Minnesota Environmental Initiative

Integrated Solid Waste Management Stakeholder Process

Report to the Minnesota Pollution Control Agency

December 31, 2009

Minnesota Environmental Initiative
Integrated Solid Waste Management Stakeholder Process Final Report

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Executive Summary

The Integrated Solid Waste Management Stakeholder Process (the Process) was convened to bridge the goals of the Waste Management Act[1] and the Minnesota Climate Change Advisory Group's (MCCAG)[2] greenhouse gas (GHG) emission reduction targets for the solid waste sector. To begin the effort to bridge these two goals, the Minnesota Pollution Control Agency (MPCA) elected to have the Process focus on the four most densely populated regions in the state where the majority of waste is generated. For the purposes of the Process, these four regions were termed "centroids" and encompassed the areas surrounding the cities of Duluth, Rochester, St. Cloud, and the Twin Cities metropolitan area. The municipal solid waste (MSW) generated in these four centroid regions combined makes up approximately 70% of the total waste generated, by tonnage, in the state of Minnesota.

In the fall of 2008, the Minnesota Environmental Initiative (MEI) was contracted by the MPCA to design, lead, and facilitate the Process. MEI assembled a seventeen member Work Group of diverse stakeholders representing industry, state and local governments, environmental organizations, and others. The MPCA charged the Work Group to develop elements of a plan to reduce GHG emissions through changes in the way solid waste is managed in the four centroids that would achieve 70% of the statewide GHG emission reduction target set by MCCAG for the solid waste sector. The statewide MCCAG target was 75 million metric tons of carbon dioxide equivalent ($MMTCO_2e$) cumulatively from 2005 to 2025, and the 70% prorated goal for the centroids used in this Process was 52.5 $MMTCO_2e$.

Over a period of twelve months the Work Group developed a broad-ranging suite of well thought out strategies to help lower GHG emissions from the solid waste sector within the four centroids. The majority (22) of the 38 recommended strategies are unanimously supported by all members of the Work Group, and the remaining recommended strategies (16) are supported by a majority of the Work Group members.

From the outset of the Process, the Work Group consented that the state's existing Waste Management Hierarchy[3] (the Hierarchy) should continue to guide policy decisions regarding preferred ways to manage MSW. As such, the majority of the Work Group's recommended strategies focus on increasing source reduction and recycling efforts, which fall in the upper-end of preference within the Hierarchy. The Work Group recommended thirteen (13) strategies to reduce solid waste generation in the centroids, which focus on increasing efforts to source reduce personal computers, phone books, cardboard, junk mail, office paper, food waste, and plastic bags. Additional recommended mechanisms to reduce waste in the centroids include legislation to establish a

[1] Minnesota Statutes Chapter 115A

[2] http://www.mnclimatechange.us/MCCAG.cfm

[3] Minnesota Statute 115A.02 lists the following waste management practices in 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; and (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.

framework to advance product stewardship efforts, modifications to the pricing structure for waste collection service to better align economic signals with quantities of waste at the point of generation, and increased education, assistance, and recognition programs to support and promote source reduction activities.

The Work Group also recommended twelve (12) strategies to increase recycling in the centroids. Recommended mechanisms to achieve substantial increases in recycling include setting aggressive statewide recycling goals, modifying local ordinances to increase commercial and institutional recycling, increasing public education about the benefits of source reduction and recycling, incentivizing residential recycling, and tasking the MPCA to investigate the feasibility of requiring the removal of recyclable material prior to waste disposal or energy recovery. Other supported strategies aim to increase recycling of mattresses through increased opportunities to recycle, carpet through extended producer responsibility, and beverage containers (glass, aluminum, and plastic) by implementing a statewide container deposit. Finally, the Work Group felt it was essential that the state further support the development of recycling end markets to support and expand local recycling programs and the influx of recyclable material that will result from the implementation of the Work Group's recommendations.

To better manage organic material in the waste stream (food waste and non-recyclable paper), the Work Group recommended increasing composting of source-separated organic material through an array of efforts to be adapted and tailored as appropriate in each centroid.

Regarding recommendations on the lower-end of the Hierarchy, the Work Group recommends three strategies, one for waste-to-energy (WTE) and two regarding landfill disposal. The WTE recommendation calls for existing WTE facilities in the state to be operated at their permitted capacity to minimize the amount of waste being disposed in landfills, and that WTE facilities pursue infrastructure improvements to enhance the efficiency of their operations. The first landfill strategy recommends increasing the rate of capture and utilization of methane gas generated at landfills throughout the state, while the second landfill strategy recommends increasing landfill disposal fees to divert waste away from landfills and shift waste to other management methods higher up on the hierarchy.

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

While the Work Group primarily focused its efforts on developing strategies to reduce greenhouse gas emissions, there was strong sentiment within the Work Group that the successful implementation of the recommended strategies would be largely contingent upon the availability of adequate funding provided to local units of government to administer solid waste programs, and sufficient funding at the state level to support market development, education, and technical assistance programs administered through the MCPA. The Work Group did develop a strategy to recommend modifications to the existing allocation of funding to counties through the SCORE

program, and in addition to that strategy, the Work Group generated a list of unanimously supported high-level funding principles to help guide decision makers as the state develops a plan for the implementation of the Work Group's recommended strategies.

To assess the projected impacts of the Work Group's recommended strategies, the Process used the U.S. Environmental Protection Agency's (EPA) WAste Reduction Model (WARM) and a few MPCA adjustments to the WARM model outputs related to the GHG cuts/ton for composting organics and the higher efficiencies of WTE facilities in Minnesota as compared to the WARM defaults. According to the estimated impacts of the recommended strategies using the WARM model and the MPCA adjustments, implementation of the Work Group's recommended strategies will enable the state to achieve significant reductions in greenhouse gases totaling approximately 47.2 $MMTCO_2e$ by 2025, which is approximately 10% below the original Process goal of 52.5 $MMTCO_2e$. The Work Group and the MPCA acknowledged this shortfall and pointed to the imprecision and imperfections within the WARM model, which are described in detail in the Process Background section of this report, as a major contributing factor to the group not reaching 52.5 $MMTCO_2e$ in GHG emission reductions. As the projected impacts are merely model estimations, it is certainly conceivable that a 10% difference is within the margin of error for WARM's current GHG emission modeling capabilities. Therefore, it should be acknowledged that the Work Group, at a minimum, has adequately fulfilled its charge by recommending changes to the management of solid waste in the four centroids that will result in significant GHG reductions very near to the order of magnitude recommended by the MCCAG. Please reference Figure 5 on page 20 for a visual depiction of the GHG emission reductions projected by WARM to result from the implementation of the Work Group's recommended strategies.

In addition to yielding significant reductions in GHG emissions as a result of the recommended strategies, the Work Group should be commended for their strategies to move waste up the Waste Management Hierarchy. As demonstrated in the report, the Work Group's recommended strategies will result in the following average projected percentages for waste management methods across the four centroids by 2025: 6.08% Source Reduction (cumulatively to 2025); 60% Recycling; 6.5% Organics Management; 24.1% Waste-to-Energy; and 9.4% Landfill Disposal. For comparison, the 2005 baseline for waste management method percentages across the four centroids are: 40% Recycling; 2.7% Organics Management; 17% Waste-to-Energy; and 35% Landfill Disposal. Please reference Tables 1 and 2 on page 21 that illustrate five-year projections of percentage and volume of waste changes by management method due to the impacts of implementing the Work Group's recommendations.

While the 38 recommended strategies provide guidance and direction to the state by comprising the elements of a plan to achieve significant GHG emission reductions through solid waste management, the state must ultimately work with, and lead, numerous partner organizations to systematically and effectively implement the recommendations.

As the MPCA develops its 2009 Solid Waste Policy Report and works with counties to update local solid waste management plans, it should assess the implementation mechanisms available to support the recommended strategies, the amount of resources that will be required to implement the strategies, and various mechanisms that could be used to fund the recommended strategies. A comprehensive implementation plan should then be developed and put into action in order to ensure that the recommended strategies are brought to fruition and that the GHG emission reductions that are projected to result are achieved.

Process Background

The Integrated Solid Waste Management Stakeholder Process (the Process) stemmed from the 2007 Minnesota Pollution Control Agency (MPCA) Solid Waste Policy Report to the Minnesota Legislature that identified a need to convene a multi-stakeholder group to develop strategies to bridge the goals of the Waste Management Act and the Minnesota Climate Change Advisory Group's (MCCAG) greenhouse gas (GHG) emission reduction targets for the solid waste sector. MCCAG set a statewide goal for the solid waste sector of reducing GHG emissions by 75 million metric tons of carbon dioxide equivalent ($MMTCO_2e$) cumulatively from 2008 to 2025.

Centroids Description

To begin the effort to bridge the goals of the Waste Management Act and MCCAG, the MPCA elected to have the Process focus on four major population areas, or "centroids," where the majority of waste is generated in the state. The four most densely populated regions in the state are the areas surrounding the cities of Duluth, Rochester, St. Cloud, and the Twin Cities metropolitan area. For the purposes of this process, the centroids were defined as follows:

- Duluth Centroid: Carlton, Cook, Lake and St. Louis Counties, and the Western Lake Superior Sanitary District
- Rochester Centroid: Dodge and Olmsted Counties
- St. Cloud Centroid: Benton, Sherburne and Stearns Counties
- Twin Cities Centroid: Anoka, Carver, Dakota, Hennepin, Ramsey, Scott, Washington and Wright Counties

See Figure 1: Centroid Regions Used in the Integrated Solid Waste Management Stakeholder Process on page 11 for a visual depiction of the centroid regions used in the Process.

The municipal solid waste (MSW) generated in these four centroid regions combined makes up approximately 70% of the total waste generated, by tonnage, in the state of Minnesota (see Figure 2: Centroid Percentage of Minnesota's Total MSW).

For the purposes of this process, MPCA set a prorated goal of reducing GHG emissions by 52.5 $MMTCO_2e$ in the four centroids by the year 2025. The GHG reduction target of 52.5 $MMTCO_2e$ was determined by calculating 70% of the statewide MCCAG goal of 75 $MMTCO_2e$, based on the fact that waste generation in the centroids makes up roughly 70% of the total waste stream statewide.

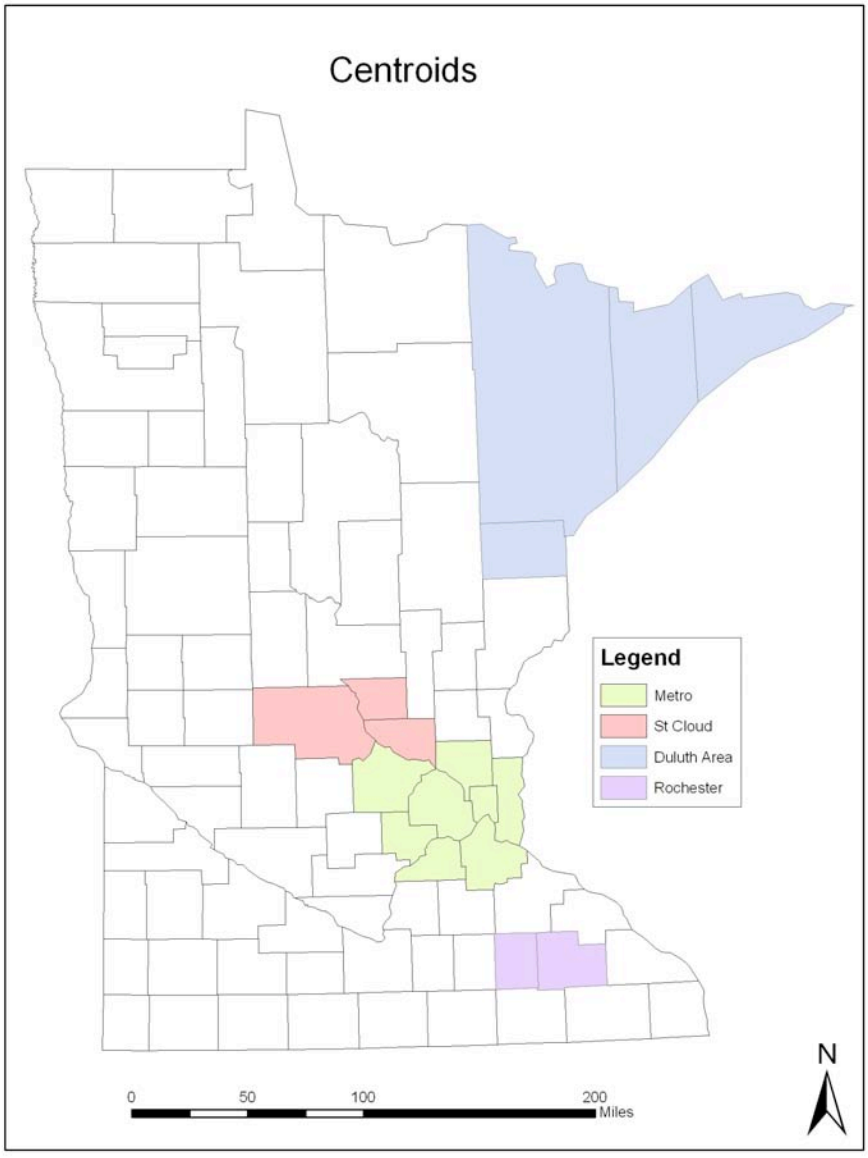

Figure 1: Centroid Regions Used in the Integrated Solid Waste Management Stakeholder Process

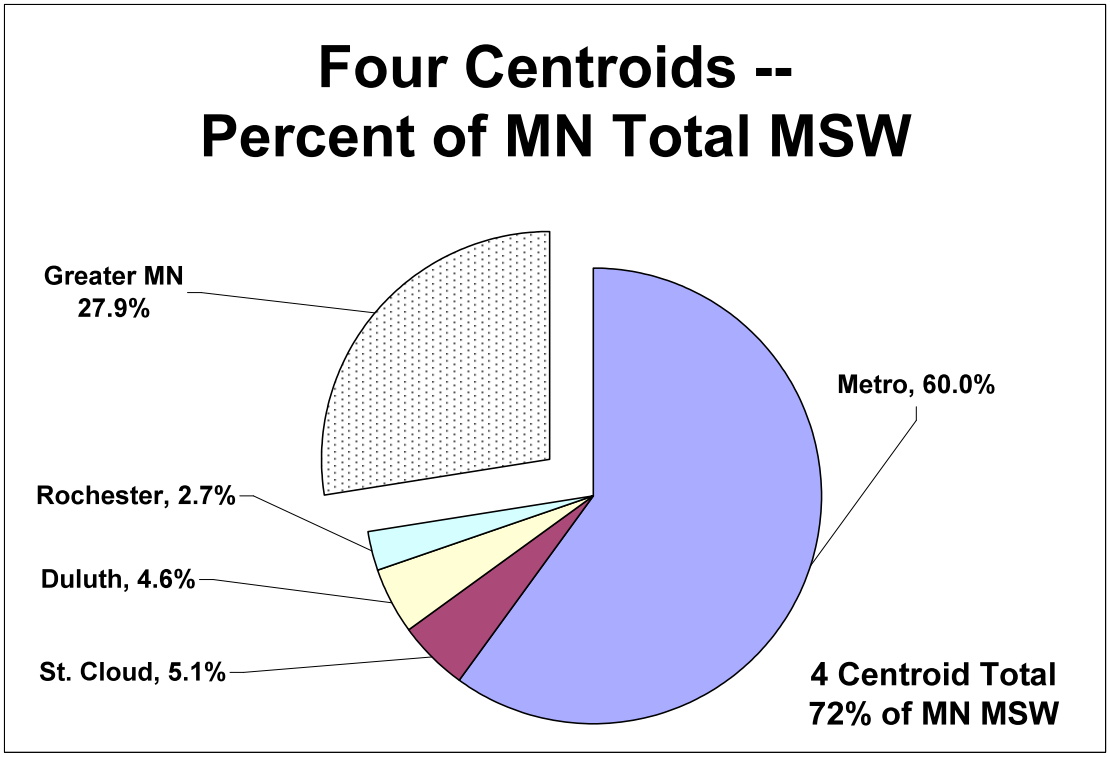

Figure 2: Centroid Percentage of Minnesota's Total MSW

Baseline Data Collection and Dissemination

To support the Process, Foth Infrastructure & Environment, LLC (Foth) was sub-contracted by the MPCA to collect and analyze data on MSW generation and composition in the four centroids. Data regarding the types, locations, and quantities of MSW to reduce, recycle or manage to reduce GHG emissions in the four centroids was compiled by Foth and provided to the Work Group in February 2009. This data was compiled using MPCA's SCORE report data, the 1999 Statewide Waste Composition Study, and waste composition studies from 5 resource recovery facilities, one transfer station and one landfill in the centroid areas. This information was synthesized to develop 2005 centroid-based waste composition data (in tonnages) to use as baseline data for the model.

Foth also normalized the data to the material input categories used in the WARM model in order to facilitate the projection of emission reductions that would result from shifting waste within material categories to different management methods. The complete Foth 2005 Baseline Data is included as Appendix F.

Measurement of Progress Toward the Goal: EPA WARM Model

To measure projected impacts of the recommended strategies and assess the Work Group's progress toward achieving the GHG emission reduction goal of 52.5 $MMTCO_2e$, the MPCA used the U.S. EPA measurement tool known as the WAste Reduction Model (WARM) (http://www.epa.gov/climatechange/wycd/waste/calculators/Warm_home.html). Like many calculation tools, the WARM model has inadequacies and deficiencies, and output results for GHG impacts of recommended strategies should be viewed as rough estimations only that will be subject to revision and refinement as state and federal agencies implement improvements to the model in the coming years. A detailed list of WARM model limitations follows:

- In general, modeling was limited by the material categories available in WARM and existing waste composition studies had to be modified to fit the WARM categories. As described earlier, Foth provided baseline data to the Process which used the MPCA's SCORE report data; the 1999 Statewide Waste Composition Study; and waste composition studies from 5 resource recovery facilities, one transfer station and one landfill in the centroid areas to develop 2005 centroid waste composition tons for the model. Not all waste composition studies use the same material categories; therefore many assumptions had to be made when grouping categories together to fit into the model's categories. The MPCA was not able to independently verify all of the assumptions and data that went into the baseline information. Because of these assumptions, quantities of materials should be considered estimates and may vary considerably from actual quantities.
- WARM does not have a "reuse" category. Therefore, reuse cannot be modeled and GHG emission reductions related to reuse programs cannot be estimated.
- WARM contains limited categories for material types that can be source reduced. Therefore, source reduction benefits cannot be fully quantified since many material types cannot be modeled as source reduced.
- In regards to organics management, WARM currently only allows for one type of organics management method (composting) and does not allow for alternative management options for organic material (e.g. food-to-people, food-to-animals, anaerobic digestion, etc.). In addition, WARM contains limited categories for material types that can be composted, most notably, non-recyclable paper types are not modelable as compostable in WARM.
- Aluminum can recycling in WARM results in higher GHG cuts than source reduction of aluminum cans because of its high recycled content. (In general, materials with high recycled content show a lower benefit for source reducing than they otherwise would because they are not displacing as much virgin material, which requires more energy to extract and produce.)
- WARM only models one of each type of waste facility in a scenario for gas capture (from landfills) and distances (to landfills, and recycling, composting and WTE facilities), so these must be averaged. Distances are from the curb to the facility; the model uses national averages from the facility to markets. WARM assumptions for these general inputs for the process were:
    - Average one-way transportation distances (using Twin Cities metro area distances):
        - Recycling – 12 miles
        - Composting – 20 miles
        - Waste-to-Energy – 25 miles
        - Landfill – 50 miles
    - Default landfill gas capture – 37% plus energy recovery (The weighted average of the four centroid assumptions)
- There is no variable in the model for users to model higher efficiency waste-to-energy facilities (WARM default is at 17%, many WTE facilities in MN are at 70+%). Also, metal recovery rates are set by the model and do not necessarily reflect the rates achieved at Minnesota WTE facilities.

- Non-MSW wastes, such as construction and demolition (C&D), industrial waste, and residuals from WTE facilities are not included in the model and were not considered in strategies proposed by the Work Group.

In spite of these significant limitations, the WARM model was determined to be the most accessible and comprehensive tool available to calculate projected GHG emissions from solid waste management activities at the time of this process. In addition to being the most accessible tool available, WARM was also the tool used by MCCAG, it is a peer-reviewed model, it includes five greenhouse gases (not just CO_2), and it is widely used in public and private sectors for policy-making, stakeholder processes, and education. All models have their deficiencies, it is important to be aware of their limitations, and these limitations were discussed and considered by the Work Group throughout the process.

MPCA's WARM model inputs and assumptions are well documented for each strategy that was modeled, and for strategies that were determined unable to be modeled, rationale for why they were not modeled is given. In two instances, the MPCA attempted to address WARM inadequacies by supplementing model output data results according to best professional judgment when reasonable and feasible to do so. Those instances were:

1) increasing the GHG cuts/ton for composting organics from the current WARM default of 0.2 $MTCO_2e$, to the projected new EPA WARM GHG cuts/ton for composting organics of 0.5 $MTCO_2e$; and

2) additions to account for the higher efficiencies of Minnesota WTE facilities (approximately 28% efficiency on average) as compared to the WARM default (18% efficiency).

MPCA staff are also working to continually improve upon the methodology and data used to calculate projected GHG emissions from solid waste management activities and will continue to research and evaluate methods and tools to more accurately calculate GHG emissions from all waste management methods and material types, as called for in strategy *6.9 Improvements to Information*.

At the time of this Process, the WARM model is able to account for the following types of waste material: Aluminum Cans, Branches, Carpet, Clay Bricks, Concrete, Copper Wire, Corrugated Cardboard, Dimensional Lumber, Fly Ash, Food Scraps, Glass, Grass, High-Density Polyethylene (HDPE), Low-Density Polyethylene (LDPE), Leaves, Magazines/3rd-Class Mail, Medium-Density Fiberboard, Mixed Metals, Mixed MSW, Mixed Organics, Mixed Paper (general), Mixed Paper (primarily from offices), Mixed Paper (primarily residential), Mixed Plastics, Mixed Recyclables, Newspaper, Office Paper, Personal Computers, Polyethylene Terephthalate (PET), Phonebooks, Steel Cans, Textbooks, Tires, and Yard Trimmings. A ton of each distinct material can be managed in one of eight ways: source reduced, recycled, composted, combusted, landfilled gas-to-energy, landfilled gas flaring, landfilled gas capture at national average, or landfilled with no gas recovery. As previously described, the model does not allow certain material types to be managed using certain management methods, which further restricts flexibility in projecting impacts from alternative approaches to waste management.

For each material, WARM assigns a GHG emission reduction multiplier factor, either through reduction in emissions (negative multiplier) or through an increase in emissions (positive multiplier). The WARM multiplier factors also enable an at-a-glance comparison of the GHG reduction value WARM places on certain materials managed via certain methods (e.g., a ton of Personal Computers

(PCs) source reduced yields a GHG reduction value in WARM of -55.97 $MTCO_2e$, while a ton of recycled PCs yields a GHG reduction in WARM of -2.27 $MTCO_2e$). See Appendix E: WARM Material Multiplier Table for the complete list of WARM multipliers per material type and management method.

Stakeholder Process Methodology

Charge to the Work Group

In the fall of 2008, the Minnesota Environmental Initiative (MEI), was contracted by the MPCA to independently design, lead, and facilitate the Process. MEI assembled a seventeen member Work Group consisting of diverse representatives from industry, state and local governments, environmental organizations, and others (see Appendix A: Work Group Roster). The charge put forth to the Work Group was to develop elements of a plan to achieve the GHG emission reduction goal of 52.5 $MMTCO_2e$ in the solid waste sector within the four centroids (see Appendix B: MPCA Charge to the Work Group).

Developing Common Understanding

Between December 2008 and June 2009, the Work Group met ten times. Early meetings focused on establishing common baseline understanding of the group's purpose, the history and current status of the waste management system in Minnesota, options to reduce greenhouse gas emissions through solid waste management, and the available tools that could be used to measure projected GHG emission reductions. Work Group members and outside experts gave presentations to the group on the management methods of the Waste Management Hierarchy and the systems currently in place in several of the centroids. Presentations were also provided to the Work Group on waste management practices in other parts of the United States, Canada, and in the European Union.

Management Method Sub-Groups

In March 2009, the Work Group formed management method sub-groups to generate straw proposal strategies to reduce greenhouse gas emissions through solid waste management. Five sub-groups were formed: Source Reduction (including Reuse), Recycling, Organics Management, Waste-to-Energy, and Landfill. Each sub-group was chaired by a member of the Work Group and sub-groups were comprised of self-selected Work Group members and other issue experts. Sub-group meetings were convened between meetings of the full Work Group and were managed by the sub-group chairs and supported by MEI staff.

The five management method sub-groups generated more than eighty (80) straw proposals, which are included in this report as Appendices G-K. A number of strategy proposals were developed in more than one management method sub-group and MEI staff compiled these "cross-cutting" proposals into a separate document, found in Appendix L: Cross-Cutting Straw Proposals.

The Process had originally been designed to begin in late 2008 and to conclude by June 30, 2009. From the first meeting of the Work Group, there was a strong sentiment within the group that the original timeline was far too short to adequately complete the charge. Throughout early 2009, stakeholders continued to express their desire to extend the process beyond the original deadline of June 30, 2009 in order to yield high-quality and well-developed recommendations. A contract extension was pursued and granted to MEI by the MPCA in the spring of 2009, making the new deadline for the process to be completed December 31, 2009.

Summer Centroid Work

In the summer of 2009, the Work Group charged four centroid sub-groups to develop implementation plan scenarios to meet their centroid-specific proportion of the 52.5 $MMTCO_2e$ GHG reduction target, calculated for each centroid region based on waste generation. As such, the reduction targets set for each centroid were: Duluth: 3.3 $MMTCO_2e$; Rochester: 2.0 $MMTCO_2e$;

St. Cloud: 3.7 $MMTCO_2e$; Twin Cities Metro: 43.5 $MMTCO_2e$ (see Figure 3: GHG Reduction Goals by Centroid). The four centroid sub-groups were comprised of solid waste practitioners and other individuals from each centroid. The centroid sub-group recommendations were designed to better inform the Work Group as they continued the development of their recommendations for the Process (see Appendix M: Centroid Sub-Group Charge). To aid their development of proposed scenarios, centroid sub-groups were given an extensive toolkit, which included, among other things, background information on the Process and the management method straw proposals developed by the Work Group Management Method Sub-Groups.

The centroid sub-groups were extremely helpful to the Process, as they brought real-world perspectives and regional expertise regarding the feasibility of strategy implementation in each of the four centroids. In addition, over the summer months the MPCA staff developed a more acute understanding of and sophisticated internal capacity to run the WARM model in order to measure projected impacts of individual strategies on GHG emissions. Centroid sub-groups were chaired by at least one self-selected member of the Work Group and were managed by MPCA staff with minimal support from MEI. The centroid sub-groups met throughout the summer to develop their proposed implementation plan scenarios for the Work Group to consider and each sub-group held at least one regional public input meeting (see Appendices O-R: Centroid Implementation Plans). It is important to note that three out of the four centroid sub-groups proposed scenarios that met their respective proportional sub-set of the GHG reduction target, and, cumulatively, all the scenario proposals from the four centroids combined reached or exceeded the 52.5 $MMTCO_2e$ goal, since some centroids exceeded their respective targets.

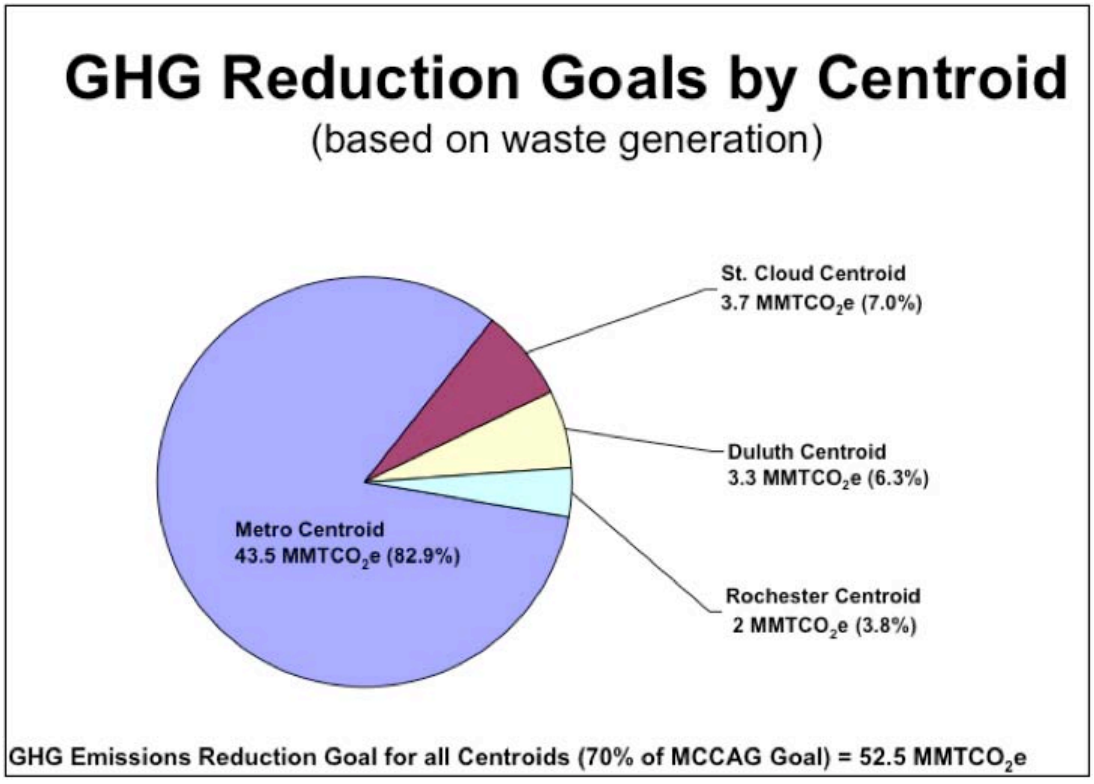

Figure 3: GHG Reduction Goals by Centroid

Refining and Finalizing Recommended Strategies

The Work Group reconvened in the fall of 2009 to review the proposed centroid scenarios and to develop a suite of recommended strategies to meet the overall GHG reduction goal for the Process of 52.5 $MMTCO_2e$. Between September 11 and December 21, 2009 the Work Group met an additional seven times. The strategies that comprised the proposed centroid scenarios formed the basis for the Work Group's recommended strategies. Centroid strategy proposals were reviewed and discussed in order of the Hierarchy, and were modified and/or added to in order to form the recommendations contained within this report. Work Group members also elected to add several additional strategies that were not included in the centroid scenarios to their recommendations.

Between fall Work Group meetings, MEI used an online survey tool to gauge members' levels of support for the various strategy proposals in order to help facilitate discussions and refine the list of recommended strategies. Ultimate decisions about strategies to include in the final set of recommendations were made during Work Group meeting discussions facilitated by the Process Chair, Ron Nargang of MEI. A vote was taken on each strategy, and for those strategies that were not unanimously supported, non-supporting members of the Work Group collaborated offline to develop language to include in the report regarding their opinions of the strategy and, in some cases, their proposed alternatives to the strategy. These non-supporting members are identified by name and their opinions and alternatives follow the strategy outlined in the recommendations.

Public Input to the Process

As mentioned previously, during the summer of 2009 each centroid held at least one public input meeting as they were developing their proposed scenarios for the Work Group. In addition, MEI held two public meetings in the fall of 2009 to gather further input for the Work Group on the draft recommended strategies. A public meeting was held on October 12, 2009 in Duluth in conjunction with a regularly scheduled meeting of the Northeast Waste Advisory Council (NEWAC), and a public Stakeholder Input Group meeting was held on the evening of November 18, 2009 in West Saint Paul. In addition, an online open public comment period on the draft recommended strategies took place from November 24 to December 8, 2009 and written comments received during this period were shared with the Work Group and discussed during their December 21 meeting. All written comments received during the online public comment period and at the Fall 2009 public input meetings are included in Appendix D of this report. MEI would like readers to note that two strategies (6.1 Organized Collection and 6.1A Industry Alternatives to Organized Collection) were added to the recommendations at the final meeting of the Work Group on December 21, 2009, and as such, there was no opportunity for written public comments to these two strategies.

Summary of Process Outcomes and Organization of Recommendations

The Work Group developed twenty-two (22) unanimously supported strategies to reduce greenhouse gas emissions within the solid waste sector and an additional sixteen (16) strategies that were supported by a majority of members, for a total of thirty-eight (38) recommended strategies. The majority of the recommended strategies are Source Reduction (13) and Recycling (12) strategies, while the remaining thirteen (13) strategies are Organics Management, Waste-to-Energy (WTE), Landfill Disposal or Other Supporting Strategies. Overall, the Work Group did an excellent job developing a broad-ranging suite of well thought out strategies to help lower GHG emissions from the solid waste sector within the four centroids. Several recommended strategies were controversial and required a great deal of compromise, and Work Group members should be commended for their willingness to rise to the challenge and collaborate to develop strategies that most or all members can support.

Estimated GHG and Waste Volume Impacts from the Work Group's Recommendations
In total, according to the estimated impacts of the recommended strategies using the WARM model and the MPCA adjustments, implementation of all of the Work Group's recommended strategies will enable the state to achieve significant reductions in greenhouse gases of approximately 47.2 $MMTCO_2e$ by 2025, which is approximately 10% below the original Process goal of 52.5 $MMTCO_2e$. The Work Group and the MPCA acknowledged this shortfall and pointed to the imprecision and imperfections within the WARM model, which are described in detail in the Process Background section of this report, as a major contributing factor to the group not reaching 52.5 $MMTCO_2e$ in GHG emission reductions. As the projected impacts are merely model estimations, it is certainly conceivable that a 10% difference is within the margin of error for WARM's current GHG emission modeling capabilities. Therefore, it should be acknowledged that the Work Group, at a minimum, has adequately fulfilled its charge by recommending changes to the management of solid waste in the four centroids that will result in significant GHG reductions very near to the order of magnitude recommended by the MCCAG.

With respect to GHG impacts of certain strategies, Figure 4: WARM Results for Unanimously Supported Strategies, and Figure 5: WARM Results for Unanimously and Majority Supported Strategies illustrate the relative WARM calculated impacts of unanimously and majority supported strategies grouped by management method. The overall WARM result for the unanimously supported strategies is approximately 15.5 $MMTCO_2e$, while the overall WARM estimated impact of unanimously plus majority supported strategies is approximately 44.7 $MMTCO_2e$. As previously indicated in the Process Background section of the report, the MPCA adjusted the overall WARM results for organics and WTE efficiency. The organics adjustment adds approximately 2 $MMTCO_2e$ and the WTE efficiency adjustment adds approximately 0.4 $MMTCO_2e$ to the overall WARM calculation, yielding the previously stated overall estimated reduction in GHG emissions resulting from the Work Group's recommendations of 47.2 $MMTCO_2e$, cumulatively by 2025.

Comparing impacts for unanimously and majority supported strategies yields the following:

- Source Reduction – unanimously supported source reduction strategies estimated to yield approximately 2.2 $MMTCO_2e$, and majority supported source reduction strategies estimated to yield approximately an additional 5.1 $MMTCO_2e$
- Recycling – unanimously supported recycling strategies estimated to yield approximately 13.3

$MMTCO_2e$, and majority supported recycling strategies estimated to yield approximately an additional 19.5 $MMTCO_2e$

- Overall – all unanimously supported strategies estimated to yield approximately 15.5 $MMTCO_2e$, and all majority supported strategies plus the MPCA adjustments are estimated to yield approximately an additional 31.7 $MMTCO_2e$
- As a reminder, several recommended strategies were not able to be modeled in WARM or were not supplemented with any adjusted model output data by the MPCA, and actual GHG emission reductions could be greater than the model projects due to the impacts resulting from these additional, not modeled strategies.

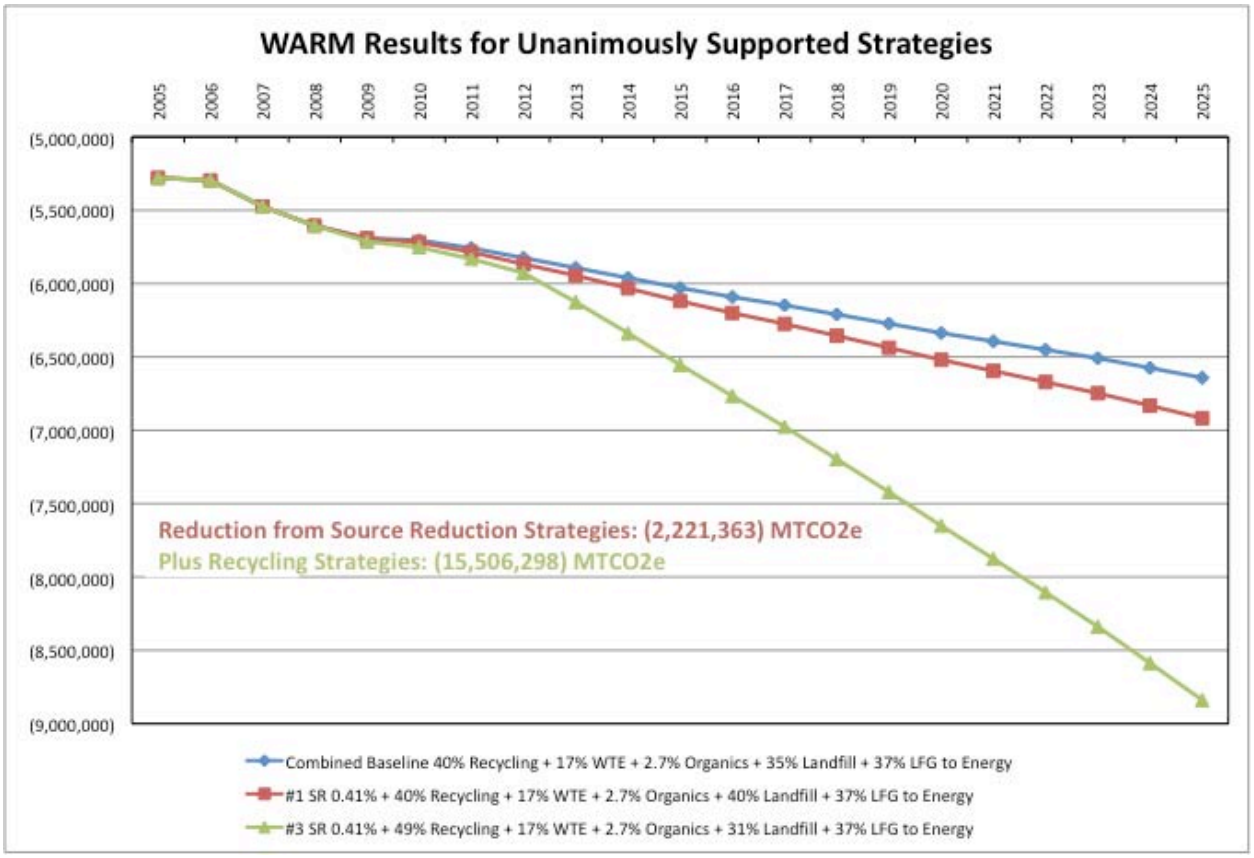

Figure 4: WARM Results for Unanimously Supported Strategies

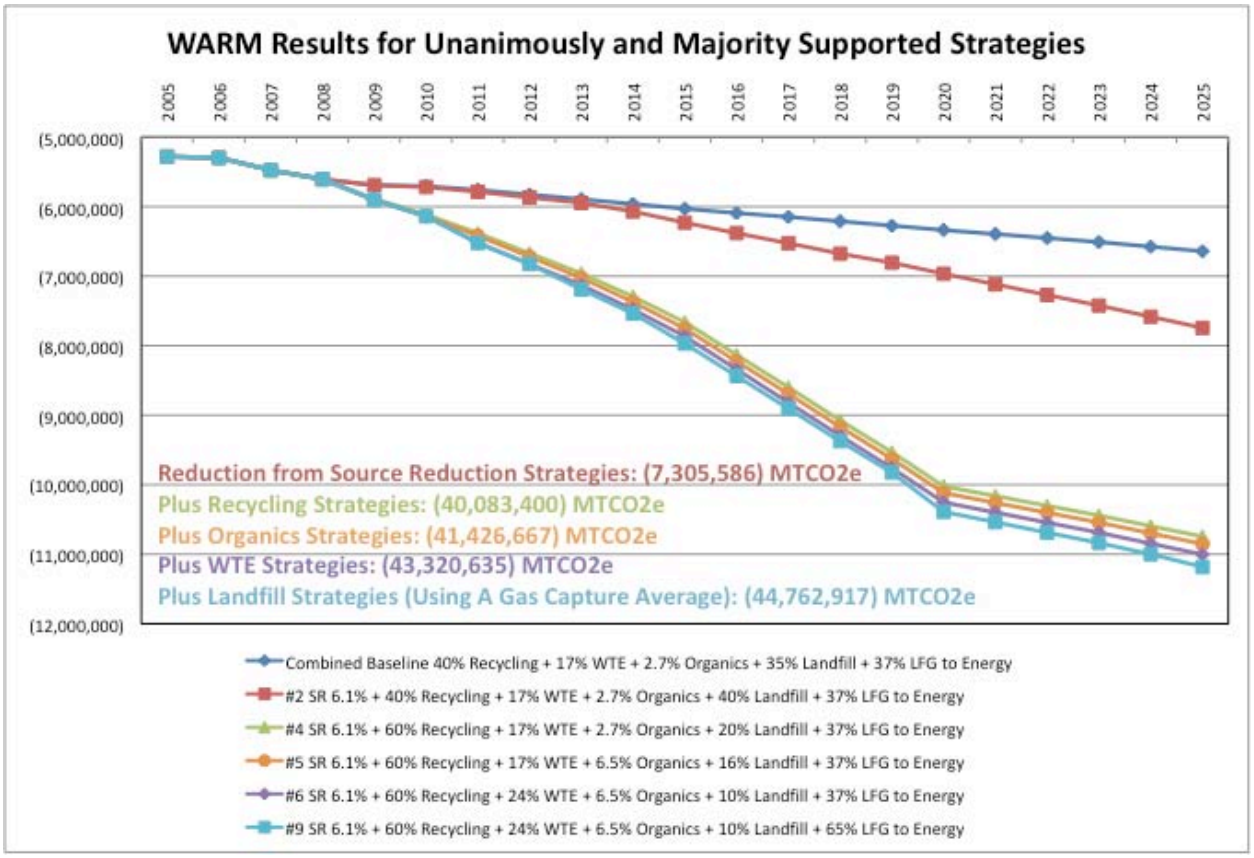

Figure 5: WARM Results for Unanimously and Majority Supported Strategies

In addition to the GHG reduction impacts of the Work Group's recommendations, below are two tables (Table 1 and Table 2) that illustrate five-year projections of percentage and volume of waste changes by management method anticipated to result from implementation of the Work Group's recommendations.

Management Method	Percentage of Waste Managed			
	2010	2015	2020	2025
Source Reduction (cumulative)	0.016%	1.02%	3.52%	6.08%
Recycling	43.2%	50%	60%	60%
Organics	3.8%	6.5%	6.5%	6.5%
Waste to Energy	21.6%	26%	25%	24.1%
Landfill	31.4%	17.5%	8.5%	9.4%

Table 1: Percentage of Waste Managed by Management Method After Implementing Recommendations

Management Method	Volume of Waste Managed (in tons)			
	2010	2015	2020	2025
Source Reduction (cumulative)	701	47,303	167,106	294,573
Recycling	1.92 million	2.36 million	2.95 million	3.06 million
Organics	166,426	306,429	319,421	331,421
Waste-to-Energy	957,849	1.23 million	1.23 million	1.23 million
Landfill	1.39 million	822,717	418,246	480,091

Table 2: Volume of Waste Managed by Management Method After Implementing Recommendations

Additional Concepts Discussed

In addition to the 38 recommended strategies, numerous other strategy concepts were discussed throughout the process that are not included in the recommended strategies because the Work Group did not reach an adequate level of support to advance them. To inform the MPCA and other decision makers, the Work Group's decisions regarding two of the more controversial strategy concepts that were discussed, but not advanced, are detailed below:

- New Waste-to-Energy Capacity: The Work Group did not support by consensus or a majority new additional WTE capacity in any of the centroids and, thus, by default, the decision as to whether or not to add new WTE capacity within a centroid will be left to local units of government and their constituent communities.
- Control of Waste: The Work Group discussed several strategy options to control the flow of waste and support the recommended strategies, including organized collection, flow control, and alternatives such as voluntary agreements and new licensing requirements and city ordinances. At the November 20 meeting, the Work Group also had a limited discussion of waste governance. Having recognized that issues surrounding the control of waste are highly controversial, Work Group members preferred to first prioritize discussion and strategy development during the meetings on other topics that had higher probability to produce recommendations with majority or unanimous support. After a limited amount of discussion at the November 20 meeting, the Work Group was unable to reach consensus or clear majority on any strategy proposals to control the flow of waste. However, at the Work Group's final meeting, organized collection, flow control and their alternatives were again discussed and the Work Group voted by majority to recommend both organized collection and industry alternatives to organized collection (strategies 6.1 and 6.1A, respectively). While flow control and its alternatives were discussed, the Work Group ultimately decided not to vote on these strategies because the proposed strategy language for these respective strategies was too vague and, thus it was not prudent to take a vote. Finally, MEI would like to again highlight to readers that because both strategy 6.1 Organized Collection, and strategy 6.1A Industry Alternatives to Organized Collection were added at the last meeting there was no opportunity for written public comments to these two strategies.

Organization of Work Group Recommendations

The recommended strategies to achieve GHG emission reductions are listed in order of preferred management method, according to the Waste Management Hierarchy. As such, each strategy is categorized with a numerical label according to the management methods of the Hierarchy:

1.0 Source Reduction Strategies

2.0 Recycling Strategies

3.0 Organics Management Strategies

4.0 Waste-to-Energy Strategies

5.0 Landfill Strategies

6.0 Other Supporting Strategies

When individual strategies were originally proposed during the Process, they were assigned distinct numerical labels to better differentiate strategy proposals from one another. The units digit for each

strategy label represents the Hierarchy management method (according to the list above), and the tenths digit is the specific numerical label given to that strategy (e.g., 1.3 Source Reduce Personal Computers). Each strategy has retained its distinct numerical classification throughout the Process, and, for clarity and consistency, strategies are listed in this document according to their original numerical label. For three strategies the units digit no longer corresponds correctly to the Hierarchy classification system developed for this process. Those strategies are: *1.12 Require Retailers to Provide Plastic Bag Recycling*, *1.16 Increased Promotion and Expansion of Voluntary Plastic Bag Recycling Program*, and *4.9 Maximize Recovery of Recyclable Material Prior to Disposal of Municipal Solid Waste*. All three of these strategies are recycling strategies and are listed in the correct management method section (2.0 Recycling Strategies) in this report, regardless of their original, and now incorrect, numerical label.

Recommended strategies are presented in two sections of the report, based on their level of support within the Work Group: Strategies with Unanimous Support and Strategies with Majority Support. Please reference the Table of Contents on page 3, which lists each of the recommended strategies in order of management method within these two groupings. For those strategies that were not supported unanimously, non-supporting members and their opinions and/or alternatives are listed following the strategy. For written public comments received that were specific to an individual strategy, MEI, to the best our abilities, attempted to reference specific comments to the strategy to which they pertain at the end of that strategy. Again, the full text of all public comments received can be found in Appendix D of this report and readers are encouraged to read each and every comment.

Members of the Work Group were responsible for drafting the written content of the recommended strategies, and modifications to the written text of the recommendations were suggested and approved by the Work Group during meetings. In an effort to standardize the format of the strategy recommendations, MEI equipped Work Group members with a strategy template to fill out as they drafted strategy proposals. However, as a result of multiple authors drafting strategy text and the fact that MEI has not taken editorial license to modify the agreed-upon language of the Work Group's recommended strategies, there is some inconsistency in the level of detail and type of information included in each strategy recommendation.

Each strategy details to the greatest extent possible the following information:

- Strategy Description/Recommendation
- Background Information
- Measurement Method
- Goals/Timeframe/Mileposts
- MPCA WARM Model Input Assumptions (Material Type and Quantity Changed)
- Potential Implementation Parties
- Costs
- Funding Mechanisms
- Barriers/Issues
- Opportunities
- General Comments
- Non-Supporting Members and Their Opinions and Alternatives[4]
- References to Specific Public Comments (found in Appendix D)[5]

Funding Recommendations
Consistent with the charge to the Work Group, the Process was structured to prioritize the generation of a list of supported strategies to achieve GHG reductions over detailing associated costs and recommended funding sources. Following the Work Group's recommended strategies is a list of ten unanimously supported high-level funding recommendations that was brainstormed and endorsed by the Work Group on November 20, 2009. These principles were developed to better inform decision makers regarding funding mechanisms to support the recommended strategies and better support the solid waste management system.

Other Notes on Recommendations
The following is additional information regarding the Work Group's recommended strategies:

- The Work Group advanced several strategies in this Process and felt it was important to point out that two supporting mechanisms are essential to the successful implementation of all the strategies: developing end markets to support the expansion of recycling activities, and providing sufficient funding to implement all of the recommended strategies.
- While this Process focused on four population "centroids," the majority of the supported strategies are designed to be, or could be, implemented statewide, and by implementing the strategies statewide the state can make progress toward achieving the MCCAG statewide GHG emission reduction goal of 75 $MMTCO_2e$ for the solid waste sector.

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[4] Only strategies that are majority, but not unanimously, supported list the Work Group members who do not support that strategy and their opinions and/or alternative ideas.

[5] At the request of the Work Group, MEI has attempted to the best of our ability to cross-reference public comments that were specific to an individual strategy to the strategy to which they pertain. Please note that readers are encouraged to read each and every public comment in its entirety, as many public comments are general in nature and therefore may not have been cross-referenced to a given strategy.

- For this Process, and the strategies that resulted from it, the term "Waste-to-Energy" or "WTE" refers to either mass-burn or refuse-derived fuel (RDF) facilities because these are the two types of WTE facilities currently operating in Minnesota. It is important to note that WARM only allows for mass-burn facility modeling and does not account for efficiency improvements due to co-generation of heat and power. Minnesota does have some RDF facilities, but all WARM modeling in respect to WTE was calculated using the WARM mass-burn input. As previously noted, WARM results for WTE strategies were adjusted to account for efficiencies of Minnesota WTE facilities. Finally, there are other facilities besides mass-burn and RDF that generate energy from processing waste, and these other or emerging technologies were not included in the Work Group's strategies regarding WTE for this process.
- Two strategies that were included in the Work Group's Draft Recommended Strategies document (dated November 24, 2009) that was open for public comment no longer appear in the final strategy recommendations. These strategies are: *2.7 Increase Carpet Recycling,* which was voted unanimously to be removed from the report at the final meeting on December 21 since *2.14 Increase Carpet Recycling through Producer Responsibility* lists more aggressive recycling rate targets for carpet recycling and had received unanimous support; and *2.12 Subsidize Local Markets' Use of Locally Source Recycled Materials in New Products*, which the Work Group opted to incorporate into the "Opportunities" section of strategy *2.5 End Market Development*.

Strategies with Unanimous Support

1.0 SOURCE REDUCTION STRATEGIES

1.3 Source Reduce Personal Computers

Strategy Description/Recommendation

Source reduce computers by extending the life of personal computers (PCs) and delaying the purchase of replacement computers by one year or more. This would be accomplished through:

1. Public sector purchasing policy adoption (either through legislation, executive order, and/or requirements through grant programs) to delay the current replacement schedule of existing computers and utilize upgrades or other tools necessary to allow existing computers to continue to operate. May include an educational component.
2. Educational outreach to businesses and residents to voluntarily participate in this effort.

If existing PCs are not energy efficient, this strategy recommends replacing those PCs according to the current replacement schedule first and then extending the life of the replacement PC. Further, the strategy recommends that all new purchases are energy efficient or small form factor PCs and/or PCs with proven life cycle extending factors, such as longer warranty, easily upgradable tools, and available replacement parts. Lastly, this strategy recommends the conversion to flat panel monitors as opposed to cathode-ray tubes (CRTs) to reduce the mass of PC waste being produced. This could be a local effort and a State initiative.

Measurement Method

Procurement policies and reports from targeted institutions, and surveys of turnover rates of business and residential community.

Goals/Timeframe/Mileposts

By 2012, extend average computer life by one year.

MPCA WARM Model Input Assumptions (Material Type and Quantity Changed)

Personal computers reduced 6% by 2025, based on extending the life of PCs purchased by the governmental sector (15% of the commercial sector)
Gradual, starting in 2011 continuing to 2025

Potential Implementation Parties

State and local government agencies, other large institutions (schools, hospitals, etc.), businesses, general public.

Costs

Minimal/Low. Some government staff time to work with public entities, businesses, and public on educational materials and advertising costs (Rochester Centroid estimated $25,000 for staff time for their centroid). Cost savings or an overall reduction in costs may also be realized.

Funding Mechanisms

Additional (new) SCORE funds supplemented by existing solid waste fees, Solid Waste Enterprise Fund, or other State funding.

Barriers/Issues

Changing technology/software upgrades may require new computers, compatibility with networks; new computers may be more energy efficient.

Opportunities

Cost savings to implementing entities. Current economic conditions make this more appealing to businesses and public entities because they will recognize a savings in PC purchases.

General Comments

Olmsted County Public Works implemented this approach from 1995 to 2000. Physical mass in PCs is already being reduced through improvements in technology. Current economic conditions are impacting the rate of new PC purchasing. An online purchasing tool, EPEAT, is available, which rates computers and other electronics on a number of environmental criteria, including product longevity and life cycle extension.

References to Public Comments Specific to 1.3 Source Reduce Personal Computers (see Appendix D)

Morris, Douglas R., Waste Management Director, Crow Wing County – Comment Re: Strategy 1.3: p. 47

1.5 Source Reduce Phone Books

Strategy Description/Recommendation

The Public Utilities Commission (PUC) should modify or repeal its rule requiring directory delivery (see barriers below).

Enact H.F. 170 establishing mandatory opt-out systems for telephone directories.

Background Information

Residents and businesses in Minnesota annually receive phone books (the industry refers to them as telephone directories). In the metro area multiple companies deliver phone books whether or not residents and businesses request them. The MPCA estimates that 13,000 tons of phone books were distributed in Minnesota in 2006 - nearly 13 pounds per household.

Telephone directories were banned from disposal in municipal solid waste (MSW) in Minnesota in 1992. Under the state law, publishers of telephone directories are subject to the following:

- Provide for the collection and delivery to a recycler of waste telephone directories.
- Inform recipients of directories of the collection system.

Telephone directory publishers used to site dumpsters in grocery store parking lots to collect out-dated phone books. As processing capacity for phone books developed at materials recovery facilities, recycling haulers began offering curbside collection of phone books. Now metro area telephone directory publishers no longer provide drop off dumpsters for old phone books. Instead they inform residential recipients to put out-dated phone books in their curbside recycling.

Despite the increased convenience of curbside collection, Minnesota's 2006 recycling rate for telephone directories was estimated at just 11%, down from 35% in 2003.

Based on 2006 estimates for recycling, 11,538 tons of phone books were discarded as municipal solid waste in Minnesota. A 2007 waste composition study at the Hennepin Energy Resource Center (HERC) found that telephone books constituted 3.8% of the waste delivered to the facility.

It appears that telephone directory publishers are not fulfilling the intent of the disposal ban, which would shift responsibility to phone book companies to manage out-dated phone books and to keep phone books out of the waste stream.

More Books

Additional companies have entered the telephone directory market in Minnesota in the past two decades. While there used to be only the local phone company's book new companies such as Yellowbook, Verizon, Frontier and at least 40 other companies are distributing telephone directories in Minnesota. Many metro area residents receive phone books from multiple competing companies.

Voluntary Efforts

The Product Stewardship Institute (PSI) worked with the Yellow Pages Association (YPA) and Association of Directory Publishers (ADP) from 2006 to 2008. PSI developed a Final Product Stewardship Action Plan for Phone Books. Meanwhile the two major industry trade associations

issued Joint Environmental Guidelines that included a voluntary pledge by individual publishers to address key issues. PSI found that the voluntary guidelines were too general and "believes that the policy presented did not include the details that were expected, and believes that the spirit of collaboration is not being honored." While PSI remains open to working with the YPA and ADP, no additional collaboration has occurred.

Opt-Out

Several states including Minnesota have discussed legislation to create opt-out systems for telephone directories. With an opt-out system publishers would be required to allow residents and businesses to decline delivery of directories, and publishers would be required to publicize that system.

Only 12 of 43 providers surveyed by the MPCA in 2008 said they have an opt-out option for residents and businesses that don't want directories delivered to them. Each company has its own program. Qwest has a website and phone number residents can use to decline delivery (or order additional books), while others only have phone numbers for residents to use. Such phone numbers often lead callers to a voice mail system with multiple options many of which are unrelated to directory delivery.

In the 2009 legislative session Representative Gardner introduced H.F. 170, which would require telephone directory publishers to offer an opt-out system for their directories, and that those systems would have to be advertised on the outside front cover of each directory.

Measurement Method

Number of residents who opt out
Tons of phone books collected by recyclers
Tons of phone books disposed of at recovery facilities

Goals/Timeframe/Mileposts

Enact in 2010, implement within 12 months. Source reduce phone books by 10%.

MPCA WARM Model Input Assumptions (Material Type and Quantity Changed)

Source reduce phone books by 10% overall.
Gradual, starting in 2011, reaching 10% by 2025.

Potential Implementation Parties

Telephone directory publishers, MPCA, Department of Commerce.

Costs

Add to current customer service programs of publishers to include tracking system if not already established.

Barriers/Issues

PUC order requires phone book distribution:

In its December 2, 1996 ORDER RESOLVING ARBITRATION ISSUES in the Consolidated Arbitration Case, at page 59:

Directory distribution. The Commission finds that US WEST must facilitate the distribution by US WEST Direct of one white and one yellow pages directory to every telephone subscriber within the geographic area covered by the directory.

Opposed by telephone directory publishers.

General Comments

Ideally it would be nice to have a central clearinghouse of telephone directories so people could opt out of books at one site.

References to Public Comments Specific to 1.5 Source Reduce Phone Books (see Appendix D)

Healy, Amy P., Director, Public Policy, Yellow Pages Association – Comment Re: Strategy 1.5: p. 19; Kordiak, Jim, Chair, Solid Waste Management Coordinating Board – Overall Comment/Comments to Multiple Strategies: p. 34; Morris, Douglas R., Waste Management Director, Crow Wing County – Comment Re: Strategy 1.5: p. 47; Muller, Alan, Minneapolis Neighbors for Clean Air/Neighbors Against the Burner – Overall Comment/Comments to Multiple Strategies: p. 50; Pratt, Tim, Association of Recycling Managers – Overall Comment/Comments to Multiple Strategies: p. 60; Rondano, Annette, St. Paul small business owner/Minneapolis CEAC member since 2009 – Overall Comment/Comments to Multiple Strategies: p. 64; Young, Randy, President/CEO, Minnesota Telecom Alliance – Comment Re: Strategy 1.5: p. 70

1.6 Source Reduce Cardboard

Strategy Description/Recommendation

Source reduce cardboard (OCC) – State/local government and manufacturing industry initiative to promote reusable containers versus cardboard boxes and the packaging goals set forth in 115A.5501 and 115A.5502. This change in packaging has been shown to be cost effective in certain manufacturing and distribution systems. This has ranged from reuse of cardboard containers with snack food distribution to pizza packaging to creating durable packages for high-tech manufactured goods.

Measurement Method

Number of manufacturers adopting new reusable transport packaging in Minnesota.
Waste composition studies & SCORE numbers.
Identify container manufacturers and obtain customer information.

Goals/Timeframe/Mileposts

By 2012: OCC reduced by 10%; Continue to 2025

MPCA WARM Model Input Assumptions (Material Type and Quantity Changed)

Not modeled – MPCA assumes negligible reduction in corrugated cardboard from implementing this strategy.

Potential Implementation Parties

Minnesota manufacturing companies, packaging design firms, MPCA, grocery stores and other retailers, State Legislature, general public.

Costs

Unknown costs due the variation in packaging development costs and package types. Container costs and shipping would be the responsibility of the businesses as they are now. If funding were available, then MPCA and Minnesota Waste Wise could coordinate staff, manufacturers, and contractor funding ($75,000 or 1 FTE).

Funding Mechanisms

State funding and manufacturers or retailers could potentially purchase containers with funds saved by avoided disposal and corrugated replacement costs.

Barriers/Issues

Retailers get little return on investment of time for deposit-trade-in program if offered to general public.

Opportunities

Some large businesses (Target and others) are already doing this and are having success.

References to Public Comments Specific to 1.6 Source Reduce Cardboard (see Appendix D)

Minnesota Solid Waste Administrators Association 2010 Policy Platform: p. 73

1.7 Source Reduce Junk Mail

Strategy Description/Recommendation

Increase promotion of existing junk mail opt-out services and/or invest in technical assistance staff to help people navigate the opt-out system.

Background Information

Unwanted mail shipped in the U.S. was close to 6,000,000 tons (based on EPA waste sort) in 2007. That is over 40% of the paper generated by weight. Recycling of unwanted mail has risen but there were still over 3,500,000 tons thrown away in 2007. This quantity could be reduced by improving the national voluntary opt-out system that the DMA currently runs and by promoting these services to people so they know that they are out there.

Currently, there is a system in place to get rid of unwanted mail. The current system requires people to create an account, then log in to their account and select the mailers that they wish to receive or not receive in the future.

There are some problems with the existing system. The opt-out system changes often, which makes it hard for customers to opt out and some of the services do not provide customers the option to opt out for life. Some of the systems ask for personal information that people are not willing to give to a third party, such as a social security number. If industry would be willing to work on changing the system so it is more consistent (doesn't change except for necessary changes and upgrades), allows people to opt out for life, and doesn't require certain personal information, it would be more customer friendly and more people would be able to use it.

Promotion of these opt-out services is not widely publicized either, so spending money on promoting the services and some money to help people navigate through the system (as technical assistance or staff time) would help more people to opt out.

Measurement Method

Waste composition study, number of pieces of information used, DMA reports the number of people that have opted out in Minnesota.

Goals/Timeframe/Mileposts

2013; Source reduce magazines, third class mail by 10%

MPCA WARM Model Input Assumptions (Material Type and Quantity Changed)

Source reduce third class mail, magazines 10% overall.
Gradual, starting in 2013 and reaching full 10% by 2025.

Potential Implementation Parties

Counties and residents of Minnesota, non-profits, for-profit opt-out companies, DMA, financial institutions.

Costs

Money would be needed to publicize the options available and to create educational material.

Funding Mechanisms

Solid Waste fees, additional (new) SCORE funds, product stewardship initiative and mass mailers pay.

Barriers/Issues

Implementation, compliance, there isn't any consistency in the DMA program because it changes frequently, making it difficult for customers to opt out. Needs to be more customer friendly.

Opportunities

Waste reduction, saves trees, saves time, resources are not wasted on people that do not want the mail in the first place.

General Comments

Support/publicize existing national opt-out registry and/or design parallel state initiative, and add option for lifetime opt-out option versus existing 5-year timeframe.

References to Public Comments Specific to 1.7 Source Reduce Junk Mail (see Appendix D)

Pratt, Tim, Association of Recycling Managers – Overall Comment/Comments to Multiple Strategies: p. 60; Rondano, Annette, St. Paul small business owner/Minneapolis CEAC member since 2009 – Overall Comment/Comments to Multiple Strategies: p. 64

1.8 Source Reduce Office Paper

Strategy Description/Recommendation

Start with improving government office paper reduction and promoting it to businesses and the public.

MPCA initiate a "Green Office Challenge," similar to what Chicago is doing in partnership with ICLEI, that will spur governments and businesses to save energy, increase recycling and water efficiency and reduce waste: http://www.chicagogreenofficechallenge.org/

Strategies related to office paper reduction include:

- Reduce your paper piles: Find out how much copier/printer paper your office uses and establish milestones to reduce paper use.
- Conserve paper: Use both sides! Use double sided copying and printing as default on all capable machines and instruct staff with clear signage on usage.
- Think before you print: Circulate documents electronically instead of using paper-based memos or fax. Include this in your office policy.

Have state agencies participate in the Challenge, which can be done through a Governor's Executive Order. MPCA has developed the Office Paper Reduction Toolkit which could be a resource used in the Challenge.

Request that the Department of Administration clarify rules on use of electronic signatures and on electronic storage so that documents can be generated and stored electronically.

Promote State Auditor's ruling that bids, RFP and RFI may be solicited via websites rather than published sources. Ask the Auditor's office for clarification on allowing bids to be submitted on electronic storage devices rather than on paper.

Fully fund the Green Step Cities program of the MPCA, which promotes cities that are reducing GHG reductions through various methods including waste reduction.

Provide technical assistance to businesses to work with them on reducing office paper. Work on setting up an in-house staff team at each unit of government or business including information technology staff to provide on-going changes in the areas of: default margins, printer and copier defaults, pop-ups for print previews, etc.

Background Information

The United States alone, which has less than 5% of the world's population, consumes 30% of the world's paper. One reason may be that the average office worker uses 10,000 sheets of copy paper each year. The entire lifecycle of office paper consumes significant energy and other resources. That's why source reduction of office paper has the fifth highest value in terms of greenhouse gas emissions reduction according to the WARM model (-8.01 $MTCO_2e$ per ton).

Governments and businesses can save money and reduce greenhouse gas emissions through source reduction of office paper. For instance, Bank of America cut its paper consumption by 25% in two years by increasing the use of online forms and reports, e-mail, double-sided copying, and lighter-weight paper. Minneapolis saved $2,000 this year by posting its 654-page budget book online. It still printed 144 copies, but that's 80 fewer than last year. And it plans to

print only 44 copies next year, said spokesman Matt Lindstrom ("Laptops helping local governments conserve," Star Tribune 10/05/2009).

Measurement Method

Individual baselines must be established at each organization most likely done through purchasing records.

Goals/Timeframe/Mileposts

Promotion can begin in 2010, must be on-going.
Implement resource management contracting for waste services as existing contracts expire.

MPCA WARM Model Input Assumptions (Material Type and Quantity Changed)

Source reduce office paper 10% overall.
Gradual, starting in 2010 and reaching full 10% by 2025.

Potential Implementation Parties

MPCA, local units of government, League of Minnesota Cities, businesses.

Costs

Program promotion, technical assistance.

Funding Mechanisms

MPCA funding

Barriers/Issues

Time, staffing constraints, behavior changes.

Opportunities

Government leads by example, cost savings for implementing parties.

1.9 Awards Program for Source Reduction

Strategy Description/Recommendation

Institute an awards program honoring exceptional examples of source reduction to inspire others to also incorporate source reduction into their business practices. The awards program would need to have a ceremony that publicizes the projects so others would see, learn about and replicate the award winning projects.

The award program could also be used as an incentive to motivate businesses to move towards source reduction. For instance in Florida, they have a program called Green Lodging. Green Lodging awardees are provided technical assistance on how to become Green Lodging certified, are promoted and Florida employees are required to stay at Green Lodges when traveling.

Wisconsin also has a program called Green Tier. Green Tier is based on a collaborative system of contracts and charters crafted jointly by participating businesses and the DNR. These contracts and charters streamline environmental requirements in many cases and encourage new environmental technologies. Green Tier is designed to help environmentally responsible companies achieve environmental and economic gains.
http://dnr.wi.gov/org/caer/cea/environmental/

This Awards Program could be started right away and incorporated into the existing Governor's Awards Program or MEI Awards Program.

Measurement Method

Each applicant submitting a source reduction project for consideration would be required to provide measurements of their source reduction and what they estimate will happen in the future. Each applicant would be asked to report any other organizations that inquire and replicate award-winning projects.

Goals/Timeframe/Mileposts

Immediate and ongoing.

MPCA WARM Model Input Assumptions (Material Type and Quantity Changed)

Not modeled - program is for overall source/waste reduction, and is not material-specific. Since there is no general reduction category in WARM, this strategy could not be modeled.

Potential Implementation Parties

MPCA, MEI

Costs

A ceremony that assures recognition requires some money to be spent on presentations, a master of ceremonies, etc. A ceremony that would be well attended, showcases the projects and honors the award winners could be done for between $10,000 and $30,000.

Funding Mechanisms

Partnerships could be pursued with Chambers of Commerce or other large corporations, but it would have to be a sponsorship and a third party that would award the winners so the judging would be unbiased. Another funding option could be to work with MPCA's Governor's Award Program or MEI's Environmental Initiative Awards Program.

Barriers/Issues

If the ceremony is not well attended organizations won't be inspired to work on similar projects. There might not be enough applicants. Consistent funding could be hard to get. Watching award winning projects might not translate into others doing similar projects.

Opportunities

There are already existing award programs to partner with. Many organizations are doing environmental projects and this is a good way to showcase them.

General Comments

There are two award programs that currently exist and it seems like it would make more sense to partner or change the existing programs instead of create an entirely new program. The other two award programs mentioned from Florida and Wisconsin could be added to the existing programs to make an existing award program even better.

References to Public Comments Specific to 1.9 Awards Program for Source Reduction (see Appendix D)

Kordiak, Jim, Chair, Solid Waste Management Coordinating Board – Overall Comment/Comments to Multiple Strategies: p. 34

1.10 Food Waste Reduction Campaign

Strategy Description/Recommendation

Educate generators of food waste about food waste issues and reduction measures including food planning, portion advice, date label advice, money savings, recipes, tips, and food storage.

Coordinate with public health staff developing proposals for Statewide Health Improvement Program (SHIP) funding to reduce "waist" and "waste." The portion control aspect of the prevention program would serve to minimize the size of people and the amount of food waste entering the municipal solid waste stream – either through organics collection programs or trash collection programs.

Measurement Method

Point source waste generation numbers.

Goals/Timeframe/Mileposts

SHIP application deadlines

MPCA WARM Model Input Assumptions (Material Type and Quantity Changed)

Not modeled - Food cannot be source reduced in WARM (there is no food category for source reduction in WARM).

Potential Implementation Parties

Government, residents, service providers, non profits, Saint Paul – Ramsey County Department of Public Health (Healthy Communities and Environmental Health Sections), others.

Costs

Unknown

Funding Mechanisms

The SHIP funding may include opportunities for portion control, obesity prevention and calorie labeling.

Barriers/Issues

Hard to measure

Opportunities

Source reduction of food waste is the cheapest, most effective strategy to reduce waste and carbon emissions associated with food waste. Saves consumer money in purchases and disposal costs.

Approximately 20% of world's climate change emissions are related to production, processing, transportation and storage of food. Opportunity to partner with health-related organizations. Build upon research findings from food-to-hogs and plate waste reduction through R/W RRP and research findings on obesity prevention programs.

General Comments

This joint approach to sharing information would be new in Minnesota and may hold strong local appeal.

1.13 Expand Technical Assistance for Source Reduction

Strategy Description/Recommendation

1. Significantly increase the number of RETAP engineers working on source reduction at organizations.
2. Develop and expand specific sectors that MnTAP staff work with on Pollution Prevention (P2).
   - Provide resources such as money
   - Make organizations accountable for numbers
   - Perception and accessibility are important
3. Technical assistance delivered through numerous partners.
   - Small business programs, Minnesota Waste Wise, business associations, extension services, vendors (procurement), and non-profits
   - Provide resources such as money to work on source reduction
   - Make organizations accountable for numbers
   - Perception and accessibility are important
   - Can't increase technical assistance efforts without additional resources

Partner with other organizations that already have access to work with companies on other issues and then work with them or train them to provide technical assistance on waste reduction.

Many organizations have stated that they would like to be more "green" but do not know how. Technical assistance helps organizations, both small and large, to set up P2 implementation at their organization. P2 assistance could also help out with resource management (RM) contracts at larger urban businesses.

In 2006-07 P2 and technical assistance helped save the following:

Program	Waste reduced (tons)	Waste reused (tons)	Water conserved (gallons)	GHG emissions avoided	Energy conserved	Cost savings
Governor's Awards Program	1,115	36,950	25.3 billion	14,465 MTCE	1.5 million kWh 9.2 million KBTU 250 million gallons of fuel	$522.8 million
Minnesota Technical Assistance Program	2,825	5,500	0.2 billion	3,163 MTCE	18,468,200 kWh 402,600 BTU	$4.78 million
Waste Wise	335	125	NA	175 MTCE	NA	$2.9 million
Total	**4,275**	**42,575**	**25.5 billion**	**17,803 MTCE**	**20 million kWh 9.6 million KBTU 250 gallons of fuel**	**$530 million**

Expanding P2 assistance helps with reduction, recycling and potentially composting.

Measurement Method

Analysis of trash bills before and after recommendations are implemented, the amount of waste leaving the organization, any savings from P2 (including procurement savings).

Goals/Timeframe/Mileposts

Minimum of ten years with milestones starting annually in year two. For new technical assistance programs outside of MnTAP, RETAP and Waste Wise, the initial stage would be creating a partnership. The next stage would be training staff from partnering organizations on waste reduction and having MPCA staff go into businesses to work on waste reduction. The program would take a while to start and gain momentum.

MPCA WARM Model Input Assumptions (Material Type and Quantity Changed)

Not modeled - reduction in waste is reported for general waste, not material-specific. Since there is no general reduction category in WARM, this strategy could not be modeled.

Potential Implementation Parties

RETAP, MPCA, local units of government, businesses and potentially LEAN consultants, non-profits, small business assistance programs, business associations, extensions services, vendors (procurement) and businesses.

Costs

Salaries, travel and training, potentially money for vouchers that could be paid back as loans (money would be used towards implementing projects with quick paybacks when organizations do not have the initial capital to invest).

Funding Mechanisms

Potentially state money or from fees assessed to businesses for services.

Barriers/Issues

Sustaining the program – how does it continue, diversity of sectors, diversity of cultures and languages, perceived government interference, trash billing, annual budgets.

Opportunities

Build on existing technical experience, outside help from non-government entities, and partnerships.

General Comments

The existing RETAP, MnTAP employees could work in the metro centroid area and new employees could be hired to work in other centroid areas.

References to Public Comments Specific to 1.13 Expand Technical Assistance for Source Reduction (see Appendix D)

Kordiak, Jim, Chair, Solid Waste Management Coordinating Board – Overall Comment/Comments to Multiple Strategies: p. 34

2.0 RECYCLING STRATEGIES

2.2 Commercial and Institutional Recycling

Strategy Description/Recommendation

Extend opportunity to recycle to non-residential sectors by developing recycling requirements for public entities and businesses. Implement public space recycling requirements for all commercial, institutional, and park facilities requiring recycling containers wherever there is a trash container.

Create new ordinances that require the opportunity to recycle at commercial entities (e.g., all business entities that contract for 16 cubic yards or greater per week of garbage collection service must separate corrugated cardboard and office paper for recycling and provide for the collection of these materials). Provide communications and assistance to commercial and institutional entities.

The state and local governments will need to play a key role in partnering with organizations that provide services to businesses including waste reduction. Businesses are wary of governmental programs and regulations and need to understand how waste reduction programs can benefit their bottom line.

Measurement Method

Include institutional and commercial sectors in SCORE reporting.

Goals/Timeframe/Mileposts

50% by 2015, 60% by 2025

MPCA WARM Model Input Assumptions (Material Type and Quantity Changed)

4% increase in recycling of cardboard, office paper, other typical commercial recyclables. Gradual, starting in 2011 through 2015, then maintain to 2025.

Potential Implementation Parties

MN Legislature, MPCA, MN Department of Commerce, Department of Education, regional/local governments (counties, economic development agencies, cities and townships), private sector, non-profits, private haulers, end markets.

Funding Mechanisms

SCORE Funds, permit and licensing fees.

Barriers/Issues

- Lack of enforcement.
- Adequate funding for implementation and education about requirements and goals.
- There is an inherent motivational and educational problem for local units of government to understand county goals and have the desire to meet them.
- Need for significant technical support to provide assistance in program establishment in all applicable locations.
- Increased financial burden on strapped school systems.

Opportunities

- MPCA should promote and facilitate the use of resource management contracts
- This could lead to the use of more resource management contracts.
- Develop Public/Private partnerships to promote recycling through the expansion of programs such as ReTap, Waste Wise, and CERTS.
- Develop strong small business recycling programs.
- Encourage/incentivize company sustainability plans.
- Enhance value for end markets through increased participation.
- Opportunities for private business partnership/sponsorships with schools.
- Create a simple template planning tool for schools, other entities.
- Increase technical assistance to entities.

References to Public Comments Specific to 2.2 Commercial and Institutional Recycling (see Appendix D)

Curry, John, Policy Director, Audubon Minnesota – Overall Comment/Comments to Multiple Strategies: p. 13

2.4 Incentives for Residential Recycling

Strategy Description/Recommendation

Incentives for residential recycling, disincentives not to recycle.

This strategy encompasses incentives that motivate residents to recycle. Incentives would be provided by local units of government and/or haulers. Potential incentive programs include:

1. Awards programs: Cities/counties offer prizes for residents who recycle
2. Recycling Rebates: Residents participating in curbside recycling programs receive a rebate on their annual garbage bill or other incentives.
3. Community Competition/Peer Pressure: This concept is new to solid waste management, but has been used in the energy sector. This program would provide residents with information on their garbage-to-recycling ratio and indicate how his/her household is doing relative to other households in the neighborhood. In the energy sector, this approach has led to positive behavior change.
4. Revenue sharing to communities within city contracts.
5. Expanded redemption centers for aluminum recovery.

Measurement Method

SCORE

Goals/Timeframe/Mileposts

Increase recycling to 60% by 2014 (curbside recyclables plus LDPE, Mixed Metals, Mixed Paper, Mixed Plastics, Mixed Recyclables, Personal Computers).
Gradual increase from 2009 to 2014.

MPCA WARM Model Input Assumptions (Material Type and Quantity Changed)

5% increase in recycling of curbside recyclables.
Initial bump in 2012, then maintain through 2025.

Potential Implementation Parties

Haulers, local governments (cities and counties)

Costs

Incurred by haulers and/or local governments; relatively low increased net cost

Funding Mechanisms

SCORE funding, generator

Barriers/Issues

Centroids with high existing recycling rates may not see much of an impact, recycling markets, non-recyclable materials.

Opportunities

Partnerships between hauling community and local units of government, direct engagement of residents.

References to Public Comments Specific to 2.4 Incentives for Residential Recycling (see Appendix D)

Curry, John, Policy Director, Audubon Minnesota – Overall Comment/Comments to Multiple Strategies: p. 13

2.5 Develop End Markets

Strategy Description/Recommendation

Support state development of improving utilization of existing or new recyclable materials for end product use within the local or regional infrastructure. This would include both final end use and processing technology to enhance or meet demand for recyclables. MPCA should commit to review and evaluate past end market development initiatives to identify successes and failures of past programs.

Measurement Method

Increase in demand capacity.
Commodity value sustainability or improvement.

Goals/Timeframe/Mileposts

Invigorate State recycled materials market development program by 2012. Increase recycling rates of non-traditional recyclables: plastics #3-7, glass, Styrofoam, all waste types.

MPCA WARM Model Input Assumptions (Material Type and Quantity Changed)

< 1% increase in overall recycling. LDPE up by 15%, PET up by 5%, mixed plastic up by 6.4%, mixed MSW up by 5%.
Gradual, starting in 2014.

Potential Implementation Parties

Government, private sector and non-profit organizations.

Costs

TBD: $500,000 increase over past state market development cost per year.

Funding Mechanisms

Planning and promoting existing state and local resources, secure existing SCORE funding that has been diverted from its original intent, State grants/loans.

Barriers/Issues

Collection infrastructure, funding, resources, State support, lack of demand or supply, quality of recycled material.

Opportunities

A specific opportunity to develop end markets exists for currently hard to recycle materials in the waste stream (e.g., plastics #3-7, mattresses, e-waste, carpets, phone books, etc.). One approach to develop end markets for these materials would be to subsidize the development of new end markets for locally sourced hard to recycle materials in the waste stream. Such a statute could be implemented by the MPCA for additional problematic materials as appropriate, especially plastics #3-7, or materials made from recycled e-waste, mattresses, or carpets.

Increased recycling of non-traditional materials, reduction of natural resources, public and private partnerships.

General Comments

There are several tactical approaches to end market development:

- Providing resources (financial – grants/loans or technical assistance) to potential partners in developing increased end market opportunities.
- Assist in driving product stewardship within the scope of creating market demand.

Any economic development initiative that supports markets for recycled material will support Minnesota's green jobs initiatives.

References to Public Comments Specific to 2.5 Develop End Markets (see Appendix D)

Curry, John, Policy Director, Audubon Minnesota – Overall Comment/Comments to Multiple Strategies: p. 13; Pratt, Tim, Association of Recycling Managers – Overall Comment/Comments to Multiple Strategies: p. 60

2.8 Increase Reduction and Recycling Education

Strategy Description/Recommendation

This strategy emphasizes partnerships in education between public and private entities and could include the use of existing programs and resources, as well as the development of new tools. One existing campaign that could be used to implement this strategy is Recycle More Minnesota (RMM). RMM is an MPCA campaign focused on providing tools and resources to assist local governments in promoting recycling. Last year, Curbside Value Partnership (CVP) conducted a study examining the impacts of increasing recycling education and marketing in two Minnesota regions. Results from this study indicated an initial 11% increase in recycling rates following the education and marketing campaign.

This strategy should include partnerships between counties on educating Minnesotans on source reduction as well as recycling. The MPCA has readily available tools to promote source reduction on the following topics: junk mail, office paper, reusable shopping bags, generic waste reduction, the Governor's Awards Program and a few other topics. When the MPCA ran a previous junk mail campaign reduction there was a large increase in the number of Minnesotans that registered with the Direct Marketing Association to get their names removed from lists. Future reduction topic areas for education could include tap water vs. bottled water, extending the life span of your computer, and the reduction of food waste.

Measurement Method

SCORE

Goals/Timeframe/Mileposts

Gradual increase in recycling of typical curbside recyclables until 2025.

MPCA WARM Model Input Assumptions (Material Type and Quantity Changed)

5% increase in recycling of curbside recyclables by 2025.
Gradual, starting in 2014 and reaching full 5% by 2025. (MPCA assumed that the individual source reduction strategies would account for any source reduction that would be gained via this strategy.)

Potential Implementation Parties

MPCA, Department of Education, local governments, schools, non-profits, haulers, neighborhood groups, Department of Health, businesses.

Costs

Funding for outreach campaigns (materials, distribution, etc.), salaries for local government staff, education about awarded projects.

Funding Mechanisms

SCORE funds, solid waste fees

Barriers/Issues

Behavioral change, measuring behavioral change and impact on solid waste volumes and composition, staffing, adequate funding for expanded education efforts.

Opportunities

Reach different/new populations; could target K-12 students; increase educational efforts by the state; increase cooperation between public, private, and institutional entities.

General Comments

Might be difficult to measure the impact.

References to Public Comments Specific to 2.8 Increase Reduction and Recycling Education (see Appendix D)

Curry, John, Policy Director, Audubon Minnesota – Overall Comment/Comments to Multiple Strategies: p. 13; Kordiak, Jim, Chair, Solid Waste Management Coordinating Board – Overall Comment/Comments to Multiple Strategies: p. 34

2.10 Increase Mattress Recycling

Strategy Description/Recommendation

Increase mattress recycling through establishing convenient drop-off programs for residents, mattress retailers, the hospitality industry, universities and other government institutions at recycling centers, transfer stations, landfills and other public places.

Measurement Method

SCORE

Goals/Timeframe/Mileposts

Metro, Rochester, St. Cloud and Duluth Centroids mattress recycling rate increases to 35% by 2012 and 50% by 2025.

MPCA WARM Model Input Assumptions (Material Type and Quantity Changed)

N/A – cannot be modeled because there is no mattress material category in WARM.

Potential Implementation Parties

Not-for-profit organizations, local units of government, mattress retailers, hospitality industry and institutions such as universities and prisons.

Costs

One processing facility (1,500 – 2,000 sq. ft.) per centroid. Equipment costs per facility estimated at $250,000 each. Not-for-profit labor cost between $7.00 - $14.00 per hour for mattress deconstruction and processing. Drop-off site collection equipment (used 48′trailer or modified Sea Van container) $10,000 per site assuming existing recycling center, transfer station or landfill site to be used. Transportation cost estimated at approximately $10,000/year for twice/month delivery from drop-off sites to processing center. More information needed as distances vary.

Funding Mechanisms

Capital investments and grants for processing and collection infrastructure, market development grants, retail fee placed on the sale of new mattresses and box springs.

Barriers/Issues

Lack of end markets for cotton and shoddy materials and the research and development funds needed to develop value added or new products. Funding to acquire special baling equipment for spring steel. No financial commitment from the mattress manufacturing industry or International Sleep Products Association (ISPA) in providing assistance in meeting these needs. A lifecycle analysis is needed on mattresses and box springs.

Opportunities

The Natural Resources Research Institute (NRRI) at the University of Minnesota – Duluth has and is actively working with regional industries in Duluth and the metro area testing the use of mattress cotton in the production of industrial wipes and various filtration mediums for storm water applications. Matt Inc. in Floodwood, MN is now using mattress cotton from the Goodwill Industries Mattress Processing Facility in the production of oil filters for diesel locomotives. Considerable landfill space savings by removing mattresses due to non-compactive

nature. Testing and ultimately displacing the use of virgin materials with used mattress textiles within regional industries leading to program sustainability.

General Comments

Despite the challenges, mattress recycling, through Goodwill Industries in Duluth, has been in existence for over five years serving, 14 collection sites in 10 counties in Minnesota and Wisconsin. In June 2008, PPL Industries and Hennepin County established the first metro area mattress recycling program. Very feasible to implement in other areas provided partnerships are developed between non-profit, public and private agencies, funding is provided to establish processing and collection infrastructure, and differential tipping fees are put into place at disposal sites.

2.13 Support State Procurement Standards that Favor Products with Recycled Content

Strategy Description/Recommendation

Institute state procurement standards (which could extend to funds granted to other entities) that favor products with recycled content to include specific materials where local markets and products need to be supported:

> "Whenever a comparable product with post-consumer recycled content is available which is within 10% of the price of a similar product without such recycled content, the state entity shall purchase the product with post-consumer recycled content. Higher percentages of recycled content shall be favored over those with lower percentages."

Whenever such a selection is made under this statute, the fact that the recycled product was selected and the cost differential between that product and the less-preferred alternative shall be reported to the Office of Management and Budget.

Such a statute could be overarching, to be "blinked on" via administrative order of the MPCA for new products and markets as appropriate, for example to support recycling of all plastics (especially #3-7) and other problematic materials such as materials made from recycled e-waste, mattresses, or carpets.

Measurement Method

Mandatory reporting

Goals/Timeframe/Mileposts

Immediate and ongoing. Growth and development of recycling markets for hard-to-recycle products targeted under the orders (i.e., Plastics #3-7, mattresses, e-waste, carpets, phone books, etc.).

MPCA WARM Model Input Assumptions (Material Type and Quantity Changed)

Not modeled - no data exists on how purchasing practices actually relate to recycling rates (basically impacts end markets).

Potential Implementation Parties

MPCA, State of Minnesota, and entities that receive state funds

Costs

Maximum 10% of materials budgets for selected items within state procurement budgets, less value of local recycling markets (jobs, tax revenue, support for waste management goals for targeted materials).

Funding Mechanisms

Existing state appropriations

Barriers/Issues

Need to pass a statute; current fiscal tightness.

Opportunities

Plastics #3-7, mattresses, e-waste, carpets, phone books, etc.

References to Public Comments Specific to 2.13 Support State Procurement Standards that Favor Products with Recycled Content (see Appendix D)

Kleinschmit, Jim, Institute for Agriculture and Trade Policy – Comment Re: Strategy 2.13: p. 32; Pratt, Tim, Association of Recycling Managers – Overall Comment/Comments to Multiple Strategies: p. 60

2.14 Increase Carpet Recycling through Producer Responsibility

Strategy Description/Recommendation

Carpet should be subject to producer responsibility. An agreement should be reached (if possible) with the industry as to how to implement producer responsibility for mandatory take-back of carpet for recycling by 2015.

Removal of carpet pre-demolition should also be part of this approach. Starting in 2010, MPCA should begin meeting with contractors, building owners and other stakeholders to develop a plan for capture and recycling of carpet waste prior to demolition/renovation projects and by 2015, MPCA should, in partnership with contractors, enact strategies to capture and recycle carpet waste prior to demolition/renovation projects.

Background Information

Carpet is an ideal "source-separated" removal from the waste stream. Nearly all carpet is isolated from the waste stream by installers before it is mixed in at WTE, landfills and/or transfer stations. Carpet occupies increasingly scarce landfill space, leaving costly voids; it is difficult to handle at RDF and other WTE facilities. A voluntary, education and incentive-based agreement (the federal CARE Agreement) is not even close to achieving its goal of 40% recycling by 2012. Carpet is an ideal product for producer responsibility, reinforced with a disposal ban.

Measurement Method

Waste survey measurements versus reported recycling from SCORE or direct from reusers.

Goals/Timeframe/Mileposts

Increase carpet recycling through producer responsibility.

MPCA WARM Model Input Assumptions (Material Type and Quantity Changed)

Carpet recycling at 40% by 2015; 75% by 2025

Potential Implementation Parties

MPCA, carpet manufacturers, carpet retailers, installers, haulers, recycling facilities, building owners/general public/generators.

Costs

TBD - based on reuse/recycling strategies employed by industry.

Funding Mechanisms

Per-square-yard disposal fee assessed at time of purchase of carpet, based on program expenditures.

Barriers/Issues

Limited end markets, haul distances/transportation costs, storage costs.

Opportunities

More efficient management of bulky materials; preserving scarce landfill space, improving WTE handling; removing high greenhouse gas generating material from waste stream.
Brotex is located in St. Paul, MN.

General Comments

With large supply of waste carpet, raw material costs will be low for recyclers, supporting existing and perhaps new re-users. Presently, retailers who have sufficient quantities are recycling because they can reduce disposal costs.

Producer responsibility, product fee and requirement that installers/retailers take back carpet for recycling.

Market development is needed.

Implementation mechanism is product stewardship approach.

References to Public Comments Specific to 2.14 Increase Carpet Recycling through Producer Responsibility (see Appendix D)

Buckley, Jean, City of Bloomington – Overall Comment/Comments to Multiple Strategies: p. 12; Kordiak, Jim, Chair, Solid Waste Management Coordinating Board – Overall Comment/Comments to Multiple Strategies: p. 34; Lange, Nancy, Izaak Walton League of America – Overall Comment/Comments to Multiple Strategies: p. 39; Pratt, Tim, Association of Recycling Managers – Overall Comment/Comments to Multiple Strategies: p. 60

6.0 OTHER SUPPORTING STRATEGIES

6.3 SCORE Funding Mechanism Repair and Enhancement

Strategy Description/Recommendation

Step 1. Revise SWMT allocation to direct specific percentage of tax revenues for SCORE pass-through grants to counties.

Expected Results if Growth of SWMT is Divided According to Current Allocation Formula:

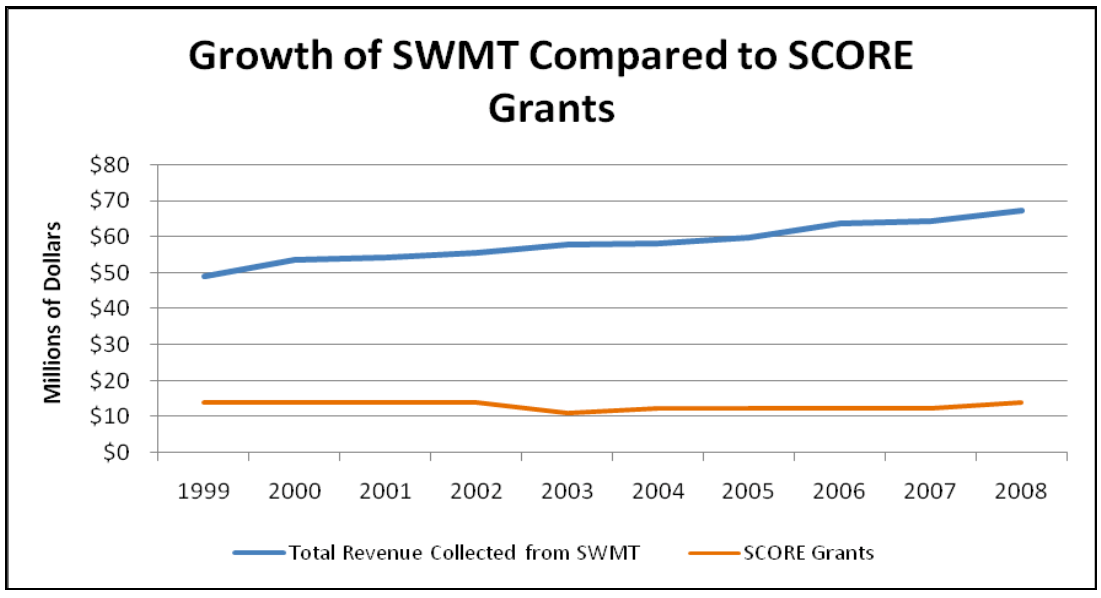
Fiscal Year	SWMT Revenue	State General Fund	Environmental Fund	Base Funding for SCORE Grants
FY10	$ 69.3	$ 20.8	$ 48.5	$ 14.5
FY11	$ 71.5	$ 21.5	$ 50.0	$ 15.0

Step 2. Revise SWMT allocation to original intent of SCORE by directing all SWMT revenue to fund solid waste-related programs, incentives, and infrastructure.

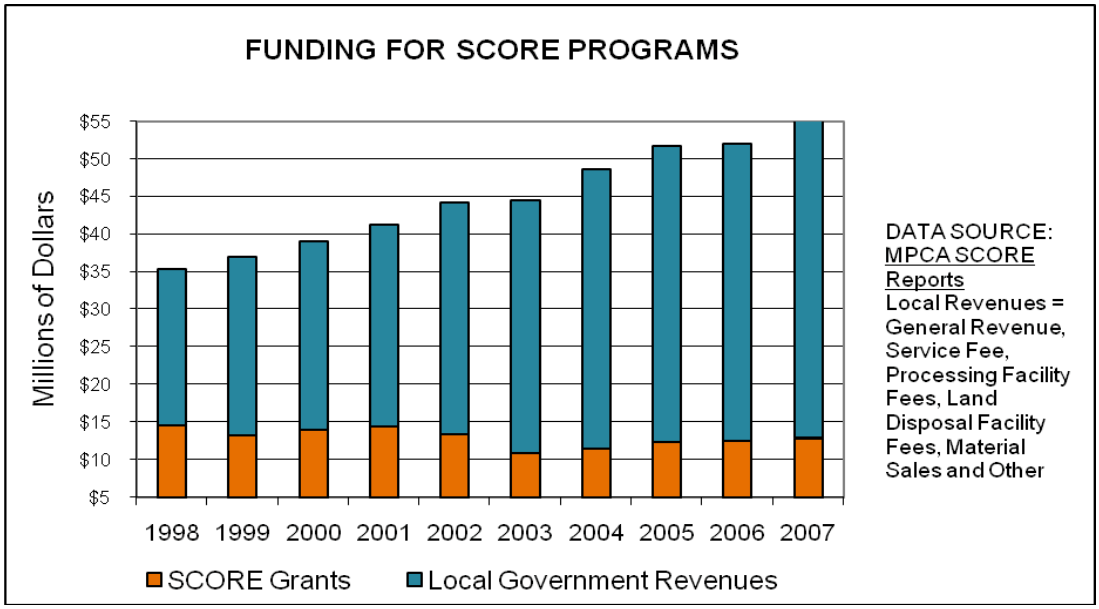
Background Information

The 1989 Select Committee on Recycling and the Environment Legislation (SCORE) established a tax to pay for services needed to meet new statewide recycling goals. The SCORE Tax was modified in 1996 to become the Solid Waste Management Tax (SWMT). Today, businesses and institutions in Minnesota pay a 17% tax on their garbage bill and residents pay a 9.75% tax. In 2008, the tax raised about $67 million.

By legislative action, 70% of the SWMT is dedicated to Minnesota Pollution Control Agency's Environmental Fund and 30% stays in the state's general fund. In fiscal year 2008, the Environmental Fund received $47 million in SWMT revenue. In turn, the MPCA allocated $14 million in SCORE Grants to Counties to provide recycling and other waste abatement services. $14 million is the same amount that was allocated in 1999 (see chart below).



Ever since SCORE passed in 1989, the relative percentage of funding directed to solid waste purposes has decreased, save for a minor increase in funding in 2009. As a result, counties and cities have had to make up for an ever-increasing funding deficit. This has led to reluctance to take on new programs and even reluctance to fund existing programs. Increasing SCORE funding will lead to increased reduction and recycling.



In 1991, the counties received $15,550,000 in SCORE grants and that gave us $9.30 per household to manage our programs. Our FY 09 allocation is a third less: $6.21 per household.

Meanwhile the size of the waste stream continues to increase and the number of homes and businesses that need information and services increases.

Measurement Method

Successful statutory revisions.

Goals/Timeframe/Mileposts

2010 Legislative Session

MPCA WARM Model Input Assumptions (Material Type and Quantity Changed)

Not modeled - no data exists correlating increased funding with increases in source reduction/recycling/composting. Also, since there is no general reduction category in WARM, source reduction effects of this strategy could not be modeled.

Potential Implementation Parties

Minnesota State Legislature, Minnesota Pollution Control Agency (MPCA)

Costs

Step 1. Any additional revenue would come out of additional revenues coming from existing tax funding as a set percentage of revenue raised. Funding could potentially decrease if overall SWMT revenues dip below current levels; this is not expected to occur.

Step 2. Upon passage of SCORE in 1989, stated legislative intent was that funding raised would be used for solid waste management purposes. Subsequently, significant portions of funding

raised have been diverted to non-solid waste environmental programs within the MPCA. In addition, 30% of the SWMT revenue goes to the general fund for non-solid waste or environmental purposes. Directing all SWMT revenue to solid waste purposes would leave unfunded programs in other areas.

Funding Mechanisms

Solid Waste Management Tax

Barriers/Issues

- Overall state financial situation.
- Directing all SWMT revenues to solid waste opportunities leaves "hole" in budget.
- Reluctance of legislature to direct new funding to existing efforts.

Opportunities

- Make good on commitment made to counties in 1989.
- Expand overall reduction and recycling funding pool and encourage new efforts.
- Prevent existing programs from going defunct.

References to Public Comments Specific 6.3 SCORE Funding Mechanism Repair and Enhancement (see Appendix D)

Curry, John, Policy Director, Audubon Minnesota – Overall Comment/Comments to Multiple Strategies: p. 13; Kleinschmit, Jim, Institute for Agriculture and Trade Policy – Comment Re: Strategy 6.3: p. 32; Pratt, Tim, Association of Recycling Managers – Overall Comment/Comments to Multiple Strategies: p. 60; Minnesota Solid Waste Administrators Association 2010 Policy Platform: p. 23; Association of Minnesota Counties 2009-2010 Policy Positions: p. 76

6.4 Promotion of Green Building

Strategy Description/Recommendation

Increase promotion of and participation in green building programs such as LEED, MN Greenstar, and B-3.

Background Information

Green building programs such as LEED, MN Greenstar, and B-3 include provisions that reward reuse of materials, use of durable materials that last longer, and use of materials with recycled content. Increased promotion of and participation in such programs will result in greater reuse, waste reduction, recycling, and utilization of materials made with recycled content.

For example, from the introduction to LEED on the U.S. Green Building Council website:

> **Materials & Resources**
> During both the construction and operations phases, buildings generate a lot of waste and use a lot of materials and resources. This credit category encourages the selection of sustainably grown, harvested, produced and transported products and materials. It promotes the reduction of waste as well as reuse and recycling, and it takes into account the reduction of waste at a product's source.

From the State of Minnesota's Sustainable Buildings Guidelines (B3-MSBG):

> **M.3 Waste Reduction and Management**
> **Intent**
> Minimize use of resources and negative environmental impacts through careful reduction and management of wastes generated during the construction process and building occupancy.
>
> **P.2 Planning for Conservation**
> Maximize utilization of facilities and modify them less over time by careful analysis of needs and resources. Building less, remodeling existing facilities, and designing for flexibility lead to reductions in cost, energy, and environmental impacts of materials.

Measurement Method

Tonnages at construction and demolition (C & D) landfills, number of buildings certified by above programs.

Green building certification programs collect data on percentage of C&D waste diverted, percentage of materials with recycled content used in the project, etc.

Documentation submitted for projects may include actual pounds/tons diverted. B3-MSBG may also collect information on square footage avoided being built through planning for conservation.

Goals/Timeframe/Mileposts

Ongoing/certification mileposts.
Targets: Dimensional lumber, Fiberboard, mixed metals, carpet, clay bricks, concrete (not all potential targets can be modeled in WARM).

MPCA WARM Model Input Assumptions (Material Type and Quantity Changed)

Not modeled - many of the material types targeted in this strategy are not modelable in WARM (categories are not included)

Potential Implementation Parties

U.S. Green Building Council – Minnesota Chapter (USGBC-MN), National Association of the Remodeling Industry – Minnesota Chapter (NARI-MN), University of Minnesota – Center for Sustainable Building Research (CSBR) (which administers the B3 program under contract to the Departments of Administration and Commerce), Green Communities Initiative, MPCA, local governments (cities and counties), The Green Institute, League of Minnesota Cities (LMC), Association of Minnesota Counties (AMC).

Costs

Most costs would be borne by the developer or owner for the actual work.

Promotional costs would be borne by the partners including the MPCA:

- Continued sponsorship of Living Green Expo
- Continued sponsorship of the Eco Experience
- Implement Green Step Cities program

Potential incentive costs

Funding Mechanisms

Private funding, SCORE

Barriers/Issues

Can be higher up-front costs for development (not always the case).

Opportunities

- Growing desire among businesses, residents and governments to be more sustainable.
- Long-term cost savings for buildings.
- Additional GHG reductions through energy and resource conservation.
- Green building outreach is an integrated way to reach people interested in environmental behaviors and get them to make appropriate choices.
- LEED for Existing Building Operations and Maintenance requires building owners to create plans for purchasing of ongoing consumables or durable goods – an excellent entry point for resource management contracting.
- Green building actively promotes purchase of building products with recycled content.
- It encourages minimizing the amount built, and reusing or recycling the waste that is created.

General Comments

Relatively easy to implement promotions, more difficult to achieve actual implementation.

References to Public Comments Specific to 6.4 Promotion of Green Building (see Appendix D)

Buckley, Jean, City of Bloomington – Overall Comment/Comments to Multiple Strategies: p. 12; Kleinschmit, Jim, Institute for Agriculture and Trade Policy – Overall Comment/Comments to Multiple Strategies: p. 33; Lange, Nancy, Izaak Walton League of America – Overall Comment/Comments to Multiple Strategies: p. 39; Millberg, Laura, MPCA – Comment Re: Strategy 6.4: p. 41; Newmark, Richard, Citizen member, Woodbury Environmental Advisory Commission – General Comment Re: Green Building Requirements: p. 55

6.5 Increased Bonding Funding for Promotion of Green Building

Strategy Description/Recommendation

Allow bonding money recipients to qualify for up to 5% additional funding if they meet both required and recommended actions of the Minnesota Sustainable Building Guidelines (B-3 standards).

Background Information

Currently all new buildings funded by state bonding money must demonstrate that the projects meet the state's B-3 standards which include standards for: Performance Management, Site and Water, Energy and Atmosphere, Indoor Environmental Quality, Materials and Waste. Beginning in 2009 all similarly funded remodeling projects of more that 10,000 sq. ft. must also meet the B-3 standards. B-3 standards include required and recommended actions (http://www.msbg.umn.edu/) See also example below.

From the State of Minnesota's Sustainable Buildings Guidelines (B-3 standards)

M.3 Waste Reduction and Management

Intent

Minimize use of resources and negative environmental impacts through careful reduction and management of wastes generated during the construction process and building occupancy.

Required Performance Criteria

A. Construction waste: Minimize waste generated from construction, renovation and demolition of buildings through detailing and specifications.

B. Construction waste: Divert at least 75% (by weight) construction, demolition, and land clearing debris from landfill disposal.

C. Packaging waste: Reduce and recycle packaging waste associated with the construction process, and encourage manufacturers to ship their product using reusable, recyclable, returnable, or recycled content packaging. Reuse or return 50% of all packaging material, by weight, to suppliers or manufacturers.

D. Operations waste: Reduce and recycle at least 50% of the waste generated during building operation. Provide dedicated recycling areas, processing and holding space, and reverse distribution space in the building.

Recommended Performance Criteria

E. Construction waste: Reuse, recycle and/or salvage an additional 15% (90% total by weight) of the construction, demolition, and land clearing waste.

F. Packaging waste: Return an additional 25% (75% total by weight) of all packaging material to suppliers or manufacturers

Note: Portions of this guideline are adapted from LEED Version 2.0.

Measurement Method

Can be incorporated into the Department of Administration's current tracking program

Goals/Timeframe/Mileposts

Legislature implement in 2010, then ongoing.

Targets: Dimensional lumber, Fiberboard, mixed metals, carpet, clay bricks, concrete (not all potential targets can be modeled in WARM).

MPCA WARM Model Input Assumptions (Material Type and Quantity Changed)

Not modeled - many of the material types targeted in this strategy are not modelable in WARM (categories are not included)

Potential Implementation Parties

Legislature, Department of Administration, Department of Commerce, local governments (cities and counties), LMC, AMC.

Costs

Not necessarily any additional costs.

Funding Mechanisms

Increased bonding funding, or reallocation formula for existing bonding funding.

Barriers/Issues

- Lawmakers may prefer funding more projects rather than setting aside money to encourage better projects.
- Can be higher upfront costs for development (not always the case).

Opportunities

- Growing desire among governments to be more sustainable.
- Can generate more green jobs.
- Long-term cost savings for buildings.
- Government serves as role model.
- Additional GHG reductions through energy and resource conservation.

References to Public Comments Specific to 6.5 Increased Bonding Funding for Promotion of Green Building (see Appendix D)

Kleinschmit, Jim, Institute for Agriculture and Trade Policy – Overall Comment/Comments to Multiple Strategies: p. 33; Lange, Nancy, Izaak Walton League of America – Overall Comment/Comments to Multiple Strategies: p. 39; Millberg, Laura, MPCA Green Building program – Overall Comment/Comments to Multiple Strategies: p. 41; Newmark, Richard, Citizen member, Woodbury Environmental Advisory Commission – General Comment Re: Green Building Requirements: p. 55

6.6 Public Entity Requirement to Meet B-3 Standards

Strategy Description/Recommendation

Currently only projects that receive bonding money from the state are required to meet B-3 standards. That requirement should be extended to city, county, state agency, and school district building and/or remodeling projects of 10,000 sq. ft. or greater, regardless of the funding source for the project.

Measurement Method

Can be incorporated into the Department of Administration's current tracking program.

Goals/Timeframe/Mileposts

Legislature implement in 2010, then ongoing.
Targets: Dimensional lumber, Fiberboard, mixed metals, carpet, clay bricks, concrete (not all potential targets can be modeled in WARM).

MPCA WARM Model Input Assumptions (Material Type and Quantity Changed)

Not modeled - many of the material types targeted in this strategy are not modelable in WARM (categories are not included)

Potential Implementation Parties

Legislature, Department of Administration, Department of Commerce, local (cities and counties) governments, LMC, AMC.

Costs

Can be higher upfront costs for development (not always the case). Would be borne by government.

Funding Mechanisms

Increased bonding funding, or reallocation formula for existing bonding funding.
Local government funding.

Barriers/Issues

- Lawmakers may prefer funding more projects rather than setting aside money to encourage better projects.
- Animosity toward a government mandate.

Opportunities

- Growing desire among governments to be more sustainable, can generate more green jobs.
- Government as role model.
- Long-term cost savings for buildings.
- Additional GHG reductions through energy and resource conservation.

References to Public Comments Specific to 6.6 Public Entity Requirement to Meet B-3 Standards (see Appendix D)

Kleinschmit, Jim, Institute for Agriculture and Trade Policy – Overall Comment/Comments to Multiple Strategies: p. 33; Lange, Nancy, Izaak Walton League of America – Overall Comment/Comments to Multiple Strategies: p. 39; Millberg, Laura, MPCA Green Building

program – Overall Comment/Comments to Multiple Strategies: p. 41; Newmark, Richard, Citizen member, Woodbury Environmental Advisory Commission – General Comment Re: Green Building Requirements: p. 55

6.7 Promotion of Sustainable Development

Strategy Description/Recommendation

MPCA should work with partners to promote sustainable development through Green Step Cities, non-profit green building certification programs in Minnesota, and similar efforts.

Background Information

Cities can promote source reduction and recycling through city codes – specifically promotion of sustainable development.

Currently, there is an opportunity to reach out to cities. Cites in the metro area completed their Comprehensive Plans in 2008. In 2009 they began updating their city codes to reflect the changes made in the Comprehensive Plan. Cities should include encouragement of sustainable development standards in their updated codes. Sustainable development standards use a whole-system approach that seeks to preserve resources, reduce operating costs, and reduce environmental and public health impacts. The U.S. Green Building Council – Minnesota Chapter has been reaching out to local governments and the Urban Land Institute to increase the sustainability of communities.

Cities can use the city code to encourage developers or they can use the code to create requirements and incentives.

Here's an example of how the city of Shoreview updated a portion of its city code to encourage developers to incorporate the expectation that developers will include recycling service in their development plans.

> *Example from Shoreview City Code on Erosion Control:*
> g) Construction Site Waste and Recycling. The site shall be maintained in a clean and orderly manner. Waste and recycling shall be stored in a appropriate containers, collected regularly, and handled in conformance with the regulations of the City and requirements of the MPCA.

Examples of requirements include: design standards that stipulate more durable materials and/or recycled content materials, performance standards for buildings that include provision of recycling service, PUD requirements for waste reduction and recycling in both the construction/remodeling and on going operations.

Examples of incentives include: TIF agreements stipulating waste reduction and recycling; bonuses for floor area ratio, surface area coverage, and/or density in exchange for waste reduction and recycling targets.

Measurement Method

Assistance provided to cities through Green Step Cities program.

MPCA WARM Model Input Assumptions (Material Type and Quantity Changed)

Not modeled - many of the material types targeted in this strategy are not modelable in WARM (categories are not included)

Goals/Timeframe/Mileposts

Cities implement in 2010, then ongoing.

Targets: Dimensional lumber, Fiberboard, mixed metals, carpet, clay bricks, concrete (not all potential targets can be modeled in WARM).

Potential Implementation Parties

MPCA, LMC, AMC, local (cities and counties) governments, developers, Met Council, private consulting firms (e.g. http://www.crplanning.com/susdo.htm: State-funded Sustainable Development model ordinances).

Costs

Would take a coordinated and comprehensive plan. May need to provide technical assistance to cities or consultants.
Ongoing funding from the MPCA of the Green Step Cities program.
Incentive funding to developers.

Funding Mechanisms

Local government funding – minimal cost.

Barriers/Issues

Not all cities are receptive to this concept.

Opportunities

- Growing desire among governments to be more sustainable, can generate more green jobs.
- Government as role model.
- Long-term cost savings for buildings.
- Additional GHG reductions through energy and resource conservation.

References to Public Comments Specific to 6.7 Promotion of Sustainable Development (see Appendix D)

Buckley, Jean, City of Bloomington – Overall Comment/Comments to Multiple Strategies: p. 12; Millberg, Laura, MPCA Green Building program – Comment Re: Strategy 6.7: p. 41; Newmark, Richard, Citizen member, Woodbury Environmental Advisory Commission – General Comment Re: Green Building Requirements: p. 55

6.8 Updated Statewide and Centroid Waste Sorts

Strategy Description/Recommendation

MPCA should conduct statistically significant statewide and/or centroid-based waste composition studies at all types of disposal facilities (WTE, landfills, transfer stations where waste is leaving the state).

Background Information

A comprehensive waste sort will provide a representative, statistically defensible estimate of the composition of Minnesota's municipal solid waste (MSW) stream. This information is necessary to understand the need for reduction of any one of the components of the waste landfilled or incinerated in Minnesota.

The last comprehensive, statewide sort was completed in 1999. Our understanding of the actual waste composition is based on data gathered 10 years ago. Since that time a number of materials have been banned (e.g., CRTs) and other management options have come about (e.g., carpet recycling). In addition, household consumption and ultimate disposal behaviors may have changed due to economics and education actions.

An updated waste sort is important now because it can accomplish the following goals:

- Establish a baseline for measuring future success in achieving waste management objectives
- Assess progress in reduction and recycling since 1999 (and since the previous sort in 1992)
- Assist the State and its partners in setting future policy direction and management priorities

Goals/Timeframe/Mileposts

Conduct in 2010; update no less than every 5 years.

MPCA WARM Model Input Assumptions (Material Type and Quantity Changed)

Not modeled - waste sorts and improvements to information don't directly affect the management methods.

Potential Implementation Parties

MPCA, disposal facilities

Funding Mechanisms

The cost of conducting waste sorts should be covered by proceeds from the solid waste disposal tax.

Opportunities

Close the gap on available recycling data.

References to Public Comments Specific to 6.8 Updated Statewide and Centroid Waste Sorts (see Appendix D)

Pratt, Tim, Association of Recycling Managers – Overall Comment/Comments to Multiple Strategies: p. 60

6.9 Improvements to Information

Strategy Description/Recommendation

The MPCA will continue to identify methods, either through suggested enhancements to the EPA WARM model or through supplementary MPCA modeling, to more accurately calculate the greenhouse gas emissions from all waste management methods and material types.

Of special interest is to have the MPCA evaluate and continue to research a more accurate calculation for the greenhouse gas emission reductions achieved and volatile organic compound (VOC) emissions created from compost facilities and landfills for all compostable materials.

In addition, there is a need to improve the quantity and quality of available commercial recycling data. MPCA should partner with counties and industry to improve commercial recycling information gathering and develop reporting models to ensure clear and consistent data collection and avoid any double counting.

Goals/Timeframe/Mileposts

Evaluations complete by 2015; reassess research needs after evaluations complete.

MPCA WARM Model Input Assumptions (Material Type and Quantity Changed)

Not modeled - waste sorts and improvements to information don't directly affect the management methods.

Potential Implementation Parties

MPCA, partnerships with local units of government, industry and facility operators.

Costs

Study costs will vary; staff time.

Funding Mechanisms

MPCA budget items

Barriers/Issues

- Budget, limited staff time
- Without the development of reporting models, industry will have difficulty meeting the commercial recycling reporting requirements.

Opportunities

- Better understanding of GHG emission reductions and VOC emissions.
- Close the gap on available recycling data.

References to Public Comments Specific to 6.9 Improvements to Information (see Appendix D)

Buckley, Jean, City of Bloomington – Overall Comment/Comments to Multiple Strategies: p. 12

Strategies with Majority Support

1.0 SOURCE REDUCTION STRATEGIES

1.1 Enact the Minnesota Product Stewardship Framework Law

Strategy Description/Recommendation

Industry should be encouraged to independently develop Product Stewardship plans and to promote those plans to the public and government.

The legislature should enact The Minnesota Product Stewardship Act. The framework legislation should be expanded to include source reduction (including packaging reduction) and product redesign into stewardship plans. Similarly legislation should stipulate that plan goals should be enforceable and seek to maximize material recovery for reuse, recycling and/or composting. The criteria for identifying products to be managed should include the ability to reduce greenhouse gas emissions through source reduction and the ability to significantly increase recycling rates of materials whose manufacturing, use and/or end-of-life disposal have high levels of greenhouse gas emissions.

Background Information

Product Stewardship, also known as Extended Producer Responsibility (EPR), is a strategy to place responsibility for end-of-life management of products and associated packaging on producers and consumers rather than on taxpayers, ratepayers or local governments.

An example is the Minnesota Electronics Recycling Law which requires that manufacturers of designated electronic devices that are sold in the state to "annually recycle or arrange for the collection and recycling of an amount of designated electronic devices equal to the total weight of its video display devices sold to households during the preceding program year."

The goals of producer responsibility are to:

- Stimulate eco-design
- Enhance source reduction, reuse and recycling
- Include environmental costs in the product price

EPR programs can be initiated by private industry or through government action. Product stewardship is implemented through participation of all parties who have a role in designing, producing, or selling a product or product components; parties that refurbish or recycle the product; and parties that collect and transport the disposed product. However, the greater the ability of a party to influence the life-cycle impacts of the product, the greater the degree of responsibility the party has for addressing those impacts.

Product stewardship programs may also result in an expanded collection infrastructure, creating more convenience for residents and creating business opportunities for retailers and processors. For example, several electronics retailers in Minnesota are now offering in-store and/or mail-in collection of certain waste electronics from residents. Similarly, paint retailers have voiced an interest in collecting leftover paint as a service for their customers.

When producers are responsible for ensuring their products are reused, recycled or otherwise managed responsibly, and when health and environmental costs are included in the product price, there is an incentive to design products that use fewer resources, reduce unnecessary product elements and/or packaging, are easier to repair or reuse, use recycled materials, are more durable, are easier to recycle, and are less toxic.

EPR in Action: An article from Recycling Today magazine dealing with changes in electronics manufacturing demonstrates the benefits of product stewardship:

> "Original equipment manufacturers (OEMs) are reducing the number of screws and other fasteners as well as reducing the amount of lead in their products. Additionally, many OEMs are replacing engineered plastic components with easier-to-recycle materials such as aluminum and other metals, says Parker Brugge, vice president of environmental affairs and industry sustainability for the Consumer Electronics Association (CEA), Arlington, VA.
>
> One of the biggest areas of growth in design for recycling is in reducing the amount of virgin plastics going into new electronics and making plastic components easier to recycle by limiting the types of plastics used and labeling them so they can be easily sorted.
>
> Panasonic reports that from the 1980s to the 2000s, the company has reduced the total number of types of plastic it uses from 13 to two and also has reduced the number of plastic parts in its products from 39 to eight. As a result, the company reports a much more efficient recycling process.
>
> Additionally manufacturers have stepped up their efforts to use recycled plastic in their new products, which can benefit recyclers.
>
> 'Some manufacturers have incorporated significant amounts of recycled plastic in their products,' says Eric Harris, director of government and international affairs for the Institute of Scrap Recycling Industries Inc. (ISRI), Washington, D.C. 'This creates demand for recycled plastics from computers, which increases the value that recyclers can capture for the material.'" (Recycling Today, April 2009)

Minnesota's Current Approach: Current product stewardship initiatives in Minnesota have been centered on individual products – rechargeable batteries, CRT landfill disposal ban, and electronics.

In the 2009 legislative session, product stewardship bills were introduced on seven different products: beverage containers, CFLs, electronics, paint, pharmaceuticals, phone books, and plastic bags.

The ISWM centroid plans included recommendations for EPR. The calculations were run through the WARM model after identifying individual product types that corresponded with WARM model categories. Examples include: beverage containers, cardboard, carpet, CFLs, computers, mattresses, phone books, and plastic bags.

An Alternative – EPR Framework: There is an alternative to this "product by product" approach called an Extended Producer Responsibility Framework.

The framework establishes criteria, processes, and plans to provide a consistent yet flexible approach and a common set of expectations for identifying and evaluating products to be managed through EPR and for developing a stewardship program for those identified products (stewardship programs will operate differently for each product). This comprehensive framework approach is more efficient than trying to address individual products on a case-by-case basis. The framework also recognizes that not all products are suited to a stewardship approach. The

framework approach also calls for greater consistency across jurisdictions since the plans are developed and managed by industry and thus less susceptible to local political considerations.

In addition, the framework approach establishes the requirement for environmentally sound processing practices and the requirement for product-specific performance measures.

During the 2009 legislative session Representative Gardner introduced H.F. 2407 – The Minnesota Product Stewardship Act. This bill would create a framework whereby the MPCA would work with citizens and industry (using a determined set of criteria) to annually identify products best managed through product stewardship and to develop product stewardship plans for those products.

Measurement Method

Reporting to MPCA from industry partners.

Goals/Timeframe/Mileposts

Enact a Product Stewardship Framework in 2010. Identification of products would begin in 2012 and programs would be implemented as they are worked out.

MPCA WARM Model Input Assumptions (Material Type and Quantity Changed)

1.9% source reduction, 5% increase in recycling of plastics mainly (LDPE, PET, HDPE) and some corrugated cardboard.
Gradual, starting in 2014 and reaching full 1.9% reduction and 5% recycling by 2025.

Potential Implementation Parties

MPCA, industry and other private partners, legislature, and local government.

Costs

The costs for implementing stewardship plans would be borne by manufactures and consumers. Transparency of those costs and education about those costs lead to consumer acceptance. Local government is expected to see a costs savings through this approach.

Through the internalization of end-of-life management costs, product stewardship may offer a more economically efficient approach for reducing waste, creating reuse opportunities and infrastructure, and addressing the collection and recycling of certain products rather than relying on fees, taxes, disposal bans or other regulatory tools.

Additionally, internalizing the costs of end-of-life management into the price of the product sends the correct market signals to the purchaser so they can make informed decisions on their purchase. Externalizing those costs onto ratepayers or the general taxpayer ensures that the consumer cannot determine the full cost of a product and therefore cannot make an educated decision at point of purchase.

Funding Mechanisms

Agency funding, registration fees

Barriers/Issues

- Each product stewardship plan requires time for all parties to negotiate implementation.
- Potential for information overload if consumers face multiple disposal mechanisms.
- Has worked well for electronics and rechargeable batteries, has not worked well for carpet and telephone books.

- Agency funding and staffing to monitor compliance.
- Legislature must remain engaged in holding the agency accountable.

Opportunities

Creates private and public partnerships that can leverage the best of both parties.
EPR can result in cost savings for local units of government. For example, Hennepin County, which has operated a collection program for waste electronics since 1992, realized cost savings of $681,982 during the first program year of the Minnesota Electronics Recycling Act.

Members Not Supportive of 1.1 Enact the Minnesota Product Stewardship Framework Law and Their Opinions and Alternatives

Non-Supporting Members

Mark Stoltman (for Doug Carnival), Mike Robertson

Non-Supporting Members' Opinions and Alternatives

- Business community believes the framework concept is too broad and does not sufficiently define what products could be included, nor the criteria that will be used to determine how products would be prioritized and targeted. Arguably, any product could be subjected to MPCA regulation.
- Disposal of problem materials (including household hazardous waste) has been dealt with in the Waste Management Act and these materials should not be subjected to extended producer responsibility.
- Need to better define what is meant by "producer," and provide further detail as to how the complexities presented by specific products will be handled.
- Industry feels the notice period (30 days) that is currently required in the process is too short.
- Industry has concerns over the technical capacity/expertise of an authoritative body that would weigh the environmental impacts of products when it comes to listing priority products to target for removal from the waste stream. Representative Gardner's framework bill listed the MPCA Board as the authoritative body to recommend products to be targeted, but industry believes that the MPCA Board does not have the appropriate technical expertise to do this.

References to Public Comments Specific to 1.1 Enact the Minnesota Product Stewardship Framework Law (see Appendix D)

Curry, John, Policy Director, Audubon Minnesota – Overall Comment/Comments to Multiple Strategies: p. 13; Hubbard, Susan & Tim Brownell, Eureka Recycling – Overall Comment/Comments to Multiple Strategies: p. 23; Kleinschmit, Jim, Institute for Agriculture and Trade Policy – Comment Re: Strategy 1.1: p. 32; Kordiak, Jim, Chair, Solid Waste Management Coordinating Board – Overall Comment/Comments to Multiple Strategies: p. 34; Lange, Nancy, Izaak Walton League of America – Overall Comment/Comments to Multiple Strategies: p. 39; Pratt, Tim, Association of Recycling Managers – Overall Comment/Comments to Multiple Strategies: p. 60; Richter, Trudy, Executive Director, Minnesota Resource Recovery Association – Overall Comment/Comments to Multiple Strategies: p. 61; Risser, Sarah, Sierra Club – Comment Re: Strategy 1.1: p. 63; Rondano, Annette, St. Paul small business owner/Minneapolis CEAC member since 2009 – Overall Comment/Comments to Multiple Strategies: p. 64; Sheehan, Bill,

Ph.D., Executive Director, Product Policy Institute – Comment Re: Strategy 1.1: p. 68; Minnesota Solid Waste Administrators Association 2010 Policy Platform: p. 73; Association of Minnesota Counties 2009-2010 Policy Positions: p. 76

1.2 Volume-Based Pricing

Strategy Description/Recommendation

Expand volume-based pricing/unit-based pricing. Require cities and counties to adopt and implement Pay-as-You-Throw (PAYT) ordinances where incremental price increases are proportional to container size increases as well as to the frequency of service. In order to truly make materials recovery successful and economically viable, the city must refine and specify its required unit-based pricing for trash, or the PAYT system.

This strategy calls for a more specific pricing structure than the legislation that is currently in place for volume-based pricing. This strategy requires that the price differential would change by a minimum of 80% when a container doubles in size or doubles in the frequency of service.

Example: 30 gallon cart per week service = $10/month; 60 gallon cart per week = $18/month; 90 gallon cart per week = $26/month

This strategy also requires haulers to have a very transparent bill so the customer is aware of the amount that they are being charged and the volume of trash that is being thrown away. Ideally, the system would be a unit-based system so that the customer is aware of the waste they are generating. Structuring waste bills similarly to a utility bill (i.e., water or electric) would provide the customer with a clear incentive to reduce their waste.

Measurement Method

Compliance of all haulers with existing volume-based pricing requirements, reduction of waste volumes, increase in recycling and composting rates.

Goals/Timeframe/Mileposts

2011-2014

Curbside recyclable materials: 5.5% increase in source reduction rate, 5% increase in recycling rate, 5-6% increase in composting rate.

MPCA WARM Model Input Assumptions (Material Type and Quantity Changed)

4% source reduction, 5% increase in recycling of all materials.

Gradual, starting in 2014 and reaching full 4% reduction and 5% recycling by 2025.

Potential Implementation Parties

MPCA, local governments, private haulers, county ordinances and enforcement. Local units of government would need to have licensing requirements or use organized collection to ensure compliance.

Costs

Low implementation costs to municipalities, reduced costs to the customer. Increased costs to implement for haulers, increased costs for enforcement, illegal dumping, burning and burying.

Funding Mechanisms

Generator

Barriers/Issues

- Additional enforcement and education would be needed.
- Resistance to change, staff for enforcement, potential for an increase in illegal dumping, burning or burying.
- Enforcement and compliance would be challenging.
- Private sector haulers will be concerned about proprietary pricing information.
- Public will have concerns about increased costs for current levels of service.
- Price for service becomes unhinged to costs for service.
- Capital costs to haulers to provide new carts of different sizes to customers.
- Application in multi-family units with central disposal.
- Some additional administration and enforcement burden.
- Bag systems create problems with the automated collection systems that industry is moving toward. Bag systems increase workers compensation and other safety costs.

Opportunities

- Minnesota cities and national studies reported that have this type of system had minimal illegal dumping if residents were well informed about the system before changes were implemented.
- Source reduction increases of 6% have been documented.
- Recycling and composting increases.
- Cost based on generation (reduced cost for disposal as waste reduces).
- Transparent and equitable pricing.
- Creates recognizable price incentives for reducing refuse service and source reduction efforts.
- Allows for customers to financially benefit by diverting waste into recycling streams.
- Could also include provisions that require transparency in pricing.

General Comments

Background exists, but has not been enforced. Proposed by St. Cloud, Duluth and Metro centroids.

The Skumatz Economic Research Association (SERA) has completed several studies that, taken together, suggest the following: Pay-as-You-Throw programs (or unit-based pricing for trash) decrease residential disposal by approximately 17% in weight, with 8-11% being diverted directly into recycling and yard waste programs. 5-6% by weight is diverted into curbside and drop-off recycling collection programs. 4-5% by weight is diverted into yard waste programs, where available. 6% by weight is removed from the waste stream via source reduction efforts (e.g., buying in bulk, selecting items with less packaging, etc.).

Research has shown that garbage collection rates that conform more closely to the actual percentage increase in service (e.g., twice the fee for twice the capacity) have a higher positive impact on the amount of recycled material than rates that progress less steeply than the percentage increase in level of service. In one SERA study comparing 30- and 60-gallon garbage service, low levels of percentage difference in fee structure (20% to 30% more for 60-gallon than for 30-gallon) resulted in an increase in recycling tonnage that hovered between 0.4% and 0.6%.

At higher levels of rate increase (e.g., an 80% increase for doubling garbage service capacity), the resulting increase in residential recycling is near 4.5%. Clearly, steeper increases for higher levels of garbage service have a significant positive impact on residential recycling tonnage.

Members Not Supportive of 1.2 Volume-Based Pricing and Their Opinions and Alternatives

Non-Supporting Members

Ryan O'Gara, Mark Stoltman (for Doug Carnival), Mike Robertson

Non-Supporting Members' Opinions and Alternatives

- Waste hauling industry prefers incentive-based approaches rather than punitive approaches to motivate behavior change.
- Waste hauling industry cites added labor costs due to human abuse of the system (crushing trash to fit more volume into a smaller container, etc.).
- Haulers prefer to retain ability to propose flexible and tailored pricing structures, based on individual community needs and priorities, and feels this proposal threatens this flexibility.
- Proposal to apply an 80% price increase to a "base rate" does not fit well with the variable labor costs used to determine service fees.
- Waste hauling industry cites implementation of a volume-based pricing system would lead communities to implement organized collection.
- Waste haulers note that there are a variety of factors that go into residents' rates and those factors differ from one hauler to another, including: disposal location and distance to disposal site, transportation costs/fuel costs/truck maintenance costs, and route density in different communities.

References to Public Comments Specific to 1.2 Volume-Based Pricing (see Appendix D)

Kordiak, Jim, Chair, Solid Waste Management Coordinating Board – Overall Comment/Comments to Multiple Strategies: p. 34; Lange, Nancy, Izaak Walton League of America – Overall Comment/Comments to Multiple Strategies: p. 39; Morris, Douglas R., Waste Management Director, Crow Wing County – Comment Re: Strategy 1.2: p. 46; Risser, Sarah, Sierra Club – Comment Re: Strategy 1.2: p. 63

1.11 Institute a Ban or Tax on Single-Use Plastic Shopping Bags

Strategy Description/Recommendation

Institute a ban or tax on single use plastic bags.

Background Information

Numerous countries and cities have banned thinner, single-use plastic bags and in some cases they also tax thicker plastic bags. Stores in some countries have instituted fees in an effort to reduce plastic bag usage. A sample of participating countries/cities include:

Africa:
Eritrea, Rwanda, Somalia, Tanzania – ban
South Africa, Kenya, Uganda – banned thinner plastic bags and imposed taxes on thicker ones

Asia:
Bangladesh – ban
China – banned thinner plastic bags and imposed taxes on thicker ones
Hong Kong – tax
South Korea – some stores voluntarily began charging
Mumbai, India – ban
Taiwan – ban on lightweight bags

Australia:
South Australia – ban on lightweight bags

Europe:
Belgium, Ireland – tax
Italy – tax began in 2006 and will be replaced with a ban in 2010
Germany, Netherlands, Switzerland – some stores voluntarily began charging
United Kingdom – various cities have bans

Americas:
Mexico City – ban on lightweight bags that are not biodegradable
Oakland – ban (currently unenforced due to ongoing litigation)
Palo Alto – ban
San Francisco – ban at certain types of stores
Los Angeles – ban goes into effect in July 2010
Maui, Hawaii – ban goes into effect in 2011
Whole Foods stores discontinued plastic bags usage
Ikea charges a fee

San Francisco reports 5 million fewer plastic bags are used every month as a result of the ban. In Ireland bag usage has dropped 95%. Ban and tax initiatives are often coupled with promotion of reusable bags.

Reduction of film plastic (HDPE or #2 and LDPE or #4) realize significant CO_2e reductions. Each ton of HDPE not produced equals a 1.8 $MTCO_2e$ reduction; for LDPE each ton not produced equals a 2.29 $MTCO_2e$ reduction.

Other arguments for limiting the use of plastic bags include the fact that the bags litter streets and streams (according to a UN report they are the second leading cause of litter behind cigarette butts), and that bags lead to health problems and death of wildlife that eat or attempt to

eat the littered bags. Bangladesh and Mumbai, India banned plastic bags because bags clogged storm water systems leading to increased flooding and deaths. According to the United States Consumer Product Commission, the Commission receives "an average of about 25 reports a year [nationwide] describing deaths to children who suffocated due to plastic carryout bags."

Measurement Method

Sales figures from businesses.

MPCA WARM Model Input Assumptions (Material Type and Quantity Changed)

90% reduction in plastic bags (assumed 51% of LDPE is bags, therefore reduced LDPE category by 46%) over a 5-year period, from 2014-2019.

Potential Implementation Parties

MPCA, grocery stores and other retailers.

Funding Mechanisms

Tax on thicker bags.

Barriers/Issues

- Opposed by grocery stores and the plastics industry.
- Does not address environmental impacts of paper bags.
- Must include consumer education on changing habits.
- Politically difficult to enact.

Opportunities

- Reduces litter.
- Reduces harmful impacts on humans, wildlife and on water bodies.
- Currently only about 10% of plastics bags are recycled nationwide.

Members Not Supportive of 1.11 Institute a Ban or Tax on Single-Use Plastic Shopping Bags and Their Opinions and Alternatives

Non-Supporting Members

Doug Carnival, Julie Ketchum (for Mike Robertson), Peg Wander

Non-Supporting Members' Opinions and Alternatives

Opinions of Opponents to Institute a Ban or Tax on Single-Use Plastic Shopping Bags:

- Business community is not in favor of bans or taxes and prefers other means to source reduce the use of single-use plastic bags, i.e. outreach and education programs to business community to encourage reductions in single-use plastic bags.
- There is a current market for plastic bag material and an existing infrastructure to support recycling of this material. Minnesota Waste Wise has a very successful voluntary plastic bag recycling program, "It's in the Bag," that should be continued and expanded to increase plastic bag and film recycling in the centroids (see strategy 1.16 Increased Promotion and Expansion of Voluntary Plastic Bag Recycling Program)

Alternatives to Institute a Ban or Tax on Single-Use Plastic Shopping Bags:

- Continue and expand promotion and participation in voluntary plastic bag and film recycling through "It's in the Bag" program – see strategy 1.16 Increased Promotion and Expansion of Voluntary Plastic Bag Recycling Program
    - Background Information: "It's in the Bag" currently operates in the Twin Cities metro area and Duluth and provides plastic bag recycling for consumers, and plastic film and bag recycling for businesses. Since October 2003, "It's in the Bag" has recycled more than 5 million pounds of plastic bag and film that has been used to create approximately 770,478 square feet of decking.
    - Potential Implementation Parties: Minnesota Waste Wise, Trex Company, local vocational centers.
    - Costs: Participating stores pay a "pick-up fee" of $4 per pick-up that goes directly to the vocation centers that employ adults with disabilities to collect, transport and process the material. Expanding the program statewide would most likely require funding one more FTE through Waste Wise.
    - Funding Mechanisms: Corporate sponsorship, pick-up fees

References to Public Comments Specific to 1.11 Institute a Ban or Tax on Single-Use Plastic Shopping Bags (see Appendix D)

Healy, Kit – Comment Re: Strategy 1.11: p. 19; Risser, Sarah, Sierra Club – Comment Re: Strategy 1.11; Risser, Sarah, Sierra Club – Comment Re: Strategy 1.11: p. 63

1.14 Resource Management Contracting

Strategy Description/Recommendation

The MPCA should continue to explore the best way to develop Resource Management Contracts and should promote identified best practices in Resource Management Contracting, with state agencies leading by example.

Background Information

Resource Management Contracting (RMC) is an alternative type of contracting meant for large, commercial/industrial/manufacturing/public organizations in an urban region. The contract focuses on customer assistance for solid waste instead of the volume of waste hauled away. The waste contractor is paid for their customer assistance and expertise in waste. The incentive is to work with the client to reduce, reuse, and recycle as much as possible and then haul the waste that is left over at the end.

These contracts look at shared costs and revenue for recycling programs, reuse programs, organics diversion and behavior change of employees when it comes to thinking about waste. RMCs also look at right-sizing containers and hauling frequency. Often times education is included in the contract and a determination is made on whose responsibility education will be, whether it is the hauler's or the institution's. This is a good step because education is often forgotten about and with an RMC, roles and responsibilities are clearly defined. RMC programs are relatively new and are still developing but seem to prove to be promising.

Measurement Method

Measurement is a crucial part of the RMC. Organizations developing an RMC are strongly encouraged to require their hauler to provide a baseline before the resource management services are determined and implemented. This helps the organization determine what is currently happening before anything changes. The baseline helps people see what needs to change as well as successes that are happening and what changes could be made in the future.

MPCA WARM Model Input Assumptions (Material Type and Quantity Changed)

Not modeled - reduction in waste is reported for general waste, not material-specific. Since there is no general reduction category in WARM, this strategy could not be modeled.

Potential Implementation Parties

All medium to large organizations in an urban area that are negotiating new hauling contracts. Haulers and potentially third party contractors for education would also be implementation parties.

Costs

Most costs would be on the organizations contracting for new services and the haulers. It would be a good idea for MPCA and other government agencies to also negotiate RMCs.

It would be nice to offer assistance to other organizations to try RMCs while it is in its infancy stages so we can document how it is working and learn so new contracts can be even better.

Funding Mechanisms

Grants to organizations. Organizations negotiate with haulers during their contract negotiations.

Barriers/Issues

RMCs are new and many organizations that the MPCA has worked with have a hard time understanding the concept without some guidance. RMCs also require organizations to have a "new" contract so the organization has to wait until their current contract has expired and then go to a new one with the hauler. There are a lot of things that the MPCA is learning as more and more organizations adopt RMCs, but it could be awhile before RMC is "mainstream."

Change is the biggest barrier. Something new takes awhile to catch on. It is a hard concept to grasp at first. Contracts are usually negotiated for a length of time and you need to wait until the contracts are up to change them.

Haulers might not like the idea.

Opportunities

There are several opportunities presented by RMC:

- Better tracking system of waste in the commercial sector.
- More opportunities for recycling, organics capture, and opportunities for reuse.
- Provides companies with an incentive to learn about their waste hauling bill. (In the MPCA's experience many organizations don't seem to analyze their waste bills.)
- Big potential to reduce waste, increase recycling, increase food reuse and organics recovery.
- Big potential for education. Organizations would pay more attention to their "resources." Recently a study showed that people that were given more information on their utility bills and compared to others (that are similar to their demographics) showed a 6% behavior change towards conservation. With a normal hauling contract this comparison would be hard to make but with RMC, you could use this type of social marketing and peer pressure in the future.

Members Not Supportive of 1.14 Resource Management Contracting and Their Opinions and Alternatives

Non-Supporting Member

Julie Ketchum (for Doug Carnival)

Non-Supporting Members' Opinions and Alternatives

- Strategy should more strongly articulate that it is to be directed at government entities

1.15 Promote Zero Waste Model Cities or Counties through Assistance and Special Grants

Strategy Description/Recommendation

State would employ a zero waste specialist and would make grants (two years, potentially renewable for another two) available on a competitive basis for public entities wanting to move to zero waste.

Background Information

Zero Waste is a strategy for managing waste as a resource that has been adopted by communities and businesses around the U.S., as well as in other countries. It is a philosophy and a design principle, which takes a systems approach to the flow of materials and wastes. It mimics natural systems in which balanced ecosystems make use of all wastes. The approach is consistent with comprehensive solid waste planning but sets a goal and implementation plans for eliminating waste through source reduction, recycling, composting, and holding producers responsible for producing products that can be fit into this system. There is a developing movement around the country in cities, counties, and businesses that provides motivation and tools for communities that want to do something progressive about their waste stream. Some cities in Minnesota (e.g., Saint Paul) have already adopted the zero waste principle, but need support for implementation. Other entities might be encouraged to take this step with some financial support.

Measurement Method

Measurement would be built into the grant agreement and the technical assistance. There would be before and after measurements of key waste streams, sector streams, etc. Recipients would develop ways of measuring progress.

Goals/Timeframe/Mileposts

The state could begin education and promotion regarding zero waste almost immediately, by feeding it into their existing programs. Grant competition could come in 2010-2011, depending on when funding becomes available. Reports from grant recipients would be required annually. They might also be responsible then for spreading the word to other entities.

MPCA WARM Model Input Assumptions (Material Type and Quantity Changed)

Not modeled - No data exists correlating the effect of staffing at the state level and grants with improvements in source reduction/recycling/composting. Also, since there is no general reduction category in WARM, source reduction effects of this strategy could not be modeled.

Potential Implementation Parties

State government through the MPCA, willing local units of government, interested businesses, non-profits, other institutions interested in zero waste.

Funding Mechanisms

Additional SCORE funds; EPA grants.

Barriers/Issues

Funding; skepticism about zero waste; current stresses on local government.

Opportunities

- Opportunity to motivate non-profits and citizens around a progressive, exciting new concept regarding waste.
- Message to get the state off the plateau in reduction, recycling, and composting.
- Successful examples can spread to other entities.

General Comments

This strategy could be piloted in all counties/cities in one centroid, but it is probably better to seek interested applicant communities wherever they are, perhaps in a range of sizes.

Members Not Supportive of 1.15 Promote Zero Waste Model Cities or Counties through Assistance and Special Grants and Their Opinions and Alternatives

Non-Supporting Members

Doug Carnival, Julie Ketchum (for Mike Robertson), Ryan O'Gara

Non-Supporting Members Opinions' and Alternatives

- Strategy is unclear about what the developed grants will support.
- Potentially, grants appropriated through this strategy could take funding away from other, more impactful strategies detailed in this report.
- Other strategies in this report are aimed at increasing source reduction, recycling and organics capture rates and these strategies will make progress toward reducing waste disposal.

References to Public Comments Specific to 1.15 Promote Zero Waste Model Cities or Counties Through Assistance and Special Grants (see Appendix D)

Hone, Nancy, Founder/Coordinator, Neighbors Against the Burner----------REPRESENTING CITIZEN STAKEHOLDERS – Overall Comment/Comments to Multiple Strategies: p. 21; Muller, Alan, Minneapolis Neighbors for Clean Air/Neighbors Against the Burner – General Comment Re: Climate change emissions: p. 52; Risser, Sarah, Sierra Club – Comment Re: Strategy 1.15: p. 63; Schmidt, Gregory V. – Overall Comment/Comments to Multiple Strategies: p. 66

2.0 RECYCLING STRATEGIES

1.12 Require Retailers to Provide Plastic Bag Recycling

Strategy Description/Recommendation

Require retail stores with a minimum square footage floor space to provide recycling programs for plastic bags.

Background Information

Some cities and states are requiring stores with a large square footage to provide recycling programs for plastic bags. A sample of participating cities/states include: California, Delaware, New York City, New York State.

Recycling of film plastic (HDPE or #2 and LDPE or #4) realize significant CO_2e reductions. Each ton of HDPE not produced equals a 1.4 $MTCO_2e$ reduction; for LDPE each ton not produced equals a 1.71 $MTCO_2e$ reduction.

Plastic bags are not accepted in curbside collection programs because when bags are mixed with other recyclables the bags can be contaminated with other materials, dirt and miscellaneous fluids. Manufacturers that use plastic bags and film in their processes need to have very clean material that is consistent in its composition.

Other arguments for increasing the recycling of plastic bags include the fact that the bags litter streets and streams (according to a UN report they are the second leading cause of litter behind cigarette butts), and that bags lead to health problems and death of wildlife that eat or attempt to eat the littered bags. According to the United States Consumer Product Commission, the Commission receives "an average of about 25 reports a year [nationwide] describing deaths to children who suffocated due to plastic carryout bags."

Measurement Method

Tonnage figures from businesses

MPCA WARM Model Input Assumptions (Material Type and Quantity Changed)

Retail bags are insignificant portion of the waste stream, so no increase to the overall recycling rate was assumed.

Potential Implementation Parties

MPCA, grocery stores and other retailers, plastics processors, plastics manufacturers.

Funding Mechanisms

Sale of recycled plastic bags to manufacturers.

Barriers/Issues

- Opposed by grocery stores and the plastics industry, but not to the same degree as a ban or tax.
- Does not address environmental impacts of paper bags.
- Must include consumer education on changing habits.
- Politically difficult to enact.

Opportunities

- A number of retailers view this as a preferable alternative to a ban or tax.
- Reduces litter.
- Reduces harmful impacts on wildlife and on water bodies.
- Currently only about 10% of plastics bags are recycled nationwide.

Members Not Supportive of 1.12 Require Retailers to Provide Plastic Bag Recycling and Their Opinions and Alternatives

Non-Supporting Members

Doug Carnival, Julie Ketchum (for Mike Robertson)

Non-Supporting Members' Opinions and Alternatives

Opinions of Opponents to Require Retailers to Provide Plastic Bag Recycling:

- Minnesota Waste Wise has a very successful voluntary plastic bag recycling program, "It's in the Bag," that should be continued and expanded to increase plastic bag and film recycling in the centroids.

Alternatives to Require Retailers to Provide Plastic Bag Recycling:

- Continue and expand promotion and participation in voluntary plastic bag and film recycling through "It's in the Bag" program – see strategy 1.16 Increased Promotion and Expansion of Voluntary Plastic Bag Recycling Program
    - Background Information: "It's in the Bag" currently operates in the Twin Cities metro area and Duluth and provides plastic bag recycling for consumers, and plastic film and bag recycling for businesses. Since October 2003, "It's in the Bag" has recycled more than 5 million pounds of plastic bag and film that has been used to create approximately 770,478 square feet of decking.
    - Potential Implementation Parties: Minnesota Waste Wise, Trex Company, local vocational centers.
    - Costs: Participating stores pay a "pick-up fee" of $4 per pick-up that goes directly to the vocation centers that employ adults with disabilities to collect, transport and process the material. Expanding the program statewide would most likely require funding one more FTE through Waste Wise.
    - Funding Mechanisms: Corporate sponsorship, pick-up fees

References to Public Comments Specific to 1.12 Require Retailers to Provide Plastic Bag Recycling (see Appendix D)

Pfuhl, Jamie, Minnesota Grocers Association – Overall Comment/Comments to Multiple Strategies: p. 59

1.16 Increased Promotion and Expansion of Voluntary Plastic Bag Recycling Program

Strategy Description/Recommendation

Continue and expand promotion and participation in voluntary plastic bag and film recycling through "It's in the Bag" program.

Background Information

Program Summary: "It's in the Bag" is a Minnesota-based plastic bag and film recycling program managed by Minnesota Waste Wise. The "It's in the Bag" program currently operates in the Twin Cities metro area and Duluth.

Plastic Bag Recycling for Consumers: Consumers deposit clean and dry plastic bags in specially designed "It's in the Bag" collection bins found at participating retail locations (typically grocery stores). Work crews from local vocational centers that employ adults with disabilities then collect and transport the material to a processing facility where additional work crews sort and bale the material. The material is then shipped to Trex Company, Inc. where it is recycled into composite lumber used in the construction of decks and railings.

Plastic Film and Bag Recycling for Businesses: Businesses collect clean and dry plastic film and bag waste generated from operations (typically stretch wrap) and store the material in a designated container onsite. Work crews from a local vocational center that employs adults with disabilities then collect and transport the material to a processing facility where additional work crews sort and bale the material. The material is then shipped to Trex Company, Inc. where it is recycled into composite lumber used in the construction of decks and railings.

Program Results: More than 5 million pounds of plastic bags and film have been recycled through the "It's in the Bag" program since October 2003. This amount equates to approximately 770,478 square feet of Trex Company, Inc. decking, or 1,541 decks that are 500 square feet in size.

Measurement Method

Weight of plastic bag/film material collected at participating retail locations.

MPCA WARM Model Input Assumptions (Material Type and Quantity Changed)

Retail bags are insignificant portion of the waste stream, so no increase to the overall recycling rate was assumed.

Potential Implementation Parties

Minnesota Waste Wise, Trex Company, local vocational centers.

Costs

Participating stores pay a "pick-up fee" of $4 per pick-up, which goes directly to the vocational center for their costs. Waste Wise program costs: staff time, website, travel, etc. Expanding the program to be comprehensive and statewide would most likely require funding one more FTE through Waste Wise.

Funding Mechanisms

Corporate sponsorships, pick-up fees

Members Not Supportive of 1.16 Increased Promotion and Expansion of Voluntary Plastic Bag Recycling Program and Their Opinions and Alternatives

Non-Supporting Members

Don Arnosti, Tim Brownell, Sarah Risser (for Brett Smith)

Non-Supporting Members' Opinions and Alternatives

Opinions of Opponents to Increased Promotion and Expansion of Voluntary Plastic Bag Recycling Program:

- Voluntary approach to plastic bag recycling is not sufficiently successful; current recycling rate for plastic bags is approximately 5%.
- Mandatory recycling is needed to achieve desired recovery rates for plastic bags.

Alternatives to Increased Promotion and Expansion of Voluntary Plastic Bag Recycling Program:

- Require Retailers to Provide Plastic Bag Recycling (see strategy 1.12)
  - Background Information: Some cities and states are requiring stores with a large square footage to provide recycling programs for plastic bags. A sample of participating cities/states include: California, Delaware, New York City, New York State.
  - Recycling of film plastic (HDPE or #2 and LDPE or #4) realize significant CO2e reductions. Each ton of HDPE not produced equals a 1.4 MTCO2e reduction; for LDPE each ton not produced equals a 1.71 MTCO2e reduction.
  - Plastic bags are not accepted in curbside collection programs because when bags are mixed with other recyclables the bags can be contaminated with other materials, dirt and miscellaneous fluids. Manufacturers that use plastic bags and film in their processes need to have very clean material that is consistent in its composition.
  - Other arguments for increasing the recycling of plastic bags include the fact that the bags litter streets and streams (according to a UN report they are the second leading cause of litter behind cigarette butts), and that bags lead to health problems and death of wildlife that eat or attempt to eat the littered bags. According to the United States Consumer Product Commission, the Commission receives "an average of about 25 reports a year [nationwide] describing deaths to children who suffocated due to plastic carryout bags."
  - Strategy Description/Recommendation: Require retail stores with a minimum square footage floor space to provide recycling programs for plastic bags.
  - Measurement Method: Tonnage figures from businesses
  - Potential Implementation Parties: MPCA, grocery stores and other retailers, plastics processors, plastics manufacturers.
  - Funding Mechanisms: Sale of recycled plastic bags to manufacturers.
  - Barriers/Issues: Opposed by grocery stores and the plastics industry, but not to the same degree as a ban or tax; Does not address environmental impacts of paper bags; Must include consumer education on changing habits.

- Opportunities: A number of retailers view this as a preferable alternative to a ban or tax; Reduces litter; Reduces harmful impacts on wildlife and on water bodies; Currently only about 10% of plastics bags are recycled nationwide.

References to Public Comments Specific to 1.16 Increase Promotion and Expansion of Voluntary Plastic Bag Recycling Program (see Appendix D)

Pfuhl, Jamie, Minnesota Grocers Association – Overall Comment/Comments to Multiple Strategies: p. 59

2.1 Recycling Legislation

Strategy Description/Recommendation

Adopt state legislation that requires the following:

- Achieve a 50% recycling goal by 2015 and a 60% recycling goal by 2020.
- Extend the current 'Opportunity to Recycle' law to commercial and institutional sectors.
- Modify local ordinances to require all licensed events to have a recycling plan.
- Recycling capacity for residential and commercial/institutional points of generation must be equal to or greater than the capacity for trash.
- If by 2013 it appears that the 50% recycling goal is not likely to be met by 2015, then the MPCA must present a plan to the Minnesota Legislature in 2014 for a disposal ban on recyclables to disposal (WTE or landfill) at the point of generation that elucidates the implications of such a ban. The MPCA must then implement that ban in 2015, or require that individual materials that do not reach a 75% recycling rate by 2015 must fall under the Product Stewardship Framework process, if adopted.

MPCA should provide educational resources on an ongoing basis to support industry in educational efforts to residential and commercial customers to increase the recycling rate to 60% by 2020 (e.g., Recycle More, Rethink Recycling campaigns).

Measurement Method

Annual reporting of tons collected or received by the haulers and end markets. Waste sort data showing reductions in recyclable materials sent to disposal facilities.

Goals/Timeframe/Mileposts

Increase recycling rate of traditional curbside materials to 50% by 2015 and 60% by 2020

MPCA WARM Model Input Assumptions (Material Type and Quantity Changed)

50% recycling rate for curbside recyclables, carpet, etc. by 2015.
60% recycling rate for curbside recyclables, carpet, etc. by 2020.

Potential Implementation Parties

MN Legislature, MPCA, Regional/local governments (counties, SWMCB, WLSSD, economic development agencies, cities and townships), non-profits, private sector, private haulers, materials recovery facility (MRF) operators.

Funding Mechanisms

Additional SCORE money to counties and cities, service fees, recyclable material revenues

Barriers/Issues

- Small haulers may have difficulty meeting this requirement.
- Strong opposition to implementation of disposal bans – enforcement must be at the point of generation, not at the disposal sites.
- Concerns over accurate measurement mechanisms to determine compliance/achievement.
- Challenges with implementation outside of centroids (reconciling stakeholder process charge with statewide goal).
- Proposal potentially changes the entity responsible for meeting recycling goals (currently responsibilities resides with counties and goals are tied to SCORE funds).

Opportunities

- Creates strong incentive for both commercial and residential sectors to meet goals.
- Requires cooperation of public and private sector to meet goals to avoid mandatory triggers.
- Provides incentives for producers to participate in solutions so that it doesn't get legislated upon them.

General Comments

Need to rely on a standardized definition for "recyclables" in determining what materials would be subject to a ban or included in product stewardship initiatives.

Members Not Supportive of 2.1 Recycling Legislation and Their Opinions and Alternatives

Non-Supporting Members

Ryan O'Gara, John Helmers (for Mike Cousino), Mike Robertson, Mark Stoltman (for Doug Carnival)

Non-Supporting Members' Opinions and Alternatives

- Waste hauling industry is concerned with the feasibility of requiring equal capacity for recycling and trash, particularly at multi-family dwellings where adequate space may be an issue.
- Industry desires further clarity on the "service fees" that would provide funding to support this strategy.
- Business community is skeptical of disposal bans because of a lack of indication that it would be practical to enforce at the point of generation.
- The last sentence of the fifth bullet in the strategy description – "The MPCA must then implement that ban in 2015, or require that individual materials that do not reach a 75% recycling rate by 2015 must fall under the Product Stewardship Framework process, if adopted." – should be removed because the Work Group cannot say that the MPCA must implement a ban because it is unknown how the Legislature will resolve the MPCA's proposal for a ban on recyclables to disposal.

References to Public Comments Specific to 2.1 Recycling Legislation (see Appendix D)

Curry, John, Policy Director, Audubon Minnesota – Overall Comment/Comments to Multiple Strategies: p. 13; Kleinschmit, Jim, Institute for Agriculture and Trade Policy – Comment Re: Strategy 2.1: p. 32; Kordiak, Jim, Chair, Solid Waste Management Coordinating Board – Overall Comment/Comments to Multiple Strategies: p. 34; Lange, Nancy, Izaak Walton League of America – Overall Comment/Comments to Multiple Strategies: p. 39; Morris, Douglas R., Waste Management Director, Crow Wing County – Comment Re: Strategy 2.1: p. 47

2.9 Container Deposit Legislation

Strategy Description/Recommendation

Support implementation of a statewide container deposit by 2011.

Measurement Method

Passage of legislation and successful implementation.

Goals/Timeframe/Mileposts

Legislation passes in 2011; attain 80-90% recovery of beverage containers (aluminum cans, steel cans, HDPE, PET, glass) by 2012.

MPCA WARM Model Input Assumptions (Material Type and Quantity Changed)

90% recycling of beverage containers.
Law passes in 2010, bump to 90% recycling of beverage containers by 2012.

Potential Implementation Parties

State Legislators, MPCA, beverage manufacturers, bottling industry, trade associations, redemption centers, local units of government, recycling industry.

Funding Mechanisms

Deposits, solid waste fees

Barriers

Opposition from Beverage/Bottling Industry, establishing infrastructure, political opposition, impacts on existing recycling systems, local funding constraints.

Issues

Unredeemed deposits:
- Amount?
- Allocation – who receives?

Cost to operate the system:
- Existing curbside costs?
- Costs of container deposit system

Redemption Locations:
- Retail?
- Regional redemption centers?
- Other?

Curbside programs:
- How do containers fit within the existing system?
- How does the existing system change without containers?

Jobs:
- How many jobs would be lost?
- How many would be created?

Sales:
- Impact on sales?

Opportunities

Similar programs have been successful in eleven other states (average redemption rate 78%).

Could create jobs, increases recycling rates, reduces litter, could lead to better packaging, better feedstock for recycling.

Members Not Supportive of 2.9 Container Deposit and Their Opinions and Alternatives

Non-Supporting Members

Mike Cousino, Ryan O'Gara, Mike Robertson, Mark Stoltman (for Doug Carnival), Peg Wander

Non-Supporting Members' Opinions and Alternatives

Opinions of Opponents to Container Deposit:

- Deposits will disrupt existing recycling infrastructure.
  - Beverage containers are highly valuable material in any recycling system (particularly aluminum).
  - Current recycling service contracts are built on inclusion of all materials currently collected in traditional curbside programs.
  - Removing highly valuable containers (i.e., aluminum cans) from existing recycling systems lowers revenue and program participation, while keeping costs virtually flat.
- The promise of revenue from unredeemed deposits will not come true.
  - Advocates say that millions in revenue from unredeemed deposits will be spent on the recycling system.
  - There is no guarantee and this is unlikely to happen. The history of the solid waste tax in Minnesota is illustrative of what will happen. Solid waste tax revenue is now diverted to fund other programs and is used to reduce the budget deficit.
  - A recent example in California: the legislature took deposit revenue from recycling programs for deficit reduction and then proposed to increase the deposit.
  - Financial pressure on the state budget is not likely to end soon. Any revenue fund will be subject to taking to relieve the general fund budget.
- Creating a new, separate collection system for beverage containers will produce more greenhouse gases, not less.
  - Separating beverage containers from the existing collection and transportation system will consume more energy (and produce more GHG emissions) in facility management and vehicle miles traveled.
  - See the study of the State of Rhode Island (*Analysis of Beverage Container Redemption System Options to Increase Municipal Recycling in Rhode Island*, May 2009)
- 80% goal is arbitrary and probably not achievable with deposits.
  - Underlying data that led to 80% goal is unreliable, particularly for aluminum cans.
  - Redemption rates reported in other states include out-of-state containers that can skew the numbers.

    - Recovery rates of 50% - 60% are probably more realistic and more achievable without a deposit system.
- Product stewardship accomplishments of beverage containers/companies should be noted.
    - Virtually all packaging is 100% recyclable.
    - Product design for recycling.
    - Investment in recycled content.
    - Funding and public-private partnerships through existing recycling programs.
- Alternatives to container deposit can leverage existing investments.
    - Best practices for recycling programs (64-gallon carts with biweekly, single stream collection; variable rate pricing for trash; mandatory bar and restaurant recycling).
    - Require and enforce public space and event recycling.
    - Multi-family recycling initiatives.
    - Improvements to commercial and institutional recycling.

Alternatives to Container Deposit:

- Public entity recycling (public buildings, schools, publicly funded buildings/projects, parks and recreation – see strategy *2.2 Commercial and Institutional Recycling*)
    - Goals/Timeframe/Mileposts: Achieve 60% recycling by 2015; 80% by 2025
    - Potential Implementation Parties: School districts, local and state government
    - Funding Mechanisms: Solid waste tax, state grants, local funds
    - Opportunities: Recover recyclables and set an example while stressing the importance of recycling.
- Single stream recycling; biweekly collection with large carts on wheels
    - Goals/Timeframe/Mileposts: All households with curbside collection must have single stream collection by 2015; all commercial facilities by 2025
    - Potential Implementation Parties: Cities, counties, waste haulers/recyclers
    - Costs: Expansion of single stream processing infrastructure
    - Funding Mechanisms: Solid waste tax, grants to recyclers for conversion and single stream processing
    - Opportunities: Rewards for participation
- Parallel access: match all recycling with waste service at public facilities and all households (curbside recycling service must be provided alongside refuse collection)
    - Goals/Timeframe/Mileposts: All households by 2015; 60% of public facilities place recycling bins where there are waste bins by 2015.
    - Potential Implementation Parties: Cities, counties, state, waste haulers, recyclers.
    - Costs: Recycling costs paid by homeowner, city, county, recycler.
    - Funding Mechanisms: SCORE funds, solid waste tax
    - Opportunities: Convenient recycling compared to drop-off centers.

References to Public Comments Specific to 2.9 Container Deposit Legislation (see Appendix D)

Archer, Joan, Minnesota Beverage Association – Overall Comment/Comments to Multiple Strategies: p. 5; Archer, Joan & Tom Koehler, Minnesota Environmental Coalition of Labor & Industry (MECLI) – Overall Comments/Comments to Multiple Strategies: p. 9; Austin, Paul, Conservation Minnesota – Comment Re: Strategy 2.9: p. 10; Austin, Paul, Conservation Minnesota – Comment Re: Strategy 2.9: p. 11; Curry, John, Policy Director, Audubon Minnesota – Overall Comment/Comments to Multiple Strategies: p.13; Kleinschmit, Jim, Institute for Agriculture and Trade Policy – Comment Re: Strategy 2.9: p. 32; Meierotto, Joan, Audubon – Comment Re: Strategy 2.9: p. 40; Olson, Ben & Sarah Heuer, Minnesota Environmental Responsibility Network – Comment Re: Strategy 2.9: p. 57; Pfuhl, Jamie, Minnesota Grocers Association – Overall Comment/Comments to Multiple Strategies: p. 59; Pratt, Tim, Association of Recycling Managers – Overall Comment/Comments to Multiple Strategies: p. 60; Risser, Sarah, Sierra Club – Comment Re: Strategy 2.9: p. 64

4.9 Maximize Recovery of Recyclable Material Prior to Disposal of Municipal Solid Waste

Strategy Description/Recommendation

MPCA would fund and commission a comprehensive study to analyze the financial impact and effectiveness of requiring pre- or post-processing of all municipal solid waste (MSW) being disposed of in either a landfill or waste-to-energy (WTE) facility in Minnesota. A pre-processing facility would be defined as a facility that separates out recyclable materials, organics and/or refuse-derived fuel for integration with various apparent facilities. Costs, benefits and risks would be examined in sufficient detail to determine if and how pre- or post-processing could be required to meet desired resource recovery rates.

Measurement Method

Completion of study that is acknowledged as complete and putting forward sound findings.

Goals/Timeframe/Mileposts

Complete in 2010

MPCA WARM Model Input Assumptions (Material Type and Quantity Changed)

Not modeled – study only

Potential Implementation Parties

MPCA with the participation of local, State and Federal governments, haulers, and facility owners.

Costs

Up to $450,000

Funding Mechanisms

Appropriation of State funds

Barriers/Issues

Tight budgets, claims that there is not need for study (preference for source separation, past studies, performance of existing pre-sort systems, and preconceived notions about processing versus landfilling).

Opportunities

Reduced GHG emissions by recovering recyclable materials that are not removed from waste stream by generator. Reduction of GHG by subsequent processing of non-recyclable materials. Increase recycling of ferrous metals, non-ferrous metals, and potentially other recyclable materials.

General Comments

Various pre-sort technology is proven, some systems have failed, and some technologies are new. There are several particular unknowns that must be resolved before moving ahead on pre-sort: scale, technical approach, costs, recycling potential, integrating pre-sort into other (related) recovery systems including energy recovery, RDF, composting, and anaerobic digestion.

Members Not Supportive of 4.9 Maximize Recovery of Recyclable Material Prior to Disposal of Municipal Solid Waste and Their Opinions and Alternatives

Non-Supporting Members

Tim Brownell, Brett Smith

Non-Supporting Members' Opinions and Alternatives

- Strategy only calls for a study.
- Preference is a strategy that called for a requirement for pre- or post-processing prior to disposal to allow more capture of recyclable materials.
- Strategy title is misleading and should reflect that the strategy is only a feasibility study, i.e. "Study the Feasibility of Recovery of Recyclable Material Prior to Disposal of Municipal Solid Waste."
- This strategy must clearly state that pre-processing of waste would not be eligible for processing tax credits.
- Strategy must clearly state that pre-processing of waste would not qualify this activity as "recycling" and move this disposal method "up the hierarchy." It must be a mandatory requirement prior to disposal of waste either to a landfill or to a WTE facility.

References to Public Comments Specific to 4.9 Maximize Recovery of Recyclable Material Prior to Disposal of Municipal Solid Waste (see Appendix D)

Richter, Trudy, Executive Director, Minnesota Resource Recovery Association – Overall Comment/Comments to Multiple Strategies: p. 61

3.0 ORGANICS MANAGEMENT STRATEGIES

3.1 Source Separated Organics Management

Strategy Description/Recommendation

Each centroid (comprised of counties and a sanitary district) sets a goal of managing 5-7% of their total MSW stream as source-separated organic material (SSOM) by utilizing Food-to-People, Food-to-Animals, composting and anaerobic digestion by 2015. Organics managed within landfills or WTE facilities are not considered part of this goal. Source separated organic material includes food waste and non-recyclable and food-soiled paper.

Definitions: Food-to-People programs recover fresh or prepared food that is still fit for human consumption and distribute it through networks of social agencies. Food-to-Animal programs collect food scraps and cook and process the food to eliminate harmful bacteria and feed directly to pigs or process bakery and food by-products into a nutritious livestock feed ingredient. Composting recovers organic material separated by the source by an individual homeowner or business and delivered to a centralized site and processed into a soil amendment. Anaerobic digestion receives organics separated by the generator and through a digestion process generates biogas and digestate, which can be further processed into a soil amendment.

Actions Recommended for MPCA

Climate Change Benefits: MPCA should research and document the greenhouse gas impacts of organics composting and anaerobic digestion. Better quantification of GHG implications of organics management would enhance the ability to assess benefits of expanded management programs relative to other management options and recommend program expansions accordingly.

Rule Development: MPCA should continue to develop and improve appropriate rules and regulations for compost and anaerobic digestion facility siting, processing operations, best management practices, etc., taking into account the environmental impacts of such management methods. Regarding the emissions of volatile organic compounds (VOCs) from composting operations, the following summary principles summarize available knowledge to date:

1) VOCs are emitted during aerobic or anaerobic composting.
2) Additional data regarding VOC emissions from composting needs to be collected and analyzed.
3) The best available research to date suggests that VOCs and other environmental impacts from composting operations can be controlled utilizing best management practices, including facility siting, design, engineering, and other regulatory requirements.
4) MPCA should proceed with continued evaluation of regulatory requirements in other states, assessment of environmental impacts of composting, and use this information in the development of rules.
5) Rules and regulations need to be revised to provide direction to composting operations in different circumstances and situations, and to standardize best management practices. MPCA should make interested parties aware that rules are under development and their anticipated schedule for promulgation.

Educational Materials: MPCA should work with counties and local communities to provide appropriate educational resources to residents and commercial customers about source separated organics management.

General Strategies (to be adapted and tailored as appropriate in each centroid):

Backyard Composting: Educate and promote backyard composting of source separated organic material.

Residential Curbside Source-Separated Organic Collection: Each city should evaluate the feasibility and opportunities to implement curbside collection of organics and provide intensive outreach/education programs to gain minimum 50% participation. Cities should consider requiring haulers to provide an opportunity to recycle organics if voluntary efforts do not achieve necessary results to obtain this goal. Capital costs of bins and collection need to be recognized and accounted for. Costs to the generator can be offset by reducing municipal solid waste (MSW) collection frequency and downsizing waste container size.

Restaurants, Cafeterias, Institutions and Businesses that Generate Significant Organic Waste: Intensive outreach and support (Duluth centroid, and Hennepin County models) to sectors that generate high quantities of organic material. Required by ordinances if voluntary efforts are not achieving necessary results to obtain goal. Reduced disposal costs (tip fees) and reduced solid waste taxes and fees to these institutions should offset any increased costs for source separation.

Anaerobic Digestion (AD): Continue feasibility work being conducted in Metro centroid by Hennepin, Ramsey and Washington Counties and the St. Paul Port Authority to research AD; characterize organic wastes for digestion potential; determine most advantageous ownership structure; calculate capital and management costs; and identify sources of material. Expand AD capacity to other centroids with sufficient quantities based on feasibility evaluation in Metro.

Centroid-Specific Targets and Implementation Plans

Metro: 7% by 2015

- Permit and open additional compost and or AD sites with sufficient capacity to meet the 2015 goal.
- Plan the expansion of successful Hennepin County residential and institutional programs and other successful models throughout the region, beginning in 2010.

Duluth: 5% by 2015

- Consider replicating Duluth/WLSSD's existing successful institutional source separated organics composting program in other communities, as appropriate.
- Support household source separated program where densities permit.
- Promote individual household composting where low densities or volumes exist.

St. Cloud: 5% by 2015

- Study successful pilots for decision on which strategies to implement, beginning in 2010.
- Replicate selected models throughout region by 2012.
- Promote individual household composting where low densities or volumes exist.

Rochester: 5% by 2015

- Study successful pilots for decision on which strategies to implement, beginning in 2010.
- Replicate selected models throughout region by 2012.
- Promote individual household composting where low densities or volumes exist.

Measurement Method

Progress toward these goals should be measured by tons of SSOM received at compost sites or ADs and periodic (at least every five years) waste composition studies at all types of waste management facilities to measures recovery rates and amount of SSOM remaining in disposal stream.

Goals/Timeframe/Mileposts

Meet target rates for diversion of food waste, non-recyclable and food contaminated paper (see above) by 2015, implementation activities begin in 2010.

MPCA WARM Model Input Assumptions (Material Type and Quantity Changed)

6.5% of organic material composted by 2015, maintained through 2025.

Additions to WARM Model calculations regarding composting organics: The current WARM GHG cut/ton for composting organics is 0.2 $MTCO_2e$. Based on discussions with the U.S. EPA, a new, higher number has been calculated, and should be added to the model in the near future of 0.5 $MTCO_2e$ cut/ton. MPCA used the new, higher number in the calculation for this recommendation which showed an increase of 1,998,565 $MTCO_2e$ (increase from 1,332,377 to 3,330,942 $MTCO_2e$) calculated by multiplying the organics result by 2.5, which is the increase from 0.2 to 0.5.

Potential Implementation Parties

Cities, counties, regional authorities, private firms, haulers, all organic waste generators, MPCA, end users of compost, others.

Costs

Curbside collection costs for residential range from $2.25-$5.00 per household per month. Collection for Food-to-Hogs is $30-35 per ton. Tipping fees at compost sites are around $40 per ton. AD costs are unknown at this time.

Funding Mechanisms

Increased SCORE funding to counties to implement tailored programs, tax incentives.

Barriers/Issues

- Shortage of permitted composting sites for composting and AD processes.
- Need to revise current compost rules to include rules more appropriate to composting of SSOM/yard waste and make AD more feasible.
- On-going financial support for necessary outreach, education, training programs.
- Legislation to support and enforce goals (e.g., May include financial support, establishing numerical goals, requiring education programs, reworking current statutory definitions. Also, it is believed by many that achievement of higher than a 7% diversion goal may require an organics disposal ban.).

- Local ordinance revisions to support backyard composting of kitchen scraps and to facilitate implementation of curbside collection of source separated compostable materials.
- Acquisition of initial capital (some strategies require this).
- Market development assistance for compost utilization needed.

Opportunities

- Diversion of a large portion of the existing disposal stream otherwise being landfilled.
- Recycling of organic matter for beneficial reuse.
- Long-term storage of carbon through net soil-building as soil amendments.
- Reduction in use of water, pesticides and fertilizer when compost used in agricultural or residential applications.
- Anaerobic digestion allows efficient capture of methane for renewable energy applications, displacing fossil fuel carbon emissions.
- Expands total employment vs. putting material in WTE or landfills.
- Removes moisture from remaining MSW material, improving refuse-derived fuel (RDF) thermal efficiency.
- Removes source of methane generation from solid waste landfills, reducing "open face" methane generation, allowing better overall life-cycle methane capture rates and improved carbon performance at the landfills.
- Increases useful life of existing permitted landfills by reducing total MSW disposal.

General Comments

Several members of the Work Group have voiced concerns over the sustainability of expanded composting, anaerobic digestion efforts, and the necessary revisions to the relevant regulations, and the current lack of end markets for finished compost.

Members Not Supportive of 3.1 Source Separated Organics Management and Their Opinions and Alternatives

Non-Supporting Members

Mike Cousino, Jack Ezell, Ted Troolin

Non-Supporting Members' Opinions and Alternatives

- "Centroids" do not exist beyond this process. Centroid's are a process-created regional grouping of counties/sanitary districts and have no authority for waste management activities.
- This strategy sets centroid goals of managing 5-7% of MSW as source-separated organic material (SSOM) by 2015. These percentage targets are too prescriptive and don't allow local units of government to develop targets that work best within their respective areas.
- Waste management planning is done at the county level and goal setting should be done at the county level as well, using the existing planning and goal setting processes.
- Counties submit 5-year management plans to the MPCA to qualify for SCORE funding. If the MPCA holds counties to these SSOM percentage targets in their management plans, county representatives are concerned that their SCORE funding could be in jeapordy if their plans do not include the SSOM percentage goals set forth by the Work Group.
- Setting a 5-7% target is premature until further research and planning is conducted to determine if these percentages targets are feasible.

- Feasibility to achieve these targets, or higher targets set by the local units of government, will be dependent on advancements in technology, permitting, regulation, funding, etc.
- Currently it is uncertain where the resulting organic material will go, as there is no structure in place today that can accept the levels of material called for in the strategy.
- Cost is a major consideration in all county planning. This strategy does not detail the full cost to implement the percentage targets and, thus, county representatives are unable to fully support this strategy without full knowledge of cost implications.
- In Olmsted County, collecting SSOM is not necessary as organic material can go to the county's Waste-to-Energy facility that will yield greenhouse gas emission reductions by reducing the need to burn fossil fuel as an energy source, as well as helping Minnesota achieve the renewable energy goal set forth in the Next Generation Energy Act.

References to Public Comments Specific to 3.1 Source Separated Organics Management (see Appendix D)

Curry, John, Policy Director, Audubon Minnesota – Overall Comment/Comments to Multiple Strategies: p. 13; Hubbard, Susan & Tim Brownell, Eureka Recycling – Overall Comment/Comments to Multiple Strategies: p. 23; Kleinschmit, Jim, Institute for Agriculture and Trade Policy – Comment Re: Strategy 3.1: p. 32; Kordiak, Jim, Chair, Solid Waste Management Coordinating Board – Overall Comment/Comments to Multiple Strategies: p. 34; Lange, Nancy, Izaak Walton League of America – Overall Comment/Comments to Multiple Strategies: p. 39; Morris, Douglas R., Waste Management Director, Crow Wing County – Comment Re: Strategy 3.1: p. 48; Pfuhl, Jamie, Minnesota Grocers Association – Overall Comment/Comments to Multiple Strategies: p. 59; Pratt, Tim, Association of Recycling Managers – Overall Comment/Comments to Multiple Strategies: p. 60

4.0 WASTE-TO-ENERGY STRATEGIES

4.11 Existing Waste-to-Energy Infrastructure is Operated at High Efficiency

Strategy Description/Recommendation

Achieve the full cost-effective utilization of existing waste-to-energy (WTE) facilities, in accordance with permit conditions and within the context of 115A.03. This would require redirecting waste away from landfills to processing and WTE projects. In addition, provide long-term commitments of mixed municipal solid waste (MMSW) to create investments to increase the efficiency of WTE.

Efficiency improvements include but are not limited to:

- Increased heat recovery (thermal efficiency)
- Co-generation of electricity and thermal (combined heat and power)
- Recovery of recyclables
- Recovery of oversized and bulky waste
- Ash recovery
- New air pollution control systems or combustion enhancements

This strategy will require new, effective, long-term waste delivery arrangements.

Measurement Method

By 2011 all WTE facilities are operating at capacity, have long-term delivery agreements, and have formulated a project specific plan to increase efficiency by planning one or more of the enhancements listed above.

Goals/Timeframe/Mileposts

Waste delivery arrangements in 2011.
Efficiency planning and proposals in 2012.

MPCA WARM Model Input Assumptions (Material Type and Quantity Changed)

Starting in 2011, maintained through 2025.

To handle projected residuals, MPCA modeled using all the permitted WTE capacity (1,228,000 tons per year) before sending any MSW to landfill.

Additions to WARM Model calculations regarding additional efficiencies in Minnesota's Waste-to-Energy (WTE) facilities: MPCA multiplied the WTE GHG cuts, calculated in WARM, by 1.1 because WARM assumes WTE plants are 18% efficient, but MN plants are at approximately 28% efficiency, this yields approximately an additional 427,388 $MTCO_2e$.

Potential Implementation Parties

Waste haulers; local, State and Federal governments; all existing facility owners.

Costs

This may save money through full utilization of capacity, increased efficiency, and amortization of costs over a logical time horizon. Waste generators would bear the cost of WTE and waste processing as it may be priced higher than landfills.

Funding Mechanisms

Tipping fees

Barriers/Issues

Bias against WTE, perception that existing WTE projects compete with reduction, reuse, and recycling. Merchant landfill business interests.

Opportunities

Expanded renewable energy production, lots of waste left to handle using other techniques, jobs in high tech waste treatment, potential for economic development/co-location of thermal load (district/institutional heating and cooling, food processing, manufacturing, etc,). Significant reduction of landfilling.

General Comments

Technology is proven but costs are site and plant specific.
Several WTE facilities have not been operated at capacity due to the failure of waste assurance through subsidy programs.

Members Not Supportive of 4.11 Existing Waste-to-Energy Infrastructure is Operated at High Efficiency and Their Opinions and Alternatives

Non-Supporting Members

Don Arnosti, Tim Brownell, Jim Kleinschmit, Brett Smith

Non-Supporting Members' Opinions and Alternatives

- Not supportive of increasing capacity utilization of existing facilities up to permitted capacity. This could, over time, compete with other management methods higher on the Waste Management Hierarchy (such as recycling and composting), as the strategy calls for long-term commitment of waste to these facilities.
- Objections to locking in a long-term supply of waste (2011) prior to "Efficiency Planning and Proposals" (2012). This does not assure that the efficiency benefits outweigh the environmental, health and economic costs to the public for these privately run facilities.
- Some are supportive of increasing efficiency, and suggest that the strategy be split into two aspects: 1) increase efficiency; 2) increase utilization to permitted capacity.
- Strategy title is misleading and should be retitled to better reflect the strategy, i.e. "Maximize Utilization of Existing Waste-to-Energy Facilities Based on Current Permitted Capacity to Pay for Efficiency Improvements."

References to Public Comments Specific to 4.11 Existing Waste-to-Energy Infrastructure is Operated at High Efficiency (see Appendix D)

Berglund, Gena – Overall Comment/Comments to Multiple Strategies: p. 11; Britton, Felicity, Linden Hills Power & Light – Comment Re: Strategy 4.11: p. 12; Davis, Leslie, President, Earth Protector, Inc. – Overall Comment/Comments to Multiple Strategies: p. 14; Decker, Diadra, Citizen – Overall Comment/Comments to Multiple Strategies: p. 16; Eyrich, Ardell, a resident of Minnesota – Overall Comment/Comments to Multiple Strategies: p. 17; Ferguson, Beverly, Professor Emerita, Metropolitan State University – Overall Comment/Comments to Multiple Strategies: p. 17; Gonder, Jan L. – Comment Re: Strategy 4.11: p. 17; Greenfield, Janice, Neighbors Against the Burner – Comment Re: Strategy 4.11: p. 18; Greenwood, Carol, writing as a private citizen – Overall Comment/Comments to Multiple Strategies: p. 19; Hone, Nancy, Founder/Coordinator, Neighbors Against the Burner---------- REPRESENTING CITIZEN STAKEHOLDERS – Overall Comment/Comments to Multiple Strategies: p. 21; Keen, Bryan – Comment Re: Strategy 4.11: p. 26; Kieselhorst, John, Concerned St. Paul resident – Overall Comment/Comments to Multiple Strategies: p. 26; Klave, Gregory L. – Overall Comment/Comments to Multiple Strategies: p. 30; Lind, Nathan – Comment Re: Strategy 4.11: p. 40; Moe, Marne – Overall Comment/Comments to Multiple Strategies: p. 43; Morris, Douglas R., Waste Management Director, Crow Wing County – Comment Re: Strategy 4.11: p. 48; Muller, Alan, Minneapolis Neighbors for Clean Air/Neighbors Against the Burner – Overall Comment/Comments to Multiple Strategies: p. 50; Muller, Alan, Minneapolis Neighbors for Clean Air/Neighbors Against the Burner – General Comment Re: Climate change emissions: p. 52; Norkus-Crampton, Lara – Overall Comment/Comments to Multiple Strategies: p. 55; Nye, Janet, Minneapolis, MN – Comment Re: Strategy 4.11: p. 57; Reilly, Rebecca, City of Minneapolis – Overall Comment/Comments to Multiple Strategies: p. 60; Richter, Trudy, Executive Director, Minnesota Resource Recovery Association – Overall Comment/Comments to Multiple Strategies: p. 61; Rondano, Annette, St. Paul small business owner/Minneapolis CEAC member since 2009 – Overall Comment/Comments to Multiple Strategies: p. 64; Scheidt, Jim – Comment Re: Strategy 4.11: p. 66; Schmidt, Gregory V. – Overall Comment/Comments to Multiple Strategies: p. 66; Spear, Connie, University of MN HSRC – Comment Re: Strategy 4.11: p. 69; Sponheim, Sarah – Overall Comment/Comments to Multiple Strategies: p. 69; No Name Provided – Comment Re: Strategy 4.11: p. 72

5.0 LANDFILL DISPOSAL STRATEGIES

5.1 Methane Management at All Landfills

Strategy Description/Recommendation

All municipal solid waste (MSW) landfills in the state of Minnesota must meet a minimum capture and destruction rate of all methane generated throughout the remaining life span of each landfill, including active and post-closure emissions. At a minimum, all captured methane must be flared, but when technically and financially feasible, energy production from recovered methane is preferable.

MPCA will determine minimum capture rate based on maximum available control technology (MACT), and determination of actual capture rates though appropriate monitoring with best available technology would be required. Additional research completed by MPCA and the landfill industry will inform measurement techniques and improve the body of available data on achievable methane recovery rates.

The intent of this strategy is to hold harmless facilities that have voluntarily implemented landfill gas equipment, and through its rulemaking process, the MPCA will determine the most appropriate way to provide this assurance.

Current rules for landfill operators are limited to 20-30 years of post-closure care funding, though the legal liability of operators is open-ended. At the request of the Legislature in 2008, the MPCA is rewriting landfill rules to "ensure" that the public doesn't ever have to pick up the cost of groundwater contamination from landfills, including events that could happen long after the landfills close for business. Once promulgated, these new rules will make tangible progress toward perpetual-care funding for landfills.

Measurement Method

Methane release cannot be continuously monitored; need to monitor via computer modeling.

MPCA WARM Model Input Assumptions (Material Type and Quantity Changed)

The WARM model is only able to model one landfill methane capture method at a time.

Original MPCA WARM model used average 65% gas-to-energy (to account for the fact that several landfills will only flare their gas); gradual increase, reaching 65% by 2025.

In order to show a general range of landfill strategy results, the MPCA ran two subsequent model runs to show two results for landfilling: 75% collection and flaring of landfill gas, and 75% landfill gas-to-energy. The difference between these two options is approximately 950,000 $MTCO_2e$ of additional GHG emission reductions when using landfill gas-to-energy rather than flaring.

Potential Implementation Parties

Landfill owner/operators (public & private)

Costs

Capital investment in gas collection systems, engineering modifications, permitting modifications, operation and maintenance.

Funding Mechanisms

Landfill tipping fees

Barriers/Issues

Any state or federal requirements on landfill gas (LFG) control in an effort to reduce GHG emissions would remove the additionality (or voluntary) aspect to these projects, and the smaller landfills wouldn't be eligible to sell carbon offsets.

These projects are expensive for the smaller landfill with limited revenue from gate receipts.

Redirect the focus to economic incentives versus mandates.

According to the MPCA projected 2011 methane emissions from the 21 landfills in Minnesota:

- 69.2% of the waste being landfilled are to landfills required to have active LFG control by NSPS (total of 4 landfills).
- With Clay County, Crow Wing, East Central, and part of Ponderosa having active LFG control voluntarily, the total is about 75% of the waste being landfilled.
- These 4 sites could gain $263,000 to $1,040,000 on the current carbon market.
- Adding the next 7 largest sites voluntarily (15 of the 21 landfills) gets to 90% of the waste being landfilled.
- These 7 sites could gain $420,000 to $1,660,000 on the carbon market.

Technically it is doubtful that methane generation at a landfill can be continuously monitored, therefore would need to use computer modeling to project methane emissions. Difficult to measure gas output at early and late stages of landfill development due to very low gas production.

This would need to include provisions for increasing methane destruction through oxidation in cover materials. This will be a viable option for smaller or closed units covered with earthen covers. Maintaining 75% will be impossible at the tail end of the gas curve with geomembrane covers. As the curve goes down the amount of methane to be collected and controlled diminishes to a point of infeasibility. This is the point at which oxidation should take over.

Opportunities

Source of renewable energy

Members Not Supportive of 5.1 Methane Management at All Landfills and Their Opinions and Alternatives

Non-Supporting Members

Tim Brownell, Brett Smith

Non-Supporting Members' Opinions and Alternatives

- Industry has stated that it can achieve a 90% landfill methane capture rate. Strategy should require landfill operators to achieve 90% capture rate as opposed to MACT determination.
- It must be clear that the capture rate pertains to the full life-cycle generation of methane at landfills, not just in the closed cells.
- Methane capture at all landfills should be required to be used as energy and not flared.
- Best Available Technology monitoring must include continuous, active monitoring of all phases of the landfill to determine the true and accurate capture rate of methane discharges on all working/active cells of the landfill, as well as the closed cells with active capture systems. Modeling of methane capture can supplement this data, but capture rate reporting cannot be fully reliant on modeling alone.
- Capture rate information must be fully auditable and follow protocols developed by the MPCA.

References to Public Comments Specific to 5.1 Methane Management at All Landfills (see Appendix D)

Hubbard, Susan & Tim Brownell, Eureka Recycling – Overall Comment/Comments to Multiple Strategies: p. 23; Lange, Nancy, Izaak Walton League of America – Overall Comment/Comments to Multiple Strategies: p. 39; Morris, Douglas R., Waste Management Director, Crow Wing County – Comment Re: Strategy 5.1: p. 48; Richter, Trudy, Executive Director, Minnesota Resource Recovery Association – Overall Comment/Comments to Multiple Strategies: p. 61

5.2 Increase Landfill Disposal Fees to Align Price Structure with Waste Management Hierarchy

Strategy Description/Recommendation

Increase landfill disposal fees.

Measurement Method

Reduction in waste going to landfills.

Goals/Timeframe/Mileposts

Implemented in 2011.
Mixed waste, recyclables (plastic, glass, paper, metals).
Result in approximately 50% recycling rate; slight increase in composting and WTE.

MPCA WARM Model Input Assumptions (Material Type and Quantity Changed)

Contributes to 60% recycling goal, but not modeled directly.

Potential Implementation Parties

MPCA, State Legislature, regional and local units of government.

Costs

Increased costs to residents and businesses.

Barriers/Issues

May drive waste out of the state. Will not increase recycling if end markets do not exist. Taxes are already significant (9.75% for residential, 17% for commercial) in addition to other taxes, service charges, fees. May encourage illegal dumping, burn barrels.

Opportunities

Higher cost to landfill moves waste to other management methods higher up on Waste Management Hierarchy.

General Comments

Metro landfill abatement fee is in place on two metro area landfills.

Members Not Supportive of 5.2 Increase landfill Disposal Fees to Align Price Structure with Waste Management Hierarchy and Their Opinions and Alternatives

Non-Supporting Members

Mike Cousino, Jack Ezell, Ryan O'Gara, Mike Robertson, Peg Wander

Non-Supporting Members' Opinions and Alternatives

- May drive waste out of state to other landfills with potentially lower methane capture rates.
- Will not increase recycling if end markets do not exist or are not developed.
- Taxes are already significant (9.75% for residential, 17% for commercial).
- May encourage illegal dumping and/or use of burn barrels.

References to Public Comments Specific to 5.2 Increase Landfill Disposal Fees to Align Price Structure with Waste Management Hierarchy (see Appendix D)

Kordiak, Jim, Chair, Solid Waste Management Coordinating Board – Overall Comment/Comments to Multiple Strategies: p. 34; Morris, Douglas R., Waste Management Director, Crow Wing County – Comment Re: Strategy 5.2: p. 50

6.0 OTHER SUPPORTING STRATEGIES

6.1 Organized Collection

Strategy Description/Recommendation

Promote the implementation of organized collection of MSW services through lessening the requirements and timeframes on governmental units to implement organized collections, as well as to encourage joint purchasing efforts/cooperatives for the procurement of waste services.

Measurement Method

Reporting of all materials collected would/could be a requirement of all contracts allowing for accurate measurement of tons captured.

Goals/Timeframe/Mileposts

Implement 2011 - 2013

MPCA WARM Model Input Assumptions (Material Type and Quantity Changed)

Not modeled - contributes to the 60% recycling rate goal, but was not modeled directly

Implementation Parties

MN Legislature, MPCA, MN Dept of Commerce, Regional/local governments (counties, SWMCB, WLSSD, economic development agencies, cities and townships), non-profits, private haulers, private sector

Costs

Low costs/medium costs. Legal and administrative costs paid by municipalities to follow the current mandated organizing statute process. Costs currently paid by residents directly to their hauler would be transferred to the local unit of government to pay. Per household costs for collection service have been shown to be lower in organized programs than under non-organized (open) collection systems.

Funding Mechanisms

Usually funded either through property tax or service fee increases.

Barriers/Issues

- Private haulers strongly oppose organized collection. Small haulers fear it will limit their opportunities to compete. Large haulers believe that if their market share grows too large they may face additional government scrutiny/regulation
- This should be done through public/private partnerships
- Vocal groups of residents protest to elected officials saying they like the ability to choose their hauler for themselves. Creates political issues for city councils, etc.
- There exist other ways to address opportunities (i.e. citywide licensing, etc)
- Could create monopolies
- Could put small haulers out of business
- The organized collection process is quite long and onerous for all parties involved. Currently the process to follow the organized collection statute takes a municipality approximately one year to complete

Opportunities

- Creates opportunity to provide community-wide education about reduction and recycling programs
- Can increase overall capture of materials by providing consistent service to all residents
- Can provide for multiple haulers to provide services by splitting cities into regions or allowing different haulers to collect each stream
- Licensing requirement, citizen mandate as alternative to organized collection
- One hauler may be able to take over the market
- Allows the city to control the waste contract for the entire community, possibly meaning more opportunities for WMC.
- Gives waste generators flow control so they can designate that waste be managed by a method higher in the hierarchy.
- Lengthens street life because of decreased heavy truck traffic, thus allowing cities to reduce or delay property tax assessments for road maintenance or replacement.
- Allows cities to negotiate rates with haulers and thus create greater price differentials between different levels of service and influence residents to reduce their waste and recycle more of their waste.
- Decreased diesel truck traffic decreases particle emissions resulting in cleaner air.
- Route efficiency decreases greenhouse gas emissions.
- Route efficiency results in less neighborhood noise pollution.
- Decreased number of trucks on residential streets reduces the odds of accidents occurring.
- Gives cities greater control over determining the best provision of service to their residents. Currently there is an artificially high threshold for switching to organized garbage service - a threshold that does not exist when cities consider organizing other services such as recycling and Wi-Fi.
- Allows for transparency and consistency in pricing.
- Associated educational efforts expand and enhance resident's knowledge about the full range of services and costs for waste disposal and recycling.
- Can guarantee market share for small haulers that are part of a consortium.
- Reduces confusion for new residents unsure how and what criteria to use to pick a garbage hauler.
- Would create the densities of materials to make collection programs more affordable, as well as to provide opportunities for all residents to participate.
- Municipalities would also have the pricing controls to then incentivize the diversion of SSOM out of the garbage can and into an organics container.

General Comments

The political barriers to implementing this strategy are large. Would require strong state initiative to implement.

Members Not Supportive of 6.1 Organized Collection and Their Opinions and Alternatives

Non-Supporting Members

Julie Ketchum (for Doug Carnival), Ryan O'Gara, Mike Robertson, Peg Wander

Non-Supporting Members' Opinions and Alternatives

Opinions of Opponents to Organized Collection:

- Organized collection has many potentially harmful impacts to hauling industry businesses, as outlined in the "Barriers/Issues" section of the strategy.
- Voluntary efforts, as outlined in strategy 6.1A Industry Alternatives to Organized Collection, can provide all of the desired benefits that proponents of organized collection seek, as described in the "Opportunities" section of strategy 6.1A.

Alternatives to Organized Collection:

- See strategy 6.1A Industry Alternatives to Organized Collection

References to Public Comments Specific to 6.1 Organized Collection (see Appendix D)

Hubbard, Susan & Tim Brownell, Eureka Recycling – Overall Comment/Comments to Multiple Strategies: p. 23; Morris, Douglas R., Waste Management Director, Crow Wing County – General Comment Re: Solid Waste: p. 46

6.1A Industry Alternatives to Organized Collection

Strategy Description/Recommendation

Voluntary cooperation with local units of government to achieve improved service outcomes (e.g., days zoning, strategic routing, safety measures, agreements for waste delivery).

Goals/Timeframe/Mileposts

Immediate

MPCA WARM Model Input Assumptions (Material Type and Quantity Changed)

Not modeled – MPCA feels that this strategy does not represent any change from current conditions

Potential Implementation Parties

Cities, haulers, residents

Barriers/Issues

Cooperation with local governments

Opportunities

- Solutions implemented by agreement and cooperation.
- These approaches have been successful in every community that has considered organized collection. Each of the twelve communities has decided to abandon pursuit of organized collection (Ramsey/Washington Counties, Olmsted County, Coon Rapids, Falcon Heights, Arden Hills, Prior Lake, Sauk Rapids, Greenwood, Carver, Lauderdale, Pine Island, and Stillwater Township).
- Citizens overwhelmingly opposed the plan preferring to maintain control of the decision individually. After input from citizens, many communities took the route described in this strategy. They worked with haulers to reach voluntary agreements to solve specific issues of concern in their own communities.

Members Not Supportive of 6.2 Industry Alternatives to Organized Collection and Their Opinions and Alternatives

Non-Supporting Members

Don Arnosti, Tim Brownell, Jeff Harthun (for Carl Michaud), Jim Kleinschmit, Tim Pratt, Brett Smith

Non-Supporting Members' Opinions and Alternatives

Opinions of Opponents to Industry Alternatives to Organized Collection:

- Organized collection, as opposed to the voluntary efforts outlined in this strategy 6.1A Industry Alternatives to Organized Collection, provides an important mechanism to support the Work Group's recommended strategies as outlined in the "Opportunities" section of strategy 6.1 Organized Collection.
- The proposal offers no concrete actions that would result in decreased greenhouse gas emissions.

- The agreements between LGUs and haulers mentioned in the proposal have not demonstrated a reduction in waste, an increase in recycling or a decrease in greenhouse gas emissions.
- Various forms of organized collection have been demonstrated in other parts of the U.S. and the world to be valuable tools to achieve waste reduction, recycling, processing, and other waste management goals, generally viewed to be in the best interests of the public. Without such tools, relying on the private waste industry to do the right thing, in this case, may not yield the desired results.

Alternatives to Industry Alternatives to Organized Collection:

- See strategy 6.1 Organized Collection

Funding Recommendations

During the November 20 Work Group meeting, members participated in a brainstorming session to develop high-level funding recommendations beyond strategy *6.3 SCORE Funding Mechanism Repair and Enhancement* that could be used to fund the recommended strategies and better support the solid waste management system. Below is the list of unanimously supported funding recommendations of the Work Group.

Funding Recommendations

1. All of the Solid Waste Management Tax revenue should go to integrated solid waste management purposes and programs.
2. In general, the full cost of waste management should be borne by the generators of waste.
3. The full cost of difficult-to-manage or problem materials should be borne by manufacturers/producers.
4. Minnesota's waste management financial resources and incentives should focus on moving waste up the Waste Management Hierarchy and progress toward this goal should be measured regularly through transparent reporting.
5. Fees, surcharges, taxes, and tax incentives should accurately reflect long-term societal goals to lower GHG emissions, keep environmental toxicants out of the waste stream, and change behavior to incentivize less waste generation.
6. Full life-cycle analysis of materials (by product) should be factored into the costs of waste management and should be imputed to waste generators.
7. Property taxes should not be used as a primary source for waste management funding.
8. Develop mechanisms (grants, etc.) that incentivize and encourage private sector innovations to achieve GHG emission reductions in waste management.
9. Provide funding to engage and educate the public in understanding the value of waste reduction activities and climate change impacts.
10. Provide financial assurance for commodity market fluctuations to balance down markets and provide needed reliable funding mechanisms to support commodity recycling and the Waste Management Hierarchy.

Conclusion

The Integrated Solid Waste Management Stakeholder Process successfully developed thirty-eight (38) recommended strategies that, if implemented, will allow the state to achieve significant reductions in greenhouse gas emissions from the solid waste sector in the four centroids used for this Process. However, as described in the report, the recommended strategies do fall an estimated 10% below the original Process goal (the recommended strategies are estimated to yield 47.2 $MMTCO_2e$ by 2025 and the original Process goal was 52.5 $MMTCO_2e$). Again, the Work Group and the MPCA acknowledged this shortfall and pointed to imperfections in current GHG modeling as a major contributing factor to the Process not reaching the original goal. Therefore the Work Group, at a minimum, has adequately fulfilled its charge by recommending changes to the management of solid waste in the four centroids that will result in significant GHG reductions very near to the order of magnitude recommended by the MCCAG.

In addition to yielding significant reductions in GHG emissions as a result of the recommended strategies, the Work Group should be commended for their strategies to move waste up the Waste Management Hierarchy. As shown in the report, the Work Group's recommended strategies will result in the following average projected percentages for waste management methods across the four centroids by 2025: 6.08% Source Reduction (cumulatively to 2025); 60% Recycling; 6.5% Organics Management; 24.1% Waste-to-Energy; and 9.4% Landfill Disposal. For comparison, the 2005 baseline for waste management method percentages across the four centroids are: 40% Recycling; 2.7% Organics Management; 17% Waste-to-Energy; and 35% Landfill Disposal.

Many individuals and stakeholders should be congratulated for their support of the Process. First and foremost, the Work Group members and their alternates devoted significant time and energy into this Process and should be acknowledged for their efforts. As described in the report, Work Group members collaborated to develop strategies that most or all members can support, including some highly controversial strategies. The MPCA should also be commended for two reasons in particular: first for their technical support throughout the Process, without which this Process could not have measured the projected impacts of strategies; and second for their willingness to extend the process timeline at the request of the Work Group. A third group of individuals that should be congratulated for their efforts in this process are the members of the centroid sub-groups. The centroid sub-groups' work was a turning point in this Process that helped lead to the development of final recommendations, and centroid sub-group members should recognize that the Process would not have yielded the level of support or detail on strategies that this Process produced without their input. Finally, the broader stakeholders, who attended Work Group meetings and public input meetings, and submitted written comments for the Work Group to review, were very helpful for the Work Group in their development of recommended strategies.

While the thirty-eight recommended strategies provide guidance and direction to the state by comprising the elements of a plan to achieve significant GHG emission reductions through solid waste management, the state must ultimately work with, and lead, numerous partner organizations to systematically and effectively implement the recommendations.

As the MPCA develops its 2009 Solid Waste Policy Report and works with counties to update local solid waste management plans, it should assess the implementation mechanisms available to support the recommended strategies, the amount of resources that will be required to implement the

strategies, and various mechanisms that could be used to fund the recommended strategies. A comprehensive implementation plan should then be developed and put into action in order to ensure that the recommended strategies are brought to fruition and that the GHG emission reductions that are projected to result are achieved.

As the measurement tools and available data on types and quantities of municipal solid waste continue to improve, MPCA should check the state's progress on achieving the strategies' intended outcomes and adjust the implementation plan as needed.

Finally, where possible, MEI would encourage the state to pursue opportunities to leverage public-private partnerships in ways to advance the goals of the Waste Management Hierarchy and achieve GHG reductions through solid waste management.

Appendix A: Work Group Roster

INTEGRATED SOLID WASTE MANAGEMENT STAKEHOLDER PROCESS
Work Group Roster
Alternates listed in italics

Don Arnosti, Audubon Minnesota
Nancy Lange, The Izaak Walton League of America

Tim Brownell, Eureka Recycling
Susan Hubbard, Eureka Recycling

Doug Carnival, National Solid Wastes Management Association
Mark Stoltman, Randy's Sanitation

Mike Cousino, Olmsted County
John Helmers, Olmsted County

Rachel Dykoski, Environmental Justice Advocates of Minnesota
Michael Neumann, Environmental Justice Advocates of Minnesota

Jack Ezell, Western Lake Superior Sanitary District
Heidi Ringhofer, Western Lake Superior Sanitary District

Wayne Hanson, Great River Energy
Jim Kuhn, Xcel Energy

Jim Kleinschmit, Institute for Agriculture and Trade Policy
Heather Schoonover, Institute for Agriculture and Trade Policy

Carl Michaud, Hennepin County / Solid Waste Management Coordinating Board

Ryan O'Gara, SKB Environmental
Mike Fullerton, SKB Environmental

Tim Pratt, City of Roseville / Association of Recycling Managers
Jean Buckley, City of Bloomington / Association of Recycling Managers

Judy Purman, Sebesta Blomberg
Tim Goodman, Tim Goodman & Associates

Mike Robertson, Minnesota Chamber of Commerce
Julie Ketchum, Waste Management

Tim Scherkenbach, Minnesota Pollution Control Agency
David Benke, Minnesota Pollution Control Agency

Brett Smith, Sierra Club
Sarah Risser, Sierra Club

Ted Troolin, St. Louis County / Minnesota Solid Waste Administrators Association
Jerry Johnson, Tri-County Solid Waste

Peg Wander, Liberty Paper
Tim Swanson, Liberty Paper

Appendix B: MPCA's Charge to the Work Group

MPCA's Charge to the Stakeholder Work Group
for the
Stakeholder Process to Achieve Greenhouse Gas Reduction, Energy Conservation and Environmental Protection through Integrated Solid Waste Management

Purpose/Mission: Develop the elements of a plan based on the recommendations from the Minnesota Climate Change Advisory Group (MCCAG). To ensure efficiency and effectiveness and a workable plan coming out of the process, the MPCA is recommending the following goal:

> *Reduce greenhouse gas emissions by 2025 through integrated solid waste management in the four population centroid regions of Minnesota by 52.5 million metric tons of carbon dioxide equivalent.*

The plan should attempt to lay out options for greenhouse gas reduction in a manner that ranks the recommendations by largest potential for reduction and assesses their achievability.

Membership: Fifteen to 20 individuals that represent the diversity of stakeholders in solid waste management in Minnesota, selected by the Minnesota Environmental Initiative, will serve on the Work Group.

Leadership: Chaired by Ron Nargang and managed by the Minnesota Environmental Initiative. Additionally, a Planning Team comprised of four Work Group members, including one MPCA representative, will provide further leadership consultation.

Other Input: Additional stakeholders will be invited to provide input to the Work Group at three public Stakeholder Input Group meetings at appropriate times during the process.

MPCA Role: Through a contract, the MPCA is providing funding to MEI to manage the process and incorporate the group's recommendations into a final report to the MPCA Commissioner. The MPCA will also provide a member to serve on the Work Group and Planning Team, as well as staff and a technical consultant to support the process.

Timing: Over a 7-month period, beginning in December 2008. Recommendations will be submitted to the MPCA by June 2009.

Anticipated Outcomes/Results: Stakeholders will develop recommendations for a plan that:

- Identifies changes in the current way waste is generated, collected and managed to achieve greenhouse gas reduction or renewable energy goals;
- Identifies policy or legislative actions that will help meet greenhouse gas reduction or renewable energy goals;
- Identifies institutional, financial or other barriers and recommends strategies to overcome the barriers;
- Identifies those parties who can effectuate change to accomplish the greenhouse gas reduction and renewable energy production goals.

If time permits, the following plan elements will also be discussed and developed:

- Timelines and mileposts toward meeting the goals;
- How existing resources could be reallocated to meet the goals;
- New resource needs and possible sources to accomplish goals;
- Other ways of accomplishing goals without infusion of new resources.

Additional Considerations:

Because the MCCAG goals were based on a broader definition of solid waste, and the statutory goals for recycling are based on Municipal Solid Waste (MSW), the Process should investigate solutions for both MSW and non-MSW. It is proposed, however, that the plan should address the different waste streams separately and that MSW remain a priority.

The stakeholder group should explore transportation as it relates to managing solid waste and factor in greenhouse gases produced from transporting waste, recyclables to market, virgin materials, etc. as it determines which management options are preferred for GHG reduction.

The climate change crisis is a global one; therefore, the Process need not discuss geographic boundaries for greenhouse gas reduction.

INTEGRATED SOLID WASTE MANAGEMENT STAKEHOLDER PROCESS
Work Group Ground Rules
November 20, 2008

Goals

The primary task of the Work Group is to develop strategies that can help reach the Minnesota Climate Change Advisory Group (MCCAG) greenhouse gas reduction targets for the solid waste sector. Recommendations produced by the Work Group will focus on the four major population centroids that encompass 17 counties and one sanitary district where approximately 70% of the solid waste in the state is generated. The MCCAG targets for solid waste for the four centroids equals a 52.5 million metric tons of CO_{2e} reduction by 2025.

The recommended strategies will serve to assist the MPCA in carrying out its mission, and will be considered as the MPCA:

- determines priorities for technical and financial assistance;
- implements existing programs and develops new ones;
- modifies rules, and;
- proposes legislative changes.

MEI's Role

The Minnesota Environmental Initiative is responsible for the design, management and facilitation of the stakeholder process. MEI will schedule and convene meetings, keep meeting minutes, post meeting summaries, compile stakeholder input over the course of the project, and work with the Work Group to develop the final project document. Correspondence regarding meeting announcements, agenda, meeting summaries, and other information related to the process will be distributed by MEI. Information will be made available to participants via email, and will be posted on a webpage dedicated to the Integrated Solid Waste Management Stakeholder Process hosted on the MEI website.

Facilitator's Role

MEI will provide a facilitator to chair the stakeholder process and lead each of the stakeholder meetings. The facilitator will assist in focusing discussions, assure fair opportunity to stakeholders to participate in the meetings, draw out participants' perspectives as necessary, will work to resolve conflicts that arise, and assist in designating tasks to advisory or sub-groups.

Work Group Membership

New individuals may be added to the Work Group throughout the course of the process if it is determined that essential stakeholder interests are not represented by the existing participants. MEI will make the final determination if and when new members should be added. Should a stakeholder choose to vacate his or her seat on the Work Group, MEI may seek a replacement.

Open Meetings

All Work Group meetings are open to the public. Anyone may attend a Work Group meeting, and, if time permits, will be given an opportunity to offer an opinion on the subject of the meeting at a time designated by the meeting facilitator.

Participation
Work Group participants are expected to attend all Work Group meetings, will make every effort to be on time, participate in conversations with the facilitator and MEI staff between meetings, review documentation prior to meetings, and actively participate in the meetings. Participants are asked to keep their member organizations and constituencies informed about the process proceedings, and to bring their views to the discussions. In addition, participants are asked to participate in three Stakeholder Input Group meeting to be held during the process. Participants are responsible for selecting 3-5 key stakeholders to serve on a Planning Team with one designated MPCA representative.

Alternates
Each Work Group member is asked to designate an alternate representative for their organization or constituency. Members who cannot attend a meeting should make arrangements with the designated alternate, and inform MEI's project manager prior to the meeting. One designated representative or alternate, but not both, will have a seat at the table and be asked to participate in decisions at each meeting.

Good Faith Participation
All participants agree to act in good faith in all aspects of the process. The participants are expected to present their own opinions based on their experience, perspective and training, and agree to participate actively, constructively and cooperatively in the process. Debate and discussions in the Work Group should be based on shared facts and technical knowledge.

No Surprises
Participants agree to be forthcoming about potential conflicts with the proceedings and with decisions that are developed by the group. Disagreements should be identified and shared with the group as early as possible.

Respect
All participants are expected to act as equals during the process and will respect the experience and perspective of the other participants. Participants should refrain from characterizing the viewpoints of others during discussions. Personal criticisms of other stakeholders will not be tolerated.

Consensus
As much as possible, decisions will be based on consensus of the group, generally defined as reaching an agreement that all participants can live with. Participants agree to be supportive of the process, but are allowed the ability to disagree with specific decisions or outcomes of the process. Consensus regarding strategies is desired, but is not required, and the process could yield a minority report if necessary.

Communications and Confidentiality
When making statements about the process or its outcomes in public, Work Group participants agree to make clear that they speak on their own behalf, and do not necessarily represent the opinions of other participants, MEI, or the Minnesota Pollution Control Agency. Work Group members will give at least 48 hours notice to other participants before communicating with the media about the process.

Comments Received on Integrated Solid Waste Management Stakeholder Process Draft Recommended Strategies: November 24, 2009

Introduction to Comments Received

The following document includes comments received during the open public comment period on the Integrated Solid Waste Management Stakeholder Process *Draft Recommended Strategies: November 24, 2009* from November 24, 2009 to December 8, 2009, and the one written comment received at the November 18 public Stakeholder Input Group meeting on the *Draft Recommended Strategies: November 10, 2009*. Comments have not been censored, and all submitted language is included in this document.

In total, MEI received 91 written comments on the draft strategies during the online public comment period from November 24 to December 8, and at the November 18 public Stakeholder Input Group meeting. The comments represent a multitude of diverse viewpoints, and Work Group members and other readers are encouraged to read all of the comments in their entirety. In addition, some comments suggest that further information can be found in other reports and list web links to where those reports can be found online for download. Work Group members and other readers are encouraged to download and review these other reports as supporting documentation for the comments submitted.

Comments are listed alphabetically by last name of the comment author, and a Table of Contents, beginning on Page 2, references page numbers for each comment received. In a few exceptional instances, comments were submitted by a broad group, rather than one individual author (i.e., Recycling Association of Minnesota Board of Directors), or the comment was submitted anonymously (i.e., No Name Provided). These comments are listed at the end of the document and referenced in the Table of Contents. If provided, the comment author's affiliation is listed following their name, and each individual comment is labeled as: 1) an Overall Comment/Comments to Multiple Strategies; 2) a General Comment Regarding a Specific Concept; or 3) a Comment Regarding a Specific Strategy (referred to by strategy number).

Some individuals submitted comments to multiple strategies using multiple comment forms, and these comments are listed individually in the document. Please note that many comments received speak to multiple strategies and concepts, and are thus listed as "Overall Comment/Comments to Multiple Strategies." Again, readers are encouraged to review all comments submitted to gain a complete understanding of the comment author's input.

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Anderson, Bruce W. "Buzz," President, MN Retailers Association – Overall Comment/Comments to Multiple Strategies

December 7, 2009 To Whom It May Concern: Thank you for the opportunity to respond to the report published through the Integrated Solid Waste Management Stakeholder Process as facilitated by MEI. First, I have serious reservations about the make-up of the stakeholders group that discussed and published its report. This group as formed was unbalanced as it had only minimal representation from the private sector. Had manufacturers and retailers had more opportunity to officially participate, the conclusions of the stakeholder process might have yielded a much different result. Having said that, there is no doubt that the stake holder group identified some pressing solid waste management challenges. It is important to note that the private sector has already; voluntarily expended significant resources to encourage and enhance the recycling of sold waste. The concern of the Minnesota Retailers Association is that a well meaning but nonetheless misdirected effort may actually have the unintended consequence of slowing progress in areas such as curb side recycling, eco friendly building design and construction, and voluntary private sector efforts in the collection and recycling of beverage containers, plastic bags, and more other consumer products. I would encourage public policy maker to use caution on the efficacy of this report until an unbiased and fair dialog can be held with all interested parties. Sincerely, Bruce W. "Buzz" Anderson President MINNESOTA RETAILERS ASSOCIATION

Archer, Joan, Minnesota Beverage Association – Overall Comment/Comments to Multiple Strategies

DATE: December 7, 2009

TO: Jack Hogin, MEI

FROM: Joan Archer, President, Minnesota Beverage Association

SUBJECT: Comments on MEI Integrated Solid Waste Management Stakeholder Process

Draft Recommended Strategies: November 24, 2009

1) **Stakeholder Composition**
   Even though several retailers and manufacturers volunteered to serve on the stakeholder group- none were chosen. Therefore the recommendations in the report lack a business perspective. There was only one representative from the MN Chamber voicing concerns of retailers, manufacturers, wholesalers, industry sectors and transportation firms.

2) **Process**
   Based on the concerns about one business vote/voice- the process of voting on issues/recommendations resulted in a number of very controversial items receiving majority vote. Unless the stakeholders group is properly balanced in numbers – voting on the items is at times meaningless. However, there were a number of unanimous

recommendations that do deserve support and this process did highlight those recommendations.

3) **Strongly Oppose – 2.9 Container Deposit Legislation Strategy**

The Minnesota Beverage Association strongly opposes container deposit legislation and agrees with the comments of the non-supporting member's opinions and alternatives. Since a specific type of container deposit system is not presented in this strategy, I will not comment specifically on a container deposit system but will offer a better alternative.

The recent study by Rhode Island best provides a comparison and a solution. An enhanced municipal recycling system in Minnesota could include the Rhode Island study's recommendations plus items that are suggested by the non-supporting comments.

Thank you for the opportunity to comment and here is an executive summary of the Rhode Island report:

"Comparing Deposits With Enhanced Municipal Recycling – A Rhode Island Case Study

In 2008 the Rhode Island legislature requested a study of a beverage container deposit system for the Ocean State compared with alternative recycling systems. The Rhode Island Resource Recovery Corporation (RIRRC), a state agency that operates the state's landfill and materials recovery facility (MRF), directed the study. Following a competitive bidding process, RIRRC awarded the study to DSM Environmental Services.

Key Findings[1]

- "[C]learly supports making major and specific improvement to our existing curbside program as the most effective way to increase recycling. This alternative system was seen as far superior to an enhanced bottle bill."[2]
- Rhode Island's existing municipal recycling system already does a good job of recovering recyclable materials
    - RI recovers 450 lbs per household per year compared with Massachusetts at 433 lbs (which includes bottle bill redemptions in MA)
    - Comparisons with high performing systems in the region indicate there is still room for improvement, however.
- Enhancing the state's municipal recycling system would provide more recycling at a lower cost than a deposit system. The enhanced system would also provide greater greenhouse gas reductions.

[1] Analysis of Beverage Container Redemption System Options to Increase Municipal Recycling in Rhode Island, DSM Environmental Services for the RI Resource Recovery Corporation, May 2009 Final Report.
[2] Transmittal letter from Michael J. O'Connell, Executive Director of RI Resource Recovery Corporation to Senate President M. Teresa Paiva-Weed.

Comparison of Incremental Impacts

	Enhanced System	Bottle Bill
Increased Recycling Tonnage	25,500 tons (+27%)	10,100 tons (+11%)
Net Costs	$6.3 - $7.8 million	$14.8 million ($10.6 - $23.1 million
Net Cost per Ton	$250 - $310	$1,050 - $2,300
Greenhouse Gas Reductions	17,000 MTCE	9,700 MTCE

- An enhanced municipal recycling system would increase municipal recovery 27 percent including both fiber (paper) and container materials; a deposit system would increase municipal recovery 11 percent, including only certain beverage container materials.
- The net cost of enhancing the municipal recycling system would be $6.3 to $7.8 million per year; the net cost for the deposit system would be $10.6 million to $23.1 million per year.
- The net cost per ton of additional recycling would be $250 to $310 for the enhanced system and $1,050 to $2,300 for the deposit system.
- Greenhouse gas reductions from the municipal system would be 17,000 metric tons of carbon equivalents *vs.* 9,700 metric tons with a bottle bill.

Background

Rhode Island's municipal recycling system captures an estimated 19 percent of municipal recyclables today. A state lawmaker proposed a beverage container deposit system or bottle bill in 2008 as a means of improving that recycling rate and generating additional revenue for the state through the taking of any unclaimed deposits for the state's general revenues.

The proposed bottle bill would be operated by RIRRC, which already runs the landfill and MRF for the state. RIRRC raised concerns about its ability to implement and operate the proposed deposit system without significant additional resources. To study the matter further, the legislature directed RIRRC to evaluate a deposit system against an alternative system. RIRRC sought bidders to identify the approach with "the greatest potential to achieve the highest diversion of recyclables" that would also be equitable, efficient, cost-effective, and economically sustainable.

Approach

Following the selection of DSM as the consultant to conduct the study, DSM began a stakeholder engagement process to gather input about the current recycling system and to

develop parameters for the deposit and alternative municipal recycling systems. Once DSM specified the scenarios for analysis, the firm distributed summary characterizations of the proposed systems for comment from the stakeholders. DSM also compiled available data from state, NGO, and industry sources to characterize baseline generation and recovery figures for beverage containers and for other municipal wastes. After preparing a draft report and presenting initial findings to RIRRC and key legislators and staff, DSM provided a briefing on the results to stakeholders. The final report is now available at www.rirrc.org/content/index.php?id=about-us/whats-new/studies-and-reports/."

Enhanced Municipal Recycling

Key Assumptions

- All households with refuse collection receive curbside recycling as well
  - Recyclables collected in 64 gallon carts
  - Every other week collection
  - Single stream (commingled) recyclables
- Variable rate pricing for waste service to encourage recycling (pay more to dispose of more)
- Mandatory bar and restaurant recycling of containers
- State of the art upgrade of MRF including switch to single stream processing

Major Cost and Revenue Elements

- Costs: collect recyclables from additional households, purchase new carts, upgrade MRF, bar and restaurant program, MRF operations, collection truck upgrades, additional public education = $14 million
- Savings/revenues: materials revenue, switch to bi-weekly collection, avoided disposal cost, avoided refuse collection cost = $6.2 million
- Costs – savings/revenues = $7.8 million annually (program costs). The net cost is reduced to $6.3 million if environmental benefit estimates are included.

Proposed Deposit System

Key Assumptions

- 5¢ deposit on all nondairy plastic, metal, and glass containers
- State-run redemption center network and state collection and processing of material
- Retailer initiates deposit and turns over to state

- State retains unclaimed deposits to operate redemption and collection systems

Major Cost and Revenue Elements

- Costs
  - RIRRC operation of redemption centers and collection vehicles, upgrade MRF, bar and restaurant collection = $14.1 million
  - Consumer travel to redemption centers (11.1 million additional miles driven) = $6.1 million
  - Retail sales losses (only included in upper bound) = $12.5 million
  - Gross = $20.2 million to $32.7 million
- Savings/revenues
  - Materials revenue, avoided disposal cost, avoided refuse collection cost, avoided litter collection costs = $5.4 million
- Costs – savings/revenues = $14.8 million annually (program costs). The net cost is reduced to $10.6 million if environmental benefit estimates are included and increases to $23.1 million if lost retail sales are included."

Archer, Joan & Tom Koehler, Minnesota Environmental Coalition of Labor & Industry (MECLI) – Overall Comments/Comments to Multiple Strategies

Jack Hogin
MN Environmental Initiative

Comments on the Integrated Solid Waste Stakeholders Draft Strategies- dated Nov. 24

Specific Comment on: Strategies with Majority Support
Recycling Strategies
2.9 Container Deposit Legislation

The Minnesota Environmental Coalition of Labor & Industry (MECLI) is a coalition comprised of more than 70 unions, businesses, and their trade associations working together to educate and support a balance between jobs and sound environmental policy.
The Coalition has adopted and has held a longstanding position against container deposit legislation.

The members of MECLI support aggressive recycling goals and we have a history of promoting recycling throughout the state. We contend that enhancing existing curbside programs will increase the overall recycling rate while protecting jobs and creating meaningful new green jobs. Throughout the years there have been many studies and reports supporting enhanced curbside programs including large single stream recycling bins on wheels, collection incentive programs

and pay as throw pricing. These types of programs bring about increased overall recycling while making use of the huge investment we have all made in existing curbside recycling. The results are also a greater and more substantial reduction in greenhouse gas emissions.

MECLI agrees with the minority comments in the report and wants to emphasize its concern over the jobs that are at stake under a container deposit systems. Loss of sales, additional costs to employers all result in loss of jobs and a negative impact on employees. Any short term and part time minimum wage jobs created to develop the inefficient infrastructure for a bottle deposit system are not an adequate trade off in comparison to the existing good paying jobs that would be impacted.

We do want to be a part of the solution and assist in developing a comprehensive approach to reaching the aggressive recycling goals. Members of MECLI in a letter to the MPCA in 2008 requested to serve and be involved in the stakeholder group. It is disappointing that only one member of MECLI was appointed to the stakeholder group. Maybe going forward we could play more of a role in developing good environmental programs that also promotes good jobs for Minnesotans.

Thank you for the opportunity to comment.

Sincerely,

Joan Archer
Industry Co-Chair

Tom Koehler
Labor Co-Chair

Austin, Paul, Conservation Minnesota – Comment Re: Strategy 2.9

COMMENTS OF CONSERVATION MINNESOTA ON MEI SOLID WASTE POLICY AND GREENHOUSE GAS REDUCTIONS Conservation Minnesota strongly supports the recommendation beginning on page 58 of the draft report that the state should adopt a beverage container recycling refund (traditionally called a beverage container deposit). If enacted, this law will close a major gap in our recycling performance and provide valuable environmental benefits, including significant reductions in greenhouse gas emissions. Current container recycling methods in Minnesota are not keeping up with generation. The recycling rate for beverage containers has been declining since 1992, when the overall rate was near 45%. The state now has an estimated 35% recycling rate for these containers. The effectiveness of recycling refunds in increasing container recycling rates has been proven again and again. The overall annual beverage container recovery rate for the 10 deposit states in 1999 was 491 per capita, while the rate for the 40 non-deposit states was only 191 per capita.. From 1990 to 2004, the national average beverage container recycling rate hovered around 40%, while the state with the most successful recycling refund program (Michigan) had a beverage container recovery rate near or above 95%. In 2006, Minnesota disposed of 128,000 to 166,000 tons of beverage containers. That means approximately 2.263 billion to 2.935 billion containers were landfilled or incinerated. Landfilled containers waste valuable resources, while incinerated plastic and aluminum containers cause toxic air pollution that may impair human health, fish and wildlife. A recycling refund for containers would not only protect the environment by reducing waste, but also help Minnesota comply with energy savings and greenhouse gas reduction

goals in state law and policy. Manufacturing bottles and cans from raw, unrecycled materials is energy costly, and so is incineration of wasted aluminum. The MPCA 2007 Solid Waste Policy Report estimated that if beverage containers in Minnesota were recycled at an 80% rate, the total greenhouse gas savings (CO2 equivalent) would be approximately 855,184 tons. This would result largely from reduced emissions from the energy-intensive manufacture of new containers, especially from aluminum. A container recycling fund law also provides social benefits by reducing unsightly and dangerous litter. Beverage container litter on farms contributes to feed contamination, equipment damage and livestock deaths that by one Pennsylvania estimate cost an average $938 per farm per year. Minnesota's Adopt-A-Stream program reports a high volume of discarded beverage containers in and near streams that must be cleaned up by volunteers. Litter studies done in the 80's in seven different bottle bill states show that after the passing of a bottle bill, litter was reduced by between 30 and 50 percent in each one of the states.

Austin, Paul, Conservation Minnesota – Comment Re: Strategy 2.9

In addition to the detailed comments submitted on behalf of Conservation Minnesota this week, I would like to ask the Work Group to revise the draft report to better reflect the values of a container deposit law for Minnesota. Although the recommendation has majority support in the Work Group, the bulk of the content lists objections, some of which are unfounded and/or inaccurate. Specifically, we ask the work group to: * Reflect the estimated total deposit-related greenhouse gas reductions in MPCA's solid waste strategy: * Note that a deposit system is essentially self-enforcing and requires far less government expenditure and oversight than other greenhouse gas emission strategies; * Note that several deposit states have exceeded the 80% recycling rate sought for a deposit law in Minnesota; * Note that deposit laws dramatically reduce litter and indirectly add to greenhouse gas reduction and taxpayer expenditures resulting from public litter cleanup programs; * Reflect the finding that container deposit laws result in a net gain in jobs and increased economic activity.

Bentfield, Mark, Citizen – General Comment Re: Anaerobic Digestion

Stakeholders must stop investing in incineration technology when Anerobic Digestion (AD) will produce more energy and no air borne particulates. Increase the ratio of waste to energy with AD.

Berglund, Gena – Overall Comment/Comments to Multiple Strategies

To MN Environmental Initiative:

I am a stakeholder. I live in the Macalester Groveland neighborhood of Saint Paul, downwind from the garbage burner in Minneapolis. These are my comments:

1. Remove Strategy 4.11, which promotes more garbage incineration, from the final report;

2. The 'stakeholders' should produce a plan that complies with the MCAG recommendations of 70 million tons cumulative carbon dioxide equivalent reductions through 2025; and

3. The stakeholder group should recommend that Minnesota enact a permanent legislative moratorium on construction or expansion of garbage incineration capacity in Minnesota.

I am working very hard to reduce trash and increase composting in my neighborhood in Saint Paul. We are working with Macalester College, Eureka Recycling, and the Green Institute to conduct a pilot project on backyard composting and curbside composting. I am on the environment

committee of the Macalester Groveland Community Council and with our limited resources we try to reduce our neighborhood's carbon footprint and trash production, but we need more leadership and more resources for this huge transformation of urban living. If you let incinerators increase their capacity you reduce the incentive to reduce trash, while polluting the air, and causing health problems for people and animals.

Incineration is not a long term solution to the problem of trash.

Britton, Felicity, Linden Hills Power & Light – Comment Re: Strategy 4.11

Please Remove Strategy 4.11, promoting more garbage incineration from the final report; we need more incentives for composting and diversion, not more burning. Need PCA to finalize regulations for composters so they are able to build/expand facilities without uncertainties, and then cities like Mpls can expand SSO collections. I understand burning is a small step up from landfill, but it's not a huge improvement, - we as a state can do better.

Buckley, Jean, City of Bloomington – Overall Comment/Comments to Multiple Strategies

I understand you want comments on line but I have more than one comment/question.

I am interested in what non-supporting members comments were on some of the strategies. That would be helpful information to be able to address their concerns.

I understand you could not get agreement on organized collection but one strategy that the haulers could support as it would mean more business for them is mandatory trash collection. There could be exceptions to take waste to a legal disposal site but we have almost 20% of our residents without trash service. There are all sorts of problems with this and not just the amount of illegal dumping that is difficult to measure. Please consider adding this strategy.

On strategy 2.12

We have tried working with Purchasing Agents and have some policies on purchasing recycled content and it goes ignored because they don't often have the clout to enforce. I feel that the problem lies in education that products can meet the quality needed but no one works with all the employees that make purchases (Park and Rec dept, Public Works, Police....) to help them find them. Hennepin County did a good job by eliminating the option to buy non green office products but there are many more products we could be considered that cities purchase often (flooring, roofing...).

Strategy 2.14

We can not get Brotex to take our carpet from our clean up because it MIGHT be wet. We need to develop more markets and have more convenient drop offs if you want residents to recycle carpet more.

Strategy 6.4

We need to require our Public Works Dept, Housing folks and whoever else takes down houses to do reuse and reclaiming of materials first. It is easy to put it in an RFP but no one tells them they need to do that first before demolition. Or require it in ordinance of developers who need permits and go before planning commissions.

Strategy 6.7

It would be helpful to explain why cities are not receptive to Sustainable Development. I do not find that the case here except it takes a while to change codes.

Strategy 6.9

I receive reports for commercial recycling from my haulers because we have mandatory recycling. However, weights/volumes are not available or not accurate. I just ask for what they are recycling, size of container for trash and recycling and a comment from driver if recycling containers are 1/2 full or full and if they are doing a good job. Weights/volumes will be impossible and a list of who is and isn't recycling is easier to obtain.

Good luck with your process. Thanks for all the hard work that went into this.

Comero, Charlie Jean, Visiam, LLC – General Comment Re: New Technology

Representing a new technology for waste processing and energy recovery, I would like to shine light on the lack of 'new technology support' seen in the Draft Recommendation Strategies. New technologies that are hard to define in existing language, but DO reduce the amount of GHGs emitted in the waste management process, should be a part of this forward thinking document. These technologies/businesses would represent a "green" alternative to the current disposal methods in the sense that 1) they offer a beneficial use for waste and 2) process waste on a higher level within the Waste Management Hierarchy. I have been to the majority of the meetings, and almost everyone agrees that how we currently use landfills will be a thing of the past—but there is no discussion for the need of flexibility in order to encourage technological growth and innovation in the field of waste management.

I propose that the members of this committee consider including a 'new technology' section that address barriers and possible assistance to businesses. The biggest barrier we have been up against as an innovative waste processing company is that we don't fit into current definitions, which could lead to additional review time during permitting. It is understood that there is a lot of fear and risk aversion for new technologies in general, especially new "waste-to-energy" technologies. For this reason, the barriers to introduce a new technology are quite high. Assistance to these businesses could be in the form of 1) streamlined permitting, which parallels MPCA's emerging goals of green streamlining for companies that result in overall benefit for the environment; 2) siting criteria consistent with similar environmental impacts; and 3) promotion of the waste hierarchy concept at all levels of the agency from policy to general staff.

Your time is certainly appreciated in considering this comment. As a stakeholder in this industry, being able to participate and share concerns/ideas is valuable to commencing a widely accepted strategy and document. Thank you very much.

Please feel free to contact me for any clarifications.

Curry, John, Policy Director, Audubon Minnesota – Overall Comment/Comments to Multiple Strategies

Audubon Minnesota appreciates the work of MEI and the work of the Stakeholders on this important topic. Audubon scientists have analyzed data collected from 40 years worth of Christmas

Bird Counts - the largest and lengthiest Citizen-Science project in the world. Their findings show that the aggregate of bird species have moved 35 miles north during the winter count, corresponding directly to warmer winters. This data corroborates what birders and outdoor enthusiasts of all stripes experience by watching nature -- we are witness to major ecological distrutption as a result of climate change. Your subect matter is waste. It is important to note that in nature there is no such thing as waste -- it is a manmade invention and wholly the product of innefficiences. In an economy such as ours which is still largely dependent on fossil fuels, waste is a remarkable proxy for greenhouse gases. Every unit that never becomes waste -- through reduced consumption, reuse or recycling -- represents the maximum possible reduction in greenhouse gas emissions. We're far from a perfect world on these concepts, but it is heartening that, like Audubon, Minnesota's waste hierarchy reflects these as the highest policy goals. Conversely, we are particularly discouraged with policies that rely on landfilling and incineration. The incineration of waste is the worst of all solutions - because it increases greenhouse gas emissions, requires additional energy and fuel to create, emits known carcinogens and creates an economic disincentive to reduction, reuse and recycling. Specific items that Audubon Minnesota would like to single out for support are: A.1.1. Support for Product Stewardship B.2.1. Support for Recycling Legislation B.2.2 Support for Commercial/Industrial Recycling B.2.4 Support for Residential Recycling B.2.5 Support for Recycling End Markets B.2.8 Support for Reduction/Recycling Education B.2.9 Support for Bottle Deposit Legislation C.3.1 The organics goal is quite low. The state should have a 10% recovery goal by 2015 and a goal of total recovery by 2020. And Minnesota should aggressively pursue anaerobic digestion of compostable materials. D.4.0. Waste-to-Energy (aka: Garbage Incineration) strategies should be avoided. E.6.0 Other support strategies, particularly 6.3 "SCORE" funding to support recycling programs are very important.

Davis, Leslie, President, Earth Protector, Inc. – Overall Comment/Comments to Multiple Strategies

Earth Protector, Inc.

P.O. Box 11688
Minneapolis, MN 55411
612/522-9433
www.EarthProtector.org

December 7, 2009

Minnesota Environmental Initiative
211 First Street North, #250
Minneapolis, MN 55401

RE: COMMENTS ON STAKEHOLDER REPORT

Earth Protector has had serious concerns with burning garbage throughout Minnesota due to the poisonous air emissions, and hazardous ash, generated from the activity.

Earth Protector has been involved in all aspects of garbage burning in Fosston, Perham, Elk River, Minneapolis, Duluth, Mankato and Red Wing. We've sued to deny or modify state air emission permits, exposed and stopped illegal ash dumping in Illinois, publicized mercury violations at the Minneapolis burner (HERC) that resulted in state of the art mercury control equipment being installed, and complained about the evaporation towers icing the road adjacent to the HERC burner that resulted in modifications of the towers.

While the years of struggle that began in the 1980's for the Earth Protectors prevented burners in Winsted, New Brighton, Dakota County and elsewhere, our work has not prevented the populace in certain areas of Minnesota from being insidiously poisoned by the most harmful pollutants known to science. These pollutants range from the organics such as dioxin, to the metals such as mercury.

Have we learned nothing in the past 25 years of how air emissions from garbage burners enter the human body at levels so low that they are measured in fractions of the width of a human hair? How they manifest into cancer, nervous disorders, endometriosis, and learning disorders? Have we learned nothing of the cumulative effects of these poisons on the human body and the environment where we have already poisoned most of our lakes? Obviously not. Or maybe we have learned something but the results are covered-up in favor of a weekly paycheck.

So on we slog with the next generation of burner advocates and regulators being taught the ropes from their bosses who are the remnants of Minnesota's ugly MPCA past. Many former MPCA uglies, such as Valentine, Bordson, Cain and Chamberlain are gone, but they have been replaced by none wiser.

The story unfolding today is particularly onerous because it involves a strategy by garbage burning proponents and their regulatory colleagues at the Minnesota Pollution Control Agency (MPCA), to incorporate environmental entities such as the Minnesota Environmental Initiative (MEI) into their review and decision-making process in order to give them a look of legitimacy in order to ultimately help them burn as much garbage as they can get their hands on. Their intentions are to increase the amount of garbage burned in Minnesota while continuing to decimate public health.

The Earth Protectors oppose such a course.

Earth Protector has always supported and advocated for a garbage management policy that avoids burning and focuses on REDUCING, REUSING and RECOVERING. This will leave us with healthier air to breathe and less to bury.

Earth Protector stands in solidarity with the other groups and individuals commenting on the MEI report, and we in particular support:

1. Removing 4.11 that promotes more garbage burning from your report.
2. Recommending a permanent legislative moratorium on construction or expansion of garbage burning in Minnesota.

Sincerely,

Leslie Davis

Leslie Davis, President
Earth Protector, Inc.

Cc: Neighbors Against Burning
MPCA Commissioner Paul Eger
Mr. Alan Muller

Decker, Diadra, Citizen – Overall Comment/Comments to Multiple Strategies

Please accept my comment:

First and foremost, follow the intent and letter of the waste management hierarchy clearly spelled out in law, defining the conservation and health policy mandate of the people of the state of Minnesota, the most important class of stakeholders in this process by virtue of legitimate agency and corporate actions always having to meet the test of protecting and enhancing the public interest over private profit or governmental convenience.

Incineration and any activities that create air pollution and/or destroy usable materials are lower on the list than 1) reduce consumption, 2) reuse materials and energy (with efficient processing that does not destroy the underlying burnable material), and 3) recycle materials and energy. In general they are to be avoided in preference to less polluting, more sustainable options. Many industrial and municiapal proposals do not measure up, when one considers the potential of similar investments in a higher rung of the waste management hierarchy as alternatives.

Therefore, specifically:

o Remove Strategy 4.11, promoting more garbage incineration, from the final report; because its result would be to increase burning, increase public subsidies for incineration and force garbage to be taken to incinerators.

o The 'stakeholders' should produce a plan that complies with the MCAG recommendations of 70 million tons cumulative carbon dioxide equivalent reductions through 2025.

o The stakeholder group should recommend that Minnesota enact a permanent legislative moratorium on construction or expansion of garbage incineration capacity in Minnesota.

Please email me a description of how you have done this.

Doyle, Patricia – General Comment Re: Recycling and Composting

It is imperative that households and businesses recylce and segregate compostable refuse. Most of our household garbage consists of plastics that Mpls no longer takes for recycling. I'd like to see all plastic containers produced that are and will be recycled. Those of us in my household, in Linden Hills, are collecting compostables and placing them in the special can for weekly pickup. If everyone could enter this plan, our land waste would be greatly reduced.

Doyle, Patricia – General Comment Re: Taxation of Garbage

I think that the garbage should be taxed according to how much each household and businesses use.

Eyrich, Ardell, a resident of Minnesota – Overall Comment/Comments to Multiple Strategies

* Remove Strategy 4.11, promoting more garbage incineration, from the final report, and * The 'stakeholders' should produce a plan that complies with the MCAG recommendations of 70 million tons cumulative carbon dioxide equivalent reductions through 2025. * The stakeholder group should recommend that Minnesota enact a permanent legislative moratorium on construction or expansion of garbage incineration capacity in Minnesota. We definitely should not be burning more garbage in Minnesota. We should be burning even less than we currently do. I highly support conserving and reusing resources rather than burning them up. It's time for Minnesota to step up to the plate and be a leader for our Nation, and the world, to do the same!!!

Ferguson, Beverly, Professor Emerita, Metropolitan State University – Overall Comment/Comments to Multiple Strategies

Burning garbage is a very bad idea. Remove Strategy 4.11 promoting more garbage incineration from the final report. The phrase Waste to Energy sounds good, but it is really being promoted by the incineration industry to con the public into believing they are doing something worthwhile. In fact they are polluting our air and causing numerous health problems. Do not be persuaded by these tactics. We have higher and higher rates of respiratory problems caused by the air we are breathing every minute. I hope the Stakeholders will enact a permanent legislative moratorium on construction or expansion of garbage incineration capacity in Minnesota. I hope the Stakeholders will protect the public by producing a plan that complies with the MCAG recommendation of 70 million tons cumulative carbon dioxide equivalent reductions through 2025.

Gitelis, Lynn, LWVMN – General Comment Re: Reducing carbon

I would hope that EACH of the recommendations that is enacted will specify the tonnage in carbon reduction that it will achieve. Please include specific numbers for each recommendation. Similarly, I would hope that NONE of the recommendations would add to already existing forms of CO2 loading. Thank you!

Gonder, Jan L. – Comment Re: Strategy 4.11

Please remove Strategy 4.11 from the final report. As a Mpls resident I oppose any expansion in burning and subsidies for burning/burners.

Thank you for your attention.

Gover, Mary W., LWVMN – Overall Comment/Comments to Multiple Strategies

Ideally, the use of light-weight plastic bags should cease. Their use produces great qualtities of litter and they are dangerous to both animals and young children. I urge making progress toward ending the use of plastic bags by imposing a tax or fee on each bag. I also favor requiring large retailers to provide depositories for used plastic bags. These measures have proven effective in other cities and states. Minnesotans should not be the last to join the effort.

Greenfield, Janice, Neighbors Against the Burner – Comment Re: Strategy 4.11

I enthusiastically applaud the majority of your draft recommendations -- in particular the emphasis on reducing, recycling & reusing. However, I find #4.11 to be an oxymoron. "Waste to Energy" is by definition a very INEFFICIENT process. Worse, it is an alternative extremely hazardous to the public health. We at the citizens' volunteer organization, Neighbors Against the Burner, have been researching the matter for two & one half years. Every day we learn new & damning details about the dangers of the air pollution which ANY incineration causes! To pretend that existing Waste to Energy facilities can be "improved" is a falsehood. They must be phased out & seen for the inefficient & toxic load to our environment that they are. For factual support of my claim, please see our website at: http://www.neighborsagainsttheburner.org/faq particularly, the sections entitled: "Waste to Energy" is Wasteful & Uneconomical! A Burning Issue The Federal Reserve Bank of Minneapolis thinks that incinerators are bad news for local government and taxpayers and explains why incineration is a financial burden on the municipalities that bought into it. 20 reasons why incineration is a losing financial proposition for host communities from the Institute for Local Self-Reliance. Incineration of Municipal Solid Waste: Understanding the Costs & Financial Risks, Durham Environment Watch, April 2006. Waste Incinerator Myths (PDF) List of Malfunctions Known in Municipal Waste Incinerators, by Neil J. Carman, Ph.D., Clean Air Program Director, Lone Star Chapter of Sierra Club. Dr. Carman spent 12 years inspecting incinerators & industrial facilities for the state of Texas, working on enforcement cases & lawsuits against polluters. AND Bioaccumulation Because the harmful effects of incineration are cumulative, they may take years or decades to finally overpower our immune systems. Independent scientists (researchers who have not been paid by those in the incinerator and garbage-processing industries, who stand to profit by "proving" that burners are safe) studying the effects of burner emissions are discovering alarming relationships between the incidences of serious diseases – cancers, reproductive system disorders, immune system disorders, heart and lung disease, asthma and other breathing disorders (especially the increases in childhood asthma), ADHD and other brain-function disorders in children, and fetal health disorders – and patients' proximity to burners. For current research, see: America's Most Toxic Cities, Forbes, November 2, 2009. "The Price of Pollution: Cost Estimates of Environment-Related Childhood Disease in Minnesota" Minnesota Ranks #7 in Top Ten States in U.S. Incinerating PVC's Pollution Can Change Your DNA in 3 Days, Study Suggests, National Geographic, May 17, 2009. Connection Between Plastics in Environment & Rising Obesity Rates, PBS NOVA: Ghost in Your Genes, 2007. MPCA Sees Rise in Mercury Levels in Northern Pike, Walleye from State Lakes "Lead, Smoke Exposure in Kids Linked to ADHD" "Lead Exposure Endangers Children" "An American Life Worth Less Today" "Lobbyists Fight Clean Air Rules" "The Health Effects of Waste Incinerators: Risk Assessment" "MPCA Air Quality Index" China's Incinerators Loom as a Global Hazard, NYTimes.com, August 12, 2009. "Dioxin and Breast Milk: the French Island Incinerator" "The Inuit's Struggle with Dioxins and Other Organic Pollutants." "Dioxin Documentation" Panel Finds Smog-Mortality Link, National Academy of Sciences, April 23, 2008. BodyBurden: The Pollution in Newborns, Environmental Working Group, July 2005. Toxic Link to Endometriosis, Endometriosis Association, 2005. Prevent Cancer Now: Let's Say "No" to Incineration in Canada I appreciate your earnest consideration of the factual material I have submitted.

Greenwood, Carol, writing as a private citizen – Overall Comment/Comments to Multiple Strategies

My comments are both general and also targetted to a specific strategy, reduction of incineration. In general, waste management policy should be made in the context of overall state sustainability and greenhouse gas reduction strategy, which would be oriented toward reduction of toxicity, CO2 generation, and use of combustion/fossil fuels. Thus, waste reduction should be oriented toward product stewardship: packaging should be reusable or compostable; retailers should be required to facilitate take back and re-use systems for packaging (e.g. aseptic boxes and plastic bags) and products that are financed by manufacturers. Most packaging that is not reusable should be compostable, and compostable materials should be salvaged and used to generate biogas to fuel energy generation systems. Less toxic materials should be required so that risk of water and air pollution are reduced. Combustion versus landfilling should be re-analyzed to compare the fate of specific wastes. Some would be safer landfilled than combusted and spewed into the air (or landfilled as bottom ash), where even more toxic components than what was in the original will go into both air and water. In regard to the garbage incineration strategy, "Remove Strategy 4.11, promoting more garbage incineration, from the final report;" "The stakeholder group should recommend that Minnesota enact a permanent legislative moratorium on construction or expansion of garbage incineration capacity in Minnesota." We already have more incinerators than any other state. This is not conducive to either air or water quality. It is also a less efficient way of generating energy. It puts money into the pockets of large multinational corporations rather than contributing to the economy of Minnesota, which, along with local air and water quality, should be one of the first considerations for any state policy. In reference to the previous comment of making the waste manegement policies comply with greenhouse gas recommendations, "The 'stakeholders' should produce a plan that complies with the MCAG recommendations of 70 million tons cumulative carbon dioxide equivalent reductions through 2025."

Healy, Kit – Comment Re: Strategy 1.11

My preference would be a ban. There is no reason for stores to offer plastic or paper bags; shoppers can bring their own reusable bag(s). If stores are worried that shoppers will forget their bags and as a result, not shop (or not buy as much), then start with a transparent tax on bags for a year. Make every store charge the tax and every shopper know when he or she is paying it and why. After a year of training/educating shoppers, stop offering the bags. Period.

Healy, Amy P., Director, Public Policy, Yellow Pages Association – Comment Re: Strategy 1.5

Executive Offices: Connell Corporate Center, 200 Connell Drive, Suite 1700, Berkeley Heights, NJ 07922-2747
Phone: 908.286.2380 Fax: 908.286.0620 www.ypassociation.org

Integrated Solid Waste Management Stakeholder Work Group
Minnesota Environmental Initiative
211 First Street North, Suite 250
Minneapolis, MN 55401

Attn: Jack Hogin, Manager of Environmental Projects

Dear Mr. Hogin,

My name is Amy Healy and I am the director of public policy for the Yellow Pages Association (YPA). YPA is the largest trade association of directory publishers and suppliers in the U.S. YPA's members include print and internet publishers, national and local sales forces, advertisers and suppliers, such as information technology, printing and paper companies. YPA requests that the MEI-facilitated stakeholder group recognize and support the continuation of the industry's voluntary efforts to reduce the distribution of unwanted directories in lieu of support for a legislative mandate.

Telephone directories are commonly referred to as "yellow pages" and "white pages," each with a distinct function. Under Minnesota law, "white pages" must be regularly published and distributed to telephone company customers. In addition to names, telephone numbers and business and government information, telephone directories must include information on contacting emergency services, dialing instructions and information on contacting telephone repair and resolving billing issues. Yellow Pages advertising is not required by law, but many small and medium local businesses use Yellow Pages as their primary means of advertising due to its high return on investment.

YPA strongly supports consumer choice. Our association is actively implementing a voluntary industry opt-out program to ensure that consumers who do not want printed directories do not receive them. That is why, beginning in 2008, the YPA, together with the Association of Directory Publishers, supported the establishment of environmental guidelines that offer consumers the option of deciding which directories they want to receive at their homes – including the option of receiving no printed directories at all.

YPA takes the issues raised by Representative Gardner in HF 170 very seriously. YPA and our members have worked with Representative Gardner to address these concerns and to promote and improve industry opt-out programs available to consumers. We have had several meetings with Representative Gardner and with Minnesota Pollution Control Agency staff prior to the launch of www.yellowpagesoptout.com. This website provides a clearinghouse of information based on a user's zip code that assists users to select which directories they would like to

Michigan Offices: 820 Kirts Boulevard Suite 100, Troy, MI 48084-4836 Phone: 248.244.6200 Fax: 248.244.0700

receive or totally opt-out of receiving directories if that is their choice. This website - www.yellowpagesoptout.com - currently contains opt-out information for publishers representing over 91% of the telephone directories in circulation in the U.S. The other 9% of directories are predominately published by small rural directory publishers. However, we continue to work towards 100% participation in the site. The opt-out website is receiving a growing number of hits each month. We expect that trend to continue as the industry and our partners in the environmental and public sector assist in efforts to increase consumer awareness of this option.

At the same time, competition from online and mobile alternatives to the printed directory has caused the number of directories distributed to decrease and we expect this trend to continue.

In addition to the industry opt-out site, some of the larger publishers serving metro areas in Minnesota offer individual web sites where users can customize their directory order online, meaning they can choose fewer directories or none at all, from the convenience of their PC.

As part of the industry's commitment to source reduction and recycling in Minnesota, YPA is in dialogue with a major state environmental group in hopes to develop a web-based educational tool that will further promote the options to reduce or eliminate directories delivered to Minnesotans.

The industry takes great pride in its role as an economic catalyst, serving as the major marketing partner to thousands of small businesses in Minnesota. And YPA believes that the industry's voluntary self-regulatory approach is reducing the number of unwanted directories in Minnesota.

For the reasons described in this letter, YPA requests that the MEI-facilitated stakeholder group support the continuation of the industry's voluntary efforts. In addition, we welcome suggestions and feedback from individuals and organizations for improvement to the industry's self-regulatory program.

I appreciate the stakeholders' consideration of this request.

Regards,

Amy P. Healy
Director, Public Policy

Hone, Nancy, Founder/Coordinator, Neighbors Against the Burner----------REPRESENTING CITIZEN STAKEHOLDERS – Overall Comment/Comments to Multiple Strategies

Dear Mr. Hogin:

Thankyou for this opportunity for the public to comment on the waste stake-holder process.

I am the founder and coordinator of Neighbors AGainst the Burner representing thousands of citizens who oppose the incineration of garbage and support Zero Waste as the alternative.

Following are my comments:

1.) Thank you for recommending increases in recycling as you have described in your draft. That is commendable.

2.) However, I think that ZERO WASTE INITIATIVES should be at the forefront and number one in your recommendations.

3.) In 4.11, the language "By 2011 all WTE facilities are operating at capacity,"

What does this mean? It appears to us that this is put in there SPECIFICALLY to allow for and even encourage the 21% increase in incineration at the Hennepin County Recovery Center in downtown Minneapolis as well as other existing burners. The citizens do not think there should be a 21% increase in their air pollution at the HERC burner or any other burner in Minnesota. This is totally unacceptable and irresponsible to even suggest any increase in garbage incineration.The Citizens of Minnesota that I am in touch with think that all garbage incinerators, in fact, should be phased out and the sooner the better.

4.) It appears that global warming was not taken seriously by the "stake-holder" process evidenced by even considering and suggesting the incineration of garbage.

Global warming is real.

We do not have time to drag our feet and move slowly to cut down on CO2 emissions. At MINIMUM the "stake-holder" report should match the Minnesota Climate Change Advisory group.The MCCAG report called for reducing greenhouse gas emissions through better waste management by 75 million metric tons of carbon dioxide equivalent, cumulatively, by 2025. The MPCA unilaterally reduced that to 52.5 million tons .This, too, is not acceptable to the "citizen stake-holders."

The state of Minnesota should be speeding and running toward all goals to cut down on Green House gases rather than cautiously moving forward with impossibility thinking. There is no time to waste appeasing special interest groups.

Global warming is an emergency and needs to be treated like one.

5.)The "stake-holder" group should be suggesting and promoting a moratorium on the expansion of and building of further garbage incinerators and the eventual phase out of "waste to energy" as a policy for the state of Minnesota.

6.) The health issues did not appear to be seriously addressed in this process. You did not seem to have anyone on your panel that was an expert in the negative health effects of toxin spewing garbage burners. As the public also was not represented on your panel, they could have brought forth experts to bring the negative health effects to the conversation.

The citizens, after all, are the ULTIMATE STAKEHOLDERS as they are the victims of bad public policy to pollute our air, our water and our land with the serious toxins coming out of the burner stacks. We are the ones that do and will suffer the consequences of the toxic chemicals as they cause cancer, parkinson's disease, asthma, autism, alzheimers, MS, and any number of other health

issues that are present today that are shown to be a direct result of the CUMULATIVE effect of toxic chemicals in our world.

7.) As I represent a large citizen group, I would like to state for the record that the citizens ARE stake-holders and in the future should be treated as such.

The "stake-holder" meetings were also held during the day when citizens work. Re: the meetings that occurred locally, we sometimes found out about them after the event, or the day of or before. The one local public meeting was poorly publicized to the citizenry and the public comment period for such a serious issue is only 2 weeks and over Thanksgiving at that.

9.) So I think that Strategy 4.11 MUST be eliminated from your draft. It is not responsible to our children and to our citizens to keep 4.11 in the recommendations from the "stake holder" group on waste management.

My serious hope is that public comment is seriously considered.

NAB includes many highly educated individuals capable of research.

NAB has consulted experts on a world wide basis to back up our comments.

Some of our research can be read on our website: neighborsagainsttheburner.org if you want to learn more.

Again, thank you for this opportunity to comment on the waste "stake holder" process and draft report.

We understand that it has been a lot of work, but we do not consider this the end of the story.

Hubbard, Susan & Tim Brownell, Eureka Recycling – Overall Comment/Comments to Multiple Strategies

Comments on Solid Waste Stakeholder Recommended Strategies
Eureka Recycling
December 8, 2009

Thank you to all of the participants who made such a great effort to develop these significant strategies. We aspire, along with you, and fully commit to continue to provide our support to accomplish these measures. As our mission is demonstrate that waste is preventable, it has been inspiring to be a part of this process where so many share this belief (at least in part if not entirely) that it is possible. Most of these strategies reflect the shared belief; there are a great many opportunities to reduce the creation and the disposal of waste in Minnesota so that we all can enjoy a true improvement in our environment, our health and our economy.

The following are a few of our specific comments on some of the strategies outlined in the report. We look forward to further discussions and refinements of these strategies as well as immediate action that results in the reduction of carbon emissions related to the waste we generate. In terms of our changing climate we must all understand now that the immediacy of action is paramount to protecting Minnesota's unique and fragile environment as well as the rest of our world.

Organics Management
We fully support the recommendation but we call attention to the lack of composting infrastructure as an extreme barrier to the general strategies that are presented for this recommendation. Cities and businesses that begin composting do so at a risk of ever-increasing costs due to limited processing options. Public monies should be aimed at increasing the viability of composting by clearly defining and prioritizing any state funds available for landfill or incinerators improvements or new capacity to be far below the requests for composting infrastructure. By shifting public dollars towards composting infrastructure, Minnesota can experience similar increases in diversion goals to those seen in Canada, California, and cities in many other parts of the world. In Toronto, the implementation of curbside organics collection resulted in a 14% increase in diversion. Two years after launching their program, San Francisco went from under 48% to a 67% diversion rate with recycling and organics collection. These cities responded to a state-led vision of comprehensive organics composting, not business-as - usual investments in disposal.

That said, until we remove statutory and regulatory barriers to increased composting by updating definitions for source separated composting, clarifying the preference for source separated

composting in the State's waste management hierarchy and updating the permitting process for composting facilities based on these statutory changes, we will not see any private investment in composting infrastructure.

Organized Collection

This strategy is not getting the attention it deserves because there is formidable opposition from industry based on how this strategy has been used in the past. Organized collection has been done in the past to support the flow of materials to landfills and incinerators where competing facilities would be challenged to operate. It has also been done in the past to reduce competition on the collection side or to favor a single hauler. Neither of these motives will gain any broad-based support. On the other hand, organized collection can be a support to developing composting infrastructure – which should be supported at least generally by all parties. That is to say – any party that recognizes composting to be environmentally preferable to incineration or landfilling could support an organized collection proposal that results in increased composting that is designed to improve/increase the processing opportunities for collected compostables. When there is a commitment to a certain level of service- financing can be structured through materials flows that will sustain facilities.

Although there would be high opposition to organized collection for garbage, a well-run organized collection system can improve the environment by providing an efficient way to collect garbage, recyclables and compostables. By organizing a collection system we could reduce the unsightly, environmentally harmful and costly mismanagement (dumping) of bulky materials, remove a number of trucks with associated emissions from the streets and alleys and provide a greater quality of life to Minnesotans.

Organized collection can—and should—support the independent haulers and allow for competition. Contrary to many residents concerns, cities in Minnesota and across the country have implemented these systems and have maintained the independent (family-owned) haulers and competition.

SCORE Funding

One thing that all stakeholders agree upon …how materials are managed is all about the money. SCORE allotments to communities have not even come close to keeping up with the rate of inflation. SCORE has not moved in any relation to the increase in waste that local governments are expected to manage. There is no correlation between the amount of SCORE funds dedicated to improving our current situation and the growing feasibility of more environmentally preferred methods that add dollars back to the economy, create jobs and protect the environment.

There is a larger amount of money collected through the (SWMT) than what is allotted for source reduction, recycling or composting programs – most of the money collected goes to the State's General Fund and other MPCA programs. Although those needs are also great, until leadership at the state level takes this situation into their hands, we will not reduce carbon emissions or change the almost double-decade long struggle between the pressing need to move

materials up the hierarchy and the local government's inability to fund the services and create the infrastructure to do so.

Methane Management in Landfills

Although these strategies are confined to measurements related to carbon reduction it is superficial and harms our chance of success if we overlook some concerns that have not been clearly quantified. Landfill gas has increasingly being eyed as a renewable energy – and as such is presented as a clean energy alternative. Landfill gas is about 40-60% methane, with the remainder being mostly carbon dioxide (CO2). Landfill gas also contains varying amounts of nitrogen, oxygen, water vapor, sulfur and a hundreds of other contaminants — most of which are known as "non-methane organic compounds" or NMOCs. Inorganic contaminants like mercury are also known to be present in landfill gas. Sometimes, even radioactive contaminants such as tritium (radioactive hydrogen) have been found in landfill gas.

Of the hundreds of toxic contaminants in landfill gas, many are chlorinated, brominated or fluoridated, which means that they can form dioxins when burned. Dioxins and furans are some of the most toxic chemicals known to science. A report released in September 1994 by the US Environmental Protection Agency clearly describes dioxin as a serious public health threat. 41 of the 94 chemical contaminants in landfill gas identified by EPA in their 1991 report on landfill gas are halogenated. Also, many of the chemical contaminants are already organohalogens, so they could serve as good dioxin precursors. See the full (11 MB) original report here: http://www.epa.gov/ttn/atw/landfill/laurv1.pdf . The public health impact of dioxin may rival the impact that DDT had on public health in the 1960's. According to the EPA report, not only does there appear to be no "safe" level of exposure to dioxin, but levels of dioxin and dioxin-like chemicals have been found in the general US population that are "at or near levels associated with adverse health effects."

So what to do with landfill gas? Doing nothing leads to gas migration off-site and has caused dangerous explosions. The release of the methane creates serious global warming problems that we try to address here and the release of the toxic contaminants can cause cancer and other health problems in local communities. A New York study of 38 landfills found that women living near solid waste landfills where gas is escaping have a four-fold increased chance of bladder cancer or leukemia.

The only safe way to deal with landfill gas is prevention. Removing the organic or compostable fraction of the waste from the non-organic or non-compostable materials prior to landfilling is the only effective way to reduce carbon emissions and protect the health of our environment, communities and citizens. No new landfill capacity should be permitted until organic materials are banned from landfills. Mandatory capture of the gas should be a requirement of the landfill owner where the cost should not be subsidized by green energy incentives rather it should be reflected in the tip fees at the landfill. The cost of landfilling is alarmingly low (much lower than incineration) because they do not reflect these environmental or health related costs. Until we have a stable composting infrastructure that is developed through prioritization of public monies, is clearly defined as a preference in the management hierarchy, and enjoys similar or greater green incentives as disposal – then we will be presented with substandard options like these in

this strategy "methane management in landfills" along with other subsidized disposal distractions to the actual solution.

Product Stewardship Framework
Manufactured products and packaging represent 72.5% of all municipal solid waste. A Product Stewardship Framework would provide a comprehensive, yet flexible method for managing products that have significant impacts on the environment and serve as an alternative to the current product specific approach with many different laws and methods.
By internalizing the costs of collection, recycling and managing product waste into the price of the product we can shift the costs of managing these products from local governments to the producers who design, manufacture and profit from these products.

Now more than ever government – especially local government is crushed with rising costs of services and shrinking sources of revenue. Only a fraction of SCORE funds (a tax placed on disposal) makes it to local governments for any waste management or diversion programs. Making producers responsible for managing their wastes motivates them to design products that are less toxic and more easily recycled. Now more than any other time we require a government strategy to place responsibility for end of life management of products and associated packaging on producers and consumers rather than on taxpayers, ratepayers or local governments.

Any product stewardship framework should take into account the opportunity to create and sustain locally-based reuse, recycling, and composting programs and the accompanying jobs. Product Stewardship should not create another funnel for money and jobs to flow out of Minnesota (or through Minnesota to the corporate headquarters in another state) but rather it should be an opportunity for new prosperity for Minnesotans and new green jobs and as such, incentives should be included and exclusively directed to revitalize local economies by supporting environmentally just, community-based, and real green materials schemes that are the backbone of the “Product Stewardship Framework Strategy.”

Thank you for the opportunity to comment on these strategies.

Sincerely,

Susan Hubbard
Co-President
Eureka Recycling

Tim Brownell
Co-President
Eureka Recycling

Keen, Bryan – Comment Re: Strategy 4.11

Remove Strategy 4.11, promoting more garbage incineration, from the final report

Kieselhorst, John, Concerned St. Paul resident – Overall Comment/Comments to Multiple Strategies

Minnesota needs to return the green roots of its former days, the days when the Mississippi River was cleared of its “sewage mats” and when eagle populations had a chance to move from a low of 70 breeding pairs to well over 700 breeding pairs. These FACTS that bear strongly upon our quality of

life only came about through the efforts of an engaged, environmentally concerned citizenry AND a responsive government. We do not need to burn garbage ("refuse derived fuel" - what Orwellian claptrap!) to generate energy in this state. Wind and solar need to be exploited to their maximum potentials, and then augmented with natural gas and coal. Rock-Tenn could retool itself to move with the times and begin producing non-depletable energy such as wind and solar. Jobs should be protected through creativity rather than protectionism. To that end I make the following recommendations: The stakeholders should produce a plan that complies with the MCAG recommendations of 70 million tons cumulative carbon dioxide equivalent reductions through 2025. The stakeholder group should recommend that Minnesota enact a permanent legislative moratorium on construction or expansion of garbage incineration capacity in Minnesota. Remove Strategy 4.11 from the final report.

Kiser, Randy, Solid Waste Administrators Association – Overall Comment/Comments to Multiple Strategies

December 8, 2009

Minnesota Solid Waste Administrators Association

Comments on Minnesota Environmental Initiative (MEI)/Minnesota Pollution Control Agency (MPCA) Integrated Solid Waste Management Stakeholder Process (ISWMSP)

The Minnesota Solid Waste Administrators Association (SWAA) has a membership roster that includes solid waste officers and solid waste administrators from all counties and waste management districts. Our members typically are responsible for implementation of solid waste program initiatives and also enforcement of local ordinances and state rules. SWAA is able to contribute a vast amount of experience and knowledge on solid waste and recycling issues.

Thank you for the opportunity to comment on the report generated by the Minnesota Environmental Initiative (MEI)/Minnesota Pollution Control Agency (MPCA) Integrated Solid Waste Management Stakeholder Process (ISWMSP). SWAA is hopeful that the process will contribute to greenhouse gas reduction and pollution prevention as expected.

General Comments.

1. Overall, SWAA supports the need to improve our waste management practices to reduce the generation of greenhouse gas (GHG) through the implementation of an integrated solid waste system that supports the waste management hierarchy as established in Minn. Stat. 115A.03. Waste reduction and recycling need to continue to be viewed as the highest priority activities.

2. The “centroid” work conducted over the summer represented a sincere effort by regions to review ways to abate GHG through integrated waste management. Regional areas will continue to work to implement practices proposed in the “centroid” work product. From that perspective, the process has been a success.

3. A report as significant as this deserves a more realistic timeline for public comment. There is much to digest in the document, and little time to digest it. The result is likely to be poor public review and comment. A more complete public review and commentary will be attained by providing additional time.

4. This report will be used for future policy development. Readers will take as accurate the information contained in the report. When data is not rigorously developed, there is a risk that readers will draw unrealistic conclusions. For example, the Minnesota Climate Change Advisory Group (MCCAG) recommended a 60% recycling rate and a 15% source separated organics composting rate. These numbers appeared to based more upon political usefulness than data and experience analysis, but have since been used as examples of realistic goals. Practical solutions require realistic goals.

5. The ISWMSP’s goal is recommending ways that Minnesota should change waste management to reduce global warming and avoid green house gas (GHG) generation. This is an important goal. To effectively address this responsibility required that participants look beyond their perceived organizational interests and consider the broader public good. It is not productive to consider short-term “winners” and “losers” if in the end we all lose.

This was a challenge. While titled a “stakeholder” process, the process was in ways more interest group-driven where recommendations may have been based more by business or organizational financial or philosophical interests than by the broader public good. This is not to say that it is bad for a business, organization, or government to work to protect its group goals, only that the results of the current process may need to be evaluated in that context.

SWAA recommends future processes be configured to more effectively incorporate the interests of the public as a whole. An example to consider may be the Jefferson Institute Citizen’s Jury Process conducted by the Solid Waste Management Coordinating Board.

6. While the title of the process included “Integrated Solid Waste Management”, promotion of integrated waste management to reduce GHG generation was not always the focus of the group. Many factors may have been at play: financial interests; a philosophy of “starving the beast” (be it landfill or waste to energy facility) to try to force more waste reduction or recycling; Not in My Backyard (NIMBY); or, perhaps simply that the process did not encourage or enable consensus on difficult issues.

The unfortunate result was consensus was impossible on a number of issues key to the development of integrated waste management systems, including solid waste processing, waste assurance, container deposit, and organized collection. For the most part, these issue areas received limited discussion, and were set aside due to lack of consensus.

7. Consensus was reached on the need for improved reduction and recycling programs; this consensus has been in place for twenty years. Counties recognize that improvement in these areas will reduce the generation of GHG. Since the passage of SCORE in 1989, Minnesota's local units of government have been leaders in implementing reduction and recycling programs.

However, while consensus has been in place, necessary federal and state actions supporting that consensus have been lacking. Absent sweeping federal and state initiatives establishing a framework where reduction and recycling can be successful, only limited success is possible on the local level. The end of the pipe is not the place to solve these problems!

SCORE pass-through grant funding is a prime example of how rhetoric has not been followed by action.

8. State leadership and vision are needed to improve integrated waste management. The State needs to avoid sending mixed signals on the suitability of various waste management alternatives based upon the type, timing, and current level of controversy of the proposal. Policy can't be based upon the level of controversy; most processing and disposal projects include controversy.

9. The ISWMSP did not include a comprehensive evaluation of costs. Absent such an analysis, recommendations are open to question.

10. Methane is a significant GHG. Landfills generate methane. Some can be captured; there is debate regarding how much. Landfill abatement must be a cornerstone of efforts to avoid climate change. Unrealistic projections that attribute unrealistic levels of success for reduction and recycling and that thereby prevent the development of solid waste processing alternatives will only result in more land disposal and more methane generation.

11. Waste to energy can be conducted in an environmentally protective and economically sustainable fashion, and needs to continue to be viewed as an available tool for integrated waste management. Properly developed and operated, waste to energy facilities will avoid the generation of GHG.

Specific Comments.

SWAA has not developed specific comments on individual recommendations contained in the report. Instead, SWAA in general endorses comments submitted by the Solid

Waste Management Coordinating Board. In addition, SWAA attaches its current legislative policy platform, along with the policy platform for the Association of Minnesota Counties, which includes positions on waste management and recycling (pages 11 and 12).*

Thank you for receiving these comments.

**MEI Notation:* The SWAA legislative policy platform and the policy platform for the Association of Minnesota Counties are included as subsequent addenda to this document.

Kiser, Randy, Solid Waste Administrators Association – General Comment Re: Duration of Public Comment Period

I am writing on behalf of the Minnesota Solid Waste Administrators Association. Our membership consists of county solid waste officers and solid waste administrators. Our association is concerned about the limited amount of time between the release of the stakeholders strategy recommendations and the deadline for submitting comments. The release date of the report was November 24, 2009. With a long holiday weekend following that date, only six full business days are available as a public comment period. Our organization intends to submit comments on many of the recommendations, and also on the stakeholder process itself. However, with over 80 members is it difficult to formulate a response in such a short time frame. Therefore, we respectfully request that MEI accept comments from the Solid Waste Administrators Association after the December 8, 2009 deadline. We fully expect to have comments submitted by December 15, 2009. Thank you for your consideration.

Klave, Gregory L. – Overall Comment/Comments to Multiple Strategies

Dear Minnesota public policy makers:

I request that you do the following:

o Remove Strategy 4.11, promoting more garbage incineration, from the final report; and

o The 'stakeholders' should produce a plan that complies with the MCAG recommendations of 70 million tons cumulative carbon dioxide equivalent reductions through 2025.

o The stakeholder group should recommend that Minnesota enact a permanent legislative moratorium on construction or expansion of garbage incineration capacity in Minnesota.

The Minnesota Pollution Control Agency wants to increase the amount of garbage burned in Minnesota by 50-60 percent, and in pursuit of that hired the "Minnesota Environmental Initiative," (MEI) to run a "stakeholder process <http://www.mn-ei.org/projects/solidwaste.html#online>."

The MCAG report showed that there are big opportunities for greenhouse gas reductions through source reduction, recycling, and composting, and essentially none through incineration (details below).

The key bad "strategy" is No. 4.11 "Existing Waste-to-Energy Infrastructure is Operated at High Efficiency". Who can be against "high efficiency?" But like many burner industry statements, this one is deceptive. The real meaning is found on pages 62-63 [comments in brackets]:

In other words, the intent of Strategy 4.11 is to increase burning, increase public subsidies for incineration and force garbage to be taken to incinerators.

So you need to "Remove Strategy 4.11 from the final report."

The MCCAG report called for reducing greenhouse gas emissions through better waste management by 75 million metric tons of carbon dioxide equivalent, cumulatively, by 2025. The MPCA unilaterally reduced that to 52.5 million tons "To ensure efficiency and effectiveness and a workable plan coming out of the process...." by including only "the four population centroid regions of Minnesota."

The "stakeholders" should produce a plan that complies with the MCAG recommendations of 70 million tons cumulative carbon dioxide equivalent reductions through 2025.

Incineration increases greenhouse gas emissions while source reduction, recycling, and composting reduce them. This is not really hard to understand: Conserving and reusing resources is pretty obviously more sustainable than burning them up.

The details of the MCAG report <http://www.mnclimatechange.us/MCCAG.cfm> are not always easy to follow, and arguable in some cases, but the conclusions are striking:

Cumulative reduction in greenhouse gas emissions through 2025 (Table I-65).

(millions of metric tons carbon dioxide equivalent)

Source reduction, recycling, and composting: 70 costing-$0.20/ton*

"End of pipe" methods such as burning: 5.1 costing $51/ton **

total 75.1

"current MPCA goals" 7.4 costing $117/ton

* recycling saves money

** essentially all from landfill gas burning, not garbage incineration as such

It would seem that something other than logic and the public interest must be driving the present leadership of the Minnesota Pollution Control Agency. It is in our best interests as a state and civil society to stop garbage incineration and put our resources toward

"The stakeholder group should recommend that Minnesota enact a permanent legislative moratorium on construction or expansion of garbage incineration capacity in Minnesota.!"

Kleinschmit, Jim, Institute for Agriculture and Trade Policy – Overall Comment/Comments to Multiple Strategies

* This is an important report with many valuable recommendations. This report provides a specific set of recommended policies and goals to address climate-changing emissions from waste management. It is important that all sectors of society involved in waste generation and management be engaged in following through on these recommendations. * The cumulative greenhouse gas (GHG) reductions forecast from all of these policies do not total the goal for reductions set forth for this sector in the MCCAG process (52.5mmt CO2e). More effort should be made to assemble a plan that fully realizes necessary reductions. These efforts should be concentrated at the "top of the

waste hierarchy", particularly in the area of producer responsibility for high GHG-potential products. * To effectively implement these recommendations, existing waste system funding must be aligned with these priorities. The cost of material reuse, recycling and disposal should be borne by those involved in the manufacture, sale and use of the material in question, and not more generally across society.

Kleinschmit, Jim, Institute for Agriculture and Trade Policy – Comment Re: Strategy 1.1

1.1 MN Product Stewardship Framework law is particularly important– IATP supports the adoption of such a law. Manufacturers of "high GHG impact" or difficult to recycle materials should be responsible for taking them back for remanufacturing or recycling.

Kleinschmit, Jim, Institute for Agriculture and Trade Policy – Comment Re: Strategy 2.1

2.1 Recycling Legislation is very important to set overarching recycling goals in legislation. We support the requirement that a ban on disposal of recyclable materials be implemented, if the goals are not achieved by 2015. The fact that a ban is viewed unfavorably by some elements of the waste system provides incentive for them to work hard to achieve the goals without a ban.

Kleinschmit, Jim, Institute for Agriculture and Trade Policy – Comment Re: Strategy 2.9

2.9 Container Deposit Legislation - IATP strongly supports this practical recommendation. This strategy is proven in other states (where deposits are ten cents) to be very effective at removing these containers from the waste stream and recovering them for recycling, resulting in significant GHG savings.

Kleinschmit, Jim, Institute for Agriculture and Trade Policy – Comment Re: Strategy 2.13

2.13 State Procurement Standards - this recommendation is appropriate and feasible and should be implemented. It combines the public sector “leading by example,” with support for recycling of materials that do not yet have robust markets.

Kleinschmit, Jim, Institute for Agriculture and Trade Policy – Comment Re: Strategy 3.1

3.1 Source Separated Organics Management - this proposal is a moderate, yet significant step towards removing these valuable organic materials from “mass disposal” in the MSW system. IATP supports this proposal, but believes that the ultimate goal by 2025 should be full recovery of usable organic matter through the strategies outlined in this proposal. The benefits to society through GHG reductions, biogas generation, nutrient recovery, soil building and job creation are very promising.

Kleinschmit, Jim, Institute for Agriculture and Trade Policy – Comment Re: Strategy 6.3

6.3 SCORE Funding - this recommendation is critical. IATP would go a step further to encourage full restoration of all Solid Waste Tax Revenue to the support of strategies recommended in this report. Particularly important is the shoring up of local government funding for direct implementation of these recommendations.

Kleinschmit, Jim, Institute for Agriculture and Trade Policy – Overall Comment/Comments to Multiple Strategies

6.4, 6.5 and 6.6 Green Building Initiatives - are important strategies which begin to address the huge GHG impacts of our buildings and homes. This effort will take years to implement, but we must begin as soon as possible. Once again, government leading by example is an excellent start, as well as an excellent long-term investment for all citizens.

Kleinschmit, Jim, Institute for Agriculture and Trade Policy – Comment Re: Strategy 6.8

6.8 Regular Updated Waste Sorts - Without this vital, recurring measure of results, all discussions are theoretical and subject to endless modeling and posturing. This MUST be done, starting with a new sort in 2010.

Kordiak, Jim, Chair, Solid Waste Management Coordinating Board – Overall Comment/Comments to Multiple Strategies

December 7, 2009

Mr. Tim Scherkenbach
Acting Deputy Commissioner
Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, MN 55155-4194

Dear Mr. Scherkenbach:

The Solid Waste Management Coordinating Board (SWMCB) applauds the MPCA's commitment to advancing Minnesota's solid waste management system and for initiating the inclusive Integrated Solid Waste Management Stakeholder Process. The SWMCB, a joint powers board comprised of the six metropolitan counties of Anoka, Carver, Dakota, Hennepin, Ramsey, and Washington, has been working collaboratively with the MPCA for nearly twenty years to develop policies and programs that improve Minnesota's environment and protect the public health. SWMCB very much appreciated the opportunity to participate in the full work group discussions and in the Metro Centroid specific meetings.

The SWMCB fully understands the varying perspectives and interests brought to the Stakeholder Process and found much value discussing the diverse interests. The SWMCB member counties, unlike many of the stakeholder workgroup representatives, have specific legislatively mandated responsibilities for solid waste management. It is important to note that while the strategies developed in the Minnesota Environmental Initiative's November 24, 2009 Draft Report focus on strategies to reduce GHG emissions, counties are also focused on protecting the public health, reducing the toxicity of the waste, meeting the processing requirements of Minnesota Statute 474.848 and managing waste as high as possible on the hierarchy established in Minnesota Statute 115A.02.

Following the enactment of the Waste Management Act, the counties aggressively responded to the legislative mandate to manage waste. The metropolitan area successfully moved from a near total dependence on landfilling to an effective and sound system that, while complex is accountable, reduces risk to health and the environment through a combination of public and private efforts, and holds true to the hierarchy. The metropolitan area created a system where nearly half of the waste was recycled, waste-to-energy was an integral component of the waste management plan, and landfilling was minimized.

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RETHINK RECYCLING™

In the past, counties had the tool of flow control or designation to meet Minnesota's solid waste goals. Now, we must recognize that the counties have very little influence over the $1 billion dollar industry that comprises Minnesota's waste management system. We are facing a situation where the environmental programs that have been developed over the last three decades are in jeopardy. Recycling programs have at best reached a plateau and waste-to-energy and landfill abatement programs are sliding backwards. The time for leadership, collaboration, and action is now.

SWMCB's comments on the Integrated Solid Waste Management Stakeholder Process and the November 24, 2009 Report *fall into three categories*: *1) The Process* Used to Develop the Report, *2) Strategies* SWMCB believes will significantly advance the Waste Management System, and *3) Gaps* in the Report. We conclude our comments by welcoming the opportunity to discuss these strategies and gaps through our work with the MPCA on the Metropolitan Solid Waste Policy Plan.

<u>Process Used to Develop the Report</u>

We recognize the Work Group's stated charge was to develop strategies that "bridge the goals of the Waste Management Act and the Minnesota Climate Change Advisory Group's greenhouse gas emission reduction targets for the solid waste sector." However, we are compelled to highlight that *the Work Group's focus, which evaluated each strategy largely on its potential to reduce GHG emissions, is very limiting in the context of all the other public health and environmental considerations that the counties must balance when designing a solid waste system.* However, we believe several of the strategies in the report hold much promise and have the potential to become critical elements in a vision for solid waste management.

SWMCB actively participated in the work of the Metro Centroid and developed three scenarios for waste management along with strategies to achieve those scenarios. The work of the Metro Centroid, along with the work of the other centroid subgroups, was advanced to the Work Group for discussion. We are disappointed that *key elements of the Metro Centroid's work were not fully discussed by the Work Group or incorporated into the Draft Report*. For example, as further highlighted in the Gaps in the Report section of these comments, the Work Group did not develop strategies around increasing waste-to-energy capacity.

We embrace the concept of stakeholder participation and value each opinion. As the process unfolded, it appeared that the opinions in the room were diverse, well-entrenched, and solidly aligned with the organizational interests of each work group member. With this diversity of interests and the significant financial and philosophical investments of the work group members, it was not possible to reach consensus on many of the difficult issues facing the solid waste system. *The difficult issues should not have been set aside – rather they should have been fully discussed and reported upon, regardless of the lack of consensus. We believe strong leadership from the MPCA and the counties*

will be needed to develop a vision, and that legislative support will be needed to implement significant changes in the solid waste system.

Lastly, we suggest that the Report call out the most important strategies on which to focus – those strategies where the technology is proven, where costs and environmental benefits are known and measurable, and that can be successfully implemented.

Strategies

Some of the strategies contained in the report represent a significant shift on how solid waste is managed and have the potential to make great strides in waste reduction and recycling. Other strategies, particularly those related to technical assistance, awards programs, and education, can be expected to only have a marginal impact on the amount of waste generated or recycled. While many of the strategies will move the ball forward; SWMCB will focus its specific comments on components of the plan we believe will have the greatest impact.

Product Stewardship: SWMCB has long been a supporter of product stewardship and was a leader in the long, difficult, but successful march towards manufacturer responsibility of e-waste and the ultimately vetoed bill to advance paint product stewardship. We are pleased that enacting the Minnesota Product Stewardship Framework (strategy 1.1) is included as a recommendation. We are also pleased that product stewardship is an element in other strategies such as telephone books (strategy 1.5) and carpet recycling (strategy 2.14). These product stewardship strategies represent a significant shift that will greatly aid the achievement of our desired outcomes for waste reduction, toxicity reduction, and recycling.

Pricing Strategies: Volume Based Pricing (for disposal) and Increase Land Disposal Fees to Align Price Structure with Waste Management Hierarchy are two strategies (strategies 1.2 and 5.2) that address the very important issue of aligning price signals with actions that will cause generators and the waste industry to work towards the reduction of waste requiring management. While the specifics of the strategies warrant much discussion, restructuring the price signals sent by the marketplace must be addressed if we are to impact the $1 billion dollar waste management industry in Minnesota.

Setting of Goals: Many of the strategies set goals for recycling or waste reduction: 60% for overall recycling (strategy 2.1), 50% for carpet recycling, (strategy 2.1), and 7% for organics management in the metro centroid (strategy 3.1). *It will not be possible to advance the current recycling rate of 42% of MSW managed in the metropolitan area to 60% by 2020 with the current tools available.* Significant changes to statewide policy that substantially impact how products are manufactured and how waste is disposed will be needed. *We ask that the Report acknowledge that meeting the GHG goals and the goals of the Waste Management Act will require significant legislative leadership and the corresponding financial incentives needed to influence the*

disposition of waste that is largely managed and controlled by the private sector.

Organics: We support the evaluation and exploration of the various strategies contained in the organics strategy (strategy 3.1) and the need for MPCA rule development and further study of the environmental impacts associated with organics management. The work group set a goal of 7% of MSW to be managed through organics programs. The Metro Centroid sub-group recognized the importance of organics management as a component of the waste management system; but had advanced three scenarios ranging from 3 – 7% of MSW to be managed through organics programs. *Seven percent is the most aggressive strategy, represents a doubling of what is currently occurring, and would require significant private and/or public investment.*

Funding Recommendations: The funding recommendations (page 67) contain overall principles for waste management that are aligned with achieving the environmental outcomes. The challenge ahead is how to implement the principles. Fundamental changes, which are likely to need legislative support, will be needed to send pricing signals that direct waste highest on the hierarchy.

Gaps in the Report

Most troubling to the SWMCB is what is NOT in the Report. The process only allowed for substantial discussion of strategies that were likely to achieve majority or unanimous support. The strategies which would implement substantial shifts, and are by their very nature controversial, are largely not included in the report.

Vision: The Report does a fine job of calculating the strategies' impacts on GHG emissions; but it falls short (particularly on the bottom portion of the hierarchy) of developing a vision that "bridges the goals of the Waste Management Act and the Minnesota Climate Change Advisory Groups green house gas emission reduction targets for the solid waste sector." Though many of the strategies support the hierarchy, the Report does not include a strategy specifically reaffirming the waste hierarchy; nor does it evaluate the quantity of waste that will require processing or landfilling. Even if all the reduction, recycling and organics strategies were implemented, there would still be a need for waste-to-energy and landfilling. Given the lack of strategies relating to preserving and expanding waste-to-energy capacity, the Report should specifically project the tons that will be landfilled in 2025.

Control of the Waste Stream: We ask that the Report incorporate the financial data the MPCA presented at the November 20, 2009 work group meeting regarding the cost of waste management. This data clearly shows, that even though the system is supported by some public funding, it is largely dominated by the private waste management sector. *If we seek to make significant improvements to the system; we must gear our strategies towards those that finance and control the flow of waste.* We ask that the Report, at a minimum, identify potential tools relating to the control of waste and identify the

need for further examination of legislative, regulatory, and financial tools that would assist the public sector in achieving the goals in the Waste Management Act.

Waste-to-Energy: Counties are required to meet the processing requirements in Minnesota Statute 474.848: Restriction on Disposal. The SWMCB and its member counties have struggled to develop a feasible solution to meeting this statutory requirement and had hoped that the Stakeholder process would at least acknowledge the importance of maintaining the significant investment that has been made in the development of waste-to-energy facilities, waste-to-energy's role in treating waste as a resource, and meeting the vision of the Waste Management Act. Further, an expansion of waste-to-energy capacity is needed even if we meet the 60% recycling goal if metro counties are to meet their obligations under the Restrictions on Disposal Statute.

With the loss of designation, the Herculean effort needed to implement organized collection under the current law, and without additional financial support, counties cannot be expected to alone fulfill the statutory requirements to process waste that is not reduced or recycled. We request that the Report, at the very least, reference Minnesota Statute 478.848: Restrictions on Disposal, and the counties obligations under that statute.

Toxicity Reduction: The absence of attention given to toxicity reduction is of concern to the SWMCB. A major goal of the waste management system is to reduce risk: risk to public health, the environment, property, and waste management workers. The Report does not address the multitude of hazardous materials that counties must manage or regulate. Significant investments in household hazardous waste facilities have been made by the counties and we proudly acknowledge the environmental benefits that have accrued because of these efforts. Because the focus of this report was on GHG emissions and because the GHG benefits of, for example, properly managing waste oil or removing mercury from MSW, doesn't fit into the WARM model, this important aspect of the waste system was not addressed. We include this comment largely to point out that counties have many public health, environmental and financial obligations regarding waste management; not to discount the value of GHG emissions.

Non-MSW: SWMCB understands that the charge of this group was to focus on MSW. However, we would be remiss if we didn't call out the need to address non-MSW – a waste stream that has significant opportunity for waste reduction and recycling. Nearly 2.5 million tons of non-MSW was managed in the metropolitan area in 2008. SWMCB has successfully partnered with the MPCA on the reduction and recycling of Non-MSW, most notably tear-off shingles, and there is much opportunity for GHG reductions through non-MSW management.

Legislative Leadership: A consistent venue at the Legislature is needed to discuss key waste management policy issues as well as develop a comprehensive waste management legislation. Many complex issues remain in waste management, the resolution of which could benefit from the re-establishment of the Legislative Commission on Waste Management.

Concluding Remarks

Thank you for your consideration of SWMCB's comments. We look forward to discussing the Report and the gaps we identified above in our on-going discussions with the MPCA and, in particular, discussions relating to the development of the Metropolitan Solid Waste Management Policy Plan.

Sincerely,

Jim Kordiak
Chair, SWMCB

cc SWMCB Members
SWMCB Policy Staff Members
Jack Hogan, Minnesota Environmental Initiative

Lange, Nancy, Izaak Walton League of America – Overall Comment/Comments to Multiple Strategies

Comments of the Izaak Walton League of America – Midwest Office INTEGRATED SOLID WASTE MANAGEMENT DRAFT REPORT December 7, 2009

The Izaak Walton League of America (IWLA) supports adoption of new policies and refinement of existing policies to achieve reductions in greenhouse gas emissions from solid waste. The working group developed an ambitious but necessary path for Minnesota. This sector is a significant source of greenhouse gas pollution and Minnesota will not achieve its statutory climate protection goals unless we take steps to reduce pollution coming from solid waste management. In addition to reducing greenhouse gas emissions, there are a myriad of other benefits that will result from strategic waste management practices. These recommendations illustrate that waste strategies will need to be implemented in a variety of sectors, using a number of different approaches. The IWLA provides the following comments on specific strategies: Source reduction strategies can achieve large reductions in greenhouse gas emissions and should be aggressively pursued.

1.1 We support the recommendations in 1.1 to encourage businesses to independently develop product stewardship plans and for the Minnesota legislature to enact the Minnesota Product Stewardship Act. We believe it is critical that a timetable for identifying products and product stewardship plans be established in state law.

1.2 Volume-based pricing is a market mechanism that provides incentives for homes and businesses to increase waste reduction efforts. These types of mechanisms make sense, are easy to implement, and are increasingly being employed to link higher consumption with higher costs. For example, in a recent rate case proceeding for Center Point Energy, the Minnesota Public Utilities Commission supported a rate structure that will charge higher rates to those consumers with the highest rates of natural gas consumption. Increased recycling rates will also produce large reductions in pollution and should be aggressively pursued.

2.1 Minnesota should adopt recycling legislation that sets ambitious recycling goals and consider including a ban on disposal of recyclables if necessary to meet the statutory goals of 50% by 2015 and 60% by 2020.

2.10/.13 It is especially appropriate to target stepped-up recycling efforts for those products that have a big impact on greenhouse gas emissions, like carpeting, including mandatory take-back requirements. Recycle organic wastes to cut greenhouse gas emissions and achieve other co-benefits.

3.1 The IWLA supports ambitious goals for organics recycling. The organics recycling rate in 2008 was about 2.5% and the draft recommendation to achieve 5-7% in the various centroids is an important but not final step towards that goal. Minnesota should undertake research and demonstration into digestion systems, biogas generation, and nutrient recovery. We believe that these research and demonstration efforts will clearly support increasing the organics recycling goals beyond 7%. Methane is a very potent greenhouse gas. Minnesota should set requirements for higher rate of capture at landfills.

5.1 Minnesota should require landfill operators to capture 90% of the released methane, a standard the industry has stated it can achieve. The captured methane should be used as an energy source, not flared.

Green Building Initiatives. 6.4,6.5, 6.6 Green building standards, including waste minimization/recycling practices, should be used when new buildings are constructed or existing buildings are remodeled. The IWLA supports expanding green building requirements to public buildings over 10,000 square feet. Capturing these opportunities during building construction is a least-cost approach.

Lind, Nathan – Comment Re: Strategy 4.11

Please strike strategy 4.11, and instead work to decrease garbage incineration!

Meierotto, Joan, Audubon – Comment Re: Strategy 2.9

Having a deposit on containers may be one of the most effective ways of raising people's consciousness to the importance of recycling. When this bill was introduced earlier, decades ago, polls indicated that about 85% of the citizens favored this legislation. The disconnect between legislative action and the will of the people was clear. Global warming with resultant climate change has been happening for some time and the effects are increasing in severity. Strategies that delay implementation until 2011 or 2025 do not appear to have a sense of urgency. Having to wait until these dates to affirm compliance seems too casual for the importance of these strategies to curb this warming trend. Why not a deposit on container bill in the next legislative session plus mandates that all products sold in MN must internalize and fund their costs of disposal?

Mellum, Julie, President, Take Back the Air – General Comment Re: no incineration--no garbage

Incineration technology is death to clean air. The fine particulates emitted pose a severe health hazard to people and they pollute the planet. Despite what "industry" manufacturers tell you, there are no scrubbers on the market at any price that can adequately contain fine particles—you'd have to change them every half hour because the black carbon soot is so profuse.

Adding garbage to the mix is even deadlier, though wood smoke alone is implicated in premature mortality and heart and asthma attacks. There is no such thing as "clean wood" when it is burned. Burning garbage with it is not giving our children the priority they need to breathe clean air to stay healthy.

Millberg, Laura, MPCA Green Building program – Comment Re: Strategy 6.7

Under Background, add, "The U.S. Green Building Council - Minnesota Chapter has been reaching out to local governments and the Urban Land Institute to increase the sustainability of communities." Under Strategy Description/Recommendation, change wording to "MPCA should work with partners to promote sustainable development through Green Step Cities, non-profit green building certification programs in Minnesota, and similar efforts." Under measurement method, add "data from green building certification programs".

Millberg, Laura, MPCA Green Building program – Overall Comment/Comments to Multiple Strategies

Unclear whether the requirement of this strategy to meet all B3-MSBG required and recommended performance criteria relates only to the Waste Reduction and Management guidelines or all of B3-MSBG. The recommended performance criteria for some of the other guidelines may be more difficult to accomplish and could deter implementation of this incentive if it applies to all of B3-MSBG. The biggest funding problem for public entities with implementing green building is that the funding mechanism (in this case, bonding for upfront costs of the building as determined by the legislature) seeks to minimize expenditures, even though additional investment in design and equipment/materials may be needed initially to create the conditions for lifetime building savings and environmental benefits. These two stakeholder strategies, 6.5 and 6.6 could be reconfigured to provide additional upfront investment funding for public entities voluntarily using B3-MSBG (instead of a government mandate), and to set up a system where the long-term savings (primarily energy, but also possibly waste management, etc), could be split 50-50 between the public entity owner and a state revolving fund set up to fund additional future front-end costs of ever greener public buildings. In this way, the state would only need the initial seed money for the 5% (or whatever amount) additional bond funding for voluntary B3-MSBG participants and then the fund would begin paying for itself as savings were returned to replenish the fund. Since the B3-MSBG administrator (Center for Sustainable Building Research) intends to keep track of building performance for all projects, and since B3-MSBG projects will soon be required to meet the MN Sustainable Building 2030 energy/carbon benchmarks, there should be good information about projected and actual energy savings, as well as other performance criteria, for B3-MSBG projects. Before actual legislation is drafted, some additional work could be put into determining more precisely what percentage of up-front costs might be used as an incentive that reflects the typical actual added costs to create a truly high performance and integrated design green building. (The reason to use the acronym B3-MSBG is because there is another part of the B3 program, the benchmarking of public building energy use and input of data in its energy tracking database.)

Millberg, Laura, MPCA – Comment Re: Strategy 6.4

In the "Background Information section: "B-3" should be identified as "the State of Minnesota Sustainable Building Guidelines (B3-MSBG)". Included in B3-MSBG is Guideline P.2 Planning for

Conservation, the intent of which is to "Maximize utilization of facilities and modify them less over time by careful analysis of needs and resources. Building less, remodeling existing facilities, and designing for flexibility lead to reductions in cost, energy, and environmental impacts of materials." This is a source reduction strategy that can be added as an example because it goes beyond reuse and recycling to the highest level of the waste management hierarchy. Under "Strategy Description/Recommendation", also include "the MN Green Communities Initiative". Under "Measurement Method", the green building certification programs collect data on percentage of C&D waste diverted, percentage of materials with recycled content used in the project, etc. Documentation submitted for projects may include actual pounds/tons diverted. B3-MSBG may also collect information on square footage avoided being built through planning for conservation. Under "Potential Implementation Parties", reword to read, "U.S. Green Building Council - Minnesota Chapter (USGBC-MN), National Association of the Remodeling Industry - Minnesota Chapter (NARI-MN), University of Minnesota - Center for Sustainable Building Research (CSBR) (which administers the B3 program under contract to the Departments of Administration and Commerce), Green Communities Initiative, MPCA, local governments (cities and counties), The Green Institute, LMC, AMC." Delete CEE from the list because it is not involved in building design, source reduction, materials selection, reuse, recycling or waste management. Under "Costs", include that "MPCA has an active Green Building outreach program including a strong web presence, contractor and local government training, partnership building, and financial and technical assistance to develop MN-specific tools that advance the implementation of green building." Regarding "Opportunities" and "Priority", green building outreach is an integrated way to reach people interested in environmental behaviors and get them to make appropriate choices. LEED for Existing Building Operations and Maintenance requires building owners to create plans for purchasing of ongoing consumables or durable goods -- an excellent entry point for resource management contracting. Green building actively promotes purchase of building products with recycled content. It encourages minimizing the amount built, and reusing or recycling the waste that is created. Green building outreach definitely can help accomplish solid waste management stakeholder goals.

Miller, Diane M., J.D., Director of Law and Public Policy, National Health Freedom Action – General Comment Re: No Garbage Burning

Dear persons to comment to:

Please do not allow garbage burning. It is so toxic and seems to be a matter of common sense and caution in light of the health hazards and dangers to all Minnesotans. I am very sad and shocked to hear that someone is even considering this, given the many other options we have.

I am an attorney and the Director of Law and Public Policy for National Health Freedom Coalition and National Health Freedom Action. We work hard to protect consumer options in health care. One big right that all people have is CLEAN AIR. Please do everything you can to protect our clean air. Encourage leaders to do critical thinking and come up with safe options. Always use the precautionary principle, and leave the burden of proof on the government to assure that there is absolutely no health hazards before allowing such a massive impact on the air we breath. The citizens do not have the responsibility to prove harm in this instance. It is our government that must show safety in the circumstance where their are known risks to populations.

Keep working for common sense solutions.

Moe, Marne – Overall Comment/Comments to Multiple Strategies

Good Day to you:

I am writing today, as an over 50-year resident of Minneapolis, and property owner, to ask you to please remove Strategy 4.11, which would promote more garbage and waste incineration, from the final report.

There should be a permanent legislative moratorium on construction or expansion of garbage incineration in the state of Minnesota.

In addition, no "wood waste" from trees or tree trimmings, should be considered as "garbage" or "refuse." Contracts with entities to supply garbage or waste results in the need for these entities to come up with a continuous supply to feed these incinerators.

Our city and state should be working to reuse or recycle as much as is possible to do, so as to put and keep dynamics in place to reduce the production of garbage and waste, not to increase it.

I fail to see how any increase of garbage or waste incineration is going to help any citizen of our city, and it would appear that the financial interests of corporations are being served, and not the interests of the citizens of our state and city, who are the ones who are ultimately picking up the tab for the cost and consequences of these projects.

I would expect the MPCA to be protecting the residents of Minnesota, and not just serving the interests of people who either: don't live here, are not from here, or don't plan on retiring/ staying in this state.

Several decades ago, city dwellers were not allowed anymore to incinerate their own garbage in their homes. I fail to see how this' being done on a large scale can be considered anything but "going backwards." Didn't we burn anything and everything as cave people? Just because we can, does not mean that we should, in my opinion.

We, as residents, rely on our protection agencies to do just that. Isn't that what our taxes are paying for?

We want the Twin Cities and outlying areas to be better places for us and our children to live in. That should mean better air quality and sustainability practices in the future, not worse ones.

Thank you for your consideration in this matter.

Morris, Douglas R., Waste Management Director, Crow Wing County – General Comment Re: Solid Waste

Overall the solid waste management sector has already accomplished very significant reductions of GHG emissions. This needs to be point out, while each phase in the solid waste management process produces GHG emissions, over the past 25 years the levels of those emissions have been reduced through technological advancements, environmental regulations, and promotion of recycling and reuse. According to a study for the Journal of the Air & Water Management Association, GHG emissions from MSW management were estimated to be 26 million metric tons carbon equivalents (MMTCE) in 1974 and 8 MMTCE in 1997. It is estimated that if local waste

manager had not taken steps they took over the past 25 years, the GHG emissions would be 60 MMTCE today. Note this is the national average; it has had a more significant impact within Minnesota due to our in depth solid waste programs. The only aspect where GHG emissions showed an increase within solid waste has been in transportation. Evaluation of the current recommendations involving Waste Management is the lack of an in depth implementation plan to obtain the emissions reductions. As a county, it may be useful to clarify our expertise and experience is relevant to the issues raised. Counties have been managing recycling and solid waste management programs since the 1990's, and the results are outlined in the States annual SCORE report. The current recycling levels for the State are primarily the result of the work the counties have invested into the waste management system. This Report does not address any of the "hard" issues that need to be addressed: 1. Organized collection 2. Waste designation 3. Current law in which the meto counties are suppose to be processing their solid waste

Morris, Douglas R., Waste Management Director, Crow Wing County – General Comment Re: "recyclable"

Recycling consists of three different activities: - Collection of the recyclable materials; - Preparing those materials for market; and - Conversion of these materials by manufacturers into new products. The greatest problem facing recycling is not the ability to collect the materials. It is the ability of the markets to absorb the quantity of materials being collected and convert it into inexpensive, new products. Market development has been the responsibility of the State, and a key factor that has been effecting expanding the County's recycling program is market development - you cannot get rid of an item if no one wants it. It should be noted that the largest negative impact on the County recycling programs has been the lack of expanding recycling markets, and a stabilized price paid for the materials collected. Providing increased economic incentive for collection activities without simultaneous market development will exacerbate the situation and ultimately end in failure. A desirable end point or goal for the County, and no doubt the State, would be a recycling industry without government subsidies. For example, last year when scrap steel hit such high levels. Our local scrap yards were forced to turn away people due to the fact they yards was filled to their limit. Also when cardboard prices were high, haulers and other private companies were aggressive in getting this material. Do not want to see more "markets" where the County has to pay someone to take it. Our County programs can increase their recycling rate but the question is, "Can it be done at a reasonable cost?" Initially, recycling programs were sold on the basis that markets would be developed for recyclable material and market revenue would eventually pay for the programs. Market development has not progressed to a point where the materials can fully support these programs - and it is questionable if this would ever be reached. In Greater Minnesota, another large cost component is shipping - moving the materials to the market. Recycling's fatal paradox is that increased demand for recyclables does not necessarily equal higher prices for recyclables. Manufacturers do not want to pay top dollar for their raw materials. Many times the low price's manufacturers pay for recyclables is the key to their profitability. Increased education, public advertising, and increased hours of operation can increase overall participation. However, a point can be reached when recycling practices mature and costs associated with increasing yields exceed the benefits. The recycling rate will become flat because it will reach an inevitable plateau. With current viable recovery technologies have we already reached this limit? There is some room to improve the existing County system, but there is a limit. Any significant gains in recycling will come from either

development of markets for materials presently being thrown away or development of cheaper ways to recycle. After all, waste is waste - materials for, which there is no longer sufficient economic value to rescue from disposal. Another long-term concern is the changing makeup of the waste stream. One area is the growth of plastics. In 1999, plastic bottle recycling fell to 22.1 percent nationwide playing out a familiar story. More plastic was collected for recycling, but it was dwarfed by an even larger increase in the amount of plastic bottles sold. The recycling rate has not kept pace with the growth of plastics. Many businesses enter and exit a specific recycling market to insure a profit margin. This indicates a position of fiscal responsibility by the business community. Recyclers tend to compete for items having a high market price and ignore items whose volume, cost of preparation, and price makes them less attractive. The following risks are associated with the loss of profitable materials to the recycling market: the County can be left with the remaining less valuable products in County-sponsored programs and increased operating costs. Recyclable materials are usually considered property, not waste, under law. Thus, the ability to legally control recyclables at the County level is restrictive. When the markets are strong, the County will see significant quantities of valuable materials diverted from the normal County-sponsored recycling programs. The County cannot interfere with these activities since recyclables are considered property and are generally exempt from municipal solid waste regulations. It appears County-sponsored recycling programs will never have a level playing field. The County must provide financial incentives for these programs when markets are weak and face stiff competition for products when the prices are firm. With today's mandated programs, the natural market mechanisms of supply and demand no longer work. The market was not generated by the private sector. Bottom line is that mandated recycling will not be self-sustaining, and needs to be considered a service - like water, sewer, police and fire protection. Funding a program from revenue raised by selling recyclables is not possible, and a service fee through local property tax and State grants will be required to pay for recycling programs into the foreseeable future. With a continued budget shortfall at the State level, counties have already seen a reduction in State SCORE grants and at the same time, declining State support. This will lead to additional recycling reassessments at the local level. The reality is that recycling competes for taxpayers dollars. Another problem is that the benefits of recycling accrue globally while the costs are borne locally. Recycling is a resource conservation issue, not a public health issue. Overall, the relevant question at the local level is "how much recycling is good policy?" The reality of the situation is that recycling services require government funding. This was further highlighted in the January 2002, Office of the Legislative Auditors Program Evaluation Report, Recycling and Waste Reduction which states, "before deciding if and how to pursue options to divert more waste, however, state and County officials need to assess priorities, agree on funding, and better understand the cost and benefits of various alternatives." It is time for federal and state policy makers to consider financial measures for recycled material that would create meaningful incentives for recycling and enable local governments to keep and expand the recycling programs they offer. Crisis is the primary driver to provoke significant change. For the past decade, garbage and recycling have not been among America's significant political issues. Tighter government budgets will make this an issue when program levels are reduced, no new programs are initiated, or programs are stopped all together, while at the same time, recycling mandates are maintained or increased.

Morris, Douglas R., Waste Management Director, Crow Wing County – General Comment Re: SCORE Funding

Under many of the strategies, it recommends SCORE Funds. Need to be very specific, that the SCORE Funds being referred to here are the funds that are currently going into general revenue. Initially, half of the proceeds or $22 million, whichever is greater, went into the Solid Waste Fund, used for MPCA landfill assessment and closure cost and appropriations for solid waste programs. The remainder went into the General Revenue Fund, but then a portion went to fund MPCA and SCORE grants to counties. Starting in 2006, this was changed to the Environmental Fund. Under this concept, 70 percent of the SWMT went into the Environmental Fund, which MPCA receives funds for SCORE, competitive grants, loans for waste abatement, and MPCA's operating budget. The remaining 30 percent remained in the General Fund, and is being spent on programs not related to solid waste or the environment. SCORE authorized grants of $55,000 or more to counties if they meet certain requirements, including providing matching funds and having an approved solid waste management plan. The 2002 Legislature reduced the baseline from $55,000 to $49,500, and reduced the overall SCORE funding by $1,401,000 or 10% for FY 2003, 2004 and 2005 in the Omnibus Budget Reduction Bill to $12.6 million. This action was prompted by the announcement of the $2 billion state budget shortfall for 2002-3003 biennium. The 2003 Legislature reduced the SCORE funds slightly to $12.5 million. The projected shortfall for the 2004-2005 biennium was $4.6 billion. For the 2008-2009 biennium the SCORE grant was increased back to the 2001 level of $14 million. The Solid Waste Management Tax is projected to generate $66 million in 2008. Even with the projected shortfall for the 2010-2011 biennium of $4.8 billion, the Legislature increased the SCORE funding by $250,000. These manipulations have challenged the concept for this being a "stable" source of State funding that was promised to the County when they initiated the existing SCORE related programs. Minnesota counties spent $55.9 million in State and local funds for SCORE-related programs in 2007. This includes the $14 million paid directly to counties from the State as a block grant. Counties spent an additional $41.9 million in 2007 on SCORE related programs. Counties spent more than 12 times the matching funds (by law they must match 25 percent or $3.5 million) they are required to provide under statute. It should be noted, the block grant of $14 million provided by the State has been flat since 1991. During the same period, Minnesota's recycling volumes increased 90 percent even though State funding stayed level. In addition, the buying power of that $14 million, as measured by the national Consumer Price Index, declined over 20 percent. Even with this flat investment by the State, the tonnage of recyclables processed by the counties has risen significantly. Again, it need to be stressed that any funding from SCORE will be coming out of the 30% that is currently going into General Revenue.

Morris, Douglas R., Waste Management Director, Crow Wing County – Comment Re: Strategy 1.2

For the centroids, this may be a valid strategy. Once you enter more rural areas, volume-based pricing loses much of its impact. Here the primary cost is in the pickup (the sunk cost for the hauler versus disposal cost), and the volume of garbage may not a key issue for many of their routes in the rural areas.

Morris, Douglas R., Waste Management Director, Crow Wing County – Comment Re: Strategy 1.3

Why only computers. and not all electronics? Overall, electronics account for between 2 - 5% of the wastestream. Our County has been operating an used electronics program since 2004 and only approximately 25% of the weight consisted of computers. We are missing over 75% of this waste stream. Household penetratoin of televisons is over 95% in the US, compared to about 50% for computers - but the rate of sales growth (and obsolescence) is slower in televisions than in computurs. Now this may be changing with the change over from analog to digital for televisions. With this newer technology, will we be seeing the same time of usage or lower? Many businesses do have some type of source reduction in place. This generally occurs as a cost-effective business practice. In fact, the normal economic pressures in a free market system guarantee that manufactures are constantly figuring out how to use fewer raw materials when making products or packages. They create less trash in the process. Lighter weigh products are easier to use, less expensive to transport and more convenient for consumers. Transportation costs are particularly important. Markets, not government mandates, have given us less waste and a more efficient economy. We have seen this since we have started our County used electronics program, and this is one of the issue of concerns of the new electronics statature. With flat screens and other innovations, new electronics weigh much less the older versions. The number of electronics coming in weigh significantly more the the same number of newer models being sold today. Agree with the Barriers - many times it is not hardware that is causing the item to be replace, but software issues. Also, energy usage - it may be more environmentally prudent to get rid of the older versions. Similar to replacing old freezers. Even though these still work, they are such energy hogs it is better to buy a replacement.

Morris, Douglas R., Waste Management Director, Crow Wing County – Comment Re: Strategy 1.5

A large issue with Counties is the fact the phone book manufactures are getting off from funding this effort by "dumping" this to the counties by informing their customers to use curbside recycling. This is contrary to the whole concept of product stewardship. Once again, they are able to avoid the full cost of their product. If they opt to use this, they should be charged a fee to offset the recycling costs or they must set up their own independent and viable program where their customers have a simple and easily available way to dispose of their phonebooks. This whole issue of phone books have been a thorn in the side of counties and our Solid Waste Administrator Association (SWAA) has voiced our concerns for the last 10-years. We were stuck with a poorly written statatue that allow the manufacture to do a very bare minimum to be in compliance.

Morris, Douglas R., Waste Management Director, Crow Wing County – Comment Re: Strategy 2.1

Under Barriers/Issues - Are their enough "viable" markets existing to deal with the potential influx of all this additional material? By "viable" I mean markets that actually pay a decent price for the material versus being subsidized to get rid of it.

Morris, Douglas R., Waste Management Director, Crow Wing County – Comment Re: Strategy 2.7

Under Barriers/Issues. Need to add something that "carpet" is not generic. When I looked into this program, I was infomed that their are some types of carpets that they do not want. Like plastics, you have different types.

Morris, Douglas R., Waste Management Director, Crow Wing County – Comment Re: Strategy 3.1

Starting back two years our County started to track food grease. I was surprised at the amount this turned out to be for our County. Shouldn't this also be addressed here. This is a duel item, besides being pulled out it is also a feed stock for bio-fuel. In addition, in many cases their is a very viable market for this material. This waste stream should be counted against the proposed goal for organics.

Morris, Douglas R., Waste Management Director, Crow Wing County – Comment Re: Strategy 4.11

Under Barriers/Issues. Bias need to be modified to address the existing NIMBY attidute. Today their was an article in the Star Tribune concerning the HERC. Road block after road block is being thrown in their way, they are requesting to burn to their current design capacity. This is a continuation of almost every inceneration project that has been proposed within the State for the last 5-years. According to the article, a State Rep lead the fight to stop it. This is contrary to the State existing goals. It seems that our own legislators have not or will not provide clear guidance or when they do, they seem not able to then to support it. All what I have seen since I started working back in 1996 in the solid waste arenea, is more and more layers of additional cost being added to any proposed project. Their is a reason why no new solid waste disposal facility (landfill or WTE) has been build since the early 1990's within the State. These facilities have a significant cost just in the construction and the operations of them. Adding in millions of dollars of additional cost to jump through admistrative hurdles, with a great possibility of still not be issued a permit adds in a large dissentive for anyone to accomplish any of these types of facilities within the State. Now we are beginning to see this same actions in permit modifications.

Morris, Douglas R., Waste Management Director, Crow Wing County – Comment Re: Strategy 5.1

1. "All municipal solid waste (MSW) landfills in the state of Minnesota must meet a minimum capture and destruction rate of all methane generated throughout the remaining life span of each landfill, including active and post-closure emissions." This document is recommending strategies for the reduction of landfill gas (LFG) and greenhouse gas (GHG) emissions that are detrimental to small landfills working towards voluntary landfill gas collections systems with the intention of selling carbon offset credits. The recommendation of mandating all MSW landfills to capture and destroy methane generated throughout the remaining life span of each landfill takes away any economic incentive that a small landfill may currently have through the sale of carbon credits. Small landfills that are below the New Source Performance Standards (NSPS) requirement to install an active landfill gas system look to finance the capital investment through the sale of carbon credits. This sale could provide up to $400,000 annually to these smaller and for the majority, public landfills during difficult economic times. For perspective, a 2000 State of Minnesota report stated that LFG

accounts for only 2.6 percent of the State's GHG emissions. Transportation and electric generation account for 70 percent of the emissions. Note that livestock flatulence accounts for 2.8 percent. Also, the four current landfills required by NSPS to control LFG emissions account for 69% of the waste being landfilled in the state. If you include the four other non-NSPS landfills with voluntary active LFG control, currently 75 percent of the waste in the open MSW landfills has GHG emission control. Stakeholders need to question if the investment in LFG collection and destruction equipment required to gain a marginal decline in GHG emissions is justified. These smaller landfills could fund this investment through the carbon offset market without tapping public funds. Two Minnesota landfills, and many nationwide, have already done so. In a letter from the Carbon Offset Providers Coalition to Barbara Boxer dated September 9, 2009 the following argument is made: "By regulating landfills rather than allowing them to create offsets, the performance standard eliminates the opportunity for landfills to pay for expensive emission capture systems by selling emission reduction offset credits. It can cost a landfill between $500,000 and $1.5 million to install a methane capture and destruction system. Most of the landfills that would be affected by this standard are smaller facilities; many are municipal landfills. (In fact, 60% of the open landfills without gas collection systems are publicly owned.) In these tough economic times, financially-strapped municipalities would be forced to recover the costs of an EPA-required methane capture system in the form of increased tipping fees or municipal bonds, imposing higher costs on citizens." Without these financial incentives the smaller public landfills would be force to pay for mandatory LFG systems and their maintenance and operation through their existing capital budgets. If these requirements create a financial burden and a County is not able to continue operation of a landfill, then the potential exists for the sale of the landfill to a large independent operator or the closure of the facility. Then either a small landfill becomes a large regional landfill with the potential of out of state waste to be brought into Minnesota, or waste must be hauled a further distance to an open facility, raising the waste collection cost to Minnesota residents and businesses. 2. "At a minimum, all captured methane must be flared, but when technically and financially feasible, energy production from recovered methane is preferable." First the MPCA need to evaluate existing environmental laws - existing laws actually discourage this action by adding in additionnal time and cost to "to the right thing." Currently a small landfill with a gas system may not require a Title V air permit if an evaluation of the emissions indicates it is below threshold values. Moving to on site generation of energy then changes this from an evaluation to the need for a mandatory air permit for a stationary source of emissions. A landfill must then go through additional and expensive air permitting. It does not make sense that flaring of capture methane emissions is evaluated under one air permitting process and the use of the same generated landfill gas for on-site power generation is conducted under a different air permitting process. Maybe the MPCA should review and revise its air permitting process prior to a recommendation, such as this one, is made. Second, again economic incentives must be explored and established to promote versus just mandating that just adds additional cost onto our already stressed economy. Many of the public MSW landfills are in rural locations serviced by rural electric cooperatives. These cooperatives are conservative in the rates they are willing to pay a renewable incentive for electricity generated from LFG. These rates do not cover the capital costs required at these smaller generation stations. This conclusion was proven through recent LFG to energy feasibility studies at two rural Minnesota landfills. 3. "The intent of this strategy is to hold harmless facilities that have voluntarily implemented landfill gas equipment, and through its rulemaking process, the MPCA will determine the most appropriate way to provide this

assurance." In discussion with representatives from the Climate Action Reserve (CAR) and the Chicago Climate Exchange (CCX) any regulatory language that mandates the collection of landfill gas disqualifies a site from the voluntary collection and destruction greenhouse gas and therefore is not eligible for carbon credit. The MPCA cannot give the assurance to those facilities that have implemented voluntary systems that their projects would remain eligible to sell carbon offset credits.

Morris, Douglas R., Waste Management Director, Crow Wing County – Comment Re: Strategy 5.2

Under Barriers/Issues. Agree with the comment that taxes are already significant. The issue is then on how these revenues are then allocated. Existing tax is SCORE and 30% is already stolen/reallocated for General Revenue. Out of the $66 million raised, only $15.5 million goes back to the Counties for recycling and HHW programs - less than 25% of the funds going to the actual programs. Big question if fees were increase, how will the funds be allocated. Legislature does not believe in dedicated funds. Just more funds to by stolen by General Revenue. If these funds are able to be "fenced" for just SCORE related activies - this has its own issues. Under our County funding structure, the landfill tipping fee accurately reflects the actual cost of the landfill operations versus the total integrated solid waste system cost. This has two advantageous. First, with keeping the tipping fee low at the County landfill it can compete with alternative disposal options that are also priced to reflect the cost of disposal only. Second, dependency on landfill tipping fee revenues to support SCORE programs puts these programs in direct competition with their source of funding. When all aspects of an integrated solid waste program are incorporated into a single tip fee, it allows little flexibility for change. Worse case is the more successful SCORE is, and it greatly reduces garbage amounts - this will decrease the funding that is coming in to pay for it!

Muller, Alan, Minneapolis Neighbors for Clean Air/Neighbors Against the Burner – Overall Comment/Comments to Multiple Strategies

Dear Mr. Hogin:

Thank you so much for accepting comments from the public on the garbage stakeholder process draft "strategies." I am writing to you on behalf of Minneapolis Neighbors for Clean Air and Neighbors Against the Burner.

Many of the "strategies" are desirable, one in particular is problematic.

It appears to us that "Strategy 4.11," among other purposes, is intended to take sides in the controversy over increased burning at the HERC garbage incinerator in Minneapolis.

I asked about this at the "Stakeholder Input Meeting" on Nov, 18, 2009. Mr. Nargang (if I recall correctly) responded that there was no intent to take sides in this controversy. That having been said, it behooves the stakeholder group to remove from the final report any wording that does appear to take sides in this controversy.

Strategy 4.11 contains this wording: "By 2011 all WTE facilities are operating at capacity, ..." This language clearly does take sides--which is why I asked the question--and should be removed.

At one of the stakeholder meetings I expressed the view that it was irresponsible for the stakeholder group to support expanded use of incineration without evaluating the health impacts, and noted that

no member of the stakeholder group--selected by MEI--appeared to have special expertise in this area.

I brought this up again at the public meeting, noting that mere compliance with environmental regulations does not prevent harmful impacts. This comment was greeted with ridicule. In my opinion members of the public should be heard respectfully and not ridiculed.

In support of my views I offer you four documents, which I ask you to distribute in full to all members of the stakeholder group and fully consider before retaining any part of Strategy 4.11 in the final report.

(1) The Health Effects of Waste Incinerators <http://www.ecomed.org.uk/content/IncineratorReport_v3.pdf> , from the British Society for Ecological Medicine.

(2) "Touted as Earth-friendly, [Covanta] incinerator accused of <http://www.nj.com/news/ledger/jersey/index.ssf?/base/news-15/1260062705235720.xml&coll=1> spewing poison" <http://www.nj.com/news/ledger/jersey/index.ssf?/base/news-15/1260062705235720.xml&coll=1>

(3) Should the "HERC" <http://www.neighborsagainsttheburner.org/files/PwrPtHERC.pdf> burn more garbage? <http://www.neighborsagainsttheburner.org/files/PwrPtHERC.pdf> (Disclosure: I am one of the authors of this presentation.)

(4) Statement of Evidence - Particulate Emissions and Health

<http://www.durhamenvironmentwatch.org/Incinerator%20Health/CVHRingaskiddyEvidenceFinal1.pdf> These are only four of thousands of documents that could be cited on the health and environmental impacts of incineration generally, and Minnesota facilities in particular.

Unless the workgroup can show that it has fully evaluated the health and environmental impacts of garbage incineration, it should not include in the final report any statements in favor of continued or expanded incineration. Therefore, it appears to me that Strategy 4.11, which focuses on increased garbage incineration in Minnesota, should be removed from the final report.

A summary of Strategy No. 4.11:

"Existing Waste-to-Energy Infrastructure is Operated at High Efficiency". Sounds harmless, doesn't it? Who can be against "high efficiency?" But like many burner industry statements, this one is deceptive. The real meaning is found on pages 62-63 [comments in brackets]:

"Several WTE facilities have not been operated at capacity due to the failure of waste assurance through subsidy programs." [Not enough money is going into subsidizing incineration.]

"By 2011 all WTE facilities are [we want them to be] operating at capacity, have long-term delivery agreements, …." [Taking sides in the HERC expansion controversy and sending more garbage to the Great River Energy Elk River burner, now in danger of closing due to lack of garbage to burn].

"… provide long term commitments of mixed municipal solid waste (MMSW) [to incinerators] to create investments" [in more incineration capacity rather than source reduction and recycling].

"Waste generators [households and businesses] would bear the cost of WTE and waste processing as it may be priced higher than landfills." [Assumes that dumping is the only alternative to burning; source reduction and recycling aren't to be taken seriously....]

In other words, the intent of Strategy 4.11 is to increase burning, increase public subsidies for incineration and force garbage to be taken to incinerators.

So our key recommendation is "Remove Strategy 4.11 from the final report."

We support Strategy 1.5 "Source Reduce Phone Books." It is clear that recycling of phone books has decreased in Minnesota in spite of promises from the industry to manage this product responsibly. We note with disapproval the continued negative and unconvincing lobbying from this industry, including comments sent into MEI on this stakeholder process.

In these comments we haven't touched on the failure of the draft strategies to adequately address the recommendations of the Minnesota Climate Change Advisory Group. We will do that in another note.

If these comments raise any questions please feel free to contact me.

Muller, Alan, Minneapolis Neighbors for Clean Air/Neighbors Against the Burner – General Comment Re: Climate change emissions

Dear Mr. Hogin:

Thank you so much for accepting comments from the public on the garbage stakeholder process draft "strategies." I am writing to you on behalf of Minneapolis Neighbors for Clean Air and Neighbors Against the Burner. This second note focuses on climate-changed emissions.

First, we should all note that the news is increasingly bad about climate change. Almost every day more indications enter the scientific literature that warming is proceeding more quickly than projected. For example, a December 6, 2009 story from AFP <http://www.france24.com/en/node/4941995> : Carbon dioxide indirectly causes up to 50 percent more global warming than originally thought, a finding that raises questions over targets for stabilising carbon emissions over the long term, a study said on Sunday.

In a paper published in the journal Nature Geoscience, British scientists said a tool commonly used in climate modelling may have badly underlooked the sensitivity of key natural processes to the warming caused by CO2. The US EPS stated in a press release <http://www.epa.gov/cgi-bin/epalink?logname=epahome&referrer=co2splash&target=http://yosemite.epa.gov/opa/admpress.nsf/bd4379a92ceceeac8525735900400c27/08d11a451131bca585257685005bf252!OpenDocument > yesterday: "After a thorough examination of the scientific evidence and careful consideration of public comments, the U.S. Environmental Protection Agency (EPA) announced today that greenhouse gases (GHGs) threaten the public health and welfare of the American people." Thus, it is vital that Minnesota not lose focus on this issue.

The charge to the stakeholder group <http://www.mn-ei.org/projects/images/SolidWaste/comment/AppB_MPCAChargetoWorkGroup.pdf> was: Purpose/Mission: Develop the elements of a plan based on the recommendations from the Minnesota Climate Change Advisory Group (MCCAG). The MCCAG report called for reducing greenhouse gas emissions through better waste management by 75 million metric tons of carbon

dioxide equivalent, cumulatively, by 2025. (This is also identified as a goal in the MPCA Strategic Plan <http://www.pca.state.mn.us/publications/p-gen1-11.pdf> : Objective L1a) By January 1, 2025, achieve a total reduction of 75 million metric tons of greenhouse gas attributed to changes in waste generation, materials conservation, and resource management practices.)

But, the MPCA unilaterally "recommended" reducing that goal in the stakeholder process to 52.5 million tons "To ensure efficiency and effectiveness and a workable plan coming out of the process...." by including only "the four population centroid regions of Minnesota."

Apparently the stakeholder group accepted this "recommendation." This was an error that should be corrected in the final report by producing a plan that accomplishes at least the MCAG recommendations of 70 million tons cumulative carbon dioxide equivalent reductions through 2025.

Many of the "strategies" do tend towards this coal. On the other hand, many are long-term matters such as "encourage sustainable development." While commendable, these are not likely to produce measurable progress in the short term, and are different to quantify. The final report should focus on a small number of basic "strategies." These, in practice, would be similar to "zero waste" strategies as identified in the growing literature of zero waste.

In our opinion the "stakeholders" should recommend strategies that substantially exceed the MCCAG recommendations. A goal of 100 million metric tons of carbon dioxide equivalent, cumulatively, by 2025, would be appropriate.

Incineration increases greenhouse gas emissions while source reduction, recycling, and composting reduce them. This is not really hard to understand: Conserving and reusing resources is pretty obviously more sustainable than burning them up.

Even the most biased possible source, the Energy Recovery Council, the national incineration lobby organization, the national counterpart of the Minnesota Resource Recovery Association, notes on its website <http://www.wte.org/epa-credits-waste-energy-recycling-ghg-a3010> :

Waste-to-energy recovery systems that combusted 31.4 million tons of MSW resulted in the avoidance of 17 million metric tons of carbon dioxide equivalent GHG emissions in 2006.

Municipal solid waste (MSW) recycling in 2006 resulted in the avoidance of nearly 183 million metric tons of carbon dioxide equivalent GHG emissions. [emphasis added]

The details of the MCAG report <http://www.mnclimatechange.us/MCCAG.cfm> are not always easy to follow, and arguable in some cases, but the conclusions are striking:

Cumulative reduction in greenhouse gas emissions through 2025 (Table I-65).

(millions of metric tons carbon dioxide equivalent)

Source reduction, recycling, and composting: 70 costing-$0.20/ton *

"End of pipe" methods such as burning: 5.1 costing $51/ton **

total 75.1

"current MPCA goals" 7.4 costing $117/ton ***

* shows that recycling saves money

** essentially all from landfill gas burning, not garbage incineration as such. Waste "preprocessing" is actually a recycling strategy, not an end-of-pipe strategy.

*** The MPCA has failed to revise it's own solid waste goals, even though these were identified by MCCAG as incompatible with the MPCA Strategic Plan. For example <http://www.pca.state.mn.us/publications/reports/solidwaste-wastetoenergy.pdf> : "As a general matter the MPCA has endorsed and will continue to endorse the concept that a higher proportion of total municipal solid waste ("MSW") should be going into a wasteto- energy ("WTE") system than is currently the case,...." Therefore, the stakeholder group should recommend that the MPCA revise its own policies to bring them into alignment with the MCCAG report and its own Strategic Plan.

The stakeholder group used the EPA WARM model--runs by the City of Rochester and the PCA--to quantify the climate change impacts of alternatives. The WARM model, while useful, fails in significant ways to reflect reality and should not, by itself, be used to make policy decisions.

In conclusion, it seems to us that the stakeholder process has been dominated too much by conventional thinking, particularly by a sense that waste policy will continue to be dominated by competition between dumping and burning interests. Minnesotans are not well served now by this paradigm, and will be less so in the future.

New thinking is needed. Fortunately, it is readily available. The "zero waste" movement, while some are uncomfortable with the term, offers an essential new mindset. It is blossoming throughout the world.

So the single most important "strategy" at this time is to begin a survey of zero waste "best practices" throughout the world, and how to bring these, as applicable, to Minnesota.

Resources should be allocated to bring zero waste leaders to the state to help set goals and structure a plan for their implementation. (This means zero waste leaders, not politically connected engineering firms accustomed to designing and permitting dumps and burners (!))

We would be happy to work with the stakeholder group and the MPCA to identify appropriate expertise.

Strategy 4.11, as noted in our previous comments, should be deleted in its entirety from the final report.

If these comments raise any questions please feel free to contact me.

Myers, Gwen S. – General Comment Re: Recycling strategies

All these strategies have merit, but we must not be satisfied w/ modest goals or we will not reach the 60% goal. 1. Commercial/institutional recycling should be mandatory. 2. Residential recycling should be mandatory. 3. Recycling end markets deserve more effort for this is critical to the success of recycling programs. 4. City and county budgets are being cut due to LGA reductions. Funding must be restored if we are to reach the 60% goal. 5. Bottle deposit legislation will be opposed, again, by the bottling industry. MPCA must support this legislation.

Newmark, Richard, Citizen member, Woodbury Environmental Advisory Commission – General Comment Re: Green Building Requirements

Green Building (sections 6.4 - 6.7) needs more emphasis. New buildings have a 30 to 50 year lifetime, but few builders have any incentive to provide energy savings since they sell or lease the building immediately after construction and leave the energy costs to future tenants. Often the payback for energy efficient construction is just a few years and the impact on greenhouse gases very large. I suggest proposing changes in the state building code to mandate green B-3 standards for all commercial buildings coupled with an educational component such that developers and renters would understand that they are saving more money on utilities than they are spending on the incremental cost of rent. The education component could come from the Green Step Cities program and SCORE. I believe cities such as Woodbury promote green building standards and are working on incentives, but cannot require standards which exceed the state building code.

Norkus-Crampton, Lara – Overall Comment/Comments to Multiple Strategies

To Whom it May Concern:

I was surprised to learn that the MPCA is considering regulations that would promote garbage incineration. I am specifically opposed to Strategy 4.11, as presented by the Minnesota Environmental Initiative as one of their recommended "Waste to Energy Strategies" in their final report.

It is very ironic to me that while we are all hoping for international agreements in regulating greenhouse gases in Copenhagen--we are considering promoting garbage burning in our own backyard. Any plan ultimately approved by the MPCA should comply with the original Minnesota Climate Change Advisory Group (MCAG) recommendations of 70 million tons cumulative carbon dioxide equivalent reductions through 2025. To comply with this recommendation--there should be a recommendation by the MPCA that Minnesota enacts a permanent moratorium on the construction or expansion of garbage incineration capacity in Minnesota.

As a Minneapolis Planning Commissioner, I reviewed the 20% increase to "full capacity" at the HERC. It was promoted as a Waste-to-Energy renewable green strategy--far superior to landfills. The Planning Commission ultimately opposed a Conditional Use Permit for the proposed expansion mainly on the grounds that it would spew more toxins like mercury and dioxin over a wide area of Minneapolis, thereby not meeting the required finding: "Will not be detrimental to or endanger the public health, safety, comfort or general welfare."

On the face of it--it appears that Strategy 4.11 "Existing Waste-to-Energy Infrastructure is Operated at High Efficiency," and the associated rationale in the report, "By 2011 all WTE facilities are [should be] operating at capacity, have long-term delivery agreements, ..." could effectively undermine the authority of local government bodies deliberate Conditional Use Permits to protect the public health, safety, or general welfare as prescribed by law.

One of the "problems" cited in the report is that "Several WTE facilities have not been operated at capacity due to the failure of waste assurance through subsidy programs." The state should not be in the business of subsidizing or promoting garbage incineration over reducing, recycling, re-using, and composting. In public testimony, Convanta told the Planning Commission that if the city successfully reduced the amount of solid waste necessary for them to burn enough trash into energy

for downtown Minneapolis--they would import garbage from other localities to keep their incinerator at "full capacity". This kills any incentive for reducing the waste stream at the source. At least with a landfill--less waste means less landfills!

Minneapolis has been developing a Comprehensive Plan for Sustainable Growth--both economic and ecological. Citizens in Minneapolis have an excellent record of participating in municipal recycling programs. The neighborhoods of Linden Hills and East Calhoun are participating in a pilot program for municipal composting and other neighborhoods want it. Individuals and communities have repeatedly stepped up to the plate to be part of the solution in terms of reducing the waste stream. Providing regulations that effectively lock localities into a certain level of incineration, regardless of the amount of solid waste produced by the residents, is the wrong strategy and sends the wrong message. To promote incineration as "green" "renewable", and to divert precious dollars away from true renewables like solar and wind stretches these definitions beyond recognition.

Finally, the MCAG report demonstrates that significant reduction in greenhouse gases can be accomplished only through source reduction, recycling and composting. This reduction is not possible through incineration.

At this critical time we are asking world leaders to take greenhouse gases and global warming seriously in Copenhagen to avert global catastrophe. We need to take these issues just as seriously here at home.

Thank you for your consideration.

Norrgard, Lois – Overall Comment/Comments to Multiple Strategies

Dear MEI, My comments are for the most part general - and I appreciate the work that has gone into this Process, there are many good draft strategies. In particular we should move to a zero waste economy, so I really support the measures that will lead to this. Moving to zero waste would create an economy where we use less natural resources - better for the planet, and our health. The health of our local birds and wildlife and open spaces depends on making wise decisions about our overuse of resources. Residential recycling should be mandatory, this is the only way to achieve recycling goals. Recycling Education programs should be fully funded to help achieve this goal. Aa well commercial/institutional recycling should be made mandatory - there is no reason not to move to this - in steps if need be. And of course create, support and implement/find recycling end markets that are local. Local markets would avoid costs of transportation long distances, reduce further emissions and extra bonus! create local jobs. All organics should be recycled - organic materials are a valuable "resource" that is wasted in the garbage stream but could be used to feed our soils - personally my household has implemented 100% household organics composting while moving to near 100% yard waste reuse within our own property. This is not a hard thing to accomplish for a home owner, should be implemented statewide. I support a bottle deposit program, and believe that this should become law in the state. Your support for this is important. We should also strongly support and permit anerobic compost operations (while using the end project and not sending this resource to landfills). Landfilling is not a good use of "waste" resources - All products from electronics to carpet and mattresses should have a "take back" program by the manufacturers. I support the MN Product Stewardship Framework law - waste reduction means avoiding greenhouse gas impacts. Many of the products created today can be remanufactured or recycled. Burning of

garbage is pollution - there is no way to avoid this impact - burning anything creates greenhouse gases,whether it is garbage or vegetation like trees. We are all downstream from garbage burners - the recent reports of 3M chemicals in the bodies of polar bears proves this. We should eliminate incineration of garbage, it is not healthy for humans or the natural world. thank you for the opportunity to participate in this process.

Nye, Janet, Minneapolis, MN – Comment Re: Strategy 4.11

The expansion of garbage burning to deal with waste is unacceptable. The solution lies in producing less non-compostable, non-recyclable waste. Incinerating garbage leads to more greenhouse gases as well as producing long-lasting toxic waste that ends up in our air, water and the earth. The alternative to burning is source reduction. Much could be done toward lessening the amount of garbage generated by a more judicious use of plastic in packaging. There are many ways to accomplish this. Refundable glass bottles, use of bulk products, and just plain less packaging, especially with non-food products could greatly lessen the amount of plastic generated. Banning plastic bags would be another huge reduction in our waste stream. This is just the tip of the plastic iceberg, but it is a substantial start toward weaning ourselves from overuse of a convenience product that has many hidden environmental costs. I ask that you remove Strategy 4.11 from the final report. The healthy future of our planet is assured by doing the common sense, economically viable, realistic work of reducing waste, with the eventual goal of zero waste. This goal can and must be accomplished.

Olson, Ben & Sarah Heuer, Minnesota Environmental Responsibility Network – Comment Re: Strategy 2.9

The Minnesota Environmental Responsibility Network commends the Integrated Solid Waste Management Stakeholder Process for recommending implementation of container deposit legislation as a way to reduce green house gases and dramatically increase recycling rates in the state of Minnesota. Minnesota has traditionally done poorly in the area of beverage container recycling, and we echo the notion that container deposit legislation is the way to fix this problem. Further, we would argu with the workgroup's findings that this legislation would create jobs, increase recycling rates, reduce litter, lead to better packaging, and create a cleaner recycling stream. However, in the report, the following information should be included under the "opportunities" section:

I. Timeliness The recommendation of the work group is timely because:

- Throughout the year 2008, the Minnesota Pollution Control Agency (MPCA) held several roundtable meetings on the topic of beverage container recycling, the product of which was the establishment of a goal to raise beverage container recycling rates to 80% by 2012
- The Minnesota Recycling Refund Act (MRRA), a traditional container deposit bill authored by Representative Hortman and Senator Sieben, was recently introduced for consideration by the legislature.
- Recycling rates for beverage containers have flattened out over the past 10 years, proving that a new approach is necessary.

II. Basic facts: Beverage container recycling rates are as follows:

- Aluminum -- 33%
- PET -- 24%
- Glass -- 47%

• These figures were generated by the MPCA, and are based upon 10 different methods for calculating the recycling rate. The average recycling rate in a state with a container deposit is 78%. The highest rate of recycling for a deposit state is Michigan at 95%; this increased rate is directly related to the fact that MI is the only state with a 10 cent deposit. MRRA advocates a 10 cent deposit as well, meaning that MN can anticipate higher than average recycling rates with the passage of this law.

III. Implications for Curbside MRRA is specifically designed to protect curbside, and will do so in the following ways:

• In cities with organized collection: a deposit would lead to a loss of aluminum revenue, however, based on a MA (who is this? it should be spelled out the first time it appears in the document) study, cities will save money by not having to manage and recycle glass, for which there is little economic value.

• In concert with other features of MRRA--namely, the allocation of a percentage of the unreclaimed deposits directly to counties (see below)--cities will end up even or with net benefit, even after counting aluminum losses.

• Under MRRA, a portion of the unreclaimed deposits goes directly to counties to maintain and expand curbside and/or recycling programs, and to offset any loss from aluminum. By reducing the burden of beverage container collection on curbside, communities may be able to pick up other household items (like additional types of recyclable plastics, carpet, etc) that are currently not being captured. Funds from the pool of unreclaimed deposits would ensure that curbside programs remained in operation, and in many cases could bolster and expand these programs.

IV. Redemption Facilities

• The bill does not mandate that retailers become or establish redemption centers.

• Any entity, with approval of the Commissioner of the MPCA, may build and operate a redemption center. They would be paid a one-cent handling fee for the processing of the container.

V. Greenhouse Gas Emissions

• There has been some discussion of increasing the traditional curbside system as a way to decrease greenhouse gas emissions, rather than implementing a deposit system.

• However, the expansion of curbside would be an extremely expensive endeavor. Given that this biennium's deficit was over five billion dollars and the next biennium's deficit is projected to be between four and seven billion dollars, local government aid is likely to be cut, putting a further strain on local recycling programs, and certainly not allowing for their expansion.

• Under the current proposed container deposit law, unreclaimed deposits would help pay for recycling programs. The system does not cost the state money, and would actually raise revenue for the state.

• Furthermore, concerns about whether a deposit efficiently reduces greenhouse gas emissions (such as the Rhode Island study mentioned in the Concerns section of this report) must take into consideration that fuel-efficient trucks are and will continue to emerge on the market. Julie Ketchum from Waste Management of Minnesota said at the Recycling Association of Minnesota's annual conference that her company has set aside 500 million dollars to invest in fuel-efficient trucks. As overall fuel-efficiency increases, this study and the associated concerns will become less and less applicable.

VI. Impact on Sales Trends

• There is no research available that attributes a direct decline in sales as a result of a new deposit law. However, it is worth identifying the impact on sales from front-end fees or deposits placed on beverage containers, which can be examined by analyzing sales before and after fee or deposit implementation for states which have this type of legislation.

• For example, in 2001 Alberta instituted a consumer fee on non-alcoholic beverages. According to Alberta sales history, there was no impact on the beverage sales trend after the implementation of this front-end fee. The same lack of impact on the sales trend was noticed in California when the deposit amount increased in 1989 and again in 1993, 2004, and 2007.

• In fact, in the state of Hawaii, which instituted a container deposit law in 2005, beverage sales have increased in every subsequent year.

VII. Impact on Jobs

• In Michigan, the new law created 4,648 jobs.

• The collection and recycling of beer and soda containers in bottle bill states has created tens of thousands of new jobs in retail, distribution and recycling. In states that have a handling fee, a redemption industry has evolved to redeem empty containers. Often these redemption centers expand into small retail operations.

Pfuhl, Jamie, Minnesota Grocers Association – Overall Comment/Comments to Multiple Strategies

December 8, 2009 Integrated Solid Waste Management Stakeholders Process 211 First Street North, Suite 250, Minneapolis MN 55401

The Minnesota Grocers Association is a state trade association representing the food retail industry since 1897. We have over 200 retail members with nearly 1,200 stores statewide, as well as approximately 115 distributors and manufacturers. Our member companies employ over 122,000 union and non-union Minnesotans. We actively advance the common interest of all those engaged in any aspect of the retail food industry as a leader and advocate. The food retail industry takes great pride in being good neighbors within the communities we serve. Our vow of sustainability can be found in every aspect of our businesses, from a progressive approach to recycling to green energy practices. The industry has built partnerships developing many innovative programs statewide. We

present resources, solutions and education to our customers, assisting them to manage their household in an environmentally conscious manner. Sustainability is of the utmost importance to our businesses. Our industry has worked hard to find solutions that not only solve problems, but work within our business models for positive outcomes. Several of the proposed strategies in the draft Integrated Solid Waste Management Stakeholders Process report take a one-size-fits-all approach to the way the retail food industry does business. There are three sections of the draft report that are particularly relevant to our industry, plastic bag recycling (1.10-1.11), the bottle deposit bill (2.9) and organics management (3.1). None of these proposals consider the important environmental work already being done by grocery stores and their partners. With this level of focus on our sector of the economy, the process was negligent in holding a stakeholders process with key stakeholders missing from the table. The food retail industry is dedicated to sustainability initiatives and has voluntarily implemented several models that have successfully reduced solid waste streams. To reach the group's charge of eliminating 52.5 million metric tons of carbon dioxide equivalent from the atmosphere to be successful, it requires everyone to pitch in, rather than placing a heavy burden on a few. Government, industry and consumers all need to work together to accomplish solutions to environmental problems. Rewarding consumers and businesses that show leadership and innovation is the necessary approach to truly create the change required to achieve desired results. The food retail industry looks forward to the opportunity to participate in this important discussion. Continued dialogue is critical to achieve goals and strategies that are feasible and logical. The members of our industry have a proven, deep commitment to the environment and need to be part of a process that improves Minnesota for the next generation.

Pratt, Tim, Association of Recycling Managers – Overall Comment/Comments to Multiple Strategies

ARM welcomes this opportunity to push the management of waste higher up the hierarchy. We have worked on various initiatives already such as carpet recycling, telephone directory opt out, and junk mail reduction. We support renewed effort on these. We welcome proposals such as producer responsibility that create public/private partnerships to manage products throughout their life. We also endorse efforts to increase composting of source separated organics. SSO are a significant portion of our waste stream. And our residents indicate to us that they would prefer organic material be composted and turned into a valuable resource. Finally we support efforts to enhance Minnesota's robust recycling system. In particular we are confident that these proposals will increase recycling in our state: end market development, state recycled content procurement standards, container deposit, improved reporting especially on commercial sector recycling, and enhanced SCORE funding.

Reilly, Rebecca, City of Minneapolis – Overall Comment/Comments to Multiple Strategies

Remove Strategy 4.11, promoting more garbage incineration, from the final report of the stakeholder process. The 'stakeholders' should produce a plan that complies with the MCAG recommendations of 70 million tons cumulative carbon dioxide equivalent reductions through 2025. The stakeholder group should recommend that Minnesota enact a permanent legislative moratorium on construction or expansion of garbage incineration capacity in Minnesota.

Richter, Trudy, Executive Director, Minnesota Resource Recovery Association – Overall Comment/Comments to Multiple Strategies

MINNESOTA RESOURCE RECOVERY ASSOCIATION
200 Gilbert Building
413 Wacouta Street
St. Paul, MN 55101-1957

December 8, 2009

Mr. Tim Scherkenbach

520 Lafayette Road North

St. Paul, MN 55155

Dear Mr. Scherkenbach:

The members of the Minnesota Resource Recovery Association (MRRA) thank you for the opportunity to comment on the MPCA's Integrated Solid Waste Management Stakeholder Process. The MRRA represents 10 waste to energy facilities in Minnesota that process about 1,200,000 tons of municipal solid waste every year (20% of the total municipal solid waste generated). This waste is converted into a usable form of energy at all facilities including electrical generation as well as process steam for numerous local industries. MRRA members are committed to utilizing MSW, a renewable energy, and reducing greenhouse gases emitted by landfills in the form of methane as well as reducing the use of fossil fuels in Minnesota.

The MRRA wishes to thank all of the members of the Integrated Solid Waste Management Stakeholder Process for working on this complex issue. Before commenting on some individual strategies, the MRRA would like to go on record supporting the four centroids' work and specifically their determinations that to accomplish the greenhouse gas reduction goals of Minnesota for the solid waste sector, waste to energy needs to be included in the strategies. It is unfortunate that the full stakeholder group did not support this aspect of the centroids' work.

Counties with waste to energy facilities are leaders in recycling. The MRRA supports the work on waste reduction and recycling but believes that an inadequate amount of time was spent on discussions related to organics, waste to energy and land filling. The waste management hierarchy supports the State's greenhouse gas reduction goals and although the topics are contentious, work needs to be done on waste to energy which provides renewable energy and a superior resource recovery option (10 times more energy is generated from WTE then land filling). Waste to energy is not an end of life management option and consequently is inappropriately grouped with landfilling.

The Stakeholder Process demonstrated yet again that the private, nonprofit and public sectors remain divided on key issues to assure successful waste management consistent with the State's environmental policies. Given this impasse, the MRRA will support the MPCA and others at the Legislature to provide more tools and financial support to achieve the objectives of the Solid Waste Management Act.

In addition, MRRA recommends continued support for two key waste management concepts: "generator pays" and "product stewardship". A key component of any successful program needs to include the concept that the "generator pays" the FULL cost for management of recyclables and waste. In addition, although the MRRA supports a product stewardship framework, pending such a framework, the MRRA believes that individual products such as CFLs need to be targeted with product stewardship strategies and toxic reduction efforts with manufactures.

Related to the stakeholders' specific strategies, the MRRA supports Strategy 4.9 to commission a comprehensive study to analyze the financial impact and effectiveness of pre or post processing of MSW at LANDFILLS and WTE facilities. MRRA members have a significant amount of information available related to the costs, benefits and risks of such pre or post processing. Certain facilities (Polk County, Pope-Douglas and the City of Red Wing) have front end materials recovery facilities and pre-processing data they can provide for such a study. Others, such as Olmsted County, has studied at length pre-processing and can provide information from their studies. Almost all facilities, if they do not have front end processing, have incorporated ferrous recovery from ash. In the case of refuse derived fuel (RDF), both facilities remove aluminum and ferrous when processing the MSW into RDF. Because WTE facilities have previously incurred significant expense to develop such information and facilities, the MRRA recommends that private landfill owners provide the funding to study the financial impact and effectiveness of pre-processing at landfills.

The MRRA supports Strategy 4.11 to operate facilities at high efficiency. Not only does such efficiency result in increased electricity or heat recovery, operating all existing facilities at full capacity is also critical to meeting greenhouse gas reduction goals. It is only common sense to fully and efficiently utilize the waste to energy capacity available. Strategies to assure full utilization are essential. Again, public and private partnerships are needed to assure investments made 20 years ago in WTE facilities, with a functional life of 40 years, or more are fully utilized.

The MRRA supports landfill gas collection at ALL landfills. Methane has a global warming potential 21 times that of CO2. Not all landfill gas can be successfully collected due to delay in gas collection from initial waste placement, leaking pipes, extraction wells and cover material over the large area covered by a landfill. The State should require landfill gas collection to capture what can be captured given these limitations. In addition, the MRRA supports perpetual care funding for landfills. Such funding should be provided with financial instruments equivalent to cash, such as letters of credit, in order to preclude future taxpayer cleanup. Almost thirty years ago, the Legislature addressed solid waste management and was on "the cutting edge". One primary goal

was to reduce the reliance on landfills. Counties embraced this goal by investing almost $400 million in processing facilities. Significant renewable energy has been produced from tons of MSW that would otherwise have been landfilled. Greenhouse gases have been reduced. Minnesota has lost its cutting edge and its vision and goals of the solid waste management hierarchy. Solid waste management is a billion dollar industry in Minnesota which has a total budget of $16 billion. Key legislative leadership is needed to once again assist counties in meeting the goal of reducing reliance on land filling. Such reduction in landfill use is also supportive of Minnesota's greenhouse gas reduction goals. The MRRA is prepared to support the centroids' efforts to include WTE in the greenhouse gas reduction strategy. The MRRA also supports increased regulations and charges to discourage land filling and encourage waste management practices higher on Minnesota's waste management hierarchy.

Sincerely,

Trudy Richter
Executive Director

Risser, Sarah, Sierra Club – Comment Re: Strategy 1.1

Responsibility for end-of-life management of product and associated packaging should be placed directly on producers and consumers rather than on taxpayers, ratepayers or local governments. This legislation will provide incentives for industry to independently develop Product Stewardship plans and to promote those plans to the public and government. Also creates private and public partnerships that can result in cost savings for local units of government.

Risser, Sarah, Sierra Club – Comment Re: Strategy 1.2

Cities and counties should be required to adopt and implement Pay-as-You-Throw ordinances where incremental price increases are proportional to container size increases as well as to the frequency of service. This systems has resulted in source reduction increases of 6% as well as increasing rates of recycling and composting. Further it is imperative that there are more financial incentives to produce less waste, recycle more and move up the solid waste management hierarchy. This law will support stronger waste management practices.

Risser, Sarah, Sierra Club – Comment Re: Strategy 1.11

I strongly support this strategy. Financial incentives can be very motivating and effective. Further, this system has worked very successfully in many other cities. San Francisco reports 5 million fewer plastic bags used every month as a result of the ban. In Ireland bag usage has dropped 95%. In addition arguments for limiting the use of plastic bags include the reducing littler from streets and streams and that the bags lead to health problems.

Risser, Sarah, Sierra Club – Comment Re: Strategy 1.15

Support this strategy as a way to increase public awareness and understanding about waste management while concurrently reducing the amount of waste generated.

Risser, Sarah, Sierra Club – Comment Re: Strategy 2.9

I feel strongly that Container Deposit Legislation will increase recycling rates and, thus, reduce greenhouse gas emissions. In addition, sch legislation would create jobs, reduce litter, lead to better packaging and better feedstock for recycling. Further, studies show that beverage container legislation has reduced total roadside litter by between 30% and 64% in the states with bottle bill and that the recycling rate for beverage containers is vastly increased with a bottle bill.

Rondano, Annette, St. Paul small business owner/Minneapolis CEAC member since 2009 – Overall Comment/Comments to Multiple Strategies

To Whom It May Concern,

I have been reading with much enthusiasm the draft recommendations from the Minnesota Climate Change Advisory Group (MCCAG). Many of the recommendations are implementations strategies that I consider integral to finally reducing the amount of natural resources incinerated in Hennepin County and the State of Minnesota. Here are my specific comments:

1. Phone books: An opt out strategy must be implemented. Curbside collection programs should not be burdened with this material, easily diverted through producer responsibility actions. 13,000 tons of phone books (aka., natural resources) constitutes over 3% of the 365,000 tons currently burned. An effective opt out strategy could easily divert this waste of trees and air pollution.

The draft states, "Ideally it would be nice to have a central clearinghouse of telephone directories so people could opt out of books at one site." Yes. Just as there is a National Do not Call phone number, a state-wide accessible opt out for phonebooks number should be implemented. At this time there is only a small handful of companies that would be required to utilize the system, making implementation/access to the data easy.

The potential for abating phone books will not be met until citizens and communities are not plagued with what to do with the books that are dumped on their doorsteps.

2. Junk Mail: The same opt out strategy must be implemented for mail. All companies that mail-sort to "current resident" would be bound to implement selective mailings based upon this list.

3. Producer Responsibility: Minnesota should be leading the country on Producer Responsibility legislation. From packaging to containers to carpeting, producers are the obvious return source for the materials that they produce. Examples:

Bottlers: Coca Cola and Pepsi are the two largest bottlers in the nation. They should be made to take back 100% of the bottles they produce as well as the bottles from the smaller bottlers. At this time, nation-wide single-serving containers are recovered at a rate just over 30%. While producers extract new materials for bottling, they could be recycling their own materials into their own containers. Diverting single-serving, quart and gallon containers from the waste stream would reduce waste to the incinerator by up to 50%.

Styrofoam: Since no method exists for recycling styrofoam, producers should be held responsible for paying for its disposal OR be expected to eliminate it entirely.

Although the list is extensive as to how Producer Responsibility can be applied, there is not the time to go into these details here.

4. High grade paper vs. mixed grade: Currently all grades of paper are mixed in most municipal recycling programs, and certainly separating paper grades is cumbersome. Still, offices, colleges, and public and private schools across the State are not recycling the very paper stream that could eliminate the most toxins from the burning process and the most waste when it comes to cutting down trees. A comprehensive high-grade collection system would recover the "gold" of the solid waste stream.

5. Incentives for Recycling: Incentives should not come at the expense of the programs that collect recyclables. Resource recovery should be Volume-based rather than incentive-based (the less one produces the more beneficial to the waste collection process in general). We have to stop looking at our citizens as children who need rewards to do what is 'right'. We make people use their trash cans and we should make them use their recycling bins. I am opposed to incentive-based systems for recycling because they cost the programs money that could be used for expanded collection of materials. I am opposed as well because I believe that, over time, mandatory recycling will become a state-wide habit far sooner than incentivized recycling.

If we are going to promote incentives for anything, we should promote an incentive to produce less waste through a comprehensive volume-based garbage collection system. It is unconscionable that Hennepin County alone burns 365,000 tons of recoverable/divertable materials each year.

6. Incineration: Incineration is not a solid waste strategy - it is crazy. Breathing garbage isn't a solution to looking at it and smelling it. Only waste abatement, reduction and elimination strategies can eliminate the mess that we are in. We must stop generating resources into waste and stop burning the waste we don't want to deal with. On this note I would recommend that you:

A. Remove Strategy 4.11, promoting more garbage incineration, from the final report.

B. Produce a plan that complies with the MCAG recommendations of 70 million tons cumulative carbon dioxide equivalent reductions through 2025.

C. Recommend that Minnesota enact a permanent legislative moratorium on construction or expansion of garbage incineration capacity in Minnesota.

Saff, Ron, MD, Tallahasse, FL – General Comment Re: Minnesota Incinerator

As a physician member of the Florida Medical Association's Environment and Health Section, I monitor polluting industries around the country. The FMA, deeply concerned about the carcinogens emitted from incinerators including dioxin, particle pollution and heavy metals is concerned about the health impacts which include cancer, asthma attacks, heart attacks, strokes and shortened lives. Dioxin is thought by many scientists to be one of the most potent carcinogens known to science, it is so potent that ingestion of just one fish contaminated with enough dioxin is enough to raise one's cancer risk. The general public is not aware that air pollution is a risk factor for breast cancer, with approximately 1 in 7 women developing breast cancer at some point in their lives. Not only is air pollution a health issue, but an educational one as well, pregnant women exposed to high levels of air pollution give birth to children with stunted IQs. With half of all men, and one third of all women developing some form of cancer in their lives, society needs less carcinogens, not more of them and certainly incinerators hefty amounts of them. Communities with incinerators have higher cancer rates. Below is the Fl Med Assoc resolution. The answer lies in resource conservation, reuse and recycling and composting rather than burning garbage and spewing the air everyone breathes with

poisons. The stakeholder group should recommend that Minnesota ban garbage incineration. Please feel free to contact me should you have any concerns.

Resolution 08-21
Resource Conservation, Waste Recycling,
Health Risks Caused by Incinerators
Duval County Medical Society
FMA Environment and Health Section
Reference Committee I

RESOLVED, That the Florida
Medical Association support the implementation of HB 7135 which requires state government to develop comprehensive programs for resource conservation, resource reuse, recycling and composting for the state of Florida;
and be it further

RESOLVED, That the Florida Medical Association urges state government to adopt policies to minimize the approval and construction of new incinerators including mass-burn, gasification, plasma, pyrolysis, biomass, refuse-derived fuel and other incinerator technologies, and to develop a plan to retire existing outdated incinerators; and be it further

RESOLVED, That the Florida Medical Association write to the Governor, the President of the Florida Senate, and the Speaker of the House of Representatives communicating the issues identified in this Resolution.

Schatz, Susie, Desnoyer Park – General Comment Re: Burning Garbage

I am writing to express my concern over Minnesota's policy to burn garbage. The research is loud and clear! It is not appropriate, it is not financially responsible, and it is not environmentally or health friendly. It's time we stop this insanity and move to better solutions for our waste like Zero Waste. The MPCA has an opportunity to use their power to push real solutions, not smoke and mirrors like WTE.

Scheidt, Jim – Comment Re: Strategy 4.11

Please remove strategy 4.11 from the final report and /or recommendations concerning any expansion of any current capacity in any current garbage incinerator; and also remove strategy 4.11 as it may relate to any future consideration for any more garbage burner/incinerator.

We need to seriously upgrade our recycling efforts to increase participation, encourage composting and possibly curbside pickup of composting materials. We can do much better.

Schmidt, Gregory V. – Overall Comment/Comments to Multiple Strategies

It has come to my attention of the opportunity to comment on the waste "stake holder" draft report.

It seriously concerns me that after 16 meetings that ANY recommendation for the incineration of garbage could possibly even be considered !!

From the public here, who are the recipients of the air, water and land pollution coming from toxin spewing garbage burners, I highly object to 4.11 being in your report. It is unconscionable and irresponsible.

I suppose that comes from the fact that the public was not fairly represented on your panel as it should have been.

The public has gathered a great deal of scientific research on the burning of garbage and its negative health effects and would have been very valuable to your conversation. It puzzles me as to their exclusion.

Perhaps you have not heard of Neighbors Against the Burner, a grass roots group that has led the way in Minnesota on the research of how toxic garbage burners are. Please consult their great web site, neighborsagainsttheburner.org <http://neighborsagainsttheburner.org> for a large amount of science that supports the evidence of negative health effects from toxin spewing garbage incinerators. This group has proven their credibility. They have nothing to gain monetarily. Follow the money. The garbage incinerator industry has a lot to gain.

The only thing we citizens have to gain is our health and the health of our children and loved ones.

I call for closing down all garbage burners by 2014 and a moratorium for all expansions and building of new burners from here on out.

Your report offering garbage incineration as an answer to the landfill problem is evidence to me that you do not take global warming seriously.

What would it take to help you to understand the state of emergency we are in on the CO2 level with global warming? Your report should at LEAST meet the Minnesota Climate Change Advisory Group recommendations which include meeting the 75 million tons of CO2 reduction and not the 52.5 million proposed by the MPCA by 2025. There is no time to move so slowly. It is only making excuses and pandering to special interests. It costs too much you say?

What is the cost of health care today with the large number of chronic diseases? Did anyone on the panel even ask about the financial cost in terms of our health? This is a question that needs to be addressed way before the cost to the industry. We as a society cannot continue to go down the path of destruction that we are on today, economically or through the pain and heartache of bad health for ourselves and our loved ones.

Lastly, Zero Waste should be front and center and number one on your recommendations with absolutely NO recommendation to burn garbage FOR ANY REASON.

Please remove 4.11 from your draft and move ahead with cleaning up Minnesota for future generations.

Thank you for this opportunity to speak from the public viewpoint.

Sheehan, Bill, Ph.D., Executive Director, Product Policy Institute – Comment Re: Strategy 1.1

Product Policy Institute

December 2, 2009

REGARDING:
MEI Integrated Solid Waste Management Stakeholder Process
Draft Recommended Strategies: November 24, 2009
1.1 Enact the Minnesota Product Stewardship Framework Law (page 45)

To Whom It May Concern:

Product Policy Institute (PPI) is a non-partisan research and educational organization promoting policies that advance sustainable production, consumption and good governance in North America. Founded in 2003, PPI works with local governments and community organizations to build support for effective Extended Producer Responsibility (EPR), or Product Stewardship, policies that hold producers responsible for ensuring that their products do not become public liabilities.

EPR policies internalize product lifecycle impacts into product prices to generate green jobs and unleash the creativity of businesses to design and provide "cradle to cradle" product management. The framework approach allows one law to establish EPR as policy and gives state government the authority to address multiple products over time. As states and local governments gain experience with stewardship laws for individual products, they are starting to see the advantages of a framework approach to improving the sustainability of a range of products.

We support Recommendation 1.1 Enact the Minnesota Product Stewardship Framework Law (page 45) as an important step towards waste management reform. Minnesota is not alone in looking at the framework approach to producer responsibility. Several provinces in Canada, including British Columbia, already have successful Framework EPR regulations and programs. These programs are saving taxpayers and ratepayers a great deal of money; the city of Vancouver alone estimates more than $4 million. The movement towards the framework approach is picking up steam. In 2009, Washington, Oregon and California introduced framework legislation, and Rhode Island introduced and passed a study bill modeled on Minnesota's. Maine has introduced a framework bill for the 2010 session.

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Bringing comprehensive EPR to Minnesota and applying it transparently and systematically through a framework approach will benefit the state and its citizens in at least three ways:

- It will support Minnesota's economy because EPR increases recycling, which in turns creates local jobs
- It will reap environmental benefits, including reduced greenhouse gas emissions and reduced toxics.
- It will streamline Minnesota's government by lowering administrative costs.

Minnesota was one of the earliest adopters of the product stewardship approach in the 1990s and has been a leader ever since. We commend Minnesota's work to once again lead the states in the development of a framework approach to product stewardship.

Sincerely,

Bill Sheehan, Ph.D.
Executive Director

Spear, Connie, University of MN HSRC – Comment Re: Strategy 4.11

Please remove Strategy 4.11 from the set of 38 draft proposals being considered for implementation in the MEI's stakeholder process report.

There are more effective ways to deal with garbage than burning it or putting it in landfills. Let's be innovators in MN! Let's do the creative work that is being done in other states and other areas of the country to educate and implement recycling and composting rather than burning our garbage.

The citizens of MN *know* that incineration INCREASES greenhouse gas emissions. We *know* that the fine particulates that are released into the air from incineration are hazardous to the health of all of us (especially children). We know that the amount of ash that needs to be hauled away from these facilities decreases our air quality (exhaust from the trucks used to haul it away-to where?)

We also know that by reducing packaging and making manufacturers accountable for recycling of their packaging- we can reduce garbage in our state.

We know that recycling and composting WORK in the fight against global warming.

Please Please Please- Do not include Strategy 4.11 in your draft proposal.

Sponheim, Sarah – Overall Comment/Comments to Multiple Strategies

I strongly recommend that you REMOVE Strategy 4.11, which promotes increased garbage incineration, from the final report. Furthermore, the stakeholder group should produce a plan that complies with the MCAG recommendations of 70 million tons cumulative carbon dioxide equivalent reductions through 2025 as well as recommend enactment of a permanent legislative moratorium on construction or expansion of garbage incineration capacity in Minnesota.

Young, Randy, President/CEO, Minnesota Telecom Alliance – Comment Re: Strategy 1.5

By way of background, Minnesota has over 80 local telephone companies. Outside of Qwest, Frontier-Citizens, and Century Link, most of the local telephone companies are small rural cooperatives and family owned companies that serve between a few hundred and 50,000 customers. They provide service to many of the smaller communities and the rural areas in Greater Minnesota.

The vast majority of Minnesota's rural telephone companies are mailing their directories to their subscribers. Using this means of delivery allows them to provide an easy means to "opt out" for customers who do not desire to receive a directory. Unlike the Twin Cities Metro area and other larger urban areas in Minnesota, in many small communities and rural areas one does not find numerous directories being distributed. Thus there are not multiple directories being delivered to the same rural residents. Because these telephone companies and the communities that they serve are small, the directories that are delivered are small, too.

In the few instances where the directories are delivered door-to-door, it generally is an accommodation for providing a fund raiser opportunity for the local Boy Scouts, service club, or school group.

We believe that because the communities that these telephone companies serve are outside of the geographic areas of concern, the directories that they deliver are small in comparison with directories delivered in metro areas, and the extensive use of the mail for delivery, these communities should be exempt for any proposed regulation of directories.

Minnesota Telecom Alliance
1000 Westgate Drive
Suite 252
Saint Paul, MN 55114
651.291.7311
Randy Young, President/CEO

Board of Directors, Recycling Association of Minnesota – Overall Comment/Comments to Multiple Strategies

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ellen@recycleminnesota.org
www.recyclemoreminnesota.org

December 8, 2009

Regarding: Public Comments for the MEI Solid Waste Stakeholders Group

To Whom It May Concern,

Thank you for the opportunity to write in our comments to the group.

First we'd like to acknowledge that the RAM board was uncertain as to why the State's organization for recycling (our organization) was not included as one of the members of this stakeholders group. RAM is THE premier Minnesota representative on a national level and our membership comprises over 230 businesses, government and individuals that work in the recycling field. It was unknown, nor was it explained to RAM why we, the state organization on recycling, were not included in your discussions. Simply put, it doesn't make sense and insinuates that our opinion does not count.

RAM's goal has and always will be to promote recycling and provide recycling education to Minnesotans. Our goal is to make every Minnesotan know the importance of recycling and encourage them to recycle even more. We have achieved this in most recent years by developing very innovative recycling programs such as Message in a Bottle ™, the only away from home recycling program of its kind in the nation. This program is going statewide this year and we have already set up three new programs in only 2 months. We now service Duluth, Mankato, St. Cloud, Hutchinson, Twin Cities and Hinkley. We have immediate plans to grow this program to Detroit Lakes, Rochester and Owatonna in the next two months. This program offers recycling at away from home locations like gas stations and car wash places to recycle cans and bottles. It's extremely successful in each area we set up and provides jobs for adults with disabilities, a population needing this meaningful work.

Message in a Bottle ™ and It's in the Bag ™ a Minnesota Waste Wise recycling program to recycle grocery bags and film, have teamed forces to offer both programs in each area that we set up. The infrastructure can be used for both programs and it helps on our resources we have available. We know that we can make these programs work in ANY community in Minnesota. We have proved it time and time again that they work.

RAM has also recently developed another recycling campaign called Recycle Your Holidays ™ and we are offering this program statewide as well to any community that wants to participate. This program has been going on for only 3 weeks and already covering almost every part of the state. We have collected over 20,000 pounds of lights. We did this with NO FUNDS, just earned media outreach and volunteers.

Imagine what we could all do together using Message in a Bottle infrastructures? That's RAM's goal and we plan to continue to do our work in the name of recycling.

Again, thank you for your time and we encourage that next time a project such as this is developed to make statewide decisions about recycling, that the state organization for recycling is also included.

Sincerely,

The Recycling Association of Minnesota's Board of Directors

No Name Provided – General Comment Re: Garbage Incinerators

I do not want an increase in garbage incinerators in Minnesota because they contribute an excess of CO2 and pollutants per unit of energy, compared to other technologies, and are contrary to state goals for CO2 reduction, and contribute to air and water toxins, thus undermining health. Prevention, diversion, composting, and reduction should be increased using incentives that have been minimally used up to now. If Minnesota wanted to be on the cutting edge, we could use bio-reactors which require less labor and maintenance although having a slightly higher start-up cost.

No Name Provided – Comment Re: Strategy 4.11

It is imperative that Strategy 4.11 be removed from the final report.

My sensitive lungs have become seriously compromised since I moved to St Paul's best neighborhood, Highland Park. When the Rock Ten on Vandalia and I94 is running, I cannot go outside and must stay within range of air purifiers. Our cities are becoming uninhabitable. How can any human being with a conscience participate in creating an environment which will serve only to suffocate them, their children and grandchildren. How!!!!!!!!!!!!!

"

(Version 9.01, 3/09)

The emission factors presented in this table reflect national average landfill gas recovery practices and transportation distances.

Greenhouse Gas Emission Factors (MTCO2E per short ton)

Material	Source Reduction	Recycling	Landfilling, National Average	Landfilling, No Recovery	Landfilling, Flaring	Landfilling, Energy Recovery	Combustion	Composting
Aluminum Cans	-8.29	-13.67	0.04	0.04	0.04	0.04	0.06	N/A
Steel Cans	-3.19	-1.8	0.04	0.04	0.04	0.04	-1.54	N/A
Copper Wire	-7.41	-4.97	0.04	0.04	0.04	0.04	0.06	N/A
Glass	-0.58	-0.28	0.04	0.04	0.04	0.04	0.05	N/A
HDPE	-1.8	-1.4	0.04	0.04	0.04	0.04	0.91	N/A
LDPE	-2.29	-1.71	0.04	0.04	0.04	0.04	0.91	N/A
PET	-2.11	-1.55	0.04	0.04	0.04	0.04	1.07	N/A
Corrugated Box	-5.59	-3.11	0.33	1.49	-0.22	-0.46	-0.66	N/A
Magazines	-8.66	-3.07	-0.33	0.14	-0.55	-0.65	-0.48	N/A
Newspaper	-4.89	-2.8	-0.89	-0.48	-1.09	-1.18	-0.75	N/A
Office Paper	-8.01	-2.85	1.76	3.71	0.84	0.42	-0.63	N/A
Phonebook	-6.34	-2.66	-0.89	-0.48	-1.09	-1.18	-0.75	N/A
Textbook	-9.18	-3.11	1.76	3.71	0.84	0.42	-0.63	N/A
Dimensional Lumber	-2.02	-2.46	-0.52	0.07	-0.81	-0.93	-0.79	N/A
Fiberboard	-2.22	-2.47	-0.52	0.07	-0.81	-0.93	-0.79	N/A
Food Waste	N/A	N/A	0.68	1.43	0.33	0.16	-0.18	-0.2
Yard Waste	N/A	N/A	-0.34	0.06	-0.54	-0.62	-0.22	-0.2
Grass	N/A	N/A	0.15	0.51	-0.02	-0.1	-0.22	-0.2
Leaves	N/A	N/A	-0.58	-0.3	-0.72	-0.78	-0.22	-0.2
Branches	N/A	N/A	-0.52	0.07	-0.81	-0.93	-0.22	-0.2
Mixed Paper Board	N/A	-3.54	0.27	1.35	-0.24	-0.47	-0.66	N/A
Mixed Paper - Residential	N/A	-3.54	0.19	1.21	-0.3	-0.52	-0.66	N/A
Mixed Paper - Office	N/A	-3.42	0.38	1.43	-0.12	-0.34	-0.6	N/A
Mixed Metals	N/A	-5.26	0.04	0.04	0.04	0.04	-1.07	N/A

Mixed Plastics	N/A	-1.52	0.04	0.04	0.04	0.04	0.97	N/A
Mixed Recyclables	N/A	-2.88	0.08	0.93	-0.3	-0.47	-0.6	N/A
Mixed Organics	N/A	N/A	0.15	0.59	-0.24	-0.37	-0.2	-0.2
MixedMSW	N/A	N/A	0.37	1.34	-0.1	-0.31	-0.13	N/A
Carpets	-4.03	-7.23	0.04	0.04	0.04	0.04	0.37	N/A
PCs	-55.97	-2.27	0.04	0.04	0.04	0.04	-0.2	N/A
ClayBricks	-0.29	N/A	0.04	0.04	0.04	0.04	N/A	N/A
Aggregate	N/A	-0.01	0.04	0.04	0.04	0.04	N/A	N/A
FlyAsh	N/A	-0.87	0.04	0.04	0.04	0.04	N/A	N/A
Tires	-4.01	-1.84	0.04	0.04	0.04	0.04	0.09	N/A

Back to WARM

Table 1 - Landfilled and Resource Recovered Materials

WARM Waste Category	Waste Sort Category	Alternative Management Methods
Aluminum Cans	♦ Aluminum beverage containers	♦ Everything but Composting
Steel Cans	♦ Ferrous food and beverage containers	♦ Everything but Composting
Copper Wire	♦ not used	♦ Everything but Composting
Glass	♦ Clear glass, brown glass, green glass, other mixed cullet, container glass, non-container glass	♦ Everything but Composting
HDPE	♦ #2 HDPE, HDPE bottles – natural, HDPE bottles – colored	♦ Everything but Composting
LDPE	♦ Film plastic, wrap, bags, film-transport packaging, other film	♦ Everything but Composting
PET	♦ #1 PET containers, PET bottles/jars – clear, PET bottles/jars – colored, other PET	♦ Everything but Composting
Corrugated Cardboard	♦ OCC, uncoated OCC, uncoated OCC – recyclable, cardboard – other	♦ Everything but Composting
Magazines/Third-class Mail	♦ Magazines, catalogs	♦ Everything but Composting
Newspaper	♦ Newsprint	♦ Everything but Composting
Office Paper	♦ High grade office, paper – mail, office and school, office grade	♦ Everything but Composting
Phonebooks	♦ Phonebooks	♦ Everything but Composting
Textbooks	♦ not used	♦ Everything but Composting
Dimensional Lumber	♦ Treated wood, non-treated wood, wood waste, wood pallets	♦ Everything but Composting
Medium-density Fiberboard	♦ not used	♦ Everything but Composting
Food Scraps	♦ Food waste	♦ Only Composted, Resource Recovered, Landfilled
Yard Trimmings	♦ Yard waste, yard waste – grass and leaves	♦ Only Composted, Resource Recovered, Landfilled
Grass	♦ not used	♦ Only Composted, Resource Recovered, Landfilled
Leaves	♦ not used	♦ Only Composted, Resource Recovered, Landfilled
Branches	♦ not used	♦ Only Composted, Resource Recovered, Landfilled

WARM Waste Category	Waste Sort Category	Alternative Management Methods
Mixed Paper (general)	♦ Boxboard, other paper, mixed paper - recyclable	♦ Only Recycled, Resource Recovered, Landfilled
Mixed Paper (primarily residential)	♦ not used	♦ Only Recycled, Resource Recovered, Landfilled
Mixed Paper (primarily from offices)	♦ not used	♦ Only Recycled, Resource Recovered, Landfilled
Mixed Metals	♦ Other Ferrous scrap, other non-Ferrous scrap, other aluminum, major appliances	♦ Only Recycled, Resource Recovered, Landfilled
Mixed Plastics	♦ Durables and other miscellaneous plastic, other containers, other non-containers, polystyrene, other plastics, PVC	♦ Only Recycled, Resource Recovered, Landfilled
Mixed Recyclables	♦ Construction and demolition debris, household hazardous waste, batteries, household bulky items, empty HHW containers	♦ Only Recycled, Resource Recovered, Landfilled
Mixed Organics	♦ Non recyclable paper, uncoated OCC – non recyclable, coated OCC, diapers, other organics,	♦ Only Composted, Resource Recovered, Landfilled
Mixed MSW	♦ Rubber, sharps, other inorganics, fines/supermix, miscellaneous	♦ Only Resource Recovered, Landfilled
Carpet	♦ carpet, textiles, leather	♦ Everything but Composting
Personal Computers	♦ Electrical and household appliances, small electronic appliances, electric and electronic products, electronics – CRT, electronics – non CRT	♦ Everything but Composting
Clay Bricks	♦ not used	♦ Only Source Reduced, Landfilled
Aggregate	♦ not used	♦ Only Recycled, Landfilled
Fly Ash	♦ not used	♦ Only Recycled, Landfilled

Table 2 - Recycled Materials

WARM Waste Category	SCORE Category	Possible Alternative Management Methods
Aluminum Cans	♦ Aluminum	♦ Everything but Composting
Steel Cans	♦ Steel/tin cans	♦ Everything but Composting
Copper Wire	♦ not used	♦ Everything but Composting
Glass	♦ Food and beverage, other glass	♦ Everything but Composting
HDPE	♦ HDPE	♦ Everything but Composting
LDPE	♦ Film plastic	♦ Everything but Composting
PET	♦ PET	♦ Everything but Composting
Corrugated Cardboard	♦ Corrugated	♦ Everything but Composting
Magazines/Third-class Mail	♦ Magazine/catalog	♦ Everything but Composting
Newspaper	♦ Newsprint	♦ Everything but Composting
Office Paper	♦ Office paper, computer paper	♦ Everything but Composting
Phonebooks	♦ Phone book	♦ Everything but Composting
Textbooks	♦ not used	♦ Everything but Composting
Dimensional Lumber	♦ pallets	♦ Everything but Composting
Medium-density Fiberboard	♦ not used	♦ Everything but Composting
Food Scraps	♦ Food waste	♦ Only Composted, Resource Recovered, Landfilled
Yard Trimmings	♦ not used	♦ Only Composted, Resource Recovered, Landfilled
Grass	♦ not used	♦ Only Composted, Resource Recovered, Landfilled
Leaves	♦ not used	♦ Only Composted, Resource Recovered, Landfilled
Branches	♦ not used	♦ Only Composted, Resource Recovered, Landfilled
Mixed Paper (general)	♦ Other paper	♦ Only Recycled, Resource Recovered, Landfilled
Mixed Paper (primarily residential)	♦ Mixed paper	♦ Only Recycled, Resource Recovered, Landfilled
Mixed Paper (primarily from offices)	♦ not used	♦ Only Recycled, Resource Recovered, Landfilled

WARM Waste Category	SCORE Category	Possible Alternative Management Methods
Mixed Metals	♦ Other Ferrous scrap and non-Ferrous, co-mingled alum/steel/tin, major appliances	♦ Only Recycled, Resource Recovered, Landfilled
Mixed Plastics	♦ Mixed plastic, other plastics, polystyrene	♦ Only Recycled, Resource Recovered, Landfilled
Mixed Recyclables	♦ Antifreeze, fluorescent & HID lamps, HHW, latex paint, used oil, used oil filters, vehicle batteries, waste tires, unspecified or other	♦ Only Recycled, Resource Recovered, Landfilled
Mixed Organics	♦ Not used	♦ Only Composted, Resource Recovered, Landfilled
Mixed MSW	♦ not used	♦ Only Resource Recovered, Landfilled
Carpet	♦ Carpet, textiles	♦ Everything but Composting
Personal Computers	♦ Electronics	♦ Everything but Composting
Clay Bricks	♦ not used	♦ Only Source Reduced, Landfilled
Aggregate	♦ not used	♦ Only Recycled, Landfilled
Fly Ash	♦ not used	♦ Only Recycled, Landfilled

2005 Recycling Tons and Compositions for Four Centroids

WARM Category	Metro Centroid	Composition %	Rochester Centroid	Composition %	St. Cloud Centroid	Composition %	Duluth Centroid	Composition %
Aluminum Cans	10,677.71	0.7%	313.61	0.5%	2,057.44	1.4%	877.18	0.7%
Steel Cans	6,953.31	0.5%	528.27	0.8%	1,330.03	0.9%	1,092.58	0.9%
Copper Wire	0.00	0.0%	0.00	0.0%	0.00	0.0%	0.00	0.0%
Glass	48,289.59	3.4%	1,905.76	2.9%	6,215.91	4.1%	5,643.57	4.8%
HDPE	567.23	0.0%	0.00	0.0%	785.77	0.5%	110.00	0.1%
LDPE	432.47	0.0%	0.00	0.0%	169.55	0.1%	59.03	0.1%
PET	1,220.20	0.1%	0.00	0.0%	237.13	0.2%	108.00	0.1%
Corrugated Cardboard	148,049.27	10.4%	15,737.24	24.2%	15,207.20	10.0%	20,404.45	17.3%
Magazines/Third-class Mail	8,614.26	0.6%	249.26	0.4%	14,424.19	9.5%	382.41	0.3%
Newspaper	139,080.42	9.7%	1,143.95	1.8%	16,899.11	11.1%	8,289.30	7.0%
Office Paper	24,787.52	1.7%	2,062.34	3.2%	1,541.00	1.0%	1,557.32	1.3%
Phonebooks	1,267.81	0.1%	59.60	0.1%	104.41	0.1%	1.00	0.0%
Textbooks	0.00	0.0%	0.00	0.0%	0.00	0.0%	0.00	0.0%
Dimensional Lumber	32,643.51	2.3%	2,137.24	3.3%	9,390.49	6.2%	398.50	0.3%
Medium-density Fiberboard	0.00	0.0%	0.00	0.0%	0.00	0.0%	0.00	0.0%
Foods Scraps	101,979.87	7.1%	2,501.00	3.8%	1,174.13	0.8%	386.00	0.3%
Yard Trimmings	0.00	0.0%	0.00	0.0%	0.00	0.0%	0.00	0.0%
Grass	0.00	0.0%	0.00	0.0%	0.00	0.0%	0.00	0.0%
Leaves	0.00	0.0%	0.00	0.0%	0.00	0.0%	0.00	0.0%
Branches	0.00	0.0%	0.00	0.0%	0.00	0.0%	0.00	0.0%
Mixed Paper (general)	155,678.35	10.9%	13,895.40	21.3%	7,305.37	4.8%	8,685.40	7.4%
Mixed Paper (primarily residential)	0.00	0.0%	0.00	0.0%	0.00	0.0%	0.00	0.0%
Mixed Paper (primarily from offices)	0.00	0.0%	0.00	0.0%	0.00	0.0%	0.00	0.0%
Mixed Metals	210,097.40	14.7%	19,999.85	30.7%	63,576.72	41.8%	62,259.01	52.9%
Mixed Plastics	22,483.00	1.6%	958.86	1.5%	1,506.38	1.0%	1,231.72	1.0%
Mixed Recyclables	500,878.86	35.1%	2,016.30	3.1%	9,824.40	6.5%	3,968.93	3.4%
Mixed Organics	0.00	0.0%	0.00	0.0%	0.00	0.0%	0.00	0.0%
Mixed MSW	0.00	0.0%	0.00	0.0%	0.00	0.0%	0.00	0.0%
Carpet	9,616.93	0.7%	638.04	1.0%	1.40	0.0%	1,785.07	1.5%
Personal Computers	3,197.70	0.2%	984.74	1.5%	335.28	0.2%	390.76	0.3%
Clay Bricks	0.00	0.0%	0.00	0.0%	0.00	0.0%	0.00	0.0%
Aggregate	0.00	0.0%	0.00	0.0%	0.00	0.0%	0.00	0.0%
Fly Ash	0.00	0.0%	0.00	0.0%	0.00	0.0%	0.00	0.0%
Grand Total	**1,426,515.41**	**100.0%**	**65,131.45**	**100.0%**	**152,085.91**	**100.0%**	**117,630.23**	**100.0%**
from centroid spreadsheet	1,426,500		65100		152100		117600	

Recycling Tons from MPCA - email from Jeff (3-05-09) and Arlene (3-10-05 for Stearns County). This data is originally from SCORE.
SCORE material categories were fit into WARM categories.

Duluth Centroid		Total Tons 0	Total Tons 139,200		Total Tons 117,600	
EPA WARM Categories	Duluth Composition Percentages Applied to WARM Categories (Landfill)	2005 Baseline		SCORE Composition Percentages Applied to WARM Categories (Recycling)	2005 Baseline	
		Resource Recovery	Landfill		Recycling	Total
Aluminum Cans	0.9%	0	1,253	0.7%	877	2,130
Steel Cans	1.0%	0	1,392	0.9%	1,092	2,484
Copper Wire	0.0%	0	0	0.0%	0	0
Glass	2.7%	0	3,758	4.8%	5,642	9,401
HDPE	0.8%	0	1,114	0.1%	110	1,224
LDPE	4.6%	0	6,403	0.1%	59	6,462
PET	0.7%	0	974	0.1%	108	1,082
Corrugated Cardboard	4.6%	0	6,403	17.3%	20,399	26,802
Magazines/Third-class Mail	2.2%	0	3,062	0.3%	382	3,445
Newspaper	4.7%	0	6,542	7.0%	8,287	14,830
Office Paper	2.1%	0	2,923	1.3%	1,557	4,480
Phonebooks	0.0%	0	0	0.0%	1	1
Textbooks	0.0%	0	0	0.0%	0	0
Dimensional Lumber (treated)	1.5%	0	2,088	0.3%	398	2,486
Medium-density Fiberboard	0.0%	0	0	0.0%	0	0
Foods Scraps	12.8%	0	17,818	0.3%	386	18,204
Yard Trimmings	2.2%	0	3,062	0.0%	0	3,062
Grass	0.0%	0	0	0.0%	0	0
Leaves	0.0%	0	0	0.0%	0	0
Branches	0.0%	0	0	0.0%	0	0
Mixed Paper (general)	8.1%	0	11,275	7.4%	8,683	19,958
Mixed Paper (primarily residential)	0.0%	0	0	0.0%	0	0
Mixed Paper (primarily from offices)	0.0%	0	0	0.0%	0	0
Mixed Metals	5.5%	0	7,656	52.9%	62,243	69,899
Mixed Plastics	6.3%	0	8,770	1.0%	1,231	10,001
Mixed Recyclables	7.0%	0	9,744	3.4%	3,968	13,712
Mixed Organics	17.4%	0	24,221	0.0%	0	24,221
Mixed MSW	8.0%	0	11,136	0.0%	0	11,136
Carpet	4.7%	0	6,542	1.5%	1,785	8,327
Personal Computers	2.2%	0	3,062	0.3%	391	3,453
Clay Bricks	0.0%	0	0	0.0%	0	0
Aggregate	0.0%	0	0	0.0%	0	0
Fly Ash	0.0%	0	0	0.0%	0	0
TOTAL	**100.0%**	**0**	**139,200**	**100.0%**	**117,600**	**256,800**
Checks						256,800

Duluth

Version 7 (8/05)

WAste Reduction Model (WARM) -- Inputs

Use this worksheet to describe the baseline and alternative MSW management scenarios that you want to compare. The shaded areas indicate where you need to enter information.

1. **Describe the baseline generation and management for the MSW materials listed below. If the material is not generated in your community or you do not want to analyze it, leave it blank or enter 0. Make sure that the total quantity generated equals the total quantity managed.**

Material	Tons Generated	Tons Recycled	Tons Landfilled	Tons Combusted	Tons Composted
Aluminum Cans	2,130	877	1,253		NA
Steel Cans	2,484	1,092	1,392		NA
Copper Wire	-	-	-		NA
Glass	9,401	5,642	3,758		NA
HDPE	1,224	110	1,114		NA
LDPE	6,462	59	6,403		NA
PET	1,082	108	974		NA
Corrugated Cardboard	26,802	20,399	6,403		NA
Magazines/Third-class Mail	3,445	382	3,062		NA
Newspaper	14,830	8,287	6,542		NA
Office Paper	4,480	1,557	2,923		NA
Phonebooks	1	1	-		NA
Textbooks	-	-	-		NA
Dimensional Lumber	2,486	398	2,088		NA
Medium-density Fiberboard	-	-	-		NA
Food Scraps	18,204	NA	17,818		386
Yard Trimmings	3,062	NA	3,062		
Grass	-	NA	-		
Leaves	-	NA	-		
Branches	-	NA	-		
Mixed Paper (general)	19,958	8,683	11,275		NA
Mixed Paper (primarily residential)	-	-	-		NA
Mixed Paper (primarily from offices)	-	-	-		NA
Mixed Metals	69,899	62,243	7,656		NA
Mixed Plastics	10,001	1,231	8,770		NA
Mixed Recyclables	13,712	3,968	9,744		NA
Mixed Organics	24,221	NA	24,221		
Mixed MSW	11,136	NA	11,136		NA
Carpet	8,327	1,785	6,542		NA
Personal Computers	3,453	391	3,062		NA
Clay Bricks	-	NA	-	NA	NA
Aggregate	-		-	NA	NA
Fly Ash	-		-	NA	NA

Please enter data in short tons (1 short ton = 2,000 lbs.)

Duluth

2. **Describe the alternative management scenario for the MSW materials generated in the baseline.**
Any decrease in generation should be entered in the Source Reduction column.
Any increase in generation should be entered in the Source Reduction column as a negative value.
(Make sure that the total quantity generated equals the total quantity managed.)

Material	Baseline Generation	Tons Source Reduced	Tons Recycled	Tons Landfilled	Tons Combusted	Tons Composted
Aluminum Cans	2,130		877	1,253		NA
Steel Cans	2,484		1,092	1,392		NA
Copper Wire	-		-	-		NA
Glass	9,401		5,642	3,758		NA
HDPE	1,224		110	1,114		NA
LDPE	6,462		59	6,403		NA
PET	1,082		108	974		NA
Corrugated Cardboard	26,802		20,399	6,403		NA
Magazines/Third-class Mail	3,445		382	3,062		NA
Newspaper	14,830		8,287	6,542		NA
Office Paper	4,480		1,557	2,923		NA
Phonebooks	1		1	-		NA
Textbooks	-		-	-		NA
Dimensional Lumber	2,486		398	2,088		NA
Medium-density Fiberboard	-		-	-		NA
Food Scraps	18,204	NA	NA	17,818		386
Yard Trimmings	3,062	NA	NA	3,062		
Grass	-	NA	NA	-		
Leaves	-	NA	NA	-		
Branches	-	NA	NA	-		
Mixed Paper, Broad	19,958	NA	8,683	11,275		NA
Mixed Paper, Resid.	-	NA	-	-		NA
Mixed Paper, Office	-	NA	-	-		NA
Mixed Metals	69,899	NA	62,243	7,656		NA
Mixed Plastics	10,001	NA	1,231	8,770		NA
Mixed Recyclables	13,712	NA	3,968	9,744		NA
Mixed Organics	24,221	NA	NA	24,221		
Mixed MSW	11,136	NA	NA	11,136		NA
Carpet	8,327		1,785	6,542		NA
Personal Computers	3,453		391	3,062		NA
Clay Bricks	-		NA	-	NA	NA
Aggregate	-	NA		-	NA	NA
Fly Ash	-	NA		-	NA	NA

Duluth

GHG Emissions Analysis -- Summary Report

Version 7 (8/05)

GHG Emissions Waste Management Analysis for St. Cloud 75%
Prepared by: JMF
Project Period for this Analysis: 01/00/00 to 01/00/00

GHG Emissions from Baseline Waste Management ($MTCO_2E$): (572,022)

Commodity	Tons Recycled	Tons Landfilled	Tons Combusted	Tons Composted	Total $MTCO_2E$
Aluminum Cans	877	1,253	-	NA	(13,045)
Steel Cans	1,092	1,392	-	NA	(1,903)
Glass	5,642	3,758	-	NA	(1,434)
HDPE	110	1,114	-	NA	(112)
LDPE	59	6,403	-	NA	145
PET	108	974	-	NA	(130)
Corrugated Cardboard	20,399	6,403	-	NA	(52,144)
Magazines/third-class mail	382	3,062	-	NA	(1,724)
Newspaper	8,287	6,542	-	NA	(34,178)
Office Paper	1,557	2,923	-	NA	2,764
Phonebooks	1	-	-	NA	(3)
Dimensional Lumber	398	2,088	-	NA	(1,794)
Food Scraps	NA	17,818	-	386	14,972
Yard Trimmings	NA	3,062	-	-	(450)
Mixed Paper, Broad	8,683	11,275	-	NA	(21,610)
Mixed Metals	62,243	7,656	-	NA	(451,973)
Mixed Plastics	1,231	8,770	-	NA	(1,521)
Mixed Recyclables	3,968	9,744	-	NA	(8,659)
Mixed Organics	NA	24,221	-	-	8,037
Mixed MSW	NA	11,136	-	NA	6,476
Carpet	1,785	6,542	-	NA	(12,892)
Personal Computers	391	3,062	-	NA	(845)

GHG Emissions from Alternative Waste Management Scenario ($MTCO_2E$): (572,022)

Commodity	Tons Source Reduced	Tons Recycled	Tons Landfilled	Tons Combusted	Tons Composted	Total $MTCO_2E$
Aluminum Cans	-	877	1,253	-	NA	(13,045)
Steel Cans	-	1,092	1,392	-	NA	(1,903)
Glass	-	5,642	3,758	-	NA	(1,434)
HDPE	-	110	1,114	-	NA	(112)
LDPE	-	59	6,403	-	NA	145
PET	-	108	974	-	NA	(130)
Corrugated Cardboard	-	20,399	6,403	-	NA	(52,144)
Magazines/third-class mail	-	382	3,062	-	NA	(1,724)
Newspaper	-	8,287	6,542	-	NA	(34,178)
Office Paper	-	1,557	2,923	-	NA	2,764
Phonebooks	-	1	-	-	NA	(3)
Dimensional Lumber	-	398	2,088	-	NA	(1,794)
Food Scraps	NA	NA	17,818	-	386	14,972
Yard Trimmings	NA	NA	3,062	-	-	(450)
Mixed Paper, Broad	NA	8,683	11,275	-	NA	(21,610)
Mixed Metals	NA	62,243	7,656	-	NA	(451,973)
Mixed Plastics	NA	1,231	8,770	-	NA	(1,521)
Mixed Recyclables	NA	3,968	9,744	-	NA	(8,659)
Mixed Organics	NA	NA	24,221	-	-	8,037
Mixed MSW	NA	NA	11,136	-	NA	6,476
Carpet	-	1,785	6,542	-	NA	(12,892)
Personal Computers	-	391	3,062	-	NA	(845)

Total Change in GHG Emissions: 0 $MTCO_2E$

This is equivalent to...		
Removing	-	Passenger Cars from the Roadway Each Year

Note: a negative value (i.e., a value in parentheses) indicates an emission reduction; a positive value indicates an emission increase

a) For explanation of methodology, see the EPA report:
Solid Waste Management and Greenhouse Gases: A Life-Cycle Assessment of Emissions and Sinks (EPA530-R-02-006)
-- available on the Internet at http://www.epa.gov/mswclimate/greengas.pdf (1.1 Mb PDF file)

Metro Centroid		Total Tons 941,900	Total Tons 1,224,800		Total Tons 1,426,500	
EPA WARM Categories	Metro Composition Percentages Applied to WARM Categories (Resource Recovery & Landfill)	2005 Baseline		SCORE Composition Percentages Applied to WARM Categories (Recycling)	2005 Baseline	
		Resource Recovery	Landfill		Recycling	Total
Aluminum Cans	0.9%	8,477	11,023	0.7%	10,678	30,178
Steel Cans	1.0%	9,419	12,248	0.5%	6,953	28,620
Copper Wire	0.0%	0	0	0.0%	0	0
Glass	3.0%	28,257	36,744	3.4%	48,289	113,290
HDPE	1.0%	9,419	12,248	0.0%	567	22,234
LDPE	5.0%	47,095	61,240	0.0%	432	108,767
PET	1.3%	12,245	15,922	0.1%	1,220	29,387
Corrugated Cardboard	4.0%	37,676	48,992	10.4%	148,048	234,716
Magazines/Third-class Mail	2.0%	18,838	24,496	0.6%	8,614	51,948
Newspaper	4.0%	37,676	48,992	9.7%	139,079	225,747
Office Paper	2.0%	18,838	24,496	1.7%	24,787	68,121
Phonebooks	1.0%	9,419	12,248	0.1%	1,268	22,935
Textbooks	0.0%	0	0	0.0%	0	0
Dimensional Lumber (treated)	3.9%	36,734	47,767	2.3%	32,643	117,144
Medium-density Fiberboard	0.0%	0	0	0.0%	0	0
Foods Scraps	13.8%	129,982	169,022	7.1%	101,979	400,983
Yard Trimmings	1.6%	15,070	19,597	0.0%	0	34,667
Grass	0.0%	0	0	0.0%	0	0
Leaves	0.0%	0	0	0.0%	0	0
Branches	0.0%	0	0	0.0%	0	0
Mixed Paper (general)	6.2%	58,398	75,938	10.9%	155,677	290,012
Mixed Paper (primarily residential)	0.0%	0	0	0.0%	0	0
Mixed Paper (primarily from offices)	0.0%	0	0	0.0%	0	0
Mixed Metals	3.5%	32,967	42,868	14.7%	210,095	285,930
Mixed Plastics	8.6%	81,003	105,333	1.6%	22,483	208,819
Mixed Recyclables	5.0%	47,095	61,240	35.1%	500,873	609,208
Mixed Organics	17.0%	160,123	208,216	0.0%	0	368,339
Mixed MSW	9.2%	86,655	112,682	0.0%	0	199,336
Carpet	4.0%	37,676	48,992	0.7%	9,617	96,285
Personal Computers	2.0%	18,838	24,496	0.2%	3,198	46,532
Clay Bricks	0.0%	0	0	0.0%	0	0
Aggregate	0.0%	0	0	0.0%	0	0
Fly Ash	0.0%	0	0	0.0%	0	0
TOTAL	**100.0%**	**941,900**	**1,224,800**	**100.0%**	**1,426,500**	**3,593,200**
Checks						3,593,200

Version 7 (8/05)

WAste Reduction Model (WARM) -- Inputs

Use this worksheet to describe the baseline and alternative MSW management scenarios that you want to compare. The shaded areas indicate where you need to enter information.

1. **Describe the baseline generation and management for the MSW materials listed below. If the material is not generated in your community or you do not want to analyze it, leave it blank or enter 0. Make sure that the total quantity generated equals the total quantity managed.**

Material	Tons Generated	Tons Recycled	Tons Landfilled	Tons Combusted	Tons Composted
Aluminum Cans	30,178	10,678	11,023	8,477	NA
Steel Cans	28,620	6,953	12,248	9,419	NA
Copper Wire	-	-	-	-	NA
Glass	113,290	48,289	36,744	28,257	NA
HDPE	22,234	567	12,248	9,419	NA
LDPE	108,767	432	61,240	47,095	NA
PET	29,387	1,220	15,922	12,245	NA
Corrugated Cardboard	234,716	148,048	48,992	37,676	NA
Magazines/Third-class Mail	51,948	8,614	24,496	18,838	NA
Newspaper	225,747	139,079	48,992	37,676	NA
Office Paper	68,121	24,787	24,496	18,838	NA
Phonebooks	22,935	1,268	12,248	9,419	NA
Textbooks	-	-	-	-	NA
Dimensional Lumber	117,144	32,643	47,767	36,734	NA
Medium-density Fiberboard	-	-	-	-	NA
Food Scraps	400,983	NA	169,022	129,982	101,979
Yard Trimmings	34,667	NA	19,597	15,070	
Grass	-	NA	-	-	
Leaves	-	NA	-	-	
Branches	-	NA	-	-	
Mixed Paper (general)	290,012	155,677	75,938	58,398	NA
Mixed Paper (primarily residential)	-	-	-	-	NA
Mixed Paper (primarily from offices)	-	-	-	-	NA
Mixed Metals	285,930	210,095	42,868	32,967	NA
Mixed Plastics	208,819	22,483	105,333	81,003	NA
Mixed Recyclables	609,208	500,873	61,240	47,095	NA
Mixed Organics	368,339	NA	208,216	160,123	
Mixed MSW	199,336	NA	112,682	86,655	NA
Carpet	96,285	9,617	48,992	37,676	NA
Personal Computers	46,532	3,198	24,496	18,838	NA
Clay Bricks	-	NA	-	NA	NA
Aggregate	-		-	NA	NA
Fly Ash	-		-	NA	NA

Please enter data in short tons (1 short ton = 2,000 lbs.)

2. **Describe the alternative management scenario for the MSW materials generated in the baseline.**
   Any decrease in generation should be entered in the Source Reduction column.
   Any increase in generation should be entered in the Source Reduction column as a negative value.
   (Make sure that the total quantity generated equals the total quantity managed.)

Material	Baseline Generation	Tons Source Reduced	Tons Recycled	Tons Landfilled	Tons Combusted	Tons Composted
Aluminum Cans	30,178		10,678	11,023	8,477	NA
Steel Cans	28,620		6,953	12,248	9,419	NA
Copper Wire	-		-	-	-	NA
Glass	113,290		48,289	36,744	28,257	NA
HDPE	22,234		567	12,248	9,419	NA
LDPE	108,767		432	61,240	47,095	NA
PET	29,387		1,220	15,922	12,245	NA
Corrugated Cardboard	234,716		148,048	48,992	37,676	NA
Magazines/Third-class Mail	51,948		8,614	24,496	18,838	NA
Newspaper	225,747		139,079	48,992	37,676	NA
Office Paper	68,121		24,787	24,496	18,838	NA
Phonebooks	22,935		1,268	12,248	9,419	NA
Textbooks	-		-	-	-	NA
Dimensional Lumber	117,144		32,643	47,767	36,734	NA
Medium-density Fiberboard	-		-	-	-	NA
Food Scraps	400,983	NA	NA	169,022	129,982	101,979
Yard Trimmings	34,667	NA	NA	19,597	15,070	
Grass	-	NA	NA	-	-	
Leaves	-	NA	NA	-	-	
Branches	-	NA	NA	-	-	
Mixed Paper, Broad	290,012	NA	155,677	75,938	58,398	NA
Mixed Paper, Resid.	-	NA	-	-	-	NA
Mixed Paper, Office	-	NA	-	-	-	NA
Mixed Metals	285,930	NA	210,095	42,868	32,967	NA
Mixed Plastics	208,819	NA	22,483	105,333	81,003	NA
Mixed Recyclables	609,208	NA	500,873	61,240	47,095	NA
Mixed Organics	368,339	NA	NA	208,216	160,123	
Mixed MSW	199,336	NA	NA	112,682	86,655	NA
Carpet	96,285		9,617	48,992	37,676	NA
Personal Computers	46,532		3,198	24,496	18,838	NA
Clay Bricks	-		NA	-	NA	NA
Aggregate	-	NA		-	NA	NA
Fly Ash	-	NA		-	NA	NA

Metro

GHG Emissions Analysis -- Summary Report

Version 7 (8/05)

GHG Emissions Waste Management Analysis for St. Cloud 75%
Prepared by: JMF
Project Period for this Analysis: 01/00/00 to 01/00/00

GHG Emissions from Baseline Waste Management ($MTCO_2E$): (4,605,516)

Commodity	Tons Recycled	Tons Landfilled	Tons Combusted	Tons Composted	Total $MTCO_2E$
Aluminum Cans	10,678	11,023	8,477	NA	(158,474)
Steel Cans	6,953	12,248	9,419	NA	(26,399)
Glass	48,289	36,744	28,257	NA	(10,651)
HDPE	567	12,248	9,419	NA	8,172
LDPE	432	61,240	47,095	NA	44,106
PET	1,220	15,922	12,245	NA	11,797
Corrugated Cardboard	148,048	48,992	37,676	NA	(401,797)
Magazines/third-class mail	8,614	24,496	18,838	NA	(37,786)
Newspaper	139,079	48,992	37,676	NA	(553,210)
Office Paper	24,787	24,496	18,838	NA	(17,923)
Phonebooks	1,268	12,248	9,419	NA	(21,141)
Dimensional Lumber	32,643	47,767	36,734	NA	(127,702)
Food Scraps	NA	169,022	129,982	101,979	99,216
Yard Trimmings	NA	19,597	15,070	-	(6,253)
Mixed Paper, Broad	155,677	75,938	58,398	NA	(492,347)
Mixed Metals	210,095	42,868	32,967	NA	(1,540,474)
Mixed Plastics	22,483	105,333	81,003	NA	48,564
Mixed Recyclables	500,873	61,240	47,095	NA	(1,448,582)
Mixed Organics	NA	208,216	160,123	-	36,692
Mixed MSW	NA	112,682	86,655	NA	54,422
Carpet	9,617	48,992	37,676	NA	(55,029)
Personal Computers	3,198	24,496	18,838	NA	(10,719)

GHG Emissions from Alternative Waste Management Scenario ($MTCO_2E$): (4,605,516)

Commodity	Tons Source Reduced	Tons Recycled	Tons Landfilled	Tons Combusted	Tons Composted	Total $MTCO_2E$
Aluminum Cans	-	10,678	11,023	8,477	NA	(158,474)
Steel Cans	-	6,953	12,248	9,419	NA	(26,399)
Glass	-	48,289	36,744	28,257	NA	(10,651)
HDPE	-	567	12,248	9,419	NA	8,172
LDPE	-	432	61,240	47,095	NA	44,106
PET	-	1,220	15,922	12,245	NA	11,797
Corrugated Cardboard	-	148,048	48,992	37,676	NA	(401,797)
Magazines/third-class mail	-	8,614	24,496	18,838	NA	(37,786)
Newspaper	-	139,079	48,992	37,676	NA	(553,210)
Office Paper	-	24,787	24,496	18,838	NA	(17,923)
Phonebooks	-	1,268	12,248	9,419	NA	(21,141)
Dimensional Lumber	-	32,643	47,767	36,734	NA	(127,702)
Food Scraps	NA	NA	169,022	129,982	101,979	99,216
Yard Trimmings	NA	NA	19,597	15,070	-	(6,253)
Mixed Paper, Broad	NA	155,677	75,938	58,398	NA	(492,347)
Mixed Metals	NA	210,095	42,868	32,967	NA	(1,540,474)
Mixed Plastics	NA	22,483	105,333	81,003	NA	48,564
Mixed Recyclables	NA	500,873	61,240	47,095	NA	(1,448,582)
Mixed Organics	NA	NA	208,216	160,123	-	36,692
Mixed MSW	NA	NA	112,682	86,655	NA	54,422
Carpet	-	9,617	48,992	37,676	NA	(55,029)
Personal Computers	-	3,198	24,496	18,838	NA	(10,719)

Total Change in GHG Emissions: 0 $MTCO_2E$

This is equivalent to...		
Removing	-	Passenger Cars from the Roadway Each Year

Note: a negative value (i.e., a value in parentheses) indicates an emission reduction; a positive value indicates an emission increase

a) For explanation of methodology, see the EPA report:
Solid Waste Management and Greenhouse Gases: A Life-Cycle Assessment of Emissions and Sinks (EPA530-R-02-006)
-- available on the Internet at http://www.epa.gov/mswclimate/greengas.pdf (1.1 Mb PDF file).

Rochester Centroid		Total Tons 61,500	Total Tons 39,800		Total Tons 65,100	
EPA WARM Categories	Olmsted County Composition Percentages Applied to WARM Categories (Resource Recovery & Landfill)	2005 Baseline		SCORE Composition Percentages Applied to WARM Categories (Recycling)	2005 Baseline	
		Resource Recovery	Landfill		Recycling	Total
Aluminum Cans	0.6%	369	239	0.5%	313	921
Steel Cans	0.7%	431	279	0.8%	528	1,237
Copper Wire	0.0%	0	0	0.0%	0	0
Glass	3.7%	2,276	1,473	2.9%	1,905	5,653
HDPE	0.7%	431	279	0.0%	0	709
LDPE	7.2%	4,428	2,866	0.0%	0	7,294
PET	1.1%	677	438	0.0%	0	1,114
Corrugated Cardboard	9.4%	5,781	3,741	24.2%	15,730	25,252
Magazines/Third-class Mail	1.5%	923	597	0.4%	249	1,769
Newspaper	2.7%	1,661	1,075	1.8%	1,143	3,878
Office Paper	2.7%	1,661	1,075	3.2%	2,061	4,796
Phonebooks	0.0%	0	0	0.1%	60	60
Textbooks	0.0%	0	0	0.0%	0	0
Dimensional Lumber (treated)	0.0%	0	0	3.3%	2,136	2,136
Medium-density Fiberboard	0.0%	0	0	0.0%	0	0
Foods Scraps	24.6%	15,129	9,791	3.8%	2,500	27,420
Yard Trimmings	1.0%	615	398	0.0%	0	1,013
Grass	0.0%	0	0	0.0%	0	0
Leaves	0.0%	0	0	0.0%	0	0
Branches	0.0%	0	0	0.0%	0	0
Mixed Paper (general)	10.1%	6,212	4,020	21.3%	13,889	24,120
Mixed Paper (primarily residential)	0.0%	0	0	0.0%	0	0
Mixed Paper (primarily from offices)	0.0%	0	0	0.0%	0	0
Mixed Metals	3.5%	2,153	1,393	30.7%	19,990	23,536
Mixed Plastics	7.7%	4,736	3,065	1.5%	958	8,758
Mixed Recyclables	0.2%	123	80	3.1%	2,015	2,218
Mixed Organics	16.0%	9,840	6,368	0.0%	0	16,208
Mixed MSW	1.4%	861	557	0.0%	0	1,418
Carpet	4.0%	2,460	1,592	1.0%	638	4,690
Personal Computers	1.2%	738	478	1.5%	984	2,200
Clay Bricks	0.0%	0	0	0.0%	0	0
Aggregate	0.0%	0	0	0.0%	0	0
Fly Ash	0.0%	0	0	0.0%	0	0
TOTAL	**100.0%**	**61,500**	**39,800**	**100.0%**	**65,100**	**166,400**
Checks						166,400

Version 7 (8/05)

WAste Reduction Model (WARM) -- Inputs

Use this worksheet to describe the baseline and alternative MSW management scenarios that you want to compare. The shaded areas indicate where you need to enter information.

1. **Describe the baseline generation and management for the MSW materials listed below. If the material is not generated in your community or you do not want to analyze it, leave it blank or enter 0. Make sure that the total quantity generated equals the total quantity managed.**

Material	Tons Generated	Tons Recycled	Tons Landfilled	Tons Combusted	Tons Composted
Aluminum Cans	921	313	239	369	NA
Steel Cans	1,237	528	279	431	NA
Copper Wire	-	-	-	-	NA
Glass	5,653	1,905	1,473	2,276	NA
HDPE	709	-	279	431	NA
LDPE	7,294	-	2,866	4,428	NA
PET	1,114	-	438	677	NA
Corrugated Cardboard	25,252	15,730	3,741	5,781	NA
Magazines/Third-class Mail	1,769	249	597	923	NA
Newspaper	3,878	1,143	1,075	1,661	NA
Office Paper	4,796	2,061	1,075	1,661	NA
Phonebooks	60	60	-	-	NA
Textbooks	-	-	-	-	NA
Dimensional Lumber	2,136	2,136	-	-	NA
Medium-density Fiberboard	-	-	-	-	NA
Food Scraps	27,420	NA	9,791	15,129	2,500
Yard Trimmings	1,013	NA	398	615	
Grass	-	NA	-	-	
Leaves	-	NA	-	-	
Branches	-	NA	-	-	
Mixed Paper (general)	24,120	13,889	4,020	6,212	NA
Mixed Paper (primarily residential)	-	-	-	-	NA
Mixed Paper (primarily from offices)	-	-	-	-	NA
Mixed Metals	23,536	19,990	1,393	2,153	NA
Mixed Plastics	8,758	958	3,065	4,736	NA
Mixed Recyclables	2,218	2,015	80	123	NA
Mixed Organics	16,208	NA	6,368	9,840	
Mixed MSW	1,418	NA	557	861	NA
Carpet	4,690	638	1,592	2,460	NA
Personal Computers	2,200	984	478	738	NA
Clay Bricks	-	NA	-	NA	NA
Aggregate	-		-	NA	NA
Fly Ash	-		-	NA	NA

Please enter data in short tons (1 short ton = 2,000 lbs.)

Rochester

2. Describe the alternative management scenario for the MSW materials generated in the baseline.
Any decrease in generation should be entered in the Source Reduction column.
Any increase in generation should be entered in the Source Reduction column as a negative value.
(Make sure that the total quantity generated equals the total quantity managed.)

Material	Baseline Generation	Tons Source Reduced	Tons Recycled	Tons Landfilled	Tons Combusted	Tons Composted
Aluminum Cans	921		313	239	369	NA
Steel Cans	1,237		528	279	431	NA
Copper Wire	-		-	-	-	NA
Glass	5,653		1,905	1,473	2,276	NA
HDPE	709		-	279	431	NA
LDPE	7,294		-	2,866	4,428	NA
PET	1,114		-	438	677	NA
Corrugated Cardboard	25,252		15,730	3,741	5,781	NA
Magazines/Third-class Mail	1,769		249	597	923	NA
Newspaper	3,878		1,143	1,075	1,661	NA
Office Paper	4,796		2,061	1,075	1,661	NA
Phonebooks	60		60	-	-	NA
Textbooks	-		-	-	-	NA
Dimensional Lumber	2,136		2,136	-	-	NA
Medium-density Fiberboard	-		-	-	-	NA
Food Scraps	27,420	NA	NA	9,791	15,129	2,500
Yard Trimmings	1,013	NA	NA	398	615	
Grass	-	NA	NA	-	-	
Leaves	-	NA	NA	-	-	
Branches	-	NA	NA	-	-	
Mixed Paper, Broad	24,120	NA	13,889	4,020	6,212	NA
Mixed Paper, Resid.	-	NA	-	-	-	NA
Mixed Paper, Office	-	NA	-	-	-	NA
Mixed Metals	23,536	NA	19,990	1,393	2,153	NA
Mixed Plastics	8,758	NA	958	3,065	4,736	NA
Mixed Recyclables	2,218	NA	2,015	80	123	NA
Mixed Organics	16,208	NA	NA	6,368	9,840	
Mixed MSW	1,418	NA	NA	557	861	NA
Carpet	4,690		638	1,592	2,460	NA
Personal Computers	2,200		984	478	738	NA
Clay Bricks	-		NA	-	NA	NA
Aggregate	-	NA		-	NA	NA
Fly Ash	-	NA		-	NA	NA

Rochester

GHG Emissions Analysis -- Summary Report

Version 7 (8/05)

GHG Emissions Waste Management Analysis for St. Cloud 75%
Prepared by: JMF
Project Period for this Analysis: 01/00/00 to 01/00/00

GHG Emissions from Baseline Waste Management ($MTCO_2E$): (258,508)

Commodity	Tons Recycled	Tons Landfilled	Tons Combusted	Tons Composted	Total $MTCO_2E$
Aluminum Cans	313	239	369	NA	(4,648)
Steel Cans	528	279	431	NA	(1,594)
Glass	1,905	1,473	2,276	NA	(360)
HDPE	-	279	431	NA	399
LDPE	-	2,866	4,428	NA	4,105
PET	-	438	677	NA	740
Corrugated Cardboard	15,730	3,741	5,781	NA	(44,722)
Magazines/third-class mail	249	597	923	NA	(1,248)
Newspaper	1,143	1,075	1,661	NA	(6,103)
Office Paper	2,061	1,075	1,661	NA	(3,733)
Phonebooks	60	-	-	NA	(199)
Dimensional Lumber	2,136	-	-	NA	(5,239)
Food Scraps	NA	9,791	15,129	2,500	5,058
Yard Trimmings	NA	398	615	-	(196)
Mixed Paper, Broad	13,889	4,020	6,212	NA	(46,034)
Mixed Metals	19,990	1,393	2,153	NA	(146,213)
Mixed Plastics	958	3,065	4,736	NA	3,257
Mixed Recyclables	2,015	80	123	NA	(5,834)
Mixed Organics	NA	6,368	9,840	-	122
Mixed MSW	NA	557	861	NA	214
Carpet	638	1,592	2,460	NA	(3,727)
Personal Computers	984	478	738	NA	(2,555)

GHG Emissions from Alternative Waste Management Scenario ($MTCO_2E$): (258,508)

Commodity	Tons Source Reduced	Tons Recycled	Tons Landfilled	Tons Combusted	Tons Composted	Total $MTCO_2E$
Aluminum Cans	-	313	239	369	NA	(4,648)
Steel Cans	-	528	279	431	NA	(1,594)
Glass	-	1,905	1,473	2,276	NA	(360)
HDPE	-	-	279	431	NA	399
LDPE	-	-	2,866	4,428	NA	4,105
PET	-	-	438	677	NA	740
Corrugated Cardboard	-	15,730	3,741	5,781	NA	(44,722)
Magazines/third-class mail	-	249	597	923	NA	(1,248)
Newspaper	-	1,143	1,075	1,661	NA	(6,103)
Office Paper	-	2,061	1,075	1,661	NA	(3,733)
Phonebooks	-	60	-	-	NA	(199)
Dimensional Lumber	-	2,136	-	-	NA	(5,239)
Food Scraps	NA	NA	9,791	15,129	2,500	5,058
Yard Trimmings	NA	NA	398	615	-	(196)
Mixed Paper, Broad	NA	13,889	4,020	6,212	NA	(46,034)
Mixed Metals	NA	19,990	1,393	2,153	NA	(146,213)
Mixed Plastics	NA	958	3,065	4,736	NA	3,257
Mixed Recyclables	NA	2,015	80	123	NA	(5,834)
Mixed Organics	NA	NA	6,368	9,840	-	122
Mixed MSW	NA	NA	557	861	NA	214
Carpet	-	638	1,592	2,460	NA	(3,727)
Personal Computers	-	984	478	738	NA	(2,555)

Total Change in GHG Emissions: 0 $MTCO_2E$

This is equivalent to...		
Removing	-	Passenger Cars from the Roadway Each Year

Note: a negative value (i.e., a value in parentheses) indicates an emission reduction; a positive value indicates an emission increase

a) For explanation of methodology, see the EPA report
Solid Waste Management and Greenhouse Gases: A Life-Cycle Assessment of Emissions and Sinks (EPA530-R-02-006)
-- available on the Internet at http://www.epa.gov/mswclimate/greengas.pdf (1.1 Mb PDF file)

St. Cloud Centroid		Total Tons 69,100	Total Tons 86,200		Total Tons 152,100	
EPA WARM Categories	RRT - Elk River Composition Percentages Applied to WARM Categories (Resource Recovery & Landfill)	2005 Baseline		SCORE Composition Percentages Applied to WARM Categories (Recycling)	2005 Baseline	
		Resource Recovery	Landfill		Recycling	Total
Aluminum Cans	1.0%	691	862	1.4%	2,058	3,611
Steel Cans	0.6%	415	517	0.9%	1,330	2,262
Copper Wire	0.0%	0	0	0.0%	0	0
Glass	3.4%	2,349	2,931	4.1%	6,216	11,497
HDPE	0.7%	484	603	0.5%	786	1,873
LDPE	5.9%	4,077	5,086	0.1%	170	9,332
PET	1.3%	898	1,121	0.2%	237	2,256
Corrugated Cardboard	3.5%	2,419	3,017	10.0%	15,209	20,644
Magazines/Third-class Mail	1.9%	1,313	1,638	9.5%	14,426	17,376
Newspaper	4.1%	2,833	3,534	11.1%	16,901	23,268
Office Paper	1.9%	1,313	1,638	1.0%	1,541	4,492
Phonebooks	0.0%	0	0	0.1%	104	104
Textbooks	0.0%	0	0	0.0%	0	0
Dimensional Lumber (treated)	2.6%	1,797	2,241	6.2%	9,391	13,429
Medium-density Fiberboard	0.0%	0	0	0.0%	0	0
Foods Scraps	11.7%	8,085	10,085	0.8%	1,174	19,344
Yard Trimmings	0.9%	622	776	0.0%	0	1,398
Grass	0.0%	0	0	0.0%	0	0
Leaves	0.0%	0	0	0.0%	0	0
Branches	0.0%	0	0	0.0%	0	0
Mixed Paper (general)	7.2%	4,975	6,206	4.8%	7,306	18,488
Mixed Paper (primarily residential)	0.0%	0	0	0.0%	0	0
Mixed Paper (primarily from offices)	0.0%	0	0	0.0%	0	0
Mixed Metals	3.7%	2,557	3,189	41.8%	63,583	69,329
Mixed Plastics	9.9%	6,841	8,534	1.0%	1,507	16,881
Mixed Recyclables	7.7%	5,321	6,637	6.5%	9,825	21,783
Mixed Organics	18.7%	12,922	16,119	0.0%	0	29,041
Mixed MSW	7.2%	4,975	6,206	0.0%	0	11,182
Carpet	4.7%	3,248	4,051	0.0%	1	7,301
Personal Computers	1.4%	967	1,207	0.2%	335	2,510
Clay Bricks	0.0%	0	0	0.0%	0	0
Aggregate	0.0%	0	0	0.0%	0	0
Fly Ash	0.0%	0	0	0.0%	0	0
TOTAL	**100.0%**	**69,100**	**86,200**	**100.0%**	**152,100**	**307,400**
Checks						307,400

St. Cloud

Version 7 (8/05)

WAste Reduction Model (WARM) -- Inputs

Use this worksheet to describe the baseline and alternative MSW management scenarios that you want to compare. The shaded areas indicate where you need to enter information.

1. **Describe the baseline generation and management for the MSW materials listed below. If the material is not generated in your community or you do not want to analyze it, leave it blank or enter 0. Make sure that the total quantity generated equals the total quantity managed.**

Material	Tons Generated	Tons Recycled	Tons Landfilled	Tons Combusted	Tons Composted
Aluminum Cans	3,611	2,058	862	691	NA
Steel Cans	2,262	1,330	517	415	NA
Copper Wire	-	-	-	-	NA
Glass	11,497	6,216	2,931	2,349	NA
HDPE	1,873	786	603	484	NA
LDPE	9,332	170	5,086	4,077	NA
PET	2,256	237	1,121	898	NA
Corrugated Cardboard	20,644	15,209	3,017	2,419	NA
Magazines/Third-class Mail	17,376	14,426	1,638	1,313	NA
Newspaper	23,268	16,901	3,534	2,833	NA
Office Paper	4,492	1,541	1,638	1,313	NA
Phonebooks	104	104	-	-	NA
Textbooks	-	-	-	-	NA
Dimensional Lumber	13,429	9,391	2,241	1,797	NA
Medium-density Fiberboard	-	-	-	-	NA
Food Scraps	19,344	NA	10,085	8,085	1,174
Yard Trimmings	1,398	NA	776	622	
Grass	-	NA	-	-	
Leaves	-	NA	-	-	
Branches	-	NA	-	-	
Mixed Paper (general)	18,488	7,306	6,206	4,975	NA
Mixed Paper (primarily residential)	-	-	-	-	NA
Mixed Paper (primarily from offices)	-	-	-	-	NA
Mixed Metals	69,329	63,583	3,189	2,557	NA
Mixed Plastics	16,881	1,507	8,534	6,841	NA
Mixed Recyclables	21,783	9,825	6,637	5,321	NA
Mixed Organics	29,041	NA	16,119	12,922	
Mixed MSW	11,182	NA	6,206	4,975	NA
Carpet	7,301	1	4,051	3,248	NA
Personal Computers	2,510	335	1,207	967	NA
Clay Bricks	-	NA	-	NA	NA
Aggregate	-		-	NA	NA
Fly Ash	-		-	NA	NA

Please enter data in short tons (1 short ton = 2,000 lbs.)

St. Cloud

2. **Describe the alternative management scenario for the MSW materials generated in the baseline.**
   Any decrease in generation should be entered in the Source Reduction column.
   Any increase in generation should be entered in the Source Reduction column as a negative value.
   (Make sure that the total quantity generated equals the total quantity managed.)

Material	Baseline Generation	Tons Source Reduced	Tons Recycled	Tons Landfilled	Tons Combusted	Tons Composted
Aluminum Cans	3,611		2,058	862	691	NA
Steel Cans	2,262		1,330	517	415	NA
Copper Wire	-		-	-	-	NA
Glass	11,497		6,216	2,931	2,349	NA
HDPE	1,873		786	603	484	NA
LDPE	9,332		170	5,086	4,077	NA
PET	2,256		237	1,121	898	NA
Corrugated Cardboard	20,644		15,209	3,017	2,419	NA
Magazines/Third-class Mail	17,376		14,426	1,638	1,313	NA
Newspaper	23,268		16,901	3,534	2,833	NA
Office Paper	4,492		1,541	1,638	1,313	NA
Phonebooks	104		104	-	-	NA
Textbooks	-		-	-	-	NA
Dimensional Lumber	13,429		9,391	2,241	1,797	NA
Medium-density Fiberboard	-		-	-	-	NA
Food Scraps	19,344	NA	NA	10,085	8,085	1,174
Yard Trimmings	1,398	NA	NA	776	622	
Grass	-	NA	NA	-	-	
Leaves	-	NA	NA	-	-	
Branches	-	NA	NA	-	-	
Mixed Paper, Broad	18,488	NA	7,306	6,206	4,975	NA
Mixed Paper, Resid.	-	NA	-	-	-	NA
Mixed Paper, Office	-	NA	-	-	-	NA
Mixed Metals	69,329	NA	63,583	3,189	2,557	NA
Mixed Plastics	16,881	NA	1,507	8,534	6,841	NA
Mixed Recyclables	21,783	NA	9,825	6,637	5,321	NA
Mixed Organics	29,041	NA	NA	16,119	12,922	
Mixed MSW	11,182	NA	NA	6,206	4,975	NA
Carpet	7,301		1	4,051	3,248	NA
Personal Computers	2,510		335	1,207	967	NA
Clay Bricks	-		NA	-	NA	NA
Aggregate	-	NA		-	NA	NA
Fly Ash	-	NA		-	NA	NA

St. Cloud

GHG Emissions Analysis -- Summary Report

Version 7 (8/05)

GHG Emissions Waste Management Analysis for St. Cloud 75%
Prepared by: JMF
Project Period for this Analysis: 01/00/00 to 01/00/00

GHG Emissions from Baseline Waste Management ($MTCO_2E$): (702,233)

Commodity	Tons Recycled	Tons Landfilled	Tons Combusted	Tons Composted	Total $MTCO_2E$
Aluminum Cans	2,058	862	691	NA	(30,645)
Steel Cans	1,330	517	415	NA	(2,997)
Glass	6,216	2,931	2,349	NA	(1,506)
HDPE	786	603	484	NA	(645)
LDPE	170	5,086	4,077	NA	3,584
PET	237	1,121	898	NA	634
Corrugated Cardboard	15,209	3,017	2,419	NA	(41,502)
Magazines/third-class mail	14,426	1,638	1,313	NA	(40,004)
Newspaper	16,901	3,534	2,833	NA	(63,973)
Office Paper	1,541	1,638	1,313	NA	(944)
Phonebooks	104	-	-	NA	(349)
Dimensional Lumber	9,391	2,241	1,797	NA	(25,326)
Food Scraps	NA	10,085	8,085	1,174	6,834
Yard Trimmings	NA	776	622	-	(253)
Mixed Paper, Broad	7,306	6,206	4,975	NA	(23,199)
Mixed Metals	63,583	3,189	2,557	NA	(463,083)
Mixed Plastics	1,507	8,534	6,841	NA	4,679
Mixed Recyclables	9,825	6,637	5,321	NA	(29,614)
Mixed Organics	NA	16,119	12,922	-	2,734
Mixed MSW	NA	6,206	4,975	NA	2,972
Carpet	1	4,051	3,248	NA	1,345
Personal Computers	335	1,207	967	NA	(974)

GHG Emissions from Alternative Waste Management Scenario ($MTCO_2E$): (702,233)

Commodity	Tons Source Reduced	Tons Recycled	Tons Landfilled	Tons Combusted	Tons Composted	Total $MTCO_2E$
Aluminum Cans	-	2,058	862	691	NA	(30,645)
Steel Cans	-	1,330	517	415	NA	(2,997)
Glass	-	6,216	2,931	2,349	NA	(1,506)
HDPE	-	786	603	484	NA	(645)
LDPE	-	170	5,086	4,077	NA	3,584
PET	-	237	1,121	898	NA	634
Corrugated Cardboard	-	15,209	3,017	2,419	NA	(41,502)
Magazines/third-class mail	-	14,426	1,638	1,313	NA	(40,004)
Newspaper	-	16,901	3,534	2,833	NA	(63,973)
Office Paper	-	1,541	1,638	1,313	NA	(944)
Phonebooks	-	104	-	-	NA	(349)
Dimensional Lumber	-	9,391	2,241	1,797	NA	(25,326)
Food Scraps	NA	NA	10,085	8,085	1,174	6,834
Yard Trimmings	NA	NA	776	622	-	(253)
Mixed Paper, Broad	NA	7,306	6,206	4,975	NA	(23,199)
Mixed Metals	NA	63,583	3,189	2,557	NA	(463,083)
Mixed Plastics	NA	1,507	8,534	6,841	NA	4,679
Mixed Recyclables	NA	9,825	6,637	5,321	NA	(29,614)
Mixed Organics	NA	NA	16,119	12,922	-	2,734
Mixed MSW	NA	NA	6,206	4,975	NA	2,972
Carpet	-	1	4,051	3,248	NA	1,345
Personal Computers	-	335	1,207	967	NA	(974)

Total Change in GHG Emissions: 0 $MTCO_2E$

This is equivalent to...		
Removing	-	Passenger Cars from the Roadway Each Year

Note: a negative value (i.e., a value in parentheses) indicates an emission reduction; a positive value indicates an emission increase.

a) For explanation of methodology, see the EPA report:
Solid Waste Management and Greenhouse Gases: A Life-Cycle Assessment of Emissions and Sinks (EPA530-R-02-006)
-- available on the Internet at http://www.epa.gov/mswclimate/greengas.pdf (1.1 Mb PDF file).

1.1 POLICY/LEGISLATION

1.1a	Implement Product Stewardship Plans for New Products				
Description	The MPCA received one-time money in 2008 to conduct a study on Product Stewardship in which the agency was to develop a framework for implementing product stewardship initiatives. Product Stewardship is a strategy where manufacturers and other parties who have a role in designing, producing, or selling a product, product component or its packaging take responsibility for reducing environmental impacts at every stage of that product's life including collecting and recycling products at the end of their useful life. This shifts responsibility for managing these wastes from government to private industry. Producers should share the responsibility for eliminating this waste -through eliminating excess packaging, designing products for durability, reusability and recyclability; using recycled materials; and providing financial support for collection, processing, recycling and disposal of used materials. Next up is legislation charging the agency with reporting to the Legislature every other year a list of products best managed through product stewardship and the agency's efforts to manage at least one product through product stewardship. We support such legislation. The agency must commit sufficient resources (money and staff) to develop and implement these plans.				
Measurement Method					
Timeframe/Mileposts	First report due in 2010				
Potential Implementation Parties	MPCA, industry and other private partners				
Costs	Most costs would be borne by private industry who would also realize any cost saving through efficiencies. Additional costs would most likely be passed through to consumers.				
Funding Mechanisms	Agency funding, registration fees				
Barriers/Issues	Each product stewardship plan requires time for all parties to negotiate implementation Potential for information overload if consumers face multiple disposal mechanisms Has worked well for electronics and rechargeable batteries, has not worked well for carpet and telephone books Agency funding and staffing to monitor compliance Legislature must remain engaged in holding the agency accountable				
Opportunities	Creates private and public partnerships that can leverage the best of both parties				
Feasibility	Highly likely				
General Comments					
Centroid Information	**Twin Cities**	**Duluth**	**St. Cloud**	**Rochester**	**Total**

1.1 POLICY/LEGISLATION

1.1b	Extend Product Stewardship Law to Include Identification of Products to be Managed Through Source Reduction				
Description	The MPCA received one-time money in 2008 to conduct a study on Product Stewardship in which the agency was to develop a framework for implementing product stewardship initiatives. State efforts to date have dealt with end of life issues for products that are either voluminous (carpet) or potentially hazardous (electronics). Legislation would charge the agency with reporting to the Legislature every other year a list of products best managed through product stewardship and the agency's efforts to manage at least one product through product stewardship. These efforts should be enhanced by also requiring the agency to compile a list of five products that could best be managed through source reduction - preferably at the manufacturing stage. Currently decisions about manufacture of products are made by producers with little regard for the need for waste prevention and recycling. Waste prevention can save money and resources. Recycling of these wastes can provide feedstock for the manufacture of new products.				
Measurement Method					
Timeframe/Mileposts					
Potential Implementation Parties	MPCA, industry and other private partners				
Costs	Most costs would be borne by private industry who would also realize any cost saving through efficiencies. Additional costs would most likely be passed through to consumers.				
Funding Mechanisms	Agency funding, registration fees				
Barriers/Issues	Each product stewardship plan requires time for all parties to negotiate implementation Agency funding and staffing to monitor compliance Legislature must remain engaged in holding the agency accountable				
Opportunities	Creates private and public partnerships that can leverage the best of both parties				
Feasibility					
General Comments					
Centroid Information	**Twin Cities**	**Duluth**	**St. Cloud**	**Rochester**	**Total**
Cumulative GHG Reduction Potential					
Priority					
Centroid-Specific Comments					

1.1 POLICY/LEGISLATION

1.1c	Expand Product Stewardship Law to Include Extended Producer Responsibility				
Description	**Extended Producer Responsibility** (EPR) is a strategy designed to promote the integration of environmental costs associated with products throughout their life cycles into the market price of the products. Extended producer responsibility imposes accountability over the entire life cycle of products and packaging introduced on the market. This means that firms, which manufacture, import and/or sell products and packaging, are required to be financially or physically responsible for such products after their useful life. They must arrange for collection of spent products and manage them through reuse, recycling or other approved management methods. In this way, EPR shifts responsibility for waste from government to private industry, obliging producers, importers and/or sellers to internalize waste management costs in their product prices (Hanisch, 2000). Currently decisions about manufacture of products are made by producers with little regard for the need for waste prevention and recycling. However, EPR not only provides a framework for managing the waste it has the potential to benefit businesses. Waste prevention can save money and resources. Recycling of these wastes can provide feedstock for the manufacture of new products. In recent years, more than two dozen countries have introduced Producer Responsibility programs and policies. This is basically Product Stewardship taken to a broader and higher level.				
Measurement Method					
Timeframe/Mileposts					
Potential Implementation Parties	MPCA, industry and other private partners, federal government				
Costs	Most costs would be borne by private industry who would also realize any cost saving through efficiencies. Additional costs would most likely be passed through to consumers.				
Funding Mechanisms					
Barriers/Issues	EPR has rarely been consistently quantified. Moreover, applying conventional Life Cycle Assessment and assigning environmental impacts to producers and consumers can lead to double counting. Developing plans require time for all parties to negotiate implementation May require use of international trade treaties				
Opportunities	Creates private and public partnerships that can leverage the best of both parties				
Feasibility					
General Comments					
Centroid Information	**Twin Cities**	**Duluth**	**St. Cloud**	**Rochester**	**Total**
Cumulative GHG					

Reduction Potential					
Priority					
Centroid-Specific Comments					

1.1 POLICY/LEGISLATION

1.1d	Institute a System of Container Deposit for Beverage Containers
Description	Only 20-25% of used beverage containers in Minnesota are recycled. We have this low recycling rate despite widespread access to residential curbside recycling and widespread educational efforts. Eleven U.S. states and eight of Canada's ten provinces have "bottle bills" requiring deposit-return programs for beverage containers. Deposit-return programs have much higher recycling rates than municipal recycling programs because of the economic incentive to recycle offered to the consumer who gets money back for the containers. Over 75% of deposit-return cans and bottles sold in "bottle-bill" states are recycled. Bottle bills creates a privately-funded collection infrastructure for beverage containers and make producers and consumers (rather than taxpayers) responsible for their packaging waste. In Canada, domestically produced beer is sold in standardized bottles and 97% of the bottles come back to the producer to be refilled.
Measurement Method	Number of beverage containers redeemed
Timeframe/Mileposts	
Potential Implementation Parties	MPCA, beverage manufacturers, redemption centers, national trade associations
Costs	
Funding Mechanisms	Money from unredeemed deposits
Barriers/Issues	Resistance from the Beverage Association of Minnesota and retailers Will take time to create a network of redemption centers
Opportunities	Creates jobs Inspires innovation in packaging (similar to EPR above) especially when redesigning containers so they will be reusable Containers collected (especially glass) are cleaner and provide a higher quality feedstock to manufacturers Reduces litter Reduces the incidence of glass lacerations among urban children (American Journal of Public Health, October 1986. v. 76, no. 10) National trade associations are adopting high recycling goals and have indicated a willingness to partner on initiatives that may include bottle bills

Feasibility	Could be politically difficult to enact				
General Comments					
Centroid Information	**Twin Cities**	**Duluth**	**St. Cloud**	**Rochester**	**Total**
Cumulative GHG Reduction Potential					
Priority					
Centroid-Specific Comments					

1.1 POLICY/LEGISLATION

1.1e	**Institute a Ban on single-use Plastic Shopping Bags**
Description	Numerous countries and cities have banned thinner, single-use plastic bags and in many cases they also tax thicker plastic bags. A sample of participating countries/cities include: Belgium – tax China – ban and tax Ireland - tax (32 cents) Italy – tax Korea – tax Mumbai, India – ban San Francisco - ban at certain types of stores South Africa – ban and tax Los Angeles' ban goes into effect in July 2010. Arguments for eliminating the use of bags include that the bags contribute to greenhouse gas emissions, clog up landfills, litter streets and streams, and kill wildlife. In San Francisco 5 million fewer plastic bags are used every month as a result of the ban. In Ireland bag usage has dropped 95%. Ban and tax initiatives are coupled with promotion of reusable bags. Currently only about 3% of plastics bags are recycled nationwide.
Measurement Method	
Timeframe/Mileposts	
Potential Implementation Parties	MPCA, grocery stores and other retailers

Costs	
Funding Mechanisms	Tax on thicker bags
Barriers/Issues	Opposed by grocery stores and the plastics industry Does not address environmental impacts of paper bags Must include consumer education on changing habits
Opportunities	Reduces litter Reduces harmful impacts on wildlife and on waterbodies
Feasibility	Politically difficult to enact
General Comments	

Centroid Information	Twin Cities	Duluth	St. Cloud	Rochester	Total
Cumulative GHG Reduction Potential					
Priority					
Centroid-Specific Comments					

1.1 POLICY/LEGISLATION

1.1f	Refillables
Description	ReUse - refillables
Measurement Method	Life cycle analysis of refillables have been done multiple times by multiple stakeholders
Timeframe/Mileposts	
Potential Implementation Parties	Retailers, bottlers, soft drink companies and assoc., elected officials, grassroots movement, non profits, MPCA
Costs	
Funding Mechanisms	Deposits, taxes
Barriers/Issues	Issues deposit legislation supports refillables require the use of generic (standardized) bottles provide financial incentives for companies that switch from one-way containers to refillable bottles establish broad materials policies, such as taxes on virgin materials or energy consumption, as an incentive to reduce the environmental effects of materials use - policies that internalize the environmental costs of an economic activity so that industry absorbs these costs and accounts for them in pricing its goods and services. For example, taxes on virgin

	materials or energy consumption, would give industry an incentive to reduce material consumption. establishing government procurement guidelines that require or give preference to refillables set two-tier quantity-based user fees half back deposits for collection of recyclable and non-recyclable solid waste, giving consumers an incentive to use refillables. Full deposit returned for refillable half for one way. implement policies that help establish a new infrastructure of outside contractors to collect, inspect, and wash refillable bottles. Such policies could be integrated into local economic development efforts. Some beverage companies cite various obstacles to greater use of refillables, including: low return rates; lack of space for storing and washing empty bottles; major capital investments needed for space, equipment, and bottles; retailers' and wholesalers' resistance to handling returned bottles; and consumer resistance to the scuffed appearance of refillable bottles after several trips. Third-party companies that collect, sort, inspect, and wash bottles offer a solution for some beverage companies that lack space or equipment to wash bottles. Still, beverage companies base their choice of containers on a variety of considerations, and using the lowest-cost to them for a package does not always translate into lowest overall system costs- cost that are born by the taxpayer and the environment.
Opportunities	Reuse keeps goods and materials out of the waste stream Reuse advances source reduction Reuse preserves the “embodied energy” that was originally used to manufacture an item Reuse reduces the strain on valuable resources, such as fuel, forests and water supplies, and helps safeguard wildlife habitats Reuse creates less air and water pollution than making a new item or recycling Reuse results in less hazardous waste Reuse saves money in purchases and disposal costs Reuse generates new business and employment opportunities for both small entrepreneurs and large enterprises Reuse creates an affordable supply of goods that are often of excellent quality. Unique to reuse is that it also brings resources to individuals and organizations that might otherwise be unable to acquire them
Feasibility	Widely used in Canada and European Union with major soft drink involvement inc. coke etc. 95% of packaged beer sold in Canada is in refillable bottle
General Comments	Refillables are currently available for cleaning products in twincities - limited – no govt support or incentives are provided

Centroid Information	Twin Cities	Duluth	St. Cloud	Rochester	Total
Cumulative GHG Reduction Potential					
Priority					
Centroid-Specific Comments					

1.2 FINANCIAL INCENTIVES

1.2a	Funding for Source Reduction and Reuse				
Description	While each of the straw proposals includes a consideration for funding mechanisms, the funding issue is important enough to address separately and directly. If more resources are not devoted to this top of the hierarchy waste management strategy, then nothing significant will happen. There are a number of possibilities including: devote all SCORE funds to waste management with a significant portion going to source reduction; fees on management strategies at the lower end of the hierarchy: land filling and/or WTE; fees on egregious examples of throw away packaging such as plastic bottles for water, non-reusable packaging of various kinds, etc.				
Measurement Method	Legislative fiscal note; agency budgets				
Timeframe/Mileposts	The sooner the better				
Potential Implementation Parties	The legislature is key; counties, state government, NGOs, citizens supporting zero waste approaches				
Costs	Opportunity costs – what else could we do with the money?				
Funding Mechanisms	See above				
Barriers/Issues	Fiscal difficulties; Resistance generally to new fees				
Opportunities	A chance to make in investment that will save funds in the long run. Perhaps the Obama administration will put some money into upper hierarchy methods and we will be in a position to take advantage of that.				
Feasibility	???				
General Comments	Source reduction and reuse has been grossly under funded when compared with back end methods. We don't have good information about total funds spent around the state, but it would not be much. We have not tried hard to make reduction and reuse work. We must remember that a large chunk of the GHG reductions anticipated by MCCAG for 2025 depended on successful reduction activities and that reduction has the highest GHG multipliers. The sooner we get started on aggressive source reduction activities, the more cumulative benefit we will get to meet 2025 goals.				
Centroid Information	**Twin Cities**	**Duluth**	**St. Cloud**	**Rochester**	**Total**
Cumulative GHG Reduction Potential					
Priority					
Centroid-Specific Comments					

1.2 FINANCIAL INCENTIVES

1.2b	Unit Based Pricing				
Description	Unit based pricing				
Measurement Method					
Timeframe/Mileposts					
Potential Implementation Parties	MPCA, Cities, Counties, private sector, nonprofits				
Costs	Low - Some legislative or ordinance change and some enforcement				
Funding Mechanisms	A method of equitable pricing for garbage services.				
Barriers/Issues	Resist change or the perception of change Application in multifamily units with central disposal Some additional admin and enforcement				
Opportunities	Source reduction increases documented 6% Recycling and composting increases 17% and higher Cost based on generation (reduced cost for disposal as waste reduces) Transparent and equitable				
Feasibility	There is already legislation that requires some generational pricing but it is not specific or effective. Differentials must be required at specific levels for benefits to result				
General Comments	Rate differentials need to be no less than 70-80% higher for double the service to have impact				
Centroid Information	**Twin Cities**	**Duluth**	**St. Cloud**	**Rochester**	**Total**
Cumulative GHG Reduction Potential					
Priority					
Centroid-Specific Comments					

1.2 FINANCIAL INCENTIVES

1.2c	Promote Zero Waste Model Cities or Counties Through Assistance and Special Grants				
Description	Zero Waste is a strategy for managing waste as a resource that has been adopted by communities and businesses around the country as well as in other countries. It is a philosophy and a design principle which takes a systems approach to the flow of materials and wastes. It mimics natural systems in which balanced ecosystems make use of all wastes. The approach is consistent with comprehensive solid waste planning but sets a goal and implementation plans for eliminating waste through source reduction, recycling, composting, and holding producers responsible for producing products that can be fit into this system. There is a developing movement around the country in cities, counties, and businesses that provides motivation and tools for communities that want to do something progressive about their waste stream. Some cities in Minnesota (Saint Paul) have already adopted the zero waste principle, but need support for implementation. Other entities might be encouraged to take this step with some financial support. The state would employ a zero waste specialist and would make grants (two years, renewable for another two?) available on a competitive basis for public entities wanting to move to zero waste.				
Measurement Method	Measurement would be built into the grant agreement and the technical assistance. There would be before and after measurements of key waste streams, sectoral streams, etc. Recipients would develop ways of measuring progress.				
Timeframe/Mileposts	The state could begin education and promotion regarding zero waste almost immediately, by feeding it into their usual programs. Grant competition could come in 2010-2011, depending on when funding was available. Reports from grant recipients would be required annually. They might also be responsible then for spreading the word to other entities.				
Potential Implementation Parties	State government through the PCA, willing local units of government, interested businesses, non-profits, other institutions interested in zero waste.				
Costs					
Funding Mechanisms	Landfill and/or WTE fees; additional SCORE funds; EPA grants? Plastic bottle fees, etc.				
Barriers/Issues	Funding; skepticism about zero waste; current stresses on local government				
Opportunities	A chance to motivate NGOs and citizens around a progressive, exciting new concept regarding waste. A message to get the state off the plateau in reduction, recycling, and composting. Successful examples can spread to other entities.				
Feasibility	Very feasible if funding issues can be settled				
General Comments	We could try zero waste in one centroid; but centroids are not political units? All counties in a centroid. This might be possible, but it is probably better to seek interested applicants wherever they are; perhaps in a range of sizes.				
Centroid Information	**Twin Cities**	**Duluth**	**St. Cloud**	**Rochester**	**Total**
Cumulative GHG Reduction Potential					
Priority					
Centroid-Specific Comments					

1.2 FINANCIAL INCENTIVES

1.2d	Subsidize residential on site composting				
Description	Increased low cost or free Residential Backyard and Vermi-Worm Composting Bins and Workshops with Measurable Outcomes				
Measurement Method	Warm Model has measurement for food waste (but it does not include upstream benefit)				
Timeframe/Mileposts					
Potential Implementation Parties	State, Counties, Cities, Nonprofit organizations, individuals				
Costs	Residents have purchased subsidized bins and attended workshops in range of $25-$35 each (no study of price sensitivity and participation)				
Funding Mechanisms					
Barriers/Issues	Benefits not measured/not understood. Needs measurement of effectiveness of bin subsidy and residents continued use of bin and carbon offset to demonstrate the value of this initiative What is price sensitivity for bin/workshop? Perception of vector/odor etc issues				
Opportunities	Composting on site is source reduction not organics management it avoids transporting costs and carbon impacts (EPA) Lowest cost impact per ton with on site programs				
Feasibility	In Seattle that is about 67,700 tons for 1995 149,400 households or 906 pounds per household per year. About 40% of single family hh compost. After 7 years 70% still using the bin				
General Comments					
Centroid Information	**Twin Cities**	**Duluth**	**St. Cloud**	**Rochester**	**Total**
Cumulative GHG Reduction Potential					
Priority					
Centroid-Specific Comments					

1.2 FINANCIAL INCENTIVES

1.2e	Resource Management Contracting (RMC)				
Description	Resource Management Contracting is an alternative type of contracting meant for large, commercial/industrial/manufacturing/public organizations in an urban region. The contract focuses on customer assistance for solid waste instead of the volume of waste hauled away. The waste contractor is paid for their customer assistance and expertise in waste. The incentive is to work with the client to reduce, reuse, recycle and then haul the waste that is left over at the end. These contracts look at shared costs and revenue for recycling programs, reuse programs, organic diversion and behavior change of employees when it comes to thinking about waste. RMC programs are relatively new and are still developing but seem to prove to be promising.				
Measurement Method	Measurement is a crucial part of the RM contract. Organizations developing an RM contract are strongly encouraged to require their hauler to provide a baseline before the RM services are determined and implemented. This helps the organization determine what is currently happening before anything changes. The baseline helps people see what needs to change as well as successes that are happening and what can happen in the future.				
Timeframe/Mileposts	RM Contracts are new and many organizations that the MPCA has worked with have a hard time understanding the concept without some guidance. RM contracts also require organizations to have a "new" contract so the organization has to wait until their current contract has expired and then go to a new one with the hauler. There are a lot of things that the MPCA is learning as more and more organizations adopt RM contracts. So, it could be awhile before RM is "mainstream". I would say it could take 10 years.				
Potential Implementation Parties	All medium to large organizations in an urban area that are negotiating new hauling contracts. Haulers Potentially third party contractors for education.				
Costs	Most costs would be on the organizations contracting for new services and the haulers. It would be nice if MPCA and other government agencies also negotiated RM contracts. It would be nice to offer assistance to other organizations to try RM contracts while it is in its infancy stages so we can document how it is working and learn so new contracts can be even better.				
Funding Mechanisms	Grants to organizations.				
Barriers/Issues	Change is the biggest barrier. Something new takes awhile to catch on. It is a hard concept to grasp at first. Contracts are usually negotiated for a length of time and you need to wait until the contracts are up to change them. Haulers might not like the idea. It goes away from the way they have made money in the past.				
Opportunities	There are several opportunities. One is that there would be a better tracking system of waste in the commercial sector. It would provide more opportunities for recycling, organics capture, and opportunities for reuse. Provides companies with an incentive to learn about their waste hauling bill. In the MPCA's experience many organizations don't seem to analyze their waste bills. Big potential to reduce waste, increase recycling, increase food reuse and organics recovery.				
Feasibility	Good feasibility but it will take time.				
General Comments					
Centroid Information	**Twin Cities**	**Duluth**	**St. Cloud**	**Rochester**	**Total**

Cumulative GHG Reduction Potential					
Priority					
Centroid-Specific Comments					

1.2 FINANCIAL INCENTIVES

1.2f	Carbon Tax on Manufacturing				
Description	Manufacturers would be charged a carbon tax based on the emissions from creation and transportation of their products. This tax could be passed on at the retail level to be paid for by the purchaser. The goal would be for manufacturers to reduce the environmental impacts that their products have as well show consumers the "true" cost of the products that they purchase. This would be accomplished at a national or international level. It would be close to impossible to do at a state level.				
Measurement Method	Life-cycle assessments would have to be done on product manufacturing so the emissions from production could be assessed back to the manufacturer. A determination would also need to be made to determine what fiscal amount would be charged based on emissions.				
Timeframe/Mileposts	This would take years to figure out.				
Potential Implementation Parties	Government, manufacturers, retailers, citizens, third- party associations, and life cycle analysis firms.				
Costs	The cost to set up the system would be a lot. You would need experts in the field or economics, environment, life cycle studies and several other fields working on this for several years as well as law makers and government agencies.				
Funding Mechanisms	Many funding mechanisms would be needed including funds from manufacturers, government, universities, businesses and others. The tax would probably be passed onto customers purchasing the products so consumers would ultimately be paying too.				
Barriers/Issues	Many.				
Opportunities	Huge greenhouse gas savings. Huge education opportunity.				
Feasibility	low				
General Comments	I know that this one isn't likely to happen for many reasons but it needs to be stated that this is one BIG change that could have extremely large impacts on reducing climate changing emissions.				
Centroid Information	**Twin Cities**	**Duluth**	**St. Cloud**	**Rochester**	**Total**
Cumulative GHG Reduction Potential					
Priority					
Centroid-Specific Comments					

1.3 EDUCATION AND OUTREACH

1.3a	Reduce the Use of Plastic Drink Bottles: Start with Water
Description	**Strategy**: Endorse and promote a campaign to reduce the use of plastic bottles for bottled water and work through Product Stewardship and other strategies to reduce or eliminate overall the use of PET plastic bottles. Several national organizations, including The New American Dream and Corporate Accountability International, have been promoting a campaign to reduce the use of bottled water in situations where tap water is an acceptable alternative. The advantages of this reduction include a significant reduction in waste plastic going to landfills and incinerators and a significant reduction in the environmental impact of the transport of bottled water. This is an important waste reduction strategy that will significantly reduce greenhouse gas releases. The state, through the Pollution Control Agency, would endorse, join, and promote this campaign for state government entities (government as role model), other public institutions, schools, businesses, and individuals. Progress would be monitored and if it was not sufficient, additional measures would be adopted such as a bottle tax, container deposit legislation, packaging bans, landfill bans, etc.
Measurement Method	Keep track of the number of individuals and institutions who "sign the pledge" and do some sampling of typical bottled water purchases and the impact of the program on reductions in purchases (involve willing participants).
Timeframe/Mileposts	Announce the campaign in 2010. Add significant resources (a "Plastic bottle staff person" with promotion budget) in 2011. Continue extended producer responsibility discussions with manufacturers and suppliers to gain commitments for reduction or recycling. Assess success in 2014. If reductions are occurring, continue with program. If not, impose mandatory programs such as product bans, disposal bans, mandatory recycling provided by suppliers, taxes on containers, etc.
Potential Implementation Parties	The PCA, along with interested counties and cities would provide the impetus for the program. Implementation would involve individuals and organizations signing the "beyond the bottle" pledge. Focus would be in the Metro area where 90 per cent or so of the waste is generated.
Costs	One campaign staff person would be added at the state level (or possibly also one at the Metro level) to promote and monitor the campaign. Budget for promotional expenses would be included. This might be approximately $100,000 per year. All or a portion of this cost could well be recovered through savings resulting from reduced bottled water consumption, although the savings would not occur at the point of expense.
Funding Mechanisms	Use proceeds from a plastic bottle tax (or a bottled water tax); or use proceeds from a disposal tax; use money from cap and auction revenues accruing to the state or other greenhouse gas funds; use SCORE or general revenue funds.
Barriers/Issues	Vested interests of the bottled water industry; marketing efforts of that industry to undermine confidence in publicly

	supplied water; habits and institutional inertia; identifying situations where bottled water is appropriate; funding sources.
Opportunities	
Feasibility	Nothing tricky about the strategy; certainly feasible to promote this campaign; feasibility of changing individual and institutional behavior is always a question.
General Comments	**GHG Reduction Potential: Note: This is a hypothetical analysis based on aggressive action by 2015. It is designed to check methodology and to show the cumulative power of early action.** According to the WARM model, PET plastic has a GHG multiplier of (2.12) while land filling has a positive multiplier of 0.04 and incineration 1.07. Thus, every ton of PET kept out of incineration results in a 3.19 ton reduction in GHG per year. (Is this addition legitimate?) Also, does the WARM model take into account the GHG impacts of transporting bottled water? If not, gains are understated. According to the Centroid study, amount of PET going to incinerators or landfills - Metro: 11,855 tons to incineration, 15, 894 tons to landfill = 27, 749 tons - Duluth 937 tons to Landfill = 937 - St. Cloud 889 tons to incineration, 1087 tons to landfill = 1,976 tons - Rochester 690 tons to incineration, 486 tons to landfill = 1,176 tons Total Incineration = 13, 334 tons to incineration (Metro is 89%) Total Landfill = 18,404 tons to landfill (Metro is 86%) Potential GHG Reduction – Eliminate Plastic Bottles by 2015 13,334 X 3.19 X 10 Years = 425,000 tons eliminated cumulatively from incineration 15,894 X 2.16 X 10 Years = 343,000 tons eliminated cumulatively from landfill **Total: 768,000 metric tons of GHGs reduced by 2025 if all PET plastic bottles that are currently going to landfills and incinerators are eliminated by 2015.** **Other Comments:** There are many ancillary benefits to areas where water is being withdrawn and for support of locally supplied public water. Reliance on bottled water undermines public support for public water which has important equity and health implications. Tap water is more highly regulated than bottled water and protects consumers; reduction in bottled water will save money for individuals and institutions. In the US bottled water revenues were $15 billion in 2006 with the average per person consumption standing at 27.6 gallons. Publicly supplied water costs significantly less than bottled water. Producing the bottles required more than 17 million barrels of oil in 2007, enough fuel a million cars for a year, generating 2.5 million tons of GHGs. **Centroid Comments:** As with most material streams, the Metro Centroid overwhelms the impact of the other three. The Duluth Centroid is perhaps the least critical as the waste is land filled there with a smaller GHG multiplier.

1.3 EDUCATION AND OUTREACH

1.3b	Increase RETAP technical assistance
Description	Double the number of RETAP engineers working on source reduction at organizations.
Measurement Method	Analysis of trash bills before and after recommendations are implemented
Timeframe/Mileposts	Minimum of 6 years with milestones starting annually in year two, advantage quick start-up.
Potential Implementation Parties	RETAP, MPCA, local units of government, businesses and potentially LEAN consultants
Costs	salaries for RETAP assessors, travel and training
Funding Mechanisms	$100,000 total for the entire centroid area
Barriers/Issues	sustaining the program-how does it continue, diversity of sectors, diversity of cultures and languages, perceived government interference, trash billing, annual budgets,
Opportunities	build from existing technical experience, outside help from non-government entities, and partnerships
Feasibility	High
General Comments	The existing RETAP employees could work in the metro centroid area and new employees could be hired to work in other centroid areas.

Centroid Information	Twin Cities	Duluth	St. Cloud	Rochester	Total
Cumulative GHG Reduction Potential					
Priority					
Centroid-Specific Comments					

1.3 EDUCATION AND OUTREACH

1.3c	Develop and expand MnTAP
Description	Develop and expand specific sectors that MnTAP staff work with on P2. – Provide resources such as money – Make organizations accountable for numbers – Perception and accessibility are important
Measurement Method	Analysis of trash bills before and after recommendations are implemented

Timeframe/Mileposts	Minimum of 6 years with milestones starting annually in year two, advantage quick start-up.
Potential Implementation Parties	MnTAP, MPCA, and businesses
Costs	salaries, travel and training
Funding Mechanisms	Potentially state money or from fees assessed to businesses
Barriers/Issues	sustaining the program-how does it continue, diversity of sectors, diversity of cultures and languages, perceived government interference, trash billing, annual budgets,
Opportunities	build from existing technical experience, outside help from non-government entities, and partnerships
Feasibility	High
General Comments	

Centroid Information	Twin Cities	Duluth	St. Cloud	Rochester	Total
Cumulative GHG Reduction Potential					
Priority					
Centroid-Specific Comments					

1.3 EDUCATION AND OUTREACH

1.3d	Develop partnerships with other business assistance programs to work on waste reduction
Description	Technical assistance delivered through numerous partners – small business programs, waste wise, business associations, extension services, vendors (procurement), and non-profits – Provide resources such as money to work on source reduction – Make organizations accountable for numbers – Perception and accessibility are important – Can't increase technical assistance efforts without additional resources Partner with other organizations that already have access to work with companies on other issues and then work with them or train them to provide technical assistance on waste reduction.
Measurement Method	Analysis of trash bills before and after recommendations are implemented
Timeframe/Mileposts	The initial stage would be creating a partnership. The next stage would be training staff from partnering organizations on

	waste reduction and having MPCA staff go into businesses to work on waste reduction. The program would take awhile to start and gain momentum.				
Potential Implementation Parties	MPCA, non-profits, small business assistance programs, business associations, extensions services, vendors (procurement) and businesses				
Costs	salaries, travel and training				
Funding Mechanisms	Potentially state money or from fees assessed to businesses				
Barriers/Issues	sustaining the program-how does it continue, diversity of sectors, diversity of cultures and languages, perceived government interference, trash billing, annual budgets,				
Opportunities	build from existing technical experience, outside help from non-government entities, and partnerships				
Feasibility	medium				
General Comments					
Centroid Information	**Twin Cities**	**Duluth**	**St. Cloud**	**Rochester**	**Total**
Cumulative GHG Reduction Potential					
Priority					
Centroid-Specific Comments					

1.3 EDUCATION AND OUTREACH

1.3e	Consumer Food Waste Reduction Campaign				
Description	Educate consumers about food waste issues and reduction measures including food planning, portion advice, date label advice, money savings, recipes, tips, and food storage. Coordinate with public health staff developing proposals for Statewide Health Improvement Program (SHIP) funding to reduce "waist" and "waste." The portion control aspect of the prevention program would serve to minimize the size of people and the amount of food waste entering the municipal solid waste stream – either through organics collection programs or trash collection programs.				
Measurement Method	Point source waste generation numbers.				
Timeframe/Mileposts	SHIP application due April 13, 2009.				
Potential Implementation Parties	Government, residents, service providers, non profits, Saint Paul – Ramsey County Department of Public Health (Healthy Communities and Environmental Health Sections), others				
Costs					
Funding Mechanisms	The SHIP funding may include opportunities for portion control, obesity prevention and calorie labeling.				
Barriers/Issues	Hard to measure				
Opportunities	Source reduction of food waste is the cheapest most effective strategy to reduce waste and carbon emissions associated with food waste Saves consumer money in purchases and disposal costs Approximately 20% of world's climate change emissions are related to production, processing, transportation and storage of food. Opportunity to partner with health-related organizations. Build upon research findings from food-to-hogs and plate waste reduction through R/W RRP and research findings on obesity prevention programs.				
Feasibility	Medium - High (Studies show that we toss over a third of the food we buy.)				
General Comments	This joint approach to sharing information would be new in MN and may hold strong local appeal.				
Centroid Information	**Twin Cities**	**Duluth**	**St. Cloud**	**Rochester**	**Total**
Cumulative GHG Reduction Potential					
Priority					
Centroid-Specific Comments					

1.3 EDUCATION AND OUTREACH

1.3f	Job Training in ReUse and Repair Industry				
Description	ReUse and repair job training				
Measurement Method					
Timeframe/Mileposts					
Potential Implementation Parties	Job development Corp. Economic dev corp, Job training orgs, non profits government, industry				
Costs					
Funding Mechanisms	Green job fed funds				
Barriers/Issues	Much of what we toss can be repaired, refurbished, restocked and resold. We lack infrastructure and skilled workforce to do it and we lack jobs for unskilled and untrained people in Minnesota. According to ILSR there are 220,000 jobs for every 25.5 million tons of reusables that are tossed.				
Opportunities	Reuse keeps goods and materials out of the waste stream Reuse advances source reduction Reuse preserves the "embodied energy" that was originally used to manufacture an item Reuse reduces the strain on valuable resources, such as fuel, forests and water supplies, and helps safeguard wildlife habitats Reuse creates less air and water pollution than making a new item or recycling Reuse results in less hazardous waste Reuse saves money in purchases and disposal costs Reuse generates new business and employment opportunities for both small entrepreneurs and large enterprises Reuse creates an affordable supply of goods that are often of excellent quality. Unique to reuse is that it also brings resources to individuals and organizations that might otherwise be unable to acquire them				
Feasibility					
General Comments					
Centroid Information	**Twin Cities**	**Duluth**	**St. Cloud**	**Rochester**	**Total**
Cumulative GHG Reduction Potential					
Priority					
Centroid-Specific Comments					

1.3 EDUCATION AND OUTREACH

1.3g	Education and Promotion of Reusables				
Description	Educate public about the environmental benefits of reuse and promote existing reuse businesses and services				
Measurement Method					
Timeframe/Mileposts					
Potential Implementation Parties	Governments, businesses and industry, nonprofits				
Costs					
Funding Mechanisms					
Barriers/Issues	Existing reuse businesses and services are underfunded/under promoted.				
Opportunities	Reuse keeps goods and materials out of the waste stream Reuse advances source reduction Reuse preserves the "embodied energy" that was originally used to manufacture an item Reuse reduces the strain on valuable resources, such as fuel, forests and water supplies, and helps safeguard wildlife habitats Reuse creates less air and water pollution than making a new item or recycling Reuse results in less hazardous waste Reuse saves money in purchases and disposal costs Reuse generates new business and employment opportunities for both small entrepreneurs and large enterprises Reuse creates an affordable supply of goods that are often of excellent quality. Unique to reuse is that it also brings resources to individuals and organizations that might otherwise be unable to acquire them				
Feasibility	Reuse businesses experience and increase in sales and services when they are promoted. This is the simplest, low cost measure for increasing reuse.				
General Comments					
Centroid Information	**Twin Cities**	**Duluth**	**St. Cloud**	**Rochester**	**Total**
Cumulative GHG Reduction Potential					
Priority					
Centroid-Specific Comments					

1.3 EDUCATION AND OUTREACH

1.3h	Awards Program for Source Reduction
Description	An awards program honoring exceptional examples of source reduction to inspire others to also incorporate source reduction into their business practices. The awards program would need to have a ceremony that publicizes the projects so others would see, learn and replicate the award winning projects. The award program could also be used as an incentive to motivate businesses to move towards source reduction. For instance in FL they have a program called Green Lodging. Green Lodging awardees are provided technical assistance on how to become green lodging certified, are promoted and FL employees are required to stay at green lodges when traveling. WI also has a program called green tier. Green Tier is based on a collaborative system of contracts and charters crafted jointly by participating businesses and the DNR. These contracts and charters streamline environmental requirements in many cases and encourage new environmental technologies. Green Tier is designed to help environmentally responsible companies achieve environmental and economic gains. http://dnr.wi.gov/org/caer/cea/environmental/
Measurement Method	Each applicant submitting a source reduction project for consideration would be required to provide measurements of their source reduction and what they estimate will happen in the future. Each applicant would be asked to report any other organizations that inquire and replicate award winning projects.
Timeframe/Mileposts	This could be started right away and incorporated into the existing Governor's Awards Program or MEI Award Porgram.
Potential Implementation Parties	MPCA, MEI
Costs	A ceremony that assures recognition requires some money to be spent on presentations, a master of ceremony, etc. A ceremony that would be well attended, showcases the projects and honors the award winners could be done for between $10,000- $30,000.
Funding Mechanisms	Partnerships could be pursued with Chambers of Commerce or other large corporations but it would have to be a sponsorship and a third party would award the winners so the judging would be unbiased. Another funding option could be to work with MPCA's Governor's Award Program or MEI's Environmental Initiative Award Program.
Barriers/Issues	If the ceremony is not well attended organizations won't be inspired to work on similar projects. There might not be enough applicants. Consistent funding could be hard to get. Watching award winning projects might not translate into others doing similar projects.
Opportunities	There are already existing award programs to partner with. Many organizations are doing environmental projects and this is a good way to showcase them.
Feasibility	Good feasibility.
General Comments	There are two award programs that exist and it seems like it would make more sense to partner or change the existing programs instead of create an entirely new program.

	The other two award programs mentioned from FL and WI could be added to the existing programs to make the award program even better.				
Centroid Information	**Twin Cities**	**Duluth**	**St. Cloud**	**Rochester**	**Total**
Cumulative GHG Reduction Potential					
Priority					
Centroid-Specific Comments					

1.4 REGULATION AND PERMITTING

1.4a	**Promote reduction through procurement, labeling, supply chain pressure**
Description	In the private sector, this is sometimes referred to as the Wal-Mart strategy where the retailer asks its suppliers to take certain steps with respect to energy, environmental impact, etc as part of their contract. Source reduction (or zero waste planning) could be a part of this requirement and burden of proof is place on the supplier. In retail situations this could be linked to green labeling of some kind (like now "organic" or "local") to inform consumers about companies with reduction efforts. In the public sector, this kind of requirement could be phased in to procurement contracts with suppliers, giving preference to companies that had a zero waste plan in place and/or which were making successful efforts in source reduction.
Measurement Method	Programmatic information would be obtained easily based on the number of businesses or government entities that had adopted this approach, and the number of suppliers that complied. In terms of waste quantities reduced, this would require some kind of sampling approach that would look at selected willing examples and extrapolate to the participants in general.
Timeframe/Mileposts	Public procurement changes would probably take legislation or at least a Governor's Executive Order. This could happen in the 2010 session and could be implemented in 2011. In the private sector (and also applicable to the public sector), a careful study of the potentials of the supply chain approach, labeling, and specific Minnesota opportunities would be important. Funding for this could be obtained in 2010 and the study done in 2011. This might be implemented in conjunction with the Product Stewardship efforts. By 2012, there might be pilot labeling and pr
Potential Implementation Parties	Pollution Control Agency; State Government; Retail and other businesses
Costs	Costs would be for implementation and technical assistance staff; money for preparing the recommended report.
Funding Mechanisms	Round up the usual suspects
Barriers/Issues	Willingness of government and private entities to include these factors in their supplier decisions and the willingness of suppliers to comply.
Opportunities	An opportunity for progressive companies to take another step toward sustainability, by implementing zero waste and

	pressuring suppliers to do the same. Put together with a retail labeling program, this could give the market and the consumer a chance to vote with their dollars for zero waste. An opportunity for state government to lead by example.				
Feasibility	Good				
General Comments					
Centroid Information	**Twin Cities**	**Duluth**	**St. Cloud**	**Rochester**	**Total**
Cumulative GHG Reduction Potential					
Priority					
Centroid-Specific comments					

1.4 REGULATION AND PERMITTING

1.4b	Remove liability barriers
Description	Educate about liability issues, remove myths and where possible remove liability barriers to regulated reuse programs for reusables including reuseable HHW.
Measurement Method	
Timeframe/Mileposts	
Potential Implementation Parties	Government, residents, service providers, non profits
Costs	
Funding Mechanisms	
Barriers/Issues	
Opportunities	Reuse keeps goods and materials out of the waste stream Reuse advances source reduction Reuse preserves the “embodied energy” that was originally used to manufacture an item Reuse reduces the strain on valuable resources, such as fuel, forests and water supplies, and helps safeguard wildlife habitats Reuse creates less air and water pollution than making a new item or recycling Reuse results in less hazardous waste Reuse saves money in purchases and disposal costs Reuse generates new business and employment opportunities for both small entrepreneurs and large enterprises Reuse creates an affordable supply of goods that are often of excellent quality. Unique to reuse is that it also brings resources to individuals and organizations that might otherwise be unable to acquire them
Feasibility	Santa Monica, CA, operates a reuse area at their permanent facility. They estimate that the reuse program has saved them more than $50,000, or 20%, of their total HHW program budget. Likewise, Chittendon County, VT, utilizes a 4’ x 7’ shed at their fixed facility for their reusable products. They estimate it provides an annual cost savings of $8,100, or 10%, of their

	total program budget.				
General Comments					
Centroid Information	**Twin Cities**	**Duluth**	**St. Cloud**	**Rochester**	**Total**
Cumulative GHG Reduction Potential					
Priority					
Centroid-Specific Comments					

1.5 COLLECTION AND PROCESSING

1.5a	Organized Collection
Description	Promote the implementation of organized collection of MSW services through the lessening the requirements and timeframes for governmental units to implement organized collection, as well as to encourage joint purchasing efforts/cooperatives for the procurement of waste services.
Measurement Method	
Timeframe/Mileposts	2011
Potential Implementation Parties	MN Legislature, MPCA, MN Dept of Commerce, Regional/local governments (counties, economic development agencies, cities and townships), non-profits, private haulers, private sector
Costs	
Funding Mechanisms	
Barriers/Issues	• Private haulers strongly oppose organized collection. Small haulers fear it will limit their opportunities to compete. Large haulers believe that if their market share grows too large they may face additional government scrutiny/regulation • This should be done through public/private partnerships • Vocal groups of residents protest to elected officials saying they like the ability to choose their hauler for themselves.
Opportunities	• Creates opportunity to provide community wide education about the program • Can increase overall capture of materials by providing consistent service to all residents. • Can provide for multiple haulers to provide services by splitting cities into regions or allowing different haulers to collect each stream. • Gives waste generators flow control so they can designate that waste be managed by a method higher in the hierarchy. • Lengthens street life because of decreased heavy truck traffic, thus allowing cities to reduce or delay property tax assessments for road maintenance or replacement. • Allows cities to negotiate rates with haulers and thus create greater price differentials between different levels of service and influence residents to reduce their waste and recycle more of their waste. • Decreased diesel truck traffic decreases particle emissions resulting in cleaner air.

	• Route efficiency decreases greenhouse gas emissions. • Route efficiency results in less neighborhood noise pollution. • Decreased number of trucks on residential streets reduces the odds of accidents occurring. • Gives cities greater control over determining the best provision of service to their residents. Currently there is an artificially high threshold for switching to organized garbage service - a threshold that does not exist when cities consider organizing other services such as recycling and wi-fi. • Allows for transparency and consistency in pricing. • Associated educational efforts expand and enhance resident's knowledge about the full range of services and costs for waste disposal and recycling. • Can guarantee market share for small haulers that are part of a consortium. • Reduces confusion for new residents unsure how and what criteria to use to pick a garbage hauler.
Feasibility	Difficult politically to enact at the Legislature
General Comments	

Centroid Information	Twin Cities	Duluth	St. Cloud	Rochester	Total
Cumulative GHG Reduction Potential					
Priority					
Centroid-Specific Comments					

1.5 COLLECTION AND PROCESSING

1.5b	ReUse Facilities
Description	Develop a network of ReUse Faciities
Measurement Method	
Timeframe/Mileposts	
Potential Implementation Parties	Public and Private transfer Station and disposal facilities owners/operators. Opportunity for small business/green job development
Costs	
Funding Mechanisms	Tip fees that are lower than disposal
Barriers/Issues	Developing a network of reuse facilities around the state especially in the centroids where materials are sorted by major category for distribution to resale retailers
Opportunities	Reuse keeps goods and materials out of the waste stream Reuse advances source reduction Reuse preserves the “embodied energy” that was originally used to manufacture an item Reuse reduces the strain on valuable resources, such as fuel, forests and water supplies, and helps safeguard wildlife habitats

	Reuse creates less air and water pollution than making a new item or recycling Reuse results in less hazardous waste Reuse saves money in purchases and disposal costs Reuse generates new business and employment opportunities for both small entrepreneurs and large enterprises Reuse creates an affordable supply of goods that are often of excellent quality. Unique to reuse is that it also brings resources to individuals and organizations that might otherwise be unable to acquire them
Feasibility	There are reuse facilities all over the country and in Minnesota that provide green jobs and are profitable – most of these enterprises received government support or assistance from donors to get established
General Comments	In 1994 over 85% of all of the reusables available were landfilled or incinerated – developing more reuse opportunities will not put a dent in what is available for exisiting charities and other for profit resale operations.

Centroid Information	Twin Cities	Duluth	St. Cloud	Rochester	Total
Cumulative GHG Reduction Potential					
Priority					
Centroid-Specific Comments					

1.7 RESEARCH

1.7a	Updated statewide waste sort
Description	A comprehensive waste sort will provide a representative, statistically defensible estimate of the composition of Minnesota's MSW stream. This information is necessary to understand the need for reduction of any one of the components of the waste landfilled or incinerated in Minnesota. The last comprehensive, state-wide sort was completed in 1999. Our understanding of the actual waste composition is based on data gathered 10 years ago. Since that time a number of components have been banned (i.e. crt's) and other management options have come about (ie. carpet recycling.) In addition, household consumption and ultimate disposal behaviors may have changed due to economics and education actions. An update is important now because it can accomplish the following goals: • Establish a baseline for measuring future success in achieving waste management objectives; • Assess progress in reduction and recycling since 1999 (and since the previous sort in 1992); • Assist the State and its partners in setting future policy direction and management priorities. You really can't assess how far you've gone unless you know where you started. A waste sort will pinpoint that starting location.

1.7 RESEARCH

1.7b	Investigate composition of reusables in the waste stream
Description	Get specific information about reusable in the waste stream in Minnesota so that we can create businesses, services and programs to support their reuse
Measurement Method	
Timeframe/Mileposts	
Potential Implementation Parties	Disposal facilities, MPCA, waste composition technicians
Costs	
Funding Mechanisms	
Barriers/Issues	Business needs information about feedstock availability to create a supporting business pan, the state needs to create training programs to get skilled workers to fill reuse business positions products, problem, prevalent reusables need to be identified for policy action and data is missing for any of these actions to occur.
Opportunities	Reuse keeps goods and materials out of the waste stream Reuse advances source reduction Reuse preserves the "embodied energy" that was originally used to manufacture an item Reuse reduces the strain on valuable resources, such as fuel, forests and water supplies, and helps safeguard wildlife habitats Reuse creates less air and water pollution than making a new item or recycling Reuse results in less hazardous waste Reuse saves money in purchases and disposal costs Reuse generates new business and employment opportunities for both small entrepreneurs and large enterprises Reuse creates an affordable supply of goods that are often of excellent quality. Unique to reuse is that it also brings resources to individuals and organizations that might otherwise be unable to acquire them
Feasibility	Santa Monica, CA, operates a reuse area at their permanent facility. They estimate that the reuse program has saved them more than $50,000, or 20%, of their total HHW program budget. Likewise, Chittendon County, VT, utilizes a 4' x 7' shed at their fixed facility for their reusable products. They estimate it provides an annual cost savings of $8,100, or 10%, of their total program budget.
General Comments	

Centroid Information	Twin Cities	Duluth	St. Cloud	Rochester	Total
Cumulative GHG Reduction Potential					
Priority					
Centroid-Specific Comments					

1.7 RESEARCH

1.7c	Feasibility Study of Commercial /Institutional on-site composting				
Description	Feasibility /potential for on-site commercial/institutional composting				
Measurement Method	Warm Model has measurement for food waste (but it does not include upstream benefit)				
Timeframe/Mileposts					
Potential Implementation Parties	Variety of commercial applications, city, county, state, nonprofits, tech asst groups, U of M other universities and schools. Other institutions				
Costs	Large variance				
Funding Mechanisms	Grants, tax incentives, no-interest loans				
Barriers/Issues	Volume discounts on garbage create disincentive for waste reduction on commercial/institutional level Lack of technical assistance for implementation No grants/funding mechanisms to support this option Perception of vector/odor etc issues				
Opportunities	Lowest cost impact per ton with on site programs Composting on site is source reduction not organics management it avoids transporting costs and carbon impacts (EPA)				
Feasibility	Existing technology and currently operating programs throughout the country				
General Comments					
Centroid Information	**Twin Cities**	**Duluth**	**St. Cloud**	**Rochester**	**Total**
Cumulative GHG Reduction Potential					
Priority					
Centroid-Specific Comments					

1.8 CD& I

1.8a	Promotion of Green Building				
Description	Green Building programs such as LEED, MN Greenstar, and B-3 include provisions that reward reuse of materials, use of durable materials that last longer, and use of materials with recycled content.				
Measurement Method	Tonnages at C & D landfills, number of buildings certified by above programs				
Timeframe/Mileposts					
Potential Implementation Parties	State Building Council, NAMRI, Green Institute, CEE, MN Dept. of Commerce, MPCA				
Costs	Most costs would be borne by the developer or owner for the actual work. Promotional costs would be borne by the partners including the MPCA				
Funding Mechanisms					
Barriers/Issues					
Opportunities	- Continued sponsorship of Living Green Expo - Continued sponsorship of the Eco Experience				
Feasibility					
General Comments	Most work will be done by parties other than the MPCA				
Centroid Information	**Twin Cities**	**Duluth**	**St. Cloud**	**Rochester**	**Total**
Cumulative GHG Reduction Potential					
Priority					
Centroid-Specific Comments					

1.8 CD& I

1.8b	Promotion of Sustainable Development				
Description	Sustainable development standards use a whole-system approach that seeks to preserve resources, reduce operating costs, and reduce environmental and public health impacts. MPCA should work with partners to promote sustainable development through GreenStep cities and similar programs.				
Measurement Method					
Timeframe/Mileposts	2009-2010				
Potential Implementation Parties	Cities, CEE, Met Council, CERTs, private consulting firms http://www.crplanning.com/susdo.htm (State funded Sustainable Development model ordinances)				
Costs	Continued funding from the MPCA of the GreenStep program Other costs borne by partners				
Funding Mechanisms					
Barriers/Issues	Would take a coordinated and comprehensive plan. May need to provide technical assistance to cities or consultants.				
Opportunities	• Metro Cites are required to update their Comprehensive Plans (Comp Plan) every 10 years. For most cities, that process will be complete in 2009. The next step in that process is to update city codes and ordinances to implement the updated comprehensive plan. Now is the time to work with cities to implement sustainable development standards because updating the city code and ordinances will happen in 2009-2010. • If cities have completed their Comp Plan process or, in the case of Greater MN, are not required to develop a Comp Plan, cities should be encouraged to adopt sustainable policies and revise their codes and ordinance to implement those policies. • Amend the Comp Plan statutes to require that sustainable development practices be incorporated into the mandatory Metro Cities Com Plan.				
Feasibility					
General Comments					
Centroid Information	**Twin Cities**	**Duluth**	**St. Cloud**	**Rochester**	**Total**
Cumulative GHG Reduction Potential					
Priority					
Centroid-Specific Comments					

1.8 CD& I

1.8c	Bonding Money Recipients Eligible for Additional Funding					
Description	Currently all new buildings funded by state bonding money must demonstrate that the projects meet the state's B-3 standards which include standards for: Performance Management, Site and Water, Energy and Atmosphere, Indoor Environmental Quality, Materials and Waste. In 2009 all similarly funded remodeling projects of more that 10,000 sq/ft must also meet the B-3 standards. B-3 standards include required and recommended actions (http://www.msbg.umn.edu/ see also example under General Comments below). Allow bonding money recipients to qualify for up to 5% additional funding if they meet both required and recommended actions.					
Measurement Method	Can be incorporated into the Dept. of Administration's current tracking program					
Timeframe/Mileposts						
Potential Implementation Parties	Department of Administration, Department of Commerce					
Costs						
Funding Mechanisms	Legislature through the bonding bill					
Barriers/Issues	Lawmakers may prefer funding more projects rather that setting aside money to encourage better projects					
Opportunities	This can provide for more Green Jobs					
Feasibility						
General Comments	**From the State of Minnesota Sustainable Buildings Guidelines (B-3 standards)** M.3 Waste Reduction and Management Intent Minimize use of resources and negative environmental impacts through careful reduction and management of wastes generated during the construction process and building occupancy. Required Performance Criteria A. Construction waste: Minimize waste generated from construction, renovation and demolition of buildings through detailing and specifications. B. Construction waste: Divert at least 75% (by weight) construction, demolition, and land clearing debris from landfill disposal. C. Packaging waste: Reduce and recycle packaging waste associated with the construction process, and encourage manufacturers to ship their product using reusable, recyclable, returnable, or recycled content packaging. Reuse or return 50% of all packaging material, by weight, to suppliers or manufacturers. D. Operations waste: Reduce and recycle at least 50% of the waste generated during building operation. Provide dedicated recycling areas, processing and holding space, and reverse distribution space in the building. Recommended Performance Criteria E. Construction waste: Reuse, recycle and/or salvage an additional 15% (90% total by weight) of the construction, demolition, and land clearing waste. F. Packaging waste: Return an additional 25% (75% total by weight) of all packaging material to suppliers or manufacturers Note: Portions of this guideline are adapted from LEED Version 2.0.					
Centroid Information	**Twin Cities**	**Duluth**	**St. Cloud**	**Rochester**	**Total**	

Cumulative GHG Reduction Potential					
Priority					
Centroid-Specific Comments					

1.8 CD& I

1.8d	New Building and Remodeling Projects by Cities, Counties, State Agencies and Schools Required to Meet B-3 standards
Description	Currently only projects that receive bonding money from the state are required to meet B-3 standards. That requirement should be extended to city, county, state agency, and school district building and/or remodeling projects of 10,000 sq/ft or greater regardless of the funding source for the project.
Measurement Method	Can be incorporated into the Dept. of Administration's current tracking program
Timeframe/Mileposts	
Potential Implementation Parties	Department of Administration, Department of Commerce
Costs	Tracking by the Department of Administration. Individual entities would provide the project funding.
Funding Mechanisms	
Barriers/Issues	Animosity toward a government mandate
Opportunities	This can provide for more Green Jobs
Feasibility	
General Comments	**From the State of Minnesota Sustainable Buildings Guidelines (B-3 standards)** M.3 Waste Reduction and Management Intent Minimize use of resources and negative environmental impacts through careful reduction and management of wastes generated during the construction process and building occupancy. Required Performance Criteria A. Construction waste: Minimize waste generated from construction, renovation and demolition of buildings through detailing and specifications. B. Construction waste: Divert at least 75% (by weight) construction, demolition, and land clearing debris from landfill disposal. C. Packaging waste: Reduce and recycle packaging waste associated with the construction process, and encourage manufacturers to ship their product using reusable, recyclable, returnable, or recycled content packaging. Reuse or return 50% of all packaging material, by weight, to suppliers or manufacturers. D. Operations waste: Reduce and recycle at least 50% of the waste generated during building operation. Provide dedicated recycling areas, processing and holding space, and reverse distribution space in the building. Recommended Performance Criteria E. Construction waste: Reuse, recycle and/or salvage an additional 15% (90% total by weight) of the construction, demolition, and land clearing waste. F. Packaging waste: Return an additional 25% (75% total by weight) of all packaging material to suppliers or manufacturers Note: Portions of this guideline are adapted from LEED Version 2.0.

2.1 POLICY/LEGISLATION

2.1a	Mandatory Recycling Legislation				
Description	Adopt a State mandatory recycling legislation that requires commercial sector and residential sector to achieve a 50% recycling rate by 2011 and a 60% recycling rate by 2025. If these goals are not being met, the state would implement mechanisms that will a help to achieve those goals. These mechanisms could include Deposit Legislation, Disposal Bans on specific recyclable materials that are not achieving those rates, and Mandates that all products sold in MN must internalize and fund their costs of disposal (EPR)				
Measurement Method	Should be measured and enforced at the point of generation/collection.				
Timeframe/Mileposts	50% state-wide recycling rate by 2011, 60% by 2025. There should be interim "check-in/trigger" dates established between 2011 and 2025				
Potential Implementation Parties	MN Legislature, MPCA, Regional/local governments (counties, SWMCB, WLSSD, economic development agencies, cities and townships), non-profits, private sector, private haulers, MRF operators				
Costs					
Funding Mechanisms	SCORE Funds, service fees, material revenues				
Barriers/Issues	• Small haulers will have difficulty meeting this requirement • Strong opposition to implementation of disposal bans – enforcement must be at point of generation, not at disposal sites • Strong opposition to deposit legislation • Concerns over accurate measurement mechanisms to determine compliance/achievement • Challenges with implementation outside of centroids (reconciling stakeholder process charge with statewide goal) • Proposal potentially changes the entity responsible for meeting recycling goals (currently responsibility resides with counties and goals are tied to SCORE funds)				
Opportunities	• Creates strong incentives for both commercial and residential sectors to meet goals • We require cooperation of public and private sector to meet goals to avoid mandatory triggers				
Feasibility	Feasible but very politically sensitive				
General Comments					
Centroid Information	**Twin Cities**	**Duluth**	**St. Cloud**	**Rochester**	**Total**
Cumulative GHG Reduction Potential					
Priority					
Centroid-Specific Comments					

2.1 POLICY/LEGISLATION

2.1b	Minimum Recycled Content Requirements:				
Description	Expand and/or enforce minimum recycled content requirements to meet or exceed the US EPA Comprehensive Procurement requirements for all products that US EPA has established minimum recycled content recycled standards. All units of government will purchase remanufactured products whenever practical without reducing safety, quality or effectiveness.				
Measurement Method	Require annual reporting by all units of government of their purchasing guidelines and outcomes				
Timeframe/Mileposts					
Potential Implementation Parties	MN Legislature, MPCA, MN Dept of Admin , Regional/local governments (counties, economic development agencies, cities and townships),				
Costs					
Funding Mechanisms	State and local government purchasing budgets				
Barriers/Issues	• Enforcement , currently there are state and local purchasing guidelines but no requirements or enforcement around them • Would require greater involvement and oversight of MPCA staff • Some products may be difficult for current venders to supply • Difficulty with quantification, reporting (ID uncertainties within reported data) • Difficult to coordinate multiple purchasing sources in an organization • Purchasing often decentralized, complex implications for reporting				
Opportunities	• Would strongly enhance recycling and remanufacturing markets, increasing value and decreasing costs • Increase awareness of the impact of recycling • Many recycled and remanufactured products are less expensive				
Feasibility	Very feasible but will have some budget impacts				
General Comments	Need an update on the current status of programs currently in place				
Centroid Information	**Twin Cities**	**Duluth**	**St. Cloud**	**Rochester**	**Total**
Cumulative GHG Reduction Potential					
Priority					
Centroid-Specific Comments					

2.1 POLICY/LEGISLATION

2.1c	Deposit Legislation – Bottle Bill				
Description	Minnesota Legislature should adopt a Container deposit law that requires retailers and distributors to collect a $.10 refundable deposit on beverage containers. The deposit is paid when the container is purchased, and refunded when the container is returned for recycling. Bottle bills have proven to be highly effective in reducing litter and waste and promoting recycling.				
Measurement Method					
Timeframe/Mileposts	2011				
Potential Implementation Parties	MN Legislature, MPCA, MN Department of Commerce, Private sector retailers, distributors,				
Costs					
Funding Mechanisms	Creates own funding mechanism				
Barriers/Issues	• Strong opposition from retailers, distributors and beverage manufacturers • Will have impacts on current curbside collection programs (less collection costs but also less revenue from materials collected, ie. aluminum) • Unredeemed deposits • Impacts of market fluctuations				
Opportunities	• Creates a privately funded infrastructure for the collection of beverage containers • Makes producers and consumers responsible for their packaging wastes • Achieves 66%-96% capture rates for containers covered by deposits in states that have passed legislation • More glass recovered through color separation at collection points, making it possible to recycle back into glass bottles				
Feasibility	Very feasible but very politically sensitive				
General Comments					
Centroid Information	**Twin Cities**	**Duluth**	**St. Cloud**	**Rochester**	**Total**
Cumulative GHG Reduction Potential					
Priority					
Centroid-Specific Comments					

2.2 FINANCIAL INCENTIVES

2.2a	Increased Costs for Disposal				
Description	Raise the costs of disposal of refuse through increases in solid waste management taxes and through tip fee surcharges at disposal sites				
Measurement Method					
Timeframe/Mileposts	2011				
Potential Implementation Parties	MN Legislature, MN Dept of Commerce, Regional/local governments (counties, economic development agencies, cities and townships), landfill operators, WTE facilities, non-profits, private sector, private haulers				
Costs					
Funding Mechanisms	Would generate funding for state and local governments				
Barriers/Issues	• Some believe that raising taxes is not an effective way to affect behavior change • With increased costs of disposal, will result in increased illegal dumping • This necessitates Flow Control to prevent outstate transfer of waste • This would include the removal of all public funding for disposal methods to landfills and WTE/mass-burn facilities, which implies certain barriers • Difficult to attribute GHG reductions to behavioral change that might result from higher disposal costs				
Opportunities	• Creates significant increase in costs to dispose of refuse, incentivizing businesses and residents to recycle whenever possible • Increases funding for state and municipal governments to implement/fund waste reduction activities • Increases funding for state and municipal governments to fund waste reduction infrastructure				
Feasibility	Feasible but very politically sensitive				
General Comments	Assumptions used in quantification activities must be well defined and transparent				
Centroid Information	**Twin Cities**	**Duluth**	**St. Cloud**	**Rochester**	**Total**
Cumulative GHG Reduction Potential					
Priority					
Centroid-Specific Comments					

2.2 FINANCIAL INCENTIVES

2.2b	Incentivizing Behavior Change
Description	Require cities and counties to adopt and implement Pay-as-You-Throw (PAYT) ordinances where incremental price increases are proportional to container size increases as well as to the frequency of service
Measurement Method	Local units of government would need to have licensing requirements that would ensure compliance
Timeframe/Mileposts	2011
Potential Implementation Parties	MPCA, Regional/local governments (counties, SWMCB, WLSSD, cities and townships), non-profits, private sector, private haulers
Costs	Low to municipalities – Costs paid by consumers
Funding Mechanisms	
Barriers/Issues	• Enforcement and compliance would be challenging • Private sector haulers will be concerned about proprietary pricing information • Public will have concerns about increased costs for current levels of service • Capital costs to haulers to provide new carts of different sizes to customers
Opportunities	• Creates recognizable price incentives for reducing refuse service and source reduction efforts • Allows for customers to financial benefit by diverting waste into recycling streams • This could also include provisions that require transparency in pricing
Feasibility	Feasible to implement – enforcement challenge
General Comments	

Centroid Information	Twin Cities	Duluth	St. Cloud	Rochester	Total
Cumulative GHG Reduction Potential					
Priority					
Centroid-Specific Comments					

2.3 EDUCATION AND OUTREACH

2.3a	Expanded Education Efforts about the Benefits of Waste Reduction				
Description	Expand statewide and local education efforts to inform all Minnesotans about the benefits of Recycling and waste reduction regarding the environmental, GHG, and economic benefits of these activities. This could be done through broad incorporation of the 3R's into school curriculums, through the promotion of the fact that recycling services are not taxed, through a targeted multifamily recycling outreach campaign (similar to Recycle More), and through educational information at points of sale.				
Measurement Method					
Timeframe/Mileposts					
Potential Implementation Parties	MPCA, Department of Education, Regional/local governments (counties, SWMCB, WLSSD, cities and townships), School Districts, non-profits, private sector, private haulers				
Costs					
Funding Mechanisms	State apportion additional solid waste tax money for SCORE grants to governmental entities to implement new and innovative programs with measurable performance standards that lead to increased recovery of recyclable material. State funding, Industry, School Districts, etc				
Barriers/Issues	• Adequate funding for educational programs • Independent governance of school districts from local units of government • School districts and waste and recovery services are not the same as municipal services in many circumstances, creating problems with universal messages • Behavior change is hard to quantify • Difficult to measure effectiveness of education programs				
Opportunities	• Creates opportunities for Centroid wide Educational initiatives • Opportunities for public/private/institutional cooperation • Develop Public/Private partnerships to promote recycling through the expansion of programs such as ReTap, WasteWise, and Certs • Opportunity for targeted education on specific material streams, informed by 2005 baseline data for each Centroid				
Feasibility					
General Comments					
Centroid Information	**Twin Cities**	**Duluth**	**St. Cloud**	**Rochester**	**Total**
Cumulative GHG Reduction Potential					
Priority					
Centroid-Specific Comments					

2.4 REGULATION AND PERMITTING

2.4a	Compliance with Current Legislation and Goals				
Description	Enforce/require that all public entity laws and requirements are being abided by; that solid waste planning requirements are being met, that new goals be reflected in those plans; that all MRF's and MSW transfer, processing and disposal facilities are required under permitting to report all materials handled and final destinations to ensure that solid waste taxes and recycling tax exemptions are being accurately applied				
Measurement Method	MPCA, County and Facility reporting requirements				
Timeframe/Mileposts	2011				
Potential Implementation Parties	MN Legislature, MPCA, MN Dept of Commerce, Regional/local governments (counties, economic development agencies, cities and townships), landfill operators, WTE facilities, non-profits, private sector, private haulers				
Costs					
Funding Mechanisms	SCORE FUNDS				
Barriers/Issues	• Planning is tied to SCORE funding, which has not increased with growth or requirements • Governance for Centroid goals may require regional jurisdiction, not independent county planning • There is an inherent motivational and educational problem for local units of government to understand county goals and have the desire to meet them • Counties will need timelines and mandates to meet goals • Barriers to enforcement: funding, staffing, follow through, education; markets drive program implementation more than solid waste plans • Multitude of county entities complicates implementation • Tying funding to data points that are not terribly precise is an issue				
Opportunities	• With auditable reporting requirements as part of permitting process, accurate reporting from all facilities will provide more detailed information for planning • Public sector compliance with current laws will provide leadership and increase recycling • SCORE funding is currently tied to completion and submission of a plan to the state. Could change funding based upon the execution/achievement of the plan.				
Feasibility	Very Feasible				
General Comments					
Centroid Information	**Twin Cities**	**Duluth**	**St. Cloud**	**Rochester**	**Total**
Cumulative GHG Reduction Potential					
Priority					
Centroid-Specific Comments					

2.4 REGULATION AND PERMITTING

2.4b	Access to Recycling through Permitting				
Description	Expand permitting requirements to include equal access to recycling for all public event permits, through modifying state building codes and regulations requiring equal opportunity/space to recycle in building design and require recycling services as part of ongoing operations, as well as during the construction/renovation process				
Measurement Method	Reporting requirements as part of permitting				
Timeframe/Mileposts	2011				
Potential Implementation Parties	MN Legislature, MPCA, MN Dept of Commerce, Regional/local governments (counties, economic development agencies, cities and townships), non-profits, private sector, private haulers, C&D landfill operators, contractors and building trades				
Costs					
Funding Mechanisms	Permit Fees				
Barriers/Issues	• Enforcement and follow-up will be imperative for this to be successful • Difficulties to apply requirements to pre-existing buildings with lack of space when applying for renovation permits • Objections from public and contractors/developers for too many containers on limited space on some new construction/renovation projects • Small haulers will have difficulty meeting this requirement				
Opportunities	• Puts recycling and other waste reduction services on equal access with waste services • Makes the commercial/retail/development sector responsible to provide services • Creates additional infrastructure for away-from-home recycling				
Feasibility	Very Feasible to implement – difficult to enforce				
General Comments					
Centroid Information	**Twin Cities**	**Duluth**	**St. Cloud**	**Rochester**	**Total**
Cumulative GHG Reduction Potential					
Priority					
Centroid-Specific Comments					

2.4 REGULATION AND PERMITTING

2.4c	Preprocessing of MSW				
Description	Require that no unprocessed waste may be landfilled in the state of Minnesota. All MSW must go through a pre-processing facility that separates out recyclable materials and materials that are suitable for composting. Materials that have no recyclable value and materials that are not well suited for composting but that are combustible should be directed to an energy recovery facility. Only materials that are non-recyclable, non compostable, and are non-combustible should be disposed of in a land-fill				
Measurement Method	New permit requirement for all pre-processing and disposal facilities				
Timeframe/Mileposts	2011				
Potential Implementation Parties	MN Legislature, MPCA, MN Dept of Commerce, Regional/local governments (counties, economic development agencies, cities and townships), landfill operators, WTE facilities, non-profits, private sector, private haulers				
Costs					
Funding Mechanisms	Disposal Fees				
Barriers/Issues	• Currently a rule for no unprocessed waste going into Landfills in the Metro, but not being enforced • No unprocessed waste in landfill is not the same as preprocessing of all waste • Enforcement would be critical to achieve compliance • Potential to increase burden on disposal facilities, not generators • Concerns about the nuances in definition of what is “recyclable, compostable, combustible” • Whose judgment on what is suitable and the value of materials? • Does not take into account if something is “combustible”, but may be harmful if burned (ie PVC) • Recyclable and compostable materials will be more contaminated for end markets				
Opportunities	• Similar to the European model which has demonstrated higher recycling and composting rates • Creates equal requirements for disposal sites and methods • Capture materials that otherwise would be disposed off and not recovered				
Feasibility	Feasible but very politically sensitive and				
General Comments					
Centroid Information	**Twin Cities**	**Duluth**	**St. Cloud**	**Rochester**	**Total**
Cumulative GHG Reduction Potential					
Priority					
Centroid-Specific Comments					

2.5 COLLECTIONS AND PROCESSING

2.5a	Organized Collections				
Description	Promote the implementation of organized collection of MSW services through lessening the requirements and timeframes governmental units to implement organized collections, as well as to encourage joint purchasing efforts/cooperatives for the procurement of waste services				
Measurement Method					
Timeframe/Mileposts	2011				
Potential Implementation Parties	MN Legislature, MPCA, MN Dept of Commerce, Regional/local governments (counties, economic development agencies, cities and townships), non-profits, private haulers, private sector				
Costs					
Funding Mechanisms					
Barriers/Issues	• Private haulers strongly oppose organized collections. It limits their opportunities to compete. Spent years building their businesses under a open hauling system and have built their business models accordingly • This should be done through public/private partnerships • Some residents like the ability to choose for themselves who will be their hauler. Creates political issues for city councils, etc • There exist other ways to address opportunites (i.e. citywide licensing, etc) • Creates monopolies • Puts small haulers out of business				
Opportunities	• Creates opportunity to provide community wide education about the program • Can increase overall capture of materials by providing consistent service to all residents. • Can provide for multiple haulers to provide services by splitting cities into regions or allowing different haulers to collect each stream. • Decreased truck traffic, road wear and tear • Licensing requirement, citizen mandate as alternative to organized collection • Help cities create increased differential pricing • One hauler may be able to take over the market • Allows the city to control the waste contract for the entire community, possibly meaning more opportunities for WMC.				
Feasibility					
General Comments					
Centroid Information	**Twin Cities**	**Duluth**	**St. Cloud**	**Rochester**	**Total**
Cumulative GHG Reduction Potential					
Priority					

Centroid-Specific Comments					

2.5 COLLECTIONS AND PROCESSING

2.5b	New Collection and Processing Technologies
Description	Support should be provided to the development of new technologies and the implementation of existing technologies to effectively separate or collect recyclables and organic materials. Separate collection vehicles for recyclables, compostables and refuse is a contributor to GHG emissions and results in unnecessary energy consumption
Measurement Method	
Timeframe/Mileposts	
Potential Implementation Parties	MPCA, Regional/local governments (counties, economic development agencies, cities and townships), private sector, non-profits
Costs	
Funding Mechanisms	SCORE Funds, MPCA Capital grants
Barriers/Issues	• Private haulers would have to swap out their fleets and buy expensive new equipment. Spent years building their businesses under a open hauling system and have built their business models accordingly for the stream of materials that they collect • Major cost implications with indeterminate benefit • Concerns if this would lead to the commingling of streams and rely on processing to separate recyclables from MSW, etc. Would lead to more contamination of materials • Might only be applicable in organized collection systems
Opportunities	• Could create efficiencies in collections that would lower the cost for collections • Have other beneficial effects of having fewer trucks on the roads, such as decreasing road wear
Feasibility	
General Comments	

Centroid Information	Twin Cities	Duluth	St. Cloud	Rochester	Total
Cumulative GHG Reduction Potential					
Priority					
Centroid-Specific Comments					

2.5 COLLECTIONS AND PROCESSING

2.5c	New Licensing Requirements and City Ordinances				
Description	**Cities must require that all haulers be licensed in their communities. Require all licensed haulers to provide recycling collection services as a condition of licensing.**				
Measurement Method	Requirement of licensing would be annual reporting of materials collected				
Timeframe/Mileposts					
Potential Implementation Parties	Regional/local governments (counties, SWMCB, WLSSD, economic development agencies, cities and townships), private haulers.				
Costs	Low costs.				
Funding Mechanisms	Service costs would be paid directly by residents to their hauler				
Barriers/Issues	• Only requires haulers to offer services, but not to provide to all customers • Cities are already required to ensure that residents have the opportunity to recycle curbside unless too small. • Does not require cities to mandate services, only an option • Minimizes education opportunities that city –wide uniform services offer				
Opportunities	• Can provide for multiple haulers opportunity to provide services • Expedites implementation				
Feasibility	Very feasible				
General Comments					
Centroid Information	**Twin Cities**	**Duluth**	**St. Cloud**	**Rochester**	**Total**
Cumulative GHG Reduction Potential					
Priority					
Centroid-Specific Comments					
Other Comments					

2.6 MARKET SECTOR (ORIGIN AND END MARKETS)

2.6a	Subsidizing New Market/Product Development				
Description	Increase viability of local recycling markets by subsidizing new market/product development. Green jobs program similar to JOBZ with associated tax incentives for companies to locate or expand end markets which also encourages creation of businesses which use recyclable materials in production				
Measurement Method	Track revenue and job creation numbers for companies that utilize program				
Timeframe/Mileposts					
Potential Implementation Parties	MN Legislature, MPCA, MN Dept of Commerce, Regional/local governments (counties, economic development agencies, cities and townships)				
Costs					
Funding Mechanisms	MPCA Capital Grants and Loans				
Barriers/Issues	• Current underfunding of MPCA grant and loan funds • Difficult to quantify benefits • Should look at multi-state approach to this concept due to interstate nature of commodity flows				
Opportunities	• Increases overall tax base with new job creation in both the new markets as well as up stream with collection and processing sectors • MPCA will have more tools to assist in recruiting market development • Stimulate market forces, harnessing private sector to bring capital to material recovery				
Feasibility					
General Comments					
Centroid Information	**Twin Cities**	**Duluth**	**St. Cloud**	**Rochester**	**Total**
Cumulative GHG Reduction Potential					
Priority					
Centroid-Specific Comments					

2.6 MARKET SECTOR (ORIGIN AND END MARKETS)

2.6b	Opportunity to Recycle in Institutional, Commercial and Multifamily Sectors				
Description	Extend opportunity to recycling to non-residential by developing recycling requirements for schools, public entities and businesses. Require School districts to create and implement solid waste plans for recycling and composting. Implement public space recycling requirements for all parks, malls, and convenience stores requiring recycling containers wherever there is a trash container. Require that all state entities employ resource management contracts for their MSW services.				
Measurement Method	Include Institutional and Commercial sectors in SCORE reporting				
Timeframe/Mileposts	2011				
Potential Implementation Parties	MN Legislature, MPCA, MN Dept of Commerce, Department of Education, Regional/local governments (counties, economic development agencies, cities and townships), private sector, non-profits, private haulers, end markets				
Costs					
Funding Mechanisms	SCORE Funds				
Barriers/Issues	• Lack of enforcement • Adequate funding for implementation and education about requirements and goals • There is an inherent motivational and educational problem for local units of government to understand county goals and have the desire to meet them • Need for significant technical support to provide assistance in program establishment in all applicable locations • Increased financial burden on strapped school systems				
Opportunities	• MPCA should promote and facilitate the use of resource management contracts • This could lead to the use of more resource management contracts • Develop Public/Private partnerships to promote recycling through the expansion of programs such as ReTap, WasteWise, and Certs, • Develop strong small business recycling programs. • Encourage/incentivize company sustainability plans. • Enhance value for end markets through increased participation • Opportunities for private business partnership/sponsorships with schools • Create a simple template planning tool for schools, entities • Increase technical assistance to entities				
Feasibility					
General Comments					
Centroid Information	**Twin Cities**	**Duluth**	**St. Cloud**	**Rochester**	**Total**
Cumulative GHG Reduction Potential					
Priority					
Centroid-Specific Comments					

2.7 RESEARCH

2.7a	Standardized calculation and consistent reporting				
Description	MPCA needs to develop and implement a standardized method for all counties and municipalities to calculate source reduction, recycling, organics recovery, WTE and land-filling in order to have full, accurate, and consistent reporting for tracking MSW in the state. In addition, MPCA should develop a materials management model that tracks costs for each method of material handling				
Measurement Method	TBD				
Timeframe/Mileposts	2011				
Potential Implementation Parties	MPCA, Regional/local governments (counties, economic development agencies, cities and townships), non-profits, landfill operators, WTE facilities, private haulers, other reclamation businesses				
Costs					
Funding Mechanisms	SCORE Funds				
Barriers/Issues	• Difficult to capture information from commercial sector on a voluntary basis • Defining and determining all businesses and locations engaged in recovery activities and getting reporting information will require significant resources • Some additional admin and enforcement				
Opportunities	• Accurate tracking by county will provide valuable information for Solid Waste plans • Cost models will educate local policy makers on the overall system costs and inform their decisions				
Feasibility	Very Feasible				
General Comments					
Centroid Information	**Twin Cities**	**Duluth**	**St. Cloud**	**Rochester**	**Total**
Cumulative GHG Reduction Potential					
Priority					
Centroid-Specific Comments					

2.8 CD & I

2.8a	Create and Expand Recovery Opportunities for C&D Materials				
Description	Create and expand efforts to develop end markets for C&D materials. Continue efforts to establish a spec for recycled tear-off roofing in asphalt pavement. Continue market development for gypsum sheetrock recycling. Continue environmental review and feasibility of C&D wood waste derived biomass fuel. Continue to require that C&D processing facilities be permitted and well regulated/enforced in order to ensure proper management and to avoid improper operating practices and material end uses, as well as opportunities for preprocessing materials for recovery of materials.				
Measurement Method					
Timeframe/Mileposts					
Potential Implementation Parties	MPCA, Regional/local governments (counties, economic development agencies, cities and townships), landfill operators, private haulers, contractors and building trades				
Costs					
Funding Mechanisms					
Barriers/Issues	• Important to make sure that end-markets are environmentally appropriate and have actual GHG benefits (i.e. not daily cover) • Renovation materials are very difficult to identify • An unknown amount of materials are already separated at job sites. Difficult to track and report that data • Painted and treated wood, painted Sheet-rock are examples of hard to determine what materials are they treated with. No uniformity in materials and hazard identification • Education of building trades professionals				
Opportunities	• Promote job site separation and recovery as an effective way to capture quality materials • LEED certification and other Green building programs are creating growing awareness of issue • State requiring job-site recycling and recycled content materials for state construction projects would go a long way in creating market demand for services				
Feasibility					
General Comments	Growing demand for Green/energy efficient/recycled content building materials and projects statewide.				
Centroid Information	**Twin Cities**	**Duluth**	**St. Cloud**	**Rochester**	**Total**
Cumulative GHG Reduction Potential					
Priority					
Centroid-Specific Comments					

2.9 OTHER

2.9a	Program and Infrastructure Development Option for Rural Recycling and Waste Collection Opportunities				
Description	Develop centralized rural recycling and waste collection drop-site network to manage and capture wastes and recyclables currently being buried or burned on site in rural areas of the state where waste collection services are not available.				
Measurement Method					
Timeframe/Mileposts					
Potential Implementation Parties	MPCA, MN Dept of Commerce, Regional/local governments (counties, economic development agencies, cities and townships), non-profits, private sector				
Costs	Low capital costs				
Funding Mechanisms	SCORE Funds, Property taxes, User fees				
Barriers/Issues	• Difficult to implement and enforce burning bans • Will require significant education and awareness campaign to change behavior				
Opportunities	This type of system could be implemented for a low capital cost with dramatic effects. Modeled on the system in place in Houston County where the county operates 5 Staffed drop-sites where residents can take MSW, recyclables, and demolition debris "free" of charge, this program is actually funded by property fees ($30.00/Household Annually).				
Feasibility	Very Feasible but politically sensitive				
General Comments					
Centroid Information	**Twin Cities**	**Duluth**	**St. Cloud**	**Rochester**	**Total**
Cumulative GHG Reduction Potential					
Priority					
Centroid-Specific Comments					

Organics Management Straw Proposals Assumptions

1. All proposals will support the existing Minnesota waste hierarchy.
2. All efforts have been made to reduce organics waste generation.
3. All efforts have been made to redirect food to people first, then animals.
4. The consequences of any proposal will include an evaluation and understanding of that proposal on other systems and infrastructure already in operation.
5. Regardless of the approach, education is key to success.
6. How a revised system is implemented will depend on what straw proposals are adopted.
7. Use of biodegradable items will improve what is collected for composting.
8. Financial mechanisms should be equitably available and applied.

3.1 POLICY/LEGISLATION

3.1a	Public Entity Source-Separated Organic Waste Diversion
Description	Take first step by mandating that public entities source-separate organic wastes. Portions of this waste could be directed to various management methods (ie. Food to Humans/animals, Composting, digestion, bioreactor, gasification etc.).
Measurement Method	Some data exists at the county level in SCORE reporting, but a thorough evaluation of measurement method would be necessary, especially in capturing data from generators, which would provide the clearest picture of how entities are managing the entire waste stream.
Timeframe/Mileposts	Needs to be developed.
Implementation Parties	State Government Buildings. Local Government buildings. School districts. Libraries. Jails/Prisons. Publicly sponsored events. Need to define the types of buildings—might be appropriate for buildings with food services, but not for general office buildings, etc.
Costs	Increased costs on public entities mandated to participate. There may be increased costs or savings for public entities depending on the particular system implemented.
Funding Mechanisms	SCORE, Solid Waste Tax if necessary.
Barriers/Issues	Funding to cover increased costs would be an issue. Education efforts would need to be in place to direct behavior change. Additional hauling and hauling distances may be an additional GHG contributor.
Opportunities	Public entities would be able to implement more quickly than commercial and residential. If implemented, a sizeable volume of organic waste would be available to evaluate different end-uses and management options. This experience would provide a good case study of what works and doesn't work in this system.
Feasibility	
General Comments	There is some existing information from places where this is already happening (MPCA bldg, Schools, etc.) that could be useful in developing this policy.

Centroid Information	Twin Cities	Duluth	St. Cloud	Rochester	Total
Cumulative GHG Reduction Potential					
Priority					
Centroid-Specific Comments					

3.1b	Target Organic Rich Commercial and Institution Generators
Description	Define and Target "Organic Rich" Commercial and Institutional Generators and Require Separate Management of Food Waste and Organics by any or all methods: reduction, food to hogs or composting, etc Includes organizations like Xcel Center, Target Center, et. Ban use of food grinders
Measurement Method	
Timeframe/Mileposts	
Implementation Parties	MCES identify large uses, MPCA, Counties, private sector
Costs	Comparable to recycling costs Depends on garbage costs, maybe cost savings for some
Funding Mechanisms	SCORE
Barriers/Issues	-Need to determine standard requirement method, legislative mandate, licensing requirement, etc -Enforcement -Space -Training of employees -Potential to impact waste hauler service level -Additional reporting and review needed
Opportunities	-Remaining msw becomes more visible and possible to reduce service and cost levels -SWMT tax savings -Increase worker safety & productivity -Increase "green" appeal -Possible increase of private sector service opportunities
Feasibility	Very feasible. Need to increase resources to develop program elements and provide assistance and education to entities.
General Comments	Examine financial incentives both at state and local levels, SWMT, county service charges

Centroid Information	Twin Cities	Duluth	St. Cloud	Rochester	Total
Cumulative GHG Reduction Potential					
Priority					
Centroid-Specific Comments					

3.1c	Residential sector, Co- collection of Food waste/organics with yard waste				
Description	Many cities throughout the United States and Canada have proven that food waste/non-recyclable paper can be efficiently co-collected using the existing yard waste collection system and managed effectively at a composting facility. Based on the experience of the Carver County co-collection organics project, if all of the approximately 800,000 households in the Metro region with curbside trash collection were provided with organics collection, an additional 27,000 to 77,000 tons of organics could be diverted from the trash.				
Measurement Method					
Timeframe/Mileposts	There are currently two organics waste demonstration projects in the Metro area managing co-collected residential yard waste and organics. The MPCA is reviewing additional requests for new organics composting sites which could be in operation in 2009. Many cities in the metropolitan area have requested residential organics collections service for their residents.				
Implementation Parties	Regional and local governments, waste service providers, compost site owner/operators, MPCA				
Costs	-possible low collection costs by co-collection of existing yard waste routes it eliminates the need for an additional truck. - hauler can utilize existing yard waste carts so no new organics carts may be necessary Residents who choose to utilize bags can not use plastic bags. The must purchase biodegradable bags which at this time are more expensive. -possible increase cost due compost facility location, type				
Funding Mechanisms					
Barriers/Issues	-Limited compost facility capacity -Potential issue in siting new compost sites -Collection during winter months. In the Carver County program organics are collected every other week and delivered to the compost site which operates year round. -Plastic bags -Perception and sorting -MCPA guidance on facility requirements needed				
Opportunities	-Reduce frequency of garbage pickup or size of container - efficiencies and lowered cost of service when residential organics are collected and composted with yard waste at yard waste composting sites specifically setup for mixed organics				
Feasibility	Proven technology				
General Comments	Food waste and other organics in a landfill setting are the major contributors to landfill methane generation. Methane is 23 times more potent than carbon dioxide as a greenhouse gas. The strength of leachate is also increased by the presence of food waste and other organics in a landfill and food waste going down in-sink garbage disposals add to the BOD and phosphorus content of wastewater.				
Centroid Information	**Twin Cities**	**Duluth**	**St. Cloud**	**Rochester**	**Total**
Cumulative GHG Reduction Potential					

Priority					
Centroid-Specific Comments					

3.1d	**Generator Organics Disposal Ban by 2015**				
Description	By 2015, residential and commercial and institutional generators will not be allowed to place food waste and organic materials into the trash. Phase in approach with diversion goals and progress measured. Start with commercial and institutional. Evaluate best practices for residential and evaluate by 2012				
Measurement Method					
Timeframe/Mileposts					
Implementation Parties	MCES, MPCA, Counties, cities, private sector				
Costs	Depends on food waste/organics program. Many comparable to recycling costs Depends on level of garbage costs, maybe cost savings for some				
Funding Mechanisms	SCORE				
Barriers/Issues	-Residential –apartment buildings, collection, ghg impacts -Commercial –requiring all, or only "organic rich", space, training employees, additional government requirement -Development of program, definitions, implementation, enforcement -trash contracts -Compost rule/MPCA facility guidance				
Opportunities	-Remaining msw becomes more visible and service levels maybe reduced, odors reduced -funding incentives, service charges, swmt savings -Increase worker safety and productivity -Increase "green appeal" -Possible increase in private sector service opportunities				
Feasibility	Review and determine whether through hauler licensing programs requirements for organics collection can be implemented.				
General Comments					
Centroid Information	**Twin Cities**	**Duluth**	**St. Cloud**	**Rochester**	**Total**
Cumulative GHG Reduction Potential					
Priority					
Centroid-Specific Comments					

3.1e	Refinement of the definition of Source Separated Compostable Materials (MN Stat. §115A.03, subd. 32b?) is needed				
Description	Current State law contains the following definition: 115A.03 Subd. 32a. **Source-separated compostable materials.** "Source-separated compostable materials" means materials that: (1) are separated at the source by waste generators for the purpose of preparing them for use as compost; (2) are collected separately from mixed municipal solid waste, and are governed by the licensing provisions of section 115A.93; (3) are comprised of food wastes, fish and animal waste, plant materials, diapers, sanitary products, and paper that is not recyclable because the commissioner has determined that no other person is willing to accept the paper for recycling; (4) are delivered to a facility to undergo controlled microbial degradation to yield a humus-like product meeting the agency's class I or class II, or equivalent, compost standards and where process residues do not exceed 15 percent by weight of the total material delivered to the facility; and (5) may be delivered to a transfer station, mixed municipal solid waste processing facility, or recycling facility only for the purposes of composting or transfer to a composting facility, unless the commissioner determines that no other person is willing to accept the materials. There was discussion amongst the SubGroup that this definition may need revised. The discussion included the need to redefine organics diversion as recycling.				
Measurement Method	Change in statute if determined a change is needed				
Timeframe/Mileposts	2010 legislative session				
Potential Implementation Parties	Agency, Stakeholders, legislators, Governor				
Costs	Zero				
Funding Mechanisms	Non-needed				
Barriers/Issues	Lack of buy-in by all stakeholders Moves composting up on the waste hierarchy				
Opportunities	Make reusing and recycling organic materials easier.				
Feasibility					
General Comments					
Centroid Information	**Twin Cities**	**Duluth**	**St. Cloud**	**Rochester**	**Total**
Cumulative GHG Reduction Potential					
Priority					
Centroid-Specific Comments					

3.2 FINANCIAL INCENTIVES

3.2a	Financial Viability				
Description	Financial viability is key to the long-term viability of all straw proposals. Funding mechanisms identified include: a. Incentives such as tax credits b. More heavily tax materials that are landfilled c. Grants, low-interest loans d. Carbon credit generation e. Subsidy f. Market factors alone g. Market factors in combination with other incentives or taxes				
Measurement Method					
Timeframe/Mileposts					
Potential Implementation Parties					
Costs					
Funding Mechanisms					
Barriers/Issues					
Opportunities					
Feasibility					
General Comments					
Centroid Information	**Twin Cities**	**Duluth**	**St. Cloud**	**Rochester**	**Total**
Cumulative GHG Reduction Potential					
Priority					
Centroid-Specific Comments					

3.3 EDUCATION AND OUTREACH

3.4 REGULATION AND PERMITTING

3.4a	**Revise the MPCA rules for permitting source separated organics composting facilities and clarifiy the definition(s) of organic materials.**				
Description	Develop an updated rule for SSOM composting facility siting, design, operation and performance standards that protect air and surface and groundwater but do not make siting and operation of such facilities cost prohibitive.				
Measurement Method					
Timeframe/Mileposts	Develop a Guidance document and/or engage the Emergency Rule Making Authority so that the rule revision process does not prevent the implementation of programs. Rule revision process to be completed by January 31, 2011				
Implementation Parties	MPCA in conjunction with County staff				
Costs	$85,000				
Funding Mechanisms	Funded by the MPCA				
Barriers/Issues	Protecting the environment, change based on scientific data including Demonstration projects				
Opportunities	Rule revision will help promote for profit company interest in processing SSOM.				
Feasibility	Highly feasible. Need is already identified. Effort is already underway.				
General Comments					
Centroid Information	**Twin Cities**	**Duluth**	**St. Cloud**	**Rochester**	**Total**
Cumulative GHG Reduction Potential					
Priority					
Centroid-Specific Comments					

3.5 COLLECTION AND PROCESSING

3.5a	Organized Collection				
Description	Implement organized collection of Source Separated Organic Materials (SSOM) in municipalities to require and implement the recovery of organics. This would create the densities of materials to make collection programs more affordable, as well as to provide opportunities for all residents to participate. Municipalities would also have the pricing controls to then incentivize the diversion of SSOM out of the garbage can and into an organics container.				
Measurement Method	In organized collection programs, reporting of all materials collected would/could be a requirement of all contracts allowing for accurate measurement of tons captured.				
Timeframe/Mileposts	• Currently the process to follow the organized collection statute takes a municipality approximately one year to complete				
Potential Implementation Parties	MPCA, MN Dept of Commerce (Office of Energy Security), regional/local governments (counties, SWMCB, WLSSD, economic development agencies, cities and townships), private haulers.				
Costs	Low costs/medium costs. Legal and administrative costs paid by municipalities to follow the current mandated organizing statute process. However, must recognize that it is transferring costs currently paid by residents directly to their hauler to the local unit of government to pay. Per household costs generally are less in organized programs than under non-organized collection programs.				
Funding Mechanisms	This is usually done through either property tax or service fee increases.				
Barriers/Issues	• Private haulers strongly oppose organized collections. It limits their opportunities to compete. Spent years building their businesses under a open hauling system and have built their business models accordingly • Residents like the ability to choose for themselves who will be their hauler. Creates political issues for city councils, etc.				
Opportunities	• Creates opportunity to provide community wide education about the program • Can increase overall capture of materials by providing consistent service to all residents. • Can provide for multiple haulers to provide services by splitting cities into regions or allowing different haulers to collect each stream.				
Feasibility	Very feasible but politically sensitive				
General Comments	The organized collection process is quite long and onerous for all parties involved				
Centroid Information	**Twin Cities**	**Duluth**	**St. Cloud**	**Rochester**	**Total**
Cumulative GHG Reduction Potential					
Priority					
Centroid-Specific Comments					

3.5b	Establish System for Transfer of SSOM				
Description	Within Centroids create a system of drop-off locations for SSOM that facilitate the collection of materials from small generators or with inadequate densities for collection. Also allow Material Recycling Facilities (MRF's) to accept, set aside, and transfer SSOM under their current permit-by-rule requirements.				
Measurement Method	Reported tons of organics diverted at MRF's and drop-off locations would be a requirement of the permits				
Timeframe/Mileposts	Modify or create new rules in order to permit MRF's to accept and transfer SSOM - 2011 License/construct/operate first municipal/regional SSOM drop-off locations - 2011				
Potential Implementation Parties	MPCA, MN Dept. of Commerce (Energy Security Office), regional/local governments (counties, SWMCB, WLSSD, economic development agencies, etc.), private MRF operators.				
Costs	Low capital costs to modify existing facilities to accept materials				
Funding Mechanisms	Solid waste fees/taxes on MSW disposal/processing facilities, state/federal grants, tipping fee at facility.				
Barriers/Issues	• Creating a sustainable infrastructure for the collection of source-separated organics. • Need to develop more regional compost sites to minimize transportation costs of collected materials to processing sites • Will require revising MPCA rules for permitting such facilities. • Public opposition to such facilities may be a problem.				
Opportunities	• Utilizes current infrastructure to facilitate the collection and movement of SSOM • Creates options for small generators and rural communities to provide access to those interested in self hauling				
Feasibility	Technically feasible				
General Comments	Would need to consider what additional permitting requirements are necessary to ensure public health				
Centroid Information	**Twin Cities**	**Duluth**	**St. Cloud**	**Rochester**	**Total**
Cumulative GHG Reduction Potential					
Priority					
Centroid-Specific Comments					

3.5c	Collect Organics Under Same Rules as Recycling Collection				
Description	Require that residents of MN be provided the same assurance of access to SSOM collection programs that govern the provision of recycling services (115.552). Additionally SSOM should be exempted from all state and local solid waste management taxes, and the collection of SSOM would be exempt from the organized collection statute.				
Measurement Method					
Timeframe/Mileposts	Will require change in State Statute and MPCA rules - 2011				
Potential Implementation Parties	MPCA, MN Dept of Commerce (Office of Energy Security), regional/local governments (counties, SWMCB, WLSSD, economic development agencies, cities and townships), private haulers.				
Costs	Medium/high costs. Municipalities and/or counties would be required to implement the collection of SSOM, either through contracted services or through licensing requirements of haulers within their jurisdiction. There would also be a loss of solid waste management tax revenue to the state and local units of government for the newly exempted materials that would now be collected as SSOM.				
Funding Mechanisms	This is usually done through either property tax or service fee increases, or through increased SCORE Funding to counties and local units of government.				
Barriers/Issues	• Private haulers strongly oppose contracted collections. It limits their opportunities to compete. Spent years building their businesses under a open hauling system and have built their business models accordingly • Unfunded mandate unless significant new funds are provided to municipalities • Higher collection costs to the generator for collection and separation but potential savings in avoided disposal costs if they are a large generator of SSOM. • Loss of revenue to state				
Opportunities	• Can increase overall capture of materials by providing consistent service to all residents • Can provide for multiple haulers to provide services by splitting cities into regions or allowing different haulers to collect each stream. • Expedites implementation • Creates opportunity to provide community wide education about the program				
Feasibility	Very feasible but politically sensitive				
General Comments					
Centroid Information	**Twin Cities**	**Duluth**	**St. Cloud**	**Rochester**	**Total**
Cumulative GHG Reduction Potential					
Priority					
Centroid-Specific Comments					

3.5d	Co-Collection				
Description	Remove any regulatory requirements or restrictions that limit or prohibit the co-collection of SSOM. Allow for the co-collection of SSOM either along with yard waste, and/or promote the collection of SSOM with the same vehicle but in separate compartments from other streams of collected materials (ie. yard-waste, recyclables, refuse)				
Measurement Method					
Timeframe/Mileposts	• Will require change in State Statute and MPCA rules - 2011				
Potential Implementation Parties	MPCA, regional/local governments (counties, SWMCB, WLSSD), private and public landfill owners, electrical utilities, other potential energy markets, etc.				
Costs	none				
Funding Mechanisms					
Barriers/Issues	• Will require developing new MPCA rules for easing the operator in permitting such facilities. WLSSD now has this kind of facility permit. • Yard-waste collection is not a year-round service so may have some issues regarding year-round separation and collection of SSOM • Collection vehicles that must be purchased.				
Opportunities	• Allows for additional opportunities to collect with low marginal costs				
Feasibility	Technically feasible on a demonstration project basis. No long term operating experience.				
General Comments					
Centroid Information	**Twin Cities**	**Duluth**	**St. Cloud**	**Rochester**	**Total**
Cumulative GHG Reduction Potential					
Priority					
Centroid-Specific Comments					

3.5e	New Licensing Requirements and City Ordinances				
Description	Cities would pass ordinances that mandate SSOM collections for their residents. This will allow haulers in the market to decide if they want to compete or these services. Another mechanism is to require all licensed haulers to provide SSOM collection services as a condition of licensing.				
Measurement Method	Requirement of licensing would be annual reporting of materials collected				
Timeframe/Mileposts					
Potential Implementation Parties	Regional/local governments (counties, SWMCB, WLSSD, economic development agencies, cities and townships), private haulers.				
Costs	Low costs. Municipalities and/or counties would be required to implement the collection of SSOM, either through ordinances or licensing requirements of haulers within their jurisdiction.				
Funding Mechanisms	Service costs would be paid directly by residents to their hauler				
Barriers/Issues	• Only requires haulers to offer services, but not to provide to all customers • Does not require cities to mandate services, only an option • Minimizes education opportunities that city –wide uniform services offer				
Opportunities	• Can provide for multiple haulers opportunity to provide services • Expedites implementation				
Feasibility	Very feasible				
General Comments					
Centroid Information	**Twin Cities**	**Duluth**	**St. Cloud**	**Rochester**	**Total**
Cumulative GHG Reduction Potential					
Priority					
Centroid-Specific Comments					

3.5f	ANAEROBIC DIGESTION				
Description	Construct regional facilities in each centroid or a series of smaller facilities to process source separated organics (SSO) with the goal of capturing 80% of the remaining organics in the municipal solid waste (MSW) stream. Through capture of the gas, these facilities would produce energy to replace fossil fuels currently in use and send the digestate to be composted at local or regional composting facilities.				
Measurement Method	Reported tons of organics diverted to the digesters, reported volumes/quality of gas generated as an energy source, and reported tons of digestate sent to composting facilities. Periodic waste sorts at disposal facilities and incinerators would aid in measurement of the amounts of organics being diverted.				
Timeframe/Mileposts	• Approve/construct/operate first community-based digester under MPCA's research/demonstration project program – 2011 • Modify or create new rules in order to permit digesters designed to process the organics in MSW – 2015 • License/construct/operate first municipal/regional scale digester to process the organics in MSW – 2018				
Potential Implementation Parties	MPCA, MN Dept of Commerce (Office of Energy Security), regional/local governments (counties, SWMCB, WLSSD, economic development agencies), technology vendors, private sector investors/development companies, electrical utilities, other potential energy markets, etc.				
Costs	Medium/high capital cost compared to other organics processing methods.				
Funding Mechanisms	Solid waste fees/taxes on MSW disposal/processing facilities, state/federal grants, tipping fee at facility, energy revenues.				
Barriers/Issues	• Creating a sustainable infrastructure for the collection of source-separated organics. • Will require revising MPCA rules for permitting such facilities. • Public opposition to such facilities may be a problem.				
Opportunities	• Being considered a renewable energy source will help in reaching renewable energy portfolio standards. • Methane capture/recovery is higher than what can be achieved in landfill gas capture/recovery systems. • Potential for processing other organic waste streams (e.g. yard waste). • Digestate would still be able to go to a composting facility for further processing. • Replaces energy produced from fossil fuels while achieving GHG emissions reductions.				
Feasibility	Proven technology for processing medium to high-moisture organic waste streams.				
General Comments	Potential for MSW digestion though much more difficult from a technical and product quality (gas & digestate) perspective.				
Centroid Information	**Twin Cities**	**Duluth**	**St. Cloud**	**Rochester**	**Total**
Cumulative GHG Reduction Potential					
Priority					
Centroid-Specific Comments					

3.5g	BIOREACTOR LANDFILLS				
Description	Require that all new Minnesota MSW landfills, landfill expansions, or new cells constructed in existing landfills serving the 4 urban centroids incorporate leachate/liquid recirculation systems along with active gas recovery systems by 2017. Landfills in greater Minnesota would need to meet the same requirement by 2020.				
Measurement Method	Volume/quality of gas production, volume/quality of leachate, periodic measurements of settlement in terms of gained airspace.				
Timeframe/Mileposts	• Develop and codify rules for design and operation of bioreactor landfills – 2014 • Leachate/liquid recirculation systems in place in all landfills serving the 4 urban centroids – 2017 • Leachate/liquid recirculation systems in place in all landfills in greater Minnesota – 2020				
Potential Implementation Parties	MPCA, regional/local governments (counties, SWMCB, WLSSD), private and public landfill owners, electrical utilities, other potential energy markets, etc.				
Costs	Medium capital costs compared to other organics processing costs. Lower cost of gas recovery system is already in place.				
Funding Mechanisms	Tipping fees, energy revenues.				
Barriers/Issues	• Bioreactor landfill technology is still in the demonstration project phase (through the EPA's Office of Research and Development). Less than a dozen bioreactor landfills are in operation nationwide. • Will require developing new MPCA rules for permitting such facilities. • Public opposition to such facilities may be a problem. • Total gas capture from bioreactor landfills is uncertain. Methane that does escape capture has a GHG warming potential 25 times that of CO_2. • Other environmental issues associated with the design and operation of bioreactor landfills include significant increased gas generation, the physical instability of the waste mass due to increased moisture and density, instability of liner systems, and surface seeps due to waste mass movement and settlement. • Precludes any recovery of degraded organics as a potential feedstock for further processing into compost.				
Opportunities	• No change in current waste collection systems. • Decomposition and biological stabilization in significantly less time. • Could gain 15 to 30 percent in landfill space due to an increase in density of waste mass. • Significant increased LFG generation that, when captured, can be used for energy use onsite or sold. • Reduced leachate disposal costs and reduced post-closure costs.				
Feasibility	Technically feasible on a demonstration project basis.				
General Comments					
Centroid Information	**Twin Cities**	**Duluth**	**St. Cloud**	**Rochester**	**Total**
Cumulative GHG Reduction Potential					
Priority					
Centroid-Specific Comments					

3.5h	GASIFICATION				
Description	Construct regional facilities in each centroid to process source separated organics (SSO) with a goal of capturing 80% of the remaining organics in the municipal solid waste (MSW) stream. Through capture of the gas, these facilities would produce energy to replace fossil fuels currently in use.				
Measurement Method	Reported tons of organics diverted to the gasifiers and reported volumes/quality of gas generated as an energy source. Periodic waste sorts at disposal facilities and incinerators would aid in measurement of the amounts of organics being diverted.				
Timeframe/Mileposts	Modify or create new rules in order to permit gasifiers designed to process SSO – 2014 License/construct/operate first municipal/regional scale gasifiers to process SSO – 2018				
Potential Implementation Parties	MPCA, MN Dept. of Commerce (Energy Security Office), regional/local governments (counties, SWMCB, WLSSD, economic development agencies, etc.), technology vendors, private sector investors/development companies, electrical utilities, other potential energy markets, etc.				
Costs	High capital cost compared to other organics processing methods.				
Funding Mechanisms	Solid waste fees/taxes on MSW disposal/processing facilities, state/federal grants, tipping fee at facility, energy revenues.				
Barriers/Issues	• Little experience in the U.S. with gasifying SSO. • Technology may be better suited to processing waste streams with a lower moisture content than SSO. • Creating a sustainable infrastructure for the collection of source-separated organics. • Will require revising MPCA rules for permitting such facilities. • Public opposition to such facilities may be a problem.				
Opportunities	• Being considered a renewable energy source will help in reaching renewable energy portfolio standards. • Potential for processing other materials (e.g. MSW) and may be economically competitive with RDF production or mass burn incineration. • Efficient process for energy production. • Replaces energy produced from fossil fuels while achieving GHG emissions reductions. • Char may have some value as a soil amendment.				
Feasibility	Technically feasible though little operational experience with SSO in the U.S.				
General Comments					
Centroid Information	**Twin Cities**	**Duluth**	**St. Cloud**	**Rochester**	**Total**
Cumulative GHG Reduction Potential					
Priority					
Centroid-Specific Comments					

3.6 MARKET SECTOR (ORIGIN AND END MARKETS)

3.6a	Increase Markets for Compost				
Description	Composters currently report that they have adequate markets for their high quality compost. They report that the lower quality compost, compost containing film plastics from plastic bags, does not have markets. This highlights the need to produce high quality compost. The goal of 10% organics recovery by 2012 and 15% by 2020 will require close attention be paid to producing high quality compost and growing end markets to accommodate the increased in available compost.				
Measurement Method	SCORE report collects data on organics collected for food-to-people, food-to-animals/feed, and composting. Refining that data collection method would provide the needed diversion numbers to determine if the 10 and 15 percent goal has been reached.				
Timeframe/Mileposts					
Potential Implementation Parties	Private sector, public sector and non-governmental entities				
Costs					
Funding Mechanisms					
Barriers/Issues	Visual contamination, quality of finished compost, research needed to encourage new markets in storm water management BMP's.				
Opportunities	Storm water management BMP that increase the infiltration of storm water improving water quality of surface water bodies. Organic farmers have not been tied into the use of compost from either yard waste facilities or yard waste/food waste compost facilities. This is a significant opportunity, considering the growth in the organic industry and value of compost as fertilizer replacement.				
Feasibility					
General Comments	Education is key to the success of organics collection programs.				
Centroid Information	**Twin Cities**	**Duluth**	**St. Cloud**	**Rochester**	**Total**
Cumulative GHG Reduction Potential					
Priority					
Centroid-Specific Comments	The Metro Centroid has been very active in promoting organics reuse/recycling/composting.	Duluth has a mandatory recycling ordinance for commercial generators of organic materials and provides the compost facility.	St. Cloud has been relatively in-active and has not shown much interest.	Rochester has been relatively in-active and has not shown much interest.	

3.7 RESEARCH

3.7a	Environmental Impact and Cost Analysis of Various Organic Management Methods				
Description	Costs and Environmental Impact Analysis: Landfill with Gas Recovery, Bioreactor Landfill with Gas Recovery, Separate Cell with Leachate Collection (Cuyahoga, OH), Greenwaste as ADC (California), Large and Small Windrow Composting Systems, Anaerobic Digestion				
Measurement Method	Gather broad spectrum (VOC's, GHG) emissions data from all types of facilities/sites and compare the data/information, including fuel used and emissions generated, leachate and run-off, total environmental impact of all types of systems versus in small (backyard) and large windrow compost systems and in anaerobic digestion systems. Compare costs of all methods and emissions generated, total lifecycle C footprint.				
Timeframe/Mileposts	Three year study?				
Potential Implementation Parties	Facility owners and operators, state and local government				
Costs	Most Systems already in place. Costs for emissions testing, and Life Cycle C Footprinting, including all transport of all materials and related emissions, fuel and emissions associated with application of finished compost				
Funding Mechanisms	State funding				
Barriers/Issues	No state funding available				
Opportunities	Assurance that we are proceeding with a firm foundation of data				
Feasibility	Very feasible				
General Comments	We need this information to make a scientific, fact based decision about what method of organics management is right for Minnesota from an environmental and cost/benefit standpoint.				
Centroid Information	**Twin Cities**	**Duluth**	**St. Cloud**	**Rochester**	**Total**
Cumulative GHG Reduction Potential					
Priority					
Centroid-Specific Comments					

3.7b	Compost Lifecycle Analysis Research Limitations
Description	The MPCA completed a literature review in December, 2008. The MPCA had limited funds available for the literature review, so several LAC were preliminarily reviewed and the two most complete studies were chosen for detailed review. Overall the literature review revealed that compost is a net benefit in reducing GHG. However, the review also revealed that each of the LAC's could not be compared, as each evaluated different components of the system. For example, some LAC's consider collection a standard part of any system (recycling trash, yard waste, ssom, etc.); therefore transportation is evaluated as a stand-alone system, and the compost LAC begins with the materials entering the composting facility. Other studies include transportation in the LAC evaluation. The two LAC reviewed did not include transportation, so in that way they were comparable to each other. Another common shortfall of compost LAC's is that rarely do they include the carbon offset benefits of the end use of compost (including the GHG generated in transportation of the material to the end use). As a result, most evaluations show that composting is either a neutral impact on GHG generation or a slight benefit. Each study says that, so long as compost is not transported great distances, it will have a significant net benefit to reducing the impact of GHGs. Nevertheless, most studies compare composting to landfilling, and not to other forms of extracting energy from the feedstock waste. So, while diversion from a landfill appears to be a desirable practice, it is less clear how waste should be managed post-diversion. In addition, most studies assume both well-managed composting operations and beneficial application of the resulting compost (and, therefore, offsets of synthetic chemicals and fossil fuels). This combination of avoided landfilling and chemical offsets determines the scope of the benefits from composting as related to GHGs. Furthermore, some studies do assume that the compost is applied in significant quantities per acre in a commercial agricultural setting, and often to soils different than, or more degraded than, most of those in Minnesota. Moreover, the scope of the benefits of compost application in gardens in metropolitan areas (where most compost feedstocks are likely to originate, and where most compost is likely to be applied) is less well studied and/or publicized, and, so, is less clear.
Measurement Method	The limitations of the above studies, and other LAC not included in the literature review, are that there is not enough hard data to be used in models to get a more complete picture of the LAC of compost. All recommend further research is needed to refine the existing LAC analysis.
Timeframe/Mileposts	
Implementation Parties	State of Minnesota, University of MN, US Composting Council Foundation
Costs	Unknown
Funding Mechanisms	Public and Private Funding
Barriers/Issues	Funding is needed Research take many years to be completed
Opportunities	• National Survey of compost facilities to facilitate data collection on GHG emissions resulting from processing YW and Food scraps

	• Conduct a series of LCA studies using a consistent study protocol such as the ISO process described in the Australian LAC in different climates, on different soil types, with different crop types to fill the gaps in data and research on the benefits and risks of compost use and its effect on GHG generation and mitigation • Research the impacts of aerobic composting on GHG generation and mitigation including carbon sequestration.
Feasibility	
General Comments	

Centroid Information	Twin Cities	Duluth	St. Cloud	Rochester	Total
Cumulative GHG Reduction Potential					
Priority					
Centroid-Specific Comments					

3.7c	WARM modeling limitations
Description	Currently the USEPA's WARM is the most accessible public model for use for evaluating GHG impacts. That model was set up primarily for modeling GHG impacts for recycling, not the reuse or recycling of organic materials. Examples would be the model is insufficient for evaluating food to people and food to animal/animal feed options. It is also insufficient for modeling compost, as it is missing the benefits accrued in the end use of compost and the negative impacts of transporting the materials to the end use.
Measurement Method	To deal with the more complicated system of managing organic materials the following actions could be pursued: 1. Revise the WARM model, or 2. A separate model created
Timeframe/Mileposts	The sooner the better.
Potential Implementation Parties	Financial resources will be needed to conduct the research needed to develop the data needed to refine the LAC on compost.
Costs	Unknown
Funding Mechanisms	Public and private funding
Barriers/Issues	• Financial and personnel resources are needed to complete the update of the WARM model • WARM does not yet allow a user to reflect the shifting of food and food scraps any further up the hierarchy than composting. That is, it does not have a separate entry for food scraps that are converted to animal feed (which could be considered recycling) or edible food that is saved for human consumption (a form of source reduction). It is likely, for example, that food-to-people would show an excellent return-per-ton on GHG avoided if fertilizer use were confirmed to be avoided; the offset fertilizer would add to benefits that come from keeping food waste out of landfills at, or below, the EPA default of 75% landfill-gas capture efficiency. • The lack of an accurate model to calculate the GHG impacts/benefits of food to people, food to animals/animal feed and compost . • The model allows for food scraps, yard trimmings, grass, leaves, branches, and mixed organics (48% food scraps/52%

	yard trimmings). However it does not allow for the composting of non recyclable paper (paper plates, paper napkins…). That material can only go to a resource recovery facility or be landfilled. • Another missing piece for composting is the ability to adjust percentages of feed stocks. The mixed organics category use a calculation of 48% food scraps/52% yard trimmings, yet Minnesota demonstration facilities are allowed to compost only a 20% food scraps/80% yard trimmings. Any percentage greater than 20% food scraps would need to go to a compost facility that has a solid waste composting permit. • The benefits of end use of compost are not included in the model. Neither is the negative impact of transporting the material to the end use included. • More research is needed to accurately calculate the GHG impacts of composing.				
Opportunities	Partner with the USEPA to update the model				
Feasibility	It is feasible to develop this model. Expertise, funding and time is needed.				
General Comments	There has been some discussion within the USEPA of revising the model. Unknown what those discussion generated.				
Centroid Information	**Twin Cities**	**Duluth**	**St. Cloud**	**Rochester**	**Total**
Cumulative GHG Reduction Potential					
Priority					
Centroid-Specific Comments					

3.8 CD&I

3.9 OTHER

4.1 POLICY/LEGISLATION

4.1a	Waste-to-energy Defined as Renewable Energy				
Description	Support inclusion of electric and thermal energy generated by waste-to-energy facilities in the state and federal definition of renewable energy. This will bring additional revenue to waste-to-energy facilities and discourages the landfilling of organic, recyclable or combustible waste materials.				
Measurement Method	If it is included in state and federal renewable energy laws.				
Timeframe/Mileposts	2010 legislative session				
Potential Implementation Parties	Local, State and Federal governments and facility owners.				
Costs	Staff and lobbyist time				
Funding Mechanisms					
Barriers/Issues	Public opposition				
Opportunities	Reduced GHG emissions as waste is moved up the waste disposal hierarchy Brings additional revenue to waste-to-energy facilities Increased recycling of ferrous and non-ferrous materials				
Feasibility					
General Comments	Waste-to-energy currently included in the definition of "eligible energy technologies in the 2008 Minnesota Renewable Energy Objective, Statute 216B.1691. Waste-to-energy is not included in all applicable federal renewable energy laws.				
Centroid Information	**Twin Cities**	**Duluth**	**St. Cloud**	**Rochester**	**Total**
Cumulative GHG Reduction Potential					Positive GHG reduction compared with landfilling MSW
Priority					
Centroid-Specific Comments					

4.1 POLICY/LEGISLATION

4.1b	Landfill Ban				
Description	Combust with energy recovery all MSW not reduced, recycled, or composted.				
Measurement Method	Weigh all incoming waste.				
Timeframe/Mileposts	ASAP				
Potential Implementation Parties	State agency, county, or private party.				
Costs	Installed capacity cost of $200,000 to $500,000 per ton of daily installed capacity				
Funding Mechanisms	Tipping Fees				
Barriers/Issues	Competition from landfills Public opposition Limited existing waste-to-energy capacity				
Opportunities	District energy system potential near sources of waste generation GHG reduction compared with landfilling				
Feasibility	Technology proven and costs known.				
General Comments	Needs commitment by state leaders. Existing state statute 473.848 which prohibits landfilling of unprocessed mixed MSW has been determined to not be enforceable				
Centroid Information	**Twin Cities**	**Duluth**	**St. Cloud**	**Rochester**	**Total**
Cumulative GHG Reduction Potential					
Priority					
Centroid-Specific Comments					

4.2 FINANCIAL INCENTIVES

4.2a	Increased Landfill Disposal Fee				
Description	Raise disposal fee for landfilling of unprocessed MSW. This will drive the disposal of waste higher up on waste hierarchy and reduce GHG emissions.				
Measurement Method	Law enacted				
Timeframe/Mileposts	Enforce processing of all waste prior to landfilling in the Minneapolis/St Paul centroid by 2015				
Potential Implementation Parties	State and local government and landfill owners				
Costs					
Funding Mechanisms	Tipping fees, Landfill tax				
Barriers/Issues	Higher tipping fees and higher landfill costs Create an enforceable law to support this proposal				
Opportunities	Increased recycling rates as demonstrated by similar European action Reduced GHG emissions from landfills				
Feasibility					
General Comments	Current state statute gives definition of unprocessed MSW				
Centroid Information	**Twin Cities**	**Duluth**	**St. Cloud**	**Rochester**	**Total**
Cumulative GHG Reduction Potential					
Priority					
Centroid-Specific Comments					

4.4 REGULATION AND PERMITTING

4.4a	Preprocessing of MSW Prior to Landfilling
Description	See recycling proposal 2.4c

4.4 REGULATION AND PERMITTING

4.4b	MSW Ash Utilization				
Description	MPCA to prepare permanent rules for WTE combined ash (fly & bottom) or bottom ash utilizations.				
Measurement Method	Permanent rules are adopted to replace temporary demonstration permits.				
Timeframe/Mileposts	2010				
Potential Implementation Parties	MPCA				
Costs	MPCA staff time				
Funding Mechanisms	MPCA environmental fund/SWM tax revenues				
Barriers/Issues	Rule making process lengthy				
Opportunities	Reuse of waste ash (European Model) rather than mono landfilling. Ash substitute for non-renewable resource of aggregate materials for road base or bituminous mix that meets MnDOT specifications. Reduce operating cost and tipping fees for waste-to-energy facilities				
Feasibility	Many states and European nations use now.				
General Comments	Polk County has demonstrated ash use feasibility for many years.				
Centroid Information	**Twin Cities**	**Duluth**	**St. Cloud**	**Rochester**	**Total**
Cumulative GHG Reduction Potential					
Priority					
Centroid-Specific Comments					

4.5 COLLECTIONS AND PROCESSING

4.5a	Flow control /Integrate the State into County Waste Designation				
Description	The State enables counties and regional governments to implement waste designation within the four centroids to achieve the desired goals of greenhouse gas reduction. Counties petition the state to designate eligible areas for flow control. Based on criteria in statute, the state designates the eligible areas. (This replaces the County waste designation plan process.) Counties implement with ordinances.				
Measurement Method	Laws and ordinances enacted				
Timeframe/Mileposts	Implement in stages: - conduct designation-specific stakeholder input process in 2010 - legislative amendments in 2011/2012 session - implement specific designation ordinances on an as-needed basis as high priority end management facilities or systems are identified and developed.				
Potential Implementation Parties	Legislature, MPCA , local governments, and waste haulers				
Costs	No significant cost increase to amend process. Expected increased near-term end of life disposal costs as wastes directed to higher tipping fee facilities Expected decreased long-term management costs as wastes are directed away from facilities such as landfills that have embedded costs borne by future generations.				
Funding Mechanisms	State and local revenues Generator tipping fees				
Barriers/Issues	Opposition from landfill owners and waste haulers Opposition from generators to higher tipping fees Legal uncertainties depending upon specific case situations				
Opportunities	Increase tipping fees serving to drive abatement alternatives such as reduction and recycling Direct waste to waste to energy facilities that combust methane-producing organic materials Reduced GHG emissions from landfills Reduced GHG emissions from avoided coal/fossil fuel combustion				
Feasibility	Demonstrated legality and feasibility when implemented correctly				
General Comments					
Centroid Information	**Twin Cities**	**Duluth**	**St. Cloud**	**Rochester**	**Total**
Cumulative GHG Reduction Potential					
Priority					
Centroid-Specific Comments					

4.7 RESEARCH

4.7a	Anaerobic Digestion				
Description	Evaluate viability of anaerobic digestion with thermal pretreatment and electric generation using mixed MSW as feed stock by supporting financially and through policy the construction and operation of one commercial scale anaerobic digestion facility in Minnesota				
Measurement Method	One unit built in proposed timeframe				
Timeframe/Mileposts	On line by end of 2010				
Potential Implementation Parties	State and local government and private industry				
Costs	Installed cost of $150,000 to $250,000 per ton on daily capacity				
Funding Mechanisms	Tipping fee, State or Federal grant/loan, SWMCB and private funds				
Barriers/Issues	Competes with existing landfills Funding could be an issue Not the lowest cost disposal method Getting sufficient MSW Diverted from other disposal methods to support this project				
Opportunities	Digester solids suitable for soil amendments Potentially lower GHG emissions than landfills High recycling rates for metals, plastics and glass				
Feasibility	Technically feasible				
General Comments					
Centroid Information	**Twin Cities**	**Duluth**	**St. Cloud**	**Rochester**	**Total**
Cumulative GHG Reduction Potential					
Priority					
Centroid-Specific Comments					

4.7 RESEARCH

4.7b	Plasma Gasification				
Description	Evaluate viability of plasma gasification with electric generation using mixed MSW as feed stock by supporting financially and through policy the construction and operation of one commercial scale plasma gasification facility in Minnesota				
Measurement Method	One unit built in proposed time frame				
Timeframe/Mileposts	On line by end of 2010				
Potential Implementation Parties	State and local government and private industry				
Costs					
Funding Mechanisms	Tipping fee, State or Federal grant/loan, SWMCB and private funds				
Barriers/Issues	Competes with existing landfills Funding could be an issue Not the lowest cost disposal method Getting sufficient MSW Diverted from other disposal methods to support this project				
Opportunities	Potentially lower GHG emissions than landfills Potentially lower air emissions than other combustion technologies				
Feasibility	Technically feasible				
General Comments	Plasma gasification facilities are capable of producing either renewable fuel such as diesel fuel or electric generation or a combination of both				
Centroid Information	**Twin Cities**	**Duluth**	**St. Cloud**	**Rochester**	**Total**
Cumulative GHG Reduction Potential					
Priority					
Centroid-Specific Comments					

4.7 RESEARCH

4.7c	Use Rochester Centroid as Case Study				
Description	Run GHG (WARM) model calculations for the Rochester centroid quantifying GHG emissions from an integrated waste management system before and after a new state-of-the-art waste-to-energy facility was added to the disposal options.				
Measurement Method	Modified WARM model. Use Dodge/Olmsted inputs				
Timeframe/Mileposts	May 2009				
Potential Implementation Parties	MPCA Staff				
Costs	Low				
Funding Mechanisms	Stakeholder project budget				
Barriers/Issues	Time constraints				
Opportunities	Understand GHG emission levels for an existing integrated solid waste system that uses all elements of the hierarchy with 22 years of history				
Feasibility	Excellent				
General Comments	Increase understanding				
Centroid Information	**Twin Cities**	**Duluth**	**St. Cloud**	**Rochester**	**Total**
Cumulative GHG Reduction Potential					
Priority					
Centroid-Specific Comments					

4.7 RESEARCH

4.7d	Modify WARM Model to add Thermal Energy for Cogeneration WTE Facilities				
Description	Run the WARM model to access GHG emissions from waste-to-energy facilities in Minnesota that incorporate combined heat and power compared with waste-to-energy facilities that include only electric generation energy in the facility design.				
Measurement Method					
Timeframe/Mileposts					
Potential Implementation Parties					
Costs	Minor				
Funding Mechanisms					
Barriers/Issues					
Opportunities	Information useful to determine best solutions for waste disposal				
Feasibility	Very				
General Comments	Over half of the waste-to-energy facilities in Minnesota use the combined heat and power design to improve thermal efficiency and reduce GHG emissions				
Centroid Information	**Twin Cities**	**Duluth**	**St. Cloud**	**Rochester**	**Total**
Cumulative GHG Reduction Potential					
Priority					
Centroid-Specific Comments					

5.1 POLICY/LEGISLATION

5.1a	Methane Capture Rates				
Description	Mandate that all landfills in the state of Minnesota must meet the requirement that a continuous, minimum 90% capture and destruction rate of all methane generated through-out the life span of each landfill, including all active and post-closure emissions. Determination of this capture rate though continuous monitoring with best available technology would be required.				
Measurement Method	Cannot continuously monitor, need to do via computer modeling.				
Timeframe/Mileposts					
Potential Implementation Parties					
Costs					
Funding Mechanisms					
Barriers/Issues	Any state or federal requirements on LFG control in an effort to reduce GHG emissions would remove the additionality (or voluntary) aspect to these projects, and the smaller landfills wouldn't be eligible to sell carbon offsets. These projects are expensive for the smaller landfill with limited revenue from gate receipts. Redirect the focus to economic incentives versus mandates. According to the MPCA projected 2011 methane emissions from the 21 landfills: * 69.2% of the waste being landfilled are to landfills required to have active LFG control by NSPS (total of 4 landfills) * With Clay County, Crow Wing, East Central, and part of Ponderosa having active LFG control voluntarily, the total is about 75% of the waste being landfilled. * These 4 sites could gain $263,000 to $1,040,000 on the current carbon market. * Adding the next 7 largest sites voluntarily (15 of the 21 landfills) gets to 90% of the waste being landfilled. * These 7 sites could gain $420,000 to $1,660,000 on the carbon market. Technically it is doubtful that you can continuously monitor methane generation at a landfill. Would have to use computer modeling. Difficult to measure gas output at early and late stages of landfill development due to very low gas production.				
Opportunities					
Feasibility					
General Comments					
Centroid Information	**Twin Cities**	**Duluth**	**St. Cloud**	**Rochester**	**Total**
Cumulative GHG Reduction Potential					

Priority					
Centroid-Specific Comments					

5.4 REGULATION & PERMITTING

5.4a	Expansion of Landfill Post-Closure Assurances and Insurance Requirements				
Description	***Recommendations.*** MPCA must complete analysis of financial assurances to create a mechanism to address the State's Landfill Post Closure largest risk factors, remedial corrective action and third party injuries that are most likely to arise after care and current assurance mechanisms end. To do that, the instrument must address each of these criteria: 1 Extend past the legal period of post-closure care. 2 Offer coverage that both reflects probabilistic events and can, as a practical matter, cover at least a significant part of the true risks. The MPCA could commission insurance experts to develop fully and then apply an "Extended Environmental Impairment Landfill Insurance" policy. 3 Retain the full value of the assurance funds in the mechanism until the end of the post-closure period because there is a significant probability that unanticipated maintenance expenses will arise. 4 Require that, if a surety bond and letter of credit is cancelled, the State shall be assumed to have exercised its right to claim the funds under the mechanism on the 120th day following notice of cancellation unless the State affirmative acts to forego its right to do so prior to that time.				
Measurement Method					
Timeframe/Mileposts					
Potential Implementation Parties					
Costs					
Funding Mechanisms					
Barriers/Issues					
Opportunities					
Feasibility					
General Comments	**MPCA is currently drafting required rules in a formal rule revision addressing financial assurance requirements for disposal facilities. This strategy will be addressed in that process.** **GHG benefit is not clear from this strategy. Also most GHG is occurs during the active life and in the beginning years of post-closure.**				
Centroid Information	**Twin Cities**	**Duluth**	**St. Cloud**	**Rochester**	**Total**
Cumulative GHG Reduction Potential					
Priority					
Centroid-Specific Comments					

5.4b	Promote Leachate Recirculation and Bioreactor Landfills
Description	Promote leachate recirculation and bioreactor landfills
Measurement Method	Number of landfill that utilize this technology
Timeframe/Mileposts	1-year to finalize leachate recirculation, 2 –3 years for bioreactor.
Potential Implementation Parties	Existing 21 landfills landfill operators and MPCA.
Costs	
Funding Mechanisms	If made to be economical, landfills will accomplish and will be funded by themselves.
Barriers/Issues	Need to finalize and implement rules to allow this technology. MPCA working on a guidance document that will allow more landfills to recirculate leachate. Leachate recirculation will just require state action, Bioreactors still require federal interaction.
Opportunities	LFG emitted by landfills that utilize this technology will be generated quicker in the process and over a shorter timeframe. This has the following benefits: - Makes energy recovery more attractive. - Faster timeframe for decomposition and biological waste stabilization; reduces long environmental risks and post-closure costs.
Feasibility	Technology already exist, just need a favorable regulatory environment to promote this technology.
General Comments	In 2006, the Solid Waste Association of North America (SWANA) and the US Composting Council agreed there is a place for both composting and bioreactor landfills. The agreement outlines that both serve beneficial but different roles and different functions in integrated waste management. There is a very strong possibility we will not see any new siting for any type of waste management facility within Minnesota due to the NIMBY syndrome. Therefore, the choice to extend the service life of the existing landfills is critical. By implementing this technique to extend a landfill life it gives science and technology time to develop methods and systems to deal with the challenges of solid waste in a more environmental benign and cost-effective manner. Some states allow YW to be landfilled if they have gas recovery systems (California, Nebraska). Minnesota allows YW to be composted on top of landfills. Some states are initiating legislation to allow YW into landfills with gas recovery (Michigan, Oklahoma, Florida).

Centroid Information	Twin Cities	Duluth	St. Cloud	Rochester	Total
Cumulative GHG Reduction Potential					
Priority					
Centroid-Specific Comments					

5.7 RESEARCH

5.7a	Cost Benefit Study of Installing Flare and Landfill Gas to Energy Systems				
Description	Review nearly completed MPCA closed landfill study to determine feasibility of implementing flares, gas recovery systems. Within the context of feasibility of closed landfill study, examine all open landfills without landfill gas to energy systems for the cost/benefit of installing either flare systems or landfill gas to energy systems. An abbreviated study would focus on landfills in/proximal to Centroids.				
Measurement Method	Identify and categorize the universe of both open and closed landfills. Categorize based on age of facility, size/tonnage. Determine representative sample of each category and conduct testing to determine current, uncontrolled emissions, gas recovery potential, need for flare system or landfill GTE system, potential partnerships with utilities, renewable energy opportunity and return on investment.				
Timeframe/Mileposts	2 years; See also General Comments below.				
Potential Implementation Parties	MPCA, public and private landfill owners, prospective utilities/third party gas operators.				
Costs	Depends on depth of study				
Funding Mechanisms	SW tax; Minn Stat. 216c.41 renewable energy tax credits extended to Landfill gas as renewable energy.				
Barriers/Issues	Lack of funding, low gas production at closed facilities may not warrant doing anything. Increased costs for publicly owned facilities if required to install flares. Perception of increased regulation with the study itself.				
Opportunities	Reduction in GHG emissions, determination of cost, business opportunity for third party gas plant operation, renewable energy opportunity for utility.				
Feasibility	Depends on depth of study				
General Comments	MPCA has considered this proposal in the past for closed landfills in the Closed LF Cleanup Program. Some of this information may already be available, which would reduce the time required for the study.				
Centroid Information	**Twin Cities**	**Duluth**	**St. Cloud**	**Rochester**	**Total**
Cumulative GHG Reduction Potential					
Priority					
Centroid-Specific Comments					

5.7b	Identify and Remove Barriers to Landfill Gas to Energy
Description	Identify and remove barriers to LFGTE (Landfill Gas to Energy)
Measurement Method	Increase in LFGTE projects and/or increase in amount of methane destroyed in LFGTE projects.
Timeframe/Mileposts	1 year to identify issues, 2 –3 years to modify/change statutes or other documents
Potential Implementation Parties	MPCA and landfill operators & their consultants. At a later date, bring in power companies representatives and potential business that can utilize LFG as direct sell.
Costs	Internal costs for majority. If an incentive payment were added there would be an additional cost.
Funding Mechanisms	Incentive payment would be funded with same funds existing incentive payments.
Barriers/Issues	Willingness to accomplish in depth reviews and modify existing rules. Need to be able to weight what has greater environmental gain – GHG versus other environmental issues.
Opportunities	All existing 21 landfill.
Feasibility	
General Comments	Some of the existing issues: - For electric generation 1. Add a landfill gas incentive payment to Minn. Stat. 216C.41 2. Local utilities are unwilling to set precedent by funding any interconnect capital 3. Local electrical infrastructure too small or too far away for electric generation 4. Utility wants to maintain carbon credit, removing potential revenue stream from Landfill 5. Utility not willing to pay the cost per kw-hr to breakeven 6. (need to talk to WM to see what their issues they encountered when they installed their electric generator plants, i.e., EAW requirements, air permits, etc.) - Direct sell 1. Consider incentive payment for direct use too. 2. No direct gas use option nearby. Option preference is 24/7 using as much gas as collected – promote an "energy park" concept. 3. Viability of direct option required economic stability of user. 4. Easement issues for pipelines going off site. (note back in 2006, Pennsylvania took steps to makes the development of landfill gas projects easier. The state is making highway right-of-ways available for landfill gas pipelines, a move that encourage and promote such projects.) - General issues 1. As landfills get smaller, LFG (landfill gas) generation is lower and capital and O&M cost per kw-hr is higher (loss of economy of scale and less bang for the buck). 2. Smaller projects may need a grant or other funding that doesn't require debt or payback 3. Air permitting issues

	Twin Cities	Duluth	St. Cloud	Rochester	Total

Cumulative GHG Reduction Potential					
Priority					
Centroid-Specific Comments					

X.1 POLICY/LEGISLATION

X.1a	Institute a System of Container Deposit for Beverage Containers – Bottle Bill
Description	Minnesota Legislature should adopt a Container deposit law that requires retailers and distributors to collect a $.10 refundable deposit on beverage containers. The deposit is paid when the container is purchased, and refunded when the container is returned for recycling. Bottle bills have proven to be highly effective in reducing litter and waste and promoting recycling.
Measurement Method	
Timeframe/Mileposts	2011
Implementation Parties	MN Legislature, MPCA, MN Department of Commerce, Private sector retailers, distributors, beverage manufacturers, redemption centers, national trade associations
Costs	
Funding Mechanisms	Creates own funding mechanism through money from unredeemed deposits
Barriers/Issues	• Strong opposition from retailers, distributors, beverage manufacturers, Beverage Association of Minnesota • Will take time to create a network of redemption centers • Will have impacts on current curbside collection programs (less collection costs but also less revenue from materials collected, i.e. aluminum) • Unredeemed deposits • Impacts of market fluctuations
Opportunities	• Creates a privately funded infrastructure for the collection of beverage containers • Achieves 66%-96% capture rates for containers covered by deposits in states that have passed legislation • More glass recovered through color separation at collection points, making it possible to recycle back into glass bottles • Deposit-return programs have much higher recycling rates than municipal recycling programs because of the economic incentive to recycle offered to the consumer who gets money back for the containers. • Bottle bills creates a privately-funded collection infrastructure for beverage containers and make producers and consumers (rather than taxpayers) responsible for their packaging waste. • In Canada, domestically produced beer is sold in standardized bottles and 97% of the bottles come back to the producer to be refilled. • Creates jobs • Inspires innovation in packaging (similar to EPR above) especially when redesigning containers so they will be reusable • Containers collected (especially glass) are cleaner and provide a higher quality feedstock to manufacturers • Reduces litter • Reduces the incidence of glass lacerations among urban children (American Journal of Public Health, October 1986. v.

	76, no. 10) • National trade associations are adopting high recycling goals and have indicated a willingness to partner on initiatives that may include bottle bills				
Feasibility	Very feasible but very politically sensitive. Eleven U.S. states and eight of Canada's ten provinces have "bottle bills" requiring deposit-return programs for beverage containers.				
General Comments	Only 20-25% of used beverage containers in Minnesota are recycled. We have this low recycling rate despite widespread access to residential curbside recycling and widespread educational efforts.				
Centroid Information	**Twin Cities**	**Duluth**	**St. Cloud**	**Rochester**	**Total**
Cumulative GHG Reduction Potential					
Priority					
Centroid-Specific Comments					

X.2 FINANCIAL INCENTIVES

X.2a	Incentivizing Behavior Change through Unit Based Pricing				
Description	Require cities and counties to adopt and implement Pay-as-You-Throw (PAYT) ordinances where incremental price increases are proportional to container size increases as well as to the frequency of service.				
Measurement Method	Local units of government would need to have licensing requirements that would ensure compliance				
Timeframe/Mileposts	2011				
Implementation Parties	MPCA, Regional/local governments (counties, SWMCB, WLSSD, cities and townships), non-profits, private sector, private haulers				
Costs	Low to municipalities, however: • Some legislative or ordinance change and some enforcement • Costs paid by consumers				
Funding Mechanisms					
Barriers/Issues	• Enforcement and compliance would be challenging • Private sector haulers will be concerned about proprietary pricing information • Public will have concerns about increased costs for current levels of service • Capital costs to haulers to provide new carts of different sizes to customers • Resistance to change or perception of change • Application in multi-family units with central disposal • Additional administration, enforcement and compliance				
Opportunities	• Creates recognizable price incentives for reducing refuse service and source reduction efforts • Allows for customers to financial benefit by diverting waste into recycling streams • This could also include provisions that require transparency in pricing • Source reduction increases documented 6% • Recycling and composting increases 17% and higher • Cost based on generation (reduced cost for disposal as waste reduces) • Transparent and equitable				
Feasibility	Feasible to implement – enforcement challenge. There is already legislation that requires some generational pricing but it is not specific or effective.				
General Comments	Rate differentials need to be no less than 70-80% higher for double the service to have impact.				
Centroid Information	**Twin Cities**	**Duluth**	**St. Cloud**	**Rochester**	**Total**
Cumulative GHG Reduction Potential					
Priority					
Centroid-Specific Comments					

X.5 COLLECTIONS AND PROCESSING

X.5a	Organized Collection
Description	Promote the implementation of organized collection of MSW services through lessening the requirements and timeframes governmental units to implement organized collections, as well as to encourage joint purchasing efforts/cooperatives for the procurement of waste services.
Measurement Method	In organized collection programs, reporting of all materials collected would/could be a requirement of all contracts allowing for accurate measurement of tons captured.
Timeframe/Mileposts	2011
Implementation Parties	MN Legislature, MPCA, MN Dept of Commerce, Regional/local governments (counties, SWMCB, WLSSD, economic development agencies, cities and townships), non-profits, private haulers, private sector
Costs	Low costs/medium costs. Legal and administrative costs paid by municipalities to follow the current mandated organizing statute process. However, must recognize that it is transferring costs currently paid by residents directly to their hauler to the local unit of government to pay. Per household costs generally are less in organized programs than under non-organized collection programs.
Funding Mechanisms	This is usually done through either property tax or service fee increases.
Barriers/Issues	• Private haulers strongly oppose organized collection. Small haulers fear it will limit their opportunities to compete. Large haulers believe that if their market share grows too large they may face additional government scrutiny/regulation • This should be done through public/private partnerships • Vocal groups of residents protest to elected officials saying they like the ability to choose their hauler for themselves. Creates political issues for city councils, etc. • There exist other ways to address opportunities (i.e. citywide licensing, etc) • Creates monopolies • Puts small haulers out of business • The organized collection process is quite long and onerous for all parties involved. Currently the process to follow the organized collection statute takes a municipality approximately one year to complete
Opportunities	• Creates opportunity to provide community wide education about the program • Can increase overall capture of materials by providing consistent service to all residents. • Can provide for multiple haulers to provide services by splitting cities into regions or allowing different haulers to collect each stream. • Licensing requirement, citizen mandate as alternative to organized collection • One hauler may be able to take over the market • Allows the city to control the waste contract for the entire community, possibly meaning more opportunities for WMC. • Gives waste generators flow control so they can designate that waste be managed by a method higher in the hierarchy.

	• Lengthens street life because of decreased heavy truck traffic, thus allowing cities to reduce or delay property tax assessments for road maintenance or replacement. • Allows cities to negotiate rates with haulers and thus create greater price differentials between different levels of service and influence residents to reduce their waste and recycle more of their waste. • Decreased diesel truck traffic decreases particle emissions resulting in cleaner air. • Route efficiency decreases greenhouse gas emissions. • Route efficiency results in less neighborhood noise pollution. • Decreased number of trucks on residential streets reduces the odds of accidents occurring. • Gives cities greater control over determining the best provision of service to their residents. Currently there is an artificially high threshold for switching to organized garbage service - a threshold that does not exist when cities consider organizing other services such as recycling and Wi-Fi. • Allows for transparency and consistency in pricing. • Associated educational efforts expand and enhance resident's knowledge about the full range of services and costs for waste disposal and recycling. • Can guarantee market share for small haulers that are part of a consortium. • Reduces confusion for new residents unsure how and what criteria to use to pick a garbage hauler. • Would create the densities of materials to make collection programs more affordable, as well as to provide opportunities for all residents to participate. • Municipalities would also have the pricing controls to then incentivize the diversion of SSOM out of the garbage can and into an organics container.				
Feasibility	Very feasible but politically sensitive – difficult politically to enact at Legislature				
General Comments					
Centroid Information	**Twin Cities**	**Duluth**	**St. Cloud**	**Rochester**	**Total**
Cumulative GHG Reduction Potential					
Priority					
Centroid-Specific Comments					

X.5b	New Licensing Requirements and City Ordinances				
Description	Cities pass ordinances to mandate the collection of recyclable and source separated organic materials or require all licensed haulers to provide recycling and source separated organic material collection as a condition of licensing. Cities must require that all haulers be licensed in their communities.				
Measurement Method	Requirement of licensing would be annual reporting of materials collected				
Timeframe/Mileposts					
Implementation Parties	Regional/local governments (counties, SWMCB, WLSSD, economic development agencies, cities and townships), private haulers.				
Costs	Low costs.				
Funding Mechanisms	Service costs would be paid directly by residents to their hauler				
Barriers/Issues	• Only requires haulers to offer services, but not to provide to all customers • Cities are already required to ensure that residents have the opportunity to recycle curbside unless too small. • Does not require cities to mandate services, only an option • Minimizes education opportunities that city –wide uniform services offer				
Opportunities	• Can provide for multiple haulers opportunity to provide services • Expedites implementation • This will allow haulers in the market to decide if they want to compete or these services.				
Feasibility	Very feasible				
General Comments					
Centroid Information	**Twin Cities**	**Duluth**	**St. Cloud**	**Rochester**	**Total**
Cumulative GHG Reduction Potential					
Priority					
Centroid-Specific Comments					

Appendix M: Centroid Sub-Group Charge

INTEGRATED SOLID WASTE MANAGEMENT STAKEHOLDER PROCESS
Centroid Sub-Groups Charge
June 17, 2009

Purpose/Mission: Each centroid sub-group is to develop up to four centroid-based implementation plans to at least meet the centroid GHG emission reduction targets set by the Work Group. The centroid targets are as follows:

Duluth Centroid: 3.3 $MMTCO_2e$

Rochester Centroid: 2 $MMTCO_2e$

St. Cloud Centroid: 3.7 $MMTCO_2e$

Twin Cities Centroid: 43.5 $MMTCO_2e$

Parameters:

- Higher centroid GHG emission reduction targets can be set, but targets cannot be reduced.
- Centroid material mix targets within management methods can change as long as the resulting overall GHG emission reduction target is still met.
- The solid waste management hierarchy should by followed when designing implementation plans or augmenting material mix targets.
- Local efforts and plans within each centroid should be focused on when developing strategies.
- Larger regional, statewide or national desired efforts can also be suggested, but are not necessary.
- Costs, practicality and centroid needs should be identified in plans as much as possible.
- Plans can be developed under a variety of funding and resource scenarios, from no additional funding/resources to sufficient additional funding/resources. In the cases where additional funding or resources are desired, plans should identify ideas to meet those additional needs, including how existing resources from within, and/or outside of, the centroid could be reallocated to meet the goals or ideas to generate new funding/resources. Sub-groups are asked to also identify other ways of accomplishing goals without the infusion of new resources.
- The Work Group created a list of strategies the centroid sub-groups must consider when creating implementation plans. If the sub-groups decide not to incorporate items on the list they need to provide rationale for why they chose not to incorporate the strategy ideas into the centroid implementation plans.
- When developing plans, sub-groups will need to provide the MPCA information and specificity on how tonnages, or percentages, of specific material amounts would change by implementing proposed strategies. This will allow the MPCA to run the WARM model or other models where possible.

Available Tools/Resources:

- 2005 Waste Composition and GHG Baseline Data – Foth Infrastructure & Environment completed a study to determine the baseline waste composition and resulting GHG emission data for each centroid. Foth utilized county (SCORE) data as well as local composition studies to generate 2005 baseline waste composition data. Some reassignment of materials occurred in order to fit into the WARM model material categories.
- Work Group straw proposals – the Work Group has developed a set of straw proposals that could potentially be used to meet the solid waste management method GHG emission goals of

the Minnesota Climate Change Advisory Group (MCCAG). Sub-groups can use these straw proposals and any additional ideas they create to achieve the centroid GHG emission reduction target.

- GHG Potential Impact Charts for straw proposals – to help the sub-groups, the MPCA reviewed the Work Group straw proposals and labeled them according to the following four categories to help inform their GHG emission reduction potential and to identify where more information is needed: Potential to directly impact GHG; Potential to indirectly impact GHG; Immaterial/no impact on GHG; Unknown impact/more information needed.
- WARM model GHG emission factor material multipliers – A spreadsheet outlining WARM's GHG emission reduction multiplier calculation for 34 different materials by management method is attached. This spreadsheet can help sub-groups identify and/or prioritize materials to focus on within each management method.
- Implementation Plan Template – A template for the implementation plans was created for the sub-groups. This template includes all aspects of the waste management hierarchy and is intended to guide format consistency across centroid implementation plans.
- MPCA staff – the MPCA will provide technical support to sub-groups as needed, including running WARM and other models where appropriate to estimate the GHG emission reduction potential associated with centroid strategies and plan(s). In addition, where possible, the MPCA can help to identify costs or other relevant information needs.

Desired Outcomes/Results: Sub-groups will develop up to four centroid-based implementation plans. As shown in the Implementation Plan Template, plan(s) should detail the overall integrated plan(s) proposed management method structure and material mix targets, as well as the specifics on individual strategies including:

- Description of strategy
- GHG reduction potential (by strategy where possible)
- Implementation timeframe and mileposts
- Potential implementation parties
- Costs
- Funding mechanisms
- Barriers and opportunities to implementation
- Feasibility
- Priority
- Material target (type and quantity)
- GHG reduction measurement method

Timing: Sub-groups are asked to complete and submit their plans to MEI by **Monday, August 31, 2009**. During the fall of 2009, the iterative process for centroid based strategy development will continue. Centroid plans will be reviewed and refined during Work Group meetings, regionally based Stakeholder Input Group meetings, and an online open public comment period on the rough draft strategies report. Work Group meetings will take place throughout the fall of 2009, the Stakeholder Input Group meetings are tentatively scheduled for October, and the online public comment period is tentatively scheduled for the second half of November. Centroid sub-group members and other interested parties are encouraged to attend and participate in all of the above opportunities to provide input. The final report is scheduled to be completed in December 2009.

INTEGRATED SOLID WASTE MANAGEMENT STAKEHOLDER PROCESS
Centroid Sub-Groups Ground Rules
June 17, 2009

Work Group Goals

The primary task of the Work Group is to develop strategies that can help reach the Minnesota Climate Change Advisory Group (MCCAG) greenhouse gas reduction targets for the solid waste sector. Recommendations produced by the Work Group will focus on the four major population centroids that encompass 17 counties and one sanitary district where approximately 70% of the solid waste in the state is generated. The MCCAG targets for solid waste for the four centroids equals a 52.5 million metric tons of CO_{2e} reduction by 2025.

The recommended strategies will serve to assist the MPCA in carrying out its mission, and will be considered as the MPCA:

- determines priorities for technical and financial assistance;
- implements existing programs and develops new ones;
- modifies rules, and;
- proposes legislative changes.

Centroid Sub-Group Goals

Centroid sub-groups are asked to design up to four implementation plans to at least meet the GHG emission reduction targets set for their centroid by the Work Group, as laid out in the centroid sub-group charges. Sub-groups can propose higher GHG emission reduction targets, but cannot reduce their targets.

Documented Assumptions

The solid waste management hierarchy has long been upheld and Work Group members have agreed to operate within the existing hierarchy to recommend management methods according to their level of preference on the hierarchy. Centroid sub-groups should also follow the hierarchy when designing implementation plans for their centroids.

The EPA's Waste Reduction Model (WARM model) is the most accessible, comprehensive tool available today to calculate projected GHG emissions from solid waste management activities. Although it has some limitations, the WARM model will be the main tool used to measure strategies created by the Work Group and the centroid sub-groups. WARM model inputs and assumptions need to be well documented, and WARM inadequacies should be identified as necessary. In some instances, it may be possible to use alternative GHG measurement models or otherwise address WARM inadequacies by supplementing alternative data when reasonably and feasibly available.

MEI's Role

The Minnesota Environmental Initiative is responsible for the design, management and facilitation of the overall Integrated Solid Waste Management Stakeholder Process. MEI will work with centroid sub-group chairs to schedule and convene sub-group meetings. Correspondence regarding sub-group meeting announcements, agendas, and meeting locations will be distributed by MEI.

Centroid Sub-Group Chair's Role

As designated by MEI, Work Group members or other individuals representing local units of government will serve as chairs for their centroid sub-group and are responsible for designing centroid sub-group meeting agendas, setting meeting dates, finding locations, and leading sub-group meetings. Centroid sub-group chairs, with support from MPCA staff, are also responsible for compiling input from sub-group

members and drafting documents for sub-group review. As requested, sub-group chairs or other designated individuals will be responsible for keeping and distributing meeting minutes.

MPCA's Role
MPCA staff will provide technical and logistical support to sub-groups as needed, including running WARM and other models as appropriate to estimate GHG emission reduction potential associated with centroid strategies and plans. Where possible, MCPA staff will also help to identify costs or other relevant information that can inform implementation plan development in the centroid sub-groups.

Centroid Sub-Group Membership
Each of the four centroids will have different sub-group membership plans, as reviewed with the Work Group. MEI will work with sub-group chairs to ensure that each centroid membership plan is followed. MEI reserves the right to limit participation as needed.

Participation
Sub-group participants are expected to attend all sub-group meetings, make every effort to be on time, participate in conversations with the chair and MEI staff between meetings, review documentation prior to meetings, and actively participate in the meetings. Participants are asked to keep their member organizations and constituencies informed about the process proceedings, and to bring their views to the discussions.

Good Faith Participation
All participants agree to act in good faith in all aspects of the process. The participants are expected to present their own opinions based on their experience, perspective and training, and agree to participate actively, constructively and cooperatively in the process. Debate and discussions in the sub-groups should be based on shared facts and technical knowledge.

No Surprises
Participants agree to be forthcoming about potential conflicts with the proceedings and with decisions that are developed by the group. Disagreements should be identified and shared with the group as early as possible.

Respect
All participants are expected to act as equals during the process and will respect the experience and perspective of the other participants. Participants should refrain from characterizing the viewpoints of others during discussions. Personal criticisms of other stakeholders will not be tolerated.

Consensus
As much as possible, decisions in the sub-group will be based on consensus of the group, generally defined as reaching an agreement that all participants can live with. Participants agree to be supportive of the process, but are allowed the ability to disagree with specific decisions or outcomes of the process. Consensus regarding strategies is desired, but is not required. In instances where significant disagreements over strategies persist in the sub-groups, sub-groups may create up to four alternative implementation scenarios to accommodate diverging viewpoints to bring to the Work Group for review. Final decisions regarding strategies and implementation plans will be made by the Work Group at future Work Group meetings.

Communications and Confidentiality
When making statements about the process or its outcomes in public, sub-group participants agree to make clear that they speak on their own behalf, and do not necessarily represent the opinions of other participants, MEI, or the MPCA.

INTEGRATED SOLID WASTE MANAGEMENT STAKEHOLDER PROCESS

Metro Centroid Sub-Group Plans

Method	Scenario #1		Scenario #2		Scenario #3	
	2005 Baseline	2025 Target	2005 Baseline	2025 Target	2005 Baseline	2025 Target
Source Reduction*	0%	5.9%	0%	5.9%	0%	5.9%
Recycling	38%	55%	38%	48.5%	38%	55%
Organics	3%	7%	3%	4%	3%	3.1%
WTE	27%	33%	27%	25.5%	27%	36.7%
Landfill	32%	5%	32%	22%	32%	5.2%
GHG REDUCTION (GOAL = 43.5)		**47.1 MMTCO$_2$e**		**44.1 MMTCO$_2$e**		**44.5 MMTCO$_2$e**

*Source reduction percentage represents cumulative percentage of the waste stream reduced from 2005 to 2025, not a 2025 target amount.

Assumptions

Average one-way transportation distance for:

a. Recycling 50 miles
b. Composting 20 miles
c. WTE 25 miles
d. Landfill 12 miles

Default 44% landfill gas capture with energy recovery.

What is needed to support the proposed scenarios?

The Metro Centroid believes that several things must happen in order to effectively implement the proposed scenarios and to meet the goals set for each management method. These essential needs include:

1) Extended Producer Responsibility/Product Stewardship – a state framework could help the Metro Centroid manage their waste more efficiently and cost effectively and reduce waste generation.

2) Control – several strategies featured in the three scenarios require increased control over the flow of waste.

3) Legislative Commission on Waste Management – many of the proposed strategies will require strong state leadership, and the creation of a legislative team that is educated on solid waste management may make for easier implementation.

Scenarios

The three scenarios, along with their resulting greenhouse gas emissions reductions are presented below.

Scenario #1

Strategies

- Extended Producer Responsibility/Product Stewardship
- Flow Control
- Organized Collection
- Volume-based Pricing
- Pre-processing of MSW
- Maximize WTE capacity
- Maximize WTE efficiency
- Recycling Legislation
- Increase landfill disposal fees
- Target organic-rich commercial and institutional generators
- Increase methane capture rates

GHG REDUCTION: 47,143,818 $MTCO_2e$

Description of Scenario

The first scenario includes more publicly-managed outcomes than the other two proposed scenarios from the Metro Centroid. Flow control and organized collection serve to increase public control of the waste and support other strategies, such as maximizing WTE capacity and efficiency, targeting organics recovery in the commercial sector, and pre-processing of MSW at all facilities.

Scenario #2

Strategies

- Extended Producer Responsibility/Product Stewardship
- Volume-based Pricing
- Incentives for commercial and institutional recycling
- Opportunity to recycle in institutional, commercial, and multifamily sectors
- Increase WTE capacity
- Maximize WTE efficiency
- Increase methane capture rates

GHG REDUCTION: 44,086,583 $MTCO_2e$

Description of Scenario

The second scenario includes a mix of publicly-managed outcomes and incentive-based outcomes. Public control of waste is less prominent, while strategies for increased incentives and opportunities to move waste up the hierarchy are included.

Scenario #3

Strategies

- Extended Producer Responsibility/Product Stewardship
- Volume-based Pricing
- Incentives for commercial and institutional recycling
- Pre-processing of MSW
- Increase WTE capacity
- Maximize WTE efficiency
- Recycling Legislation

GHG REDUCTION: 44,538,311 $MTCO_2e$

Description of Scenario

The third scenario features the strategies appearing most often in the scenarios developed by individual workgroup members.

Strategy-Specific Spreadsheets

1.1	Extended Producer Responsibility/Product Stewardship
Description	Extended Producer Responsibility/Product Stewardship
Measurement Method	SCORE; Reporting from manufacturers
Timeframe/Mileposts	Legislation passes in 2011, slow increase in reduction over time, 1.92% source reduction, cumulative
Potential Implementation Parties	State (legislation)
Costs	Incurred by manufacturers
Funding Mechanisms	Established in legislation
Barriers/Issues	Political barriers
Opportunities	
Feasibility	Very difficult to get the legislation passed, but easy to implement once legislation is in place
Priority	High
Material Targets (Type and Quantity Changed)	HDPE, LDPE, PET, OCC, Magazines, Newspapers, Office Paper, Phone Books, Carpet, Personal Computers
GHG Reduction Potential	Large (2% overall source reduction)
General Comments	

1.2	Volume-Based Pricing
Description	Volume-Based Pricing
Measurement Method	Source Reduction, Recycling
Timeframe/Mileposts	Legislation passes in 2011, increasing reduction over 2-3 years
Potential Implementation Parties	State (legislation), regional (county ordinances), state and regional enforcement
Costs	Costs incurred by generator
Funding Mechanisms	
Barriers/Issues	Enforcement is challenging
Opportunities	Significant potential for reducing waste and increasing recycling
Feasibility	Difficult
Priority	High
Material Targets (Type and Quantity Changed)	Curbside materials reduced by 5.5%; 5.5% recycling increase (when combined with EPR/PS, source reduction is 5.92%); Contributes to composting increase.

GHG Reduction Potential	Large (5 to 5.5% overall source reduction)
General Comments	Need to revise the current state law, consider requiring percent differentials. Also proposed by St. Cloud and Duluth

2.1	**Recycling Legislation**
Description	Recycling Legislation – mandate 60% by 2025
Measurement Method	Recycling, SCORE, MRF Reporting
Timeframe/Mileposts	Increases recycling rate to 50% by 2011, 55% by 2025
Potential Implementation Parties	State - legislation, market development for recyclables, implementation tools, funding Regional – ordinances, use tools to reach recycling goals
Costs	Costs for education/outreach efforts, new infrastructure
Funding Mechanisms	State funding for local government implementation
Barriers/Issues	Lack of markets for recyclables; behavior change by citizens; lack of tools and funding
Opportunities	
Feasibility	Very difficult
Priority	Medium
Material Targets (Type and Quantity Changed)	Residential and Commercial recycling increase in most material categories; gradual increases
GHG Reduction Potential	Large
General Comments	To get to 60% recycling with the current waste composition, we must increase recycling of certain materials to 90+%. This strategy requires supporting strategies (such as Container Deposit, increased educational efforts, etc.) to get to those material recycling rates. WARM Run assumed final goal not achieved (final 55% recycling rate)

2.2	**Opportunity to Recycle in Non-Residential Sectors**
Description	Opportunity to recycle in non-residential sectors
Measurement Method	Recycling; Reporting; SCORE
Timeframe/Mileposts	Implemented in 2011, reach 4% increase in recycling by 2013
Potential Implementation Parties	State – legislation Regional – infrastructure and enforcement
Costs	Infrastructure and enforcement costs
Funding Mechanisms	
Barriers/Issues	Enforcement by counties would be difficult
Opportunities	Combined with VBP, improves recycling rate and composting
Feasibility	Very difficult

Priority	Low
Material Targets (Type and Quantity Changed)	Increases overall recycling rate by 4%; Materials include Corrugated Cardboard, Magazines/Junk Mail, Office Paper, Mixed Metals, Mixed Plastics, LDPE, HDPE, PET, Newspaper; Slight increase in organics
GHG Reduction Potential	Large
General Comments	Unfunded mandates without tools are not effective.

2.3	**Incentives for CII Recycling**
Description	Incentives for Commercial/Institutional Recycling
Measurement Method	Recycling
Timeframe/Mileposts	No changes modeled (no data for this strategy)
Potential Implementation Parties	State – legislation for economic incentives
Costs	
Funding Mechanisms	
Barriers/Issues	
Opportunities	
Feasibility	Difficult (depending on the type of incentive)
Priority	High
Material Targets (Type and Quantity Changed)	
GHG Reduction Potential	
General Comments	High priority if incentives are strong (i.e. increase the Solid Waste tax); Not modeled because incentives not defined.

3.1	**Target Organics in CII**
Description	Target Organics in CII
Measurement Method	Organics
Timeframe/Mileposts	Reach 7% composting by 2014; start increasing in 2011
Potential Implementation Parties	State – legislation to level the playing field Regional – development of infrastructure
Costs	
Funding Mechanisms	
Barriers/Issues	Collection is difficult, need to develop infrastructure

Opportunities	
Feasibility	Difficult (depends on the technology)
Priority	Medium
Material Targets (Type and Quantity Changed)	Food waste, Yard Waste, Mixed Organics
GHG Reduction Potential	Medium
General Comments	Some concern regarding the greenhouse gas emission reductions from composting relative to waste to energy.

4.1	**Pre-Processing of MSW**
Description	Pre-processing of MSW
Measurement Method	Recycling; SCORE, facility reports
Timeframe/Mileposts	Implemented by 2015
Potential Implementation Parties	State – legislation and enforcement
Costs	
Funding Mechanisms	
Barriers/Issues	Marketing of dirty/contaminated materials is challenging
Opportunities	
Feasibility	Somewhat difficult
Priority	High
Material Targets (Type and Quantity Changed)	Aluminum Cans, Steel Cans, Ferrous and Nonferrous metals, Mixed Metals, OCC, HDPE; 90% recovery of metals in waste stream, 50% recovery of corrugated cardboard and HDPE
GHG Reduction Potential	Large
General Comments	Ability to influence waste flow is important to implementing this strategy.

4.2	**Increase/Maximize WTE capacity**
Description	Increase/Maximize Waste to Energy capacity
Measurement Method	Waste to Energy
Timeframe/Mileposts	By 2011
Potential Implementation Parties	State – legislation, support from MPCA (permitting) Regional

Costs	Development of facilities
Funding Mechanisms	
Barriers/Issues	Permitting issues
Opportunities	Flow control or organized collection
Feasibility	Difficult
Priority	High
Material Targets (Type and Quantity Changed)	All materials Maximize: at least 40% by 2013 Increase: Depends on control (capacity increase, but percentage level or slight increase)
GHG Reduction Potential	Medium
General Comments	

4.3	**Maximize WTE Efficiency**
Description	Maximize Waste to Energy efficiency
Measurement Method	Waste to Energy
Timeframe/Mileposts	By 2009
Potential Implementation Parties	Regional – local government support State – legislative, MPCA support
Costs	Investments in facilities
Funding Mechanisms	
Barriers/Issues	Ability to control flow of waste is important
Opportunities	Flow control or organized collection is required
Feasibility	Somewhat difficult
Priority	Medium
Material Targets (Type and Quantity Changed)	All materials; Multiplication factor of .1004 applied to additional capacity over BAU
GHG Reduction Potential	Medium
General Comments	

5.1	**Increase Methane Capture at Landfills**
Description	Increase methane capture at landfills
Measurement Method	Landfill reporting

Timeframe/Mileposts	Implemented in 2013
Potential Implementation Parties	State - legislation
Costs	Investments in technology
Funding Mechanisms	
Barriers/Issues	May not be practical at small landfills
Opportunities	
Feasibility	Easy
Priority	Medium
Material Targets (Type and Quantity Changed)	N/A; increase capture efficiency to 75%
GHG Reduction Potential	Large, depending on baseline capture
General Comments	Also proposed by St. Cloud

5.2	**Increase Landfill Disposal Fees**
Description	Increase landfill disposal fees
Measurement Method	Reduction in waste going to landfills
Timeframe/Mileposts	Implemented in 2011
Potential Implementation Parties	State – legislation Regional – legislation
Costs	
Funding Mechanisms	
Barriers/Issues	May drive waste out of the state
Opportunities	
Feasibility	Somewhat difficult
Priority	High
Material Targets (Type and Quantity Changed)	Mixed waste, recyclables (plastic, glass, paper, metals); Results in approx. 50% recycling rate; Slight increase in composting and WTE
GHG Reduction Potential	Large*
General Comments	*Reduction potential may be insignificant if 50% recycling is reached by other means.

6.1	**Organized Collection**
Description	Organized Collection

Measurement Method	Source Reduction, Recycling, Organics; SCORE; Reporting required in contracts
Timeframe/Mileposts	Implemented in 2013
Potential Implementation Parties	State – legislation Regional
Costs	
Funding Mechanisms	
Barriers/Issues	Political
Opportunities	Impacts of strategy extend beyond small recycling rate increase to improving implementation of other strategies.
Feasibility	Very difficult
Priority	Low
Material Targets (Type and Quantity Changed)	Curbside recyclables; Total increase in recycling rate of 0.5%
GHG Reduction Potential	Medium
General Comments	The political barriers to implementing this strategy are large. Would require strong state initiative to implement.

6.2	**Flow Control**
Description	Flow Control
Measurement Method	SCORE; Reports from facilities
Timeframe/Mileposts	Implemented in 2011; Maximize WTE; Small increases in recycling and organics
Potential Implementation Parties	State – legislation, support for counties on litigation, assist counties with buying facilities Federal - legislation
Costs	
Funding Mechanisms	
Barriers/Issues	Legislation will be challenging to pass.
Opportunities	Impacts of strategy assist with improving implementation of other strategies.
Feasibility	Very difficult (legislation), easy to implement once legislation is in place.
Priority	Medium
Material Targets (Type and Quantity Changed)	Most materials are affected by recycling rate/composting rate increase.
GHG Reduction Potential	Medium
General Comments	All remaining waste (minus 5%) to WTE. Contributes to recycling and composting increases.

INTEGRATED SOLID WASTE MANAGEMENT STAKEHOLDER PROCESS

St. Cloud Centroid Sub-Group Plan

Method	Scenario #1	
	2005 Baseline	2025 Target
Source Reduction*	0%	5.49%
Recycling	53%	60%
Organics	0%	0%
WTE	6%	32%
Landfill	41%	8%
GHG REDUCTION (GOAL = 3.7)		**2.5 MMTCO$_2$e**

*Source reduction percentage represents cumulative percentage of the waste stream reduced from 2005 to 2025, not a 2025 target amount.

Assumptions

Average one-way transportation distance for:

a. Recycling 50 miles
b. Composting 60 miles
c. WTE 65 miles
d. Landfill 100 miles

Default 50% landfill gas capture with energy recovery.

What is needed to support the proposed scenario?

In order to implement the proposed scenario and maximize greenhouse gas emission reductions, the St. Cloud Centroid believes the following must happen:

1) Market Development – the current recycling rate in the St. Cloud Centroid is already high; in order to significantly increase recycling (and maximize greenhouse emission reductions), more materials need to be recyclable and markets need to be stabilized for the recyclables that are currently being collected.

2) Waste to Energy maximization – The Tri-County Solid Waste Commission just concluded a 20 year agreement with the RRT facility in Elk River. A new agreement will send waste to the Pope/Douglas WTE facility in Alexandria. It will ultimately result in about half of the available MSW being incinerated. In order to incinerate more waste, either the price at the RRT facility would have to become more attractive, or the State would have to mandate it.

Scenario

Strategies

- Incentives for residential recycling & disincentives for not recycling
- Market Development
- Increase Commercial/Institutional/Industrial recycling
- Increase carpet & mattress recycling
- Increase methane recovery at landfills to 65%
- Volume-based pricing
- Source reduction of phonebooks and office paper
- Increase recycling education
- Product Stewardship for packaging
- Extend life of personal computers
- Increase Waste to Energy

GHG REDUCTION: 2,516,519 $MMTCO_2e$

Description of Scenario

The scenario proposed for the St. Cloud centroid reflects a mix of state and regional strategies.

Strategy-Specific Spreadsheets

1.2	Volume-based Pricing
Description	Volume-based pricing
Measurement Method	SCORE
Timeframe/Mileposts	2010 through 2025 cumulative
Potential Implementation Parties	State – legislature, haulers, local governments
Costs	Enforcement, illegal dumping
Funding Mechanisms	Generator
Barriers/Issues	Potential increase in illegal dumping or backyard burning
Opportunities	Research indicates generators reduce waste and increase recycling with effective volume-based pricing of waste
Feasibility	Difficult
Priority	Medium
Material Targets (Type and Quantity Changed)	Aluminum Cans, Steel Cans, Glass, HDPE, LDPE, PET, OCC, Mag/3rd Class Mail, Newspaper, Phone Books, Office Paper
GHG Reduction Potential	High
General Comments	3% source reduction (City of St. Cloud already has VBP, therefore, assumed less source reduction than other centroids); Contributes to 60% recycling rate by 2014 Also proposed by Metro, Duluth

1.3	PC Source Reduction
Description	Extend life of personal computers
Measurement Method	Procurement reports from targeted institutions
Timeframe/Mileposts	Policies to extend the length of time between new computer purchases in place; gradual decrease of 10% cumulative accomplished through procurement and purchasing guidelines established in government entities in the St. Cloud Centroid
Potential Implementation Parties	Local governments, other large institutions (schools, hospitals, etc.)
Costs	Relatively low (overall reduction in costs is likely)
Funding Mechanisms	
Barriers/Issues	Software requires new computer, new computers might be more energy efficient
Opportunities	Cost savings to implementing entities
Feasibility	Relatively easy to delay purchases, but made difficult by software compatibilities

Priority	High
Material Targets (Type and Quantity Changed)	Computers reduced by 10%, gradual decrease to 2025
GHG Reduction Potential	High
General Comments	Also proposed by Rochester, Duluth

1.4	**Product Stewardship for Packaging**
Description	Product Stewardship for packaging
Measurement Method	SCORE, manufacturer/retailer reports
Timeframe/Mileposts	2010 through 2025 cumulative; ~2% decrease in waste generation
Potential Implementation Parties	State – legislature, manufacturers, retailers
Costs	Incurred by manufacturer
Funding Mechanisms	Could end up saving manufacturers money because they would save on raw material purchases and shipping costs
Barriers/Issues	Political
Opportunities	Waste reduction, more packaging is recyclable
Feasibility	Difficult (legislation)
Priority	High
Material Targets (Type and Quantity Changed)	Aluminum Cans, Steel Cans, Glass, HDPE, LDPE, PET, OCC, Mag/3rd Class Mail, Newspaper, Phone Books, Office Paper
GHG Reduction Potential	High
General Comments	State should take a three-pronged approach: education, initiatives, and legislation

1.5	**Source Reduce phonebooks, office paper**
Description	Reduction in phonebooks and office paper
Measurement Method	SCORE
Timeframe/Mileposts	Gradual to 2025; ~0.5% reduction in total waste generation by 2025
Potential Implementation Parties	State – legislature & Commerce, local government, private industry, trade associations
Costs	Relatively low, Infrastructure (developing programs i.e. phone book opt outs)
Funding Mechanisms	Private industry

Barriers/Issues	Upfront costs, behavioral changes, staffing
Opportunities	Local units of government, businesses, other institutions
Feasibility	Relatively easy
Priority	High
Material Targets (Type and Quantity Changed)	Phonebooks, office paper – 50% reduction by 2025 (overall waste generation decrease of ~0.5%)
GHG Reduction Potential	
General Comments	

2.4	**Incentives for residential recycling**
Description	Incentives for residential recycling, disincentives not to recycle
Measurement Method	SCORE
Timeframe/Mileposts	Increase recycling to 60% by 2014; Gradual increase from 2009 to 2014
Potential Implementation Parties	Haulers, local (cities and counties) governments
Costs	Incurred by haulers and/or local governments; relatively low costs
Funding Mechanisms	SCORE, generator
Barriers/Issues	Already have a high recycling rate, recycling markets, non-recyclable materials
Opportunities	
Feasibility	Relatively easy to implement, difficult to achieve 60% recycling
Priority	Medium
Material Targets (Type and Quantity Changed)	Curbside recyclables plus LDPE, Mixed Metals, Mixed Paper, Mixed Plastics, Mixed Recyclables, Personal Computers
GHG Reduction Potential	High
General Comments	Could include: RecycleBank, recycling rebates, Get Caught Recycling

2.5	**End Market Development**
Description	Market Development
Measurement Method	Commodity prices, number of local markets and materials recycled
Timeframe/Mileposts	2014
Potential Implementation	State (PCA, DEED, Commerce), League of Minnesota Cities, Private Industry

Parties	
Costs	Moderate, investment in markets
Funding Mechanisms	State grants/loans
Barriers/Issues	Collection infrastructure
Opportunities	More materials are recyclable
Feasibility	Difficult
Priority	High
Material Targets (Type and Quantity Changed)	Plastics (#1 and #2 without necks, #3-7), glass, stryofoam
GHG Reduction Potential	
General Comments	Also proposed by Duluth

2.6	**Increase CII Recycling**
Description	Increase Commercial/Institutional/Industrial Recycling
Measurement Method	SCORE
Timeframe/Mileposts	60% recycling by 2014
Potential Implementation Parties	State - legislature (require businesses to report), private sector
Costs	Infrastructure (collection, separation, labor), enforcement
Funding Mechanisms	Generator
Barriers/Issues	Reporting, enforcement, space for separation/collection
Opportunities	Big opportunity, lots of material to collect
Feasibility	Difficult
Priority	Medium-High
Material Targets (Type and Quantity Changed)	Metals, OCC, paper, plastic, glass
GHG Reduction Potential	High
General Comments	Need mandates to achieve compliance (education, incentives, and mandates) Incentives for CII also proposed by Metro

2.7	**Increase Carpet, Mattress Recycling**
Description	Increase carpet/mattress recycling
Measurement Method	Carpet retailers and installers
Timeframe/Mileposts	Gradual to 2025, 50% recycling rate

Potential Implementation Parties	Local government (education, info), private companies, haulers, recycling facility, generators
Costs	Moderate
Funding Mechanisms	Market development grants
Barriers/Issues	Markets, collection, distances to haul
Opportunities	More efficient management of bulky materials
Feasibility	Difficult
Priority	Medium
Material Targets (Type and Quantity Changed)	Carpet – recycling rate increased to 50% Mattresses
GHG Reduction Potential	High
General Comments	Ban from landfill, product stewardship opportunity Increase carpet recycling also proposed by Rochester

2.8	**Increase Recycling Education**
Description	Increase recycling education
Measurement Method	SCORE
Timeframe/Mileposts	Gradual until 2025
Potential Implementation Parties	State – MPCA, local governments, haulers
Costs	Funding for outreach campaigns
Funding Mechanisms	SCORE funds
Barriers/Issues	Behavioral change, staffing
Opportunities	Reach different/new populations; could target K-12; increase educational efforts by the state
Feasibility	Relatively easy (providing staff availability)
Priority	High
Material Targets (Type and Quantity Changed)	Typical curbside recyclables (metals, paper, glass, plastic)
GHG Reduction Potential	
General Comments	Might be difficult to measure the impact. Also proposed by Duluth

4.4	**Increase WTE**
Description	Increase Waste to Energy

Measurement Method	SCORE
Timeframe/Mileposts	Increase to capacity by 2014; Gradual increase from 2009 to 2014
Potential Implementation Parties	State, local governments
Costs	Infrastructure to build and maintain facilities
Funding Mechanisms	Capital grants, increased landfill fees to make WTE a more economical choice
Barriers/Issues	Funding for facilities, opposition from some environmental associations, landfills fees are less expensive than WTE
Opportunities	A new source of energy, jobs in creating new technologies, and operating facilities; Educational opportunity with public/industry/commercial
Feasibility	Relatively easy – already have nearby capacity
Priority	Medium-High
Material Targets (Type and Quantity Changed)	Materials diverted from landfill; 90% WTE processing of remaining waste
GHG Reduction Potential	
General Comments	May extend the life of a landfill (less waste going into the landfill, the longer it will operate), a benefit since siting a landfill is not easy.

5.1	**Increase Methane Recovery at Landfills**
Description	Increase methane recovery at landfills to 65%
Measurement Method	TBD, remote sensing
Timeframe/Mileposts	Mandate by 2014
Potential Implementation Parties	State – legislature, landfill owners/operators
Costs	Unknown, incurred by landfill owners/operators
Funding Mechanisms	Tipping fees
Barriers/Issues	Measurement, permitting, engineering
Opportunities	Energy source
Feasibility	Unknown
Priority	High
Material Targets (Type and Quantity Changed)	65% LF gas capture and energy recovery
GHG Reduction Potential	
General Comments	Also proposed by Metro

INTEGRATED SOLID WASTE MANAGEMENT STAKEHOLDER PROCESS

Rochester Centroid Sub-Group Plan

Part 1 - Overall Management Method Target Spreadsheet

Description: The overall management method target spreadsheet will provide details on the proposed 2025 management method structure for the centroids. Centroid sub-groups could create up to four different management method target structures for their centroid. The spreadsheet should describe the centroid's 2025 percentage targets for the five management methods within the solid waste management hierarchy: Source Reduction and Reuse, Recycling, Organics, Waste-to-Energy, Landfill Disposal.

Fill-in Section:

Method	Rochester	
	2005 Baseline	2025 Target
Source Reduction*	0%	2%
Recycling	35%	40%
Organics	0%	2%
WTE	40%	55%
Landfill	25%	1%
GHG REDUCTION (GOAL = 2.0)		**2.055 $MMTCO_2e$**

*Source reduction percentage represents cumulative percentage of the waste stream reduced from 2005 to 2025, not a 2025 target amount.

Part 2 - WARM Input Form for Final Scenarios

Description: This form will provide the MPCA with information and specificity on how tonnages, or percentages, of specific material amounts would change by implementing proposed strategies. This information will allow the MPCA to run the WARM model or other models to estimate GHG reduction potential. The form will also provide information to detail the overall plan(s) for the centroid and fill in the strategy-specific spreadsheets that will detail strategies to implement the overall plan(s). When using the form and selecting strategies, it is important to consider:

- The tonnages available for each material to be managed (e.g. you cannot source reduce more of one material than is available in the waste stream)
- If you make a change in one management method or material, it will result in a change in another management method or material (e.g. if you increase aluminum recycling tons disproportionately more than other recyclables, you must decrease tons recycled of some other material if you plan to stay at the same overall recycling percentage target)
- WARM has limitations. For example, it's important to keep in mind that WARM limits some materials to certain management methods.

Fill-in Section:

1. Do you have any suggested changes to the projected baseline waste generation for your centroid for the years 2005 through 2025?
   - All runs use the MPCA numbers regarding Waste generation and growth as well as distribution among the categories.
   - The baseline reflects the 2 current waste combustors running at capacity till end of life in 2016. In 2017 all waste would be landfilled and, due to regulations LFG capture installed. Based on data from the IPCC (Intergovernmental Panel on Climate Change) and other GHG websites 20% collection is what is now being given as a realistic capture rate so Olmsted used 25% as their model.

2. Based on your 2025 Source Reduction target, do you anticipate a gradual change in programs over time, or will there be specific milestones?
   a. If milestones, indicate in which year(s) and for which materials(s):

Program/Strategy	Year	Material Type	Change Expected
Source Reduce Computers	2012	PC's	Immediate increase to 20%
Promote Reusable Containers	2012	OCC	Immediate increase to 10%

3. Based on your 2025 Recycling target, do you propose implementing a strategy that targets a specific material or set of materials? If so, please indicate your 2025 target for each targeted material and whether you expect a gradual change or specific milestones?

Program/Strategy	Year	Material Type	2025 Target	Change Expected
Implement Waste Processing and Metals Recovery from Ash	2011	Ferrous Metals	75%	Immediate increase to 75%
Carpet	2012	Carpet	40%	Immediate increase to 40%

4. Based on your 2025 Organics target, do you propose implementing a strategy that targets a specific material or set of materials? If so, please indicate your 2025 target for each targeted material and whether you expect a gradual change or specific milestones?

Program/Strategy	Year	Material Type	2025 Target	Change Expected
Unit 3	2010	All types	100%	Incremental increase in composting with current activities. Effectively, 0% will go to the landfill.

5. Based on your 2025 WTE target, do you expect any changes in capacity? If so, in what year?
   Yes, additional unit is currently being built at the Olmsted Waste-to-Energy Facility (OWEF) resulting in 200 tons per day of available capacity starting in 2010.

6. Indicate any changes in landfill gas management?
   Landfill gas management would be required in 2017 if there were no changes to the current system. Due to the addition of Unit 3, and the processing of bulky waste, the amount of waste will be significantly reduced, and therefore the addition of a landfill gas management system will not be necessary.

7. Please estimate average one-way transportation distance for:
   a. Recycling 90 miles
   b. Composting 17 miles
   c. WTE 4 miles
   d. Landfill 8 miles

What is needed to support the proposed scenario?

The Rochester Centroid believes that several things must happen in order to effectively implement the proposed scenarios and to meet the goals set for each management method. These essential needs include:

1) Landfill tax
2) Funding – more SCORE appropriations, infrastructure funding (capital grants)
3) Product Stewardship/Extended Producer Responsibility (also deposits on items, return cores)
4) Flow Control
5) Petroleum tax

Part 3 - Strategy-Specific Spreadsheet

Description: Centroid sub-groups are asked to create up to four centroid-based plans for their centroids. Each plan should consist of text describing the overall plan, the overall management method targets and specific material mix targets by management method, and the multiple strategies to implement the overall plan. Each strategy proposed for each plan should be detailed in the strategy-specific spreadsheet below and filled in as much as possible regarding the following:

- Description of strategy
- GHG reduction potential (by strategy where possible)
- Implementation timeframe and mileposts
- Potential implementation parties
- Costs
- Funding mechanisms
- Barriers and opportunities to implementation
- Feasibility
- Priority
- Material targets (type and quantity changed)
- GHG reduction measurement method

Strategy-Specific Spreadsheets:

1.3	PC Source Reduction
Description	Source Reduce – Computers: This would be accomplished in coordination with public entities and businesses to adopt policies that delay the purchase of PCs for one year more than the current the current replacement schedule and recommend the purchase of small form factor PCs when it is time for replacement. Also, conversion to flat panel monitors as opposed to CRT s will reduce the mass of PC waste being produced. This could be a local effort or a State initiative.
Measurement Method	Survey turnover rates from public entities/Purchasing & IT policies
Timeframe/Mileposts	Source Reduce by 20% by 2012
Potential Implementation Parties	Olmsted County, Dodge County, School Districts, municipalities, businesses, general public
Costs	An estimated cost of $25,000 for staff time to work with businesses and public entities (includes cost of educational materials)
Funding Mechanisms	Solid Waste Enterprise Fund or State funding
Barriers/Issues	Changing technology upgrades and compatibility with networks
Opportunities	Economic conditions make this more appealing to businesses and public entities because they will recognize a savings in PC purchases
Feasibility	Potentially 80%
Priority	Medium
Material Targets (Type and Quantity Changed)	PC's – Source reduce by 20% by 2012
GHG Reduction Potential	0.392 Million MTCO2E
General Comments	Olmsted County Public Works implemented this approach from 1995-2000. Physical mass is already being reduced by improvements in technology. Economic conditions are currently impacting this rate. Also proposed by St. Cloud, Duluth

1.6	Source Reduce OCC
Description	Source Reduce OCC – State initiative to require or promote reusable containers vs. cardboard boxes and enforcing the packaging requirements and goals set forth in 115A.5501 and 115A.5502.
Measurement Method	Waste composition studies & SCORE numbers/Identify container manufacturers and obtain customer information
Timeframe/Mileposts	By 2012/reduced by 10% - continue to 2025
Potential Implementation Parties	MPCA, retailers, grocery stores etc., State Legislature, general public

Costs	An estimated $10,000 for staff time to work with businesses (unless done through State initiative). Container costs and shipping would be the responsibility of the businesses as they are now.
Funding Mechanisms	State funding and manufacturers or retailers could potentially purchase containers with funds saved by avoided disposal and corrugated replacement costs
Barriers/Issues	Retailers get little return on investment of time for deposit-trade-in program if offered to general public
Opportunities	Some large businesses Target and other already doing and it is successful.
Feasibility	Dependent on State initiative
Priority	Low
Material Targets (Type and Quantity Changed)	10% reduction
GHG Reduction Potential	0.140 Million MTCO2E through 2025
General Comments	

2.7	**Increase Carpet Recycling**
Description	Increase Carpet Recycling through local programs for carpet retailers and installers through local educational efforts
Measurement Method	SCORE numbers
Timeframe/Mileposts	Increase Carpet Recycling to 40% by 2012. Current rate is ~14%
Potential Implementation Parties	Carpet retailers, installers, general public
Costs	An estimated cost of $8,000-$20,000 for staff time and educational media/advertising depending on whether the existing program with collection by retailers was expanded or whether the option was opened up to the general public. Providing collection at a County facility for the general public would also require a building expansion and would only be done to provide space for other activities as well at a cost of roughly $420,000. Transportation costs are estimated to be approximately $10,000/year for twice/month delivery.
Funding Mechanisms	In good market times, transportation costs are covered in avoided landfill disposal costs for retailers. Making a program self-sustaining at a County facility, would require a considerable capital grant for building expansion, that could provide space for other activities as well. After initial capital costs, user fees would still be required to cover staff and transportation costs.
Barriers/Issues	Space in current facilities inadequate to offer public collection option. Transportation costs exclude small retailers if quantities are too small, limited markets for material
Opportunities	Brotex is located in St. Paul, MN.
Feasibility	Likely, if markets remain favorable and costs can be recovered through sale of materials or State grant were available to cover capital costs of public facility. Retailers who have sufficient quantities are doing it now because they recognize a savings in disposal costs.

Priority	Medium
Material Targets (Type and Quantity Changed)	Carpet – 40% recycling
GHG Reduction Potential	0.151 Million MTCO2E through 2025
General Comments	Market development Increase carpet (and mattress) recycling also proposed by St. Cloud

2.9	**Container Deposit**
Description	Implementation of a State Bottle Bill
Measurement Method	Change in recovery rate over time/SCORE numbers/unredeemed deposits/waste sorts
Timeframe/Mileposts	Implement statewide bottle bill with 80% recovery by 2012
Potential Implementation Parties	State Legislators, bottling industry, local recyclers
Costs	An estimated $5,000 in local lobbying costs
Funding Mechanisms	State
Barriers/Issues	Bottling industry, impact on existing recycling centers and local funding
Opportunities	Similar programs have been successful in other states
Feasibility	Unknown
Priority	Medium
Material Targets (Type and Quantity Changed)	Glass, aluminum and PET plastic beverage containers – 80% reduction
GHG Reduction Potential	0.158 Million MTCO2E through 2025
General Comments	Also proposed by Duluth

4.5	**Add Unit 3 to OWEF**
Description	Adding Unit 3 to the Olmsted Waste-to-Energy Facility will provide 200 tons of additional waste combustor capacity. This would reduce the amount landfilled to about 5% of the waste stream.
Measurement Method	Tonnage records and data from Continuous Emissions Monitors (CEMs)
Timeframe/Mileposts	January 2010 start-up of 200 TPD additional combustor capacity
Potential Implementation	Olmsted and Dodge Counties

Parties	
Costs	$112 per ton of mixed municipal solid waste processed
Funding Mechanisms	Bonding, tipping fees, hauler collected service charge, energy sales and State grant
Barriers/Issues	The MN Solid Waste Management Tax (SWMT) is a disincentive for counties to utilize waste-to-energy technology. With landfilling being the cheapest disposal method it provides no incentive for counties to move toward processing. The SWMT is based on the cost of disposal so counties that process waste also pay more state tax than counties who landfill waste.
Opportunities	Community support, County Board conviction to handle waste locally, limit tax payer liability from environmental damage.
Feasibility	99.9%
Priority	High
Material Targets (Type and Quantity Changed)	MSW and bulky waste such as furniture, large wood items, and other oversize waste that precludes or complicates being handled in normal collection, processing or disposal methods.
GHG Reduction Potential	1.02 Million MTCO2E through 2025
General Comments	

4.6	**Bulky Waste Processing and Ferrous Recovery at OWEF**
Description	Waste Processing and Metals Recovery - Install processing equipment for bulky waste such as furniture, large wood items, and other oversize waste that precludes or complicates being handled in normal collection, processing or disposal methods. The second component is to recover ferrous metals from the ash from the Olmsted Waste-to-Energy Facility (OWEF) for recycling.
Measurement Method	Tonnage of bulky waste processed at the landfill and delivered to the OWEF and the amount of metal sold for recycling.
Timeframe/Mileposts	Operational by 2011
Potential Implementation Parties	U.S. Department of Energy, Olmsted Waste-to-Energy Facility & Kalmar Landfill, metals markets
Costs	$2.5 Million for capital/equipment start-up, plus operational costs
Funding Mechanisms	Department of Energy Grant or State Grant and landfill operations budget. Operational costs should be self-sustaining depending on metals markets
Barriers/Issues	No $ / No project
Opportunities	Good markets for recovered ferrous material. Success with similar projects in other counties.
Feasibility	Dependent on funding of capital equipment
Priority	Medium
Material Targets (Type and Quantity Changed)	Metals from OWEF ash - This is estimated to reduce the amount landfilled by about 75% and the ferrous metal recovered from the ash would be recycled.

GHG Reduction Potential	0.191 Milllion MTCO2E through 2025
General Comments	

INTEGRATED SOLID WASTE MANAGEMENT STAKEHOLDER PROCESS

Duluth Centroid Sub-Group Plan

Method	Scenario #1		Scenario #2		Scenario #3	
	2005 Baseline	2025 Target	2005 Baseline	2025 Target	2005 Baseline	2025 Target
Source Reduction*	0%	.77%	0%	5.77%	0%	5.77%
Recycling	47%	51.9%	47%	56.9%	47%	59.9%
Organics	0.1%	5.4%	0.1%	5.4%	0.1%	5.4%
WTE	0%	0%	0%	34.7%	0%	33.2%
Landfill	53%	42.7%	53%	3%	53%	1.5%
GHG REDUCTION (GOAL = 3.3)		**1.7 $MMTCO_2e$**		**3.3 $MMTCO_2e$**		**3.7 $MMTCO_2e$**

*Source reduction percentage represents cumulative percentage of the waste stream reduced from 2005 to 2025, not a 2025 target amount.

Assumptions

Average one-way transportation distance for:

a. Recycling 112 miles
b. Composting 11 miles
c. WTE 0 miles and 10 miles if applicable
d. Landfill 27 miles

Default landfill gas capture is 0%.

What is needed to support the proposed scenarios?

The Duluth Centroid believes that several things must happen in order to effectively implement the proposed scenarios and to meet the goals set for each management method. These essential needs include:

PRIMARY RECOMMENDATIONS

1. Beverage Container Deposit Legislation – The groups feels this is a good approach to increase recovery rates of beverage containers.
2. Expand state funding to cities and counties - additional SCORE, capital funding and financial assistance to expand programs.
3. Support state recycling and energy markets – Quantifiable increase in recyclables end market demand and recycled materials commodity values. The group would also like to see a state program established to develop end markets for energy produced by WTE.

Secondary Recommendations:

1. Increase education and standardize recycling.
2. Expand rural garbage and recycling service/ban burn barrels.

Other Recommendations:

1. Support for waste processing.
2. Landfill gas capture and destruction (flaring) on a facility by facility basis.
3. Product Stewardship (i.e. HHW, Electronics, CFL's, extended computer longevity, etc.).

Scenarios

The three scenarios, along with their resulting greenhouse gas emissions reductions are presented below.

Scenario #1

Strategies

- Container deposit legislation
- Junk mail reduction
- Extend the life of personal computers
- Landfill gas flaring at all landfills
- Expand organics composting programs
- Regional waste processing feasibility
- Increased recycling rate
- Support state markets for recyclable and energy

Description of Scenario

The scenario proposed for the Duluth centroid reflects a mix of state and regional strategies.

Scenario #2

Strategies

- All strategies from Scenario #1
- Volume-based Pricing
- Processing of waste
- Landfill gas to energy
- Perpetual care

Description of Scenario

The scenario proposed for the Duluth centroid reflects a mix of state and regional strategies.

Scenario #3

Strategies

- All strategies from Scenario #1 and #2
- Expanded education efforts

GHG REDUCTION: 3.7 $MMTCO_2e$

Description of Scenario

The scenario proposed for the Duluth centroid reflects a mix of state and regional strategies.

Background

Centroid sub-groups were asked to create up to four centroid-based plans for their centroids. Each plan should consist of text describing the overall plan, the overall management method targets and specific material mix targets by management method, and the multiple strategies to implement the overall plan. Each strategy proposed for each plan should be detailed in the strategy-specific spreadsheet below and filled in as much as possible regarding the following:

- Description of strategy
- GHG reduction potential (by strategy where possible)
- Implementation timeframe and mileposts
- Potential implementation parties
- Costs
- Funding mechanisms
- Barriers and opportunities to implementation
- Feasibility
- Priority
- Material targets (type and quantity changed)
- GHG reduction measurement method

Strategy-Specific Spreadsheets:

SCENARIO 1

1.3	PC Source Reduction
Description	Extend life of computers
Measurement Method	Internal purchasing/tracking
Timeframe/Mileposts	2013; Extend average govt/business computer life by 1 year
Potential Implementation Parties	Business, Institutional and government purchasing agents, county and state environmental staff, Potential public outreach
Costs	Minimal. Some public information/advertising. Should realize some cost savings.
Funding Mechanisms	~~A~~dditional (new)SCORE funds supplemented by existing solid waste fees
Barriers/Issues	Changing software needs, anti-stimulus, potentially prevent switch out to more energy efficient units
Opportunities	
Feasibility	High
Priority	High
Material Targets (Type and Quantity Changed)	Computers and related components; 10% reduction
GHG Reduction Potential	
General Comments	Also proposed by St. Cloud, Rochester

1.7	Source Reduce Junk Mail
Description	Reduce junk mail
Measurement Method	Waste composition study, number of pieces of information used
Timeframe/Mileposts	2013
Potential Implementation Parties	Counties
Costs	County WLSSD education budgets; $40,000
Funding Mechanisms	Solid Waste fees, additional (new)SCORE funds
Barriers/Issues	Implementation, compliance

Opportunities	Waste reduction, save trees
Feasibility	High
Priority	High - Medium
Material Targets (Type and Quantity Changed)	Magazines/Third Class Mail; 10% reduction
GHG Reduction Potential	
General Comments	

2.5	**End Market Development**
Description	Support state development of recyclables and energy markets
Measurement Method	Quantifiable increase in recyclables end market demand. Quantifiable increase in recycled materials commodity values. Establishment of State Program to develop end markets for energy produced by W-to-E.
Timeframe/Mileposts	Invigorated State recycled materials market development program by 2012. Creation of State energy end market development program by 2012.
Potential Implementation Parties	Counties and WLSSD (policy makers and senior staff). Legislators. MPCA and other state agencies (ex: NRRI, IRRB). Public utilities staff.
Costs	TBD. $20 million per year ($10 per ton processing end market credit on 2 million tons of MSW in Minnesota).
Funding Mechanisms	Planning and promoting: existing state and local resources. Implementation: new state funding derived from solid waste management tax revenues.
Barriers/Issues	Funding. State support. Potential opposition.
Opportunities	Creation of long term renewable energy source. Reducing use of natural resources and fossil fuels. Etc.
Feasibility	High.
Priority	High.
Material Targets (Type and Quantity Changed)	No changes modeled; All waste types.
GHG Reduction Potential	Anticipated high.
General Comments	Also proposed by St. Cloud

2.9	Container Deposit
Description	Support state-implemented container deposit by 2011
Measurement Method	Passage of Legislation
Timeframe/Mileposts	2011
Potential Implementation Parties	MPCA, Beverage mfrs, Trade Associations, Redemption Centers, WLSSD, Counties
Costs	Embedded staff time
Funding Mechanisms	Deposits, solid waste fees
Barriers/Issues	Opposition from Beverage Industry, establishing infrastructure, political opposition
Opportunities	Creates jobs, increases recycling rates, reduces litter, better packaging, better feedstock for recycling
Feasibility	All but politically
Priority	High
Material Targets (Type and Quantity Changed)	90% recycling rate for Beverage containers; Aluminum Cans, Steel Cans, HDPE, PET, Glass
GHG Reduction Potential	Significant
General Comments	Also proposed by Rochester

2.10	50% Recycling Rate
Description	50% recycling rate within Centroid by 2011 (w/deposit legislation)
Measurement Method	Local waste sort, tonnage on SCORE annual reports
Timeframe/Mileposts	2010 – 47%, 2011 – 53%, 2012 – 53%, 2013 – 53%
Potential Implementation Parties	WLSSD, State and Counties, state legislation (bottle bill)
Costs	Increased costs to the customer
Funding Mechanisms	Solid Waste Management Fees, increased SCORE grants
Barriers/Issues	Funding, enforcement, increased recycling opportunities, behavior change
Opportunities	Better recycling rate, reduced litter, saved landfill space,
Feasibility	High

Priority	High
Material Targets (Type and Quantity Changed)	Beverage containers, glass, tin, aluminum, #1 and #2 plastic, paper, OCC; 50% recycling rate by 2011
GHG Reduction Potential	
General Comments	

3.2	Expand organics composting programs
Description	Expand organics composting programs (specific methods determined by area)
Measurement Method	Tonnage composted
Timeframe/Mileposts	Implement in 2011; 3,000 tons by 2012, 4,000 tons by 2014
Potential Implementation Parties	WLSSD and counties
Costs	$100 per ton
Funding Mechanisms	Tip fees, solid waste management fees, product sales
Barriers/Issues	Transportation of product, site capacity beyond 4,000 tons, collection logistics, customer participation
Opportunities	Increase of local reusable material into finished product, renewable product, awareness of waste generation by generators, potential to implement residential collection
Feasibility	High
Priority	High
Material Targets (Type and Quantity Changed)	SSOM – Source Separated Organic Material; Double recovery to 5%
GHG Reduction Potential	
General Comments	

4.7	WTE Feasibility
Description	Continue to evaluate regional waste processing feasibility
Measurement Method	Completion of regional feasibility study.
Timeframe/Mileposts	Study completion by fall of 2011.
Potential Implementation	St. Louis County. WLSSD. MPCA. Other state agencies. End energy markets?

Parties	
Costs	Est. $100,000 to $150,000
Funding Mechanisms	State and Local funding (state grants, local sources)
Barriers/Issues	Available technologies. Participation by end markets. Study cost. Participation by needed partners
Opportunities	Establishment of long-range processing road map
Feasibility	High
Priority	High
Material Targets (Type and Quantity Changed)	No changes modeled; Potential benefits: Avoid combustion of fossil fuel. Avoid generation of landfill-based methane. Improved transportation efficiencies.
GHG Reduction Potential	Estimated high.
General Comments	

5.3	**Require Landfill Gas Flaring**
Description	Require landfill gas flaring
Measurement Method	Percentage of active industrial and MSW landfills actively collecting and flaring gas as determined by State permit records
Timeframe/Mileposts	Implementation by summer 2011; 50% capture and flare by 2013
Potential Implementation Parties	Landfill owners. Environmental consulting community. Regulatory agencies.
Costs	Feasibility and design. Construction. Operations. Low to county, cost passed on top consumer.
Funding Mechanisms	State grant and loan funding (proposed). Landfill owner funding resources.
Barriers/Issues	No significant technical barriers. Potential issue regarding local authority to require flaring.
Opportunities	Destroy methane prior to emission.
Feasibility	High
Priority	High
Material Targets (Type and Quantity Changed)	Methane; 50% capture and flare
GHG Reduction Potential	High
General Comments	

SCENARIO 2 (additions)

1.2	Volume-Based Pricing
Description	Expanded volume-based pricing
Measurement Method	Compliance of all haulers with existing VBS requirements, reduction of waste volumes, increase in recycling rates
Timeframe/Mileposts	2011
Potential Implementation Parties	MPCA, Cities, Counties and WLSSD, private haulers
Costs	Low implementation costs, reduced costs to the customer
Funding Mechanisms	Equitable pricing for garbage services
Barriers/Issues	Resist change, multi-family units, staff for enforcement
Opportunities	Source reduction increase of 5.5%, 5.5% recycling increase, and compost increase, costs based on generation, transparent and equitable.
Feasibility	High
Priority	High-Medium
Material Targets (Type and Quantity Changed)	Curbside materials; 5.5% source reduction, 5.5% recycling increase, increase in composting
GHG Reduction Potential	
General Comments	Background exists, need to enforce Also proposed by St. Cloud and Metro

4.8	WTE Facility
Description	Regional processing facility by 2018 (If feasible)
Measurement Method	Successful development of facility.
Timeframe/Mileposts	Go/no go decision by 2014; facility running by 2018
Potential Implementation Parties	State. Local units of government. End markets for materials energy.
Costs	Anticipated $50 to 100 million.

Funding Mechanisms	State grants funding. Processing credits for energy markets. Local funding (existing, bonding). Modified tipping fees.
Barriers/Issues	Cost. Potential public opposition. Need for end markets for materials. Governance issues, and need for long term management structure. Uncertain State regulatory agency perspective.
Opportunities	Significant opportunity to capture recyclables and create energy. Significant opportunity to avoid fossil fuel usage and reduce methane gas generation.
Feasibility	high
Priority	high
Material Targets (Type and Quantity Changed)	Process by WTE 92% of remaining waste (includes 90% ferrous recovery and .1004 efficiency factor); all materials
GHG Reduction Potential	High
General Comments	

5.4	**Landfill Gas-to-Energy at all facilities**
Description	Landfill gas to energy at all facilities (If feasible)
Measurement Method	Percentage of active industrial and MSW landfills actively collecting and flaring gas as determined by State permit records
Timeframe/Mileposts	Implementation by summer 2013
Potential Implementation Parties	Landfill owners. Environmental consulting community. Regulatory agencies.
Costs	Feasibility and design. Construction. Operations.
Funding Mechanisms	State grant and loan funding (proposed). Landfill owner funding resources.
Barriers/Issues	No significant technical barriers. Potential issue regarding local authority to require flaring.
Opportunities	Destroy methane prior to emission, recognize increased demand for fossil fuels
Feasibility	High
Priority	High
Material Targets (Type and Quantity Changed)	Methane; 50% LF gas capture and energy production

5.5	Perpetual care at all landfills
Description	Perpetual care at all landfills
Measurement Method	Establishment of required perpetual care provisions at all msw/industrial waste landfills by 2015
Timeframe/Mileposts	Legislative authorization by 2013
Potential Implementation Parties	State legislature. MPCA and other governmental agencies. Counties and WLSSD. All landfill owners.
Costs	TBD
Funding Mechanisms	Funded by landfill owner.
Barriers/Issues	Potential opposition by private landfill owners.
Opportunities	Establish organizational system for permanent management of methane generation.
Feasibility	High
Priority	High
Material Targets (Type and Quantity Changed)	No changes modeled; All landfilled materials (MSW and industrial).
GHG Reduction Potential	High, through establishment of upgraded system.
General Comments	

SCENARIO 3 (additions)

2.8	Increased Recycling Education
Description	Expanded regional education and related reduction efforts
Measurement Method	
Timeframe/Mileposts	2012 to 2014 (5% increase); 2015 to 2025 (3%)
Potential Implementation Parties	MPCA, Department of Education, Regional/Local governments including counties and WLSSD, Schools, Non-profits and haulers
Costs	Salaries for county, WLSSD staff, materials and distribution through a variety of media
Funding Mechanisms	Additional SCORE funding to Counties and WLSSD, solid waste fees,
Barriers/Issues	Having adequate funding for expanded educational programs, measuring behavioral change, measuring impact on solid waste volumes and composition

Opportunities	Creates opportunities for consistent messages across Centroid, increased opportunities for cooperation between public, private and institutional entities.
Feasibility	Medium
Priority	Medium
Material Targets (Type and Quantity Changed)	5% initial increase in recycling rate; 3% sustained rate; curbside recyclables
GHG Reduction Potential	
General Comments	

2.11	**55% Recycling Rate**
Description	55% recycling rate within centroid by 2018
Measurement Method	Local waste sort, tonnage on SCORE annual reports
Timeframe/Mileposts	2014 – 53%, 2015 – 53%, 2016– 53%, 2018 – 55%
Potential Implementation Parties	WLSSD, State and Counties, state legislation (bottle bill)
Costs	Increased costs to the customer
Funding Mechanisms	Solid Waste Management Fees, grants, taxes
Barriers/Issues	Funding, enforcement, behavior change
Opportunities	Better recycling rate, reduced litter, saved landfill space,
Feasibility	High
Priority	High
Material Targets (Type and Quantity Changed)	Beverage containers, glass, tin, aluminum, #1 and #2 plastic, paper; 55% recycling rate by 2020 (Already at 55% because of VBP and MSW pre-processing)
GHG Reduction Potential	
General Comments	