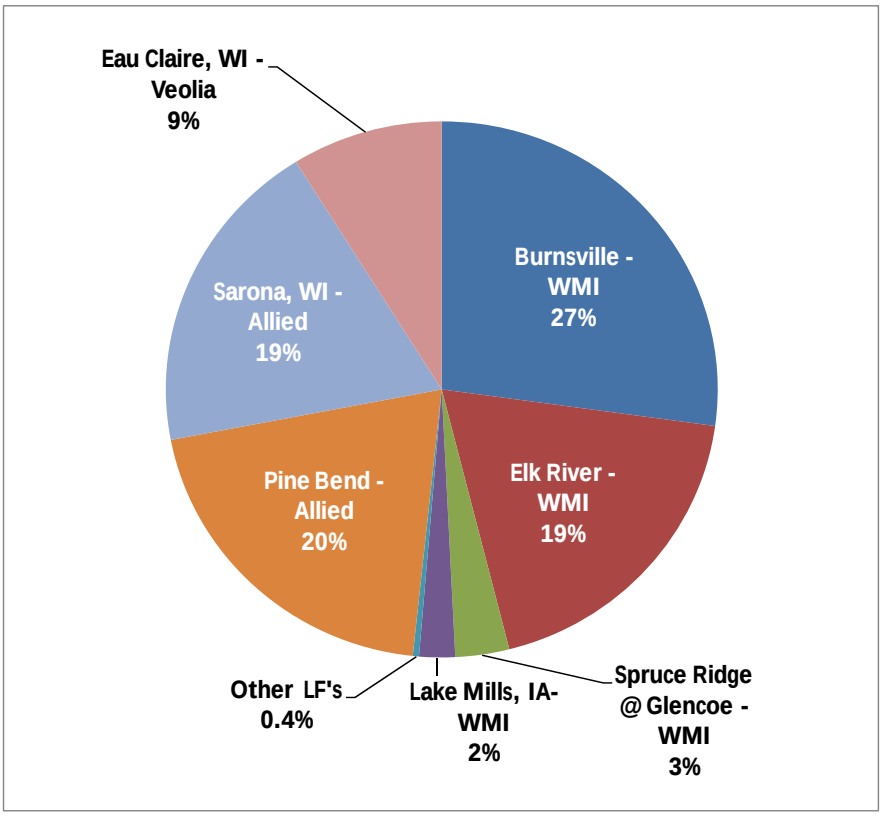
The city of Red Wing (City) operates a 30,000 ton per year modular waste-to-energy facility that provides energy for a manufacturing plant. In 2008, the WTE facility received 5,300 tons from Dakota County. In 2010, the City added an up-front materials processing MRF. The City is seeking an additional 10,000 tons per year of MSW, and is interested in contracting with communities in the TCMA to obtain the additional tonnage.

The four resource recovery facilities have a combined permitted processing capacity of approximately 1.2 million tons per year. This capacity is presently not being fully used due to MSW bypassing the resource recovery facilities to go to landfills. In addition, there is available unpermitted, but installed capacity of 40,000 tons per year at HERC and 40,000 tons per year of unused permitted capacity at the Red Wing and Mankato RDF combustors.

Landfills

In 2008, 28 percent of the TCMA MSW was land disposed. Nine landfills received TCMA MSW, with 30 percent going to landfills located in Iowa and Wisconsin. Figure A-3 shows which landfills received TCMA MSW in 2008. The four Minnesota landfills receiving the majority of TCMA MSW have a collective remaining permitted MSW capacity of approximately 13 million cubic yards. If all the TCMA MSW was delivered to the four landfills, the capacity would be exhausted in 5.5 years. Notwithstanding, this does not take into account the additional design capacity that could potentially be permitted.

Figure A-4. Landfills receiving significant amounts of TCMA MSW in 2008



The TCMA has two MSW landfills, both located in Dakota County. The Burnsville Sanitary Landfill is located in Burnsville and is owned by Waste Management Inc. (WMI). The Pine Bend Sanitary Landfill is located in Inver Grove Heights and is owned by Allied Waste. Both landfills operate methane gas-to-energy systems that capture methane gas generated by the decaying waste. Two other Minnesota landfills that receive significant amounts of TCMA MSW are the WMI Spruce Ridge Landfill in McLeod County and the WMI Elk River Landfill in Sherburne County. These also operate methane gas-to-energy systems. The Blue Earth County Ponderosa Landfill received a very small amount of waste from the TCMA and does not operate a gas-to-energy system. For the four Minnesota landfills that receive the majority of TCMA MSW, while the efficiency of the gas

collection systems has not been established, it is estimated that an average of 75 percent of the methane that is captured is used to produce electricity, and the remaining captured methane is flared.

Three out-of-state landfills receive TCMA MSW, including: the WMI Central Disposal Landfill in Lake Mills, Iowa; the Allied Waste Landfill in Sarona, Wisconsin; and the Veolia Seven Mile Creek Landfill in Eau Claire, Wisconsin. The Allied Waste Timberline Trail landfill in WI accepted a very small amount of TCMA waste in 2008. As a consequence of a Wisconsin landfill tax imposed in 2009, approximately 200,000 to 300,000 tons of Minnesota MSW and industrial waste formerly going to Wisconsin landfills was disposed at Minnesota landfills.

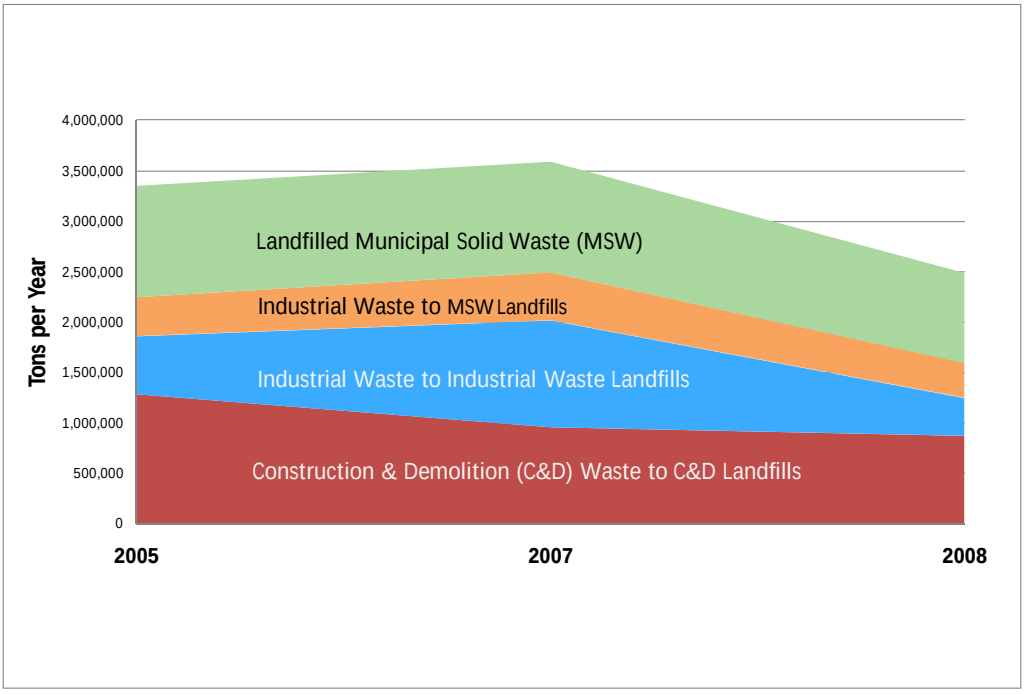
Non-MSW management

The TCMA is served by nine landfills that accept industrial wastes and/or C&D debris, or non-MSW. These landfills have approximately 25 million cubic yards of remaining capacity. Non-MSW includes nonhazardous industrial waste, C&D waste, materials banned from disposal with MSW, problem materials, infectious waste, and other waste streams that are not MSW or otherwise defined or regulated as hazardous waste.

Materials separated for recycling at some C&D transfer stations and landfills, include concrete, bituminous asphalt, aluminum, copper, steel, brick, mattresses, appliances, and tires. Other materials have the potential to be separated and recycled from the C&D waste. Private businesses own and operate most of the TCMA facilities that manage non-MSW. There is some public sector activity in managing certain non-MSW materials in the TCMA, such as tree waste processing and crushing, and recycling concrete or road base material.

Figure A-4 shows the MSW and non-MSW tonnages going to landfills. In 2008, non-MSW landfills in the TCMA received almost 1.5 million tons of wastes, representing slightly more than 50 percent of the total solid wastes landfilled.

Figure A-5. Construction and demolition, industrial, and MSW landfill disposal of TCMA waste



Appendix B: Integrated Solid Waste Management Stakeholder recommendations – Executive Summary

The Integrated Solid Waste Management Stakeholder Process (the Process) was convened to bridge the goals of the Waste Management Act1 and the Minnesota Climate Change Advisory Group's (MCCAG's) two greenhouse gas (GHG) emission reduction targets for the solid waste sector. To begin the effort to bridge these two goals, the Minnesota Pollution Control Agency (MPCA) elected to have the Process focus on the four most densely populated regions in the state where the majority of waste is generated. For the purposes of the Process, these four regions were termed "centroids" and encompassed the areas surrounding the cities of Duluth, Rochester, St. Cloud, and the Twin Cities metropolitan area. The municipal solid waste (MSW) generated in these four centroid regions combined makes up approximately 70 percent of the total waste generated, by tonnage, in the state of Minnesota.

In the fall of 2008, the Minnesota Environmental Initiative (MEI) was contracted by the MPCA to design, lead, and facilitate the Process. MEI assembled a seventeen member Work Group of diverse stakeholders representing industry, state and local governments, environmental organizations, and others. The MPCA charged the Work Group to develop elements of a plan to reduce GHG emissions through changes in the way solid waste is managed in the four centroids that would achieve 70 percent of the statewide GHG emission reduction target set by MCCAG for the solid waste sector. The statewide MCCAG target was 75 million metric tons of carbon dioxide equivalent (MMTCO2e) cumulatively from 2005 to 2025, and the 70 percent prorated goal for the centroids used in this Process was 52.5 MMTCO2e.

Over a period of twelve months the Work Group developed a broad-ranging suite of well-thought-out strategies to help lower GHG emissions from the solid waste sector within the four centroids. The majority (22) of the 38 recommended strategies are unanimously supported by all members of the Work Group, and the remaining recommended strategies (16) are supported by a majority of the Work Group members. From the outset of the Process, the Work Group consented that the state's existing Waste Management Hierarchy (the Hierarchy) should continue to guide policy decisions regarding preferred ways to manage MSW. As such, the majority of the Work Group's recommended strategies focus on increasing source reduction and recycling efforts, which fall in the upper-end of preference within the Hierarchy. The Work Group recommended thirteen (13) strategies to reduce solid waste generation in the centroids, which focus on increasing efforts to source reduce personal computers, phone books, cardboard, junk mail, office paper, food waste, and plastic bags. Additional recommended mechanisms to reduce waste in the centroids include legislation to establish a framework to advance product stewardship efforts, modifications to the pricing structure for waste collection service to better align economic signals with quantities of waste at the point of generation, and increased education, assistance, and recognition programs to support and promote source reduction activities.

The Work Group also recommended twelve (12) strategies to increase recycling in the centroids. Recommended mechanisms to achieve substantial increases in recycling include setting aggressive statewide recycling goals, modifying local ordinances to increase commercial and institutional recycling, increasing public education about the benefits of source reduction and recycling, incentivizing residential recycling, and tasking the MPCA to investigate the feasibility of requiring the removal of recyclable material prior to waste disposal or energy recovery. Other supported strategies aim to increase recycling of mattresses through

increased opportunities to recycle, carpet through extended producer responsibility, and beverage containers (glass, aluminum, and plastic) by implementing a statewide container deposit. Finally, the Work Group felt it was essential that the state further support the development of recycling end markets to support and expand local recycling programs and the influx of recyclable material that will result from the implementation of the Work Group's recommendations.

To better manage organic material in the waste stream (food waste and non-recyclable paper), the Work Group recommended increasing composting of source-separated organic material through an array of efforts to be adapted and tailored as appropriate in each centroid. Regarding recommendations on the lower-end of the Hierarchy, the Work Group recommends three strategies, one for WTE and two regarding landfill disposal. The WTE recommendation calls for existing WTE facilities in the state to be operated at their permitted capacity to minimize the amount of waste being disposed in landfills, and that WTE facilities pursue infrastructure improvements to enhance the efficiency of their operations. The first landfill strategy recommends increasing the rate of capture and utilization of methane gas generated at landfills throughout the state, while the second landfill strategy recommends increasing landfill disposal fees to divert waste away from landfills and shift waste to other management methods higher up on the hierarchy.

Other supporting strategies recommended by the Work Group include: increased promotion of green building and sustainable development initiatives, and improvements to information, including an updated assessment of the statewide and centroid-specific waste streams, and further research on GHG modeling, volatile organic compound (VOC) emissions from compost facilities and landfills for all compostable material, and enhancements to commercial recycling data. Also, during the final Work Group meeting, the Work Group advanced two strategies by majority support as mechanisms to support the implementation of the other recommendations: organized collection, and voluntary agreements between haulers and local units of government to achieve improved service outcomes.

While the Work Group primarily focused its efforts on developing strategies to reduce greenhouse gas emissions, there was strong sentiment within the Work Group that the successful implementation of the recommended strategies would be largely contingent upon the availability of adequate funding provided to local units of government to administer solid waste programs, and sufficient funding at the state level to support market development, education, and technical assistance programs administered through the MCPA. The Work Group did develop a strategy to recommend modifications to the existing allocation of funding to counties through the SCORE program, and in addition to that strategy, the Work Group generated a list of unanimously supported high-level funding principles to help guide decision makers as the state develops a plan for the implementation of the Work Group's recommended strategies.

To assess the projected impacts of the Work Group's recommended strategies, the Process used the U.S. Environmental Protection Agency's (EPA) WAste Reduction Model (WARM) and a few MPCA adjustments to the WARM model outputs related to the GHG cuts/ton for composting organics and the higher efficiencies of WTE facilities in Minnesota as compared to the WARM defaults. According to the estimated impacts of the recommended strategies using the WARM model and the MPCA adjustments, implementation of the Work Group's recommended strategies will enable the state to achieve significant reductions in greenhouse gases totaling approximately 47.2 MMTCO2e by 2025, which is approximately 10 percent below the original Process goal of 52.5 MMTCO2e. The Work Group and the MPCA acknowledged this shortfall and pointed to the imprecision and imperfections within the WARM model, which are described in detail in the Process Background section of this report, as a major contributing factor to the group not reaching 52.5 MMTCO2e in GHG emission reductions. As the projected impacts are merely model estimations, it is certainly conceivable that a 10 percent difference is within the margin of error for WARM's current GHG emission modeling

capabilities. Therefore, it should be acknowledged that the Work Group, at a minimum, has adequately fulfilled its charge by recommending changes to the management of solid waste in the four centroids that will result in significant GHG reductions very near to the order of magnitude recommended by the MCCAG. In addition to yielding significant reductions in GHG emissions as a result of the recommended strategies, the Work Group should be commended for their strategies to move waste up the Waste Management Hierarchy. As demonstrated in the report, the Work Group's recommended strategies will result in the following average projected percentages for waste management methods across the four centroids by 2025: 6.08 percent Source Reduction (cumulatively to 2025); 60 percent Recycling; 6.5 percent Organics Management; 24.1 percent Waste-to-Energy; and 9.4 percent Landfill Disposal. For comparison, the 2005 baseline for waste management method percentages across the four centroids are: 40 percent Recycling; 2.7 percent Organics Management; 17 percent Waste-to-Energy; and 35 percent Landfill Disposal.

While the 38 recommended strategies provide guidance and direction to the state by comprising the elements of a plan to achieve significant GHG emission reductions through solid waste management, the state must ultimately work with, and lead, numerous partner organizations to systematically and effectively implement the recommendations. As the MPCA develops its 2009 Solid Waste Policy Report and works with counties to update local solid waste management plans, it should assess the implementation mechanisms available to support the recommended strategies, the amount of resources that will be required to implement the strategies, and various mechanisms that could be used to fund the recommended strategies. A comprehensive implementation plan should then be developed and put into action in order to ensure that the recommended strategies are brought to fruition and that the GHG emission reductions that are projected to result are achieved.

Appendix C: Predrafting Notice

Statement of Subjects Expected to be Covered by Revisions to the Metropolitan Area Solid Waste Policy Plan

Introduction

The MPCA has started the process to prepare revisions to the Metropolitan Area Solid Waste Management Policy Plan. This plan would revise the current plan adopted by the MPCA on January 15, 2004. The new plan will be adopted by the MPCA Commissioner and submitted to the Legislature as part of the State Solid Waste Policy Report by December 1, 2009.

Revisions to the Metropolitan Area Solid Waste Management Policy Plan will be prepared in accordance with Minn. Stat. §473.149. The Policy Plan must be followed in the Metropolitan Area. The Policy Plan contains goals and policies for solid waste management, including recycling and household hazardous waste management. The statute requires that the regional plan contain objectives to abate the landfilling of mixed municipal solid waste and of specific components of the solid waste stream, including residuals and ash, to the greatest extent feasible and prudent.

The MPCA is required to prepare this predrafting notice to solicit public comments on the anticipated revisions to the Policy Plan. Public comments must be received within 45 days from the date of the publication in the State Register. Questions about the document or the process may be addressed to Tina Patton at 651 757-2642 or 1-800-657-3864 (toll-free in Minnesota).

Comments on the predrafting notice should be sent to: tina.patton@pca.state.mn.us

Comments must be received by the MPCA by 4:30 p.m., C.S.T., Thursday, February 12, 2009. [Written correspondence may be sent to the following address: Tina Patton, Minnesota Pollution Control Agency, 520 Lafayette Rd. N., 2nd Floor, St. Paul, Minnesota 55155-4100]

Overall approach and philosophy

The Policy Plan revisions will focus on greenhouse gas reduction, energy and resource conservation, renewable energy production, waste assurance and modifications to the current collection system, an improved governance structure, waste reduction and recycling and economic development. However, the Plan will also continue to support: treating waste as a resource; landfill abatement; waste and toxicity reduction; the management of all solid waste; the WMA hierarchy; aggressive abatement goals; region-wide waste processing; regional operations; and minimization of negative environmental impacts. The Policy Plan will continue to support policies aimed beyond the traditional municipal solid waste (MSW) stream, such as construction and demolition waste and industrial solid waste and ash.

The Policy Plan revisions will be developed consistent with the state policies and purposes expressed in Minnesota Statutes §115A.02 of the Minnesota Waste Management Act (WMA). The Policy Plan will support the WMA hierarchy of preferred waste management methods.

The Policy Plan will evaluate and consider the recommendations from the Minnesota Climate Change Advisory Group (MCCAG), and those emerging from the Stakeholder Process to Achieve Greenhouse Gas Reduction, Energy Conservation and Environmental Protection through Integrated Solid Waste Management (Stakeholder Process). The Stakeholder Process was formed in response to the MCCAG recommendations

and will establish a multi-stakeholder group to develop a plan for modifying the current waste management system to increase positive environmental outcomes by reducing waste, increasing recycling of materials and reducing greenhouse gas contributions from management activities. That process will begin in December 2008 and complete its work by June 30, 2009.

The Policy Plan will also evaluate the recommendations coming out of other legislatively-mandated MPCA reports and groups, which include: 1) the Construction and Demolition (C&D) Metropolitan Recycling Study (due December 1, 2008); 2) the results of the Construction, Demolition and Industrial (CDI) Landfill Working Group/Landfill Siting Restrictions report (due January 15, 2009); and 3) the Product Stewardship Report (due January 15, 2009). The C&D Metropolitan Recycling Study will determine the capacity for recycling C&D waste in the metropolitan area and make recommendations to increase C&D recycling. The CDI Landfill Working Group is charged by the Legislature to develop, evaluate, and recommend policies and legislation regarding the management of industrial solid waste and demolition debris in land disposal facilities and to prepare a report to the Legislature with its conclusions and recommendations. The Product Stewardship Report will identify methods to designate products that should be included in future product stewardship efforts.

Description of How the Existing Solid Waste System Serves the Metropolitan Area

The Metropolitan Area's current solid waste infrastructure has developed extensively since the passage of the 1980 WMA. In 2006, 65 percent of the region's mixed MSW was managed through source separation and composting services and at resource recovery facilities. This level of abatement is among the highest in the country, and public policy should continue to support this regional system, as well as finding ways to improve it.

The Policy Plan will describe the level to which the existing Metropolitan Area solid waste system has fulfilled the legislatively mandated purposes described in the WMA, including the WMA hierarchy and the policy that favors the provision of solid waste services by private businesses.

The Policy Plan will describe how the existing solid waste system benefits the Metropolitan Area, including the environmental benefits, and how the new plan proposes to increase those benefits. The Policy Plan will identify the waste volumes and types of materials managed by the different solid waste abatement methods and technologies and the volumes of materials recovered and energy produced.

The Policy Plan will show how an integrated solid waste system, consistent with the waste management hierarchy, supports a vibrant economy, the reduction of greenhouse gases, the conservation of energy and resources, the production of renewable energy, and can be improved through stronger governance, a more efficient collection system, and waste assurance.

Metropolitan Area Solid Waste System Faces Some Challenges

The Policy Plan will discuss some challenges that face the Metropolitan Area solid waste system, including: increased landfilling; increased waste generation and per capita growth rates; smaller increases in the recycling rates; and a potential decline in waste-to-energy capacity.

Solid Waste Management Facilities and Programs

The Solid Waste Management Coordinating Board (SWMCB) is a joint-powers board that coordinates many of the solid waste activities of six of the seven metropolitan counties. The MPCA will consult with the SWMCB and Scott County in the revision of the plan.

The Policy Plan will include goals and policies for solid waste management, including recycling consistent with Minnesota Statutes §115A.551, and household hazardous waste management consistent with Minnesota Statutes §115A.96, subdivision 6, in the Metropolitan Area.

The Policy Plan will include specific and quantifiable regional objectives for abating to the greatest feasible and prudent extent the need for and practice of landfilling of mixed MSW and of specific components of the solid waste stream. The objectives will be stated for a period of at least 20 years. The Policy Plan will include objectives for waste reduction and abatement of solid waste through resource recovery, recycling, and source separation of organic waste for composting for a period of at least 20 years.

The Policy Plan will identify the environmental and resource management benefits of waste processing. The Policy Plan will identify the quantities and geographic origin of waste subject to processing. The Plan will also identify the available processing capacity, and the inter-county regional opportunities for the development of future processing capacity and opportunities for inter-county sharing of waste.

The Policy Plan will evaluate the state and regional governance structure and make appropriate recommendations that best fulfill the needs of integrated solid waste management. The Policy Plan also will explore issues beyond the Metropolitan Area jurisdiction that affect the regional solid waste system.

Policy Plan Implementation Tools

The Policy Plan will include procedures, standards and criteria regarding the MPCA review of: county master plans; annual waste certification reports; waste facility permits; certificates of need; and solid waste supply contracts and processing agreements. The usefulness of these reviews will also be examined to determine if some of them should be eliminated, changed or others conducted.

The Policy Plan will include standards and criteria for the MPCA review of solid waste facility permits regarding the following matters: general location; capacity; waste supply; operation; processing techniques; environmental impact; effect on existing, planned, or proposed collection services and waste facilities; and economic viability.

Appendix D: Review criteria

Minn. Stat. chs. 115A and 473 authorize the MPCA to approve:

- solid waste facility permit applications
- solid waste supply and processing contracts
- waste district proposals
- waste designation proposals
- landfill certificates of need proposals
- county annual and waste certification reports
- county solid waste master plans

The MPCA will use these reviews as one method to implement the Policy Plan. Public and private entities subject to review are encouraged to contact the MPCA before preparing and submitting approval requests. The MPCA will coordinate the reviews with its procedures for environmental review and solid waste permitting.

Solid Waste Facility Permit Applications

Solid waste facilities include transfer stations, storage facilities, land disposal facilities and waste processing facilities such as resource recovery facilities and materials recovery facilities that accept waste. Solid waste facilities also include non-MSW facilities such as demolition landfills, industrial waste landfills, and processing facilities for non-MSW solid waste. A solid waste facility includes all apparent facilities, property and easements that may be needed or useful for the processing or disposal of solid waste (Minn. Stat. § 115A.03 subd. 35).

Prior to approval of a permit (or permit renewal) to operate a solid waste facility in the TCMA, the MPCA must complete a review to determine whether the proposed project is consistent with the Policy Plan (Minn. Stat. § 473.823 subds. 3 and 5). The MPCA can incorporate conditions in the permit if the MPCA determines that conditions are necessary to satisfy the criteria in the Policy Plan (Minn. Stat. § 473.823 subd. 3c). The Plan includes criteria that address the following aspects of proposed waste facilities:

- waste management service impacts
- capacity
- processing techniques
- location
- environmental impacts
- operations
- competitive operation
- economic viability

The MPCA will use these criteria when reviewing permit applications in accordance with the requirements of Minn. Stat. § 473.823. The MPCA will coordinate its review with other required MPCA review and facility permit decisions. Some criteria may be met in accordance with the authority granted to local units of government to license and approve waste facilities.

A. Waste management service impacts

1. Objectives
    a. Ensure the efficient and orderly transition from land disposal to waste reduction, reuse, recycling, organics recovery and resource recovery through mixed MSW composting or incineration supports the Metropolitan System Plan in Part Three of the Policy Plan.
    b. Ensure that adequate solid waste supplies are available for development of solid waste facilities.
2. Criteria
    a. Proposed waste facility service areas shall be compatible with the objectives and goals of the Metropolitan System Plan. Restrictions may be placed on the type, character, quantities and geographic territory of the waste supplies for waste facilities.
    b. Proposals for landfills, transfer stations and processing facilities shall not adversely impact the practice of waste reduction, reuse, and source separation of waste materials and organics recovery.
    c. Proposals for landfills and transfer stations shall not adversely impact the effective utilization and processing at existing processing facilities and the development of additional resource recovery facility capacity.

B. Capacity

1. Objectives
    a. Ensure that waste facility capacities meet efficient, cost effective service requirements and take into consideration the area-wide need and benefit of the applicant facility.
    b. Ensure that waste facility capacities promote adaptable systems of waste management and orderly transition from land disposal to waste reduction, reuse and recovery in accordance with the Metropolitan System Plan.
2. Criteria
    a. Proposed waste facility capacities shall be compatible with the Metropolitan System Plan objectives and goals.
    b. Proposed waste facility capacities shall be consistent with the MPCA's approved Certification Reports (Minn. Stat. § 473.848) and with county plans (Minn. Stat. § 116.07 Subd. 4j). Proposed facility capacity must be consistent with the needs for processing or disposal capacity identified in the approved plan or plans.
    c. Proposed waste facility capacities should not exceed the projected need for secondary materials and/or energy, nor should they exceed the projected waste supply from the areas they serve. Limits may be placed on capacities to coordinate facility development with projected market demand and/or supplies.
    d. Proposed waste facility capacities shall be consistent with area-wide need for the capacity, based on an analysis of waste generation; county plans for use and development of waste facilities; and historical and projected patterns of operation by facilities in the region.

C. Processing techniques

1. Objectives

a. Promote the use of technically reliable and efficient processing techniques. Identify and resolve problems that may reduce processing efficiency and reliability.

b. Allow for the development of new and/or experimental waste processing techniques to recover energy or materials.

c. Assure that waste facilities comply with Minn. Stat. § 473.848 regarding restrictions on land disposal.

2. Criteria

a. Proposed processing facilities shall use materials handling and processing techniques that are known to provide continuous, reliable and effective service, while recovering energy and/or materials that consistently meet market specifications.

b. Proposed facilities using new or experimental waste processing techniques shall be tested on a small-scale basis only. A processing facility will be considered experimental if its history of commercial effectiveness and workability is undocumented.

c. Proposed facilities that arrange for the management of mixed MSW shall comply with the Minn. Stat. §473.848, which prohibits the land disposal of processible mixed MSW.

D. Location

1. Objectives

a. Assure that proposed waste facilities are located in areas compatible, to the extent possible, with local land use plans and existing and planned county and TCMA-wide waste systems and utilities.

2. Criteria

a. Solid waste facilities should be compatible, to the extent possible, with TCMA-wide land use policies and county and local comprehensive land use plans. Lack of compatibility with land use policies and plans shall not preclude MPCA approval of a waste facility if waste management policy considerations take precedence.

b. A proposed waste facility site should be capable, to the extent possible, of being returned to a use anticipated in the plan of a TCMA agency, county, or local unit of government after closure of the facility. Land-use restrictions and closure dates may be placed on the facility compatible with the development of future uses for the site.

E. Environmental impacts

1. Objectives

a. To design, operate, and maintain solid waste facilities so as to minimize risk to public health and the environment.

2. Criteria

a. Waste management facilities shall be designed and operated to prevent, to the greatest extent possible, discharge of pollutants under or beyond the site boundaries. These factors will be considered in determining consistency with this criterion:

I. The characteristics of the wastes that will be accepted;

II. Ability to prevent violations of state water quality standards;

III. Ability to control unregulated substances adequately;

IV. The nature of the water resources including their existing uses and potential for use (potential for use exists if a withdrawal rate of one gallon/minute can be sustained);

V. The underlying soils and hydro-geological conditions (including depth to bedrock, soil texture, permeability of underlying materials and ground water flow patterns);

VI. Whether the applicant's proposed engineering control and management technologies provide the levels of protection afforded by other reasonably available technologies.

b. Solid waste facilities shall provide for appropriate handling and treatment of surface water runoff, wastewater and collected leachate.

c. Solid waste facility applicants shall have developed environmental monitoring programs and contingency plans. These plans shall address protection of surface and groundwater resources; air quality; protection against odors, safety and nuisance impacts; and conditions under which the contingency plans would be implemented.

d. Solid waste processing facilities shall be located, designed and operated so as to minimize emissions to the atmosphere. The following factors will be considered in determining consistency with this criterion:

I. Ability to prevent violations of state or federal air quality standards;

II. Ability to measure air and water emissions;

III. The potential impact on environmentally sensitive ecosystems; and

IV. Whether the applicant's proposed engineering control and management technologies provide the levels of protection afforded by other reasonably available technologies.

F. Operations

1. Objectives

a. Ensure that facility operations result in safe, regular and efficient waste management services.

b. Ensure that required reporting of waste deliveries and waste characterization will be performed in a timely and effective manner.

c. Ensure adequate and continued waste management services during non-operating periods.

2. Criteria

a. Proposed waste facilities shall have controlled access to prevent unauthorized entry and provisions for handling wastes left at the facility illegally.

b. Proposed waste facilities shall incorporate into their operations protocols procedures for measuring and reporting the delivery and disposition of waste processed or disposed.

c. Proposed waste facilities shall incorporate into their operations protocols and procedures for measuring and reporting air and water emissions.

d. Proposed waste processing facilities shall ensure regular service to generators during non-operating periods by demonstrating the availability of backup processing or disposal services. Standby procedures shall be established for emergencies and periods when the facility is shut down.

G. Competitive operation

1. Objectives:

a. Ensure that publicly supported waste facilities do not jeopardize viable, comparable facilities unless the displacement is required to achieve the Metropolitan System Plan objectives and goals.

2. Criteria

a. Public waste facility proposals shall not displace viable, comparable facilities currently in operation unless the displacement is necessary to achieve the goals and objectives of the Metropolitan System Plan. Restrictions may be placed on facility design and operating capacities. For a resource recovery facility or transfer station serving a resource recovery facility, restrictions may be placed on facility design and operating capacities and/or on the composition, quantity and geographic territory of the waste supplies. The following factors will be considered when determining whether waste facilities are comparable and have the potential to compete:

I. Consistency with the policies, goals and objectives in the Plan;

II. Design and operating capacities of the waste facilities;

III. Geographic area from which the waste facilities draw their waste;

IV. Waste supply and refuse-derived product market contracts or commitments;

V. Economic requirements and viability of the facilities.

H. Economic effects

1. Objectives

a. Ensure that publicly owned, operated, or funded waste facilities, or waste facilities having contractual obligations with governmental units, minimize public economic risk.

b. Minimize adverse economic effects on local communities affected by waste facilities.

2. Criteria

a. Public waste facility proposals should, to the extent possible, use projected operating revenues, including those from the sale of recovered products and tipping fees or user fees, to pay capital and operating costs associated with a facility underwritten by a governmental unit over the life of the facility. The following factors will be considered in determining the extent of public obligation and consistency with this criterion:

I. Total capital costs and the projected annual operation, administration, maintenance and debt service costs of the facility;

II. Amount, level and nature of projected revenues available for the payment of facility cost over the life of the facility;

III. Proposed methods of financing the facility; the amount, type and provisions made for the security of any public indebtedness incurred to finance the facility; size of the tax base and other financial resources backing any bonds to be issued to finance the facility;

IV. Any facts about the facility that could affect its continued operation and realization of revenues necessary for financial self-sufficiency, including supply contracts and by-product markets.

b. A proposed waste facility should not place burdens on the use of local public services without compensation. Services available from other governmental entities and compensation may be used to meet facility service requirements as provided for under state law.

Solid Waste Supply and Processing Contracts

TCMA cities, counties and towns can enter into contracts for the delivery of solid waste to waste facilities and the processing of solid waste (Minn. Stat., §473.813, subd. 1). The MPCA is required to approve local government supply and processing contracts that are longer than five years in duration (Minn. Stat. § 473.813, subd. 2). The success of waste facilities often depends on long-term commitments for waste supplies and processing. It is anticipated that long-term supply and processing contracts will continue to be used as new facilities proceed toward development or as existing contracts are renewed or renegotiated. MPCA contract approvals will remain in effect unless (1) the contract term is extended; or (2) the contract is substantially amended or revised during its term.

1. Objectives
    a. Ensure that waste supply and processing contracts implement the Policy Plan.
    b. Ensure that waste supply and processing contracts can respond to changing facility service requirements and market conditions.
    c. Ensure that waste processing facilities are able to obtain adequate waste supplies in accordance with the requirements of Minn. Stat. § 473.848.
    d. Ensure that waste supply and processing contracts support the development of feasible and cost effective processing systems, such as organic waste processing, non-MSW recovery systems, new mixed MSW processing systems, and other necessary materials and energy recovery systems.
2. Criteria
    a. Waste supply and processing contracts shall be consistent with the Policy Plan.
    b. Waste supply and processing contracts should not prevent or adversely affect the operation or development of other waste management activities higher on the hierarchy. The following factors will be considered in determining the ability to meet this criterion: probable effect of the contract payment structure on other waste activities higher on the hierarchy; and effect on service areas and collection rates and charges.
    c. Service costs to the generator as a result of waste supply and processing contracts should be reasonable in light of the environmental and abatement results to be attained. This criterion recognizes there may be higher service costs to generators with particular waste facilities and activities.
    d. Waste supply and processing contracts should minimize public economic risk. Contracts will be examined for these factors:
        I. Quantity and duration of waste supplies and the required service are needed to meet minimum facility operating requirements and debt service amortization.
        II. Method of ensuring that the waste can be provided to the facility.
        III. Provisions to adjust drop charges and the price of energy and secondary materials produced by the facility to reflect changes in the cost for operations, maintenance, and value of materials or energy recovered.
        IV. The facility's performance guarantees and contract contingencies.

Waste Management Districts

Under the WMA, Minn. Stat. § 115A.62 - .72, Minnesota counties, including metropolitan counties, can form waste management districts. This authority enables counties to implement waste management practices they may not be able to conduct independently or which can be more effectively performed jointly. The establishment of a waste management district must be approved by the MPCA Specific conditions can be incorporated as part of the MPCA's approval. Minn. Stat. § 115A.63, subd. 3 provides that a waste management district formed by metropolitan counties has the same procedural and substantive responsibilities and duties as a metropolitan county, including requirements for preparing a comprehensive solid waste management plan. The requirements for county solid waste planning are contained in Minn. Stat. § 473.803 and in the Policy Plan.

Solid waste management districts are public corporations and political subdivisions of the state. Two or more counties can form waste districts. The MPCA cannot establish a district unless the counties demonstrate that they are unable to fulfill the purposes of a district through individual or joint action. The counties must have completed a solid waste management plan before a district can be formed.

Districts have various powers including: the acquisition of property by purchase, lease, condemnation and gift; the right of entry; the right to accept gifts, grants and loans; the construction and operation of solid waste facilities and services; the setting of rates and charges for waste facilities and services of the district; the right to dispose of property; the employment of persons; and review by the district of other waste facilities within a district. Property owned, used or occupied by the district is exempt from taxation by the state or any political subdivision of the state. Districts have the same rights as municipalities to issue revenue bonds.

Waste districts have the power to designate the flow of waste, if the designation authority is contained in the district's articles of incorporation and is approved by the MPCA under the Designation Statute, Minn. Stat. §§ 115A.80 - .893. The WMA sets up a specific process that must be followed by the MPCA to establish, alter, and terminate waste districts.

1. Objectives
    a. Ensure that the establishment of waste districts proceeds in accordance with the requirements established in statute.
2. Criteria
    a. The MPCA will follow the review procedures in statute.

Waste Designation Proposals

The WMA, Minn. Stat. §§ 115A.80 - .893 (Designation Statute), allows county or waste district to designate a facility where all MSW generated within its boundaries, or a service area thereof, is required to be delivered. Using designation to direct the waste to a particular destination is referred to as waste designation or flow control. MPCA approval of waste designations is required. Designation was authorized by the Minnesota Legislature to further state policies and purposes, as articulated in Minn. Stat. § 115A.02, and to advance the public purposes served by effective solid waste management. See Minn. Stat. § 115A.80.

Waste assurance is a means to assure the movement of waste from its origin to a particular facility. Waste designation is one method of waste assurance. Other methods of waste assurance include economic

incentives to influence waste movement, contracting with waste collectors having direct control over waste movement, and implementing public collection.

Waste assurance is sometimes used to meet the financial security requirements for resource recovery or landfill projects. Large-scale facilities usually require significant capital investment. By assuring delivery of a definite quantity of waste to a facility, revenues are guaranteed from disposal fees and from sales of energy and/or materials products. The revenues provide a source of income to amortize the project's debt service. Investment commitments are tied closely to the strength of waste supply commitments.

Waste assurance can also be used to support other solid waste planning objectives. Waste assurance can provide greater control over the components of waste. Recyclable waste, waste with hazardous components and nonrecoverable residuals may be separated out and sent to appropriate facilities. The development and operation of ancillary projects may be improved with dependable waste quantities. Project type, size, location and financing can all be better controlled under these circumstances.

The procedures and criteria for approval of waste designation are contained in the Designation Statute, Minn. Stat. § 115A.80 - .983.

1. Objectives
    a. Ensure that the establishment of waste designations proceeds in accordance with the requirements in statute.
2. Criteria
    a. The MPCA will follow the review procedures in statute. .

Landfill Certificate of Need

The WMA, Minn. Stat § 473.823, subd. 6, states that no new land disposal capacity for mixed MSW shall be permitted in the TCMA without a CON issued by the MPCA indicating that the additional disposal capacity is needed. The MPCA must certify need only to the extent that there are no feasible and prudent alternatives to land disposal. Alternatives that are speculative or conjectural cannot be deemed to be feasible and prudent. Economic considerations alone cannot justify the CON or the rejection of alternatives. Minn. Stat. § 473.823, subd. 6 requires the MPCA to include in the Policy Plan the standards and procedures for certifying need. The standards and procedures must be based on the metropolitan disposal abatement plan and the solid waste disposal facilities development schedule, both a part of the Policy Plan, and with approved county solid waste management master plans that are consistent with the abatement plan and development schedule.

Requests for a CON must describe the location of the facility, proposed capacity, expected active life and fill rate, schedule for development and closure plan. The request, and any accompanying information submitted by the applicant, will be used by the MPCA to prepare a preliminary report with recommendations. The MPCA will conduct a public meeting on the preliminary report.

The public meeting will provide the applicant and interested persons an opportunity to provide comments on the report. After the meeting record closes, a final report with findings and conclusions and the decision will be prepared. The MPCA must decide whether or not to certify land disposal capacity (issue a CON) prior to its decision on the permit application for a facility. Conceivably, the MPCA could issue a CON and deny issuance of a permit for a facility based upon environmental or other reasons unrelated to capacity considerations.

1. Objectives

a. Ensure that new land disposal capacity is only approved if there are no feasible and prudent alternatives.

b. Ensure that any new land disposal capacity approved is consistent with the MPCA's Policy Plan.

c. Ensure that new land disposal capacity does not contribute to diverting waste from reuse, source separation, resource recovery through mixed municipal solid waste composting or incineration, or management at a higher level of the waste hierarchy.

2. Criteria

a. No CON capacity will be approved in excess of the landfill ceiling described in the Metropolitan System Plan in Part Three of this Policy Plan.

b. If the requirements of Minn. Stat. § 473.848 (no unprocessible mixed MSW generated in the metropolitan area may be disposed of at a land disposal facility) are not being met, no new CON capacity will be approved for landfills serving the TCMA.

c. The proposed CON capacity shall be consistent with the provisions for reduction, reuse, recycling, organics recovery and resource recovery identified in the regional and county solid waste management master plans.

d. New CON capacity will be approved, when there are no feasible and prudent alternatives, including existing permitted land disposal capacity, to substitute for the proposed capacity.

I. An alternative is feasible if it is consistent with sound engineering practices, and there is a known method or technology, that can successfully be put into practice to accomplish the task. An alternative is not feasible if it is experimental, theoretical or not capable of reliable operation at the appropriate scale.

II. An alternative is prudent if it is not expected to result in extraordinary, unusual or unique impacts more adverse than such impacts from the proposed capacity. Non-environmental impacts may include, but are not limited to, impacts on waste collection and disposal systems; waste collection and disposal costs; and solid waste planning and implementation efforts within and outside of the TCMA.

e. Proposed new MSW CON capacity will not be approved based solely on a determination that it is the least-cost alternative.

f. All previously granted landfill CONs must be consistent with the Metropolitan System Plan in Part Three of this Policy Plan.

County Annual Report and Waste Certification Reports

The TCMA counties are required to submit annual solid waste reports and certification reports to the MPCA for approval under Minn. Stat. §§ 473.803, subd. 3 and 473.848, subd 2. The MPCA will review these reports for consistency with the Policy Plan and for consistency with the requirements of Minn. Stat.§ 473.848, which states that no person shall dispose of unprocessible mixed MSW generated in the metropolitan area at a land disposal facility. Minn. Stat. § 473.848, subd. 4 states that the MPCA may adopt standards for determining when waste is unprocessible and procedures for expediting certification and reporting of unprocessed waste. The MPCA will use the information contained in the reports to enforce Minn. Stat. § 473.848 with respect to permitted waste facilities and public entities. MPCA permitted waste facilities are required by state law to comply with Minn. Stat. § 473.848. The restriction on disposal in Minn. Stat. § 473.848, subd. 1 applies only to solid waste management and landfilling within Minnesota. Public entities that manage solid waste or

contract for the management of solid waste are required by Minn. Stat. § 473.46, subd. 5(b) to manage the waste consistent with the county plan.

The county reports must provide information on: waste generation and waste management activities; progress in achieving the policies and objectives in the Policy Plan, including the goals and objectives of the Metropolitan System Plan; the cities that have not satisfied the county performance standards for local abatement of solid waste through resource recovery, waste reduction and source separation; the quantity of MSW generated and not processed prior to land disposal; the reasons the MSW was not processed; a strategy to ensure that the MSW will be processed, including a timeline for implementation; and progress the county has made in reducing the amount of unprocessed MSW landfilled. The report shall also certify whether mixed MSW generated in the county is unprocessible based on the criteria in 2.c. and 2.d.iii below. The certification shall be made at least annually, but the county shall provide more frequent certifications if the MPCA determines that more frequent certifications are necessary to expedite the certification process. The MPCA will work with the metropolitan counties to develop a process for expediting the certification process.

If the MPCA finds that the counties are achieving results consistent with the Policy Plan, including the Landfill Abatement Plan, and as required by law, the reports will be approved. If a report is disapproved, the MPCA will work with the county or counties to develop specific methods within specified time frames to achieve the landfill abatement objectives.

1. Objectives
    a. Implement the goals and objectives of the Metropolitan System Plan.
    b. Ensure that no unprocessible mixed MSW goes to land disposal facilities in accordance with the requirement of Minn. Stat. § 473.848.
    c. Increase the recovery of materials and energy from mixed MSW.
    d. Assure clear and consistent determinations and certification of unprocessible MSW.
2. Criteria
    a. County Annual Reports shall demonstrate that appropriate measures were implemented to support the objectives and goals of the Metropolitan System Plan.
    b. County Annual Reports shall report on the barriers to implement the objectives and goals of the Metropolitan System Plan, along with recommendations to overcome the barriers.
    c. TCMA mixed MSW is unprocessible when all reasonably available capacity within the TCMA processing system is fully utilized at a 100 percent of its operating capacity. In determining reasonably available capacity, consideration will be given to the specific geographic area that typically supports each of the processing facilities that serves the TCMA. The TCMA processing system is described in Appendix A, but this system could change periodically. The MPCA will annually provide a list of processing facilities that serve the TCMA.
    d. County Certification Reports shall:
        I. Demonstrate that appropriate measures were implemented to assure that public entities, mixed MSW haulers, and permitted mixed MSW facilities comply with Minn. Stat. § 473.848.
        II. Report on the barriers to mixed MSW processing and recommendations for increasing the processing of mixed MSW.

III. Certify mixed MSW as unprocessible when there is no reasonably available mixed MSW capacity within the TCMA processing system. County certification of mixed MSW as unprocessible must be consistent with the criteria outlined in 2.c. above. All certifications of unprocessible mixed MSW must be approved by MPCA.

Regional and County Solid Waste Master Plans

The metropolitan counties are required by Minn. Stat. § 473.803 to prepare and submit solid waste master plans to the MPCA for approval. The MPCA will review the county master plans and any regional master plan in accordance with the requirements of Minn. Stat. §§ 473.149, 473.803, and 473.848. In accordance with Minn. Stat. § 473.803, subd. 2, the MPCA will review the county master plans for consistency with the Policy Plan. The general content requirements for county master plans are contained in Minn. Stat. §§ 473.803. If the MPCA disapproves a master plan, the county and/or SWMCB must within 90 days submit a revised master plan to the MPCA for approval.

1. Objectives
    a. Ensure that the master plans implement the Metropolitan Solid Waste Policy Plan, including the goals and objectives of the Metropolitan System Plan.
2. Criteria
    a. Master plans must be comprehensive and clearly describe solid waste management policies, plans and implementation strategies.
    b. Master plans must support the Metropolitan System Plan's numerical objectives by management method.
    c. Master plans must describe the projects and activities to be implemented during the planning period (2010-2030) by counties, cities and townships and the private sector that will result in the achievement of system objectives.
    d. Master plans must show how the counties will implement a regional solid waste systems approach.
    e. Given the solid waste authorities granted to TCMA counties, the master plans must identify the techniques that will be used to hold stakeholders accountable for implementing the various components of their plans. For the purpose of this criterion "stakeholders" includes waste generators, public entities, and the waste management industry.

Appendix E: Glossary

Terms used in this Policy Plan are intended to have meanings consistent with state statutes. Any words not defined in this appendix should be understood to have a meaning consistent with state law.

Collection — The aggregation of waste from the place at which it is generated and includes all activities up to the time the waste is delivered to a waste facility. (Minn. Stat. § 115A.03, subd. 5)

Composting — The controlled microbial degradation of organic waste to yield a humus-like product. (Minn. Rules, sec. 703 5.0300, subp. 20)

Construction debris — Waste building materials, packaging and rubble resulting from construction, remodeling, repair and demolition of buildings and roads. (Minn. Stat. §115A.03, subd. 7). Also referred to in the Plan as construction and demolition waste.

Governance — Governance is the process by which waste is managed for the public good. Governance includes the goals and activities of government entities, businesses, nonprofits, communities, and individual citizens.

Hazardous waste — Any refuse, sludge, or other waste material or combinations of refuse, sludge or other waste materials in solid, semisolid, liquid, or contained gaseous form, which because of its quantity, concentration, or chemical, physical, or infectious characteristics may (a) cause or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible illness; or b) poses a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed. Categories of hazardous waste materials include but are not limited to explosives, flammables, oxidizers, poisons, irritants and corrosives. Hazardous waste does not include source, special nuclear, or by-product material as defined by the Atomic Energy Act of 1954, as amended. (Minn. Stat. § 116.06, subd. 11)

Household hazardous waste — Waste generated from household activity that exhibits the characteristics of or that is listed as hazardous waste under agency rules, but does not include waste from commercial activities that is generated, stored, or present in a household. (Minn. Stat. § 1 15A.96, subd. lb)

Industrial solid waste — Solid waste resulting from industrial processes and manufacturing. It does not include hazardous wastes.

Land disposal — Depositing of waste materials in a land disposal facility.

Leachate — Liquid that has percolated through solid waste and has extracted, dissolved, or suspended materials from it. (Minn. Rules, sec. 7035.0300, subp. 56)

Local governmental unit	Cities, towns and counties. (Minn. Stat. § 1 15A.03, subd. 17)
Long-term care	Actions to prevent or minimize the threat to public health and the environment posed by a mixed municipal solid waste disposal facility that has stopped accepting waste by controlling the sources of releases or threatened releases at the facility (Minn. Stat.§115B.39, subd. 2.(c)).
Major appliances	Defined by statute as clothes washers and dryers, dishwashers, hot water heaters, heat pumps, furnaces, garbage disposals, trash compactors, conventional and microwave ovens, ranges and stoves, air conditioners, dehumidifiers, refrigerators and freezers. (Minn. Stat. § 1 15A.03, subd. 17a)
Materials recovery facility (MRF)	Facility designed for centralized sorting, processing, and/or grading of collected recyclable materials for marketing.
Mixed municipal solid waste (MSW)	(a) Garbage, refuse and other solid waste from residential, commercial, industrial and community activities that the generator of the waste aggregates for collection, except as provided in paragraph (b), (b) mixed MSW does not include auto hulks, street sweepings, ash, construction debris, mining waste, sludges, tree and agricultural wastes, tires, lead acid batteries, motor and vehicle fluids and filters, and other materials collected, processed and disposed of as separate waste streams, but does include source-separated compostable materials. (Minn. Stat. § 115A.03, subd. 21)
Non-municipal solid waste	Solid waste resulting from construction, demolition, or industrial activities which is not mixed municipal solid waste.
Organic Waste	Organic waste typically includes food waste, non-recyclable paper products, yard waste and other materials that readily degrade. Organic waste will be more clearly defined in the Regional Solid Waste Master Plan to be developed in 2004 (see Part III: Implementation, Opportunities and Challenges, Organics Management).
Organized collection	A system for collecting solid waste in which a specified collector, or a member of an organization of collectors, is authorized to collect from a defined geographic service area or areas some or all of the solid waste that is released by generators for collection. (Minn. Stat. § 115A.94, subd. 1)
Problem material	Material that, when it is processed or disposed of with mixed municipal solid waste, contributes to one of the following results: 1) the release of a hazardous substance, or pollutant or contaminant; 2) pollution of water; 3) air pollution; or 4) a significant threat to the safe or efficient operation of a solid waste processing facility. The four conditions are further defined in Minn. Stat. § 115A.03, subd. 24a.
Processing	The treatment of waste after collection and before disposal. Processing includes, but is not limited to, reduction, storage, separation, exchange, resource recovery, physical,

	chemical, or biological modification and transfer from one waste facility to another (Minn. Stat. § 115A.03, subd. 25 and. 473.848, subd. 5.
Recyclable Materials	Materials that are separated from mixed municipal solid waste for the purpose of recycling, including paper, glass, plastics, metals, automobile oil, and batteries. Refuse derived fuel or other material that is destroyed by incineration is not a recyclable material. (Minn. Stat. § 115A.03, subd. 25a)
Refuse-derived fuel	The fraction of processed mixed municipal solid waste that is shredded and used as fuel in a boiler. It consists of lighter weight materials such as plastic and paper products, with most metals, glass, and other non-combustible materials removed.
Residuals	Waste materials left after recovery of recyclables and/or the physical, chemical or biological processing of wastes.
Resource recovery	The reclamation for sale, use, or reuse of materials, substances, energy, or other products contained within or derived from waste. (Minn. Stat. § 115A.03, subd. 27)
Resource recovery facility	A waste facility established and used primarily for resource recovery, including related and appurtenant facilities such as transmission facilities and transfer stations primarily serving the resource recovery facility. (Minn. Stat § 115A.03, subd. 28)
Secondary materials	The marketable or usable products derived from solid or hazardous waste through processing or separation.
Solid waste	Garbage, refuse, sludge from a water supply treatment plant or air contaminants treatment facilities, and other discarded waste materials and sludges, in solid, semisolid, liquid, or contained gaseous form, resulting from industrial, commercial, mining, and agricultural operations, and from community activities, but does not include hazardous waste; animal waste used as fertilizer; earthen fill, boulders, rock; sewage sludge; solid or dissolved materials in domestic sewage or other common pollutants in water sources, such as silt, dissolved or suspended solids in industrial wastewater effluents or discharges which are point sources subject to permits under section 402 of the federal Water Pollution Control Act; as amended, dissolved materials in irrigation return flows; or source, special nuclear, or by-product materials as defined by The Atomic Energy Act of 1954, as amended. (Minn. Stat. § 116.06, subd. 22)
Solid waste management	The systematic administration of activities that provide for the collection, separation, storage, transportation, transfer, processing, treatment and disposal of solid waste.
Source separation	Separation of recyclable or compostable materials by the waste generator prior to collection.

Source reduction (see also Waste reduction)	An activity that prevents generation of waste or the inclusion of toxic materials in waste, including: (1) reusing a product in its original form; (2) increasing the life span of a product; (2) reducing material used in production or packaging, or changing procurement, consumption, or waste generation habits to result in smaller quantities of waste generated. (Minn. Stat. § 115A.03, subd. 36a)
Special wastes	Nonhazardous wastes that have been prohibited from disposal with mixed municipal solid waste or have had other specific management requirements prescribed by statute. They include, but may not limited to, tires, lead acid batteries, major appliances, used oil and yard waste.
Storage	Containment of solid or hazardous waste, in an approved manner, after generation and before collection, for ultimate recovery or disposal.
Transfer station	An intermediate waste facility in which waste collected from any source is temporarily deposited to await transportation to another waste facility. (Minn. Stat § 115A.03, subd. 33)
Waste flow designation	A requirement by a waste management district or county that all or any portion of the mixed municipal solid waste that is generated within its boundaries or any service area thereof be delivered to a processing or disposal facility identified by the district or county. (Minn. Stat. § 115A.81, subd. 2)
Waste facility	All property real or personal, including negative and positive easements and water and air rights, which is or may be needed or useful for the processing or disposal of waste, except property used for the collection of the waste and property used primarily for the manufacture of scrap metal or paper. Waste facility includes, but is not limited to, transfer stations, processing facilities, and disposal sites and facilities. (Minn. Stat. § 115A.03, subd. 35)
Waste management	Activities that are intended to affect or control the generation of waste and activities which provide for or control the collection, processing and disposal of wastes. (Minn. Stat. § 115A.03, subd. 36)
Waste reduction (see also Source Reduction)	An activity that prevents generation of waste or the inclusion of toxic materials in waste, including: (1) reusing a product in its original form; (2) increasing the life span of a product; (2) reducing material used in production or packaging, or changing procurement, consumption, or waste generation habits to result in smaller quantities of waste generated. (Minn. Stat. § 115A.03, subd. 36a)
Yard waste	Garden wastes, leaves, lawn cuttings, weeds, shrub and tree waste, and prunings. (Minn. Stat. § 115A.03, subd. 38)