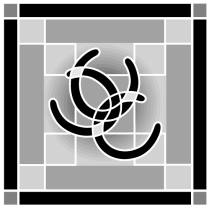
Washington County Organic Waste Management Strategies in Grocery Stores

Final Report Prepared for the

Solid Waste Management Coordinating Board

December 2003



J L TAITT and associates inc

WE TURN GARBAGE INTO GOLD™

WASHINGTON COUNTY
ORGANIC WASTE MANAGEMENT STRATEGIES IN GROCERY STORES

Acknowledgements

JL Taitt & Associates would like to thank the following participants on the project:

- Kowalski's Market and hauler, Aspen Waste Systems.
- Rainbow Foods and hauler, BFI Waste Services.

Without their time, effort and interest in pioneering organic waste management strategies in the Twin Cities metropolitan area, the project would not have been possible.

Project Contacts

For more information on this project, contact:

JL Taitt & Associates
8457 North Meadow Lake Road
Minneapolis, Minnesota 55428
763-504-2445
jodi@jltaitt.com
www.jltaitt.com

Jodi Taitt, President
Katy Boone, Associate

Washington County
Department of Public Health & Environment
14949 62nd Street North
Stillwater, Minnesota 55082

Judy Hunter
Senior Program Manager
651-430-6668
judy.hunter@co.washington.mn.us

Nicole Stewart
Senior Environmental Specialist
651-430-6669
nicole.stewart@washington.mn.us

WASHINGTON COUNTY
ORGANIC WASTE MANAGEMENT STRATEGIES IN GROCERY STORES

TABLE OF CONTENTS

EXECUTIVE SUMMARY

Washington County

Washington County, located on the eastern edge of Minnesota, is one of seven Twin Cities metropolitan area counties. In February 1999, Washington County's Board of Commissioners adopted a Regional/County Solid Waste Management Master Plan. The Plan authorized the Washington County Department of Public Health and Environment to: (1) conduct a comprehensive research focus on reduction, recycling and management of solid waste in the grocery industry in 2002; and (2) to identify barriers and solutions for increasing reduction, recycling and nonMSW management in the grocery industry and implement solutions.

In December 2001, Washington County contracted with JL Taitt & Associates to begin its study of the grocery industry and its work with grocery stores. Washington County's study of the grocery industry and its work with grocery stores has unfolded in three phases:

- **Phase I:** Research & Evaluation
  December 2001 – October 2002

- **Phase II:** Evaluation & Education
  July 2002 – December 2002

- **Phase III:** Grocery Stores Decline Pilot Projects & A Change In Project Scope
  January 2003 – May 2003

A summary of the work accomplished in Phase I of the project is provided in the report, *Strategies to Reduce & Recycle Solid Waste in Grocery Stores*, prepared by JL Taitt & Associates, March 2003. A summary of the work accomplished in Phase II and III of the project is provided in this report.

Solid Waste Management Coordinating Board

The Solid Waste Management Coordinating Board (SWMCB) represents the Twin Cities metropolitan area counties of Anoka, Carver, Dakota, Hennepin, Ramsey and Washington and includes the cities of St. Paul and Minneapolis. The mission of the SWMCB is to increase the efficiency and environmental effectiveness of the SMWCB region's solid waste management system.

In September 1999, the SWMCB partnered with the Minnesota Pollution Control Agency and the Minnesota Office of Environmental Assistance to study the composition of Minnesota's municipal solid waste stream. The results of this study suggest that approximately 30% of the waste generated in the SWMCB region is organic in nature including food, fiber (paper and wood) and plant waste.

In July 2002, the SWMCB enhanced Washington County's original grocery store project with additional funding. The SWMCB entered into an agreement with Washington County and provided funds for the County to develop and implement source separated organic waste composting pilot projects at NRG Processing Solutions (NRG PS) located in Dakota County, Minnesota. Through an amendment to the existing contract with the County's Contractor, JL Taitt & Associates, the intent was to conduct the pilot projects for a period of six months at two grocery stores already participating in the County's project: (1) Kowalski's Market in Woodbury; and (2) Rainbow Foods in Oakdale.

Grocery Stores Decline Pilot Projects

Typically, a final report on this project would focus on the development, implementation and outcomes of the grocery store source separated organics composting pilot projects at NRG PS. The report would include outcomes such as:

1. Quantitative effects of the pilot projects on the stores' waste management system.

2. Economic impacts (cost-benefit analysis) of the pilot projects for the participating stores.

3. Process involved in identifying, developing and implementing a source separated organics composting system.

4. Barriers and challenges related to implementing and sustaining a source separated organics composting system.

5. Recommendations on ways a county could encourage source separated organics collection in grocery stores on a county-wide scale.

However, the grocery stores declined Washington County's offer to conduct source separated organic waste composting pilot projects using technical assistance and funding from the County. Instead, Kowalski's Market and Rainbow Foods elected to continue to receive technical assistance from the County's Contractor to explore and evaluate a number of organic waste management options including hog feeding, livestock feed ingredient manufacturing and composting.

After evaluating the information collected about these options with the assistance of the County's Contractor, the grocery stores made the business decision to develop and implement a company-wide organic waste management system. Without the influence of public funding or subsidies, Kowalski's Market and Rainbow Foods decided to use Endres Processing as their end-use facility because it was estimated to be the least-cost solution. Endres Processing, located in Dakota County, Minnesota, manufactures livestock feed ingredients.

This unanticipated change in the grocery stores' degree of motivation from implementing a single pilot project at one store location to implementing a long-term, company-wide organics waste management system changed the scope of Washington County's project. This change in the grocery stores' approach to organic waste management was due to the impact of the County Environmental Charge, a new economic incentive created by Washington and Ramsey Counties.

A New Economic Incentive

From June 2001 to July 2002, Washington and Ramsey Counties jointly explored and studied the implementation of a public solid waste management collection system. This study revealed that the system of solid waste collection and management was not moving the Counties toward their long term solid waste master plan goals. Some findings of the study concluded that:

1. Solid waste generation in Washington and Ramsey Counties was increasing.

2. Recycling was stagnant or decreasing as economic incentives to recycle have diminished.

3. Key decisions have been made with a focus on short term costs or profits.

Two significant recommendations of the study were to:

1. Make system changes to create market incentives for source reduction, recycling and organics composting, especially among commercial generators.

2. Develop and implement a hauler collected waste management service charge and move some or all of the service charge from the property tax statement to this new financing tool.

In November 2002, the Washington and Ramsey County Boards of Commissioners implemented these recommendations by establishing a County Environmental Charge. This change in the prevailing economics for commercial waste generators created a new economic incentive for "organic rich" businesses, such as grocery stores, to explore, evaluate and develop organic waste management strategies.

The County Environmental Charge

Washington and Ramsey Counties, respectively, approved a 34.2% and 56% County Environmental Charge (CEC) to be assessed to all businesses that generate waste in their counties. Beginning April 2003, the 34.2% CEC in Washington County and the 56% CEC in Ramsey County is applied to a businesses' total garbage hauling and disposal bills and replaces charges that were previously collected on property tax bills.

Commercial waste generators pay the CEC in addition to the existing 17% Minnesota State Solid Waste Management Tax.

Commercial waste generators have the opportunity to be exempt from both assessments if materials from their waste stream are separated (by the generator) from the waste stream and managed separately as recyclables or organic waste. The costs of recycling and organic waste management services are exempt from the CEC and the Minnesota State Solid Waste Management Tax.

The End-Use Options

Research conducted in Phase I of the project identified five end-use options currently available in the Twin Cities metropolitan area to manage organic waste: (1) food rescue; (2) rendering; (3) hog feeding; (4) manufacturing livestock feed ingredients; and (5) composting. The costs to the grocery stores to receive these services would be exempt from the new CEC in Washington and Ramsey Counties. The type of organic waste managed by each end-use option is provided in Table 1.

Table 1: Organic Waste End-Use Options in the Twin Cities Metropolitan Area

End-Use Options	Types of Organic Waste Managed
Food Rescue	Edible Excess Food
Rendering	Food Waste (meat, fat, bones & grease)
Hog Feeding	Edible Excess Food Food Waste
Manufacturing Livestock Feed Ingredients (Endres Processing)	Edible Excess Food Food Waste Fiber Waste (paper & cardboard only) Plant Waste
Composting (NRG Processing Solutions)	Edible Excess Food Food Waste Fiber Waste (paper, cardboard & wood) Plant Waste

End-Use Options are Mutually Exclusive

The types of acceptable and unacceptable materials for each organic waste end-use option are summarized in Table 2. This table demonstrates that end-use options are mutually exclusive, and there is no concept of "one size fits all." Food packaging is highlighted in bold because it is a significant part of the organic waste stream and requires staff time to sort it on a daily basis.

Table 2: Acceptable & Unacceptable Materials for Each Organic Waste End-Use Option

End-Use Options	Types of Organic Waste Managed	Acceptable Materials	Unacceptable Materials
Food Rescue	Edible Excess Food	Unserved, prepared & perishable food from all grocery store departments	Inedible & dated food **Food Packaging** All Other Trash
Rendering	Edible Excess Food Food Waste	Meat, fat, bones & grease	Non-meat food waste **Food Packaging** All Other Trash
Hog Feeding	Edible Excess Food Food Waste	Produce Deli Meat & Seafood Bakery Dairy & Frozen Dry Goods	Coffee Grounds Rock Salt **Food Packaging** All Other Trash
Manufacturing Livestock Feed Ingredients	Edible Excess Food Food Waste Fiber Waste (paper & cardboard) Plant Waste	Produce Deli Bakery Dairy & Frozen Dry Goods **Food Packaging (paper, cardboard, plastic, cans)**	Meat & Seafood **Food Packaging (glass & wood)** All Other Trash
Composting	Edible Excess Food Food Waste Fiber Waste (paper, cardboard & wood) Plant Waste	Produce Deli Meat & Seafood Bakery Dairy & Frozen Dry Goods **Food Packaging (paper, cardboard & wood)**	**Food Packaging (plastic, glass & cans)** All Other Trash

Recommendations for Next Steps

As the County's Contractor worked with Rainbow Foods and Kowalski's Market to explore, evaluate and develop system-wide organic waste management strategies, it became apparent that there were a number of policy issues related to managing organic waste in the SWMCB region that were more complicated than expected. Because these policy issues would be encountered by any "organic rich" business exploring, evaluating and developing organic waste management strategies in any Twin Cities metropolitan area county, it is very important that these issues be identified and addressed.

The following five questions address these issues. The response to the questions are the recommendations for next steps.

I. What is the definition of organic waste?

Develop a functional, working definition for organic waste that:

- Addresses the types of organic waste material (e.g., food waste, fiber waste and plant waste) that is being produced by waste generators. Explore if the definition for organic waste should include yard waste, recyclable paper and cardboard and wood.

- Includes the types of organic waste material (e.g., food waste, fiber waste and plant waste) that is being received by a wide variety of end-use facilities.

- Allows the flexibility for "organic rich" waste generators and current and future end-use facilities accepting organic waste to develop creative and effective least-cost solid waste management solutions.

II. What is the volume of organic waste generated in the SWMCB region?

Based on a functional, working definition of organic waste, estimate the volume of organic waste generated in the SWMCB region.

To plan and develop policy, determine what percentage of the organic waste volume is generated by:

- Residential generators

- Commercial generators

Based on the source of the greatest volume of organic waste generated (e.g., residential or commercial), plan and develop policies that prioritize and focus on providing the

SWMCB region the "biggest bang for the buck" in recovering the largest volume of organic waste generated.

III. What are the current end-use options for managing organic waste, how successful are they and what policies should exist to support them?

Currently, there are five end-use options to manage organic waste generated in the SWMCB region: (1) food rescue; (2) rendering; (3) hog feeding; (4) manufacturing livestock feed ingredients; and (5) composting. Clearly, the end-use options for managing organic waste are more varied than just composting. However, current perceptions and policy only address composting in the hierarchy and statutory definitions.

Expand the Perception of End-Use Options

Expand the perception of organic waste management to include all current and future end use options.

Develop policies and appropriate statutory definitions to include and support all current and future end-use options.

Evaluate Existing End-Use Options

Of the types of residential and commercial organic waste management strategies currently being implemented in the SWMCB region:

- Determine how sophisticated, mature and successful these programs are.
- Identify the barriers to entry of existing programs.
- Evaluate the economic benefits of these programs.

IV. Are the current end-use options for managing organic waste properly permitted and in compliance with their permit requirements; and if they were used to their full capacity, is there enough current capacity for the SWMCB region?

Due diligence requires a clear understanding of all organic waste end-use options, their permitting requirements and if they are in compliance with these requirements.

Explore End-Use Options & Their Permits

Explore what the current permitting requirements are for end-use options.

Determine if the end-use options are in compliance with their permitting requirements.

Determine if there is consistent permitting requirements among end-use options.

If all "organic rich" businesses in the SWMCB region made the business decision to develop and implement organic waste management strategies, it is important to have an understanding of the capacity for current and future end-use options to accept and receive this volume of organic waste.

Determine Existing End-Use Capacity

Measure how much existing end-use capacity currently exists.

Determine how much of the existing end-use capacity is currently being used.

Develop a Plan to Encourage New End-Use Capacity

Determine if additional end-use capacity will be needed in the future.

Determine how new end-use capacity will be developed:

- Expansion of existing end-use facilities and/or transfer capacity.
- Establishment of new end-use facilities and/or transfer capacity.

V. Should all Twin Cities metropolitan area counties develop and implement a similar type of economic incentive, such as the CEC, to stimulate the development of organic waste management strategies in the SWMCB region?

The new economic incentive created by the Washington and Ramsey County CEC has been extremely successful in generating a "flurry" of new interest in developing and implementing least-cost organic waste management strategies in the SWMCB region.

The success of the CEC is based on one simple concept: "Trash costs more and organics could cost less." For the first time in almost a decade, the CEC matched the prevailing economics to the preferences of the hierarchy. It is very important for all Twin Cities metropolitan area counties to understand the economic impact the CEC—a surcharge—has had on changing the behavior of "organic rich" commercial generators.

Understand the Economics of the Hierarchy

Use the 1999 waste composition data for the SWMCB region to answer the question: "What are the prevailing economic drivers in the solid waste management system that yield these data?"

Compare the real-world economics of current solid waste management practices to the preferences of the hierarchy.

Determine if the prevailing economics for managing solid waste match the preferences of the hierarchy.

If the prevailing economics for managing solid waste do not match the preferences of the hierarchy, determine what the economic options are to change the prevailing economics.

Identify the Economic Tools that Could be Used to Change Generator Behavior so that it Supports the Hierarchy

Understand the economic differences between subsidies (e.g., subsidized collection programs and processing credits) and surcharges (e.g., County Environmental Charge).

Identify all existing subsidies and surcharges in the SWMCB region's solid waste management system and their economic impacts.

Evaluate the impact subsidies and surcharges would have on recovering source separated organic waste on the part of:

- Commercial and residential waste generators.
- Haulers.
- Private sector end-use facilities that accept organic waste.

PROJECT BACKGROUND

Washington County

Washington County, located on the eastern edge of Minnesota, is one of seven Twin Cities metropolitan area counties. The County has a diverse economy with a strong trade and manufacturing base. The City of Stillwater, along the St. Croix River, serves as the County seat. Washington County is comprised of 423 square miles and is home to 201,130 residents. The County projects that its population will grow to over 288,000 by 2020.

Minnesota state law requires metropolitan area counties to plan and implement activities to meet the State's policy for solid waste management. In February 1999, Washington County's Board of Commissioners adopted a Regional/County Solid Waste Management Master Plan. The Plan authorized the Washington County Department of Public Health and Environment to:

1. Conduct a comprehensive research focus on reduction, recycling and management of solid waste in the grocery industry in 2002.

2. Identify barriers and solutions for increasing reduction, recycling and nonMSW management in the grocery industry and implement solutions.

In December 2001, Washington County contracted with JL Taitt & Associates (Contractor) to begin its study of the grocery industry and its work with grocery stores.

Solid Waste Management Coordinating Board

The Solid Waste Management Coordinating Board (SWMCB) represents the Twin Cities metropolitan area counties of Anoka, Carver, Dakota, Hennepin, Ramsey and Washington and includes the cities of St. Paul and Minneapolis. The mission of the SWMCB is to increase the efficiency and environmental effectiveness of the SMWCB region's solid waste management system.

In September 1999, the SWMCB partnered with the Minnesota Pollution Control Agency and the Minnesota Office of Environmental Assistance to study the composition of Minnesota's municipal solid waste stream. The results of this study suggest that approximately 30% of the waste generated in the SWMCB region is organic in nature including food, fiber (paper and wood) and plant waste.

In June 2001, the SWMCB sponsored an evaluation of solid waste management in its region through a Citizen's Jury. The Citizen's Jury recommended that 19% of the Twin Cities metropolitan area's integrated solid waste management goal be achieved through organics processing projects, including source separated organics composting. Consistent with the recommendations of the Citizen's Jury to promote source separated

organics composting, the SWMCB dedicated funding to the development and implementation of organic composting pilot projects in the Twin Cities metropolitan area.

In July 2002, the SWMCB enhanced Washington County's original grocery store project with additional funding. The SWMCB entered into an agreement with Washington County and provided funds for the County to develop and implement source separated organic waste composting pilot projects at NRG Processing Solutions (NRG PS) located in Dakota County, Minnesota. Through an amendment to the existing contract with JL Taitt & Associates, the intent was to conduct the pilot projects for a period of six months at two grocery stores already participating in the County's project: (1) Kowalski's Market in Woodbury; and (2) Rainbow Foods in Oakdale.

Grocery Stores Decline Pilot Projects

Typically, a final report on this project would focus on the development, implementation and outcomes of the grocery store source separated organics composting pilot projects at NRG PS. The report would include outcomes such as:

1. Quantitative effects of the pilot projects on the stores' waste management system.

2. Economic impacts (cost-benefit analysis) of the pilot projects for the participating stores.

3. Process involved in identifying, developing and implementing a source separated organics composting system.

4. Barriers and challenges related to implementing and sustaining a source separated organics composting system.

5. Recommendations on ways a county could encourage source separated organics collection in grocery stores on a county-wide scale.

However, the grocery stores declined Washington County's offer to provide technical assistance and funding to conduct the pilot projects. Instead, Kowalski's Market and Rainbow Foods elected to continue to receive technical assistance from the County's Contractor to explore and evaluate a number of organic waste management options. These options included hog feeding, livestock feed ingredient manufacturing and composting.

After evaluating the information collected about these options with the assistance of the County's Contractor, the grocery stores made the business decision to develop and implement a company-wide organic waste management system. Without the influence of public funding or subsidies, Kowalski's Market and Rainbow Foods decided to use Endres Processing as their end-use facility because it was estimated to be the least-cost

solution. Endres Processing, located in Dakota County, Minnesota, manufacturers livestock feed ingredients.

This unanticipated change in the grocery stores' degree of motivation from implementing a single pilot project at one store location to implementing a long-term, company-wide organics waste management system changed the scope of Washington County's project. This change in the grocery stores' approach to organic waste management was due to the impact of the County Environmental Charge, a new economic incentive created by Washington and Ramsey Counties.

Three Project Phases

Washington County's study of the grocery industry and its work with grocery stores has unfolded in three phases:

- **Phase I:** Research & Evaluation
  December 2001 – October 2002

- **Phase II:** Evaluation & Education
  July 2002 – December 2002

- **Phase III:** Grocery Stores Decline Pilot Projects & A Change In Project Scope
  January 2003 – May 2003

A summary of the work accomplished in Phase I of the project is provided in the report, *Strategies to Reduce & Recycle Solid Waste in Grocery Stores*, prepared by JL Taitt & Associates, March 2003. A summary of the work accomplished in Phase II and III of the project is provided in this report.

A description for each phase of the project follows.

PHASE I: RESEARCH & EVALUATION

December 2001 – October 2002

In Phase I of the project, Washington County retained the services of JL Taitt & Associates and began its study of the grocery industry as directed by its Regional/County Solid Waste Management Master Plan. The scope of the project in Phase I was to obtain participation from two grocery stores located in Washington County and:

1. Evaluate the stores' current solid waste management activities and conduct research on alternatives.

2. Develop recommendations to reduce and recycle various solid wastes generated by grocery stores.

3. Report on project outcomes.

National grocery industry research suggests that the composition of the solid waste stream in a grocery store is significantly high in organic waste (69 to 89%) comprised of food, fiber (paper and wood) and plant waste. It was recommended that emphasis be put on developing and implementing organic waste management strategies for grocery stores in the Twin Cities metropolitan area.

Solid waste generation, recycling, waste reduction and disposal activities were evaluated at two grocery stores located in Washington County: (1) Kowalski's Market in Woodbury; and (2) Rainbow Foods in Oakdale. On-site visits were conducted and interviews with store managers and department heads identified the average volume of waste generated per day by seven grocery store departments as summarized in Table 1.

Table 1: Grocery Store Departments Average Daily Waste Volume

Department	Average Daily Volume of Waste Generated (Gallons)
Bakery	185
Dairy & Frozen Food	35
Deli	200
Floral	80
Grocery	60
Meat & Seafood	205
Produce	215

Based on this information, the departments were grouped into the following two categories:

1. Departments producing large amounts of organic waste:

    a. Bakery
    b. Deli
    c. Meat & seafood
    d. Produce

2. Departments producing small amounts of organic waste:

    a. Dairy & frozen food
    b. Floral
    c. Grocery

It was recommended that:

1. More research be conducted on the feasibility of expanding organic waste management strategies in the Twin Cities metropolitan area.

2. An economic incentive be created for grocery stores to recover organic waste from their waste stream.

3. Case studies be developed of organic waste management strategies in grocery stores by providing technical assistance.

PHASE II: EVALUATION & EDUCATION

July 2002 – December 2002

In Phase II of the project, the SWMCB enhanced the County's original grocery store project with additional funding. The SWMCB provided funds for Washington County to develop and implement source separated organic waste composting pilot projects at NRG Processing Solutions (NRG PS) located in Dakota County, Minnesota.

Through an amendment to the existing contract with JL Taitt & Associates, the scope of work in Phase II was to:

1. Pilot the most appropriate system to source separate organic waste at Kowalski's Market in Woodbury and Rainbow Foods in Oakdale for composting at NRG PS.

2. Conduct a cost-benefit analysis for the grocery stores participating in the pilot project.

3. Identify challenges and barriers to implementing the pilot project and how to overcome those barriers and other issues that might affect a grocery store's decision to implement organic waste management strategies.

4. Develop recommendations on ways a county could encourage source separated organic waste collection in grocery stores on a county-wide scale.

5. Report on project outcomes.

On-site visits were conducted at Kowalski's Market in Woodbury and Rainbow Foods in Oakdale to interview store managers and department heads to:

1. Understand where organic waste was generated in the grocery store departments.

2. Identify what types of organic waste were generated (food, fiber and plant waste).

3. Identify the type of waste materials generated in a grocery store that are unacceptable to the composting process (e.g., glass, metal and plastics).

4. Explore the in-house operational logistics of source separating organic waste including:

    a. Sorting out unacceptable waste materials in each department.

    b. Providing intermediate collection containers for organic waste and trash containers for unacceptable waste materials.

    c. Transferring organic waste and trash from the point of generation in each department to a place for consolidation and transportation at the loading dock.

An economic analysis was conducted to compare the cost of the grocery stores' current solid waste management system to an organics recovery system for composting. To conduct the analysis, 12 months of trash hauling and cost data were obtained. Each of these stores generate approximately 455 tons of trash per year.

While the grocery stores were very interested in being good corporate citizens and "doing the right thing" for the environment, the grocery stores initially perceived a number of logistical and economic challenges and barriers to implementing an organics recovery system:

1. The additional staff time required to develop and implement the organics composting system and to educate staff on participating in the system.

2. The labor required to source separate organic waste by sorting out unacceptable materials, especially plastic packaging.

3. The additional in-house collection equipment required to source separate organic waste including the potential use of biodegradable bags.

4. The space required to store additional collection containers in each department and at the loading dock.

5. The additional hauling and disposal costs to deliver organic waste to NRG PS.

The additional funding from the SWMCB was instrumental in helping Washington County work with the grocery stores to identify these challenges and barriers.

PHASE III: GROCERY STORES DECLINE PILOT PROJECTS AND A CHANGE IN PROJECT SCOPE

January 2003 – May 2003

In January 2003, Kowalski's Market and Rainbow Foods declined Washington County's offer to provide assistance and funding to conduct source separated organic waste composting pilot projects. Specifically, the grocery stores declined the County's offer to provide:

1. Technical assistance to:

    a. Plan and develop the most appropriate in-house source separated organics collection system and delivery to NRG PS.

    b. Develop educational materials and conduct on-site training sessions for employees.

    c. Trouble shoot challenges and barriers in implementing the pilot system.

    d. Evaluate the economic impact and employee acceptance of the pilot system.

2. Funding to cover incremental costs the grocery stores would incur, including:

    a. Additional hauling costs and disposal fees.

    b. Equipment costs and biodegradable bags.

Instead of developing and implementing a pilot project to source separate organic waste for composting at NRG PS, Kowalski's Market and Rainbow Foods elected to continue to receive technical assistance from the County's Contractor to explore and evaluate a number of organic waste management options. These options included hog feeding, livestock feed ingredient manufacturing and composting.

After evaluating the information collected about these options with the assistance of the County's Contractor, the grocery stores made the business decision to develop and implement a company-wide organic waste management system. Without the influence of public funding or subsidies, Kowalski's Market and Rainbow Foods decided to use Endres Processing as their end-use facility because it was estimated to be the least-cost solution. Endres Processing, located in Dakota County, Minnesota, manufacturers livestock feed ingredients.

This unanticipated change in the grocery stores' degree of motivation from implementing a single pilot project at one store location to implementing a long-term, company-wide organics waste management system changed the scope of Washington County's project. This change in the grocery stores' approach to organic waste management was due to the

impact of the County Environmental Charge, a new economic incentive created by Washington and Ramsey Counties.

A NEW ECONOMIC INCENTIVE

From June 2001 to July 2002, Washington and Ramsey Counties jointly explored and studied the implementation of a public solid waste management collection system. This study revealed that the system of solid waste collection and management was not moving the Counties toward their long term solid waste master plan goals. Some findings of the study concluded that:

1. Solid waste generation in Washington and Ramsey Counties was increasing.

2. Recycling was stagnant or decreasing as economic incentives to recycle have diminished.

3. Key decisions have been made with a focus on short term costs or profits.

Two significant recommendations of the study were to:

1. Make system changes to create market incentives for source reduction, recycling and organics composting, especially among commercial generators.

2. Develop and implement a hauler collected waste management service charge and move some or all of the service charge from the property tax statement to this new financing tool.

In November 2002, the Washington and Ramsey County Boards of Commissioners implemented these recommendations by establishing a County Environmental Charge. This change in the prevailing economics for commercial waste generators created a new economic incentive for "organic rich" businesses, such as grocery stores, to explore, evaluate and develop organic waste management strategies.

The County Environmental Charge

Washington and Ramsey Counties, respectively, approved a 34.2% and 56% County Environmental Charge (CEC) to be assessed to all businesses that generate waste in their counties. Beginning April 2003, the 34.2% CEC in Washington County and the 56% CEC in Ramsey County is applied to a businesses' total garbage hauling and disposal bills and replaces charges that were previously collected on property tax bills.

Since the mid-1980s, both counties had a Solid Waste Management Service Charge placed on property tax bills to generate revenues for solid waste and environmental

programs and services. It was a fixed, "invisible" charge embedded in and collected from property owners through their property tax statements. The Counties' switch to the CEC represents an important shift in how funds for solid waste programs are collected.

Funds are now collected by haulers from their commercial customers as the County Environmental Charge and are directly related to the volume of waste generated rather than a flat fee. The CEC creates a charge paid by commercial waste generators that is visible by appearing every month on their trash bills. When the CEC went into effect, the Solid Waste Management Service Charge on property tax for businesses was eliminated in Washington and Ramsey Counties. This is a new and different way of collecting the same funds.

The Exemption

In Washington and Ramsey Counties, respectively, the 34.2% and 56% CEC is applied to trash hauling and disposal costs and is paid by commercial waste generators on their trash bills. Commercial waste generators pay the CEC in addition to the existing 17% Minnesota State Solid Waste Management Tax. Commercial waste generators have the opportunity to be exempt from both assessments if materials from their waste stream are separated (by the generator) from the waste stream and managed separately as recyclables or organic waste. The costs of recycling and organic waste management services are exempt from the CEC and the Minnesota State Solid Waste Management Tax.

An Illustration

Table 2 illustrates how solid waste management assessments were paid by commercial waste generators on their trash bills in 2002. Table 3 illustrates the important shift in the way funds for solid waste programs are collected in Washington and Ramsey Counties from commercial waste generators on their trash bills effective April 2003.

Table 2: Solid Waste Management Assessments Paid by Commercial Waste Generators on their Trash Bills in 2002

County	State Solid Waste Management Tax	Total Assessments on Trash Bills
Washington	17%	17%
Ramsey	17%	17%

Table 3: Solid Waste Management Assessments
Paid by Commercial Waste Generators on their Trash Bills Effective April 2003

County	State Solid Waste Management Tax	County Environmental Charge	Total Assessments on Trash Bills
Washington	17%	34.2%	51.2%
Ramsey	17%	56%	73%

This visible increase from a total assessment of 17% to 51.2% in Washington County and from 17% to 73% in Ramsey County on trash bills created a new economic incentive for commercial waste generators to change the way they manage their waste so that they could become exempt from these assessments. "Organic rich" businesses, such as grocery stores, have a new economic incentive to explore, evaluate and develop organic waste management strategies that could significantly impact their businesses' bottom line.

ORGANIC WASTE MANAGEMENT STRATEGIES

Kowalski's Market and Rainbow Foods elected to continue to receive technical assistance from the County's Contractor to explore and evaluate a number of organic waste management strategies that would exempt the grocery stores from being assessed the new CEC in Washington and Ramsey Counties. A description of the organic waste end-use options available in the Twin Cities metropolitan area explored and evaluated follows.

The End-Use Options

Research conducted in Phase I of the project identified five end-use options currently available in the Twin Cities metropolitan area to manage organic waste: (1) food rescue; (2) rendering; (3) hog feeding; (4) manufacturing livestock feed ingredients; and (5) composting. The costs to the grocery stores to receive these services would be exempt from the new CEC in Washington and Ramsey Counties. The type of organic waste managed by each end-use option is provided in Table 4, and a description for each option follows.

Table 4: Organic Waste End-Use Options in the Twin Cities Metropolitan Area

End-Use Options	Types of Organic Waste Managed
Food Rescue	Edible Excess Food
Rendering	Food Waste (meat, fat, bones & grease)
Hog Feeding	Edible Excess Food Food Waste
Manufacturing Livestock Feed Ingredients (Endres Processing)	Edible Excess Food Food Waste Fiber Waste (paper & cardboard only) Plant Waste
Composting (NRG Processing Solutions)	Edible Excess Food Food Waste Fiber Waste (paper, cardboard & wood) Plant Waste

Food rescue is based on the concept of collecting prepared and perishable, edible excess food from donor businesses and delivering it to non-profit agencies serving people in need. Businesses that donate food to food rescue programs are protected against liability by the federal Good Samaritan Law and may benefit from tax deductions.

Rendering is the treatment of animal tissue and cooking grease by thermal and/or chemical processes to separate fat from protein and mineral components. In a grocery store, meat, fat and bone trimmings generated in the meat department are collected and transported to rendering companies where this organic waste material is processed into livestock feed ingredients such as meat and bone meal and tallow and lard.

Hog Feeding uses food waste as livestock feed. Livestock producers are required to obtain a permit from the Minnesota Board of Animal Health. Two types of permits are available to livestock producers:

1. Exempt materials permit: allows a livestock producer to feed non-meat food waste (e.g., fresh produce waste) to livestock. This food waste must have had no possibility of coming into contact with meat and is typically fed to cattle without cooking.

2. Garbage feeder permit: allows a livestock producer to feed meat by-products and other food by-products that may have come into contact with meat to livestock. To help prevent the spread of disease, Minnesota state law requires this food waste to be cooked at 212°F for 30 minutes and is typically fed to hogs.

Because grocery stores sell meat and meat products, livestock producers that collect food waste from grocery stores must hold garbage feeder permits, must cook the food waste and feed it to hogs. Once a month their facilities and trucks are inspected by the Minnesota Board of Animal Health.

Manufacturing Livestock Feed Ingredients is a relatively new end-use option for grocery stores. Food waste products such as cookies, dough, cereal, pasta, crackers, bread, bagels and chips are processed into a livestock feed ingredient that is registered by the Department of Agriculture. Acceptable materials are heat treated, dried to less than 10 percent moisture, ground and screened to particles that are less than $1/10^{th}$ of an inch.

Composting is a new end-use option that can accept the wide variety of organic waste generated by grocery stores including food, fiber (paper, cardboard and wood) and plant waste. The composting process uses micro-organisms such as bacteria and fungi to break down the organic materials. Compost can be used in many applications depending on its quality. High quality compost is being used in agriculture, horticulture, landscaping and home gardening. Medium quality compost can be used in applications such as erosion control and roadside landscaping. Low quality compost can be used as a landfill cover or in land reclamation projects.

Most End-Use Options are Mature Systems

Most end-use options in the Twin Cities metropolitan area are mature organic waste management systems that have been operating "under the radar screen" for many years. For the most part, solid waste management professionals were not aware of the amount of material that is being handled by these organic waste management systems and the length of time that they have been operating.

The CEC created a new economic incentive for commercial waste generators to revisit and maximize the use of their existing organic waste management strategies and/or to explore and evaluate the economic benefits of implementing new organic waste management strategies for the first time. The CEC also created the impetus for solid waste management professionals to research and better understand all organic waste end-use options available in the Twin Cities metropolitan area.

Food rescue provides a vital link between surplus food supplies and emergency food assistance while reducing food waste. Twelve Baskets, sponsored by Second Harvest Heartland, and All Seasons Food Rescue are food rescue programs serving the Twin Cities metropolitan area. While All Seasons Food Rescue is currently in start-up phase, Twelve Baskets has had the infrastructure to redistribute prepared and perishable food in

the Twin Cities metropolitan area since its inception in 1984. Twelve Baskets has a donor base of over 520 businesses and serves 61 non-profit agencies in the Twin Cities metropolitan area with five (5) refrigerated trucks and six (6) full time drivers trained and certified as food managers by the State of Minnesota.

Rendering has been traditionally used by slaughterhouses and butcher shops as a way to manage waste materials from slaughtering animals for over 100 years. For example, the Environmental Recycling Corporation (ERC), located in South St. Paul, has been operating since 1881. The Company processes meat, fat and bones from locker plants, butcher shops and grocery stores, as well as cooking oil and grease from restaurants and other establishments that fry food. This organic waste is collected by ERC trucks as often as once a week or as infrequently as once a year. ERC was recently purchased by Anamax Grease Services located in Wisconsin.

Hog Feeding has been an organic waste management strategy for "organic rich" businesses in the Twin Cities metropolitan area for decades. In 1988, this end-use option was formalized when independent, hauler-farmers starting entering into contracts and service agreements with their customers. Currently, there are three family farms that collect food waste from commercial waste generators in the Twin Cities metropolitan area and process it before feeding it to hogs: (1) Barthold Family Farms, Inc.; (2) Second Harvest Farms, Inc.; and (3) Yotter Food Recycling. Barthold Family Farms and Second Harvest Farms have recently created a network of family farms positioning themselves to expand their services in the Twin Cities metropolitan area with improved service standards.

Manufacturing Livestock Feed Ingredients from food waste products began at Endres Processing in 1986 when the Endres Family Farm started feeding excess bakery products to their cattle. In a short time, the Company realized that processing these food waste products into one consistent ingredient would be the best way to utilize the products. In 1998, the Company opened its facility in Rosemount, Minnesota and more than doubled its processing capacity. In addition to food waste, selected food packaging (paper, cardboard, plastic, cans) and plant waste are accepted. Endres Processing currently collects acceptable materials from grocery stores, and its goal is to increase the number of grocery stores it serves in the Twin Cities metropolitan area.

Composting has been used as an organic waste management strategy in Minnesota for many years. Over the past 20 years, a number of composting facilities and programs have been developed, operated and shut down. These facilities and programs have composted a variety of materials from municipal solid waste to yard waste.

Currently, NRG Processing Solutions (NRG PS) located in Dakota County, Minnesota is the only composting facility in the Twin Cities metropolitan area that can accept the wide variety of organic waste generated by grocery stores including food, fiber (paper, cardboard and wood) and plant waste. NRG PS is exploring methods to recover organic waste from grocery stores in the Twin Cities metropolitan area.

Each End-Use Option is Unique

All five end-use options are unique in terms of the types of organic waste they manage. As illustrated in Table 5, edible excess food and food waste have the greatest variety of end-use options available. When fiber and plant wastes are added to food waste, end-use options become limited.

Table 5: Types of Organic Waste Managed by Each End-Use Option

Types of Organic Waste Managed	End-Use Options
Edible Excess Food	Food Rescue Hog Feeding Manufacturing Livestock Feed Ingredients Composting
Food Waste	Rendering Hog Feeding Manufacturing Livestock Feed Ingredients Composting
Food Waste Fiber Waste (paper & cardboard only) Plant Waste	Manufacturing Livestock Feed Ingredients Composting
Food Waste Fiber Waste (paper, cardboard & wood) Plant Waste	Composting
Food Waste Fiber Waste (paper & cardboard only) Plant Waste Selected Packaging (plastic & cans)	Manufacturing Livestock Feed Ingredients

End-Use Options are Mutually Exclusive

The types of acceptable and unacceptable materials for each organic waste end-use option are summarized in Table 6. This table demonstrates that end-use options are mutually exclusive, and there is no concept of "one size fits all." Food packaging is highlighted in bold because it is a significant part of the organic waste stream and requires staff time to sort it on a daily basis.

Table 6: Acceptable & Unacceptable Materials for Each Organic Waste End-Use Option

End-Use Options	Types of Organic Waste Managed	Acceptable Materials	Unacceptable Materials
Food Rescue	Edible Excess Food	Unserved, prepared & perishable food from all grocery store departments	Inedible & dated food **Food Packaging** All Other Trash
Rendering	Edible Excess Food Food Waste	Meat, fat, bones & grease	Non-meat food waste **Food Packaging** All Other Trash
Hog Feeding	Edible Excess Food Food Waste	Produce Deli Meat & Seafood Bakery Dairy & Frozen Dry Goods	Coffee Grounds Rock Salt **Food Packaging** All Other Trash
Manufacturing Livestock Feed Ingredients	Edible Excess Food Food Waste Fiber Waste (paper & cardboard) Plant Waste	Produce Deli Bakery Dairy & Frozen Dry Goods **Food Packaging (paper, cardboard, plastic, cans)**	Meat & Seafood **Food Packaging (glass & wood)** All Other Trash
Composting	Edible Excess Food Food Waste Fiber Waste (paper, cardboard & wood) Plant Waste	Produce Deli Meat & Seafood Bakery Dairy & Frozen Dry Goods **Food Packaging (paper, cardboard & wood)**	**Food Packaging (plastic, glass & cans)** All Other Trash

THE CHALLENGES & BARRIERS

Both Kowalski's Market and Rainbow Foods initially decided to participate in Phase I of the project because they were very interested in being good corporate citizens and wanted to "do the right thing" for the environment. However, during Phase I and II of the project when only an organic waste composting system was being considered, both grocery store

chains initially perceived a number of logistical and economic challenges and barriers to implement the system:

1. The additional staff time required to develop and implement the organics composting system and to educate staff on participating in the system.

2. The labor required to source separate organic waste by sorting out unacceptable materials, especially plastic packaging.

3. The additional in-house collection equipment required to source separate organic waste including the potential use of biodegradable bags.

4. The space required to store additional collection containers in each department and at the loading dock.

5. The additional hauling and disposal costs to deliver organic waste to NRG PS.

After the CEC was approved in Washington and Ramsey Counties, Kowalski's Market and Rainbow Foods had a new economic incentive to explore and evaluate the pros and cons of all organic waste management end-use options in the Twin Cities metropolitan area and work with their haulers to implement the one with the "best fit." Based on their initial analysis of how the CEC would economically impact them, both grocery store chains made the decision to:

1. Dedicate staff time to develop and implement an organic waste management system and educate staff on participating in the system.

2. Dedicate labor to source separate organic waste and sort out unacceptable materials.

3. Obtain additional in-house collection containers and loading dock equipment required to source separate organic waste.

4. Find the space required to store additional collection containers and equipment in each department and at the loading dock.

A description of the process Kowalski's Market and Rainbow Foods experienced to make these decisions follows.

THE KOWALSKI'S MARKET EXPERIENCE

Kowalski's Market is independently owned and operated by Jim and Mary Anne Kowalski. The operations of Kowalski's Market consist of:

- Seven (7) Kowalski's Markets.
- One (1) franchised Cub Foods store.
- One (1) central bakery and transportation facility.

Two (2) facilities are located in Washington County, three (3) facilities are located in Ramsey County and four (4) facilities are located in Hennepin County.

The Impact of the CEC

Table 7 illustrates the solid waste management assessments paid by Kowalski's Market on its trash bills in 2002. The system-wide impact the CEC would have on total solid waste management assessments paid by Kowalski's Market on its trash bills effective April 2003 is summarized in Table 8.

Table 7: System-Wide Solid Waste Management Assessments Paid by Kowalski's Market on its Trash Bills in 2002

County	Number of Stores	State Solid Waste Mgmt Tax	County Environmental Charge	Solid Waste Mgmt Fee*	Total Assessments on Trash Bills
Washington	2	17%	0%		17%
Ramsey	3	17%	0%		17%
Hennepin	4	17%		14.5%	31.5%

*Since January 1994 Hennepin County has assessed a 14.5% Solid Waste Management Fee on a businesses' total garbage hauling and disposal bill. The Solid Waste Management Fee is exempt on recycling and source separated organic waste management hauling and disposal services.

Table 8: System-Wide Solid Waste Management Assessments Paid by Kowalski's Market on its Trash Bills in April 2003

County	Number of Stores	State Solid Waste Mgmt Tax	County Environmental Charge	Solid Waste Mgmt Fee*	Total Assessments on Trash Bills
Washington	2	17%	34.2%		51.2%
Ramsey	3	17%	56%		73%
Hennepin	4	17%		14.5%	31.5%

*Since January 1994 Hennepin County has assessed a 14.5% Solid Waste Management Fee on a businesses' total garbage hauling and disposal bill. The Solid Waste Management Fee is exempt on recycling and source separated organic waste management hauling and disposal services.

If Kowalski's Market continued to operate with no change in the way it managed its solid waste, it was estimated that the Company would pay approximately $34,700 more per year as CEC assessments on its trash bills. This estimated increase was calculated by applying the 34.2% CEC to the trash bills at two (2) facilities in Washington County and the 56% CEC to the trash bills at three (3) facilities in Ramsey County.

The Existing System

Before the CEC, Kowalski's Market used one end-use option to manage its organic waste—food rescue. The existing solid waste management system at Kowalski's Market consisted of:

1. Donations of edible food from the bakery, dairy, deli, produce and grocery departments to a food rescue program.

2. Cardboard recycling.

3. Trash.

Edible food from the bakery, dairy, deli, produce and grocery departments that were near expiration were culled and set aside for the food rescue program; one loading dock bay was dedicated to accommodate a compactor to recycle loose cardboard; and one loading dock bay had a compactor to manage trash. Trash generated in Washington and Ramsey Counties was transported to the Resource Recovery Facility in Newport, Minnesota. Trash generated in Hennepin County was transported to the Hennepin Energy Resource Co. (HERC facility) in Minneapolis, Minnesota.

The Evaluation Process

Kowalski's Market evaluated two new end-use options to manage its organic waste:

1. Livestock feed ingredient manufacturing at Endres Processing.

2. Composting at NRG PS.

To evaluate these options, Kowalski's Market:

1. Received technical assistance from the County's Contractor to:

    a. Evaluate solid waste generation, recycling, waste reduction and disposal activities at its Woodbury store.

    b. Conduct on-site visits at the Woodbury store to understand where organic waste was generated in the grocery store departments, what types of organic waste was generated, identify the type of waste materials generated in a grocery store that are unacceptable to the composting process and to explore the in-house operational logistics of source separating organic waste.

    c. Coordinate meetings held between Kowalski's Market and Endres Processing and NRG PS.

    d. To understand the nature of its waste stream. With the assistance of Aspen Waste Systems—the hauler for Kowalski's Market—and NRG PS, a compactor load of trash was transported to NRG PS for a visual inspection.

2. Received assistance from Aspen Waste Systems to evaluate the economic impact and operational logistics of an organic waste management system using Endres Processing and NRG PS.

With the assistance of Aspen Waste Systems, Kowalski's Market evaluated the economic impact and operational logistics of managing organic waste by placing its facilities into two groups:

1. Five (5) facilities located in Washington and Ramsey Counties subject to the new 34.2% and 56% CEC's.

2. Four (4) facilities located in Hennepin County subject to the existing 14.5% Solid Waste Management Fee.

Both groups were subject to the 17% State Solid Waste Management Tax.

The Decision

Based on this analysis, Kowalski's Market made the business decision to develop an organic waste management system for five (5) facilities located in Washington and Ramsey Counties. Without the influence of public funding or subsidies, the Company decided to use Endres Processing as its end-use facility because it was estimated to be the least-cost solution.

Kowalski's Market chose not to develop an organic waste management system at its four (4) facilities in Hennepin County because:

1. The exemption from the 14.5% Hennepin County Solid Waste Management Fee and the 17% State Solid Waste Management Tax was not a strong enough economic incentive to implement an organic waste management system.

2. The facilities in Hennepin County currently generate less than half of the volume of waste generated by the facilities located in Washington and Ramsey Counties.

3. These facilities were recently redesigned and remodeled without adequate space to implement a source separated organic waste management system.

The Outcome

During April and May 2003, Kowalski's Market developed and implemented an organic waste management system using Endres Processing at five (5) facilities located in Washington and Ramsey Counties. The new solid waste management system at these facilities consist of:

1. Donations of edible food from the bakery, dairy, deli, produce and grocery departments to a food rescue program.

2. Source separation of organic and other acceptable materials for shipment to Endres Processing.

3. Cardboard recycling.

4. Trash.

The change in equipment to accommodate this new system included:

1. Adding new, red intermediate collection barrels for unacceptable waste in each department and dedicating the existing grey intermediate collection barrels to organic waste and other materials accepted by Endres Processing.

2. Dedicating the former "trash" compactor to organic waste and other materials accepted by Endres Processing.

3. Adding trash dumpsters for unacceptable waste materials.

The change in transportation to accommodate this new system included:

1. Transporting compactor loads of organic waste and other acceptable materials to Endres Processing in Dakota County, Minnesota.

2. Providing a front-end load service to empty unacceptable materials from trash dumpsters and transporting the material to the Resource Recovery Facility in Newport, Minnesota.

Kowalski's Market worked with Aspen Waste Systems and Endres Processing to train staff on how to sort acceptable and unacceptable material in each department and how to transfer acceptable materials to the compactors and unacceptable materials to the trash dumpsters.

THE RAINBOW FOODS EXPERIENCE

During this project, Rainbow Foods was owned by Fleming Companies, Inc. located in Lewisville, Texas. Fleming operated 68 Rainbow Foods stores in four states including Texas, New Mexico, Wisconsin and Minnesota. Forty-two (42) stores were located in Minnesota, and 36 of these stores were located in the Twin Cities metropolitan area. In June 2003, thirty (30) Rainbow foods stores in Minnesota and one (1) store in Wisconsin were purchased by Roundy's, Inc. based in Pewaukee, Wisconsin.

For the purpose of this project, the system-wide operations of Rainbow Foods consist of 36 Rainbow Foods stores located in the Twin Cities metropolitan area. Five (5) stores are located in Washington County; six (6) stores are located in Ramsey County; fourteen (14) stores are located in Hennepin County and eleven (11) stores are located in Anoka, Carver, Dakota and Scott counties.

The Impact of the CEC

Table 9 illustrates the solid waste management assessments paid by Rainbow Foods on its trash bills in 2002. The system-wide impact the CEC would have on total solid waste management assessments paid by Rainbow Foods on its trash bills effective April 2003 is summarized in Table 10.

Table 9: System-Wide Solid Waste Management Assessments Paid by Rainbow Foods on its Trash Bills in 2002

County	Number of Stores	State Solid Waste Mgmt Tax	County Environmental Charge	Solid Waste Mgmt Fee*	Total Assessments on Trash Bills
Washington	5	17%	0%		17%
Ramsey	6	17%	0%		17%
Hennepin	14	17%		14.5%	31.5%
Anoka, Carver, Dakota, Scott	11	17%			17%

*Since January 1994 Hennepin County has assessed a 14.5% Solid Waste Management Fee on a businesses' total garbage hauling and disposal bill. The Solid Waste Management Fee is exempt on recycling and source separated organic waste management hauling and disposal services.

Table 10: System-Wide Solid Waste Management Assessments Paid by Rainbow Foods on its Trash Bills in April 2003

County	Number of Stores	State Solid Waste Mgmt Tax	County Environmental Charge	Solid Waste Mgmt Fee*	Total Assessments on Trash Bills
Washington	5	17%	34.2%		51.2%
Ramsey	6	17%	56%		73%
Hennepin	14	17%		14.5%	31.5%
Anoka, Carver, Dakota, Scott	11	17%			17%

*Since January 1994 Hennepin County has assessed a 14.5% Solid Waste Management Fee on a businesses' total garbage hauling and disposal bill. The Solid Waste Management Fee is exempt on recycling and source separated organic waste management hauling and disposal services.

If Rainbow Foods continued to operate with no change in the way it managed its solid waste, it was estimated that the Company would pay approximately $100,000 more per year as CEC assessments on its trash bills. This estimated increase was calculated by applying the 34.2% CEC to the trash bills at five (5) stores in Washington County and the 56% CEC to the trash bills at six (6) stores in Ramsey County.

The Existing System

Before the CEC, Rainbow Foods used two end-use options to manage its organic waste—food rescue and rendering. The existing solid waste management system at each Rainbow Foods store consisted of:

1. Donations of bakery goods to a food shelf.
2. Rendering of meat trimmings, fat and bones.
3. Cardboard recycling.
4. Trash.

Bakery goods that were near expiration were culled and set aside for the food shelf; 55-gallon containers full of meat trimmings, fat and bones were picked up once a week by a rendering company; one loading dock bay was dedicated to accommodate a compactor to recycle loose cardboard; and one loading dock bay had a compactor to manage trash. Trash was transported to various transfer stations throughout the Twin Cities metropolitan area.

The Evaluation Process

Rainbow Foods evaluated three new end-use options to manage its organic waste:

1. Hog feeding.
2. Livestock feed ingredient manufacturing at Endres Processing.
3. Composting at NRG PS.

To evaluate these options, Rainbow Foods received technical assistance from the County's Contractor to:

1. Evaluate solid waste generation, recycling, waste reduction and disposal activities at its Oakdale store.

2. Conduct on-site visits at the Oakdale store to understand where organic waste was generated, what types of organic waste was generated, identify the type of waste materials generated in a grocery store that are unacceptable to the composting process and to explore the in-house operational logistics of source separating organic waste.

3. Attend meetings with Rainbow Foods and its hauler, BFI Waste Services, representatives of hog farmers and Endres Processing.

4. Tour Jerry's Food Market in Edina with Rainbow Foods and observe the collection system of food waste for hog feeding.

5. Tour Barthold Farm in St. Francis, Minnesota to observe food waste hog feeding operations.

6. Understand the nature of its waste stream. With the assistance of BFI Waste Services and Endres Processing, a compactor load of trash was transported to Endres Processing for a visual inspection.

7. Develop a methodology to receive proposals for organic waste management systems using hog feeding and Endres Processing.

Rainbow Foods believed it could get better proposals from organic end-use options by leveraging its total waste stream volume generated at all of its 36 stores and took an "all or nothing" approach. It analyzed the new end-use options on a system-wide basis where the hauling and disposal costs to manage organic waste generated at all of its 36 stores would be exempt from the:

1. CEC in Washington County (34.2%).

2. CEC in Ramsey County (56%).

3. Solid Waste Management Fee in Hennepin County (14.5%).

4. Minnesota State Solid Waste Management Tax in all counties (17%).

Rainbow Foods received proposals for an organic waste management system using hog feeding and Endres Processing. Rainbow Foods perceived the tip fee for composting at NRG PS to be too high and did not pursue this end-use option.

The Decision

Based on the analysis of the proposals it received, Rainbow Foods made the business decision to develop an organic waste management system using Endres Processing as the end-use facility. Without the influence of public funding or subsidies, Rainbow Foods

chose to implement this system at all of its 36 stores in the Twin Cities metropolitan area because it was estimated to be the least-cost solution.

The Outcome

During April and May 2003, Rainbow Foods developed and implemented an organic waste management system using Endres Processing at all 36 stores in the Twin Cities metropolitan area. The new solid waste management system consisted of:

1. Donations of bakery goods to a food shelf.

2. Rendering of meat trimmings, fat and bones.

3. Source separation of organic and other acceptable materials for shipment to Endres Processing.

4. Cardboard recycling.

5. Trash.

The change in equipment to accommodate this new system included:

1. Adding new intermediate collection barrels for organic waste and other materials accepted by Endres Processing in each department and dedicating existing intermediate barrels to unacceptable materials.

2. Adding more 55-gallon barrels to collect a larger volume of fresh and processed meat, fat and bones for rendering, which are unacceptable to Endres Processing.

3. Dedicating the former "trash" compactor to organic waste and other materials accepted by Endres Processing.

4. Adding trash dumpsters for materials unacceptable to Endres Processing.

The change in transportation to accommodate this new system included:

1. Transporting compactor loads of organic waste and other acceptable materials to Endres Processing in Dakota County, Minnesota.

2. Providing a front-end load service to empty unacceptable materials from trash dumpsters and transporting the material to various transfer stations throughout the Twin Cities metropolitan area.

Rainbow Foods worked with BFI Waste Services and Endres Processing to train staff on how to sort acceptable and unacceptable material in each department and how to transfer

acceptable materials to the compactors and unacceptable materials to the trash dumpsters. In addition, greater emphasis was placed in the meat departments on maximizing the recovery of fresh and processed meat, fat and bones for rendering.

RECOMMENDATIONS FOR NEXT STEPS

As the County's Contractor worked with Rainbow Foods and Kowalski's Market to explore, evaluate and develop system-wide organic waste management strategies, it became apparent that there were a number of policy issues related to managing organic waste in the SWMCB region that were more complicated than expected. Because these policy issues would be encountered by any "organic rich" business exploring, evaluating and developing organic waste management strategies in any Twin Cities metropolitan area county, it is very important that these issues be identified and addressed.

The following five questions address these issues. The response to the questions are the recommendations for next steps.

I. What is the definition of organic waste?

There is confusion about the definition and use of the term, "organic waste." The term, organic waste, is often used interchangeably with the term, "food waste." Both of these terms are being used loosely and interchangeably, but they mean very different types of waste. For example, the term, organic waste, may be comprised of a wide range of food, fiber (paper, cardboard and wood) and plant waste materials. The term, food waste, has been used to refer to a mixture of food waste and selected food packaging materials.

Currently, these terms are being defined by those who are generating this type of waste and by those who are receiving this type of waste at a variety of end-use facilities requiring very unique specifications for the types of organic waste they will accept. There is no consistency across the board in the use of these terms, and there is no statutory definition providing direction in the application and meaning of these terms.

Define Organic Waste

1. Develop a functional, working definition for organic waste that:

    a. Addresses the types of organic waste material (e.g., food waste, fiber waste and plant waste) that is being produced by waste generators. Explore if the definition for organic waste should include yard waste, recyclable paper and cardboard and wood.

    b. Includes the types of organic waste material (e.g., food waste, fiber waste and plant waste) that is being received by a wide variety of end-use facilities.

c. Allows the flexibility for "organic rich" waste generators and current and future end-use facilities accepting organic waste to develop creative and effective least-cost solid waste management solutions.

II. What is the volume of organic waste generated in the SWMCB region?

Because of the confusion about the definition of organic waste, there is confusion about the method used to measure the volume of organic waste that is generated in the SWMCB region. It is very important to have a clear picture of the volume of organic waste generated in the SWMCB region for planning and developing policy that will provide the SWMCB the "biggest bang for the buck."

Estimate the Volume of Organic Waste Generated to Plan & Develop Policy

1. Based on a functional, working definition of organic waste, estimate the volume of organic waste generated in the SWMCB region.

2. To plan and develop policy, determine what percentage of the organic waste volume is generated by:

   a. Residential generators

   b. Commercial generators

3. Based on the source of the greatest volume of organic waste generated (e.g., residential or commercial), plan and develop policies that prioritize and focus on providing the SWMCB region the "biggest bang for the buck" in recovering the largest volume of organic waste generated.

III. What are the current end-use options for managing organic waste, how successful are they and what policies should exist to support them?

Currently, there are five end-use options to manage organic waste generated in the SWMCB region: (1) food rescue; (2) rendering; (3) hog feeding; (4) manufacturing livestock feed ingredients; and (5) composting. The type of organic waste managed by each strategy is summarized in Table 11.

Table 11: Organic Waste End-Use Options in the Twin Cities Metropolitan Area

End-Use Options	Types of Organic Waste Managed
Food Rescue	Edible Excess Food
Rendering	Food Waste (meat, fat, bones & grease)
Hog Feeding	Edible Excess Food Food Waste
Manufacturing Livestock Feed Ingredients (Endres Processing)	Edible Excess Food Food Waste Fiber Waste (paper & cardboard only) Plant Waste
Composting (NRG Processing Solutions)	Edible Excess Food Food Waste Fiber Waste (paper, cardboard & wood) Plant Waste

Clearly, the end-use options for managing organic waste are more varied than just composting. And some options, such as food rescue, rendering, hog feeding and manufacturing livestock feed ingredients have been used by "organic rich" commercial generators as long term organic waste management strategies in the SWMCB region. However, current perceptions and policy only address composting in the hierarchy and statutory definitions.

Expand the Perception of End-Use Options

1. Expand the perception of organic waste management to include all current and future organic waste end-use options.

2. Develop policies and appropriate statutory definitions to include and support all current and future organic waste end-use options.

Evaluate Existing End-Use Options

1. Of the types of residential and commercial organic waste management strategies currently being implemented in the SWMCB region:

a. Determine how mature, sophisticated and successful these programs are.

b. Identify the barriers to entry of existing programs.

c. Evaluate the economic benefits of these programs.

IV. Are the current end-use options for managing organic waste properly permitted and in compliance with their permit requirements; and if they were used to their full capacity, is there enough current capacity for the SWMCB region?

Due diligence requires a clear understanding of all organic waste end-use options, their permitting requirements and if they are in compliance with these requirements.

Explore End-Use Options & Their Permits

1. Explore what the current permitting requirements are for organic waste end-use options.

2. Determine if the organic waste end-use options are in compliance with their permitting requirements.

3. Determine if there is consistent permitting requirements among organic waste end-use options.

If all "organic rich" businesses in the SWMCB region made the business decision to develop and implement organic waste management strategies, it is important to have an understanding of the capacity for current and future end-use options to accept and receive this volume of organic waste.

Determine Existing End-Use Capacity

1. Measure how much existing organic waste end-use capacity currently exists.

2. Determine how much of the existing organic waste end-use capacity is currently being used.

Develop a Plan to Encourage New End-Use Capacity

1. Determine if additional organic waste end-use capacity will be needed in the future.

2. Determine how new organic waste end-use capacity will be developed:

    a. Expansion of existing end-use facilities and/or transfer capacity.

    b. Establishment of new end-use facilities and/or transfer capacity.

V. Should all Twin Cities metropolitan area counties develop and implement a similar type of economic incentive, such as the CEC, to stimulate the development of organic waste management strategies in the SWMCB region?

The new economic incentive created by the Washington and Ramsey County CEC has been extremely successful in generating a "flurry" of new interest in developing and implementing least-cost organic waste management strategies in the SWMCB region among:

a. "Organic rich" businesses, such as grocery stores.

b. Haulers serving their "organic rich" customers.

c. Private sector end-use facilities receiving organic waste.

The success of the CEC is based on one simple concept: "Trash costs more and organics could cost less." For the first time in almost a decade, the CEC matched the prevailing economics to the preferences of the hierarchy. It is very important for all Twin Cities metropolitan area counties to understand the economic impact the CEC—a surcharge—has had on changing the behavior of "organic rich" commercial generators. This change in generator behavior has created the impetus for haulers that serve these generators and the end-use facilities that could receive this organic waste to become creative and innovative in recovering organic waste.

Understand the Economics of the Hierarchy

1. Use the 1999 waste composition data for the SWMCB region to answer the question: "What are the prevailing economic drivers in the solid waste management system that yield these data?"

2. Compare the real-world economics of current solid waste management practices to the preferences of the hierarchy.

3. Determine if the prevailing economics for managing solid waste match the preferences of the hierarchy.

If the prevailing economics for managing solid waste do not match the preferences of the hierarchy, determine what the economic options are to change the prevailing economics.

Identify the Economic Tools that Could be Used to Change Generator Behavior so that it Supports the Hierarchy

1. Understand the economic differences between subsidies (e.g., subsidized collection programs and processing credits) and surcharges (e.g., County Environmental Charge).

2. Identify all existing subsidies and surcharges in the SWMCB region's solid waste management system and their economic impacts.

3. Evaluate the impact subsidies and surcharges would have on recovering source separated organic waste on the part of:

    a. Commercial and residential waste generators.

    b. Haulers.

    c. Private sector end-use facilities that accept organic waste.