2005 **Solid Waste Policy** Report

Minnesota Pollution Control Agency **March 2006**

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Part 1: Executive Summary

As we mark the 25th anniversary of the Waste Management Act, we find that Minnesota is at a crossroads. While much progress has been made in avoiding landfilling and in recovering resources from waste, Minnesota faces significant challenges in the upcoming years.

Despite recent strong market prices for commodities, recycling rates have leveled off at nearly 41 percent, meaning that while the tons recycled continues to grow, those gains are being outpaced by overall growth in waste generation. Given inflation and budget cuts, state financial support for waste management activities has been eroding steadily. In response, some counties, particularly in rural areas, have been cutting back their efforts on recycling, waste reduction, public education, and problem materials management. Two of the largest waste-to-energy facilities may close in 2007 and 2009 when county contracts expire. Landfill capacity in the Metropolitan Area is limited, and neighboring states (Wisconsin, Iowa, and North Dakota) are increasing fees on landfilled waste, including all waste imported into their states. There is a distinct possibility that our reliance on other states over the last 10 years for cheap landfilling may not last. This trend may place a heavy burden on Minnesota's landfill capacity, particularly if a portion of today's waste-to-energy processing capacity is lost.

While Minnesota has been successful in closing open-burning dumps, raising environmental protection at disposal facilities, and diverting huge amounts of material from landfills, it has not succeeded in reducing the amount of material being thrown out. The long-held assumption that government and its licensed waste handlers can cope with whatever quantity of material is being thrown away will in time be outdated, and in fact was seriously tested in Minnesota in the 1980s with the failure of the Metro Landfill siting process.

This report highlights three policy recommendations:

- preserve and increase waste-to-energy capacity to conserve landfill capacity;
- recover more recyclables and organics; and
- stop residential burning and on-site burial of waste.

These three recommendations are the result of internal discussion and stakeholder input (for a complete list of stakeholder comments, see Appendix J) and are directly linked to the MPCA's current strategic plan, which calls for ambitious waste-abatement achievements by 2010. For example, the MPCA strategic plan calls for Minnesota to send 35 percent of its total waste to waste-to-energy and source-separated composting processing facilities by 2011. While the current total for such processing is less than 21 percent, and since some of that existing capacity may be in jeopardy, hitting the 35 percent goal will take considerable effort and perhaps a new way of looking at the problem. The report also discusses other subsequent policy recommendations; and research needs are also highlighted and are organized in the report according to the Waste Management Act solid waste hierarchy.

For the past 25 years, the state has promoted reduction, reuse, and recycling (the 3Rs). This approach brought much progress, but this progress has leveled off. Close attention to energy, economy, and the environment (the 3Es) can help the state reach a higher level of waste diversion. Further, the 3Es will allow policymakers to identify and understand the point of diminishing returns as we pursue higher levels of waste diversion.

Part 2: State Solid Waste Policy

This is the ninth biennial Solid Waste Policy Report to the Minnesota Legislature. The Waste Management Act (WMA) requires the commissioner of the Minnesota Pollution Control Agency (MPCA) to submit the report every two years to the Minnesota Legislature, Minn. Stat. § 115A.411 (2000). The purpose of this report, as specified in the WMA, is to:

- Summarize the current status of solid waste management in Minnesota.
- Evaluate the extent and effectiveness of programs in accomplishing state policies and goals.
- Identify issues requiring further research and action, and make recommendations for establishing or modifying the state's solid waste management policies and programs.

State waste management policy is based on the Waste Management Act, Minn. Stat. § 115A. Full versions of the state statutes, session laws, and rules can be found online on the Minnesota State Legislature web site: www.leg.state.mn.us/leg/statutes.htm.

Background

The goal of the WMA (Minn. Stat. § 115A.02b) is to foster an integrated waste management system in a manner appropriate to the characteristics of the waste stream, and thereby protect the environment and public health. The WMA ranks waste management practices in the following order of preference:

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.

Twenty-Five Years of the Waste Management Act

In 1980 at least nine out of every 10 tons of waste went straight to 140 landfills and nearly 200 illegal open dumps. These waste deposits were often located in low areas such as excavated gravel pits, and any pollutants passed easily into ground water or streams. It was not unusual for operators of open dumps to burn the waste to reduce the volume, emitting a persistent, noxious smoke. For these reasons, citizens organized to oppose indiscriminate waste burial and supported an integrated and sustainable approach to waste management. The result was passage of the Waste Management Act.

The intention of the act was to recover resources and not dispose of waste. In the ensuing years, the Legislature added more tools in the attempt to shift away from indiscriminate land disposal toward recycling and recovery of waste materials. At its core was the creation of the "waste hierarchy." The Waste Management Act relied on five mechanisms: state goals, state permitting, county implementation of locally written waste plans, modest financial assistance from the state, and a set of legal tools to manage and direct the flow of waste.

History of progress

In the initial 15 years following passage of the Waste Management Act, gains came each year as recycling opportunities multiplied and large processing plants went on line to extract energy from the combustion of garbage. A bi-partisan group of senators and representatives, known as the Legislative Commission on Waste Management, met each year to review progress and draft proposed law changes. (For additional detail on the history of Minnesota's Waste Management Act, see Appendix B.)

In 2005, Minnesotans have much to be proud of: we recycle 40 percent of the state's garbage, and burn 20 percent of our waste for energy. The number of land-disposal facilities has dropped dramatically from 144 to 22 mixed municipal solid waste (MSW) landfills. No open MSW dumps remain, except on private land in certain counties, with the agreement of commissioners in those counties. All MSW landfills must have liners, which allow the operators to collect contaminated liquids gathering at the bottom of the landfill, intercepting the liquid from seeping into our water supplies and sending it for treatment instead.

Four open MSW landfills are flaring landfill gas; three open landfills are producing electricity from landfill gas; and 21 of the closed landfills are flaring gas. Two non-MSW landfills are flaring gas also. Experiments are underway to accelerate the decomposition of waste disposed of in today's landfills, so that biologically active material will not remain for future generations to handle.

Finally, the state has set up an innovative Closed Landfill Program to provide perpetual care and remedial action for 110 old state-permitted landfills that closed before 2000. Those old landfills contain more than 40 million tons of waste deposited as long as six decades ago. To date, the first 10 years of the Closed Landfill Program cost the state $223 million. This program, along with the state's other solid waste efforts, is supported by a Solid Waste Management Tax that encourages waste generators to cut their garbage collection bills through recycling, source-separated composting, and reduction.

Because of its waste management efforts, Minnesota has avoided the need to use a great deal of land for burial of its waste: 2,000 acres of landfill, more than three square miles, has been avoided over 25 years. Over that time, Minnesota's waste-to-energy facilities reclaimed the energy equivalent of 12 million tons of coal. Minnesotans have recycled 27 million tons of paper, metal, plastic, and glass.

At a crossroads

While much progress has been made in the last 25 years, Minnesota faces challenges in the upcoming years.

Recycling: We are at a crossroads in recycling because recycling rates have leveled off at 41 percent, despite recent strong market prices for commodities and while 41 percent reflects the investments made into Minnesota's recycling infrastructure, much more needs to be done to recover the significant tonnages that continue to be disposed of each year. Significant advances in recycling will not be possible without a new approach and additional funding. Furthermore, state financial support for Waste Management Act activities has been eroding and some counties have begun cutting back their efforts on recycling, waste reduction, public education, and problem materials management.

Waste-to-energy: We are at a crossroads in the area of waste-to-energy because landfilling has taken up the excess tons of waste handled previously by a much larger waste-to-energy capacity. One waste-to-energy facility (Fergus Falls) will close in 2006 due to the loss of its steam customer, a state-run health facility. Two of the largest waste-to-energy facilities may close in 2007 and 2009 when county contracts expire. Waste-to-energy capacity is being lost at a time when there is a distinct possibility that our recent reliance on other states for cheap landfilling may not last. Neighboring states (Wisconsin, Iowa, and North Dakota) are increasing fees on landfilled waste, including all waste imported into their states, and landfill capacity in the Metropolitan Area is limited. This trend may place a heavy burden on Minnesota's landfill capacity.

Waste generation: Minnesota has been successful at diverting huge amounts of material from landfills, but has not succeeded in reducing the amount of trash being thrown away. Waste generation is rising. The long-held assumption that government and its licensed waste handlers can cope with whatever quantity of

materials being thrown away will in time be outdated, and in fact was seriously tested in Minnesota in the 1980s with the failure of the Metro Landfill siting process.

Looking to the future, Minnesota retains a set of tools for local governments as they plan and implement their local and regional solid waste systems. These tools include organized collection, contracts, districting, fee authority, and joint powers authority. Minnesota also has a strong integrated waste management infrastructure, and proposals are in place to expand this infrastructure. With today's analytical tools, Minnesota's policymakers will be able to more efficiently guide the waste management efforts of its public and private sectors.

The existing legislative task force charged with addressing electronic waste, landfill disposal capacity, and source-separated organics could be a valuable forum for addressing these crossroads issues.

Current Waste Generation and Funding

Summarizing Minnesota's annual solid waste and recycling data

The *Report on 2004 SCORE Programs* summarizes Minnesota's waste generation and recycling data for calendar year 2004. The report also provides details about waste-related efforts around the state, such as waste reduction activities, recycling, household hazardous waste and problem materials management, and the costs associated with these activities. While the *Report on SCORE Programs* is typically written each year as a stand-alone report, the data is used as a basis for many policy recommendations and research needs found in the *Solid Waste Policy Report.* See Appendix A for the full *Report on 2004 SCORE Programs*; for a stand-alone version, go to www.moea.state.mn.us/lc/score.cfm.

Waste generation

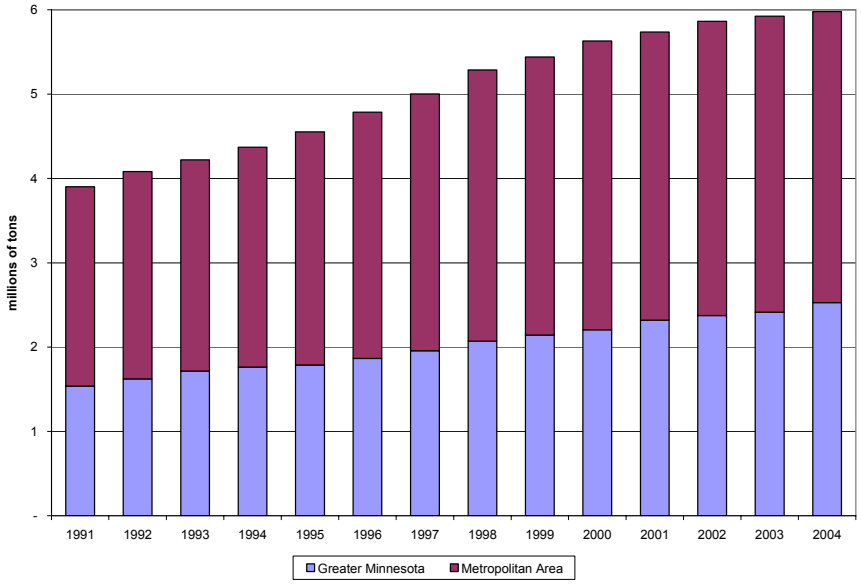
Mixed MSW is defined by statute as "garbage, refuse, and other solid waste from residential, commercial, industrial, and community activities that the generator of the waste aggregates for collection." Total generation of the state's municipal solid waste includes wastes recycled, discarded (including tons sent to disposal and resource recovery facilities), and tons disposed of on-site (burn barrels or rural dumps).

Total amount of MSW generation

Minnesota MSW generation totaled nearly 6 million tons in 2004 (Figure 1). Statewide, this represents an increase just shy of one percent over the previous year. Since 1991, MSW generation has grown on average by 3.4 percent per year. Over the past two years, however, total MSW generation has only grown by only 1 percent each year which is the lowest rate of growth recorded since records have been kept (1989).

The most significant growth occurred in the mid-1990s (4.4 percent per year from 1993 to 1998) decreasing to an average of 2.1 percent over the past six years. We attribute these fluctuations primarily to the economy which tends to mirror waste generation trends. (See Figure 2.)

Figure 1: Minnesota MSW generation



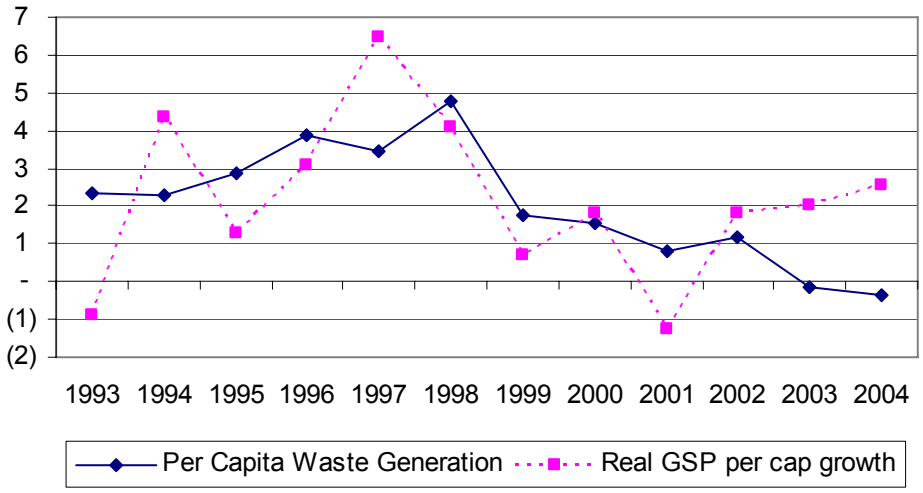
Overall, 58 percent came from counties in the seven-county Metropolitan Area and 42 percent of the state's MSW generation came from counties in Greater Minnesota.

Per-capita MSW generation

Per-capita MSW generation is preferable to overall MSW generation as a key index when trying to ascertain trends involving consumption and waste generation. In 2003, the per-capita rate was 1.165 tons/person/year; showing a very slight decline from the previous year of 0.03 percent. In 2004, the per-capita rate was 1.162 tons, or a decrease of 0.2 percent from 2003. Although this decrease may seem minimal, it becomes significant when put into context with the past trend—over the past 15 plus years of SCORE data collection, per-capita MSW growth has increased, on average, by 2.2 percent annually and has never shown a decline until 2003 and 2004.

Though Minnesota has shown steady growth in total MSW generation since 1989, this growth has moderated, likely as a direct result of a slumping economy. As the economy improves, MSW generation should again increase accordingly. Historically, there has been a strong correlation between gross state product (GSP) and per-capita waste generation. However, this correlation seems to have weakened in the last two years (see Figure 2). There may be a more reliable economic indicator, and the MPCA will pursue this question.

Figure 2: Economy and waste generation



County and state funding

County funding

Over the last 10 years, overall SCORE expenditures have increased by 46 percent. These increases have been funded entirely at the local level by counties and cities through use of general revenue, special assessments, or other sources of revenue.

Each county is required to match the funding from the Legislature with a local contribution of at least 25 percent. In 2004, counties exceeded this match by 11 times, spending over $38 million of county funds toward recycling, waste reduction, household hazardous waste (HHW), and related activities. This investment is in addition to undocumented dollars spent by other local units of government such as cities and townships on programs such as recycling, household hazardous waste, and waste education.

Figure 3 indicates this trend and shows the continued reliance on local dollars to fund reduction, recycling, HHW, and other SCORE programs.

State funding: SCORE pass-through dollars

Since the inception of the SCORE program in 1989, state tax revenue has provided a funding source for recycling and waste reduction programs (see Figure 3). Money from the state is passed on to the county level in the form of annual block grants for source reduction, recycling, market development, management of problem materials, waste education, litter prevention, technical assistance to ensure proper solid waste management, and waste processing (Minn. Stat. § 115A.55). The state disbursed only $12.5 million in SCORE block grants to eligible counties in calendar year 2004.

Despite challenges to get recycling to the next level, Minnesota boasts one of the best recycling rates in the nation due to the high level of participation by our citizens and businesses, along with comprehensive recycling programs at the city and county levels—programs funded by local government and state revenues. In 2004, Minnesota counties spent over $51 million for SCORE-related programs, an increase of more than $2 million, or 4 percent, from 2003. Continued funding commitments from the Legislature and significant investments at the local level provide the funding for these programs.

Figure 3: County and state expenditures for SCORE programs

Part 3: Policy Recommendations

Minnesota's waste system not only benefits our environment, but it also positively affects our energy supplies and our economy. Pending further research, policymakers should focus on three issues for the next biennium. Each issue includes a discussion of energy benefits, as well as benefits to Minnesota's economy and environment.

For the past 25 years, the state has promoted reduction, reuse, and recycling (the 3Rs). Close attention to energy, economy, and the environment (the 3Es) will move the state beyond the 3Rs to reach a higher level of waste diversion. Further, the 3Es will allow policymakers to identify the point of diminishing returns as we pursue higher levels of waste diversion.

Waste-to-Energy

The state should preserve and increase waste-to-energy capacity to conserve landfill capacity.

Currently, 20 percent of Minnesota's mixed solid waste is burned for energy. Seven plants burn garbage for energy (in addition to the La Crosse, Wisconsin, facility that managed approximately 10,000 tons of Minnesota waste in 2004), two plants grind waste into refuse-derived fuel (RDF), and there are three RDF combustors. Over $500 million has been invested in waste-to-energy capacity in Minnesota. After two decades of operation, these facilities are mostly paid for and have been the subject of much refinement. These facilities help our state avoid dependency on landfills and lengthen the life of existing landfills in Minnesota. After accounting for unburnable materials and ash, these waste-to-energy facilities reduce MSW landfilling needs by at least 80 percent.

Energy production

Waste-to-energy facilities processing Minnesota waste manage 3,800 tons of municipal waste per day (1.2 million tons per year) for industrial heat and for electrical generation. This represents a substantial amount of energy value, roughly equivalent to burning 2,000 tons per day of western coal. Since the passage of the Waste Management Act, the total energy reclaimed is equivalent to 12 million tons of coal. These facilities produce approximately 100,000 megawatts of electrical energy, or enough energy to power 98,000 homes. Waste-to-energy is a vital part of the energy infrastructure in those communities where these facilities are located.

Economic development

Waste-to-energy facilities employ approximately 300 people in Minnesota and have avoided more than 1,000 acres of landfill space, not including buffer zones, buildings, and adjacent properties. Revenue generated from these facilities stay in Minnesota. Steam or electricity generated by these facilities is used by numerous adjacent businesses and has served as an anchor for businesses located adjacent to these facilities.

Environmental benefits

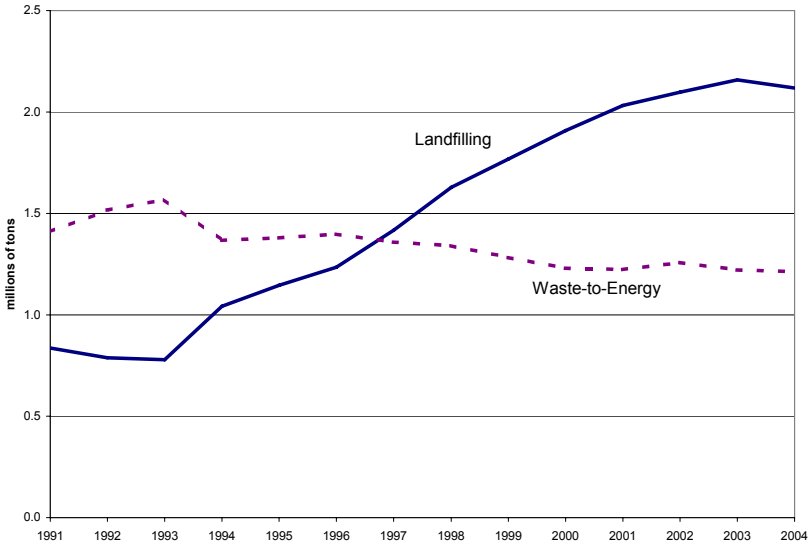
Combustion renders municipal waste into a much less reactive form, chemically and biologically. By solving the problem now, we are not leaving the problem for future generations.

Status of existing capacity

The future of existing capacity is an immediate concern. Even though the existing facilities are all operating at nearly full capacity, no waste-to-energy capacity has been added in Minnesota for over 10 years. In fact, total waste-to-energy capacity has dropped. Most recently, the waste-to-energy facility in Fergus Falls will shut down in 2006. In 2004, tons processed as waste-to-energy declined by 1 percent.

Figure 4 clearly shows that 10 years ago landfilling replaced processing as the dominant waste disposal method, in spite o the waste management hierarchy. The time has come to stop giving up waste-to-energy capacity and reverse this trend. Replacing the existing capacity with new plants would be very expensive. As an example, replacing the two refuse-derived-fuel plants serving the Metro Area would cost $500 million.

Figure 4: Waste-to-Energy and Landfilling



The pressing issue over the next few years is whether Minnesota's waste-to-energy will rise or fall. Operations contracts for NRG Newport, which serves Ramsey and Washington Counties, will expire in 2007, and NRG Elk River, which serves Hennepin, Anoka, Stearns, Benton, and Sherburne Counties, will expire in 2009.Though language in support of waste processing can be found in the county master plans, none of the participating counties has renewed their agreements with NRG. Both NRG refuse-derived fuel production plants and their associated three RDF combustors/power generation facilities could cease handling waste permanently, if contracts are not renewed. Other factors influencing the closure of these facilities include repeated requests from waste haulers for the processing plants to reduce the tipping fee, as it is less expensive to haul waste to landfills. The Metropolitan Area counties have stated that current business plans of the owner/operator of these facilities may not support continued waste processing.

Adding waste-to-energy capacity

The 2006 legislative session will see bonding requests for additional waste-to-energy projects, which could expand the state's processing capacity. Minnesota is currently at a 21 percent organics/waste-to-energy conversion rate. This proposed increased capacity will be vital to reach the MPCA's strategic plan goal of 35 percent conversion rate. Success is likely to require some approach that depends on waste generators to share in these costs through their waste bills.

There are two distinct challenges Minnesota faces that will require different policies. One is the full utilization of existing capacity. This capacity is already paid for so it makes sense to use it. The second challenge is to add new capacity to take in processible waste that could not be handled by existing waste-to-energy facilities. Action on both of these fronts will be needed to meet our new waste-to-energy goals.

Figure 5 illustrates the processing capacity that will need to be added each year, if we are to meet the MPCA's strategic plan goals.

Figure 5: Additional Waste-to-Energy Capacity Needs

Current level	1,400,000
2006	300,000
2007	150,000
2008	140,000
2009	150,000
2010	150,000
New tons total	890,000
Grand total	**2,290,000**

*See Appendix B for derivation.

Policy recommendations

Waste-to-energy can be a significant contributor to Minnesota's energy portfolio, helping the state become more energy self-sufficient. The additional capacity needed will cost approximately $500 million.

- The state needs, a new financial strategy, in addition to the Capital Assistance Program,, to support the construction of new and expanded waste-to-energy facilities.
- The MPCA should work with counties and local units of government to encourage the use of the full range of tools available in order to increase waste-to-energy processing.

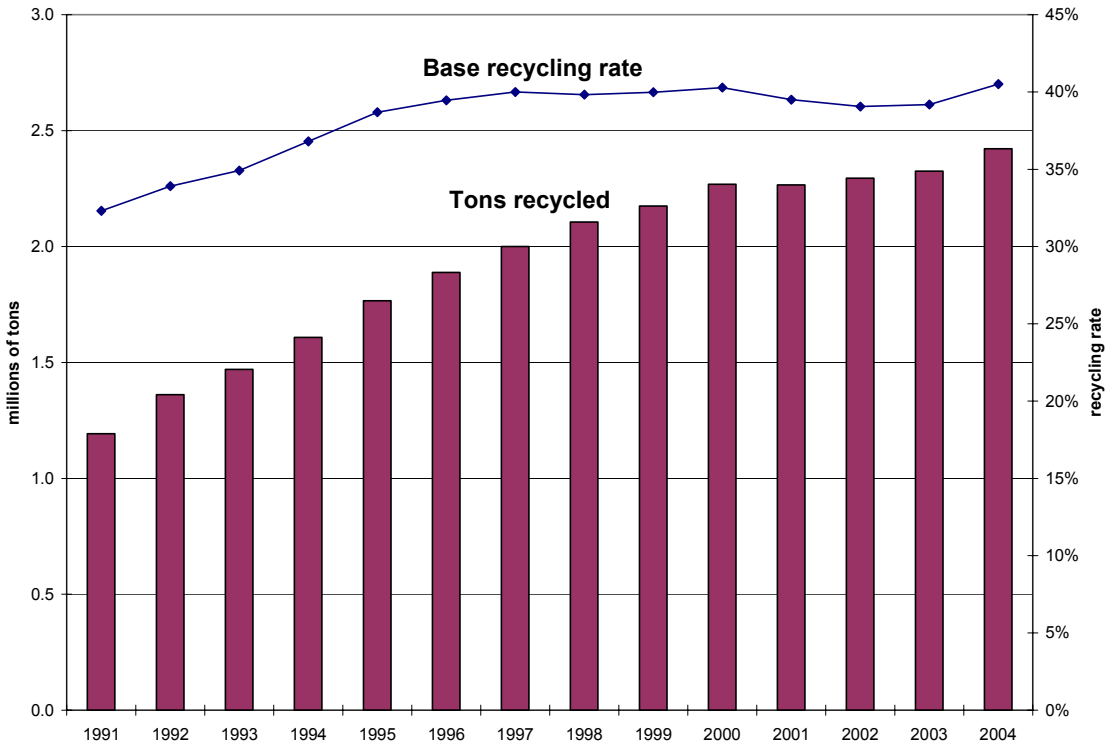
Link to MPCA strategic plan: "By January 1, 2007, a…27 percent organics/waste-to-energy rate is achieved. By January 1, 2011, a…35 percent organics/waste-to-energy rate is achieved."

Recyclables and Organics

The state should recover more recyclables and organics.

While Minnesota recycled 41 percent of its MSW in 2004, Minnesotans continue to throw away valuable resources that could be recycled or reused. In order to maximize the economic, environmental, and energy-related benefits, as well as preserve existing landfill capacity in Minnesota, we need to recover more of the materials that are currently going to disposal and waste-to-energy facilities.

Figure 6: Minnesota's recycling progress (tons and recycling rates)



A waste sort conducted in 1999 revealed that 34 percent of the waste currently going to landfills and waste-to-energy facilities is paper (of which 24.4% is potentially usable in a recycling process), 26 percent is recoverable organic materials, 11 percent is recyclable plastic, 5 percent is recyclable metals, and 3 percent is recyclable glass.

With organic waste, the state's approach to separate yard waste management (i.e., yard waste bans, local composting sites, home composting bins, and mulching mowers) has succeeded in keeping out a large volume of organic material from landfills. Future organics management should be based on source separation from non-residential sources. Organic material other than yard waste, however, has proven to be more difficult and costly to manage. As a practical matter, the largest volume of organic material will be recovered from non-residential sectors in metropolitan areas of the state. Rural counties have expressed concerns about mandates from the state to separate food waste for composting.

The Solid Waste Management Coordinating Board (SWMCB) prepared a Commercial Organic Waste Management Assessment in 2004, which identified more than 100,000 tons of potential available capacity to prevent and recover organic waste in the Metro Area. The greatest opportunities for additional recovery were in food-to-livestock, livestock feed manufacturing, and source-separated organic composting.

Energy savings

Clearly, recycling is important for Minnesota, and all three indicators—economics, environment, and energy—are a part of the equation. In terms of energy benefits, the current amount of energy saved by using recycled materials in the manufacturing process is enough to power 354,000 homes (see Appendix D).

Economic value

Recycling industries make a substantial contribution to the state's economy. Minnesota's recycling manufacturers contribute an estimated $2.98 billion to the state's economy, supporting nearly 9,000 direct jobs and nearly 20,000 jobs in total (see Appendix E). Further information is available in the Minnesota Office of Environmental Assistance 2004 Biennial Report to the Legislature, January 2005, available at: http://www.moea.state.mn.us/publications/biennial2005.pdf.

Minnesota has developed strong local markets for the core recycled materials such as plastic, newspaper, cardboard, glass, and steel. In most cases, Minnesota has become a net importer of recycled materials and has some of the most well-rounded markets in the nation. Most states do not have a complete array of local markets available to them. For example, Master Mark Plastics employs 100 people and uses 50 million pounds of HDPE (milk jugs and detergent bottles) a year to make a plastic composite lumber for decking. The amount of material needed by this company and others continues to grow every year. Rock Tenn uses 1,000 tons of paper per day, and the loss of just this one company would reduce the available local market capacity by 45 percent and result in the loss of 500 to 600 jobs. This is just one reason why it is important to support the local markets with material collected locally.

Energy saved

*If the additional 1.1 million tons of material available for recovery were recycled in the state, it would result in additional energy savings of **25 trillion BTUs**—enough energy to power an additional 238,000 homes. Energy savings should be looked at as savings for the region, since the recycled materials are not only used in Minnesota but also in surrounding states and Canada.*

Money earned

*The total value of the additional materials available for recovery is **$167 million** at current market prices as of fourth quarter 2005 (see Appendix F). The total market value potential of additional recoverable material (potentially an additional 905,000 tons) available for source-separated composting is **$12 million** (see Appendix G).*

Greenhouse gases reduced

If the additional 1.1 million tons available for recycling were recycled, there would be an additional reduction of 1.1 million tons of greenhouse gas emissions for a total reduction of 2.6 million tons of greenhouse gas emissions—the equivalent of taking 800,000 cars off the road per year.

Environmental benefits

Recycling in Minnesota reduces air and water pollution. The National Recycling Coalition's environmental benefits calculator estimates environmental benefits based on the tons of specified materials recycled, landfilled, and incinerated in a particular geographic region.

In 2004, recycling reduced greenhouse gas emissions by 1.6 million tons (see Appendix H). If that recycled material had been landfilled, the reduced greenhouse gas emission would have been only 92,000 tons. Waterborne wastes were also reduced by 6,700 tons.

Figure 7 illustrates the additional organic and recycling capacity needed each year, if we are to meet the MPCA's strategic plan goals.

Figure 7: Additional Organic and Recycling Capacity Needs

	Organics	Recycling
Current level	30,000	2,440,000
2006	55,000	270,000
2007	35,000	140,000
2008	35,000	140,000
2009	35,000	140,000
2010	40,000	150,000
New tons total	200,000	840,000
Grand total	**230,000**	**3,280,000**

Policy recommendations

- Use some of the growth in the Solid Waste Management Tax proceeds going into the environmental fund to fund incentive-based programs (i.e., waste reduction, source-separated organics, and innovative recycling efforts). Evaluate additional economic incentives, including county collected fees.
- Gather data on non-residential waste using a commercial/industrial waste sort and identify ways to increase significant recovery of recyclables and organics.

Links to strategic plan: "By January 1, 2007, a statewide 43 percent recycling rate …….is achieved. By January 1, 2011, a 50 percent recycling rate …….is achieved."

"By January 1, 2014, increase the number of value-added recycling manufacturing jobs to 9,600 and gross economic activity from this sector by 20 percent over 2000 levels."

Residential Burning and On-Site Burial of Waste

Citizens should stop residential burning and on-site burial of waste.

Open burning and burial of waste is a dated practice that generates significant pollution, which poses very real health and environmental risks to the citizens of Minnesota. It is also something that can be greatly reduced or virtually eliminated through effective education, infrastructure development, incentives, and enforcement efforts.

A 2005 study of burn barrel use in rural Minnesota found that 45 percent of rural residents still burn their household wastes in backyard burn barrels, fire pits, open spaces, and stoves. Some regions of the state are as high as 64 percent. This equates to nearly 100,000 tons of waste burned each year in rural Minnesota and does not include additional estimates for burning and dumping that occurs in smaller townships, suburbs, cabins, and semi-rural areas not covered by this study. Estimates including those areas could put the total as high as 250,000 tons. Based on EPA's research on burn barrel emissions, this means Minnesota currently produces 50 to 180 pounds of dioxin per year from burn barrel use alone—the equivalent dioxin output of *thousands* of full-scale municipal waste burners burning 200 tons of waste per day. This is particularly significant because the EPA considers open burning to be the largest source of uncontrolled airborne dioxin emissions in the United States and estimates that one burn barrel will produce as much dioxin as a full-scale municipal waste incinerator burning 200 tons per day.

Backyard burning creates smoke that contains many different toxic substances that are known or suspected carcinogens, including heavy metals, and produces volatile organic compounds (VOCs) and dioxin. The smoke is an irritant that affects people with sensitive respiratory systems (asthma and emphysema), as well as children and the elderly. Backyard burning can increase the risk of heart disease and cause rashes, nausea, and headaches. Among the health risks posed by backyard burning, dioxin, however, is the main concern and a key driver for current backyard burning reduction efforts.

Current reduction and education programs are achieving some results, but barriers still exist at the local and state levels. In many parts of the state, farmers are legally allowed to burn or bury their wastes on-site which opens the door to other rural residents to burn or bury illegally. This makes state and local compliance efforts difficult. In fact, according to the 2005 survey, nearly 70 percent of those who burn their household wastes are not farmers. Upcoming burn barrel reduction efforts include partnering with the agriculture community, working with DNR's Firewise grant program, which will distribute $100,000 in grant aid for county burn barrel buy-back programs, and undertaking a statewide reduction campaign in partnership with these and other stakeholders. For more information on state and local burn barrel reduction efforts and resources, go to www.moea.state.mn.us/reduce/burnbarrel.cfm.

Energy recovery

To the extent that the newly captured waste goes to waste-to-energy facilities, reducing residential burning will improve energy recovery.

Economic effects

Reducing residential burning will increase costs in the short term, but this will be offset not only by avoiding the long-term cost of cleanups of rural dump sites, but by possible avoided healthcare costs. Self-hauling can reduce out-of-pocket costs to rural residents.

Environmental benefits

By reducing residential burning and on-site burial, we will avoid depositing dioxin downwind of burn barrels and associated bioaccumulation in tissue, and avoid land and ground water contamination from on-site dumps.

Policy recommendations

- The state should set a goal to eliminate open burning and burying waste by 2010.
- The MPCA will spend the next four years working with local units of government to reduce open burning and burial of waste (i.e., education, burn barrel buy-back programs and other incentives, rural canister sites and other infrastructure, and enforcement tools).
- By December 1, 2007, report to the Legislature regarding the effectiveness of state and local burn barrel reduction efforts under current state law.

Link to MPCA strategic plan: "By July 1, 2008, reduce emission of dioxins and furans from open burning (e.g., burn barrels and wood-burning stoves) sources by 50 percent from 2002 levels."

Part 4: Evaluation, Research Needs, and Related Policies

The following additional policies, priorities, and research needs are listed in order of the waste management hierarchy. The narrative also includes stakeholder evaluations, based on public meetings that were held throughout the state to gain input on the policy report. Meeting participants "graded" how the state was doing on implementing state policy and also offered opinions on how much effort the state and local governments should spend on that aspect, going forward. The average grade (A, B, C, D, or F) and effort (3 highest, 1 lowest) is listed.

Reduction and Reuse

Preventing waste at its source is at the top of the waste management hierarchy, because it is the most beneficial economic and environmental waste management strategy. Waste that is prevented at its source does not need to be managed or recycled, which means fewer costs and less pollution from transporting, recycling, processing, or landfilling wastes.

Stakeholder evaluation: Weighted grade: C+; suggested state and local effort: 2.7 out of 3.

Recommendation

- Recipients of capital assistance funds should agree to devote a specific effort to promote waste reduction as a part of their integrated waste management system.

Information needed

- Research specific products to determine non-renewable resource consumption and waste reduction opportunities.
- Evaluate the outcomes from using resource management contracts.

Priority actions

- Leverage resources toward specific sectors targeted for waste reduction activities (e.g., restaurants, grocery stores, etc.).
- Include recommendations for waste and toxicity reduction in county solid waste planning activities.

Link to MCPA strategic plan: "By January 1, 2007, growth in municipal solid waste generation does not exceed the population growth rate." "By January 1, 2008, identify the top five discarded materials that adversely deplete nonrenewable resources and propose conservation actions."

Recycling and Organics Diversion

For more information on recommended policies, see "Recover more Recyclables and Organics" on page 10. For additional background information, see "Report on 2004 SCORE Programs" and recycling summary data in Appendix A.)

Stakeholder evaluation (recycling): Weighted grade: B; suggested state and local effort: 2.4 out of 3.

Stakeholder evaluation (organics): Weighted grade: D+ ; suggested state and local effort: 2.1 out of 3.

Recommendations

See page 10 for policy recommendations.

Information needed

- Conduct an economic analysis of how much and where money moves, based on the different waste management techniques.
- Evaluate how Ramsey and Washington Counties Environmental Charge (CEC), particularly in the commercial sector, influenced waste generation and disposal behavior.
- Evaluate strategies needed to reach the strategic plan goal, going from 0.5 percent of non-yard-waste discards to 4 percent by 2010, using recommendations made by the Food Waste Diversion Team and other sources. (See Appendix I.)
- Determine through a life-cycle analysis, potential benefits of compost versus fertilizer in various applications.
- With the aid of local governments, MPCA staff will map out an infrastructure plan to meet the MPCA's strategic plan recycling goals.
- The commodity value of recoverable materials is approximately $167 million. Evaluate the cost of separation to arrive at a net value of the materials.

Priority actions

- Perform a statewide composition study that focuses on non-residential solid waste (i.e., commercial, institutional, and industrial solid waste and construction/demolition debris) to identify the opportunities to increase recycling and recovery of resources.

- Increase recovery of recyclables and organic waste from public entities and residents by conducting a public education campaign after sufficient capacity to manage organics is in place.
- Single stream recycling has become significant in today's recycling collection. It produces higher residuals, particularly glass. Conduct a study to determine the feasibility of constructing an optical-sorting facility in the state (size, location, economic analysis, etc.).
- Research opportunities for developing additional cooperative marketing groups throughout the state, using the Southeast Minnesota Recycling Exchange as a model.
- Develop and implement an aggressive education campaign about opportunities and how-tos for organic waste management.
- Research the funding needs for private or public sector construction of additional compost facilities.
- Require public entities to use compost materials in construction projects.
- Encourage businesses and residents to use a biodegradable plastic bag for collection of yard waste and source-separated organics.

Links to strategic plan: "By January 1, 2007, a statewide 43 percent recycling rate …….is achieved. By January 1, 2011, a 50 percent recycling rate …….is achieved."

"By January 1, 2014, increase the number of value-added recycling manufacturing jobs to 9,600 and gross economic activity from this sector by 20 percent over 2000 levels".

Resource Recovery

For more information, see "Waste-to-Energy" on page 8. For additional background information, see *Report on 2004 SCORE Programs* in Appendix A.

Stakeholder evaluation: Weighted grade: C; suggested state and local effort: 2.2 out of 3.

Recommendations

See page 8 for policy recommendations.

Information needed

- Research the cause and determine strategies to reduce waste-to-energy and other processing plant downtime.
- Research the energy recovery potential of bioreactors, using pilots as proposed in Minnesota, versus waste-to-energy plants.
- With the aid of local governments, MPCA staff will inventory all available capacity and then map out an infrastructure plan to provide the additional capacity needed to meet the MPCA strategic plan waste-to-energy goals.

Priority actions

- Continue work to assist local projects in developing resource recovery capacity.

Link to MCPA strategic plan: "By January 1, 2007, a…27 percent organics/waste-to-energy rate is achieved. By January 1, 2011, a…35 percent organics/waste-to-energy rate is achieved."

Landfilling

Minnesota's 2.1 million tons of solid waste go to 33 municipal solid waste (MSW) landfills. Eleven out-of-state landfills accepted 840,000 tons, or 36 percent, of all Minnesota solid waste going to MSW landfills, an increase of 20 percent from the previous year. An additional one million tons of industrial and construction/demolition debris were disposed of at the MSW landfills. The 16 county-owned landfills and one small private landfill accepted 28 percent of the Minnesota solid waste going to Minnesota MSW landfills. The four large private Minnesota landfills accepted 72 percent of Minnesota solid waste going to in-state MSW landfills.

The seven-county Metropolitan Area landfill disposal need in 2004 was served by eight private landfills, four in Minnesota, three in Wisconsin, and one in Iowa. The four private Minnesota landfills serving the Metro Area and all or portions of 14 greater Minnesota counties accepted 1,392,000 tons of MSW.

At current landfill use rates, within 10 to 12 years, two of the Metro Area landfills, the Burnsville and Pine Bend landfills, will be filled. The Burnsville landfill has no future expansion potential and the Pine Bend landfill potentially has expansion options. Based on projected MSW growth, assuming the percentage of waste going to out-of-state landfills remains constant, the total existing and proposed new landfill capacity will be exhausted in 18 years. Some believe that it may not be possible to site an entirely new landfill in Minnesota. If the two Metro Area refuse-derived fuel waste-to-energy facilities were to close and the waste was diverted to metro landfills only, all existing and new proposed metro landfill capacity will be filled in approximately 14 to 15 years.

Minnesota landfills generate approximately 20 million gallons of landfill leachate annually that is either recirculated back into the landfill, land spread, or taken to wastewater treatment plants. Further, landfills generate substantial quantities of methane gas annually, some of which is lost to the atmosphere. Four landfills (Pine Bend, Burnsville, Elk River, and Flying Cloud) collect the methane for generation of electric power, generating 24.2 megawatts of electricity.

Minnesota has taken ownership of 109 closed landfills, has spent $95 million in capital landfill closure costs for remediation, engineering design, and construction, and spends $4 to $5 million annually for perpetual care and maintenance activities. Owners of operating landfills are responsible for perpetual landfill care but must provide funding for only 20 years of post-closure care and a contingency action cleanup fund for a 30-year period.

Stakeholder evaluation: Weighted grade: C for landfills with and without energy recovery; suggested state and local effort: 2.1 out of 3 for landfills with energy recovery, and 1.4 out of 3 for landfills without energy recovery).

Information needed

- Research potential effects on landfill capacity and methane production and recovery if Minnesota loses 2,500 tons per day of RDF processing capacity.
- Determine the cause and strategies to reduce landfill gas-to-energy downtime.
- Develop information on the energy balance and efficiency of pilot landfill bioreactor projects, compared to reuse, recycling, and closed vessel bioreactors.
- Research practical, alternative energy recovery methods for methane from medium-sized landfills.

Priority actions

Carry out one or more pilot project to study bioreactor performance.

Link to strategic plan: "By January 1, 2007, 85 percent of available gas and 85 percent of leachate from closed landfills are managed."

Other Current Issues

Household hazardous waste

Each of Minnesota's 87 counties has a household hazardous waste (HHW) program. Most counties have permanent staff and facilities that accept HHW year round; several counties offer only one collection event each year. In 2004, state and local government spent more than $13,250,000 on HHW programs, which includes costs for public education, staff, training, facilities, equipment, and waste management.

Currently, counties report statistics to the state, but more work is needed on the statewide database before waste quantity, participation, and program cost statistics can be produced. In 2004, the six metro counties collected 6,275 tons of HHW, including latex paint and electronics. This is up from 3,550 tons in 1998. Also in 2004, approximately 62,000 more citizens brought waste to metropolitan HHW facilities than did in 1998.In addition, many HHW programs accept up to 10 gallons of hazardous waste from businesses that do not generate more than 10 gallons per year. Many HHW programs also collect waste from businesses that generate less than 225 pounds of hazardous waste per month. Fees are collected by the programs to cover administrative and waste management costs. Participation by businesses in collection programs has increased dramatically over the past five years. Small business waste collection programs are available in more than 60 counties in Minnesota.

Recommendation: None at this time.

Information needed

- Research opportunities to work with the private industry (manufacturers, landfill owners) on cost sharing.
- Conduct cost/benefit analysis on materials coming to facilities. Study whether there would be advantages or disadvantages to stopping acceptance of some materials.

Priority actions: Develop statewide database to collect HHW information.

Link to strategic plan: "By January 1, 2009, consumers produce 15 percent less household hazardous waste than in 2005."

Waste electronics

In 2003, the Minnesota Legislature enacted a disposal ban for cathode-ray-tube-containing products—televisions and computer monitors—in 2003. The ban is now slated for implementation on July 1, 2006. The agency held four meetings with manufacturers and retailers from July through October 2004. In addition, the agency sponsored two public forums for interested parties such as representatives from local government, waste haulers, environmental advocacy organizations, trade associations, and others. Given the lack of agreement among the manufacturers of electronic products on the most efficient and equitable funding mechanism, the majority of the consultation process was devoted to an analysis and discussion of potential financing options to support the collection and recycling of old electronic products. Despite the attention devoted to the issue during the session, the 2005 Legislature was unable to come to an agreement regarding a statewide program for waste electronics. It is expected that legislation to implement a program will be again considered in 2006.

Recommendation: If the Legislature enacts a program to manage waste electronics, the attributes of the system should be consistent with the findings from the stakeholder process (see Appendix L).

Information needed

Develop better county estimates on anticipated volumes and cost to manage electronic waste.

Priority actions: None at this time.

Link to strategic plan: "By January 1, 2010, 500 tons of lead per year are removed from the disposal system."

Appendix A

Report on 2004 SCORE Programs

A Summary of Waste Management in Minnesota

February 2006

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The total cost of preparing the Report on 2004 SCORE Programs *was $10,000, including staff time, writing, editing, and printing.*

The MPCA is reducing printing and mailing costs by using the Internet to distribute reports and information to a wider audience. For additional information on recycling, waste prevention, and waste management, check out the SCORE web site: www.moea.state.mn.us/score/

This report was printed on recycled paper manufactured without the use of elemental chlorine (cover: 30% post-consumer; body: 100% post-consumer).

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Introduction

How much garbage do we create in Minnesota every year? How much does the average person generate? Where does it end up and how much of it gets recycled? How much do we recycle each year and why do we recycle in the first place? These are all excellent questions and there are many more that come up every time we explore the timeless issue of what do we do with the waste we create.

To help answer these questions, we gather data from all 87 counties in the state. By comparing the most current information about waste generation, recycling, household hazardous waste, landfilling, processing, waste reduction, and funding to past years' data, we can see emerging trends that help us improve our programs, policies, and outreach efforts. By analyzing the data, we can also quantify recycling's impact on our environment (the amount of resources conserved) and on our economy (the businesses and jobs supported by Minnesota's value-added recycling manufacturing industry, as well as the resulting direct and indirect tax revenues).

The *Report on 2004 SCORE Programs* uses data collected during calendar year (CY) 2004, the most current data set available; CY2005 data are not due to the MPCA until March 31, 2006. These 2004 data were further used to develop the *2005 Solid Waste Policy Report,* which makes policy and program recommendations to the Legislature every other year: www.moea.state.mn.us/policy/policy2005.cfm.

The SCORE program

Minnesota's statewide recycling efforts began in earnest in 1989, when the Legislature adopted comprehensive legislation based on the recommendations of the *Governor's Select Committee on Recycling and the Environment*. This set of laws, commonly referred to as SCORE, initiated a source of state funding for programs for recycling, as well as waste reduction and the improved management of household hazardous wastes and problem materials. The legislation, SCORE grant dollars, and revenue from counties and local government provide the basis for programs that are long-term and flexible within the scope of waste reduction, recycling, and problem materials management.

The SCORE Report

Data for this *Report on 2004 SCORE Programs* were collected from Minnesota's 87 counties through the MPCA's annual SCORE survey. The key contributors are the county solid waste staff members who provide the details on local programs for solid waste management and recycling.

The MPCA uses the information from the survey to calculate recycling rates and the cost of managing waste and recycling, as well as identify trends in waste generation and disposal. This is what drives our planning efforts, policy direction, and assistance efforts.

Although SCORE data were first collected in fiscal year 1989/1990, the MPCA uses calendar year 1991 as a baseline for trend analysis in the SCORE report. These data are considered to be the most accurate and comparable with the most recent SCORE surveys.

MSW Generation in Minnesota

Though Minnesota has generally shown a steady growth in municipal solid waste (MSW) since 1989, reflected in both the total amount of MSW generated and in the per-capita figures, the rate of growth has declined over the past two years.

Mixed MSW is defined by statute as "garbage, refuse, and other solid waste from residential, commercial, industrial, and community activities that the generator of the waste aggregates for collection." It includes

common materials found in household and commercial garbage such as packaging materials, containers, food discards, and other compostable materials, plastic, paper, etc. Municipal solid waste 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 (Minn. Stat. § 115A.03, subd. 21).

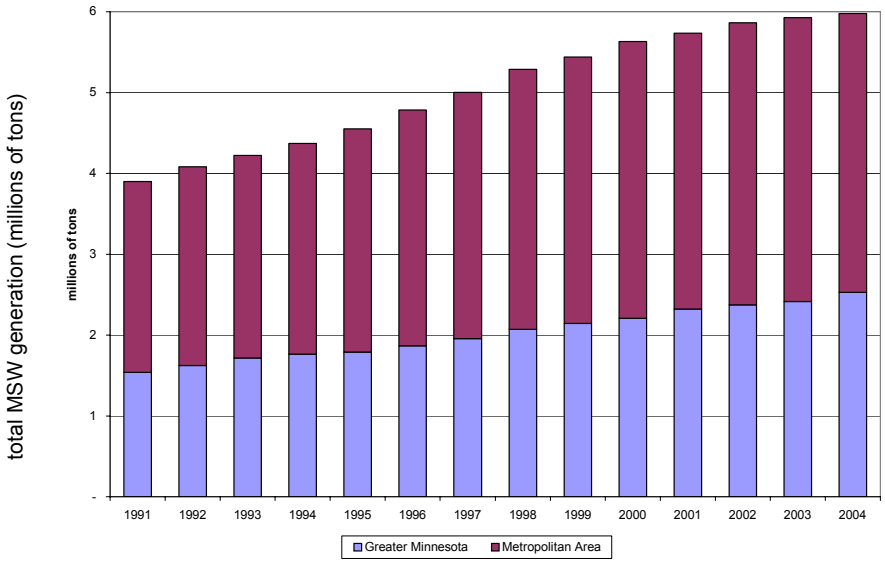
Total generation of the state's municipal solid waste includes wastes recycled, discarded (including tons sent to disposal and resource recovery facilities), and tons disposed of on-site (burn barrels or rural dumps).

Totals and trends

Minnesota MSW generation totaled nearly 6 million tons in 2004. Statewide, this represents an increase just shy of one percent over the previous year. Since 1991, MSW generation has grown on average by 3.4 percent per year. Over the past two years, however, total MSW generation has only grown by only one percent annually—the lowest rates of growth recorded since records have been kept (1989). The most significant growth occurred in the mid-1990s (4.4 percent per year from 1993-1998), decreasing to an average of 2.1 percent over the past six years. We attribute these fluctuations primarily to the economy, which tends to mirror waste generation trends. For more information on this correlation, see the *2005 Solid Waste Policy Report*: www.moea.state.mn.us/policy/policy2005.cfm.

With 46 percent of Minnesota's population, the seven-county Metropolitan Area generates 58 percent of the state's waste. The 80 counties of Greater Minnesota report the balance, 42 percent of the waste.

Figure 1: Minnesota MSW generation



Total generation: 5,979,200 tons

Waste generation increased by less than one percent from 2003 (0.9%), the smallest increase in 15 years of SCORE reporting.

	1991	1998	1999	2000	2001	2002	2003	2004	Changes 2003-04
Greater Minnesota	1.54	2.07	2.14	2.21	2.32	2.37	2.41	2.53	4.8%
Metropolitan Area	2.37	3.22	3.30	3.42	3.42	3.49	3.51	3.45	(1.7%)
Minnesota	3.90	5.29	5.44	5.63	5.74	5.86	5.92	5.98	0.9%

Figures in millions of tons. Decreases indicated by parentheses (x%).

Per-capita MSW generation

Per-capita MSW generation is a preferable measure to overall MSW generation when trying to ascertain trends involving individual consumption and waste generation. In 2003, the per-capita rate was 1.165 tons/person/-year; showing a very slight 0.03 percent decline from 2002. This decline was repeated in 2004, with a per-capita rate of 1.162 tons, a year-on-year decrease of 0.2 percent. These decreases may seem minimal, but they are significant when put into context with the historical trend—over 15 years of SCORE data collection, per-capita MSW growth has increased by an average of 2.2 percent annually, and had never shown a decline until 2003 and 2004. We will be watching to determine how much of an impact an improving economy has on per-capita MSW generation, and what role ongoing educational programs and initiatives for waste reduction play in reducing waste generation rates for individuals and businesses.

Recycling and Waste Reduction

The heart of SCORE is Minnesota's recycling efforts, and our city and county programs are among the nation's most successful. In 2004, Minnesota's recycling rate (including credits for yard waste recycling and waste reduction efforts) increased to 48 percent, an increase of 1.5 percentage points from 2003. The statewide recycling rate has increased by 12 percentage points since 1991. While the latest edition of *BioCycle* magazine's annual survey won't be published until spring 2006, their last survey lists Minnesota among the top ten states in the nation, and the best among surrounding states.

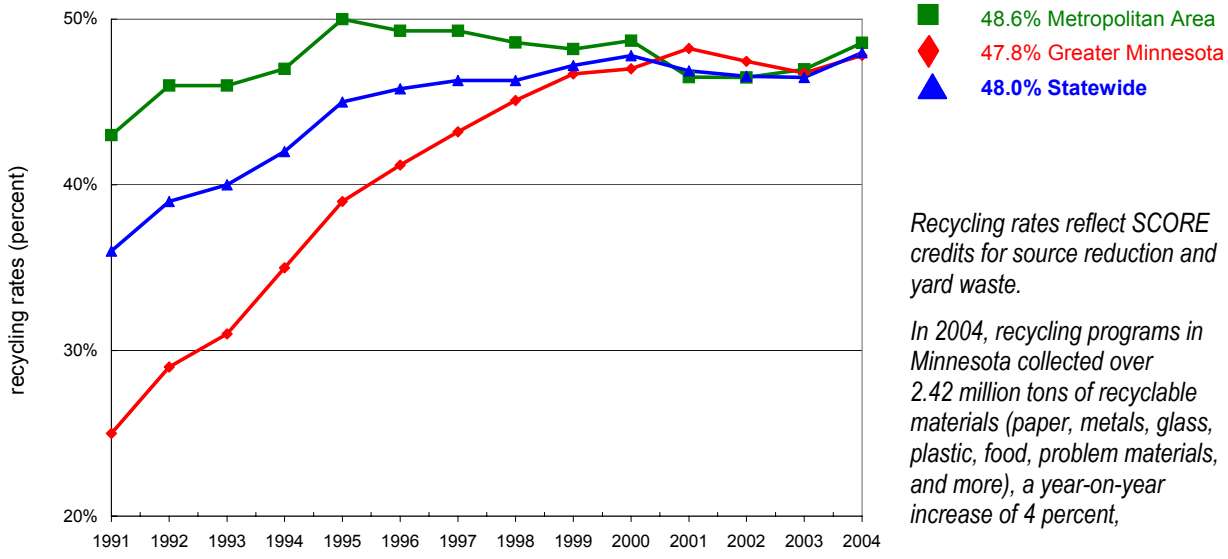
The state's base recycling rate is nearly 41 percent—the highest rate since SCORE began in 1989. (*Base recycling rate* is the actual percentage of materials recycled, not including the additional SCORE credits for source reduction and yard wastes.)

BioCycle's 2003 recycling rates

Minnesota	45.6%
Iowa	41.7%
Wisconsin	24.6%
North Dakota	9.4%
South Dakota	3.0%

source: "The State of Garbage in America," *BioCycle*, January 2004

Figure 2: Minnesota's recycling progress



Recycling rates reflect SCORE credits for source reduction and yard waste.

In 2004, recycling programs in Minnesota collected over 2.42 million tons of recyclable materials (paper, metals, glass, plastic, food, problem materials, and more), a year-on-year increase of 4 percent,

In 2004, recycling programs in Minnesota collected over 2.42 million tons of recyclable materials (paper, metals, glass, plastic, food, problem materials, and more), a year-on-year increase of 4 percent, nearly 100,000 tons. Since 1991, the tons of materials collected for recycling in Minnesota have more than doubled, growing by 103 percent.

While this growth reflects the significant state, local, and industry investment in our recycling system, as well as strong material markets, evidence suggests much more could be done to recover millions of tons of recyclable and organic material that are still discarded as waste each year. In fact, nearly 75 percent of all waste disposed could be either recycled or composted. The *2005 Solid Waste Policy Report* discusses this issue in greater detail and provides recommendations for meeting the challenge of recycling and processing a greater percentage of our waste.

Commercial and residential recycling

The breakout of collection and processing of recyclables by sector is relatively unchanged: 73 percent commercial and 27 percent residential. The MPCA has identified additional tons of recyclables that could be recovered from both sectors and is working with partners on projects designed to reinvigorate residential recycling participation and boost commercial recovery. (See the *2005 Solid Waste Policy Report* for more information.)

Benefits of recycling

Recycling is important in Minnesota—both environmentally and economically.

Environmental benefits. Recycling conserves natural resources and reduces air and water pollution. In 2004, recycling in Minnesota conserved nearly 700,000 tons of natural resources, including coal, iron ore, limestone, etc. Recycling reduced greenhouse gas emissions by 1.6 million tons; if that waste had been landfilled, the reduction would have been just 92,000 tons. Waterborne wastes were reduced by 6,700 tons. (Figures developed using the National Recycling Coalition's "environmental benefits calculator," a tool to quantify and illustrate the impact of recycling.)

Economic benefits. Recycling industries make a substantial contribution to the state's economy. Minnesota's recycling manufacturers contribute an estimated $2.98 billion to the state's economy, supporting nearly 9,000 direct jobs and nearly 20,000 jobs in total. Further information is available in the Minnesota Office of Environmental Assistance's *2004 Biennial Report to the Legislature*: www.moea.state.mn.us/publications/biennial2005.pdf.

Serving local markets

Minnesota has developed strong local markets for core recycled materials such as plastic, newspaper, cardboard, glass, and steel. While many states do not have a complete array of available markets, Minnesota has become a net importer of recycled materials and has some of the most well-rounded markets in the nation. In order to support our state economy and keep our recycling programs strong, we must support our local recycling manufacturers.

For example, Master Mark Plastics (Albany, Minn.) employs 100 people and annually uses 40-50 million pounds of HDPE (milk jugs and detergent bottles) to make a plastic composite lumber for decking and landscaping products—and the amount of material they need continues to grow. Rock-Tenn's St. Paul plant uses 1,000 tons of paper per day; loss of this one company would reduce local market capacity by 45 percent and result in the loss of 500 to 600 jobs.

One important way we can do that is by supplying them with local material, which reduces transportation and labor costs for local markets as well as recycling programs. With narrow profit margins, this can make a big difference in market sustainability in the long run.

Waste and toxicity reduction

Waste reduction efforts focus attention on the prevention of waste at its source and the reuse of materials before they are recycled or discarded, slowing the rate of overall MSW growth. Removing toxic materials from garbage is an important strategy for minimizing potential harm to human health and the environment.

Waste reduction

Preventing waste at its source is at the top of the waste management hierarchy because it is the most beneficial waste management strategy, both economically and environmentally. Waste that is prevented does not need to be managed or recycled, which means fewer costs and less pollution from waste transport, recycling, or disposal. Selected MPCA waste reduction efforts include:

- Partnering with Minnesota Waste Wise, a program of the state Chamber of Commerce, to offer assistance to member businesses in developing effective waste reduction and recycling programs and find new markets for waste materials.
- Cooperation with the Department of Natural Resources and others to educate anglers on the risks of lead fishing tackle and identify nontoxic alternatives. In 2004, a series of 30 exchange events brought in almost 900 pounds of lead sinkers and jigs, which were swapped for nonlead versions.
- Continuing the *Reduce Waste: If not you, who?* campaign (www.reduce.org), educating consumers on the importance of waste reduction. Reducing the use of office paper, stopping junk mail, and home composting are important opportunities for reducing the amount of material discarded and recycled in Minnesota.

Household hazardous waste

Household hazardous wastes (HHW) are materials that are toxic and should be managed separately from the regular waste stream, such as pesticides, paint, household chemicals, and mercury thermometers. Collection programs for HHW are important because they minimize the volume and toxicity of waste and reduce the potential for harm to human health and the environment. All counties in Minnesota have programs for their residents' household hazardous wastes, offering a collection site, periodic HHW collection events, or a contract with other county programs.

All Minnesota counties provide education and information to county residents about safe management of HHW, including collection opportunities. In 2004, over 243,000 households delivered HHW to a permanent facility or one of the 385 special collection events held around the state.

In 2004, state and local government spent more than $13.25 million on HHW programs, including costs for public education, staff, training, facilities, equipment, and waste management. Between ten to fifty percent of local program costs are offset by state revenue, with the rest paid for with local revenue sources.

Plans are underway to develop a comprehensive online system for collecting data from HHW programs, similar to the annual SCORE survey, to better document HHW management data and trends.

Minnesota Technical Assistance Program

MPCA's Minnesota Technical Assistance Program (MnTAP) at the University of Minnesota focuses on pollution prevention assistance and expertise from industry specialists to a wide array of manufacturing and service industries. All services designed to help businesses reduce costs by preventing pollution at its source.

Through their efforts in 2004, MnTAP documented reductions of 61.5 million pounds of waste and 5.8 million pounds of wastewater pollution, and conservation of 12.2 million gallons of water. Their pollution prevention activities resulted in a total cost savings of $2.6 million to businesses.

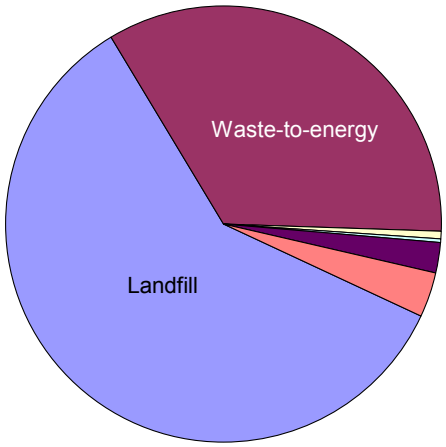
Materials exchange programs are reuse networks that help businesses and organizations find uses for items that would otherwise be thrown away or recycled, keeping usable materials from becoming waste. Businesses save money by avoiding disposal costs and obtaining materials at little or no cost. MnTAP coordinates the statewide materials exchange network, which totaled 1,500 tons of waste exchanged, saving companies $1.5 million in avoided purchase and disposal costs.

MSW Processing and Disposal

In 2004, waste remaining for disposal, after recycling and reduction efforts, totaled nearly 3.6 million tons, a decrease of 1.6 percent from 2003. This includes waste disposed of or processed, as well as estimates for on-site disposal and problem materials not recycled.

In Minnesota, waste is managed through four main methods: source-separated and MSW compost facilities, waste-to-energy and Refuse Derived Fuel (RDF) facilities, landfills, and on-site disposal.

Figure 3: MSW disposal and processing in Minnesota, 2004



		Change 2003-04
Landfill	59.5%	(1.9%)
Waste-to-energy	34.1%	(0.8%)
Problem Materials not Recycled (est.)	3.4%	2.2%
On-site Disposal (est.)	2.3%	(0.6%)
MSW Compost	0.4%	0.6%
Source-separated Compost	0.3%	112.6%

Percentages of total waste disposal; decreases in parentheses (x%).

Trends in waste processing and disposal

Waste management in Minnesota is guided by a hierarchy that prioritizes waste reduction, reuse, recycling at the top, followed by traditional waste disposal options: composting, waste-to-energy, and landfilling.

This overview of the second half of the hierarchy presents the latest data and ongoing and emerging trends. In addition, this section addresses burn barrels and on-site disposal of waste, recognizing their unofficial place at the bottom of the solid waste management hierarchy—the least-preferred way to manage waste.

Composting

The primary way of actively managing organics in the municipal waste stream is through source-separated organics and MSW composting. The key difference between the two methods is that source-separated organics composting is separated by the generator and managed separately, whereas MSW compost is managed in aggregate without pre-sorting. During 2004, source-separated composting had the largest increase, doubling from five to ten thousand tons, while MSW composting was unchanged from the previous year.

Source-separated organics composting manages just 0.2 percent of the state's total waste generation**,** or 0.3 percent of tons disposed and processed. But as the dramatic year-on-year increase of 112% indicates, source-separated programs are growing in importance for the future of integrated solid waste management. The state's 1999 waste composition study found that organic materials comprise over 1/3 of the

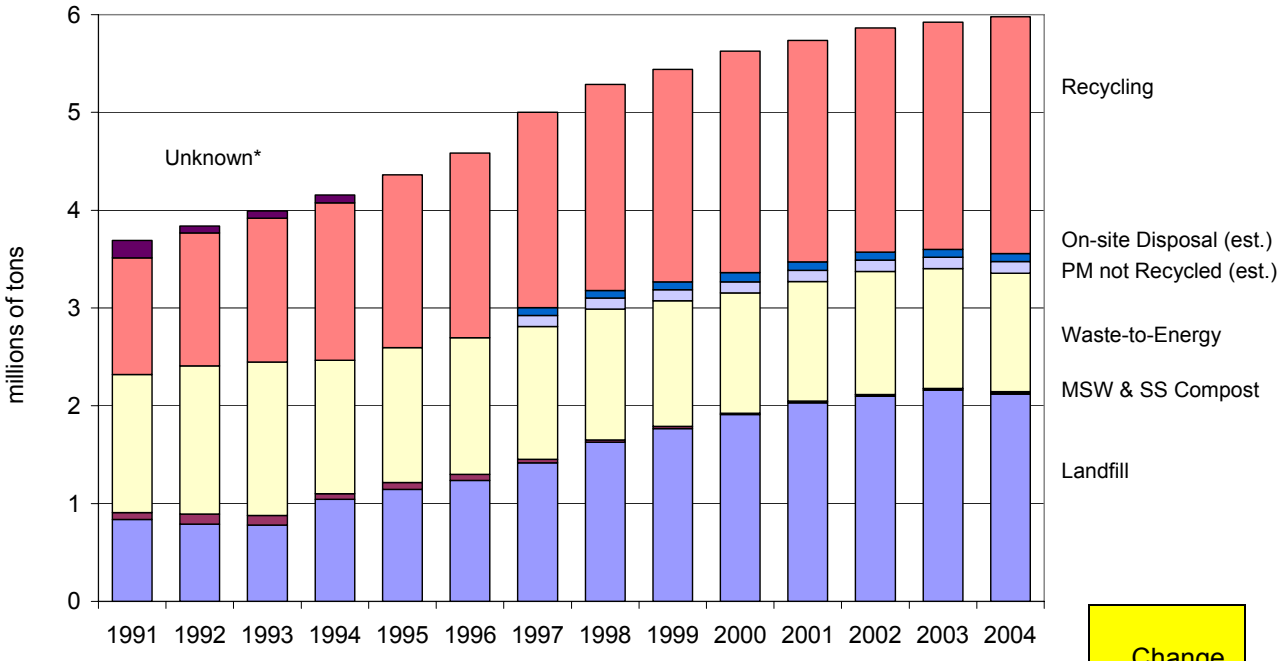
total waste stream, highlighting an important opportunity to recover additional material. There are established source-separated organics projects in the Metro Area, Duluth, and southeast Minnesota, with many other pilot projects underway or being developed.

MSW composting comprises a small, but stable portion of Minnesota's integrated waste management system. Three facilities—Swift County Compost, Dodge County Compost, and the Prairieland facility in Martin County—annually manage over 14,000 tons of MSW, providing a vital service in the communities they serve. For more information about the latest on programs, policies, and related recommendations for organics diversion efforts, see part 3 of the *2005 Solid Waste Policy Report*.

Waste-to-energy

Waste-to-energy declined by 0.8 percent from 2003. Since reaching its highest level in 1993, representing over 57 percent of waste disposed or processed, it has declined to the point where it now represents only 34 percent of all waste disposed or processed in 2004.

Figure 4: Trends in Minnesota waste management



	1997	1998	1999	2000	2001	2002	2003	2004	Change 2003-04
Source-separated compost						0.004	0.005	0.01	112.6%
Recycling	2.00	2.11	2.18	2.27	2.27	2.29	2.32	2.42	4.1%
On-site Disposal (est.)	0.08	0.08	0.08	0.10	0.09	0.08	0.08	0.08	(0.6%)
PM not Recycled (est.)	0.11	0.11	0.11	0.11	0.11	0.12	0.12	0.12	2.2%
Waste-to-Energy	1.36	1.34	1.28	1.23	1.22	1.26	1.23	1.21	(0.8%)
MSW Compost	0.04	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.6%
Landfill	1.42	1.63	1.77	1.91	2.03	2.11	2.17	2.12	(1.9%)
Total	5.00	5.29	5.44	5.63	5.74	5.88	5.93	5.98	0.9%

Figures in millions of tons. PM = Problem Materials. Decreases indicated by parentheses (x%).
* Unknown destination waste totals were only reported during the early years of SCORE (1989-1994).

Currently, five plants burn garbage for energy, two plants grind waste into refuse-derived fuel (RDF), and three RDF combustors use RDF for fuel. Over $500 million has been invested in WTE capacity in Minnesota. After two decades of operation, these facilities are mostly paid for and have been the subject of much refinement. These facilities help our state avoid dependency on landfills and lengthen the life of existing landfills in Minnesota. After accounting for unburnable materials and ash, WTE facilities reduce MSW landfilling needs by at least 80 percent.

Minnesota's WTE facilities process 3,800 tons of municipal waste per day (1.2 million tons per year) for generation of industrial heat and electricity. This represents a substantial amount of energy value, roughly equivalent to burning 2,000 tons per day of western coal. Since the passage of the Waste Management Act, the total energy reclaimed is equivalent to 12 million tons of coal. These facilities produce approximately 100,000 megawatts of electrical energy, enough energy to power 98,000 homes. Waste-to-energy is a vital part of the energy infrastructure in those communities where it is located.

For a more detailed look at waste processing in Minnesota, future directions, and recommended policies and research needs, see the *2005 Solid Waste Policy Report*.

Landfilling

Since the inception of the Waste Management Act (WMA), the number of land-disposal facilities in Minnesota has dropped dramatically to 22 mixed municipal solid waste (MSW) landfills. Over the past year, the amount of waste sent to landfills decreased by 2 percent (43,000 tons) to 2,118,000 tons. Tons sent to out-of-state landfills increased by 22 percent to over 840,000 tons in 2004, the largest total in 15 years of SCORE reporting. Assuming the status quo, as MSW generation continues to increase, both in- and out-of-state landfill tonnages can be expected to increase.

At present, no large-scale open MSW dumps remain (not including residential on-site dumping). All MSW landfills must have liners, which allow the operators to collect contaminated liquids gathering at the bottom of the landfill, intercepting the liquids from seeping into our water supplies and sending it for treatment instead. All medium- to large-sized landfills collect the flammable gas caused by slow waste decomposition and burn it to reduce air pollution; four of the largest landfills even capture it for electricity production. Experiments are underway to accelerate the decomposition of waste in landfills so that biologically active material will not remain for future generations to handle.

The state has set up an innovative Closed Landfill Program to provide perpetual care and remedial action for 110 old state-permitted landfills that closed before 2000. Those old landfills contain more than 40 million tons of waste deposited as long as six decades ago. To date, the first ten years of the Closed Landfill Program cost the state $223 million. This program, along with the state's other solid waste efforts, is supported by a Solid Waste Management Tax that encourages waste generators to cut their garbage collection bills through recycling, source-separated composting, and reduction.

Burn barrels and on-site disposal of waste

Open burning and burial of waste are dated practices that generate significant pollution, posing very real health and environmental risks to the citizens of Minnesota. These activities can be greatly reduced or virtually eliminated through effective education, infrastructure development, incentives, and enforcement efforts.

A 2005 study of burn-barrel use in rural Minnesota found that 45 percent of rural residents still burn their household wastes in backyard burn barrels, fire pits, open spaces, and stoves; rates in some parts of state are as high as 64 percent. This equates to nearly 100,000 tons of waste burned each year in rural Minnesota, with more inclusive estimates running as high as 250,000 tons.

The U.S. EPA considers open burning to be the nation's largest source of uncontrolled airborne dioxin emissions, a major risk to human health. Curbing the generation of dioxin is a key driver for efforts to reduce backyard burning of trash. Based on EPA's emissions research, one burn barrel from an average family of four

will produce as much dioxin as a full-scale municipal waste incinerator burning 200 tons per day. By plugging Minnesota-specific data into the equation we find that Minnesota annually produces 50 to 180 pounds of dioxin from burn barrel use alone—the equivalent dioxin output of *thousands* of full-scale municipal waste burners, each burning 200 tons of waste per day. Other health risks include toxic smoke that contains substances that are known or suspected carcinogens, including heavy metals, volatile organic compounds (VOCs), and dioxin. The smoke is also an irritant that affects people with sensitive respiratory systems (asthma and emphysema), as well as children and the elderly. Backyard burning can also increase the risk of heart disease and cause rashes, nausea, and headaches.

While burning or burying waste on-site has been illegal since 1969, state law still allows farmers to legally engage in these activities unless their county has passed a resolution stating garbage service options exist (Minn. Stat. § 17.135). Over two-thirds of Minnesota counties have not passed such a resolution for a variety of reasons (politically difficult, education barriers, enforcement issues, etc.). Nearly 70 percent of those who burn their household wastes on site are not farmers and are not legally allowed to burn anyway, but determining who is or isn't a farmer can be difficult, and if a person sees neighbors burning they might assume they can as well. Enforcement suffers from a lack of staff, money, and education on both sides of the issue.

Upcoming burn barrel reduction efforts include partnering with the agricultural community, working with DNR's Firewise grant program which will distribute $100,000 in grant aid for county burn-barrel buy-back programs, and undertaking a statewide reduction campaign in partnership with these and other stakeholders. For more resources and information on state and local burn barrel reduction efforts, including the 2005 study *Open Burning in Rural Minnesota*, go to www.moea.state.mn.us/reduce/burnbarrel.cfm. For more information on the latest policy and program recommendations on burn barrels and on-site disposal, see section 3 of the *2005 Solid Waste Policy Report*.

Funding of SCORE Programs

Minnesota boasts one of the best recycling rates in the nation due to the level of participation by our citizens and businesses, along with comprehensive recycling programs at the city and county levels—programs funded by local government and state revenues. In 2004, Minnesota counties spent over $51 million for SCORE-related programs, an increase of over $2 million, or 4 percent, from 2003. Despite the success of recycling programs in the state, significant advances will likely not be possible without a new approach and additional state funding. State financial support for Waste Management Act activities has been eroding and some counties have begun cutting back their efforts on recycling, waste reduction, public education, and problem materials management (See Figure 5).

State funding: SCORE block grants

From the inception of SCORE, state solid waste tax revenue has provided an annual funding source for recycling and waste reduction programs. Money from the state is passed on to the county level in the form of annual block grants. The OEA disbursed $12.5 million in SCORE block grants to eligible counties in 2004.

Within certain guidelines, counties have broad discretion in determining how to spend SCORE block grants and local matching funds, which gives them flexibility to develop programs that best meet local needs. The MPCA monitors the county use of SCORE grants to ensure they are used to fund SCORE-eligible programs: source reduction, recycling, market development, management of problem materials, waste education, litter prevention, technical assistance to ensure proper solid waste management, and waste processing (Minn. Stat. § 115A.55).

County funding

In the past ten years, overall SCORE expenditures have increased by over 46 percent. These increases have been funded entirely at the local level by counties through use of general revenue, special assessments, and

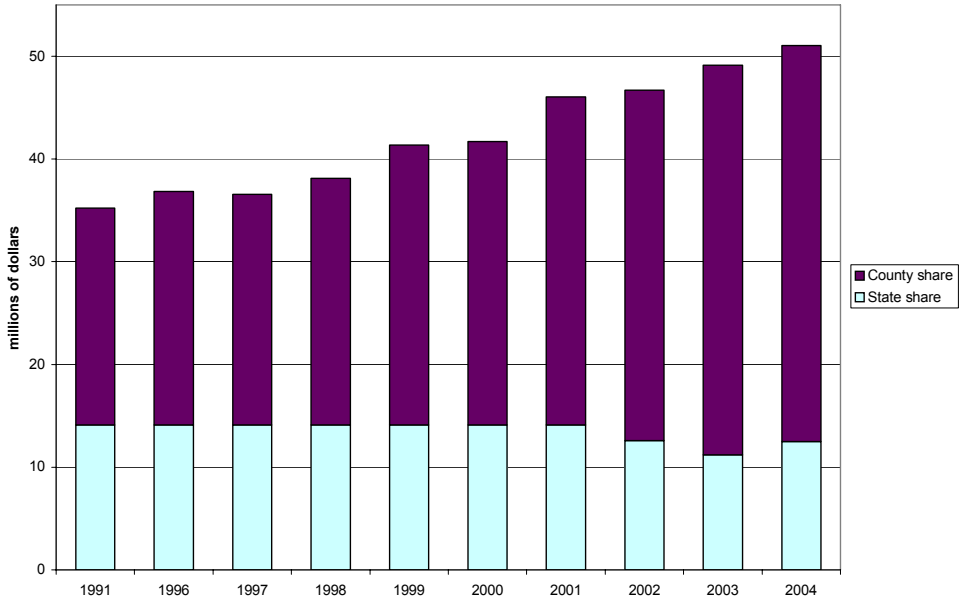
other sources. Figure 5 illustrates the reliance on local dollars to fund reduction, recycling, HHW, and other SCORE programs. This investment is in addition to undocumented dollars spent on waste-related programs by other local units of government such as cities and townships.

Each county is required to match the funding from the Legislature with a local contribution of at least 25 percent. In 2004, counties exceeded this match by 11 times, spending over $38 million of county funds on SCORE-related activities.

Challenges

Despite the aforementioned economic value of the recycling industry to the state's economy, Minnesota's recycling infrastructure faces both technical and financial challenges. Some counties are dealing with budget reductions by closing down recycling centers or limiting the types of materials they collect. Plastic and glass recycling have been eliminated in some communities. Rural recycling programs, in particular, are facing more obstacles in getting materials collected since population centers are spread out over large areas not to mention the problems associated with moving materials to distant markets. The MPCA continues to explore ways to better support county recycling programs and secondary markets such as the 2005 regional recycling markets workshops, recover more recyclable and organic material from the waste stream, and identify more opportunities to reduce, reuse, and recycle in the manufacturing and business sectors. For more information about the MPCA's funding recommendations designed to bolster the SCORE program, see "Policy Recommendations: Recyclables and Organics" in the *2005 Solid Waste Policy Report*.

Figure 5: SCORE expenditures



	1991	1997	1998	1999	2000	2001	2002	2003	2004	Change 2003-04
Greater Minnesota	14.4	20.4	21.5	23.0	23.1	25.8	26.7	29.5	28.5	(3.4%)
Metropolitan Area	20.8	16.1	16.7	18.4	18.6	20.2	19.9	19.7	22.6	14.9%
Total	35.2	36.6	38.1	41.4	41.7	46.0	46.7	49.1	51.1	3.9%

Millions of dollars; decreases indicated by parentheses (x%). The annual SCORE survey includes only county spending; local units of government also fund programs for waste management, reduction, and recycling.

Appendix AA

Report on 2004 SCORE Programs:

County SCORE Survey Reponses

Finances: Revenues (part 1)

County	CY2003 revenue carried over	Adjustment to carryover	General revenue	Service fee	Processing facility tip fee	Land disposal facility surcharge
Aitkin	$165,951	0	$170,221	$800	$27,344	$0
Anoka	$0	0	$58,021	$86,656	$0	$0
Becker	$0	0	$0	$0	$0	$0
Beltrami	$0	0	$0	$447,998	$0	$0
Benton	$4,417	0	$0	$20,899	$0	$0
Big Stone	$46,228	0	$12,280	$0	$0	$0
Blue Earth	$0	0	$0	$120,526	$0	$0
Brown	$0	0	$0	$310,330	$0	$0
Carlton	$0	0	$14,190	$58,860	$33,726	$0
Carver	$0	0	$0	$572,126	$0	$0
Cass	$0	0	$0	$648,285	$0	$0
Chippewa	$44	0	$102,071	$0	$0	$0
Chisago	$74,803	0	$0	$70,616	$0	$0
Clay	$195,056	0	$0	$230,029	$0	$0
Clearwater	$0	0	$0	$39,362	$0	$0
Cook	$0	0	$133,566	$0	$0	$0
Cottonwood	$23,042	8,984	$0	$180,505	$0	$0
Crow Wing	$0	0	$535,423	$0	$61,153	$0
Dakota	$0	0	$0	$0	$0	$1,499,081
Dodge	($11,725)	11,725	$143,394	$0	$22,359	$0
Faribault	$7,734	0	$17,000	$31,847	$0	$0
Fillmore	$40,203	0	$12,291	$0	$0	$0
Freeborn	$0	0	$309,590	$1,287	$0	$0
Goodhue	$0	0	$215,312	$11,041	$0	$0
Grant	($7,979)	0	$0	$162,800	$0	$0
Hennepin	$0	0	$0	$6,984,306	$0	$0
Houston	$0	0	$24,640	$0	$0	$0
Hubbard	$0	0	$13,750	$524,607	$0	$0
Isanti	$84,150	0	$19,725	$0	$0	$0
Itasca	$0	0	$362,530	$0	$0	$0
Jackson	$133,695	0	$12,275	$0	$0	$0
Kanabec	$101,253	0	$12,275	$0	$0	$0
Kandiyohi	$0	0	$104,486	$141,479	$0	$0
Kittson	$0	0	$20,139	$0	$48,174	$0
Koochiching	$0	0	$0	$95,241	$38,631	$0
Lac Qui Parle	($23,302)	0	$100,632	$0	$0	$0
Lake	($112,448)	112,448	$0	$84,284	$0	$0
Lake of the Woods	$0	0	$0	$20,974	$0	$0
Le Sueur	$0	0	$97,032	$0	$0	$0
Lincoln	$54,840	0	$44,493	$9,063	$0	$0
Lyon	$0	0	$0	$182,899	$0	$80,000
Mahnomen	$45,643	0	$12,280	$0	$0	$0
Marshall	$0	0	$29,437	$0	$0	$0
Martin	($1,342)	1,342	$0	$240,876	$0	$0
McLeod	$0	0	$0	$0	$148,397	$658,884
Meeker	$10,303	0	$15,000	$0	$0	$0

Finances: Revenues (part 1)

County	CY2003 revenue carried over	Adjustment to carryover	General revenue	Service fee	Processing facility tip fee	Land disposal facility surcharge
Mille Lacs	($5,460)	5,460	$70,478	$0	$0	$0
Morrison	$0	0	$51,758	$0	$0	$0
Mower	$0	0	$0	$343,833	$0	$0
Murray	$18,959	0	$13,750	$0	$0	$0
Nicollet	$0	0	$243,904	$0	$0	$0
Nobles	$92,825	0	$8,836	$187,417	$0	$128,551
Norman	($22,057)	22,057	$9,820	$0	$0	$0
Olmsted	($380,640)	380,640	$0	$0	$295,877	$0
Otter Tail	$15,200	0	$0	$438,733	$0	$0
Pennington	$0	0	$0	$15,892	$0	$0
Pine	$0	0	$69,534	$0	$0	$0
Pipestone	$0	0	$120,653	$0	$0	$0
Polk	$105,988	0	$0	$200,201	$0	$0
Pope/Douglas	($142,856)	142,856	$257,144	$0	$0	$0
Ramsey	$0	0	$0	$3,777,110	$0	$0
Red Lake	$0	0	$20,084	$0	$0	$0
Redwood	$0	0	$0	$157,563	$0	$0
Renville	$140,964	0	$141,149	$0	$3,638	$0
Rice	($173,841)	173,841	$0	$374,557	$0	$0
Rock	$1,119	0	$51,452	$0	$0	$0
Roseau	($145,042)	145,042	$0	$0	$0	$0
Scott	$619,030	0	$105,825	$0	$0	$0
Sherburne	$110,858	0	$0	$0	$0	$70,293
Sibley	$0	0	$127,534	$0	$0	$0
St. Louis	$0	0	$0	$451,348	$0	$40,944
Stearns	$94,996	0	$39,709	$108,031	$0	$0
Steele	$0	0	$13,344	$339,262	$0	$0
Stevens	$28,434	0	$12,280	$0	$0	$0
Swift	($7,670)	7,670	$72,500	$0	$0	$0
Todd	$0	0	$131,078	$0	$0	$0
Traverse	($30,073)	30,073	$12,275	$0	$0	$0
Wabasha	($98,076)	98,076	$12,562	$0	$0	$0
Wadena	$0	0	$47,876	$0	$0	$0
Waseca	$0	0	$0	$31,627	$0	$0
Washington	$0	0	$0	$745,549	$0	$0
Watonwan	$288,811	0	$14,196	$138,460	$0	$0
Wilkin	$0	0	$0	$84,712	$0	$0
Winona	($26,329)	0	$627,664	$0	$0	$0
WLSSD	($836,343)	836,343	$0	$856,000	$396,874	$0
Wright	$745,610	0	$57,514	$16,644	$0	$48,421
Yellow Medicine	$37,175	0	$12,375	$58,597	$0	$19,540
Metro Area	$110,858	$0	$58,021	$12,165,747	$0	$1,569,374
Greater Minn.	$1,151,286	$1,976,557	$4,879,326	$7,437,484	$1,076,172	$976,340
Minnesota	$1,262,144	$1,976,557	$4,937,347	$19,603,231	$1,076,172	$2,545,714

Finances: Revenues (part 2)

County	SCORE pass-through	Grants	HHW funding	Material sales	Other	Total Revenue
Aitkin	$49,099	$5,115	$3,952	$0	$0	$422,481
Anoka	$708,603	$177,343	$0	$0	$817,106	$1,847,729
Becker	$70,598	$0	$17,927	$0	$331,521	$420,046
Beltrami	$94,180	$0	$7,231	$0	$0	$549,409
Benton	$83,757	$0	$0	$0	$1,593	$110,666
Big Stone	$49,099	$0	$2,400	$0	$0	$110,006
Blue Earth	$130,781	$0	$61,712	$0	$43,512	$356,531
Brown	$61,196	$0	$3,566	$0	$12,914	$388,006
Carlton	$75,048	$11,970	$6,321	$0	$0	$200,115
Carver	$89,032	$87,184	$0	$0	$124,414	$872,756
Cass	$63,986	$13,710	$9,890	$0	$5,000	$740,871
Chippewa	$49,099	$0	$2,400	$0	$0	$153,614
Chisago	$104,228	$0	$48,453	$36	$18,978	$317,115
Clay	$118,755	$0	$10,985	$0	$458	$555,282
Clearwater	$49,099	$0	$7,453	$0	$9,368	$105,282
Cook	$49,099	$0	$2,654	$58,628	$0	$243,947
Cottonwood	$49,099	$0	$0	$2,255	$8,458	$272,343
Crow Wing	$131,957	$0	$12,767	$0	$70,720	$812,020
Dakota	$849,835	$0	$0	$0	$72,421	$2,421,337
Dodge	$49,099	$0	$1,782	$124,418	$11,213	$352,264
Faribault	$49,099	$0	$0	$0	$20,133	$125,813
Fillmore	$49,164	$3,031	$6,564	$0	$0	$111,253
Freeborn	$73,380	$0	$10,145	$1,283	$0	$395,685
Goodhue	$103,098	$0	$20,465	$129,375	$0	$479,291
Grant	$49,099	$0	$0	$0	$250	$204,170
Hennepin	$1,293,689	$299,444	$19,032	$1,783,848	$105,182	$10,485,501
Houston	$49,099	$750	$4,006	$144,585	$50,943	$274,023
Hubbard	$49,099	$0	$3,938	$0	$0	$591,393
Isanti	$78,899	$0	$2,423	$0	$0	$185,197
Itasca	$100,970	$0	$2,858	$0	$0	$466,358
Jackson	$49,099	$0	$0	$4	$5,075	$200,147
Kanabec	$0	$49,099	$1,371	$0	$0	$163,997
Kandiyohi	$94,351	$0	$63,519	$433,773	$127,309	$964,917
Kittson	$49,099	$0	$4,692	$34,836	$9,802	$166,742
Koochiching	$49,099	$0	$3,566	$22,103	$0	$208,640
Lac Qui Parle	$49,099	$0	$2,400	$0	$0	$128,830
Lake	$24,559	$0	$4,232	$24,418	$2,170	$139,663
Lake of the Woods	$49,079	$0	$0	$34,233	$1,947	$106,233
Le Sueur	$60,140	$0	$3,596	$26,922	$14,359	$202,049
Lincoln	$49,099	$10,430	$0	$0	$3,751	$171,676
Lyon	$86,536	$30,000	$73,940	$398	$2,244	$456,017
Mahnomen	$49,099	$0	$723	$0	$2,869	$110,614
Marshall	$49,099	$0	$4,989	$22,345	$17,363	$123,233
Martin	$49,136	$0	$0	$0	$4,794	$294,806
McLeod	$81,628	$5,621	$10,410	$141,858	$44,503	$1,091,301
Meeker	$78,909	$0	$3,258	$0	$0	$107,469

Finances: Revenues (part 2)

County	SCORE pass-through	Grants	HHW funding	Material sales	Other	Total Revenue
Mille Lacs	$54,581	$0	$5,580	$0	$0	$130,639
Morrison	$74,220	$0	$7,353	$0	$344,079	$477,410
Mower	$88,930	$0	$14,004	$216,350	$4,199	$667,316
Murray	$49,099	$0	$0	$0	$2,129	$83,937
Nicollet	$70,081	$0	$6,112	$29,304	$11,526	$360,927
Nobles	$49,099	$0	$0	$0	$6,463	$473,191
Norman	$49,099	$0	$3,195	$9	$39,610	$101,732
Olmsted	$299,066	$0	$119,455	$0	$83,348	$797,746
Otter Tail	$133,393	$0	$40,415	$541,244	$33,337	$1,202,321
Pennington	$49,099	$0	$0	$0	$0	$64,991
Pine	$62,910	$0	$0	$0	$0	$132,444
Pipestone	$49,099	$0	$0	$0	$0	$169,752
Polk	$71,144	$0	$8,074	$58,429	$1,624	$445,459
Pope/Douglas	$126,670	$0	$14,105	$0	$500	$398,419
Ramsey	$1,629,393	$242,158	$0	$0	$147,383	$5,796,044
Red Lake	$49,099	$0	$5,401	$8,037	$0	$82,621
Redwood	$49,099	$0	$34,220	$136,510	$330	$377,721
Renville	$49,099	$0	$0	$0	$0	$334,850
Rice	$135,218	$0	$30,588	$503,899	$40,841	$1,085,103
Rock	$49,099	$0	$0	$0	$13,490	$115,160
Roseau	$49,099	$0	$5,428	$27,846	$19,958	$102,331
Scott	$233,775	$0	$0	$0	$0	$958,630
Sherburne	$167,100	$1,436	$2,545	$0	$780	$353,012
Sibley	$49,099	$0	$2,675	$21,381	$9,542	$210,231
St. Louis	$219,090	$0	$17,953	$340,216	$0	$1,069,551
Stearns	$313,251	$0	$5,502	$0	$13,603	$575,091
Steele	$78,956	$0	$0	$0	$995	$432,557
Stevens	$49,099	$0	$0	$0	$50	$89,863
Swift	$49,099	$0	$2,400	$109,473	$0	$233,472
Todd	$55,724	$0	$5,498	$106,967	$0	$299,267
Traverse	$49,099	$0	$0	$0	$0	$61,374
Wabasha	$25,158	$750	$3,199	$47	$1,125	$42,842
Wadena	$49,099	$0	$0	$0	$0	$96,975
Waseca	$49,099	$0	$0	$164,475	$396	$245,597
Washington	$484,535	$111,014	$0	$0	$21,660	$1,362,758
Watonwan	$49,099	$0	$3,340	$0	$1,218	$495,124
Wilkin	$49,099	$0	$0	$114,559	$0	$248,370
Winona	$113,430	$0	$25,144	$67,506	$7,565	$814,980
WLSSD	$236,168	$28,422	$253,374	$41,307	$442,142	$2,254,288
Wright	$230,055	$745	$8,753	$0	$21,466	$1,129,207
Yellow Medicine	$49,099	$0	$0	$0	$529	$177,315
Metro Area	$5,222,187	$918,579	$21,577	$1,783,848	$1,288,946	$23,139,136
Greater Minn.	$6,302,818	$159,643	$1,048,354	$3,689,028	$1,921,313	$30,618,321
Minnesota	$11,525,005	$1,078,221	$1,069,931	$5,472,876	$3,210,259	$53,757,458

Finances: Revenue Summary

County	Adjusted CY2003 Revenue (carried over)	CY2003 Revenue	Total Revenue
Aitkin	$165,951	$256,530	$422,481
Anoka	$0	$1,847,729	$1,847,729
Becker	$0	$420,046	$420,046
Beltrami	$0	$549,409	$549,409
Benton	$4,417	$106,249	$110,666
Big Stone	$46,228	$63,779	$110,006
Blue Earth	$0	$356,531	$356,531
Brown	$0	$388,006	$388,006
Carlton	$0	$200,115	$200,115
Carver	$0	$872,756	$872,756
Cass	$0	$740,871	$740,871
Chippewa	$44	$153,570	$153,614
Chisago	$74,803	$242,313	$317,115
Clay	$195,056	$360,226	$555,282
Clearwater	$0	$105,282	$105,282
Cook	$0	$243,947	$243,947
Cottonwood	$32,026	$240,317	$272,343
Crow Wing	$0	$812,020	$812,020
Dakota	$0	$2,421,337	$2,421,337
Dodge	$0	$352,264	$352,264
Faribault	$7,734	$118,079	$125,813
Fillmore	$40,203	$71,050	$111,253
Freeborn	$0	$395,685	$395,685
Goodhue	$0	$479,291	$479,291
Grant	($7,979)	$212,149	$204,170
Hennepin	$0	$10,485,501	$10,485,501
Houston	$0	$274,023	$274,023
Hubbard	$0	$591,393	$591,393
Isanti	$84,150	$101,047	$185,197
Itasca	$0	$466,358	$466,358
Jackson	$133,695	$66,453	$200,147
Kanabec	$101,253	$62,744	$163,997
Kandiyohi	$0	$964,917	$964,917
Kittson	$0	$166,742	$166,742
Koochiching	$0	$208,640	$208,640
Lac Qui Parle	($23,302)	$152,131	$128,830
Lake	$0	$139,663	$139,663
Lake of the Woods	$0	$106,233	$106,233
Le Sueur	$0	$202,049	$202,049
Lincoln	$54,840	$116,836	$171,676
Lyon	$0	$456,017	$456,017
Mahnomen	$45,643	$64,971	$110,614
Marshall	$0	$123,233	$123,233
Martin	$0	$294,806	$294,806
McLeod	$0	$1,091,301	$1,091,301
Meeker	$10,303	$97,167	$107,469

Finances: Revenue Summary

County	Adjusted CY2003 Revenue (carried over)	CY2003 Revenue	Total Revenue
Mille Lacs	$0	$130,639	$130,639
Morrison	$0	$477,410	$477,410
Mower	$0	$667,316	$667,316
Murray	$18,959	$64,978	$83,937
Nicollet	$0	$360,927	$360,927
Nobles	$92,825	$380,366	$473,191
Norman	$0	$101,732	$101,732
Olmsted	$0	$797,746	$797,746
Otter Tail	$15,200	$1,187,121	$1,202,321
Pennington	$0	$64,991	$64,991
Pine	$0	$132,444	$132,444
Pipestone	$0	$169,752	$169,752
Polk	$105,988	$339,471	$445,459
Pope/Douglas	$0	$398,419	$398,419
Ramsey	$0	$5,796,044	$5,796,044
Red Lake	$0	$82,621	$82,621
Redwood	$0	$377,721	$377,721
Renville	$140,964	$193,886	$334,850
Rice	$0	$1,085,103	$1,085,103
Rock	$1,119	$114,041	$115,160
Roseau	$0	$102,331	$102,331
Scott	$619,030	$339,600	$958,630
Sherburne	$110,858	$242,154	$353,012
Sibley	$0	$210,231	$210,231
St. Louis	$0	$1,069,551	$1,069,551
Stearns	$94,996	$480,095	$575,091
Steele	$0	$432,557	$432,557
Stevens	$28,434	$61,429	$89,863
Swift	$0	$233,472	$233,472
Todd	$0	$299,267	$299,267
Traverse	$0	$61,374	$61,374
Wabasha	$0	$42,842	$42,842
Wadena	$0	$96,975	$96,975
Waseca	$0	$245,597	$245,597
Washington	$0	$1,362,758	$1,362,758
Watonwan	$288,811	$206,312	$495,124
Wilkin	$0	$248,370	$248,370
Winona	($26,329)	$841,309	$814,980
WLSSD	$0	$2,254,288	$2,254,288
Wright	$745,610	$383,598	$1,129,207
Yellow Medicine	$37,175	$140,141	$177,315
Metro Area	$110,858	$23,028,278	$23,139,136
Greater Minn.	$3,127,843	$27,490,478	$30,618,321
Minnesota	$3,238,701	$50,518,757	$53,757,458

Finances: Expenditures by program area (part 1)

County	Planning & administration	Recycling	Yard waste	HHW and problem materials	Source reduction
Aitkin	$118,001	$126,452	$0	$24,893	$0
Anoka	$544,721	$21,825	$82,996	$399,715	$12,091
Becker	$176,307	$136,671	$11,097	$38,549	$0
Beltrami	$116,022	$388,518	$0	$44,869	$0
Benton	$84,586	$86	$0	$8,220	$0
Big Stone	$41,231	$108,060	$0	$7,343	$0
Blue Earth	$5,169	$216,292	$0	$97,052	$0
Brown	$36,552	$330,692	$0	$35,751	$0
Carlton	$44,226	$86,550	$1,900	$51,033	$0
Carver	$299,295	$89,519	$30,665	$350,657	$0
Cass	$131,498	$535,179	$9,152	$46,548	$7,043
Chippewa	$27,798	$123,320	$0	$2,452	$0
Chisago	$98,193	$57,170	$0	$77,487	$0
Clay	$183,709	$220,553	$26,179	$78,593	$0
Clearwater	$21,808	$51,577	$3,838	$24,848	$0
Cook	$181,195	$50,597	$0	$11,642	$0
Cottonwood	$130,731	$58,113	$0	$5,170	$0
Crow Wing	$141,740	$277,724	$5,814	$126,831	$5,000
Dakota	$1,257,871	$28,403	$0	$732,501	$0
Dodge	$26,707	$238,848	$0	$25,657	$20,208
Faribault	$780	$37,275	$0	$37,321	$0
Fillmore	$12,115	$45,035	$0	$27,578	$0
Freeborn	$88,945	$291,285	$2,293	$12,476	$0
Goodhue	$342,904	$92,944	$0	$40,068	$0
Grant	$0	$148,292	$0	$57,891	$0
Hennepin	$1,374,980	$1,201,042	$32,807	$4,748,001	$110,364
Houston	$27,492	$236,553	$0	$6,438	$0
Hubbard	$63,378	$407,589	$3,950	$96,514	$0
Isanti	$46,295	$39,332	$0	$11,325	$0
Itasca	$98,393	$328,439	$932	$36,853	$0
Jackson	$31,067	$22,114	$0	$16,930	$0
Kanabec	$5,667	$50,976	$0	$5,793	$0
Kandiyohi	$221,360	$642,397	$0	$101,160	$0
Kittson	$30,201	$92,694	$0	$2,265	$0
Koochiching	$83,254	$100,807	$0	$19,563	$0
Lac Qui Parle	$49,949	$49,584	$0	$962	$0
Lake	$60,464	$145,879	$79,988	$10,351	$0
Lake of the Woods	$513	$83,433	$1,027	$20,120	$0
Le Sueur	$44,842	$57,861	$0	$54,460	$0
Lincoln	$36,120	$70,374	$0	$3,219	$0
Lyon	$31,975	$226,885	$0	$112,739	$42,721
Mahnomen	$39,786	$16,877	$0	$15,982	$0
Marshall	$22,759	$394	$0	$8,691	$0
Martin	$30,834	$170,600	$70	$802	$0
McLeod	$331,006	$260,941	$42,156	$53,934	$0
Meeker	$20,259	$25,996	$0	$9,467	$0

Finances: Expenditures by program area (part 1)

County	Planning & administration	Recycling	Yard waste	HHW and problem materials	Source reduction
Mille Lacs	$34,500	$91,204	$0	$4,935	$0
Morrison	$61,706	$143,261	$18,372	$189,421	$0
Mower	$112,382	$414,517	$0	$28,045	$0
Murray	$46,238	$24,950	$0	$2,295	$0
Nicollet	$53,187	$203,560	$0	$67,449	$0
Nobles	$79,182	$193,528	$0	$73,040	$0
Norman	$23,788	$52,131	$0	$11,567	$0
Olmsted	$50,810	$331,653	$153,268	$348,724	$111,593
Otter Tail	$543,829	$424,054	$3,420	$158,567	$4,788
Pennington	$0	$55,500	$0	$9,491	$0
Pine	$20,484	$110,960	$0	$0	$0
Pipestone	$27,230	$138,074	$0	$2,843	$0
Polk	$37,828	$190,835	$3,075	$68,527	$0
Pope/Douglas	$160,248	$127,445	$0	$38,048	$0
Ramsey	$1,549,359	$91,288	$1,140,719	$1,075,479	$17,540
Red Lake	$17,387	$59,170	$0	$5,786	$0
Redwood	$201,947	$155,015	$0	$7,020	$3,000
Renville	$55,907	$140,469	$0	$8,078	$0
Rice	$450,363	$502,149	$37,000	$108,504	$500
Rock	$44,030	$53,457	$2,588	$14,012	$600
Roseau	$15,283	$0	$0	$27,111	$0
Scott	$293,804	$0	$0	$91,088	$0
Sherburne	$5,040	$6,192	$1,500	$91,620	$0
Sibley	$40,093	$41,401	$0	$48,621	$0
St. Louis	$123,692	$727,227	$6,810	$171,509	$0
Stearns	$129,197	$45,482	$12,340	$100,962	$12,340
Steele	$98,555	$307,957	$0	$8,218	$0
Stevens	$36,403	$29,303	$950	$16,388	$0
Swift	$166,810	$57,536	$1,600	$11,460	$880
Todd	$128,439	$100,209	$1,000	$67,354	$1,000
Traverse	$52,874	$27,306	$0	$5,556	$0
Wabasha	$53,540	$74,401	$0	$16,235	$0
Wadena	$0	$79,417	$3,000	$14,427	$0
Waseca	$65,135	$142,253	$768	$36,129	$0
Washington	$208,401	$9,401	$0	$547,900	$34,951
Watonwan	$12,874	$134,939	$0	$7,202	$0
Wilkin	$49,337	$150,331	$3,427	$42,298	$2,019
Winona	$213,026	$525,229	$0	$60,051	$0
WLSSD	$1,132,080	$499,686	$89,264	$516,394	$0
Wright	$29,127	$26,771	$23,609	$141,253	$0
Yellow Medicine	$6,965	$97,226	$0	$1,154	$0
Metro Area	$5,239,667	$1,447,670	$1,288,687	$7,945,873	$174,946
Greater Minn.	$7,954,111	$13,129,566	$548,889	$3,999,603	$211,691
Minnesota	$13,193,778	$14,577,236	$1,837,575	$11,945,476	$386,637

Finances: Expenditures by program area (part 2)

County	Education	Market development	Litter prevention	County grants to other local units of government
Aitkin	$7,252	$0	$0	$0
Anoka	$77,778	$0	$0	$703,871
Becker	$7,846	$0	$0	$49,576
Beltrami	$0	$0	$0	$0
Benton	$1,572	$0	$0	$98,091
Big Stone	$0	$0	$0	$0
Blue Earth	$36,761	$0	$1,257	$0
Brown	$11,031	$0	$0	$0
Carlton	$2,010	$0	$0	$14,396
Carver	$17,079	$0	$9,260	$76,281
Cass	$11,451	$0	$0	$0
Chippewa	$44	$0	$0	$0
Chisago	$20,747	$0	$0	$0
Clay	$13,825	$0	$0	$0
Clearwater	$3,211	$0	$0	$0
Cook	$513	$0	$0	$0
Cottonwood	$4,232	$0	$0	$0
Crow Wing	$23,376	$0	$35,095	$196,440
Dakota	$210,204	$0	$0	$192,358
Dodge	$29,522	$900	$0	$0
Faribault	$16,231	$0	$0	$38,070
Fillmore	$6,972	$0	$366	$0
Freeborn	$686	$0	$0	$0
Goodhue	$3,376	$0	$0	$0
Grant	$0	$0	$0	$0
Hennepin	$256,479	$0	$0	$2,761,828
Houston	$3,540	$0	$0	$0
Hubbard	$19,962	$0	$0	$0
Isanti	$58	$0	$0	$0
Itasca	$1,740	$0	$0	$0
Jackson	$6,377	$0	$0	$0
Kanabec	$0	$0	$96	$0
Kandiyohi	$0	$0	$0	$0
Kittson	$123	$0	$0	$41,459
Koochiching	$4,915	$0	$100	$0
Lac Qui Parle	$3,445	$0	$0	$1,500
Lake	$1,073	$600	$0	$0
Lake of the Woods	$1,140	$0	$0	$0
Le Sueur	$33,084	$0	$0	$11,803
Lincoln	$3,194	$0	$0	$0
Lyon	$41,696	$0	$0	$0
Mahnomen	$1,635	$0	$418	$0
Marshall	$0	$0	$0	$91,390
Martin	$5,265	$0	$109	$21,329
McLeod	$44,480	$0	$0	$358,785
Meeker	$18,641	$0	$0	$3,120

Finances: Expenditures by program area (part 2)

County	Education	Market development	Litter prevention	County grants to other local units of government
Mille Lacs	$0	$0	$0	$0
Morrison	$1,308	$0	$0	$63,342
Mower	$7,911	$0	$0	$0
Murray	$4,986	$0	$0	$600
Nicollet	$36,731	$0	$0	$0
Nobles	$6,269	$0	$0	$0
Norman	$3,168	$0	$0	$0
Olmsted	$187,459	$0	$0	$0
Otter Tail	$49,818	$0	$2,645	$0
Pennington	$0	$0	$0	$0
Pine	$1,000	$0	$0	$0
Pipestone	$1,605	$0	$0	$0
Polk	$9,180	$0	$0	$15,000
Pope/Douglas	$13,278	$0	$0	$0
Ramsey	$351,835	$0	$0	$985,000
Red Lake	$278	$0	$0	$0
Redwood	$10,742	$0	$0	$0
Renville	$1,223	$0	$0	$0
Rice	$15,900	$1,820	$100	$0
Rock	$4,992	$0	$0	$0
Roseau	$0	$0	$0	$104,402
Scott	$15,375	$0	$0	$0
Sherburne	$47,241	$5,000	$42,267	$101,922
Sibley	$30,645	$0	$0	$49,472
St. Louis	$40,313	$0	$0	$0
Stearns	$31,888	$12,340	$12,340	$121,167
Steele	$17,827	$0	$0	$0
Stevens	$6,452	$0	$0	$0
Swift	$3,600	$0	$0	$0
Todd	$1,265	$0	$0	$0
Traverse	$643	$0	$0	$4,000
Wabasha	$0	$0	$0	$0
Wadena	$131	$0	$0	$0
Waseca	$1,312	$0	$0	$0
Washington	$136,881	$0	$0	$425,224
Watonwan	$2,691	$0	$0	$0
Wilkin	$959	$0	$0	$0
Winona	$6,231	$0	$0	$0
WLSSD	$86,149	$9,908	$12,903	$79,844
Wright	$11,015	$0	$0	$255,774
Yellow Medicine	$2,397	$0	$0	$0
Metro Area	$1,097,498	$5,000	$51,527	$5,246,483
Greater Minn.	$1,005,767	$25,568	$65,430	$1,619,558
Minnesota	$2,103,265	$30,568	$116,957	$6,866,041

Finances: Balance Sheet

County	Total Revenues	Total Expenditures	CY2003 Balance
Aitkin	$422,481	$276,597	$145,883
Anoka	$1,847,729	$1,842,996	$4,732
Becker	$420,046	$420,046	$0
Beltrami	$549,409	$549,409	$0
Benton	$110,666	$192,554	($81,888)
Big Stone	$110,006	$156,635	($46,629)
Blue Earth	$356,531	$356,531	$0
Brown	$388,006	$414,026	($26,020)
Carlton	$200,115	$200,115	$0
Carver	$872,756	$872,756	$0
Cass	$740,871	$740,871	$0
Chippewa	$153,614	$153,614	$0
Chisago	$317,115	$253,597	$63,518
Clay	$555,282	$522,859	$32,423
Clearwater	$105,282	$105,282	$0
Cook	$243,947	$243,947	$0
Cottonwood	$272,343	$198,246	$74,097
Crow Wing	$812,020	$812,020	$0
Dakota	$2,421,337	$2,421,337	$0
Dodge	$352,264	$341,842	$10,422
Faribault	$125,813	$129,677	($3,865)
Fillmore	$111,253	$92,066	$19,187
Freeborn	$395,685	$395,685	$0
Goodhue	$479,291	$479,291	($0)
Grant	$204,170	$206,183	($2,013)
Hennepin	$10,485,501	$10,485,501	$0
Houston	$274,023	$274,023	$0
Hubbard	$591,393	$591,393	($0)
Isanti	$185,197	$97,010	$88,187
Itasca	$466,358	$466,358	($0)
Jackson	$200,147	$76,489	$123,659
Kanabec	$163,997	$62,532	$101,466
Kandiyohi	$964,917	$964,917	$0
Kittson	$166,742	$166,742	($0)
Koochiching	$208,640	$208,640	($0)
Lac Qui Parle	$128,830	$105,440	$23,390
Lake	$139,663	$298,355	($158,692)
Lake of the Woods	$106,233	$106,233	$0
Le Sueur	$202,049	$202,049	($0)
Lincoln	$171,676	$112,907	$58,769
Lyon	$456,017	$456,017	$0
Mahnomen	$110,614	$74,699	$35,915
Marshall	$123,233	$123,233	($0)
Martin	$294,806	$229,009	$65,797
McLeod	$1,091,301	$1,091,301	$0
Meeker	$107,469	$77,482	$29,987

Finances: Balance Sheet

County	Total Revenues	Total Expenditures	CY2003Balance
Mille Lacs	$130,639	$130,639	$0
Morrison	$477,410	$477,410	$0
Mower	$667,316	$562,855	$104,460
Murray	$83,937	$79,069	$4,868
Nicollet	$360,927	$360,927	$0
Nobles	$473,191	$352,019	$121,172
Norman	$101,732	$90,655	$11,077
Olmsted	$797,746	$1,183,507	($385,761)
Otter Tail	$1,202,321	$1,187,121	$15,200
Pennington	$64,991	$64,991	$0
Pine	$132,444	$132,444	$0
Pipestone	$169,752	$169,752	$0
Polk	$445,459	$324,446	$121,014
Pope/Douglas	$398,419	$339,020	$59,400
Ramsey	$5,796,044	$5,211,220	$584,824
Red Lake	$82,621	$82,621	($0)
Redwood	$377,721	$377,724	($3)
Renville	$334,850	$205,677	$129,173
Rice	$1,085,103	$1,116,336	($31,233)
Rock	$115,160	$119,679	($4,519)
Roseau	$102,331	$146,796	($44,465)
Scott	$958,630	$400,267	$558,363
Sherburne	$353,012	$300,782	$52,230
Sibley	$210,231	$210,231	$0
St. Louis	$1,069,551	$1,069,551	$0
Stearns	$575,091	$478,056	$97,035
Steele	$432,557	$432,557	$0
Stevens	$89,863	$89,496	$367
Swift	$233,472	$241,886	($8,414)
Todd	$299,267	$299,267	$0
Traverse	$61,374	$90,379	($29,005)
Wabasha	$42,842	$144,176	($101,334)
Wadena	$96,975	$96,975	$0
Waseca	$245,597	$245,597	$0
Washington	$1,362,758	$1,362,758	$0
Watonwan	$495,124	$157,706	$337,417
Wilkin	$248,370	$248,370	$0
Winona	$814,980	$804,537	$10,443
WLSSD	$2,254,288	$2,426,228	($171,941)
Wright	$1,129,207	$487,549	$641,658
Yellow Medicine	$177,315	$107,742	$69,573
Metro Area	$23,139,136	$22,497,350	$641,786
Greater Minn.	$30,618,321	$28,560,183	$2,058,139
Minnesota	$53,757,458	$51,057,532	$2,699,925

Paper collected for recycling (tons)

County	Computer paper	Corrugated (OCC)	Magazine/ catalog	Mixed paper	Newsprint (ONP)	Office paper	Other paper	Phone book	Total Paper
Aitkin	0	772	0	499	0	0	0	0	1,271
Anoka	5	41,796	513	7,745	13,692	345	16,820	42	80,958
Becker	0	3,303	89	151	276	0	0	7	3,826
Beltrami	0	1,770	146	773	76	80	0	0	2,845
Benton	0	2,046	11,719	383	1,259	211	239	15	15,872
Big Stone	0	166	0	166	0	0	0	0	331
Blue Earth	0	18,193	2,323	5,880	7,272	381	4	89	34,142
Brown	0	2,963	0	2,908	1,160	864	0	0	7,894
Carlton	0	2,194	125	669	892	267	0	0	4,147
Carver	0	3,774	0	5,157	1,161	5,823	0	1	15,916
Cass	0	2,746	52	0	2,068	63	0	0	4,928
Chippewa	0	1,243	48	19	467	1	0	0	1,778
Chisago	100	2,086	0	2,221	0	132	0	50	4,589
Clay	0	2,419	119	4	1,148	277	0	24	3,993
Clearwater	0	226	0	84	0	2	0	2	314
Cook	0	495	104	41	147	0	0	5	792
Cottonwood	0	1,306	16	0	217	54	0	0	1,593
Crow Wing	0	3,261	2,669	981	1,109	13	0	10	8,042
Dakota	0	9,950	1,166	23,338	20,095	3,493	0	799	58,841
Dodge	0	954	65	688	0	0	10	0	1,716
Faribault	0	1,097	0	302	136	10	47	0	1,593
Fillmore	0	224	124	141	312	60	0	0	862
Freeborn	0	6,258	0	1,556	2	0	0	0	7,816
Goodhue	0	3,685	102	1,712	2,789	0	200	0	8,488
Grant	0	158	0	0	124	32	0	0	313
Hennepin	0	35,396	3,932	32,950	49,068	9,477	4,405	278	135,506
Houston	0	724	91	0	300	0	0	0	1,115
Hubbard	0	1,813	0	0	463	87	0	0	2,363
Isanti	0	2,427	37	7	733	168	0	10	3,382
Itasca	32	3,203	100	2,336	1,780	429	0	21	7,901
Jackson	0	1,180	0	0	432	44	0	1	1,657
Kanabec	0	595	0	25	124	1	0	0	745
Kandiyohi	0	4,155	321	201	856	205	229	12	5,980
Kittson	0	105	7	0	95	5	0	0	212
Koochiching	0	881	23	1,106	85	35	0	0	2,130
Lac Qui Parle	0	374	45	0	188	45	0	0	651
Lake	0	476	78	0	213	41	14	8	828
Lake of the Woods	0	92	0	0	0	0	0	0	92
Le Sueur	0	810	0	585	175	37	0	0	1,606
Lincoln	0	220	125	0	0	0	0	0	345
Lyon	0	3,163	1	500	143	3	0	0	3,810
Mahnomen	0	83	5	0	44	0	0	0	132
Marshall	0	114	0	37	114	5	0	1	272
Martin	0	4,332	422	444	857	492	147	0	6,694
McLeod	0	2,421	18	475	1,416	319	0	2	4,652
Meeker	0	1,135	14	126	264	68	0	0	1,606

Paper collected for recycling (tons)

County	Computer paper	Corrugated (OCC)	Magazine/ catalog	Mixed paper	Newsprint (ONP)	Office paper	Other paper	Phone book	Total Paper
Mille Lacs	0	446	0	440	0	0	0	0	886
Morrison	0	2,568	69	0	331	1,376	30	1	4,375
Mower	0	10,154	143	0	1,029	457	0	8	11,791
Murray	0	516	12	0	459	16	0	0	1,004
Nicollet	0	1,933	0	7,435	356	656	0	0	10,380
Nobles	0	3,480	445	0	1,041	600	0	0	5,566
Norman	0	92	0	0	53	0	0	0	145
Olmsted	0	10,359	0	161	4,683	2,080	8,371	17	25,671
Otter Tail	0	3,900	31	0	864	245	0	0	5,040
Pennington	0	689	23	0	146	79	0	0	937
Pine	0	554	0	1,020	0	25	0	0	1,599
Pipestone	0	868	0	0	280	91	0	0	1,239
Polk	0	2,240	254	0	443	73	0	0	3,009
Pope/Douglas	0	10,186	59	256	1,585	176	0	0	12,262
Ramsey	0	2,805	2,258	45,688	18,798	75	1,011	122	70,756
Red Lake	0	149	0	119	0	3	0	1	271
Redwood	0	1,816	190	22	354	182	3	0	2,568
Renville	0	536	203	36	755	54	227	0	1,811
Rice	0	8,651	0	0	2,300	0	0	27	10,978
Rock	24	617	0	0	212	12	0	1	866
Roseau	0	1,996	26	0	146	157	0	0	2,325
Scott	0	21,831	211	18,460	3,512	234	285	2	44,535
Sherburne	0	2,138	108	300	2,107	141	312	9	5,115
Sibley	0	642	0	211	51	2	0	0	906
St. Louis	0	7,104	0	4,029	385	46	0	0	11,564
Stearns	9	10,531	8,042	2,169	5,060	749	157	52	26,769
Steele	0	2,299	21	2,778	3	28	312	0	5,440
Stevens	0	362	10	20	182	20	0	4	598
Swift	39	625	60	0	435	106	0	3	1,268
Todd	0	1,576	61	0	161	0	13,346	0	15,144
Traverse	0	112	28	0	86	10	0	0	236
Wabasha	0	3,797	55	0	813	30	0	0	4,695
Wadena	0	332	0	164	0	0	6	1	503
Waseca	0	2,433	90	1,152	355	513	27,586	10	32,139
Washington	0	15,393	508	14,204	17,662	12,544	2	35	60,350
Watonwan	0	1,484	0	0	1,037	2	0	0	2,523
Wilkin	0	361	25	0	160	22	0	0	568
Winona	0	6,560	194	3,245	760	425	0	0	11,184
WLSSD	0	15,443	176	2,331	6,995	537	1,677	639	27,798
Wright	2	249	90	24	4,125	6	0	0	4,495
Yellow Medicine	0	482	94	0	240	54	16	0	887
Metro Area	5	111,252	8,485	129,382	122,583	31,898	22,550	1,285	427,441
Greater Minn.	206	223,841	29,599	69,089	67,132	13,494	52,906	1,023	457,289
Minnesota	212	335,093	38,084	198,471	189,714	45,392	75,455	2,309	884,730

Metal collected for recycling (tons)

County	Aluminum	Commingled alum/steel/tin	Other ferrous & non-ferrous	Steel/tin cans	Total Metal
Aitkin	91	0	780	50	921
Anoka	362	485	29,175	999	31,021
Becker	109	0	0	57	166
Beltrami	121	0	1,497	0	1,618
Benton	202	86	6,282	2,561	9,132
Big Stone	55	0	869	9	933
Blue Earth	7,651	3,000	1,526	1,245	13,422
Brown	265	0	2,805	403	3,472
Carlton	185	0	44	137	366
Carver	259	26	3,946	47	4,279
Cass	57	0	112	42	211
Chippewa	10	43	0	50	102
Chisago	145	0	100	193	438
Clay	129	0	7	122	258
Clearwater	40	0	357	125	522
Cook	18	0	496	40	554
Cottonwood	11	0	452	35	498
Crow Wing	122	0	7,658	204	7,984
Dakota	627	9,868	8,131	177	18,803
Dodge	27	0	1,500	55	1,582
Faribault	10	88	154	62	314
Fillmore	36	52	0	81	168
Freeborn	236	4,748	0	460	5,444
Goodhue	303	0	285	55	643
Grant	14	0	167	24	205
Hennepin	4,665	2,193	50,411	2,527	59,796
Houston	156	0	625	57	838
Hubbard	343	0	2,485	62	2,890
Isanti	384	0	92	3,389	3,864
Itasca	100	130	2,100	115	2,445
Jackson	59	0	93	195	347
Kanabec	3	1	194	17	215
Kandiyohi	197	0	0	117	314
Kittson	9	58	77	0	144
Koochiching	81	0	835	24	940
Lac Qui Parle	48	73	44	316	482
Lake	20	0	209	42	271
Lake of the Woods	13	0	330	0	343
Le Sueur	378	1	3,503	232	4,114
Lincoln	0	41	0	0	41
Lyon	153	0	68	50	272
Mahnomen	14	0	52	9	75
Marshall	0	71	175	0	246
Martin	263	1,070	2,614	995	4,942
McLeod	72	61	191	138	463
Meeker	82	29	141	214	465

Metal collected for recycling (tons)

County	Aluminum	Commingled alum/steel/tin	Other ferrous & non-ferrous	Steel/tin cans	Total Metal
Mille Lacs	0	66	0	0	66
Morrison	1	171	1,209	32	1,413
Mower	266	0	20	90	377
Murray	57	51	97	0	205
Nicollet	644	38	1,251	69	2,002
Nobles	131	0	0	134	265
Norman	25	0	480	120	626
Olmsted	238	500	3,772	510	5,019
Otter Tail	424	0	4,916	155	5,495
Pennington	0	763	0	0	763
Pine	0	370	2,548	0	2,918
Pipestone	38	43	27	45	153
Polk	197	0	2,974	138	3,309
Pope/Douglas	179	11	3,372	326	3,887
Ramsey	395	604	32,396	904	34,299
Red Lake	12	0	200	36	248
Redwood	540	0	2,886	61	3,486
Renville	84	0	580	178	842
Rice	232	190	1,396	282	2,100
Rock	41	0	1,279	95	1,415
Roseau	44	0	307	216	567
Scott	752	173	14,505	3,354	18,784
Sherburne	248	83	7,467	2,970	10,768
Sibley	310	0	302	23	634
St. Louis	308	2,965	33,882	854	38,009
Stearns	1,177	1,347	19,714	9,078	31,317
Steele	116	10	706	121	953
Stevens	71	0	403	133	607
Swift	115	0	59	78	252
Todd	95	0	0	63	158
Traverse	46	16	0	10	72
Wabasha	57	10	74	467	607
Wadena	221	0	522	45	787
Waseca	123	0	1,068	23	1,214
Washington	1,864	313	5,941	915	9,033
Watonwan	17	0	0	38	54
Wilkin	55	0	61	12	128
Winona	619	0	0	2,278	2,897
WLSSD	580	0	12,864	307	13,751
Wright	229	5	158	818	1,210
Yellow Medicine	12	0	15	66	93
Metro Area	8,419	13,572	137,468	8,539	167,999
Greater Minn.	20,267	16,280	150,566	32,236	219,349
Minnesota	28,687	29,853	288,033	40,775	387,348

Glass collected for recycling (tons)

County	Food & beverage	Other glass	Total Glass
Aitkin	281	0	281
Anoka	4,573	377	4,950
Becker	1,706	0	1,706
Beltrami	617	54	671
Benton	573	4	577
Big Stone	42	0	42
Blue Earth	780	0	780
Brown	383	0	383
Carlton	786	0	786
Carver	5	0	5
Cass	275	0	275
Chippewa	181	0	181
Chisago	641	0	641
Clay	267	0	267
Clearwater	10	0	10
Cook	175	0	175
Cottonwood	119	0	119
Crow Wing	658	0	658
Dakota	6,995	0	6,995
Dodge	225	338	562
Faribault	156	71	227
Fillmore	332	0	332
Freeborn	1,222	0	1,222
Goodhue	1,418	0	1,418
Grant	112	0	112
Hennepin	19,409	1,105	20,514
Houston	556	0	556
Hubbard	411	0	411
Isanti	188	0	188
Itasca	790	0	790
Jackson	104	0	104
Kanabec	47	0	47
Kandiyohi	323	0	323
Kittson	94	0	94
Koochiching	82	0	82
Lac Qui Parle	126	0	126
Lake	196	0	196
Lake of the Woods	500	0	500
Le Sueur	366	0	366
Lincoln	56	0	56
Lyon	190	0	190
Mahnomen	28	0	28
Marshall	101	0	101
Martin	794	255	1,049
McLeod	792	0	792
Meeker	140	0	140

Glass collected for recycling (tons)

County	Food & beverage	Other glass	Total Glass
Mille Lacs	252	0	252
Morrison	289	0	289
Mower	264	0	264
Murray	170	0	170
Nicollet	383	0	383
Nobles	240	0	240
Norman	40	0	40
Olmsted	1,960	670	2,630
Otter Tail	0	482	482
Pennington	0	0	0
Pine	211	0	211
Pipestone	144	0	144
Polk	1,080	0	1,080
Pope/Douglas	1,433	0	1,433
Ramsey	6,328	0	6,328
Red Lake	87	0	87
Redwood	315	0	315
Renville	639	0	639
Rice	867	3,754	4,621
Rock	130	0	130
Roseau	126	3,655	3,781
Scott	1,365	0	1,365
Sherburne	752	5	757
Sibley	116	0	116
St. Louis	1,263	0	1,263
Stearns	2,376	13	2,389
Steele	532	20,409	20,941
Stevens	129	0	129
Swift	253	0	253
Todd	124	0	124
Traverse	33	0	33
Wabasha	362	0	362
Wadena	0	0	0
Waseca	216	0	216
Washington	3,565	0	3,565
Watonwan	155	0	155
Wilkin	65	0	65
Winona	794	0	794
WLSSD	1,915	0	1,915
Wright	1,190	0	1,190
Yellow Medicine	147	0	147
Metro Area	41,627	1,487	43,114
Greater Minn.	36,508	29,704	66,212
Minnesota	78,135	31,192	109,326

Plastic collected for recycling (tons)

County	Film plastic	HDPE	Mixed plastic	Other plastic	PET	Polystyrene (PS)	Total Plastics
Aitkin	0	0	52	0	0	0	52
Anoka	31	90	1,357	1,079	20	91	2,667
Becker	0	0	127	0	0	0	127
Beltrami	0	0	0	0	0	0	0
Benton	49	32	181	12	19	0	293
Big Stone	0	0	28	0	0	0	28
Blue Earth	309	77	1,890	0	549	67	2,892
Brown	22	0	681	0	0	0	702
Carlton	0	15	143	0	11	0	169
Carver	0	0	547	0	3	0	550
Cass	0	0	311	0	28	0	339
Chippewa	1	3	0	3	58	99	165
Chisago	2	0	171	0	0	0	173
Clay	0	0	139	0	0	0	139
Clearwater	0	0	2	0	0	0	2
Cook	0	0	43	0	0	0	43
Cottonwood	0	75	44	1	0	0	120
Crow Wing	0	0	378	0	0	0	378
Dakota	33	1	3,617	0	0	0	3,651
Dodge	0	0	44	215	0	0	258
Faribault	15	0	59	0	13	0	87
Fillmore	0	33	0	0	27	0	60
Freeborn	0	0	856	0	0	0	856
Goodhue	0	228	0	0	119	0	347
Grant	0	0	26	0	0	0	26
Hennepin	0	90	14,077	0	81	0	14,248
Houston	0	30	0	1	40	0	71
Hubbard	0	0	77	0	0	0	77
Isanti	7	0	8	0	0	0	15
Itasca	0	25	27	0	22	0	74
Jackson	0	1	45	5	0	0	51
Kanabec	0	0	93	0	0	0	93
Kandiyohi	0	61	0	0	41	0	102
Kittson	0	2	18	0	4	0	23
Koochiching	0	5	0	0	25	0	30
Lac Qui Parle	0	56	17	0	26	0	100
Lake	0	0	36	0	0	0	36
Lake of the Woods	0	0	0	0	0	0	0
Le Sueur	0	0	74	12	0	0	85
Lincoln	0	0	38	0	0	0	38
Lyon	0	0	177	0	0	0	177
Mahnomen	0	0	7	0	0	0	7
Marshall	0	0	25	0	2	0	27
Martin	15	4	728	0	0	1	748
McLeod	0	0	3,910	0	0	194	4,104
Meeker	0	0	49	0	0	0	49

County SCORE Survey Reponses

Plastic collected for recycling (tons)

County	Film plastic	HDPE	Mixed plastic	Other plastic	PET	Polystyrene (PS)	Total Plastics
Mille Lacs	0	0	77	0	0	0	77
Morrison	0	0	112	177	0	0	289
Mower	68	57	0	0	33	0	158
Murray	0	2	84	2	0	0	88
Nicollet	86	17	134	0	32	0	269
Nobles	0	93	0	0	77	0	170
Norman	0	0	13	0	0	0	13
Olmsted	0	187	214	0	118	0	520
Otter Tail	0	206	0	0	0	0	206
Pennington	0	0	0	0	0	0	0
Pine	0	0	92	0	0	0	92
Pipestone	0	0	737	0	0	0	737
Polk	0	2	76	0	0	0	78
Pope/Douglas	0	292	129	0	90	0	511
Ramsey	10	0	919	0	0	0	929
Red Lake	0	0	15	0	0	0	15
Redwood	40	15	127	47	5	6	239
Renville	0	0	162	0	0	0	162
Rice	30	147	66	0	105	0	348
Rock	0	38	0	2	41	0	81
Roseau	0	0	46	230	0	0	276
Scott	50	51	402	10	188	0	701
Sherburne	32	19	267	7	13	0	338
Sibley	0	0	18	0	0	0	18
St. Louis	0	102	0	0	106	0	208
Stearns	91	108	655	63	123	232	1,272
Steele	0	0	125	69	0	0	194
Stevens	0	21	0	0	21	0	42
Swift	0	52	0	0	61	0	113
Todd	14	0	18	0	12	0	44
Traverse	0	0	14	0	0	0	14
Wabasha	0	0	133	0	0	0	133
Wadena	0	0	0	0	0	0	0
Waseca	0	33	29	17	38	0	117
Washington	111	10	744	0	8	0	873
Watonwan	0	0	57	0	0	0	57
Wilkin	0	0	10	0	0	0	10
Winona	33	81	244	53	0	43	454
WLSSD	10	376	4	0	111	0	501
Wright	0	0	297	0	8	0	305
Yellow Medicine	0	0	82	0	0	0	82
Metro Area	217	210	21,527	1,086	124	91	23,254
Greater Minn.	841	2,527	14,670	917	2,155	642	21,753
Minnesota	1,058	2,737	36,197	2,003	2,279	733	45,007

Organics, textiles and other materials collected for recycling (tons)

County	Food waste	Carpet	Textiles	Pallets	Unspecified or Other	Total
Aitkin	0	0	10	0	3	13
Anoka	13,453	0	1,571	5,256	2,304	22,585
Becker	0	0	0	0	0	0
Beltrami	0	0	0	0	0	0
Benton	0	0	0	0	2	2
Big Stone	0	0	0	0	0	0
Blue Earth	0	0	823	17,761	0	18,584
Brown	800	0	0	1,056	180	2,036
Carlton	0	0	0	0	0	0
Carver	11,836	0	6	585	2,737	15,164
Cass	0	0	25	0	3,000	3,025
Chippewa	0	0	0	0	152	152
Chisago	0	0	54	10	0	64
Clay	6,558	0	578	441	2	7,579
Clearwater	0	0	10	0	0	10
Cook	0	0	19	0	20	39
Cottonwood	0	0	0	1,600	48	1,648
Crow Wing	0	0	334	0	14,951	15,285
Dakota	8,535	0	6,998	4,999	39,463	59,995
Dodge	0	0	6	0	52	58
Faribault	375	0	6	0	0	381
Fillmore	0	0	9	0	0	9
Freeborn	0	0	3	0	0	3
Goodhue	300	0	33	0	0	333
Grant	0	0	0	0	0	0
Hennepin	43,687	6	6	8,742	289,595	342,036
Houston	0	0	18	0	0	18
Hubbard	0	0	102	0	0	102
Isanti	119	0	7	4,073	0	4,199
Itasca	0	0	0	1,750	0	1,750
Jackson	0	0	142	2	304	448
Kanabec	0	0	0	6	2	8
Kandiyohi	156	0	0	0	0	156
Kittson	22	0	0	0	4	25
Koochiching	0	0	0	0	0	0
Lac Qui Parle	0	0	0	0	0	0
Lake	0	0	0	0	16	16
Lake of the Woods	0	0	0	0	0	0
Le Sueur	3,500	0	0	57	0	3,557
Lincoln	0	0	9	0	0	9
Lyon	0	0	159	0	3,000	3,159
Mahnomen	0	0	0	0	0	0
Marshall	0	0	0	0	0	0
Martin	0	0	89	3,268	2	3,359
McLeod	0	0	0	633	2,307	2,940
Meeker	17	0	0	662	0	679

Organics, textiles and other materials collected for recycling (tons)

County	Food waste	Carpet	Textiles	Pallets	Unspecified or Other	Total
Mille Lacs	0	0	0	0	0	0
Morrison	0	0	28	1,420	3	1,451
Mower	0	0	62	13,090	0	13,152
Murray	483	0	146	31	46	705
Nicollet	0	0	0	354	0	354
Nobles	0	0	325	80	0	405
Norman	0	0	0	0	0	0
Olmsted	1,803	0	551	0	2	2,356
Otter Tail	16,592	0	166	43	0	16,801
Pennington	0	0	0	0	0	0
Pine	0	0	0	0	12	12
Pipestone	0	0	125	3,200	104	3,429
Polk	2,308	0	0	0	1,776	4,084
Pope/Douglas	0	124	8	0	213	345
Ramsey	15,308	0	1,022	543	145,053	161,926
Red Lake	0	0	8	0	0	8
Redwood	383	20	838	460	3,018	4,720
Renville	890	0	45	0	0	935
Rice	19,175	0	50	700	0	19,925
Rock	0	0	61	4	0	65
Roseau	531	0	0	527	0	1,058
Scott	169	12	19	627	32	860
Sherburne	387	0	0	6,537	330	7,254
Sibley	2,300	0	0	110	0	2,410
St. Louis	0	0	0	0	0	0
Stearns	1,560	0	0	5,097	4,039	10,696
Steele	0	0	14	5,337	826	6,176
Stevens	0	0	0	0	0	0
Swift	0	0	0	0	0	0
Todd	0	0	0	0	0	0
Traverse	0	0	0	0	0	0
Wabasha	5,848	0	2	150	0	6,001
Wadena	0	0	0	0	201	201
Waseca	0	0	214	0	0	214
Washington	2,033	0	20	1,208	4,053	7,315
Watonwan	0	0	0	0	0	0
Wilkin	0	0	0	0	69	69
Winona	1,209	0	13	1,538	0	2,760
WLSSD	559	0	1,300	2,620	97	4,576
Wright	0	0	0	1	0	1
Yellow Medicine	0	0	0	0	108	108
Metro Area	95,239	6	9,623	27,870	483,535	616,274
Greater Minn.	65,655	156	6,409	66,706	34,591	173,518
Minnesota	160,894	162	16,032	94,577	518,126	789,792

Problem materials (banned) collected for recycling (tons)

County	Anti-freeze	Electronic appliances	Fluorescent & HID lamps	HHW	Latex paint	Major appliances	Used oil	Used oil filters	Vehicle batteries	Waste tires	Total PM
Aitkin	1	15	1	1	4	181	104	8	100	297	711
Anoka	9	92	8	0	0	1,879	251	146	1,922	626	4,934
Becker	0	0	2	18	7	187	25	15	191	62	506
Beltrami	1	25	2	0	0	250	66	19	255	125	743
Benton	2	0	0	1	2	222	469	17	227	74	1,015
Big Stone	0	0	1	0	1	42	39	6	35	34	159
Blue Earth	4	74	5	11	14	650	122	75	1,100	2,100	4,155
Brown	0	9	5	22	5	161	21	13	165	54	456
Carlton	0	0	1	2	4	199	27	15	203	66	518
Carver	2	140	8	197	7	471	63	37	481	157	1,563
Cass	0	4	4	12	6	279	23	13	173	431	944
Chippewa	0	0	0	0	0	78	10	6	80	26	200
Chisago	4	15	1	28	36	279	37	22	285	93	801
Clay	18	8	10	6	16	312	315	29	319	169	1,204
Clearwater	0	0	0	3	1	51	7	4	52	17	135
Cook	0	0	0	0	0	32	15	2	32	11	92
Cottonwood	0	0	5	0	2	72	10	27	74	24	213
Crow Wing	3	32	17	2	13	951	47	33	358	169	1,625
Dakota	118	474	82	79	186	2,254	301	176	2,677	751	7,097
Dodge	0	0	1	8	0	114	15	9	117	47	311
Faribault	2	0	3	1	1	96	13	8	99	32	254
Fillmore	0	0	2	5	20	128	17	10	131	43	356
Freeborn	0	23	1	11	9	242	517	17	213	323	1,355
Goodhue	1	18	6	10	13	271	36	21	277	90	744
Grant	0	3	1	4	3	38	5	3	38	13	107
Hennepin	34	1,485	28	124	514	6,839	912	533	6,996	2,280	19,744
Houston	0	0	2	0	0	275	16	9	123	169	594
Hubbard	0	0	5	2	1	985	25	9	114	340	1,481
Isanti	4	0	4	11	0	1,192	59	17	217	157	1,660
Itasca	2	0	4	0	0	950	37	22	271	88	1,375
Jackson	0	42	3	1	1	67	9	5	69	22	219
Kanabec	0	4	0	0	0	120	18	7	97	232	479
Kandiyohi	0	0	0	0	0	248	33	19	253	83	636
Kittson	0	2	1	1	1	31	4	2	31	10	83
Koochiching	0	0	2	0	1	84	11	7	86	28	219
Lac Qui Parle	0	40	0	0	0	50	25	4	49	16	184
Lake	5	1	1	0	5	67	60	5	69	30	243
Lake of the Woods	0	0	2	4	2	35	74	3	30	85	236
Le Sueur	0	7	3	6	0	160	21	12	164	150	524
Lincoln	0	0	2	3	0	37	21	3	39	29	134
Lyon	0	0	3	0	0	152	20	12	155	51	393
Mahnomen	0	0	0	0	0	39	83	3	34	52	210
Marshall	1	0	2	1	1	60	8	5	61	20	157
Martin	8	335	30	6	6	276	255	12	130	455	1,513
McLeod	0	0	7	60	17	1,400	29	17	220	72	1,822
Meeker	1	0	17	34	4	139	19	11	171	46	442

Problem materials (banned) collected for recycling (tons)

County	Anti-freeze	Electronic appliances	Fluorescent & HID lamps	HHW	Latex paint	Major appliances	Used oil	Used oil filters	Vehicle batteries	Waste tires	Total PM
Mille Lacs	0	0	0	0	0	146	19	11	149	49	374
Morrison	76	4	12	0	7	196	607	15	200	320	1,438
Mower	1	6	6	4	8	234	31	18	239	78	625
Murray	0	1	2	2	1	55	15	4	63	35	178
Nicollet	0	8	10	13	0	185	25	14	190	90	535
Nobles	13	0	10	2	15	124	17	10	127	41	358
Norman	0	0	1	1	3	44	6	3	45	15	118
Olmsted	5	0	1	42	49	792	755	69	868	264	2,845
Otter Tail	0	31	11	60	24	353	47	27	361	118	1,031
Pennington	0	5	5	3	0	82	11	6	84	88	283
Pine	0	0	12	0	0	382	22	13	177	120	726
Pipestone	0	0	0	1	1	58	8	5	59	19	151
Polk	0	0	2	8	2	391	25	15	192	158	792
Pope/Douglas	2	4	78	14	26	272	36	21	278	91	823
Ramsey	0	84	0	0	0	3,092	412	241	3,163	1,031	8,022
Red Lake	0	0	1	1	1	26	7	2	26	15	80
Redwood	42	18	3	6	3	98	230	17	448	717	1,581
Renville	0	2	2	4	3	103	14	8	105	34	275
Rice	12	68	12	6	23	420	48	28	367	120	1,104
Rock	0	0	2	2	1	58	8	5	60	36	171
Roseau	0	8	16	0	2	98	13	8	100	33	278
Scott	147	112	13	95	70	631	84	49	1,927	210	3,338
Sherburne	4	62	2	3	13	449	60	35	459	150	1,236
Sibley	0	4	1	4	0	93	12	7	95	110	325
St. Louis	37	3	10	58	0	1,599	844	40	520	927	4,038
Stearns	0	819	0	0	0	827	637	64	846	1,081	4,273
Steele	0	17	8	4	3	208	28	16	213	69	568
Stevens	0	3	3	5	5	60	8	5	61	20	170
Swift	0	0	3	6	3	70	9	5	72	23	192
Todd	0	0	2	0	2	146	19	11	149	119	449
Traverse	0	0	1	0	1	24	3	2	24	8	63
Wabasha	0	8	1	7	0	133	18	10	136	44	357
Wadena	0	0	0	0	0	225	11	6	84	27	354
Waseca	0	0	2	0	0	117	16	9	120	39	303
Washington	12	0	8	90	144	1,280	171	100	1,310	427	3,541
Watonwan	0	0	1	0	0	71	9	6	72	24	182
Wilkin	0	0	2	2	0	71	11	8	43	23	160
Winona	0	0	0	19	15	298	40	23	305	99	799
WLSSD	48	214	13	98	60	1,016	95	157	699	228	2,627
Wright	0	17	1	34	46	618	82	48	632	206	1,685
Yellow Medicine	0	0	0	0	0	65	9	5	66	22	166
Metro Area	179	2,337	137	493	863	16,263	2,168	1,267	17,009	5,421	46,138
Greater Minn.	439	2,010	403	776	569	21,585	6,646	1,329	17,111	12,156	63,025
Minnesota	618	4,347	541	1,268	1,433	37,848	8,814	2,596	34,120	17,577	109,162

Wastes generated (tons)

County	Estimated MSW not collected	Problem matls not collected	MSW to facilities: disposal/processing	Tons collected for recycling	Total tons generated
Aitkin	275	229	7,957	2,544	11,005
Anoka	0	7,990	183,437	140,460	331,888
Becker	252	802	14,592	6,231	21,876
Beltrami	0	885	18,736	8,021	27,642
Benton	2,827	959	22,117	28,735	54,638
Big Stone	1,007	81	1,873	1,237	4,199
Blue Earth	1,427	805	44,536	76,765	123,533
Brown	2,267	679	15,499	16,935	35,379
Carlton	881	836	12,693	5,250	19,660
Carver	294	2,058	48,111	41,259	91,722
Cass	210	451	17,058	8,315	26,033
Chippewa	1,679	319	8,097	2,581	12,676
Chisago	630	1,221	24,548	7,641	34,040
Clay	833	1,002	27,096	13,489	42,420
Clearwater	42	150	3,856	1,324	5,371
Cook	30	129	4,021	1,540	5,720
Cottonwood	1,006	290	5,792	5,743	12,831
Crow Wing	254	1,400	41,981	40,599	84,234
Dakota	0	9,131	211,428	178,166	398,724
Dodge	881	488	8,664	3,978	14,011
Faribault	1,847	386	7,769	5,105	15,106
Fillmore	3,064	533	5,341	1,994	10,932
Freeborn	420	0	25,783	18,547	44,750
Goodhue	420	1,152	26,517	12,062	40,151
Grant	765	155	2,173	782	3,875
Hennepin	0	28,852	947,994	603,722	1,580,569
Houston	504	333	5,924	2,630	9,390
Hubbard	0	274	13,939	6,729	20,943
Isanti	2,728	921	23,010	8,946	35,605
Itasca	466	1,047	25,173	18,831	45,517
Jackson	943	283	4,039	3,038	8,303
Kanabec	1,259	212	9,315	1,305	12,091
Kandiyohi	871	1,044	29,601	7,402	38,918
Kittson	101	121	1,738	613	2,573
Koochiching	525	346	8,388	3,399	12,658
Lac Qui Parle	1,679	167	2,840	1,237	5,924
Lake	252	33	6,501	2,413	9,199
Lake of the Woods	17	76	2,551	1,351	3,994
Le Sueur	1,028	558	18,662	11,139	31,387
Lincoln	1,007	121	2,184	706	4,019
Lyon	854	631	18,455	8,099	28,039
Mahnomen	426	0	1,538	577	2,541
Marshall	315	252	5,224	786	6,577
Martin	2,375	82	9,950	23,068	35,475
McLeod	3,694	819	27,676	9,959	42,148
Meeker	588	587	9,216	3,466	13,857

Wastes generated (tons)

County	Estimated MSW not collected	Problem matls not collected	MSW to facilities: disposal/processing	Tons collected for recycling	Total tons generated
Mille Lacs	1,679	631	10,572	1,949	14,831
Morrison	378	294	23,462	9,885	34,019
Mower	1,343	983	28,205	24,556	55,087
Murray	902	215	3,275	2,437	6,828
Nicollet	1,049	638	16,346	16,293	34,326
Nobles	1,217	515	10,180	6,559	18,471
Norman	22	178	3,213	1,122	4,535
Olmsted	531	3,379	89,198	57,139	150,247
Otter Tail	982	1,390	32,275	28,664	63,311
Pennington	1,637	342	13,582	2,283	17,844
Pine	574	708	18,415	5,539	25,236
Pipestone	1,196	242	5,060	4,054	10,552
Polk	189	681	17,287	11,853	30,010
Pope/Douglas	496	1,155	29,745	18,782	50,177
Ramsey	0	12,999	422,676	286,601	722,276
Red Lake	8	78	1,404	746	2,237
Redwood	2,045	0	8,225	16,194	26,464
Renville	2,183	420	8,578	3,023	14,203
Rice	1,301	1,453	40,686	38,577	82,017
Rock	588	202	3,880	3,618	8,287
Roseau	682	406	10,794	8,555	20,437
Scott	14	2,788	65,678	63,331	131,811
Sherburne	1,652	1,993	53,401	26,495	83,541
Sibley	443	300	6,673	4,627	12,042
St. Louis	330	677	54,560	52,619	108,186
Stearns	2,776	2,219	74,018	87,472	166,485
Steele	1,070	887	31,946	34,568	68,471
Stevens	406	247	5,166	1,522	7,341
Swift	1,098	291	4,425	2,100	7,915
Todd	2,057	580	11,077	17,384	31,098
Traverse	525	97	972	425	2,019
Wabasha	614	561	6,956	10,193	18,323
Wadena	378	322	7,852	6,122	14,674
Waseca	78	489	10,733	37,629	48,930
Washington	0	5,484	101,358	86,687	193,528
Watonwan	1,049	290	6,390	2,853	10,583
Wilkin	840	141	2,192	1,108	4,281
Winona	1,139	1,257	33,591	20,619	56,605
WLSSD	3,652	2,937	67,704	51,820	126,113
Wright	1,259	2,692	46,930	15,664	66,545
Yellow Medicine	1,217	269	4,305	1,382	7,172
Metro Area	308	69,302	1,980,682	1,400,226	3,450,518
Greater Minn.	80,235	51,014	1,375,894	1,021,539	2,528,682
Minnesota	80,543	120,317	3,356,576	2,421,765	5,979,200

Recycling rate

County	Tons collected for recycling	Total MSW generated	MSW collected for recycling	Source reduction credit	Yard waste credit	Recycling rate with credits
Aitkin	2,544	11,005	23.1%	3%	5%	31.1%
Anoka	140,460	331,888	42.3%	3%	5%	50.3%
Becker	6,231	21,876	28.5%	3%	5%	36.5%
Beltrami	8,021	27,642	29.0%	1%	5%	35.0%
Benton	28,735	54,638	52.6%	2%	5%	59.6%
Big Stone	1,237	4,199	29.5%	2%	3%	34.5%
Blue Earth	76,765	123,533	62.1%	3%	5%	70.1%
Brown	16,935	35,379	47.9%	3%	5%	55.9%
Carlton	5,250	19,660	26.7%	3%	5%	34.7%
Carver	41,259	91,722	45.0%	3%	5%	53.0%
Cass	8,315	26,033	31.9%	3%	5%	39.9%
Chippewa	2,581	12,676	20.4%	0%	5%	25.4%
Chisago	7,641	34,040	22.4%	3%	5%	30.4%
Clay	13,489	42,420	31.8%	3%	5%	39.8%
Clearwater	1,324	5,371	24.6%	3%	5%	32.6%
Cook	1,540	5,720	26.9%	3%	5%	34.9%
Cottonwood	5,743	12,831	44.8%	3%	5%	52.8%
Crow Wing	40,599	84,234	48.2%	6%	5%	59.2%
Dakota	178,166	398,724	44.7%	3%	5%	52.7%
Dodge	3,978	14,011	28.4%	2%	5%	35.4%
Faribault	5,105	15,106	33.8%	0%	5%	38.8%
Fillmore	1,994	10,932	18.2%	3%	5%	26.2%
Freeborn	18,547	44,750	41.4%	3%	5%	49.4%
Goodhue	12,062	40,151	30.0%	1%	5%	36.0%
Grant	782	3,875	20.2%	0%	5%	25.2%
Hennepin	603,722	1,580,569	38.2%	3%	5%	46.2%
Houston	2,630	9,390	28.0%	3%	5%	36.0%
Hubbard	6,729	20,943	32.1%	3%	5%	40.1%
Isanti	8,946	35,605	25.1%	2%	5%	32.1%
Itasca	18,831	45,517	41.4%	3%	5%	49.4%
Jackson	3,038	8,303	36.6%	3%	5%	44.6%
Kanabec	1,305	12,091	10.8%	1%	5%	16.8%
Kandiyohi	7,402	38,918	19.0%	1%	5%	25.0%
Kittson	613	2,573	23.8%	3%	5%	31.8%
Koochiching	3,399	12,658	26.9%	4%	3%	33.5%
Lac Qui Parle	1,237	5,924	20.9%	3%	5%	28.9%
Lake	2,413	9,199	26.2%	3%	5%	34.2%
Lake of the Woods	1,351	3,994	33.8%	1%	3%	37.8%
Le Sueur	11,139	31,387	35.5%	2%	5%	42.5%
Lincoln	706	4,019	17.6%	3%	5%	25.6%
Lyon	8,099	28,039	28.9%	3%	5%	36.9%
Mahnomen	577	2,541	22.7%	3%	5%	30.7%
Marshall	786	6,577	12.0%	2%	5%	19.0%
Martin	23,068	35,475	65.0%	3%	5%	73.0%
McLeod	9,959	42,148	23.6%	3%	5%	31.6%
Meeker	3,466	13,857	25.0%	3%	5%	33.0%

Recycling rate

County	Tons collected for recycling	Total MSW generated	MSW collected for recycling	Source reduction credit	Yard waste credit	Recycling rate with credits
Mille Lacs	1,949	14,831	13.1%	1%	5%	19.1%
Morrison	9,885	34,019	29.1%	3%	5%	37.1%
Mower	24,556	55,087	44.6%	3%	5%	52.6%
Murray	2,437	6,828	35.7%	3%	5%	43.7%
Nicollet	16,293	34,326	47.5%	2%	5%	54.5%
Nobles	6,559	18,471	35.5%	3%	5%	43.5%
Norman	1,122	4,535	24.7%	1%	5%	30.7%
Olmsted	57,139	150,247	38.0%	3%	5%	46.0%
Otter Tail	28,664	63,311	45.3%	3%	5%	53.3%
Pennington	2,283	17,844	12.8%	3%	5%	20.8%
Pine	5,539	25,236	21.9%	3%	5%	29.9%
Pipestone	4,054	10,552	38.4%	3%	5%	46.4%
Polk	11,853	30,010	39.5%	3%	5%	47.5%
Pope/Douglas	18,782	50,177	37.4%	3%	5%	45.4%
Ramsey	286,601	722,276	39.7%	3%	5%	47.7%
Red Lake	746	2,237	33.4%	3%	5%	41.4%
Redwood	16,194	26,464	61.2%	3%	5%	69.2%
Renville	3,023	14,203	21.3%	3%	3%	27.3%
Rice	38,577	82,017	47.0%	3%	5%	55.0%
Rock	3,618	8,287	43.7%	3%	5%	51.7%
Roseau	8,555	20,437	41.9%	3%	5%	49.4%
Scott	63,331	131,811	48.0%	3%	5%	56.0%
Sherburne	26,495	83,541	31.7%	3%	5%	39.7%
Sibley	4,627	12,042	38.4%	2%	5%	45.4%
St. Louis	52,619	108,186	48.6%	3%	5%	56.6%
Stearns	87,472	166,485	52.5%	3%	5%	60.5%
Steele	34,568	68,471	50.5%	2%	5%	57.5%
Stevens	1,522	7,341	20.7%	3%	5%	28.7%
Swift	2,100	7,915	26.5%	3%	5%	34.5%
Todd	17,384	31,098	55.9%	2%	5%	62.9%
Traverse	425	2,019	21.0%	3%	5%	29.0%
Wabasha	10,193	18,323	55.6%	3%	5%	63.6%
Wadena	6,122	14,674	41.7%	2%	5%	48.7%
Waseca	37,629	48,930	76.9%	2%	5%	83.9%
Washington	86,687	193,528	44.8%	3%	5%	52.8%
Watonwan	2,853	10,583	27.0%	0%	5%	32.0%
Wilkin	1,108	4,281	25.9%	3%	5%	33.9%
Winona	20,619	56,605	36.4%	3%	5%	44.4%
WLSSD	51,820	126,113	41.1%	3%	5%	49.1%
Wright	15,664	66,545	23.5%	3%	5%	31.5%
Yellow Medicine	1,382	7,172	19.3%	3%	5%	27.3%
Metro Area	1,400,226	3,450,518	40.6%	3.0%	5.0%	48.6%
Greater Minn.	1,021,539	2,528,682	40.4%	2.5%	4.9%	47.8%
Minnesota	2,421,765	5,979,200	40.5%	2.6%	4.9%	48.0%

Appendix B

History of Solid Waste Management in Minnesota

1900-1949

How wastes were managed

- Solid waste was not a big issue. Garbage dumps and burning dumps were located everywhere in the state.
- Over 1,800 garbage and burning dumps were located in Minnesota.
- All types of wastes were disposed of in the dumps.
- Dumps offered the opportunity for people to scrounge for reusable items. One man's throwaway could be another man's treasure.
- All burnable materials were burned, including yard waste, tires, and used oil.
- Used oil was dumped on roads or drained on the ground.
- Rural people all had burn barrels for anything that would burn.
- Dumps served as a social gathering place for people for such activities as shooting rats and watching bears (Northern Minnesota).
- Any regulatory control was the responsibility of city, village, or township in which dump was located.
- Typical problems were smoke, odors, rodents, flies, litter, and ground- and surface-water pollution.
- The MDH was created in 1927, but was only given legislative authority over dumps located in tourist camps, summer hotels, and resorts.

Waste composition and amounts

- Wastes were much different than today's wastes.
- Household wastes were much less in volume. No plastic containers.
- Glass and tin were used extensively for containers.
- Pop, beer, and milk all came in returnable glass bottles.
- Most meat, fruit, and vegetables were bought fresh from markets or were raised and processed by the household. Canning was the common method for preserving food.
- Meat from markets was usually wrapped in butcher paper. Fruit and vegetables were usually sent home in paper bags or burlap bags, which could be reused.
- Junk mail was nonexistent.
- People in general were much more frugal; two World Wars and the great depression made people more conscious about saving and reusing as many items as they could.

1950s

How wastes were managed

- Dump sites continued as the disposal method.
- Land use, due to expanding cities with quickly increasing populations, caused concerns for many of the existing dumps. New dump sites were getting hard to site, NIMBY (not in my backyard) started with the increasing populations.

- Metro Area shortage of dump sites led the Legislature to enact chapter 450 in 1957. Let cities of the 2nd, 3rd, and 4th class within 25 miles of Minneapolis City Hall create sanitary disposal authority. However, only one authority was formed and the shortage of dumps sites continued.
- In rural Minnesota, life went on like it had in the past. Dumps continued to burn and bury. The siting of new dumps generally was not a problem in greater Minnesota.

Waste composition and amounts

- Household wastes very small when compared to today's wastes. No plastic containers. Glass bottles and tin cans were the main containers. Paper boxes for breakfast food and oatmeal.
- Televisions were just starting to become popular; this would prove to be a large problem in the future (electronic wastes).

1960s

How wastes were managed

- The shortage of dumps due to the increasing of population and the expansion of cities became a national issue.
- In 1965 the Federal Solid Waste Disposal Act was passed. 19 Solid waste research projects received up to $2 million in aid from the Federal Government.
- In 1967 the Federal Beautification Act was passed. (Lady Bird Johnson Act) It did not allow any landfills to be built adjacent to a highway.
- In 1967 the Minnesota Legislature created the MPCA investing them with broad powers to control air, water and land pollution. The MPCA did not have authority to control solid waste activities. However, the MPCA was directed to study and make recommendations on solid waste disposal needs for the 1969 legislature.
- The 1967 Legislature also created the Metropolitan Council and directed them to study and plan solid waste management in the Twin Cities Metro area.
- The 1969 Legislature gave SW authority to the MPCA and to the Met Council.
- State Solid Waste Act becomes law - Prohibits open burning; solid waste permitting process established; landfills upgraded; put emphasis on creating sanitary landfills.

Waste composition and amounts

- Waste amounts increase as the population increases. More individual packaging begins.
- Glass returnable bottles (pop, beer, and milk) still used extensively.
- Milk starts to be sold in paper containers.
- Pop and beer begin to be sold in metal cans – mid 1960s.
- Convenience becomes important to the consumers and our ways of life.
- Burning dumps still the most used waste disposal method in Minnesota.

1970s

How wastes were managed

- Open dumps are closed and sanitary landfills are established using county solid waste plans as a tool.
- MPCA promulgates solid waste rules requiring disposal facilities to obtain permits and meet basic design and operational meetings.
- In 1971 the Legislature enacted Chapter 400 establishing a much expanded role in solid waste management for counties outside the Twin Cities Metropolitan area.
- MPCA required all counties to submit plans on managing solid waste. In these plans, the county needed to indicate the dumps to be upgraded to sanitary landfill statue and the dumps to be closed.

- By 1973, approximately 1,500 operating open dumps were replaced by approximately 140 permitted landfills.
- In 1973 the MPCA revised the solid waste rules to: exclude hazardous waste disposal practices, to provide for a five-foot minimum separation to the ground water table and establish closure requirements for dumps.
- September 1973, 84 of the 87 county plans had been submitted to MPCA for approval.
- In 1974 all efforts were directed to dump closing and construction of permitted landfills.
- In 1974 landfill operator training was offered for the first time.
- In 1974 the water monitoring reports start to show the presence of leachate at permitted landfills. This served as the early warning that something was wrong and that sanitary landfills could actually cause pollution problems.
- Foundation of the Met Council and metro counties solid waste planning structure.
- 1976 Federal Resource Conservation and Recovery Act (RCRA) enacted.
- 1977 almost all open dumps were closed and nearly all landfills were permitted.
- In 1978, a number of landfills permitted in the early 1970s were either closing or asking for expansions. A crisis situation was predicted in the Metropolitan Area, and the other large cities in the state (Duluth, St Cloud, Rochester).
- The 1978 Legislature enacted Chapter 728, which required the State Panning Agency to study the problems with solid waste and hazardous waste in the state and report back to the Legislature. This study known as the "Casserly Report" was published in 1979. Its recommendation would be used for legislation in 1980.
- In 1979 the MPCA began to focus on ground water and hazardous waste. In June of 1979, the MPCA published the state hazardous waste rules.

Waste composition and amounts

- Amounts of MSW increasing as the population of the state grows and the economy booms.
- Consumer convenience becomes extremely important.
- The use of plastic in packaging increases.
- The use of glass returnable bottles in the beverage business decreases as the use of aluminum cans increases.
- Fast food industry becomes extremely large.
- Disposable diapers become very popular with the working families.
- See U.S. EPA.1977 Solid Waste Composition Study.

1980s

How wastes were managed

1980: Minnesota Waste Management Act established by the Legislature.

- Establishes state waste management hierarchy (emphasizing resource recovery – waste combustion, composting, and recycling over land disposal).
- Creates landfill siting process.
- Solid waste abatement planning required in Twin Cities region waste assurance provided (i.e., designation or flow control).
- Waste Management Board (precursor to OEA) created and given solid and hazardous waste responsibilities (hazardous waste siting and recycling grants.
- Provides grants to MPCA for solid waste planning, as well as for new technology for resource recovery.
- Legislative Commission on Waste Management created.

- MPCA documents ground water contamination problems at unlined landfills.

1981

- RCRA State Plan (MPCA state solid waste plan approved by federal EPA).

1982 to 1984: Development of recycling and solid waste management

- First resource recovery facility opens (1982).
- Initial development of recycling and public education initiatives.
- Solid waste plans are required to contain information and to be approved by the MPCA.
- 1982- landfill "Certificate of Need" legislation – intends that landfilling is the method of last resort.

1983

- In 1938 Minnesota's Superfund Program was created under the Minnesota Environmental Response and Liability Act (MERLA) and the federal Superfund Program under the1980 Comprehensive Environmental Response, Compensation and Liability Act [CERLA]. This provided legal and financial tools to remediate uncontrolled releases of hazardous substances, including where releases had been identified at landfills.

1985 to 1986: Mandatory Waste Processing

- Legislation for the Metro Area.
- Requires that no unprocessed MSW generated in the Metro Area go to landfills after Jan. 1, 1990.

Waste Management Act Amendments

- Waste tires could not be disposed in the land. (Minn. Stat.§115A.904)
- Source separated recyclable materials may not be accepted at public resource recovery facilities, except for transfer to a recycler, unless no other person is willing to accept the recyclable materials.

Third Metropolitan Region Solid Waste Plan

- Sets abatement goals based on hierarchy (80% processing; 20% reduction/recycling; market development, and public education).
- Abatement grant program established.

Solid waste planning rules adopted

- County Solid Waste Management master plans are stated, implementing the waste management hierarchy.

HHW Program developed

- MPCA sponsored household hazardous waste (HHW) collections begin.

1987 to 1988: Solid waste responsibilities are divided

- County solid waste management master plans approved by Met Council for Metropolitan region; WMB for greater Minnesota.
- Political support building for major processing facilities due to difficulties in siting new landfill capacity (examples, East Central, Pope/Douglas, Prairieland).
- Greater regional awareness of solid waste problems.
- Major recycling programs implemented.
- WMB assumes responsibility for planning and issuing Certificates of Need for landfill capacity.
- MPCA promulgates new landfill siting criteria, design standards, closure/ post closure and financial assurance requirements are set by MPCA.

- New rule requirements for liners, leachate collection systems, ground water monitoring and financial assurance increased operating costs foe MSW landfills- about 50% of operating landfills close by 1990 (55 still in operation).
- MPCA streamlines permit-by-rule for recycling, yard waste, transfer and demolition facilities.
- MPCA establishes partnership program with counties for HHW management.

Waste Management Act Amendments

- Spent lead acid batteries and used oil disposal in MSW was prohibited.
- Used motor oil is restricted from disposal in or on the land without MPCA approval.

1989: SCORE Legislation passed

- Sets county recycling goals.
- Establishes state funding for waste reduction, recycling and problem materials management from sales tax applied to garbage collection services ($25 million to counties).
- Office of Waste Management (OWM) replaces the Waste Management Board.
- Counties required to have a Household Hazardous Waste Plan completed by October 4, 1990.

Highlights of the 1980s

Processing facilities built and operating (some built with CAP funding)

1982 – St Johns Incinerator (Collegeville) closed 1988
1982 – Red Wing (Red Wing)
1983-84 – Rueters RDF (MPLS)
1985 – Newport (RDF) NRG (Newport)
1985 – WLSSD Incinerator (Duluth)
1986 – Quadrant WTE (Perham Facility)
1986 – RECOMP RDF-Compost (St Cloud)
1987 – Wilmarth (Mankato-NSP-NRG) rebuilt to burn RDF
1987 – Olmsted County WTE (Rochester)
1987 – Red Wing WTE (Red Wing)
1987 – Pope/Douglas WTE (Alexandria)
1987 – Fillmore County MSW Composting
1988 – Polk County WTE (Fosston)
1988 – Elk River Incinerator (Elk River)
1984-1988 – Future Fuels – SWIS Corp. (RDF/compost) (Thief River Falls)
1988 – Lake of the Woods MSW Composting
1989 – HERC WTE Facility (MPLS)
1989 – Fergus Falls WTE (Fergus Falls)
1989 – Rice County HHW and Recycling Facility

Waste composition and amounts

- Waste volumes continue to increase.
- Aluminum continues to increase in the beverage container market, glass continues to decline.
- Plastics show increases; shrink wrap and protective wrapping becomes standard in the shipping of goods.
- Paper continues to increase (office paper is a large percentage due to the introduction of printers for computers).

1990s

How Wastes Were Managed

1990: Pollution Control Act

- Requires industries to prepare plans and progress reports for submission to the MPCA and the OWM.
- Provides for financial and technical assistance from the MPCA and OWM on pollution control methods.
- Metro counties create SWMCB.

Waste Management Act Amendments

- Yard waste can not be disposed in landfills and resource recovery facilities, in the Metro Area, except for the purposes of composting. [Minn. Stat. § 115A.931]
- A person may not dispose of unprocessed MSW at a Metro Area disposal facility. Certain exemptions exist for unprocessible wastes and other conditions. [Minn. Stat. § 473.848]
- A person may not place a major appliance in MSW, in or on the land, or a disposal or processing facility. Counties are required to provide for the opportunity to recycle residential major appliances. [Minn. Stat. §§ 115A.02, subd. 17a, 115A.552, 115A.9561]
- A person may not place in MSW a dry cell battery containing mercuric oxide electrode, silver oxide electrode, nickel-cadmium or sealed lead-acid that was purchased or used by a government agency or an industrial, communications, or medical facility. [Minn. Stat. 115A.9155]

1991: MPCA Prioritizes Permitting Projects

- New federal standards for landfills enacted (Subtitle D of federal RCRA).
- MPCA prioritizes permitting activity for facilities that are higher on the Waste Management Act's hierarchy.

Waste Management Act Amendments

- A person may not place in MSW a rechargeable battery or battery pack or a product with a non-removable battery pack. [Minn. Stat. § 115A.9157]
- Solid waste generated outside of Minnesota may not be processed or disposed of unless the waste meets all current solid waste management regulations and has separated all items that are banned from MSW. [Minn. Stat. § 115A.935]

Fourth Metro regional Solid Waste Plan

- Establishes goal of 35% recycling by 1993 (50% by 2000).
- Emphasis on toxicity reduction; reduced dependence on landfilling.
- Greater responsibility on generators to recycle and reduce waste.

1992: MPCA receives approval from Federal EPA for the Solid Waste Permitting Program

- Each county in Minnesota required to implement their Household Hazardous Waste Management Plan by June 30, 1992.

Waste Management Act Amendments

- The yard waste ban was extended to Greater Minnesota [Minn. Stat.§ 115A.931]
- A person may not place mercury, a thermostat, thermometer, electric switch, appliance, medical/scientific instrument that has not had the mercury removed in solid waste, knowingly place in a processing or disposal facility or in a wastewater disposal system. Manufactures are required to provide information on recycling or proper management of the product. A person may not sell for resale, or at retail, a toy or game that contains mercury. [Minn. Stat. §§ 115A.932, 116.92, 116.932]

Federal Court Flow Control Decisions

- 1992 – Faribault and Martin Counties waste designation ordinance struck down; 1994 Supreme Court Carbone decision; 1995 – "Environmentally Inferior Facilities" struck down.
- Limits the ability to direct MSW to resource recovery facilities.
- Increased the amount of MSW going out-of-state landfills.
- Many local governments subsidize tipping fees to at public resource recovery facilities to make them competitive with out-of-state landfills.

1993: Waste Management Act Amendments

- A person (households were exempt until August 1, 1994) may not knowingly place a fluorescent or high intensity discharge lamp in solid waste or at a solid waste facility, except a household hazardous waste or recycling facility. [Minn. Stat. § 115A.932]
- A person shall not dispose of residential lead paint at an unlined land disposal facility or a MSW incinerator. Citizens who remove lead paint must manage the waste in accordance with household hazardous waste laws. [Minn. Stat. §§ 116.875, 116.88]
- **Hennepin County enacts first Waste Generator Fee.** Hennepin County enacts an ordinance requiring waste generators to fund solid waste management programs. This is the first solid waste generator fee in the state.

1994: Office of Environmental Assistance (OEA) created

- Replaces Office of Waste Management.
- Assumes Metropolitan Council's solid waste responsibility.

Landfill Cleanup Act

- Creates close landfill program.
- Transfer of ownership of landfills to state.
- In response a significant portion of MSW landfills close, leaving only 27 MSW landfills operating.
- 106 Minnesota landfills become part of program.

1994 and 1995: Waste Management Act Amendments

- Prohibition on disposal of motor and vehicle fluids and filters expanded to include brake fluid, power steering fluid, transmission fluid, commercially generated motor oil filters and antifreeze. [Minn. Stat.§ 115A.916]
- Households generating fluorescent or high intensity discharge lamps may not knowingly dispose of them in solid waste or at a solid waste facility, except a household hazardous waste or recycling facility. [Minn. Stat.§ 115A.932]
- A person may not place a telephone directory (that contains more than 7,500 listing) in solid waste, in a solid waste disposal facility or at a resource recovery facility, except a recycling facility. Directory publishers or distributors have certain collection and recycling requirements. [Minn. Stat. § 115A.951]
- Unprocessed MSW disposal restriction was amended to cover all MSW generated in the Metro Area and established a standard of no more that 35 percent of the weight before processing may be disposed of in any MSW disposal facility on an annual basis. [Minn. Stat. § 473.848]
- The ban on the delivery of source-separated recyclables was amended to include disposal facilities and private resource recovery facilities unless approved by the Director of the MOEA. [Minn. Stat. § 115A.95]
- A person may not knowingly vent, or other wise release into the environment, any CFC used as refrigerant in appliances. [Minn. Stat. § 116.731]
- Motor oil filter ban extended to those generated by households. [Minn. Stat. § 115A.916]

1996

- Legislative Commission on Waste Management (LCWM) abolished.

Waste Management Act Amendments

- Businesses that purchase and use 150 or fewer gallons per month and residential users may not place antifreeze in the sanitary sewer system. [Minn. Stat. § 115A.916]
- 1996 to 1998 Waste Management Act re-examined by the OEA.

1997

- **Fifth Metropolitan Regional Solid Waste Policy Plan:** Focus on waste and toxicity reduction; sustainability.
- Olmsted County Solid Waste Management contract with waste haulers: Use of contract and service fees to control flow of MSW.

1998

- **Stearns County Solid Waste Collection and Transportation Ordinances:** Ordinances use public health as a way to direct the collection and transportation of MSW.
- **Public Entities Law [Minn. Stat. §§115A.46, 115A.471]:** Requires that a public entity that manages solid waste must manage waste in a manner that is not inconsistent with the county solid waste management plan.

1999

- **Wabasha County Public Solid Waste Service Ordinance:** County assumes the responsibilities for the collection, transportation, processing and disposal of all MSW generated within the county.

Highlights of the 1990s

Processing facilities built and operating (CAP Grant Funding)

1990 – Aitkin County HHW/Recycling Facility
1990 – Norman County Recycling Facility (Ada)
1990 – Swift County MSW Compost and Recycling Facility (Benson)
1990 – Goodhue Recycling Facility
1991 – Hubbard County Recycling Facility (Park Rapids)
1991 – City of North Mankato Recycling Facility (North Mankato)
1991 – Dodge County recycling Facility
1991 – Lake County Recycling Facility
1991 – Prairieland MSW Compost Facility (Truman)
1991 – Wright County MSW Compost (Buffalo)
1991 – Kandiyohi HHW/Recycling Facility (Willmar)
1991 – East Central MSW Compost Facility (Mora)
1992 – Clearwater County Recycling Facility (Bagley)
1992 – Redwood County Recycling Facility (Redwood Falls)
1992 – Hennepin County HHW facility (MPLS)
1992 – Pennington County MSW Compost Facility (Thief River Falls)
1992 – Cass County HHW/Recycling (Pine River)
1992 – WLSSD HHW Facility (Duluth)
1992 – Blue Earth County HHW Facility (Mankato)
1992 – Olmsted County HHW Facility (Rochester)
1994 – Otter Tail County HHW/Recycling Facility (Fergus Falls)
1994 – Koochiching Recycling /HHW Facility (International Falls)
1994 – Waseca County Recycling/HHW Facility (Waseca)
1994 – Cook County recycling Facility
1995 – Polk County MRF at Polk Co. WTE Facility (Fosston)

1997 – St Louis County HHW Facility
1997 – Scott County HHW Facility
1998 – Tri - County North HHW Facility (St. Cloud)
1998 – Chisago County HHW Facility
1999 – City of Hutchinson Organic Compost/HHW Facility (Hutchinson)

Facilities closed for operations during the 1990s

- Recomp MSW Compost (St Cloud) 1994
- East Central MSW Compost (Mora) 1994
- Wright County MSW Compost Facility 1994
- Quadrant (Perham) Resource Recovery Facility 1998
- WLSSD Incinerator 1998

Waste composition and amounts

The 1990s were a decade of both population growth and growth in MSW production. Total MSW production during the decade grew at 33.6% or approximately 3.4% per year. The population during the decade grew at approximately12.4% or at approximately 1.25% per year. The 1990s saw the beginning and the growth of recycling. During the decade recycling grew from a statewide rate of approximately 25% to approximately 47.7%.

The composition of MSW produced in Minnesota changed during the decade of the 1990s. A summary of changes taken from the R W. Beck, Inc. study are as follows:

- Paper – decrease from 40.1% of total waste stream to 34.3%
- Plastic – remained the same 11.4 %.
- Metal – Increase from 5.0% to 5.1%.
- Glass – decrease from 3.1% to 2.8%.
- Organics (food wastes) – decrease from 13.3% to 12.4%.
- Organics (yard wastes) – decrease from 2.9% to 2.3 %.
- Wood waste – increase from 6.5% to 7.5%.
- Other organic – decrease from 3.7% to 1.4%.
- Textiles – increase from 3.1% to 5.1% (increase due to carpet recycling in late 1990s).
- Construction/Demolition – decrease from 2.9% to 2.8%.
- Diapers – decrease from 2.4% to 2.1%.
- Tires – increase from 0.1% to 0.8%.
- Other inorganic – increase 3.8% to 5.8%.
- Problem materials – increase from 0.8% to 1.9%.
- HHW/HW – increase from 0.9% to 1%.

2000s

2000: OEA Solid Waste Policy Report

- Proposes new policies that emphasize reduction, recycling, and recovery.
- Set goal of eliminating landfilling of unprocessed MSW by 2008.
- Transition from waste management to resource efficiency.

2001

- **NEPSI (National Electronics Product Stewardship Initiative):** NEPSI kicks off with meeting in Washington, D.C. NEPSI's purpose is to bring stakeholders together to develop solutions to the issue of electronic products management.

2002

- **State Solid Waste Policy Report:** Waste as a resource.
- Lake of the Woods MSW compost facility closes, not cost effective.
- SCORE funding reduced by Legislature from $14.1 million to $12.6 million.
- Quadrant WTE reopens as the Perham resource recovery facility.

2003

- **OEA Solid Waste Advisory Committee:** OEA Solid Waste Task Force recommends a vision, goals, and action items for solid waste management in Minnesota.
- **Minnesota Legislature Bans Cathode Ray Tubes In MSW:** Effective July 1, 2005, a person may not place an electronic product containing a cathode ray tube in MSW. (Chapter 128, Article 1, Section 129)
- **Metropolitan Regional Solid Waste Plan:** Focuses on sustainability, waste as a resource, solid waste management hierarchy, generator responsibility, government as a leader, product stewardship, private sector initiative and reinvigoration of recycling.
- **Ramsey/Washington County Environmental Service Charge:** Ramsey and Washington Counties jointly implemented the County Environmental Service Charge in 2003. The County Environmental Serve Charge (CEC) transfers the service charge for solid waste management from the property tax statement to hauler bills for all customers of garbage services in the two counties.
- Norman County Recycling Center closes due to high cost of operation.
- SCORE funding unallotted (11.5%) by governor for FY 2003.

2004

- SCORE funding restored to level before unallotment, but still $1.6 million short of years before FY 2002.
- SWIS/Pennco MSW resource recovery (MSW compost facility) in Thief River Falls closes for financial reasons.
- Clearwater County recycling facility closes due to high costs of operation.

2005

- Legislature extends July 1, 2005 date for the ban on cathode ray tubes in the MSW to July 1, 2006.
- Legislative Waste Management Task Force was created to examine the management of organic wastes, to examine alternative methods of establishing a statewide system for the disposal of electronic waste, and to examine prospects for expanding current landfills and siting new ones.
- The Legislature passes a bill to merge the Minnesota Office of Environmental Assistance and the Minnesota Pollution Control Agency.

Appendix C

Six-Year Solid Waste Plan

Strategic Plan Objectives

By 2006 MSW Growth Rate does not exceed the annual Population Growth Rate of 0.95%
Statewide recycling rate by 2006: 43%
Statewide processing rate by 2006: 27%
Statewide recycling rate by 2010: 50%
Statewide processing rate by 2010: 35%

Year:			2005	2006	2007	2008	2009	2010	5 Yr Totals	
MSW Generation Projections										
	5,933,000	5,980,000	4.51%							
2003 Policy Report Projection -- tons			*6,249,590*	*6,447,026*	*6,650,988*	*6,861,700*	*7,079,397*	*7,304,321*	*34,340,000*	*tons*
Strategic Plan Objective Generation -- *tons*	*@pop growth rate*		6,250,000	**6,310,000**	**6,370,000**	**6,430,000**	**6,490,000**	**6,550,000**	***32,150,000***	*tons*
	Annual Waste Growth= Population Growth			*0.96%*	*0.95%*	*0.94%*	*0.93%*	*0.92%*		

Waste Reduction Strategic Objective

Waste Reduction Rate Strategic Objective		**2%**	**4%**	**6%**	**8%**	**10%**		
Waste Reduction Tonnage Objective *(The difference from the Policy Report Tonnage)*		140,000	280,000	430,000	590,000	750,000	**2,190,000**	*tons*
Base Waste Generation		6,310,000	6,370,000	6,430,000	6,490,000	6,550,000		

Total Waste Reduction Accomplished through 2010 to

Recycling Strategic Objective

Recycling Rate Strategic Objective	**39%**	**41%**	**43%**	**46%**	**48%**	**50%**		
Recycling tons projected, if Strategic Objective met	2,440,000	**2,600,000**	**2,760,000**	**2,930,000**	**3,100,000**	**3,280,000**	**14,670,000**	*tons*
Base Objective Recycling Capacity Starting @ 2005 (tons)	2,440,000	2,440,000	2,600,000	2,760,000	2,930,000	3,100,000		
Increased Recycling Needed Annually above Base % to Reach Strategic Objective		*160,000*	*160,000*	*170,000*	*170,000*	*180,000*	***840,000***	*tons*

Total New MSW Recycling Activity Needed by 2010 to Reach the Strategic Objective

Processing Strategic Objective

MSW Processing Rate Strategic Objective	**20.32%**	**27%**	**29%**	**31%**	**33%**	**35%**		
MSW Processing Projection Objective Tonnage	1,270,000	**1,700,000**	**1,850,000**	**1,990,000**	**2,140,000**	**2,290,000**	**9,970,000**	*tons*
Base Objective Processing Facility Capacity Starting @ 2005 (tons)	1,400,000	1,400,000	1,700,000	1,850,000	1,990,000	2,140,000		
New Processing Needed Annually to Reach Strategic Objective Capacity		*300,000*	*150,000*	*140,000*	*150,000*	*150,000*	***890,000***	*tons*
% of MSW Collected by Waste Collection Industry Going to Processing Fac.	*33%*	*46%*	*51%*	*57%*	*63%*	*70%*		

Total New MSW Processing Capacity Needed by 2010 to Reach the Strategic Objective

Landfilling Remaining MSW

		2,540,000	**2,010,000**	**1,760,000**	**1,510,000**	**1,250,000**	**980,000**	**7,510,000**	*tons*
Total MSW Percent to Landfill		41%	**32%**	**28%**	**23%**	**19%**	**15%**	
MSW Permitted LF Capacity - MN	*29%*	730,000	580,000	510,000	430,000	360,000	280,000	*2,160,000*	
MSW Capacity Remaining - out-of-state	*71%*	1,810,000	1,430,000	1,250,000	1,080,000	890,000	700,000	*5,350,000*	
Landfill capacity remaining (MN)	*18,622,000*	*17,892,000*	*17,312,000*	*16,802,000*	*16,372,000*	*16,012,000*	*15,732,000*		
Landfill capacity remaining (out-of-state)	*46,179,000*	*44,370,000*	*42,940,000*	*41,690,000*	*40,610,000*	*39,720,000*	*39,020,000*		
Total landfill capacity remaining	*64,800,000*	*62,260,000*	*60,250,000*	*58,490,000*	*56,980,000*	*55,730,000*	*54,750,000*		

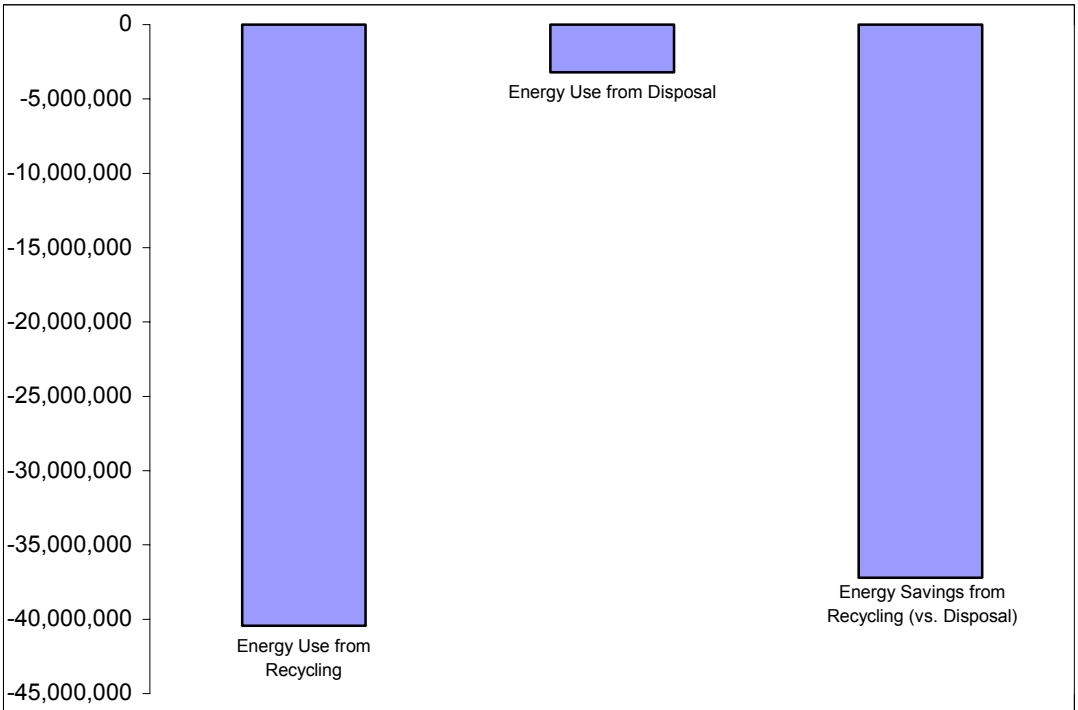
Appendix D

Energy Savings from Recycling

	Tons Recycled	Energy Use if All Recycled (million BTU)	Energy Use if All Disposed (million BTU)	Net Energy from Recycling Compared to Disposal (million BTU)	Energy Savings in Per Household Equivalent (# of houses/year)
RECYCLABLE COMMODITIES					
Aluminum Cans	24,510	-4,645,358	9,286	-4,654,644	-44,246
Steel Cans	40,819	-815,000	-246,892	-568,109	-5,400
Mixed Metals	38,779	-3,106,597	18,474	-3,125,071	-29,706
Ferrous Scrap Metal	346,449	-6,917,270	-2,095,481	-4,821,790	-45,835
Glass	116,040	-246,633	42,459	-289,092	-2,748
HDPE	2,767	-52,552	-5,784	-46,769	-445
LDPE	0	0	0	0	0
PET	2,713	-60,239	-2,507	-57,732	-549
Mixed Plastics (HDPE, LDPE, and PET)	36,803	-777,993	-54,498	-723,496	-6,877
Unclassified Plastics	4,790	-101,258	-7,093	-94,165	-895
Corrugated Cardboard	351,596	-4,571,303	-205,498	-4,365,805	-41,500
Magazines/Third-class Mail	30,256	-20,745	-9,121	-11,624	-110
Newspaper	196,811	-3,244,616	-126,620	-3,117,997	-29,639
Office Paper	43,845	-442,003	-30,460	-411,543	-3,912
Phonebooks	1,887	-22,514	-1,214	-21,300	-202
Textbooks	0	0	0	0	0
Mixed Paper	219,998	-3,069,268	-118,105	-2,951,163	-28,053
Other Uncategorized Paper	50,615	-336,734	-30,268	-306,465	-2,913
Dimensional Lumber	0	0	0	0	0
Medium-density Fiberboard	0	0	0	0	0
TOTAL - COMMODITIES	**1,508,678**	**-28,430,084**	**-2,863,321**	**-25,566,763**	**-243,030**
OTHER MATERIALS					
Food Scraps	156,934	91,649	10,184	81,466	774
Yard Trimmings	0	0	0	0	0
Grass	0	0	0	0	0
Leaves	0	0	0	0	0
Branches	0	0	0	0	0
Mixed Organics	0	0	0	0	0
Unclassified Organics	0	0	0	0	0
Construction	0	NA	NA	NA	NA
Mixed Recyclables	0	0	0	0	0
Other Recyclables	749,677	-11,804,000	-361,968	-11,442,032	-108,765
Carpet	147	-15,520	-206	-15,314	-146
Personal Computers	6,326	-274,778	863	-275,640	-2,620
Clay Brick	0	NA	NA	NA	NA
Aggregate	0	0	0	0	0
Fly Ash	0	0	0	0	0
TOTAL - OTHER MATERIALS	**913,084**	**-12,002,648**	**-351,128**	**-11,651,520**	**-110,756**
TOTAL - ALL MATERIALS	**2,421,762**	**-40,432,732**	**-3,214,449**	**-37,218,283**	**-353,786**

Sources: U.S. EPA, Revised "WARM" model. August, 2004. Available online at http://yosemite.epa.gov/oar/globalwarming.nsf/content/ActionsWasteWARM.html

Energy Impacts of Recycling and Disposal (mmBTU/yr)



The above graph shows the energy impacts of your recycling scenario. The first bar shows the reduction in energy use resulting from your recycling activities alone. The second bar shows the energy use that would have occurred if you had disposed your waste.* The final bar shows the total reduction in energy use resulting from recycling, rather than disposing, your waste.

*A negative value for disposal is due to avoided energy use for electricity generation resulting from energy production at landfills (using recovered methane) and/or waste incineration facilities.

Appendix E

Economic Activity for Recycling

Economic activity indicator associated with Minnesota's value-added recycling manufacturers	Based on reported employment	Based on total estimated employment
Direct jobs at the companies	6,499	9,003
Estimated indirect jobs Impacts on local suppliers statewide, unadjusted for displacement effects.	2,595	3,057
Estimated induced jobs Long-term effects on personal income and consumer spending, localized and statewide.	5,475	7,200
Total estimated jobs	**14,870**	**19,260**
Total estimated wages and salary disbursements The monetary remuneration of employees, including compensation of officers, commissions, tips, and bonus and receipts-in-kind that represent income to the recipient.	**$560 million**	**$760 million**
Total estimated tax revenue on direct jobs Business/personal state income taxes, sales tax, excise tax and miscellaneous taxes, real estate taxes and business taxes.	**$46 million**	**$64 million**
Total estimated value-added activity Contribution to Gross State Product analogous to GDP (gross domestic product), output excluding the intermediate inputs (primarily compensation and profit).	**$1.09 billion**	**$1.29 billion**
Total estimated gross economic activity Amount of production in total sales, includes intermediate goods purchased as well as value-added (compensation plus profit).	**$2.35 billion**	**$2.98 billion**

Source scenarios calculated using the Regional Economic Models, Inc. (REMI) Minnesota Forecasting and Simulation Model, December 2004, Office of Environmental Assistance, Wayne Gjerde.

Appendix F

Estimate of Recyclable Materials Available for Recovery in 2004

Total amount of solid waste sent to disposal facilities in 2004: 3,409,940 tons.

Materials	Percentage of waste	Available tonnage	Market value $ per ton	Market value potential	Data source
Newsprint	4.1%	139,808	$6	$9,100,000	Official Board Markets 10-10-2005
High-grade office	3.0%	102,298	$190	$19,400,000	Official Board Markets 10-10-2005
Uncoated OCC	6.8%	231,876	$70	$16,200,000	Official Board Markets 10-10-2005
Mixed paper boxboard	9.0%	306,895	$65	$19,900,000	Official Board Markets 10-10-2005
Pet	0.6%	20,460	$845	$17,300,000	Plastic News 9/05/2005
HDPE	0.5%	17,050	$860	$14,700,000	Plastic News 9/05/2005
Other plastic containers	0.5%	1,534	$400	$600,000	Estimate on average of all resins PN
Aluminum beverage containers	1.2%	40,919	$1,240	$50,700,000	Waste News 9-29-2005
Ferrous containers	2.9%	98,888	$126	$12,500,000	Recycle Xchange.com 9-15-2005
Other ferrous	0.9%	30,689	$143	$4,400,000	Recycle Xchange.com 9-15-2005
Clear containers	1.3%	44,329	$40	$1,800,000	Anchor Glass 2005
Green containers	0.3%	10,230	$15	$200,000	Anchor Glass 2005
Brown containers	0.4%	13,640	$35	$500,000	Anchor Glass 2005
Recyclable potential	**32%**	**1,065,000**		**$167,300,000**	

Potential value by material category	
Paper	$64,600,000
Plastic	$32,600,000
Ferrous cans, other ferrous	$16,900,000
Aluminum beverage containers	$50,700,000
Glass	$2,500,000
Total	$167,300,000

Appendix G

Market Value Potential of Compostable Materials: 2005

Materials	Percent of waste	Tonnage estimate
Yard waste grass	2.10%	70,000
Yard waste woody material	0.2%	7,000
Food waste	12.40%	413,000
Nonrecycleable OCC	0.50%	17,000
Nonrecycleable mixed paper	9.20%	306,000
Diapers	2.10%	70,000
Totals	26.50%	883,000
Total market value potential of additional recoverable material		**$11,920,000**
Potential jobs		**1,850**

Assumptions:
(1) Market value per ton is based on the average of compost sold at a 50/50 split between bulk and bagged material.
(2) Market value per bulk ton 2005 = $15. Market value per ton for bagged material = $30 per ton.
(3) Average per ton price = $23 per ton, and there is a proven additional market demand.
(4) End market value based 60% of the gross tonnage—$22.50 average per ton price.
(5) Jobs based on Hutchinson's job-to-total-tonnage throughput of 11 jobs for 5,262 tons.
(6) Minnesota municipal solid waste disposed of in 2004: 3,331,000 tons

Appendix H

Impact on GHG Reductions

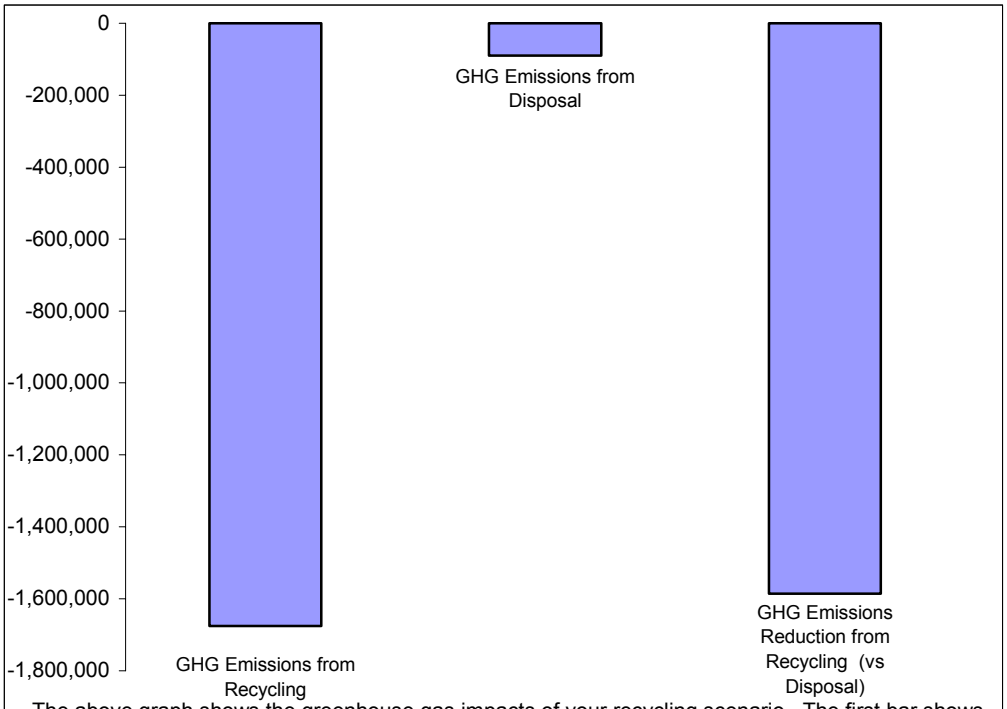
Table 2. Reductions in Greenhouse Gas Emissions through Recycling

	Tons Recycled	Greenhouse Gas Emissions Associated with Recycling (MTCE)	Greenhouse Gas Emissions if all Disposed (MTCE)	Net Greenhouse Gas Emissions from Recycling Compared to Disposal (MTCE)	Greenhouse Gas Reductions in Passenger Cars Equivalent (# of cars off the road per year)
RECYCLABLE COMMODITIES					
Aluminum Cans	24,510	-98,239	315	-98,554	-74,365
Steel Cans	40,819	-19,973	-5,941	-14,031	-10,588
Mixed Metals	38,779	-67,376	-3,465	-63,910	-48,224
Ferrous Scrap Metal	346,449	-169,518	-50,427	-119,091	-89,861
Glass	116,040	-8,839	1,372	-10,211	-7,705
HDPE	2,767	-1,060	252	-1,313	-990
LDPE	0	0	0	0	0
PET	2,713	-1,149	299	-1,448	-1,092
Mixed Plastics (HDPE, LDPE, and PET)	36,803	-15,199	3,657	-18,857	-14,229
Unclassified Plastics	4,790	-1,978	476	-2,454	-1,852
Corrugated Cardboard	351,596	-249,064	-6,387	-242,677	-183,114
Magazines/Third-class Mail	30,256	-22,314	-3,787	-18,527	-13,979
Newspaper	196,811	-186,813	-41,151	-145,663	-109,911
Office Paper	43,845	-29,694	14,524	-44,219	-33,366
Phonebooks	1,887	-1,717	-395	-1,323	-998
Textbooks	0	0	0	0	0
Mixed Paper	219,998	-183,251	7,921	-191,172	-144,251
Other Uncategorized Paper	50,615	-34,075	-135	-33,940	-25,610
Dimensional Lumber	0	0	0	0	0
Medium-density Fiberboard	0	0	0	0	0
TOTAL - COMMODITIES	**1,508,678**	**-1,090,259**	**-82,871**	**-1,007,388**	**-760,135**
OTHER MATERIALS					
Food Scraps	156,934	-8,479	14,105	-22,583	-17,040
Yard Trimmings	0	0	0	0	0
Grass	0	0	0	0	0
Leaves	0	0	0	0	0
Branches	0	0	0	0	0
Mixed Organics	0	0	0	0	0
Unclassified Organics	0	0	0	0	0
Construction	0	NA	NA	NA	NA
Mixed Recyclables	0	0	0	0	0
Other Recyclables	749,677	-571,615	-20,903	-550,712	-415,545
Carpet	147	-293	6	-299	-226
Personal Computers	6,326	-4,685	-87	-4,598	-3,469
Clay Brick	0	NA	NA	NA	NA
Aggregate*	0	0	0	0	0
Fly Ash*	0	0	0	0	0
TOTAL - OTHER MATERIALS	**913,084**	**-585,072**	**-6,880**	**-578,192**	**-436,281**
TOTAL - ALL MATERIALS	**2,421,762**	**-1,675,331**	**-89,751**	**-1,585,580**	**-1,196,416**

*Please note that landfilling is the only emission factor available for this material.

Sources: U.S. EPA, Revised "WARM" model. August, 2004. Available online at http://yosemite.epa.gov/oar/globalwarming.nsf/content/ActionsWasteWARM.html.

Greenhouse Gas Impacts of Recycling and Disposal (MTCE/yr)



The above graph shows the greenhouse gas impacts of your recycling scenario. The first bar shows the reduction in greenhouse gas emissions resulting from your recycling activities alone. The second bar shows the greenhouse gas impacts that would have occurred if you had disposed your waste.* The final bar shows the total reduction in greenhouse gas emissions resulting from recycling, rather than disposing, your waste.

*A negative value for disposal may be due to the following factors:: 1) avoided greenhouse gas emissions at electric utiltiies due to energy production at landfills (using recovered methane) or waste incineration faciilities; and/or 2) long-term storage of carbon in landfills.

Appendix I

Organic Waste Recovery

Part 1: Summary from Food Residuals Diversion Team

The Food Residuals Diversion Team identified the following barriers:

1. **Lack of incentive to separate at the source and lack of separation.**
2. **Lack of state funding for environmental programs (especially the SW tax); state financing, taxing/incentives polices could go further in supporting organics recovery.**
3. **Current tax structure promotes land disposal, need greater financial incentives.**

   Comments: These last two barriers suggest that the current system of financial incentives needs to be reevaluated and changes made to provide greater incentives to not landfill the valuable resources in the MSW stream. These changes would need to legislative.

4. **Lack of knowledge on the part of the public and businesses about:**
   - food sources
   - information to make an informed decision on waste management options to manage food
   - options for organics
   - lack of tax education, knowledge of write-off
   - lack of liability education among generators

   Comments: As did recycling programs, source-separated organics (SSO) programs need an aggressive education program. To do this, funding and personnel is necessary. This could be part of the above-mentioned financial incentive discussion.

Other barriers receiving votes were:

5. **Lack of long-term capacity at compost facilities.**

   Comments: There is limited capacity for composting organics materials. The state should provide funding for CAP and/or moneys available to the private sector to construct compost facilities.

6. **Lack of knowledge on how to start a collection program, and generator needs education on amount of staff time SSO actually takes.**

   Comments: As did recycling programs, SSO programs need an aggressive education program. To do this, funding and personnel is necessary. This could be part of the above-mentioned financial incentive discussion.

Many of the above barriers were identified by MPCA staff as well. In addition, the following list of barriers was identified by MPCA staff:

- Increasing the markets for the finished product
- Compost used to protect surface water
- Develop soil standards that require a percolation rate which will absorb a 1 inch rainfall, tie to MS4 permit
- Require public entities to use compost materials, i.e., state, counties, cities, townships

  Comments: These three bullets address a similar issue: one of increasing markets for finished compost. One possible policy action is to require the use of compost materials to re-establish the functions of the native soils, infiltration/filtration of storm water runoff.

- Statute change to support SSO collected with yard waste
- Develop organics hierarchy

- Green energy policy

  Comments: The state has no cohesive energy policy. Without a policy discussion and adoption of a policy, there are no criteria to make a determination on what green energy is.

- Collect SSO from commercial/industrial

  Comment: This could be structured like the current recycling statute "An Opportunity to Compost"

- Reducing the cost of processing—financial incentives for composting and/or against landfilling
- Promote corn-based products such as biodegradable plastic bags, flatware, cups, etc.

  Comments: This could be similar to the efforts in ethanol. Plastic film is the number one contaminant in compost and the reason most often given for people not purchasing compost. Requirements to use a biodegradable plastic for collection of yard waste/SSO would remove this problem and give a kick to the farm economy in the state. California adopted a law on this in the past year or so.

- Consider a phased-in ban of organics from land disposal.

Research needs:

- Economic evaluation of SSO collection.
- Economic analysis of storm water system vs. prevention.
- Lifecycle analysis that includes end uses.
- Pilot/research project on a facility that composted SSO and yard waste, i.e., more than a permit by rule, but less than an MSW permit.

Part 2: Solid Waste Management Coordinating Board—Food Waste Opportunities in the Metro Area

The two predominant organic waste streams in the municipal solid waste (MSW) stream are food and non-recyclable paper. The 1999 *MSW Composition Study* indicated these materials averaged about 12.4 percent and 9.7 percent of the statewide waste stream, respectively. Wood (pallets, untreated, and treated, but not yard waste) accounted for an additional average of 7.5 percent. Yard waste is also a major source of organic material, but it has been banned from MSW since 1990.

There are a variety of programs actively preventing organic waste or recovering organic waste for higher and better uses in Minnesota. These programs, the sectors in which they operate, and the amount of material they manage, if known, are highlighted below.

Solid Waste Management Hierarchy	Sector	Organic Material Recovery Program	Organic material managed in 2004 (tons)	
			Six-county Metro Area	Greater Minnesota
Reduction/ reuse	Residential and commercial	Food rescue	845	
		Backyard/on-site composting		
Recycling	Commercial only	Food-to-livestock		
		Livestock feed manufacturing: Endres Processing		
Resource recovery	Residential and commercial	Source-separated organics composting: NRG Processing Solutions, City of Hutchinson, WLSSD		
		MSW composting: Prairieland, Swift County		

Opportunities and Challenges

The counties that comprise the Solid Waste Management Coordinating Board have demonstrated great potential to prevent and recover organic waste through working with residents, businesses, and schools on the implementation of several projects. Carver County recovered organic materials at the 2002 PGA Championship; Dakota County worked with Independent School District 196 to recover organic materials from school cafeterias; Hennepin County worked with the city of Wayzata to establish the only curbside residential organics collection program in Minnesota and is working with 35 schools to collect organics for composting; and Ramsey/Washington Counties worked to increase the recovery of organic materials in four schools and organic-rich businesses, including restaurants, through food-to-livestock programs. These programs required significant technical assistance and public subsidy or tax incentive to be successful. In addition, several organizations, such as Eureka Recycling and the city of Burnsville, continue to contribute to organics collection through research and pilot projects.

The Solid Waste Management Coordinating Board prepared a Commercial Organic Waste Management Assessment in 2004. The assessment identified over 100,000 tons of unused capacity to prevent and recover organic waste in the region. The greatest opportunities for additional recovery were in food-to-livestock, livestock feed manufacturing, and source-separated organic composting.

Nonetheless, there are significant challenges to utilizing unused capacity and expanding the capacity to prevent and recover organic waste in Minnesota. Two overarching challenges are lack of financial incentives to separate waste at the source and lack of education and awareness about organic waste prevention and recovery options. Overcoming these challenges are two critical steps to increasing organic waste recovery during the next planning period. In addition, there are several program-specific challenges, such as the following:

- **Food rescue:** Liability perception, cost of collection, and lack of recipient sites.
- **Food-to-livestock:** Competition with haulers, limited capacity to expand, difficult to understand what is acceptable organic material.
- **Livestock feed manufacturing:** Competition with haulers, difficult to understand what is acceptable organic material.
- **Source-separated composting:** Permitting process, competition with haulers, cost of collection, operational cost, difficult to understand what is acceptable organic material.

Appendix J

Collated Comments from Public Meetings 11/2005 Solid Waste Policy Report

Waste reduction and reuse

Waste reduction and recycling should link up with energy self-sufficiency. (Metro)

Are more opportunities in building demolition materials reuse, e.g., "Re-Store" by Habitat for Humanity. (Mankato)

Waste reduction efforts have been stymied by retailers, manufacturers, and the interstate commerce issue. (Mankato)

State effort on waste reduction has been spotty. (Mankato)

Behavior change on waste reduction can be done locally. (Mankato)

Material exchange (e.g., Semrex) has good potential but suffers from budget cutbacks. (Mankato)

Semrex is successful—hard to duplicate but could expand. (Mankato)

Recycling

Focus on "real world" economics—maybe 46% recycling rate is OK. Aggregate market is high-pavement is recycled; don't be arbitrary on recycling goal. (Metro)

We've neglected public education on recycling—we should emphasis energy recovery as part of recycling education (Metro).

There are strong markets for recyclables—there is value (ex: Fridley's resource management contract., rebate from hauler). (Metro)

46% is pretty good recycling rate—Question whether higher goal is economic (?) (Metro).

Would be difficult to set and measure non-MSW recycling goals. (Metro)

Recycling percentages depend on commercial estimates—are soft. (Metro)

Just because materials are collected at curb, doesn't mean they are recycled. (Metro)

24% of MSW is recyclable paper, though market is great (China). Problem is not lack of capacity, but human resources—it's not in the culture—must be led by people who are skilled. (Metro)

Use SCORE info to increase bang-for-buck in raising recycling percentages in counties. (Metro)

Foster innovative projects like mattress recycling. (Metro)

Non-MSW—any recycling that makes sense is being done. (Metro)

Single-stream recycling—slight increase in residuals is worth other benefits (participation is up, injuries down, fewer pickups). (Metro)

Include food-to-people/ animals in SCORE. (Metro)

Single-stream recycling has boosted diversion—it's worth the slightly higher residue rate (glass, etc.). (Mankato)

Is state helping with glass optical sorter? Important given single-stream recycling. (Mankato)

Counties question continued payments for public recyclable-collection given budget needs. (Mankato)

Without a subsidy, recycling would go "back to basics"—mostly corrugated containers and aluminum, with some inspection of landfills by counties and regions. (Mankato)

Industry is doing great—but residential is a black hole for funds. Need to get residential recycling tied into cost savings. (Grand Rapids)

Public entity recycling—should be recycling; if not,-need to comply with statute. (written comment from Morrison Co.)

Telephone book recycling: check compliance of publishers providing recycling opportunity. (written comment from Morrison Co.)

Organics separation

Counties more focused on separation and capture, not collection (organics?). (Metro)

Swift and Prairieland are up in tonnage-note that in report. (Metro)

Organics is more than just composting. (Metro)

Explain why Metro Area is interested in organics—high percentage of waste in the waste stream—not a minor fraction—good bang for the buck. (Metro)

MPCA should help in efforts to study economics of SSOC—how to make it more efficient. Hauling is costly. (Metro)

Make sure quality fits end-user need. (Metro)

Address any concerns by users—liability, etc., —MPCA advise on solutions and incentives. (Metro)

Minnesota is losing soil from agricultural use—composting is a way to restore soil. Needs work (logistics, economics, etc) to build public support. (Metro)

Waste composition study shows organics there—but it will decompose somewhere—leachate, etc., separate collection uses fuel-study fuel and collection, air emissions. (Metro)

Organic collection is on books but interferes with market. State putting it out for discussion is promoting it. Goes beyond what state should do. (Metro)

What is role of organics collection in rural Minnesota; waste processing counties? (Metro)

Effort on organics—focus on yard and garden waste. Food waste is a stretch now. (Mankato)

SMC recycling had to shut off—even having the University food waste account wasn't enough, due to costs. Food-organics separate composting shouldn't be a statewide emphasis. (Mankato)

Do not expand yard waste ban for other organics—impact on greater Minnesota. (Grand Rapids)

Processing for waste to energy

Resource recovery—some technology proven not cost-effective—locals question their continued support. Use marketplace to decide. (Metro)

With resource recovery—which resources (trees, oil)? What's a workable model? (Distance to market, etc.). Don't use old principles. (Metro)

Clarify 2007 deadline for processing contracts; Washington Co. master plan—some counties are committed until 2009. (Metro)

Trend line in resource recovery, caused by Carbone. Counties invested in it before but stopped afterward. It's still a big issue though not discussed. (Mankato)

Look for workable compromise re: inverse condemnation. Passing that law would be a hindrance. (Mankato)

State enforcement of processing in Metro Area. (Grand Rapids)

Metro processing w/teeth. (Grand Rapids)

Re-affirmation of Waste Management Act (elimination of CON); agency stand and position on enforcement. (Grand Rapids)

Other (Carbone) options for waste flow (Iowa intrastate). (Grand Rapids)

Perham—not able to get 5 cents green energy—make clear and consistent.

Utilities must buy renewable energy. (Grand Rapids)

Landfilling

Resource recovery plants–residual rate is 35%; energy is taken and then gone—landfill produces gas for 30 years—Pine Bend generates energy for 14,000 homes. (Metro)

Public funding goes to resource recovery—landfills are excluded. (Metro)

Landfill gas recovery projects should be eligible for CAP grants. (Metro)

Almost all 22 operating landfills can harness energy—don't starve them of organics. (Metro)

Bioreactors can co-exist with source-separated organics—time is right for economic decision making. (Metro)

Question on "reduce airspace consumed"—what is meaning? (Metro)

Why increase financial assurance? Existing mechanism is sufficient. No evidence for beyond—don't study right now. (Metro)

Shifting of MSW to non-MSW is small (5,000 tons/year), less than 0.1%, instead waste reduction and recycling are up. (Metro)

Financial assurance bullet—why limit discussion to MSW cells—if opening issue to other sites,-also have liability issues. (Metro)

Why spend effort on financial assurance? (Metro)

Leachate cleans up, biodegrades—speeds up—shorter time frame. (Metro)

Don't apply financial assurance to all types of landfills. (Metro)

Address recirculating and bioreactor landfills. State is dragging feet. Will cut landfill use. (Mankato)

Include look at waste shredding at recirculating and bioreactor landfills. (Mankato)

Organics separation can work alongside bioreactors—there's enough organics to go around. (Mankato)

If economics are pushing MSW to the bottom of hierarchy—how much can we do about it? (Mankato)

Small landfills need appropriate alternatives to electrical generation for using their gas, such as direct heating. (Mankato)

Recirculating landfills—look at energy recovery. (Mankato)

All landfills are subtitle-D standard. Need more assistance to promote this. (Grand Rapids)

Minimizing on-site disposal

On-site disposal has more environmental impacts than other issues now. Put effort there—risk of waste processing in rural is discouraged—(?) of waste collection. (Metro)

Burn barrels—if dioxin figures are accurate, they are a big problem. (Mankato)

Counties can't fix burn-barrel usage problem individually—do it statewide. (Mankato)

Are emissions from burn barrels another food-safety issue? Does trash burning relate to forest fire prevention at DNR? (Mankato)

Support state ban on on-site disposal. (Grand Rapids)

Hard to enforce—lots of work (simple civil citations); state should set up framework. (Grand Rapids)

MPCA regional enforcement of burn barrels. (Grand Rapids)

DNR enforcement—step up. (Grand Rapids)

Clarify burning versus ash and enforcement of on-site disposal. (Grand Rapids)

Backyard burning—tie in with water quality and air issues. (written comment from Morrison Co.)

E-waste and HHW

E-waste bullet in PowerPoint—is actually a "placement" ban, not a landfill ban. (Metro)

Toxicity reduction needs a better effort. (Mankato)

Fix agricultural pesticide collection program. (Mankato)

Do better on public avoidance of buying products that become HHW. (Mankato)

Why collect recently manufactured latex paint, if it contains no mercury? Prioritize the materials. (Mankato)

Coordinate with feds on recycling to promote consistent recycling options (e.g., mercury thermostats) (Grand Rapids)

Increase product stewardship with manufacturers. (Grand Rapids)

Cost/benefit on electronics. (Grand Rapids)

Support evaluation of HHW programs. (Grand Rapids)

Intangibles of HHW important (showing interest in doing right thing—thinking about their waste, education)—links to what people buy-behavior. (Grand Rapids)

Program for VSQGs—currently absent. (Grand Rapids)

Support using pesticide tax on pesticide collection— not currently given to operating county programs. (Grand Rapids)

Hybrid battery disposal—next big product stewardship/management issue. (Grand Rapids)

VSQG and SQG—more funding and outreach—toxicity reduction efforts need to concentrate on these generators. (written comment from Morrison Co.)

Electronics: report should speak loud and clear to statewide program with a funding mechanism to handle CRTs and other e-waste. (written comment from Morrison Co.)

Mercury: more education to Minnesota wholesalers about the thermostat recycling program and allow HHW programs to participate in program. (written comment from Morrison Co.)

General comments

Large amount of money is collected on solid waste—MPCA is redirecting—if you let money drift off, pressure will come to raise solid waste tax. (Metro)

Question—how much of a role should government play in private sector decisions? (Metro)

State needs to renew its waste-ed public education materials. (Mankato)

Political awareness of processing (all types) is fading—because of turnover in politicians, etc. (Mankato)

State should look outside government for partnerships—RAM, etc. (Mankato)

In early days of Waste Management Act—saw state enthusiasm—we're coasting now. Revenues are down. A new reality: counties are not flush with cash. (Mankato)

New state emphasis is TMDL and watersheds—counties have noticed that. (Mankato)

Water issue is getting the attention that recycling got 20 years ago. Also, it's a federal priority. (Mankato)

Public entity/state agency should follow hierarchy versus lowest bid. (Grand Rapids)

Public entity reporting of MSW-recycling management—get funding tied in. (Grand Rapids)

Graduated solid waste tax which increases as you go down the hierarchy—evaluate entire tax structure. (Grand Rapids)

Hierarchy starts with government. (Grand Rapids)

More support for Waste Wise. (Grand Rapids)

Support CON and county solid waste plans. (State's position on inverse condemnation). (Grand Rapids)

Historical funding trends in policy report—as solid waste tax increases, more will be spent on SCORE—impacts on HHW and problem materials. (Grand Rapids)

Decline in local programs are direct result of funding cuts. (Grand Rapids)

Stable funding—stable, more efficient programs. (Grand Rapids)

Tax/other financial incentives than just SCORE—help move programs forward. (Grand Rapids)

Articulate state goals—in (?) numbers. (Grand Rapids)

Clearer process for processing to encourage county investment (pot o' gold). (Grand Rapids)

Focus on processing (recycling, waste-to-energy, compost, etc.) (Grand Rapids)

Recycling—not much more we can do—markets; state needs to push all processing; state needs to spend more time on landfill abatement. (Grand Rapids)

Need more emphasis on Waste Wise and other programs that work with industry. (Grand Rapids)

Waste hierarchy is antiquated, outdated, and ineffective—should be updated to include new landfill technologies and innovations—the hierarchy is ineffective in curbing the increase in solid waste generation and has done little to influence recycling rates. (written comment from Morrison Co.)

Waste tires: funding to continue cleanup of waste tires (written comment from Morrison Co.)

Thoughts on focus

From Metro:

- On-site disposal
- Bioreactors
- Recycling

- Education needed at legislative presentation
- Identify public versus private role—and sp (?) of taxpayer money

From Mankato:

- Full restoration of SCORE money, with inflation
- Not just recycling goes away if SCORE cuts continue, but also HHW and public education
- Metro and rural Minnesota are different enough that maybe two policy reports are needed, possibly alternating every two years.
- (Discussion of taking third bullet point off "Focus" slide and substituting SCORE full restoration for that.)
- (One suggestion for substituting into 2nd bullet: Let the market sort out how much material recovery should happen. Look at residue rates and costs.)

From Grand Rapids:

- Processing
- Funding: Increase SCORE dollars; create tax incentives
- Create economic incentives to do the right thing
- What does the state think are priorities?
- Air quality permitting and waste-to-energy projects aren't on the same page.

For a full copy of stakeholder comments, please contact Anne Gelbmann, MPCA, 651-215-0292.

Appendix K

Summary of Waste Electronics Consultation Process

Conducted by the Minnesota Office of Environmental Assistance
2004

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Summary of Waste Electronics Consultation Process
Conducted by the Minnesota Office of Environmental Assistance

Introduction

Following the conclusion of the 2004 legislative session and consideration of House File 882 and Senate File 838, OEA was charged by the Governor's Office and legislative committees to convene a consultation process to inform policymaking on waste electronics during the 2005 legislative session.

The OEA held four meetings with manufacturers and retailers from July through October 2004. In addition, the OEA sponsored two public forums for interested parties such as representatives from local government, waste haulers, environmental advocacy organizations, trade associations, and others.

The meetings and forums were designed to solicit input on a variety of topics related to the management of electronic waste, including financing mechanisms, collection strategies, environmentally sound management standards, and the role of various parties in the collection and recycling infrastructure. Products within the scope of the discussions included televisions, computer monitors, computer processing units (CPUs), laptops, small computer peripherals (keyboards, mice, etc.), and printers as agreed to in the National Electronic Product Stewardship Initiative (NEPSI), a multi-stakeholder dialogue convened from 2001 to 2005 to develop a national approach to managing waste electronics.

Given the lack of agreement among the manufacturers of electronic products on the most efficient and equitable funding mechanism, the majority of the consultation process was devoted to an analysis and discussion of potential financing options to support the collection and recycling of old electronic products.

Description of Policy Options

Three policy options for financing a statewide waste electronics recycling program received significant attention during the meetings.

Option 1: Advance Recycling Fee

Financing: An advance recycling fee (ARF) option requires consumers and business to pay a fee at point of sale on televisions, computer monitors, and laptops. The fee applies to both household and business sales. The accumulated fees will cover all the costs necessary to support the collection and recycling of discarded electronic products.

Manufacturers are responsible for informing retailers which products carry the fee. Retailers will receive five percent of the fee to cover their administrative costs.

Orphaned/abandoned waste: The ARF funds the collection and recycling of the following discarded products: computer monitors, televisions, laptops, CPUs, small peripherals (e.g. keyboards, mice), and printers, regardless of when the product was manufactured or if the manufacturer is still in business.

Program management: The ARF will be transferred to the Electronics Stewardship Association (ESA), a non-profit organization that will be responsible for implementing the program.

The ESA, modeled on the Insurance Guaranty Association (Minn. Stat. § 60C), is to be governed by a board of directors composed of representatives from electronic product manufacturers, local government, retailers and non-governmental organizations. The responsibilities of the ESA will include management of the

collection and recycling program, setting the ARF on an annual basis to ensure that sufficient funds are available to operate the program, and conducting public information and outreach on collection opportunities for Minnesota residents.

Collection: The ESA will reimburse entities such as local government, haulers, retailers, and others engaged in the collection of discarded products. The ESA will offer competitive contracting opportunities for recyclers to process material collected in Minnesota.

Environmentally sound management: The contracts will stipulate environmentally sound management standards to ensure that collected products are handled safely.

State fiscal impact: The advance recycling fee will generate an estimated $15 million per year.

Example: The Electronic Waste Recycling Act enacted in California in 2003.

Option 2: Individual Responsibility

Financing: In contrast to the advance recycling fee funding mechanism, the cost-internalization financing model does not require a visible fee applied to products at point of sale. To compel participation in the program, individual manufacturers have the responsibility to register with the state in order to sell products in Minnesota.

Program management: The individual responsibility mechanism does not create an implementation organization although the manufacturers may choose to do so voluntarily. To fulfill their obligations, individual manufacturers would have the responsibility to transport and recycle material collected at consolidation facilities located across the state. Manufacturers could fulfill this responsibility on an individual basis or by working collectively and contracting for services.

Orphaned/abandoned waste: The amount of product that each company would be responsible for would be determined annually and based upon the percentage of a company's product in the total amount collected for recycling. This same percentage would then also be applied to the collected products of manufacturers that are not fulfilling their responsibility, are no longer in business, or whose manufacturer cannot be identified.

Collection: The individual responsibility approach would not specify responsibility for collection but it is expected that local governments, retailers, haulers, and others will voluntarily provide collection services and ensure that material is transported to consolidation facilities. The consolidation facilities would be designated by the OEA through an RFP process to ensure geographic diversity and performance capability. It is expected that a variety of entities including local government, haulers, recyclers and others would apply to serve as consolidation facilities.

The collection agents may charge a fee to cover collection costs but would deliver the collected material to the point of consolidation for no charge.

State government has responsibility to ensure participation and compliance with this system and would report to the Legislature on progress toward meeting program objectives.

State fiscal impact: No fees are enacted or appropriations required. OEA and PCA estimated that 0.5 full-time equivalent (FTE) staff person would be necessary to accomplish the responsibilities included in language considered by the 2004 Legislature.

Examples: Electronics Recycling program adopted in Maine in 2004; HF 882/SF 838 considered during the 2004 Legislature.

Option 3: Hybrid Financing Model

Financing: The hybrid financing model combines the advance recycling fee (ARF) financing approach for televisions with the individual responsibility model for information technology (IT) equipment. The recycling of computer equipment would be addressed through individual manufacturer responsibility with no fee at point of sale as described above.

Orphaned/abandoned waste: Orphaned/abandoned products would be handled by each product sector and the respective financing method.

Program management: An ARF would be placed on televisions at point of sale and remitted by the retailer to a third-party organization created to manage the program. The third-party organization would have the responsibility for ensuring the transportation and recycling of collected product from consolidation centers.

Manufacturers of IT products would fulfill the program requirements either individually or by participating in the third-party organization established to manage discarded televisions. The IT manufacturers would take back collected products from the consolidation points themselves or contract for recycling services.

State fiscal impact: The OEA has not prepared a fiscal note regarding FTE necessary to carry out the responsibilities for the state.

Example: No hybrid financing mechanisms have been adopted.

Evaluation of Policy Options and Desired Attributes

The OEA identified six attributes necessary for an effective recycling program for Minnesota residents. The OEA analyzed the various financing models against their ability to fulfill the following attributes:

- ### Convenient

  Advance Recycling Fee: Due to the availability of a reimbursement payment for collection services, the advance recycling fee provides an incentive for multiple entities to offer collection services.

  Individual Responsibility: The individual responsibility approach does not assign specific collection responsibilities or provide a defined source of funding for collection, factors that may have an impact on the number of available collection opportunities. Collection agents will be permitted to charge a small end of life fee to cover the costs of collection and transportation to consolidation facilities.

  Hybrid System: As indicated above, the hybrid system would place an ARF on televisions and require individual manufacturer responsibility for IT equipment. However, in order to prevent the cross-subsidization of product categories, the ARF funds would be used for the recycling of products from the point of consolidation only. Due to the presence of an ARF on televisions at point of sale, this may restrict the viability on the use of end of life fees for collection services thus impacting convenience.

- ### Accountability

  Advance Recycling Fee: The advance recycling fee model offers several elements to ensure participation in the program and result in accountability. The advance recycling fee at point of sale ensures that manufacturers that sell products through retailers located in Minnesota will carry the fee. Retailers and manufacturers who sell directly to consumers will be required to notify the Electronic Stewardship Association of their intent to sell products in Minnesota. Ensuring the remittance of the ARF from online sellers remains a concern, particularly for IT equipment, but the OEA is closely monitoring the implementation and compliance of the retail fee in California to accurately assess what enforcement tools will be necessary to ensure adequate program funding.

Individual Responsibility: To ensure participation in the program, the individual responsibility model requires manufacturers to register with the state in order sell products in Minnesota. Individual manufacturers must report annually regarding the amount of waste electronics they managed for recycling. Compelling registration by manufacturers, particularly by those located overseas, may be a challenge but given the individual responsibility program in place in Maine, a precedent has been established.

Hybrid System: The hybrid institutes the accountability mechanisms inherent in the ARF and individual responsibility options for their respective product categories.

- ## Environmentally sound management (ESM)

Advance Recycling Fee: This policy option will promote environmentally sound management of collected waste electronics and ensure that such waste is handled safely and not exported to countries with inadequate environmental standards. This will be executed through contractual obligations between the third-party organization and its vendors.

Individual Responsibility: Ensuring environmentally sound management of products in the cost internalization financing approach would require specific language in statute and some degree of oversight by the MPCA.

Hybrid System: ESM is to be accomplished through contracting requirements for the third-party organization designated for the management of waste televisions. For those IT manufacturers who are not participating in the third-party organization, specific management requirements will be required in statute.

- ## Supports existing infrastructure

Advance Recycling Fee: Due to the availability of a defined source of financing, the ARF policy option may support existing collection infrastructure, particularly operated by local government, more effectively than other policy options. The ARF option may also more effectively utilize existing recyclers due to the presence of collective contracting through the third-party organization.

Individual Responsibility: Since the individual responsibility approach does not require manufacturers to offer collection or raise revenue through a fee, it must rely on voluntary collection efforts by local government, retailers, haulers, and others.

Hybrid System: The hybrid financing approach supports the existing infrastructure to the same degree as the advance recycling fee due to the presence of a fee for televisions and manufacturer responsibility for the collection, transportation, and recycling of IT equipment.

- ## Incentives for Design for the Environment

Advance Recycling Fee: The OEA recognizes the importance of supporting design for environment efforts to promote recyclability of products, reduce toxic constituents, and recognize resource conservation. The proposed recommendation may not provide the same level of incentive for design for environment activities as a strict individual responsibility financing mechanism but the ability of one state to influence design changes using financial incentives may be limited. Recognizing the lack of drivers for design change inherent in the ARF approach, California requires compliance with the restrictions on hazardous substances (lead, mercury, hexavalent chromium and cadmium) adopted by the European Union. It is expected that only a minority of products sold in the US market will now be out of compliance with those restrictions.

Individual Responsibility: Since individual manufacturers are responsible for funding recycling activities for their share of collected products, this approach to financing would provide a more direct

economic signal to manufacturers to further consider design for environment practices. This is particularly true for manufacturers that operate recycling programs for their own and similar products. Given the shorter lifespan and turnover for IT equipment, recognizing and incorporating design-for-the-environment practices is more relevant than for televisions, which have an average lifespan of 15-17 years.

Hybrid System: IT manufacturers have the same incentives for design for the environment as addressed in the individual responsibility approach while the incentive for television manufacturers is negligible.

- **Private management of the program**

  Advance Recycling Fee: With the creation of the Electronics Stewardship Association, a multi-stakeholder board will provide program management and oversight of the program. Not only will the ESA ensure that the necessary parties participate in operating the system, but also ensure that resources from state government are kept at a minimum.

  Individual Responsibility: Since manufacturers are individually responsible for managing discarded products and no fee is collected, few resources from government are required to implement and operate the program. This approach encourages the development of partnerships directly between manufacturers and collection agents such as retailers and haulers.

  Hybrid System: Private management of the program is expected under a hybrid model with television manufacturers participating in a statutorily created third-party organization and IT manufacturers choosing to fulfill their responsibility individually or through the third-party organization.

OEA Recommendation

After an evaluation of the three policy options and the desired attributes, the OEA recommends that the Legislature enact an advance recycling fee (ARF) to finance the collection and recycling of waste electronics. The OEA recommends an ARF based on its ability to provide reliable and defined funding for collection services as well as for orphaned and abandoned products. The OEA also believes that the ARF offers the greatest potential for broad participation from manufacturers and retailers.

Unlike the Electronic Waste Recycling Act enacted in California in 2003, the OEA recommends that implementation and management of the program be carried out by a third-party organization rather than by state government. The third-party organization would be created by statute and managed by a board of directors composed of representatives of manufacturers, retailers, local government, and environmental advocates. This approach engages all parties in program management, increasing the program's overall effectiveness while decreasing the need for state resources.

The management structure of the third-party organization and its ability to execute contracts with recyclers to process collected material offer strong opportunities to achieve cost efficiencies. The third-party organization would require environmentally sound management standards for the collected materials, including restrictions on the export of material to countries with weaker environmental standards.

The OEA recognizes that several parties that participated in the consultation process voiced concerns with the ARF, and will continue to work with those parties to address their concerns.

Description of 2004 Consultation Process

Following the conclusion of the 2004 legislative session, OEA convened a consultation process to examine policy options for legislative action on electronic waste. The process provided manufacturers, retailers, local government, environmental advocacy organizations, trade associations, recyclers, and others an opportunity to offer input and perspectives on various policy options for a state program. Please see Appendix B for a list of consultation process participants.

Manufacturers/Retailers Meetings

First meeting (July 14)

- Introduce process and outline objectives.
- Provide policy parameters from Governor's Office.
- Review legislative proposal from last session and outline approaches in California, Maine, and Alberta.
- Review history of issue in Minnesota (projects and policy).
- Facilitate discussion on various perspectives on financing models.

Objectives: Secure participant understanding of consultation objectives and begin discussion of potential financing options.

Second meeting (August 26)

- Continue discussion of financing models from July 14 meeting.
- Solicit feedback on specific financing models presented to participants.

Objective: Complete review of potential financing options.

Third meeting (September 21)

- Facilitate discussion on draft financing models.
- Introduce discussion of approach to providing collection services.
- Solicit feedback on approaches to development of performance measures.

Objective: Provide input to OEA on draft financing models.

Fourth meeting (October 18)

- Review draft financing options from OEA.
- Provide overview of next steps.

Objective: Secure participant understanding of draft financing options for Legislature.

Multi-stakeholder Forums

First meeting (August 5)

- Present overview of process and objectives.
- Solicit input on financing and collection strategies.
- Facilitate discussion on appropriate role for government.

Objectives: Secure understanding of process to develop recommendations.

Second meeting (October 7)

- Present methodology for determining performance metrics and solicit input on development of environmentally sound management standards.
- Review OEA draft recommendations.

Objectives: Secure understanding of draft recommendations.

Data Analysis

The following data may be useful to formulating a statewide policy on managing waste electronics.

Estimated Number of Electronics Sold in Minnesota in 2003 (units)

- Television sales: 608,000
- Desktop PC sales: 703,000
- Laptop sales: 266,000
- Printer sales: 570,000

Source: *Appliance Manufacturer Magazine*, EIA

U.S. Market Share by Brand

PCs

- Dell: 27.4 percent
- HP: 19.4 percent
- IBM: 4.6 percent
- Gateway: 3.3 percent
- Apple: 3 percent

Source: IDC U.S. data (3rd quarter 2004)

Televisions

1. Sony
2. Panasonic
3. Toshiba
4. RCA
5. Mitsubishi

Top five brands: 54.2 percent

6. Hitachi
7. Philips
8. Samsung
9. Sharp
10. JVC

Top ten brands: 76.4 percent

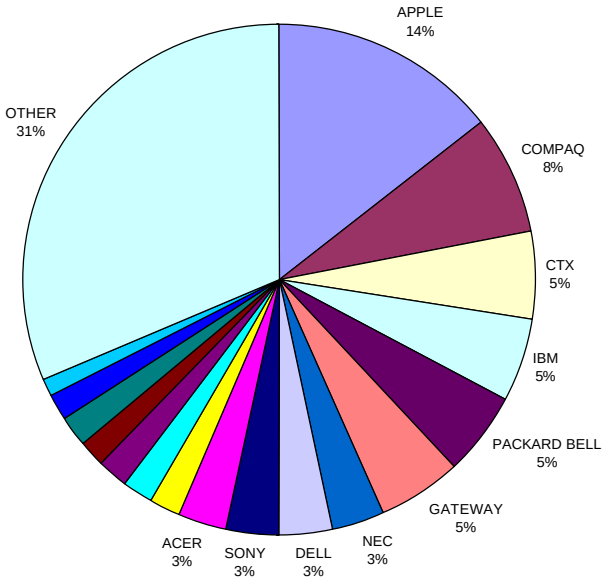
Source: NPD Consulting (2003)

Collected Material by Brand

The OEA conducted an analysis of brands and product vintage for electronics collected during an event in September 2004. The following data illustrates the brands that are being collected for recycling as well as how the return share for a particular manufacturer may help shape their preferred financing option.

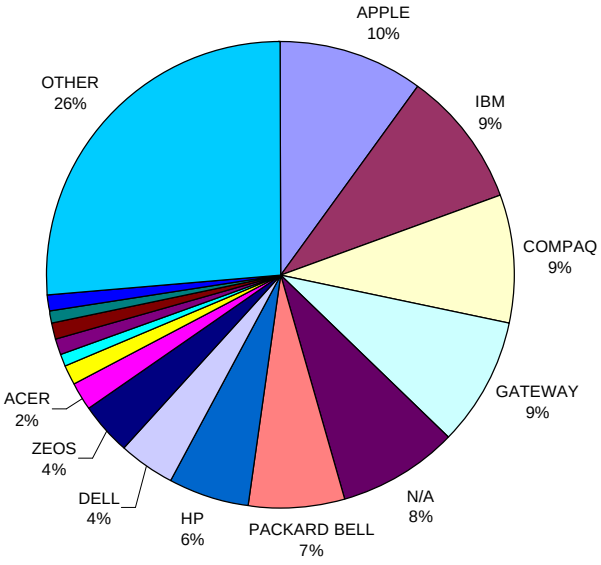
Monitors

Brand	Collected	Share	Weight (pounds)
APPLE	67	14.4%	2,006
COMPAQ	35	7.5%	1,100
CTX	25	5.4%	722
IBM	25	5.4%	649
PACKARD BELL	25	5.4%	670
GATEWAY	24	5.2%	844
NEC	16	3.4%	570
DELL	15	3.2%	596
SONY	15	3.2%	500
ACER	14	3.0%	390
N/A	10	2.1%	324
SAMSUNG	9	1.9%	252
VIEWSONIC	9	1.9%	332
GOLD STAR	8	1.7%	208
HP	8	1.7%	260
ZENITH	8	1.7%	214
MICRON	5	1.1%	188
OTHER	146	31.3%	4,347
TOTAL	466		14,254



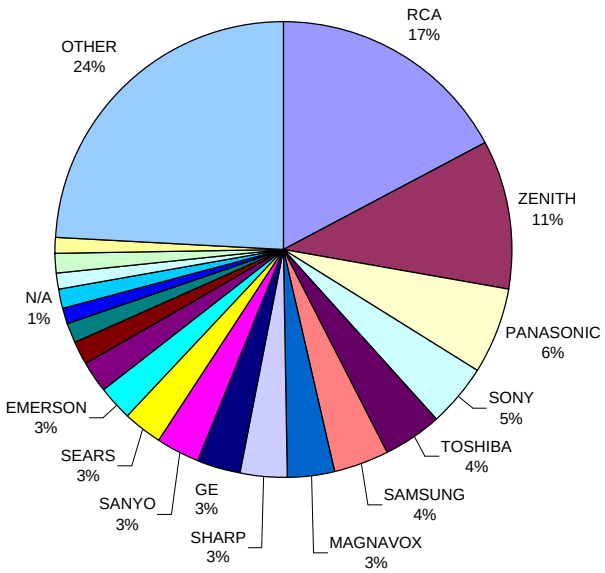
Desktop PCs

Brand	Collected	Share	Weight (pounds)
APPLE	30	10.0%	612
IBM	28	9.4%	668
COMPAQ	27	9.0%	696
GATEWAY	26	8.7%	678
N/A	25	8.4%	686
PACKARD BELL	20	6.7%	434
HP	17	5.7%	543
DELL	11	3.7%	310
ZEOS	11	3.7%	378
ACER	6	2.0%	130
EPSON	4	1.3%	104
NEC	3	1.0%	92
NORTHGATE	3	1.0%	106
PORTICO	3	1.0%	50
TANDY	3	1.0%	74
TIGER	3	1.0%	66
OTHER	79	26.4%	2,100
TOTAL	299		7,727



Televisions

Brand	Collected	Share	Weight (pounds)
RCA	41	17.3%	2,583
ZENITH	25	10.5%	1,552
PANASONIC	14	5.9%	386
SONY	11	4.6%	640
TOSHIBA	10	4.2%	408
SAMSUNG	9	3.8%	338
MAGNAVOX	8	3.4%	504
SHARP	8	3.4%	294
GE	7	3.0%	216
SANYO	7	3.0%	274
SEARS	7	3.0%	274
EMERSON	6	2.5%	152
MITSUBISHI	5	2.1%	326
JVC	4	1.7%	136
FUNAI	3	1.3%	82
MONTGOMERY WARD	3	1.3%	64
N/A	3	1.3%	104
SYLVANIA	3	1.3%	222
SYMPHONIC	3	1.3%	110
WARD	3	1.3%	146
OTHER	57	24.1%	2,851
TOTAL	237		11,662



Residential Material Expected to be Collected and Recycled Statewide

The OEA estimates that if a statewide program for electronic waste is enacted, the following amount of electronic waste from residences will be collected for recycling for 2006-2008.

- 2006: 13.1 million pounds
- 2007: 15 million pounds
- 2008: 18 million pounds

The estimate is based on the per capita amount collected in the Hennepin County program for 2003 and applied statewide. The projection assumes a one percent annual increase in Minnesota's population and a 16 percent annual increase in the amount of material collected. The projected collection volumes from residences are expected regardless of the financing mechanism selected.

Employment Projections

Recognizing the economic development potential of increased waste electronics recycling, the OEA surveyed recyclers to estimate full-time equivalent (FTE). The OEA estimates that one FTE is required to process approximately 1 million pounds per year. This does not include FTE required for collection and transportation services. Given this estimate, the OEA projects the following additional FTE will be necessary to process the expected residential collection volumes from 2006-2008.

- 2006: 13 additional employees
- 2007: 16 additional employees
- 2008: 19 additional employees

Attachment A: Minnesota Electronics Timeline

1995

The Minnesota Office of Environmental Assistance issues **Management of Waste Electronic Appliances**, a report to the state Legislature that developed estimates of the number of waste electronics entering the waste stream and gathered information on the toxic materials they contain. The OEA outlined management options and gave recommendations for improving the handling of electronic products in waste.

1999

The Minnesota Office of Environmental Assistance (OEA) issues a product stewardship policy proposal that names electronics containing CRTs as one of three priority products. The proposal establishes a policy framework that states the principles and goals of product stewardship. The proposal calls on manufacturers to assume some costs and responsibility for getting old products collected and recycled, and outlines a process for bringing industry and government together to set recycling goals.

1999–2000

- The OEA, Sony Electronics, Panasonic-Matsushita, Waste Management's Asset Recovery Group, and the American Plastics Council jointly fund and conduct a statewide electronics collection and recycling project. The three-month project involved 64 collection sites and brought in 575 tons of old electronic products—twice the amount anticipated by the project partners. The project evaluated product composition and yielded valuable findings about the costs and benefits of various collection methods and markets for the materials.

- The OEA and the Solid Waste Management Coordinating Board of the Metropolitan Counties convene a task force on electronic products containing CRTs to examine management and financing options, and to assess various markets for materials from recovered electronic products. Task force members include electronics manufacturers, retailers, recyclers, and local and state government representatives.

2000

Sony Electronics announces that the company will recycle for free any Sony products collected from Minnesota residents. (Note, as of 2004, Recycle America Alliance had established 17 drop-off points in southern Minnesota and the Twin Cities area.)

2001

The National Electronic Product Stewardship Initiative (NEPSI) begins. NEPSI, a multistakeholder dialogue with manufacturers, state and local government, U.S. EPA, retailers, recyclers, and national environmental organizations, is convened to reach agreement on how to establish and fund a national program for the recovery, reuse, and recycling of used electronics.

2002

Representative Ozment introduces legislation establishing a statewide program for waste electronics. Bill is heard in committee, but no vote is taken.

2003

Following consideration of a bill to enact a statewide program for waste electronics, the Legislature enacted a ban on the disposal of products containing cathode ray tubes starting July 1, 2005.

2004

- NEPSI holds its final meeting without reaching a financing mechanism acceptable to all dialogue participants.

- The Legislature considers HF 882 (Rep. Cox) and SF 838 (Senator Higgins).

Attachment B: 2004 Electronic Waste Consultation Process Participants

Manufacturers

- Doug Smith — Sony
- Tim Mann — IBM
- Valerie Pace — IBM
- David Thompson — Panasonic
- Butch Teglas — Philips
- Michael Foulkes — Apple
- Mike Longaker — HP
- Renee St. Denis — HP
- Mark Nelson — HP
- Sonnie Elliot — Lexmark
- Frank Marella — Sharp

Retailers

- Laura Bishop — Best Buy
- Sue Mills — OfficeMax
- Kevin Johnson — Target

State Government

- Senator Linda Higgins — MN Senate
- Mike Bull — Governor's Office
- Bob Eleff — MN House Research
- Marilyn Brick — MN Legislature
- Dave Weirens — Association of MN Counties
- Ellen Telander — MN Waste Wise
- Jim Chiles — MPCA
- Carol Nankivel — MPCA
- Melissa Wenzel — MPCA
- Rep. Ray Cox — MN House
- Rep. Dennis Ozment — MN House
- Jake Hamlin — MN House
- Garth Hickle — OEA
- Art Dunn — OEA Director
- Caleb Werth — OEA
- Anne Gelbmann — OEA
- John Gilkeson — OEA

Local Government

- Laura Villa — Dakota County
- Dave Magnuson — Dakota County
- Amy Roering — Hennepin County
- Dave Kronlokken — Blue Earth County
- George Minerich — Stearns County
- Gary Noren — Chisago County
- Tim Lundell — WLSSD
- Lorilee Blais — WLSSD
- Joe Wozniak — Ramsey County
- Zack Hansen — Ramsey County

- Mike Hanan — Otter Tail County
- Amy Kowalzek — Morrison County
- Phil Eckhert — Hennepin County
- Mike Brandt — Hennepin County
- Steve Steuber — Scott County
- Paul Henrikson — Lyon County
- Jim Kordiak — SWMCB
- Nicola Blake-Bradley — Sherburne County
- Mike Cook — Rice County
- Paul Pieper — Rice County
- Rick Frank — Houston County
- Curt Gadacz — Lake County
- Doug Morris — Crow Wing County
- Anne Morse — Winona County
- Gene Mossing — Olmsted County
- Roger Schroeder — Lyon County
- Kent Severson — Clay County
- Ted Troolin — St. Louis County
- Susan Young — City of Minneapolis

Environmental Organizations

- Nina Axelson — Minnesota Center for Environmental Advocacy (MCEA)
- John Curry — Minnesota Center for Environmental Advocacy (MCEA)
- Cynthia Moore — WI DNR
- Tim Rudnicki — Computer Take Back Campaign
- Robin Schneider — Computer Take Back Campaign
- Paul Gardner — RAM
- Barry Tilley — SWMCB
- Ted Smith — Silicon Valley Toxics Coalition
- Cheryl Lofrano-Zaske — RBRC
- Susan Hubbard — Eureka Recycling

Trade Associations

- Todd Iverson — Ewald & Associates
- Marnie Moore — Cook Hill Girard
- Judy Cook — Cook-Hill-Girard
- Kathie Doty — Richardson Richter
- Bob Hentges — Faegre & Benson
- Buzz Anderson — MN Retailers Association
- Lloyd Grooms — Winthrop & Weinstein
- Matthew Lemke — Winthtrop & Weinstein
- Peter Lindstrom — MN High Tech Association
- Peg Larson — RCS Consulting
- Kate Theisen — Richardson Richter
- Doug Carnival — McGrants Shea
- Sarah Psick — Legislative Consultant, MN Hi-Tech Association
- Mike Robertson — MN Chamber
- Tony Kwilas — MN Chamber

Recyclers

- David Paulson — MN Computers for Schools
- Tamara Gillard — MN Computers for Schools
- Jim Vosika — J.R.'s Appliance
- Katy Boone — J.R.'s Appliance
- Ryan Laber — Asset Recovery Corp.
- Julie Ketchum — Waste Management/RAA

Other

- Robert Dunn — Moderator
- Joanie Burns — Department of Environmental Protection – IRE