

IOWA DEPARTMENT OF NATURAL RESOURCES

MARCH 2014

SUCCESS STORIES

FROM THE SOLID WASTE ENVIRONMENTAL MANAGEMENT SYSTEM

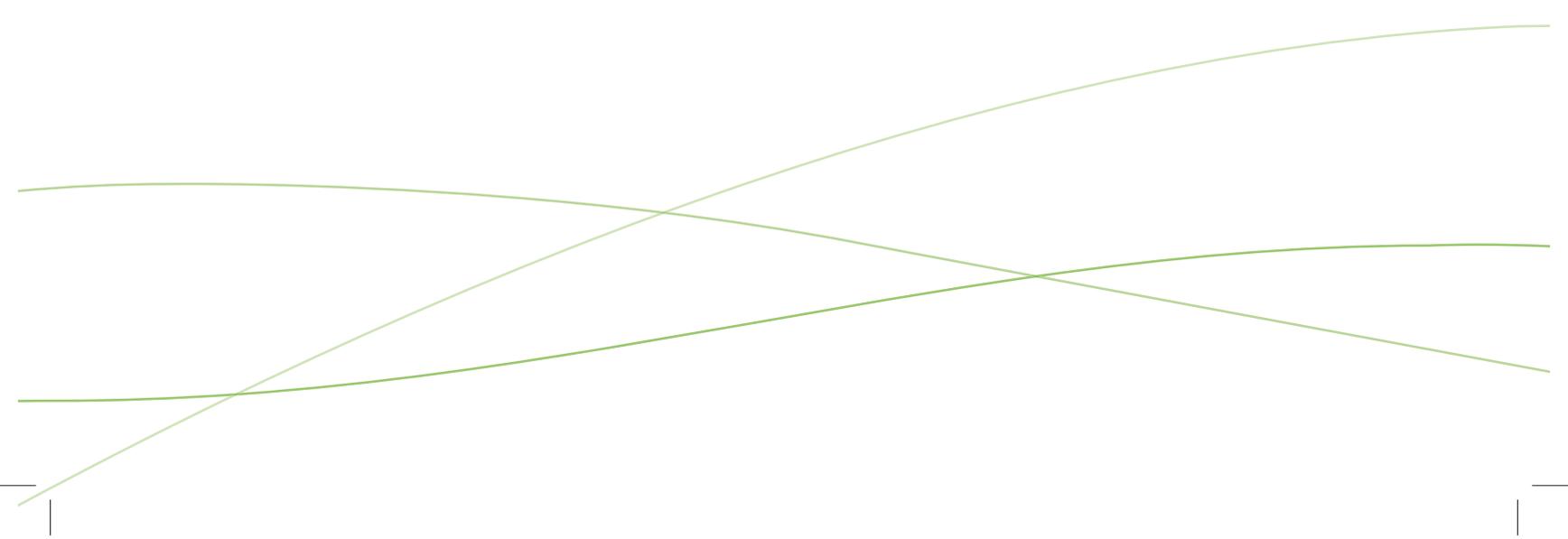


IOWA
Department of
Natural Resources



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The Solid Waste Planning Alternative

Environmental Management Systems

It's been almost thirty years since Iowa's General Assembly first recognized that a variety of benefits result from a comprehensive waste reduction policy and declared the need for an integrated solid waste management system. The system that evolved from the policy, commonly referred to as solid waste comprehensive planning, has driven state and local programs that have produced numerous accomplishments. However, we now have almost three decades of experience with waste management, and it's evident that the landscape has changed over that time.



The methodology used to demonstrate progress toward the state's comprehensive planning goals has served as a valid measurement for landfill diversion. However, the ability to accurately assess the accomplishments and environmental benefits of integrated solid waste management in Iowa has diminished over time by factors that are not considered in the methodology calculation. For example, the existing methodology does not consider the full extent of environmental benefits from proper waste management such as toxicity reduction through the state's Household Hazardous Materials Educational Program and Regional Collection Centers. In the 2013 fiscal year, this program diverted 6.5 million pounds of household hazardous waste from landfilling. From a landfill diversion aspect, the 3,250 tons do not seem significant, but the environmental benefits of this program extend beyond landfill avoidance. The diversion methodology can also be perceived as a barrier to positive policy initiatives such as reducing illegal dumping or open burning of trash since these may cause an increase in landfill tonnage. Now Iowa has a proven solid waste planning alternative.

While continuing to support and build upon current successful programs, there has been a strong push to transition to a system that is able to acknowledge and reward the entire spectrum of integrated solid waste management. The Environmental Management System (EMS) program for Iowa's solid waste planning areas does just that. It is a voluntary program that is an alternative to traditional solid waste comprehensive planning. The concept of EMS embraces every aspect of the environmental footprint created by the management and disposal of solid waste. The EMS program allows solid waste planning areas to set their own continuous improvement goals and be recognized for their efforts in doing so.

As you read through this booklet, you'll have the opportunity to learn about some of the success stories that are already underway within the EMS systems throughout the state and how these projects are benefitting Iowans in many ways.

Alex Moon

Alex Moon

Land Quality Bureau Chief
Iowa Department of Natural Resources

Beyond Traditional Solid Waste Services

Environmental Management Systems

I would like to introduce you to a system which is simple yet cutting edge, developed right here in the state of Iowa. While the nation has been wrestling with how to increase landfill diversion rates without mandates requiring businesses, residents or industry to reduce their production of waste, Iowa DNR has implemented a new alternative through its EMS program. The EMS program has allowed landfill planning agencies, who were striving for new and better ways to provide recycling and waste reduction services a way to receive credit for improving programs, services, and their impact on the environment.



Each organization challenges itself to improve in targeted environmental areas. The EMS program allows for a level playing field so small organizations and large organizations alike can strive for the same thing, continuous improvement. Through my participation in the EMS Council, I've witnessed measurable environmental improvements in each of the participating agencies. And more importantly, as each participating agency develops their own EMS, a transformation in the organizational cultures is taking place—to now strategically think beyond traditional services and programs. The success stories in this booklet provide evidence of these results from the EMS program. We are pleased to present these examples of how Iowa Solid Waste Planning Areas are making a difference and creating a culture that strives to make Iowa a better place to work and live.

Tom

Tom Hadden

EMS Council, Chairperson

Metro Waste Authority, Executive Director

Overview of the Iowa Solid Waste Environmental Management System

In 2008, Iowa legislation established a program and process that allows solid waste planning areas throughout the state to be designated as EMS, providing an alternative to waste diversion goals. Each solid waste agency involved in the voluntary program develops a customized EMS, comprised of 10 basic elements (see following list), which foster the design and implementation of local environmental programs related to solid waste management. Through the various programs developed in its EMS, each participating agency aims to make environmental improvements which directly relate to its own operations or to solid waste management within its planning area. The programs initiated by EMS participants help to achieve the overarching goal of the EMS program, which is to address solid waste reduction and promote environmental benefits with a commitment to continuous improvement.

Since the EMS program kicked off in 2009, 11 solid waste agencies across Iowa have joined (see Figure 1). Participating agencies vary in size from some of the smallest to the largest facilities in the state, demonstrating that a successful EMS program can be achieved by a facility of any size.

The EMS program promotes six Environmental Areas of Focus (see following list). Each of the EMS solid waste agencies set goals and implemented projects which target the program focus areas. The following success stories in this booklet describe a small selection of the many projects undertaken by the EMS agencies so far. The EMS agencies continue to set new environmental objectives and strive to further improve solid waste management practices throughout Iowa. The projects have been highly successful in addressing the environmental areas of focus—new or expanded recycling programs, reduced fuel use and greenhouse gas emissions, increased composting and yard waste diversion, improved water quality through stream clean ups and new partnerships to expand the agencies efforts. The stories also demonstrate positive outcomes beyond the environmental impacts, with many of the projects yielding operational benefits, including cost savings and improved customer service. And the solid waste agencies in the EMS program continue to enhance existing programs or establish new projects every year.

The 6 Environmental Areas of Focus :

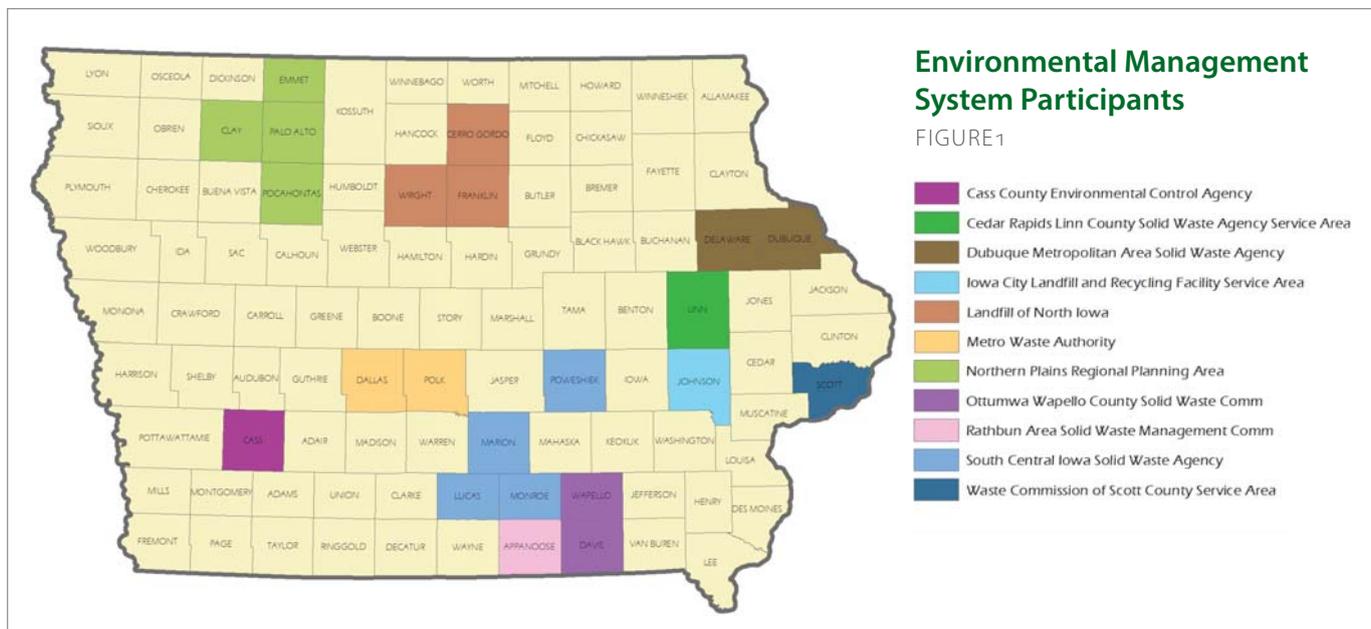
- Yard Waste Management
- Household Hazardous Waste Collection
- Water Quality Improvement
- Greenhouse Gas Reduction
- Recycling Services
- Environmental Education

10 EMS Elements:

- Environmental Policy Statement
- Environmental Aspects and Impacts
- Legal and Other Requirements
- Objectives and Targets
- Action Plan
- Identify Roles and Responsibilities
- Communication/ Training/Awareness
- Monitoring and Measurement
- Assessment
- Reevaluation and Modification

Wanted: EMS Applicants

All solid waste agencies in the state of Iowa are invited to apply for EMS status and program participation. The EMS Council sets the annual application date and forwards the approved applications to the Environmental Protection Commission for review and official EMS designation. Those designated as an EMS receive specialized training to help develop and implement their EMS, including the 10 basic elements of EMS. Training takes place through a variety of methods, including meetings, on-site visits, webinars, videos and conference calls. Additionally, veteran participants serve as mentors in the program. EMS participants are eligible for a number of special benefits including EMS grant funds, group workshops and reduced Comprehensive Planning Requirements. Participants have also reported an increase in environmental performance, better communication among employees and improved record-keeping and documentation. More information about the program may be found on the Iowa DNR EMS website: www.iowadnr.gov/swems





Idling Policy Reduces Carbon Footprint for Landfill Vehicles



The Dubuque Metropolitan Area Solid Waste Agency has approved an idling policy for landfill vehicles. Since the policy went into effect in 2012, the Agency has noticed an annual reduction in diesel fuel consumption of about 5,500 gallons per year, a reduction that saved the Agency an estimated \$21,000 in 2012 and reduced the Agency's carbon footprint by approximately 54 tons of CO₂ in the same year.

The Environmental Area of Focus— Greenhouse Gas Reduction

Vehicle idling at landfill facilities has been identified as an activity which significantly impacts air quality and the environment. Vehicles emit considerable amounts of greenhouse gases, specifically carbon dioxide (abbreviated as CO₂), into the atmosphere. Greenhouse gases are significant contributors to global climate change and can have a variety of far-reaching effects on the environment including altered weather patterns, among other consequences. For example, the presence of greenhouse gases in the earth's atmosphere can drastically increase or decrease long-term rainfall depths, influence agricultural crop yields, and cause changes to forests and other ecosystems.

Vehicle idling can also impact local air quality. Specifically, diesel fuel combustion is associated with the creation of airborne particles, which can cause various respiratory problems, lead to property damage, and decrease visibility by producing haze. Nitrogen oxides (NO_x) are another byproduct released by diesel-powered vehicles. When NO_x enters the atmosphere, it can irritate the respiratory system and even produce acid rain. Diesel burning also generates significant odor and noise, which can be a nuisance to those who spend significant time near the landfill facility.

Aware of the potential impacts its diesel fuel consumption could have on the local and global environments, the Dubuque Metropolitan Area Solid

Waste Agency (Agency) realized it had an excellent opportunity to help reduce its carbon footprint, decrease greenhouse gas emissions and improve local air quality by developing and implementing an idling policy for Agency equipment.

The Project

The Agency identified vehicle idling at their landfill facility as a major contributor to their carbon footprint. The Agency, concerned with their impact on local air quality and global climate change, had adopted a target goal of reducing its carbon footprint by 50%, compared to its total CO₂ emissions in the year 2009. To accomplish this goal, the Agency has considered various action plans, including an idling policy at the landfill.

By the end of 2011, the Equipment Idling Policy had been developed and was ready to be implemented as part of the overall goal to drastically decrease greenhouse gas emissions internally at the Agency's facilities. The policy limited idling to 5 minutes, with a longer period of 20 minutes allowed during low and high weather temperatures, accommodating the use of heaters and air conditioners for the health and safety of the drivers. The policy's only exception was at temperatures below -10°F, for which idling was not limited due to health and safety concerns. The overall plan was to reduce fuel usage through limited idling. The decrease in amount of combusted fuel would correlate to decreased greenhouse gas emissions, effectively reducing the size of the Agency's carbon footprint.

The Agency's Equipment Idling Policy went into effect informally on January 1, 2012 and was approved by the Agency Board of Directors on February 15, 2012. Notices of the policy requirements were posted on each agency-owned vehicle in various locations and visible to the



Highly visible signs remind landfill staff of the Idling Policy and communicate the details to visitors.



The Idling Policy saves valuable fuel and reduces greenhouse gas emissions by landfill vehicles, including those used to move and compact landfilled waste.

equipment operators. Agency staff, vendors and visitors were also encouraged to follow this policy with their personal vehicles when on the landfill site. The Agency’s fuel usage was tracked, and the total amount of diesel used for each machine from 2011 was compared to that of 2012. The difference in the quantity of fuel for the two years was then entered into an Environmental Management System (EMS) Greenhouse Gas Model to calculate the reduction in the amount of CO₂ emissions.

The Outcomes

Since the Agency’s idling policy has gone into effect, drastic decreases in diesel fuel usage have been observed. The Agency’s fuel usage dropped by nearly 5,500 gallons in 2012 compared to the previous year when the policy had not been in effect. Based on this reduction in fuel consumption, it is estimated that the landfill reduced its greenhouse gas emissions by approximately 54 tons of CO₂, which is a sizable decrease in the Agency’s carbon footprint as a result of the idling policy. In addition, the decrease in diesel fuel usage saved the Agency roughly \$21,000, and the decrease in idling time saved the Agency’s equipment from experiencing approximately 1,800 hours of unnecessary wear and tear.

The Equipment Idling Policy has proven to be highly successful, but it is only the first step toward reducing the Agency’s carbon footprint. The Agency plans to implement additional practices and policies to reach its goal of a 50% CO₂ emission reduction compared to its 2009 emissions.



BY THE NUMBERS

Idling Policy	
Reduction in Fuel Usage from 2011 to 2012	nearly 5,500 gallons
Avoided Hours of Equipment Wear and Tear (2012 compared to 2011)	about 1800 hours
Estimated Reduction in CO ₂ Emissions from 2011 to 2012	54 tons
Estimated Cost Savings as a Result of the Idling Policy (2012 compared to 2011)	\$21,000



Citywide Automated Recycling Dramatically Increases Curbside Recycling Rates



The City of Spencer bolstered residential recycling rates by implementing a proven automated recycling program. With a 5.6 year financial payback expected to purchase equipment and conduct targeted educational outreach, the program is already demonstrating success. The City has posted a **noteworthy 37%** increase in curbside recycling rates in the first five months of program implementation compared to 2012.

The Environmental Area of Focus—Recycling Services

Automated collection is a method of collecting garbage and recyclables that eliminates the need for residents and collection employees to manually lift or carry containers. The method is considered automated because a truck with a mechanical arm lifts and dumps the containers without the driver having to leave the truck. Each residence within the service area is provided wheeled recycling and garbage carts that are rolled curbside for collection. Automated recycling and garbage collection has been used in some communities for over 40 years. These communities have cited many benefits, including helping to keep neighborhoods cleaner as well as lower collection costs by reducing labor, work-related injuries, insurance rates and fuel usage. The automated collection system has also been shown to increase residential recycling participation.

Use of standardized carts contributes to fewer materials inadvertently leaving the container and contributing to litter. The containers' fixed lids also reduce odors and deter animal scavenging. Employee handling of carts is eliminated with the automated collection process which decreases the exposure to potentially hazardous materials. Also, fewer air emissions are associated with shorter collection trips citywide as the average amount of time drivers spend at each residence collecting recycling is cut in half as compared to the time required prior to use of the standardized carts. The lidded containers also keep rain out, which improves the quality of the recyclable materials.

Residents received two new carts, a 96-gallon cart for recyclables (shown here) and a 64-gallon cart for garbage.

The Project

The City of Spencer received a grant to purchase nearly 4,200 recycling carts for residents to participate in an automated collection system which has been in citywide operation since June 2013.

The project was initiated in July 2012 when the EMS Council approved two grants for \$50,000 each for the City of Spencer to purchase new recycling carts as part of an automated collection system. Following approval from local officials and the Iowa DNR, the City decided to include automated garbage collection and recycling. Residents received two new carts, a 96-gallon cart for recyclables and a 64-gallon cart for garbage. The City selected these cart sizes based on survey information from other Midwestern U.S. municipalities with automated collection systems who were also targeting increased residential recycling.

In anticipation of the recycling and garbage collection changes, the City conducted a focused educational campaign several months before the expected program start date. The campaign spanned various forms of media, including newspaper and television advertisements, and information on the City's website. Public forums, various mailed flyers and brochures and even a billboard were used to get the word out related to the changes. A packet of materials was also included with the delivery of each cart addressing cart care, updated recycling schedules and a recycling guide to assist residents.

In April 2013, the City received nearly 4,200 recycling carts which were distributed at the beginning of May. A pilot program began in the southwestern portion of the City on May 6, 2013. Residents responded positively to the pilot program which was expanded citywide on June 3, 2013 with bi-weekly recycling collection and weekly garbage collection.





The City of Spencer residents have quickly adopted the new recycling program. The high participation rate (as seen in the photo) is one of the keys to success.

The Outcomes

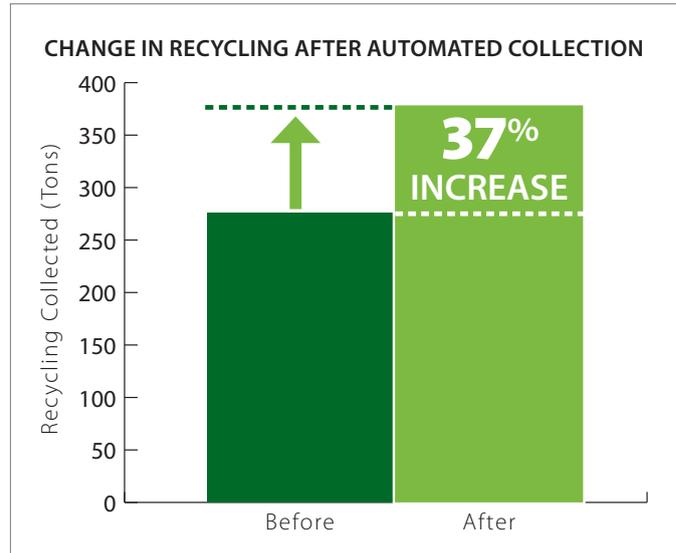
Since its initiation in June 2013, the City of Spencer’s automated collection system has resulted in a 37% increase in curbside recycling. This equates to a 102.66 ton increase in collected recyclables from June through November 2013 compared to the same period in 2012. The City cites the accessibility of larger recycling carts and focused educational outreach for residents on both the use of the carts and recyclables to place into the carts as major contributors to the increased recycling rate. Program participation continues to increase as more residents become familiar with the carts and the program through additional education initiatives.

Concern by some City residents to the use of large recycling carts was addressed in educational events prior to implementation of the program. By the time the system was fully operational, residents had adopted the carts and their size was no longer an issue.

In addition to increasing residential recycling rates citywide with the implementation of this program, residents have realized a cost savings by eliminating the need to purchase their own garbage cans. Worker safety has improved with no work-related injuries recorded since the automated system was implemented and City employees are no longer on the streets handling garbage cans. The number of man hours required for recycling collection has also decreased from 54 per week to 16 per week, resulting in an annual cost savings of approximately \$62,000 for the City. The simultaneous implementation of automated garbage collection has led to a decrease in the number of man hours required for that service as well. The City’s total cost savings for labor is estimated

at approximately \$132,000 annually due to the automated garbage and recycling collection systems.

As part of implementing the automated collection system, the City of Spencer also purchased two new diesel trucks equipped with the latest emissions reducing technology. The trucks are able to perform all necessary functions for handling containers while the engine is at an idle. This feature has enabled the City to reduce fuel consumption and further reduce annual costs.



BY THE NUMBERS

Increase in Curbside Recycling	37%
Increase in Collected Recyclables*	102.66 tons
Number of Carts Purchased with Grant Funding	nearly 4,200
Anticipated Payback of Investment	5.6 Years

*compared to same period in 2012

Program Expenses

2 New Diesel Trucks	\$431,706
Retrofits to 2 Existing Trucks (as Backup Units)	\$13,200
Advertising and Education	\$10,210

Program Cost Savings

Total Grant Funding Received (DNR EMS Program and SWAP)	\$120,000
Annual Labor Cost Savings to City	\$132,000
Anticipated Payback on Investment	5.6 Years



Voluntary Adopt A Stream Program Improves Local Water Quality



Metro Waste Authority prioritizes local stream water quality with leadership in the Adopt A Stream program. Over 41 miles of streams were cleaned in the first year of the program with groups collecting over 39.6 cubic yards of garbage. Metro Waste Authority's partnership with member communities and Walnut Creek Watershed Coalition has demonstrated far reaching success across the region.

The Environmental Area of Focus— Water Quality Improvement

Streams become the resting place of litter when storm runoff carries it away. They are also subject to illegal dumping for tires, drug paraphernalia, hazardous chemicals and other items. The litter and dumped materials jeopardize water quality, public health and the environment. They also make the streams unattractive and unsafe for recreational use.

While there are organizations focused on cleaning up waterways, most of them focus on the larger rivers and bodies of water. Smaller streams tend to get overlooked. Metro Waste Authority launched Adopt A Stream to clean up and protect the smaller streams within Polk County, a primarily urban area

The Project

Metro Waste Authority worked with its member communities, the Walnut Creek Watershed Coalition and other clean up experts, to develop the Adopt A Stream program. This program at www.GoAdoptAStream.com provides a step-by-step guide for volunteers to adopt and clean up area streams. It also provides resources for reserving clean up supplies provided by Metro Waste Authority and information on how to name a stream. A Facebook page complements the website, providing recognition to groups doing clean ups, as well as helpful hints.

Success is measured based on how many miles of stream are cleaned up and how many groups have adopted streams. Not all streams are publicly accessible, so this can limit what is available for adoption.

Groups report the approximate amount of material they clean up through the Adopt A Stream website.

As a means of getting more involvement and participation, Metro Waste Authority promotes the program through city newsletters, radio, television, newspaper, social media and area events.





Volunteers from Clive are gearing up for their stream cleanup day with supplies provided by Metro Waste Authority.

The Outcomes

The program launched in January of 2013. By November of 2013, 10 groups had adopted streams and 9 of those held clean ups in Urbandale, Des Moines, Clive, West Des Moines, Altoona, Ankeny and Mitchellville. The most recent team adopted a stretch in Pleasant Hill. In total, approximately 23 miles have been adopted with roughly 21 miles cleaned up. The groups collected 39.6 cubic yards of garbage or nearly a year's worth of garbage from 5 typical households.

Metro Waste Authority's member communities support the program, and many times offer to dispose of the litter collected. The communities also post signs provided by Metro Waste Authority at the beginning and end of the adoption area to recognize the teams for their efforts.

To complement the program and demonstrate leadership, Metro Waste Authority put together its own Stream Team, comprised of four interns, who cleaned up streams in eastern Polk County in the summer of 2013. The team's clean up was documented on Facebook and promoted through unpaid (earned) media to showcase the program in hopes of getting others involved. In all, Metro Waste Authority's Stream Team cleaned up 20 miles of stream, collecting over 750 tires, 42,520 pounds of materials, three cars (in partnership with Polk County Conservation) and one used oil tank with 135 pounds of oil.



BY THE NUMBERS

Adopt A Stream Program

Length of Stream Cleaned	21 Miles
Garbage Removed	39.6 Cubic Yards
Number of Groups Participating	10
Number of Clean ups Held	9

Metro Waste Authority's Stream Team

Length of Stream Cleaned	20 Miles
Garbage Removed	
Materials	42,520 Pounds
Tires	750
Cars	3
Oil Tank with Oil	1 Tank/135 Pounds of Oil



Expanded Recycling Reaches Rural Town and School

Environmental
Management
System

South Central Iowa Solid Waste Agency expanded its recycling services by providing a recycling trailer in convenient drop off locations in Bussey as well as Twin Cedar School, diverting 31 tons of recyclables from the landfill in less than two years, almost three times the 2011 amount.

The Environmental Area of Focus—Recycling Services

Access to recycling services is often limited in rural areas, where curbside collection is typically uneconomical. Designated drop off sites are the most common method to provide access to recycling in rural areas. However, drop off sites tend to be limited as well, requiring residents to drive long distances to participate in recycling programs. For example, the landfill was previously the only recycling drop off location in the SCISWA planning area. This inconvenience reduced participation in recycling, wasting valuable space in the landfill. Not surprisingly, a

waste sort performed by SCISWA in 2011 revealed that an estimated 35% of the landfilled waste stream consisted of recyclable materials, such as paper, plastic, metal, and glass. With such a high level of recyclables being landfilled, SCISWA realized that a significant portion of landfill space, as well as valuable materials, could be saved by bolstering recycling participation. SCISWA set out to accomplish just that by identifying project opportunities to make recycling a more convenient and accessible service for its planning area residents.

The Project

With help from an EMS grant, the South Central Iowa Solid Waste Agency (SCISWA) purchased a recycling trailer in April 2012 to serve the small town of Bussey as well as the nearby Twin Cedar School. The population of Bussey is approximately 420 people, while Twin Cedar School has nearly 500 enrolled students from the towns of Bussey, Tracy, Hamilton, Marysville, Attica, and Pershing. Prior to the arrival of the recycling trailer, residents of Bussey and students at Twin Cedar School did not have access to recycling collection within their community. Instead, community members had to transport their recyclables to the SCISWA Landfill drop off site if they wished to recycle, a 20 to 30 mile round trip. The objective of the project was to provide a more convenient recycling service in an effort to divert material from the landfill. The recycling trailer purchased by SCISWA in April 2012 is shared by the Town of Bussey and Twin Cedar School. The trailer is moved between the two locations on a weekly basis. SCISWA uses a truck from the landfill to transport the trailer, which is located at the school from Wednesday through Friday and is moved into Bussey for the remainder of the week. When the container becomes full, SCISWA hauls it to a recycling facility in Oskaloosa.

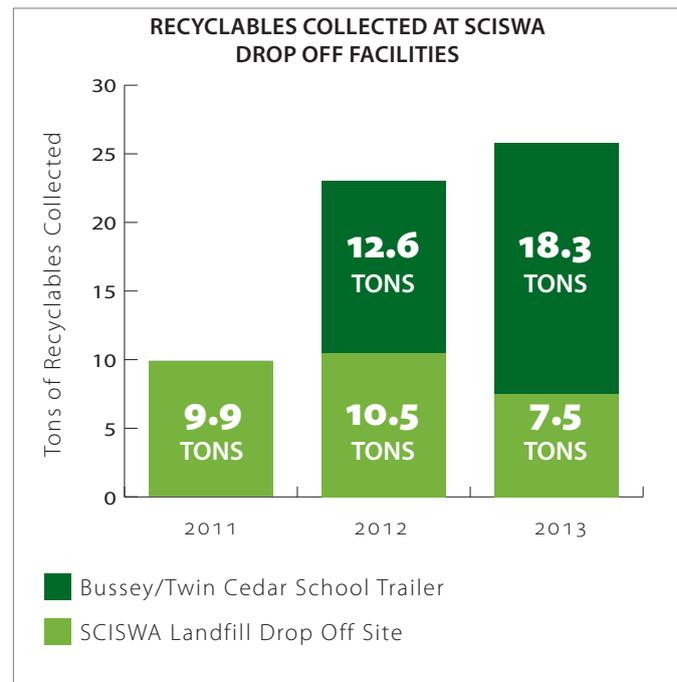


Residents of Bussey and students at Twin Cedar School now have a highly accessible option for collecting and transporting a wide variety of recyclable materials, including those listed here.



The Outcomes

As a baseline, the recycling drop off site at the SCISWA Landfill collected 9.9 tons of recyclables in 2011 before the new recycling project began. Since the implementation of the Bussey/Twin Cedar School recycling trailer in April 2012, 30.9 tons of additional recyclable materials have been diverted from the landfill. In nine months of 2012, the project resulted in 12.6 tons of recyclables delivered to the recycling facility. The project continued to prove its success into 2013, with 18.3 tons of recyclables collected from Bussey/Twin Cedar School and diverted from the landfill. In comparison, collection of recyclables between 2012 and 2013 at the landfill drop off site was 10.5 and 7.5 tons respectively. Recycling collection at Bussey and Twin Cedar School has more than made up for this slight decline in collection at the landfill. The total amount of recyclables SCISWA is diverting has nearly tripled (162% increase) over the past two years, indicating that more convenient access to recycling can substantially increase recycling participation within a solid waste planning area.



BY THE NUMBERS

Population Now Served in Bussey, Iowa	420
Student Population Now Served at Twin Cedar School	494
Recyclables Diverted from the Landfill in 2011 (prior to project)	9.9 tons
Recyclables Collected at Bussey/Twin Cedar School Drop Off Site (2012-2013)*	30.9 tons
Total Recyclables Collected by SCISWA (2012-2013)	48.8 tons

*excluding January to March 2012



Impressive Food Waste Diversion Program: Getting Organics Out of the Garbage



The Cedar Rapids/Linn County Solid Waste Agency is demonstrating exceptional environmental leadership by implementing a food waste diversion program. The program helps produce high quality compost while also reducing greenhouse gas emissions.

The Environmental Area of Focus— Yard Waste Management

A waste characterization study conducted in 2010 at the Cedar Rapids/Linn County Solid Waste Agency (Agency) showed that nearly 20% of the waste being landfilled in Linn County was organic material, with approximately 28,000 tons as food waste. Other organics included disposable diapers, textiles, leather, and rubber.

When food waste decomposes in a landfill, methane is produced. Methane is a potent greenhouse gas (GHG), and its global warming potential (i.e., the ability of the gas to trap heat in the atmosphere) is estimated to be 20-25 times greater than that of carbon dioxide (CO₂). As a result, methane is considered to be a significant contributor to global climate change, especially in the near term (i.e., 10–15 years).

Through the waste characterization study, the Agency realized a huge opportunity to divert unwanted food waste away from the landfill and into its yard waste management program for composting. The results would include additional high quality compost, a reduction in greenhouse gas emissions, and decreased landfill usage.

The Project

In 2012, the Agency developed and implemented a food waste diversion pilot program. The idea was to be simple, yet effective.

To begin, the Agency identified large food waste generators including grocers, hospitals, cafeterias and schools/colleges as well as area haulers interested in and capable of collecting food waste.

The Agency then contacted the food waste generators, described the benefits of composting (such as reducing the amount of landfilled waste and therefore the number of weekly garbage pick-ups) and offered the opportunity to participate in the pilot program. The program included a 16-week incentive in which the Agency underwrote hauling costs and compost tipping fees to allow time for the generator to develop their program internally. Generators were responsible for employee training and education as well as signage and equipment with Agency and hauler staff assistance. After the 16 weeks, the generator would decide whether or not to continue with the program.

Throughout the pilot program, incoming loads of food waste were recorded and tracked at the Agency's Cedar Rapids compost facility. Food scraps were mixed with leaves, lawn clippings and wood chips (i.e., yard waste) to produce a high quality soil amendment. Agency staff worked with participating organizations and businesses as well as the haulers to review what was effective and what could be improved. If, for example, contaminants such as plastic bags or styrofoam containers showed up in the food waste, the Agency photographed the load and shared with the participant. Then they worked to solve the problem together.

To date, 12 businesses and organizations – eight Hy-Vee grocery stores, Mercy Medical Center, Clarion Hotel, Brucemore Mansion, and Mount Mercy University – have taken part in the pilot program and continue to divert food waste. And, recently, Aramark at Rockwell-Collins, Cedar Rapids, became a pilot participant.



Special organic waste bins are stationed at participating facilities to collect food scraps. This bin, located at Mount Mercy University, was used to collect almost 14 tons of food scraps over a 17-week period, with weekly pickup.

GreenRU is among the companies providing food waste hauling services for the program. Representative Demetrios Hadjis said, “The Solid Waste Agency’s pilot program has had a tremendous impact on GreenRU’s ability to generate interest in contracting source separated food waste collection in Linn County. The program not only encourages participation with incentives, but it also provides GreenRU with sustainable proximity to a Linn County area drop site and helps our company economize collection logistics.”

“Working with the compost program is great for the environment; this program is a no-brainer,” said Jason Busswitz, Hy-Vee, Manager of Store Operations, Cedar Rapids #7.

Mercy Medical Center also found the program to be a big success. “Once the decision was made by our Food and Nutrition Department, everything just clicked into place. It was the right thing to do for Mercy and our Community. The startup began quickly with the help of GreenRU doing a waste analysis that included determining which container to use and frequency for pickup. Furthermore, the Solid Waste Agency offered us an attractive 16-week trial where they covered the hauling costs and tipping fees. I call that a win/win for all parties involved. The program has never slowed; we continue to look to add items for organic recycling. We see value in this program as we divert material from the landfill at a greatly reduced price (\$18/ton) compared to landfilling (\$38/ton) this material as we did before,” said Les Etscheidt, Director of Mercy’s Environmental Services Department.

The Outcomes

In 2011, approximately 130 tons of food waste were accepted at the Agency compost facility. By 2013, the amount reached just over 1,200 tons due to the pilot program and the Agency’s Environmental Management System. From 2011 to 2013, more than 2,300 tons of food waste were diverted from the landfill. Based on the reduced tipping fee for organics, the participating generators have saved \$20 per ton for a total of \$46,000 over the past three years.

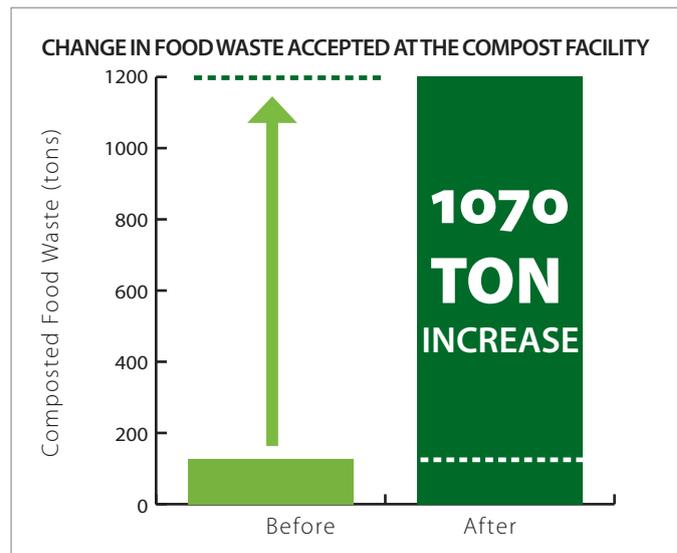
Together with haulers, the Agency continues efforts to reach other large food generators who are landfilling these valuable organics. By diverting food waste, the Agency has seen a number of benefits. The waste diversion has improved the yard waste management program by adding valuable nutrients to the composting process. In addition, greenhouse gas emissions from the decomposition of these organics in the landfill have been reduced and landfill space has been saved in Linn County.

The food waste diversion program at the Cedar Rapids/Linn County Solid Waste Agency is considered a demonstration project while the Agency evaluates the amount of food waste its technology can tolerate. New customers are considered on a case-by-case basis. Steadily increasing tonnages over the past three years have been incorporated successfully, and the Agency continues to accept additional material.

A few organizations saw the benefits of composting their food waste prior to the implementation of the Agency incentive program. When Wal-Mart learned of the composting option for their un-purchased produce in 2010, they contracted with Sanimax and other haulers to bring the material to the compost facility. Since 2006, Coe College has been bringing their cafeteria food waste to the Cedar Rapids facility.



The Cedar Rapids/Linn County Solid Waste Agency recognized partnerships with organic waste generators and haulers as a key to success.



BY THE NUMBERS

Number of Businesses and Organizations to Complete the Pilot Program to Date	12
Food Waste Diverted from the Landfill from 2011 to 2013	more than 2,300 tons
Landfill Airspace Conserved*	4,600 cubic yards
Total Savings by Generators in First 3 years	\$46,000

*Based on 1,000 pounds food waste per cubic yard



Iowa City Successfully Pilots Multi-Family Recycling



Iowa City is leading efforts to help minimize environmental impacts with the implementation of a coordinated recycling pilot program. As a result, over 37 tons of material have been diverted from the landfill, and the planning area has experienced an impressive 36% increase in the number of multi-family complexes that provide recycling. Furthermore, the pilot program demonstrated the feasibility and low cost of expanding recycling services to an underserved sector.

The Environmental Area of Focus—Recycling Services

Iowa City has offered curbside solid waste services since 1978. Initially just for refuse collection, the program has expanded over the years to include yard waste in 1989 and recycling in 1992. The City changes the curbside program as necessary to improve service for the public. In recent years, this has included the addition of tipper carts for most refuse customers and a change to a dual-stream recycling system.

While the program continues to improve, there is one major shortfall. The City only serves single-family homes through four-plex apartments with curbside trash, recycling and yard waste pick up. This accounts for only about 55% of Iowa City residents. The remaining 45% live in larger multi-family units which are considered commercial accounts and are not served by the City. For these residents, landlords are required to provide trash service but not recycling and the vast majority of landlords elect not to hire recycling services due to logistics and cost. In fact, only about 36 out of 1,030 multi-family housing buildings have hired private recycling services (3.5%).

Since one third of the waste going to the landfill is recyclable, this lack of recycling for almost 45% of the community's population means a huge loss of recyclable materials and a waste of valuable landfill space. Through its Environmental Management System (EMS), the Iowa City Landfill wanted to work toward minimizing those impacts and promoting responsible resource management.

The Project

In late 2011, Iowa City applied for and received Solid Waste Alternative Program (SWAP) funding from the Iowa Department of Natural Resources to plan and implement a multi-family recycling pilot program. The pilot began in February 2012 and included five apartment and condominium complexes, covering about 196 units in total.

Staff worked with apartment owners/managers and condominium representatives to draft memorandums of understanding with their existing trash haulers to provide recycling services. They also provided education at three points throughout the pilot – a month before the program started, at the time recycling bins were distributed and mid-way through the pilot. Two private haulers served five complexes and were able to help the participants and the City work through the logistics of multi-family recycling with single stream programs.

Pre- and post-pilot surveys to tenants were used to gather information and document changes in attitudes and behaviors. Each building had a recycling coordinator who took weekly visual readings of both recycling and waste in the dumpsters. Then, estimated volumes were converted to tons to quantify waste reduction and recycling rates.

The pilot ended in late 2012 and a Best Management Practices (BMP) manual was compiled early in 2013 to share the lessons learned. Since then, staff has been reaching out to landlords, building managers, apartment associations and condominium associations to share the information and to encourage them to add recycling services at their multi-family complexes. Postcards, a website, media releases, direct outreach and social media were used throughout 2013 to reach as many landlords as possible.

In August 2013, the City also began working with the University of Iowa Student Government (UISG) to reach student tenants directly and encourage them to contact their landlords or property management





For smaller multi-family complexes, multiple recycling carts can provide plenty of collection space and serve as a viable option for expanding access to those who previously did not have curb-side recycling service.

companies to request recycling. UISG organized an extensive media campaign, including contact with about 500 students which resulted in over 200 direct emails to landlords and property management companies. The results of this campaign are currently being measured.

The Outcomes

Overall, the City’s multi-family recycling pilot program was a noteworthy success. Since the beginning of the pilot, an additional 13 multi-family complexes have hired private recycling services, representing an increase of 36%. Results from the pilot program also indicate a high level of recycling participation. Over a period of only 27 weeks, recycling collected from four pilot program complexes totaled 37 tons, indicating that 36% of the total waste stream was recycled. (Information on the fifth pilot program complex is still being collected.)

While implementing the pilot program, the City learned that private recycling services are readily available from multiple hauling companies in the area. Furthermore, almost 95% of tenants responding to surveys agreed that “all apartments and condominiums in Iowa City should have recycling programs” and, even more importantly, 60% of tenants responding said they would be willing to pay for recycling service. Through the pilot program, the average cost was calculated to be about \$2.57 per unit per month.

While the pilot program may have ended, its impacts will carry forward. As part of an EMS goal toward proper natural resource management and environmental education, outreach will continue into 2014. Efforts will focus on directly encouraging landlords to provide recycling and partnering with other organizations and neighborhood associations. City Council will be kept informed of additional progress with the possibility of a request for a multi-family recycling mandate.

The City and its partners are beginning to see a change in expectations from tenants and a willingness to pay for recycling services. They are optimistic that this effort has significantly contributed to a conversation that all residents should have access to recycling and that more apartment owners and property management companies will hire private recycling services.



BY THE NUMBERS

Recyclables collected from 4 of 5 pilot program participants over 27 weeks	nearly 37 tons
Percent of total waste recycled by 4 pilot program complexes over 27 weeks	36%
Percent of Iowa City Residents with no previous recycling access	about 45%
Number of Apartment and Condominium Complexes in the Pilot Program	5
Calculated Average Cost for Recycling in Multi-Family Complexes	\$2.57 per unit per month
Tenants willing to pay for recycling service	60%



Improved E-Waste Collection Saves Money and Reduces Greenhouse Gas Emissions



The Waste Commission of Scott County has purchased a semi-truck and five trailers to enhance its electronic waste hauling program. The new trailers have reduced the Commission's e-waste transportation and storage costs by approximately \$13,300 annually and cut carbon dioxide emissions by an estimated 1.8 tons per year. Additional benefits include better customer service and new educational initiatives.

The Environmental Area of Focus— Greenhouse Gas Reduction

Transportation is one of the largest sources of greenhouse gas emissions in the United States. Greenhouse gases, such as carbon dioxide (abbreviated as CO₂), in the atmosphere participate in a heat-trapping phenomenon known as the greenhouse effect, which contributes to global climate change and can have a variety of effects on local weather patterns. Fuel combustion during transportation releases byproducts including CO₂ and is a main source of greenhouse gas emissions caused by humans. Therefore, a reduction in fuel usage can reduce the amount of greenhouse gases emitted, ultimately serving to reduce the size of one's carbon footprint.

On a more local level, the byproducts of fuel combustion can cause a decrease in air quality. One major consequence includes the creation of smog, which results in decreased visibility. Fine particles created in the atmosphere as a result of fuel combustion can also have negative impacts on human health, specifically related to respiratory illness.

The Waste Commission of Scott County (Commission) has taken action to shrink its carbon footprint and improve local air quality by using an EMS grant to partially offset the cost of trailers for hauling and storing electronic waste. The new trailers have led to a reduction in the Commission's fuel consumption because they now own enough trailers to minimize the frequency at which the trailers need to be moved. Less frequent trips mean decreased fuel consumption and a reduced carbon footprint.

The Project

In 2012, the Commission identified an opportunity to improve its ongoing storage and hauling program for electronic waste. Previously, the Commission's e-waste program consisted of collecting e-waste at events and on an ongoing basis using a combination of cages and/or rented trailers for storage in Dubuque, Great River, and Muscatine, Iowa. When full, the Commission would haul the trailers to its Electronic Demanufacturing Facility in Davenport for processing. With the financial assistance of a \$36,000 EMS grant, the Commission was able to purchase a semi-truck and five trailers, eliminating the need for trailer rentals and expanding the number of usable trailers. The new semi-truck and trailers are stationed at off-site collection locations and used during collection events. With more trailers to move around, the Commission has been able to take advantage of backhauling to save both time and money. This more efficient system requires fewer trips to move material between locations. As a result, the Commission's fuel consumption is reduced along with its carbon footprint.

As an added project component, the Commission decided to use the trailers as educational tools to encourage the responsible recycling of electronics. The new trailers have graphics with a responsible recycling message and function as traveling billboards on Iowa roads.





The Outcomes

Since the new e-waste trailers were purchased, the Commission has reduced its annual fuel consumption by approximately 190 gallons per year. According to the U.S. EPA's Greenhouse Gas Equivalencies Calculator, this fuel savings equates to an estimated greenhouse gas reduction of about 1.8 tons of CO₂ annually.

The project has also resulted in fiscal savings. Staffing costs have declined along with fuel costs since e-waste transportation is now required less frequently. The Commission also no longer requires rented trailers to store electronic waste, resulting in further cost savings. Overall, the Commission estimates that the project has saved them approximately \$13,300 per year. With a project payback time of only 5 years and two months, the project has proven to be a sound investment.

In addition to the environmental and fiscal benefits, the e-waste trailer project has improved customer service by streamlining the collection and hauling processes for the agency's partners. Responsible recycling messages on the sides of the new trailers also promote e-waste recycling and serve as educational billboards on Iowa's roadways across the Commission's planning area and beyond.



Workers at an electronic waste collection event proudly pose for a photograph with one of the Commission's five new trailers for hauling electronic waste.

BY THE NUMBERS

Annual Reduction in Fuel Consumption	190 gallons
Estimated Annual Reduction in Greenhouse Gas Emissions	1.8 tons
Estimated Annual Cost Savings	\$13,300
Project Payback Time	5.2 years
EMS Grant Funds Received	\$36,000
Number of E-Waste Trailers Purchased	5



Access to Recycling Services Increased in Rural Iowa Communities



The Rathbun Area Solid Waste Commission (RASWC) actively partners with rural communities throughout its planning area in Wayne and Monroe counties to increase recycling access and participation. Through a consultation program, RASWC has guided and supported the expansion of recycling services in four towns. New drop-off facilities and trailers resulting from the program have increased overall recycling rates by as much as 26%. The initial success of RASWC's consultation program has led to partnerships with other small communities.

The Environmental Area of Focus—Recycling Services

Many rural communities find it difficult to overcome the numerous obstacles to running a sustainable, cost-effective residential recycling program. Although it is widely accepted that recycling is a worthwhile practice for reducing the amount of waste sent to landfills, most small farming communities cannot offer curbside recycling services either inside or outside city limits. To address this issue, the Rathbun Area Solid Waste Commission (RASWC) created a community partnership program to aid small towns within its service area. Through the program, RASWC works with communities to identify recycling service alternatives which may provide increased recycling access to rural residents while addressing various obstacles.

The Project

RASWC serves Iowa communities in Wayne and Monroe counties and has actively increased recycling participation in this area by providing support to local partners. Through a community partnership program, RASWC took on a consulting role to help communities evaluate their existing recycling collection services as well as explore potential alternatives and possible project funding sources. Communities that have been involved in the program include the Town of Seymour in Wayne County as well as three towns in Monroe County: Albia, Melrose, and Lovilia.

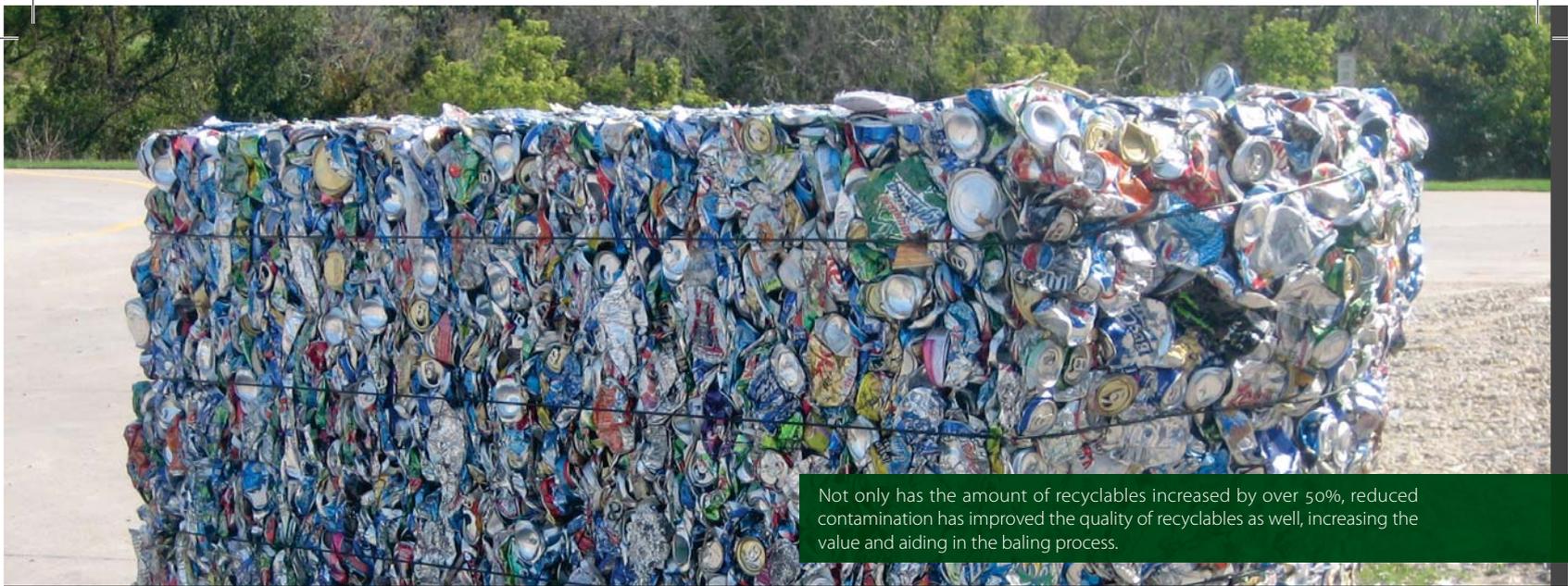
Based on the alternatives and information provided by RASWC, each participating community has selected its preferred recycling program improvements. With RASWC's assistance, the communities have invested in their recycling collection systems to provide better services and increase the revenue generated from the recyclables

collected. By taking this active role with area partners, RASWC has improved recycling accessibility to its service area by bolstering the recycling programs run independently by the local communities. This has increased the amount of recyclables processed and sold at the RASWC Recycling Center.

“The original goal of this project was to increase the amount of recycling received at our facility. As we continued to look for opportunities to do this we found that these small towns wanted to offer better recycling programs to their residents,” said Rodger Kaster, RASWC Director. After attending City Council and County Supervisor meetings, RASWC was able to provide the communities with options to increase the level of service available and to help secure funding through the Solid Waste Alternative Program (SWAP) grants.

The Town of Seymour formerly used a trailer as a recycling drop-off option every other week for area residents. As potential alternatives to this program, RASWC proposed and evaluated the following options: curbside recycling, a permanent drop-off facility, and continued trailer use. After reviewing its options, Seymour decided to establish a 24-hour permanent drop-off facility to be maintained by Town employees. Some of the construction costs for the new facility were offset by grant funding provided by SWAP grants through Iowa DNR. The new facility also provides presorting services, which result in a cleaner product sent to the RASWC Recycling Center.

Monroe County formerly provided recycling drop-off trailers on alternating Saturdays in the towns of Albia, Melrose and Lovilia. After evaluating the RASWC alternatives, Monroe County elected to increase service to the entire county by establishing a 24-hour permanent drop-off facility in the larger town of Albia and placing



Not only has the amount of recyclables increased by over 50%, reduced contamination has improved the quality of recyclables as well, increasing the value and aiding in the baling process.

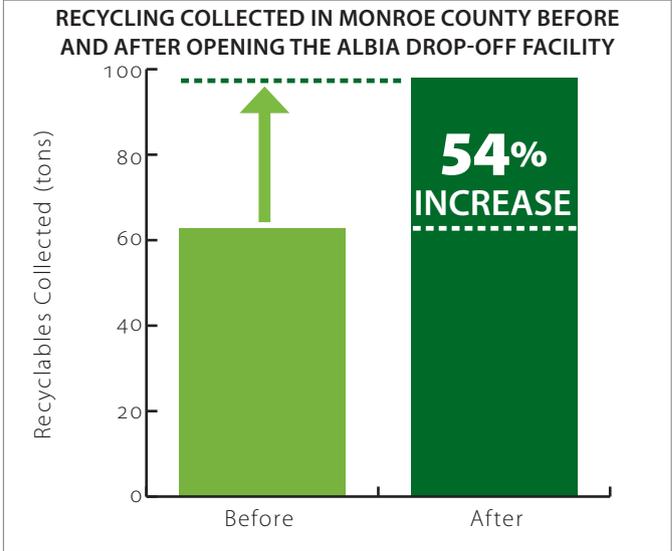
recycling trailers in the smaller towns of Melrose and Lovilia. The trailers are pulled by County employees to the new facility in Albia which has baling capabilities for cardboard and plastic. The baled recyclables can then be sold at an increased price. The facility accepts a variety of recyclable materials, including paper, cardboard, tin, glass, and plastic.

Both programs prepare material for processing at the RASWC Recycling Center in Centerville, Iowa. The location in Albia began collecting recycling from residents in January 2013 while the Seymour location began operations in June 2013. RASWC continues to collaborate with other small towns within its service area to provide further access to recycling services.

The Outcomes

Seymour and Monroe County have improved their own recycling operations with the assistance of RASWC’s consultation and partnership. The new drop-off facilities and trailers in the RASWC service area have led to increased recycling rates and improved recyclable quality. Since the changes were incorporated into the Monroe County recycling program, the overall recycling rate, measured by tons of recyclables collected, has increased by an astounding 54% compared to 2012. Sorting has also improved in Monroe County with the amount of mixed recycling dropping from 46.15 tons in 2012 to 17.93 tons in 2013. As for the Seymour recycling program, the preliminary dataset indicates that the amount of recyclables collected is nearly the same as before the permanent drop-off facility began operations. However, the quality of recyclables collected in Seymour has improved as a result of the project and the efficiency of collection has reduced costs.

The quality of recyclables received at the RASWC Recycling Center has also improved since the new collection systems were implemented. Contamination has become less of an issue, and the recyclables are easier to bale due to presorting activities at the drop-off facilities.



BY THE NUMBERS

Increase in Collected Recycling (Monroe County)*	54%
Increase in Collected Recyclables (Monroe County)*	33 tons
Decrease in Mixed Recyclables (Monroe County)*	28 tons
Increase in Sorted Cardboard (Monroe County)*	8 tons
Increase in Sorted #1 Plastic (Monroe County)*	4 tons
Increase in Sorted Tin (Monroe County)*	3 tons

* 2013 compared to 2012



Multifaceted Success Achieved Through Collaboration and Partnerships



Through extensive collaboration and multiple partnerships, the Cass County Environmental Control Agency (Agency) has maximized the use of its resources and spearheaded the effective implementation of various partnerships to expand its reach for environmental programs. These partnerships have a multiplying effect on the positive environmental impacts made by the Agency.

The Environmental Area of Focus—Multiple Areas

The extent of a solid waste agency's resources can limit its potential for effecting change within the scope (or fenceline) of the EMS. As a result, agencies can often implement effective programs in some focus areas, while having some difficulty in other focus areas where the Agency has limited direct control. For example, yard waste is an environmental focus area for EMS, but yard waste is banned at the Cass County Landfill. In an effort to overcome such challenges, the Cass County Environmental Control Agency (Agency) annually identifies partners to help support projects in some of those focus areas outside the Agency's direct control. Through the development of partnerships, the Agency is able to stretch its resources and initiate projects that affect various facets of the EMS, and extend the Agency's influence beyond its fenceline.

The Projects

The Agency began its successful multifaceted EMS program by identifying objectives, targets and action plans for proposed projects related to various environmental areas of focus, and partners have played an active part in project implementation. Partners have helped the Agency to promote programs in areas that would otherwise be outside their reach for direct involvement. Many of the Agency's partners have brought potential projects to the table, extending the environmental benefits and potential savings to the entire planning area.

A few examples of the collaborative projects undertaken by the Agency include:

WATER QUALITY IMPROVEMENT - The Agency could not have established the Illegal Dumping Task Force and the Illegal Dumping Ordinance without the collaboration of the Cass County Board of Supervisors, Cass County Sheriff, Attorney, Engineer and the Environmental Board. Partners take ownership in these projects, helping to provide structure and growth.

GREENHOUSE GAS REDUCTION - The Agency has also partnered with Cass County Conservation to develop and implement a Vermicomposting project in local schools within the planning area. A pilot school was selected, and the program has been implemented. Cass County CAM Middle School students are documenting the project to provide direction for implementation in other schools within Cass County with the help of Cass County Conservation and Master Gardeners. The pilot school plans to use the compost produced from this program in its greenhouse projects and will work with the Cass County Master Gardeners group to expand this program and promote it among residents of the county. Cass County Conservation will also provide the results of the school Vermicomposting project to Cass County residents during their events. Through the program, the Agency educates the public on the greenhouse gas effects of landfilling food waste.

YARD WASTE MANAGEMENT - Cass County Master Gardeners group has been instrumental in the continued efforts undertaken by the Agency to educate residents on the benefits of composting, including yard waste composting. The Master Gardeners group sponsors a yearly Garden Seminar in the planning area. The Agency sponsors the group's programs and educates the residents of the planning area on optional methods of creating compost to manage yard waste.



Students from CAM Middle School will share the lessons learned from their pilot vermicompost program with other local schools.



RECYCLING SERVICES – The Agency has collaborated with several western Iowa landfills to establish a shingle recycling program for the Cass County planning area. The Western Iowa Initiative was created to provide benefit to western Iowa landfills that were interested in creating a shingle recycling program but did not have the quantity necessary to make it an effective program. By joining forces, the Western Iowa Initiative was able to establish shingle recycling programs at all members’ landfills and contract with an end user for using the shingles in new asphalt projects. All members benefited from fewer shingles being landfilled, a practice which saves valuable landfill space.

HOUSEHOLD HAZARDOUS WASTE MANAGEMENT

The Agency partnered with all point of sale locations (lumberyards, hardware stores, etc.) in Cass County to distribute information on the correct disposal of paint to the Cass County Regional Household Hazardous Waste location.

The Outcomes

As previously mentioned, the Agency had no direct control in these project areas, but the agency was able to influence change through various partnerships. Together with its partners, the Agency could provide programs that would benefit the entire planning area.

The Agency shares project successes with its partners, and the local news media has provided great coverage to promote the projects. Overall, the projects have proven to be highly successful.

With the establishment of the Illegal Dumping Taskforce and the Illegal Dumping Ordinance, all partners have taken on responsibilities for providing project support and enforcement. The Agency has also requested support from the residents of the planning area on monitoring any illegal dumping activity and then notifying taskforce members for enforcement. Initial results indicate an increase in public awareness and reporting of illegal dumping.

The vermicomposting project will allow the Agency to educate the public on greenhouse gas effects of food waste being landfilled. It has been a great project to go along with the agency’s continued efforts to educate the public on composting, a practice used by the Agency to reduce the amount of landfilled yard waste. The pilot project will also provide the Agency with important documentation to educate the public and other school systems on the amount of food waste available to recycle through composting. Middle school students are tracking data about the pilot project, including the amount of waste composted and the output of finished compost, to help start vermicomposting at other schools.

The project with the Western Iowa Initiative has allowed the Agency to provide a program in its planning area to recycle shingles. The program has been cost effective because the Agency can now provide enough volume by working with the other planning areas. Since the start of the shingle recycling program, the Agency has recycled over 100 tons of shingles that would have otherwise been disposed of in the landfill.



BY THE NUMBERS

Number of collaborators/partners

More than 20

Shingles Recycled through the Western Iowa Initiative

over 100 tons

**Thank you to the following Iowa solid waste agencies
for sharing the stories of their EMS success:**

Cass County Environmental Control Agency
Cedar Rapids/Linn County Solid Waste Agency
Dubuque Metropolitan Area Solid Waste Agency
Iowa City Landfill and Recycling Center
Metro Waste Authority
Northern Plains Regional Landfill
Rathbun Area Solid Waste Commission
South Central Iowa Solid Waste Agency
Waste Commission of Scott County

**Additional appreciation for the editing and
production of this booklet goes to:**



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