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www.wasteadvantagemag.com October 2012 Vol.3, No.10

# WasteAdvantage

magazine

The Advantage in the Waste Industry and Recycling Industry

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CONVENTIONAL  
RECYCLING**

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## Editor's Note



### AS WE GET CLOSER TO THE HOLIDAYS, WE ALL MUST REMEMBER THAT WITH MORE

family, gatherings, events, gifts and parties, there comes a lot of extra trash. Paper plates, plastic silverware, fancy napkins and paper towels, candy wrappers, gift wrap—the list goes on and on. This is the time to step up your recycling awareness program (especially since America Recycles Day is November 15) and let those in your community know before the holiday season debuts that they have a resource for recycling the abundance of unwanted trash. Phone calls, mailings, Web site postings, newsletters—the ability to reach your audience is endless.

On another environmentally friendly note, I attended the Hybrid-Efficiency Truck Users Forum (HTUF) last month in Charlotte, NC. An annual event that focuses on the commercialization of hybrid, electric and advanced technologies for the medium- and heavy-duty industries. It was a great show since it gave a different perspective on what options are available for refuse trucks and the systems that can help them reduce their carbon footprint. With sessions that covered topics like overview of the market demand, fleet leadership, transformative technologies, and State and local strategies for advanced truck deployment, there was plenty of information to listen to and think about as it applies to the waste industry.

We also have a great issue for you this month. Our “In the Spotlight” focuses on ReCommunity and their goal to lead a Recovery Revolution®, which includes a vision of zero waste (page 14). In addition, “Choosing the Right Trailer for Your Needs” (page 20) gives you what to think about when making that crucial decision, while “Deciding on the Right Power Take-Off” discusses the pitfalls to avoid in order to ensure you get the most out of your application (page 22). Other topics include “Marketing and Implementing Emerging Waste Conversion Technologies” (page 28), “Rail Freight Traffic” (page 32) and the science behind a zero accident culture (page 38). And don't miss our R/T/L section which covers the seven benefits of selling recyclables (page 52) and location restrictions for landfills (page 61).

New to our Web site, [www.wasteadvantagemag.com](http://www.wasteadvantagemag.com), is our Safety Tip of the Month, which will give safety advice to think about every day when you are out in the field or even at your facility. Be sure to take a look. As always, feel free to contact me with any questions, comments or otherwise. I appreciate your feedback.

Best Regards,

Angelina Ruiz

Editorial Director

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### **On the Cover:**

The sorting process begins.

Photo courtesy of ReCommunity (Rutland, VT).

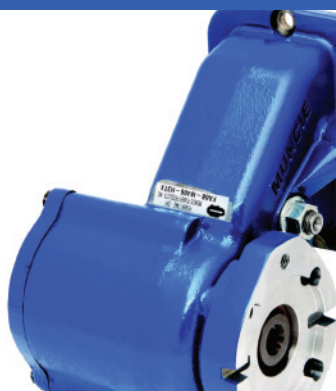
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to discover who is  
selling what in the  
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## Trash Talk



### ClosureTurf Recognized by SWANA

**CLOSURETURF** (Atlanta, GA) announces that two landfills using the ClosureTurf system were honored at this year's SWANA Excellence Awards held at WASTECON 2012. SWANA awarded landfill owner IESI a Gold Excellence Award for the Timber Ridge Landfill in Richwoods, MO in the Landfill Gas Control category. Through the

use of the ClosureTurf system, the landfill has been able to reduce gas systems costs, contain all odors and reduce ongoing labor, maintenance efforts and costs. ClosureTurf is also used for the Seneca Landfill in Mars, PA, which was awarded the Silver Excellence Award in the Landfill Gas Control category.

*For more information, visit [www.closureturf.com](http://www.closureturf.com).*

### Community Waste Disposal Introduces Natural Gas Trucks

**COMMUNITY WASTE DISPOSAL (CWD)** (Dallas, TX) has introduced five new CNG waste trucks that will help improve the area's air quality. CWD is the first private waste management DFW firm to own and operate CNG trucks. The company expects the new vehicles to eliminate 225 metric tons of greenhouse emissions each year—the equivalent of taking 370 vehicles off Metroplex roads each day. Since the CNG trucks run quieter, they lead to less noise pollution. In addition, natural gas costs 40 percent less than diesel. Over the next 10 years, CWD will convert its diesel fleet to CNG trucks. By 2022, when the transition is complete, CWD anticipates having 175 environmentally-friendly trucks on Texas roads.

*For more information, call (972) 392-9300 or visit [www.communitywastedisposal.com](http://www.communitywastedisposal.com).*

### California Product Stewardship Council Recognizes Call2Recycle

**CALL2RECYCLE®** (Atlanta, GA) was honored with the Bow and Arrow Award for Coalition Building by the California Product Stewardship Council during the organization's Arrow Awards ceremony held in Oakland, CA. Call2Recycle was honored for their efforts in bringing together leading companies and visionaries to create opportunities and innovations that drive today's sustainability movement. "Our participants and stakeholders are responsible for the Call2Recycle program receiving this prestigious award," said Carl Smith, CEO and president of Call2Recycle. "Thanks to them, the Call2Recycle battery and cellphone recycling program is able to illustrate the success a voluntary product stewardship program can achieve."

*For more information, call (877) 723-1297 or visit [www.call2recycle.org](http://www.call2recycle.org).*

### PIRTEK is Member of the ARA

Recently **PIRTEK** (Rockledge, FL) joined the Automotive Recyclers Association (ARA) to generate awareness about the services offered by PIRTEK to scrap and recycling companies. PIRTEK understands the importance of keeping equipment and work crews up and running. When a hose fails, it can cost recycling businesses thousands of dollars in lost productivity. That's where PIRTEK can help the ARA members reduce the costs of equipment downtime, idle crews, labor and parts, fuel, overtime and lost opportunity associated with hose failures.

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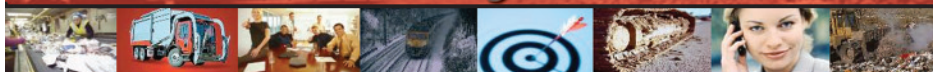
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**23 – 24: Northeast Recycling Council Fall Conference**  
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[www.nerc.org](http://www.nerc.org)

**24 – 26: Coast Waste Management Association 2012 Annual Conference: EPR – The (R)Evolution Continues**  
Fairmont Express  
Victoria, BC  
[www.cwma.bc.ca/events/2012/conference/default.htm](http://www.cwma.bc.ca/events/2012/conference/default.htm)

**29 – 31: 12th Annual Conference on Renewable Energy from Organics Recycling**  
Marriott St. Louis Union Station  
St. Louis, MO  
[www.biocycle.net/conferences/renewable-energy-2012](http://www.biocycle.net/conferences/renewable-energy-2012)

**29 – 31: Advanced Biofuels Markets: The Race for Scale**  
Parc 55 Hotel  
San Francisco, CA  
[www.advancedbiofuelsmarkets.com](http://www.advancedbiofuelsmarkets.com)

### NOVEMBER 2012

**12 – 13: Food Waste Reduction Conference**  
Hilton University Palace  
Charlotte, NC  
<http://cra-recycle.org/foodwasteconference>

**14 – 15: 15th Annual Canadian Waste & Recycling Expo**  
International Centre  
Toronto, ON  
[www.cwre.ca](http://www.cwre.ca)

### 15: AMERICA RECYCLES DAY

**27 – 29: National Advanced Biofuels Conference & Expo**  
Hilton Americas – Houston  
Houston, TX  
[www.biorefiningconference.com](http://www.biorefiningconference.com)

**28 – 29: Waste Conversion Congress West Coast**  
Renaissance Hotel  
Long Beach, CA  
[www.renewable-waste.com/waste-conversion-west](http://www.renewable-waste.com/waste-conversion-west)

### DECEMBER 2012

**11 – 13: Renewable Energy World Conference & Expo North America**  
Orlando Convention Center  
Orlando, FL  
[www.renewableenergyworld-events.com/index.html](http://www.renewableenergyworld-events.com/index.html)

### JANUARY 2013

**23 – 24: Kuwait Waste Management Conference & Exhibition**  
Radisson Blu Hotel  
Kuwait City, Kuwait  
[www.promediakw.com/2013/waste](http://www.promediakw.com/2013/waste)

**27 – 30: Managing Recycling Systems Training/Exam**  
Florida Hotel and Conference Center  
Orlando, FL  
[www.swanafl.org](http://www.swanafl.org)

**28 – 31: U.S. Composting Council Annual Conference & Trade Show**  
Buena Vista Palace Hotel and Spa  
Lake Buena Vista-Orlando, FL  
[www.compostingcouncil.org/conference](http://www.compostingcouncil.org/conference)



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Since launching the Preventing Falls in Construction campaign in April, OSHA's Regional and Area Offices have been getting the message of "Safety Pays, Falls Cost" out to tens of thousands of employers, workers and other stakeholders. Across the country, OSHA's Free Onsite Consultation Program and compliance assistance specialists have conducted more than one thousand workshops, presentations, site visits, and radio and TV interviews. OSHA's specialists have participated in phone banks, staffed information booths at community events, visited with foreign consulates, distributed educational materials and conducted many other outreach activities to explain that falls can be prevented when employers follow a three-step process—Plan, Provide and Train. OSHA also has numerous educational resources available in multiple languages, including stickers, wallet cards, fact sheets and posters.

For more information or to order any of OSHA's outreach materials, call (202) 693-1999 or [www.osha.gov](http://www.osha.gov).

## EPA Requests Proposals for \$216,000 Environmental Education Grant

Through November 21, 2012, EPA Region 4 will accept proposals from eligible schools and entities for a \$216,000 environmental education grant to develop new programs promoting environmental stewardship across the Southeast. The Environmental Education Regional Grants Program is a

competitive program that supports EPA's efforts to increase public awareness and knowledge about environmental issues. The total estimated funding for this opportunity is approximately \$2,160,000 nationwide. EPA expects to award 10 grants nationally—one per region—with each individual award totaling no more than \$216,000. Applications can be submitted electronically via [www.grants.gov](http://www.grants.gov) by November 21, 11:59 pm Eastern Standard Time. Alternately, applications may be postmarked by November 21 or hand delivered by the end of the business day to the EPA Southeast Regional Office. Proposals received after the due date will not be considered.

Environmental education grants provide funding to local education agencies, state education and environmental agencies; colleges and universities; not-for-profit organizations; and non-commercial broadcasting entities. Tribal education agencies controlled by an Indian tribe, band or nation, including schools and community colleges, may also apply.

For more information, contact Kathy Armstrong at (404) 562-8225, via e-mail at [armstrong.kathy@epa.gov](mailto:armstrong.kathy@epa.gov) or visit [www.epa.gov/enviroed/grants.html](http://www.epa.gov/enviroed/grants.html).

## AQMD Approves Measure to Significantly Reduce Emissions from Biogas-Powered Engines Across the Southland

The South Coast AQMD approved a measure that will reduce emissions from the 55 large biogas-powered engines operating across the Southland that produce power from landfill and wastewater gases. "These are some of the dirtiest engines operating in our region," said William A. Burke, Ed.D., AQMD's Governing Board Chairman. "While they are small in number, they produce hundreds of tons of air pollution annually. The good news is that we have set a path going forward that will significantly reduce their emissions."

The action adopts revisions to AQMD's Rule 1110.2 – Emissions from Gaseous- and Liquid-Fueled Engines to extend the compliance deadline from July 1, 2012 to January 1, 2016 for biogas-fueled engines to meet lower emission limits. This action follows a lengthy technology assessment required by the rule to address availability, feasibility, cost-effectiveness, compliance and global warming gas impacts of biogas-fueled engine control technologies. Of the 55 biogas engines operating in the Southland, 27 are wastewater digester gas-fueled and 28 are landfill gas-fueled. These engines are operated by 13 independent operators at 22 locations. This action will help the region meet federal health-based standards for particulate matter (PM<sub>2.5</sub>) and ozone by reducing 334 tons per year of NO<sub>x</sub> emissions, 178 tons per year of VOC emissions and 7,302 tons per year of CO emissions.

AQMD will continue to work collaboratively with stakeholders and interested parties on continuing biogas-fueled engine demonstration projects and report back periodically to AQMD's Stationary Source Committee.

For more information, visit [www.aqmd.gov](http://www.aqmd.gov).

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# ReCommunity: Rethinking Conventional Recycling

**With a mission to reposition waste as a strategic community resource, RECOMMUNITY HAS BECOME THE LARGEST PURE-PLAY RECYCLING COMPANY IN THE U.S.—and plans to keep on growing.**

### RECOMMUNITY (RUTLAND, VT) WAS CREATED IN 2011

when Intersection Partners and a group of investors acquired parts of the recycling assets of FCR, Inc, which was a subsidiary of Casella Waste Systems, Inc. They renamed the company ReCommunity to highlight their mission of leading the 'Recovery Revolution®' and to reflect their community-centric values. With the acquisition of Hudson Baylor earlier this year, ReCommunity became the largest pure-play recycling company in the U.S., with 36 facilities in 13 states, and more than 1,500 employees. Pure-play means they don't own landfills or trucks. The company is unique in the fact that they are singularly focused on maximizing recovery and recycling for partner communities. At ReCommunity, recycling is more than processing and marketing tons of aluminum cans, plastic bottles and paper. They believe in the restorative power of recycling and what it can do to build jobs, to build revenue and to build a future for communities. Committed to this powerful idea, ReCommunity pursues continuous innovation and a vision of zero waste. This community-centric vision demands a special brand of imagination, enterprise, courage and confidence to dramatically reduce the volume of landfilled waste.

ReCommunity's mission is to reposition waste as a strategic community resource, instead of a growing liability. In 2011, they recovered, processed and marketed nearly 2 million tons of recyclables, enabling community partners to generate additional revenue, recover community-owned resources, create new jobs, fund budget shortfalls and reduce their carbon footprint (see Figure 1, page 16).

Because all of ReCommunity's employees are committed to 'Leading the Recovery Revolution®', the company culture is truly a family. They all work very closely together and are all passionate about their mission of diverting as much as possible from landfills into the recycling stream. Most employees have long tenures with the company, which shows how committed the entire team is to the company mission.

### No Signs of Backing Down

ReCommunity works each day to extend their services and partnerships with additional forward-thinking communities. Says Jeff Fielkow, ReCommunity's executive vice president of revenue and growth, "We know first-hand there is economic-social-environmental power in recovering and transforming

ReCommunity Morris MRF.  
Images courtesy of ReCommunity.





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:: NORTHEAST REGION			
Facility Name	Location	County	State
Hartford	Hartford, CT	Hartford	CT
Nutmeg	South Windsor, CT	Hartford	CT
Ridgefield	Ridgefield, CT	Greenwich	CT
Beacon*	Beacon, NY	Dutchess	NY
Brookhaven	Brookhaven, NY	Suffolk	NY
Dutchess	Poughkeepsie, NY	Dutchess	NY
HBC 240	Newburgh, NY	Orange	NY
Newburgh	Newburgh, NY	Orange	NY
Rockland	Hillburn, NY	Rockland	NY

:: MID-ATLANTIC REGION			
Facility Name	Location	County	State
DSWA	New Castle, DE	New Castle	DE
ACUA	Egg Harbor, NJ	Atlantic County	NJ
Camden	Camden, NJ	Camden	NJ
Cape May	Woodbine, NJ	Cape May	NJ
Morris	Mine Hill, NJ	Morris	NJ
Montgomeryville	North Wales, PA	Montgomery	PA
Philadelphia	Philadelphia, PA	Philadelphia	PA
Upper Dublin	Willow Grove, PA	Montgomery	PA

:: SOUTHEAST REGION			
Facility Name	Location	County	State
Sarasota	Sarasota, FL	Sarasota	FL
Lee County	Fort Myers, FL	Lee	FL
West Palm	West Palm Beach, FL	Palm Beach	FL
Athens-Clarke	Athens, GA	Clarke	GA
Greensboro	Greensboro, NC	Guilford	NC
Mecklenburg	Charlotte, NC	Mecklenburg	NC
Memphis	Memphis, TN	Shelby	TN

:: MIDWEST REGION			
Facility Name	Location	County	State
Ann Arbor	Ann Arbor, MI	Washtenaw	MI
Detroit	Southfield, MI	Oakland	MI
Huron	New Boston, MI	Wayne	MI

**Figure 1:**  
A sample of the communities that ReCommunity has partnered with. ReCommunity has 36 facilities in 13 states and more than 1,500 employees.

materials from what was once called the waste stream. However, regardless of economic conditions, we have a proven record of outperforming competitors and market indices in commanding superior pricing for commodities.” In fact, ReCommunity even successfully honored the terms of all their contracts and serviced all of their customers through the worst of the market crashes. “We have never failed to accept, process or market recyclable materials—even during the most trying economic times. Our proven reliability and performance is the result of our bringing a host of patented technologies and processes together to transform the way communities transform their waste into value,” Fielkow says. “Regardless of economic trends, success is all about quality. Certainly quality increases in importance when pricing drops. But finding the highest and best use of the material also works to raise the floor price of commodities. We use hedging tools to reduce risk to our portfolio. This is something we offer our customers to reduce their risk as well.”

ReCommunity’s process for new opportunities focuses on identifying forward-thinking communities seeking to create the ideal recycling program. Then they go about building a relationship based on a shared commitment to revolutionary waste reduction through optimal equipment technology, evolutionary education programs and profitable marketing strategies. These areas are a few of many for which we become true partners with a municipality, fully investing in the success of the program.

## The Recovery Revolution

Fielkow goes on to stress that ReCommunity aims to lead a Recovery Revolution and the biggest challenge is gaining momentum for an entirely new way of thinking. In this case, how people think about waste. In doing so, Fielkow points out that changing how people think about waste is a challenge that requires



# IMPACT to the Environment

In addition to enabling community partners to generate additional revenue, recover community-owned resources, create new jobs and fund budget shortfalls, ReCommunity is particularly proud of the following impact to the environment.

*Efforts have reduced greenhouse emissions by 5.3 million metric tons, or:*

- Approximately a million fewer cars on the road
- Over half a billion fewer gallons of gasoline burned
- 47,633 acres of forested trees

*Efforts have reduced landfill space by 2.6 million cubic yards, or:*

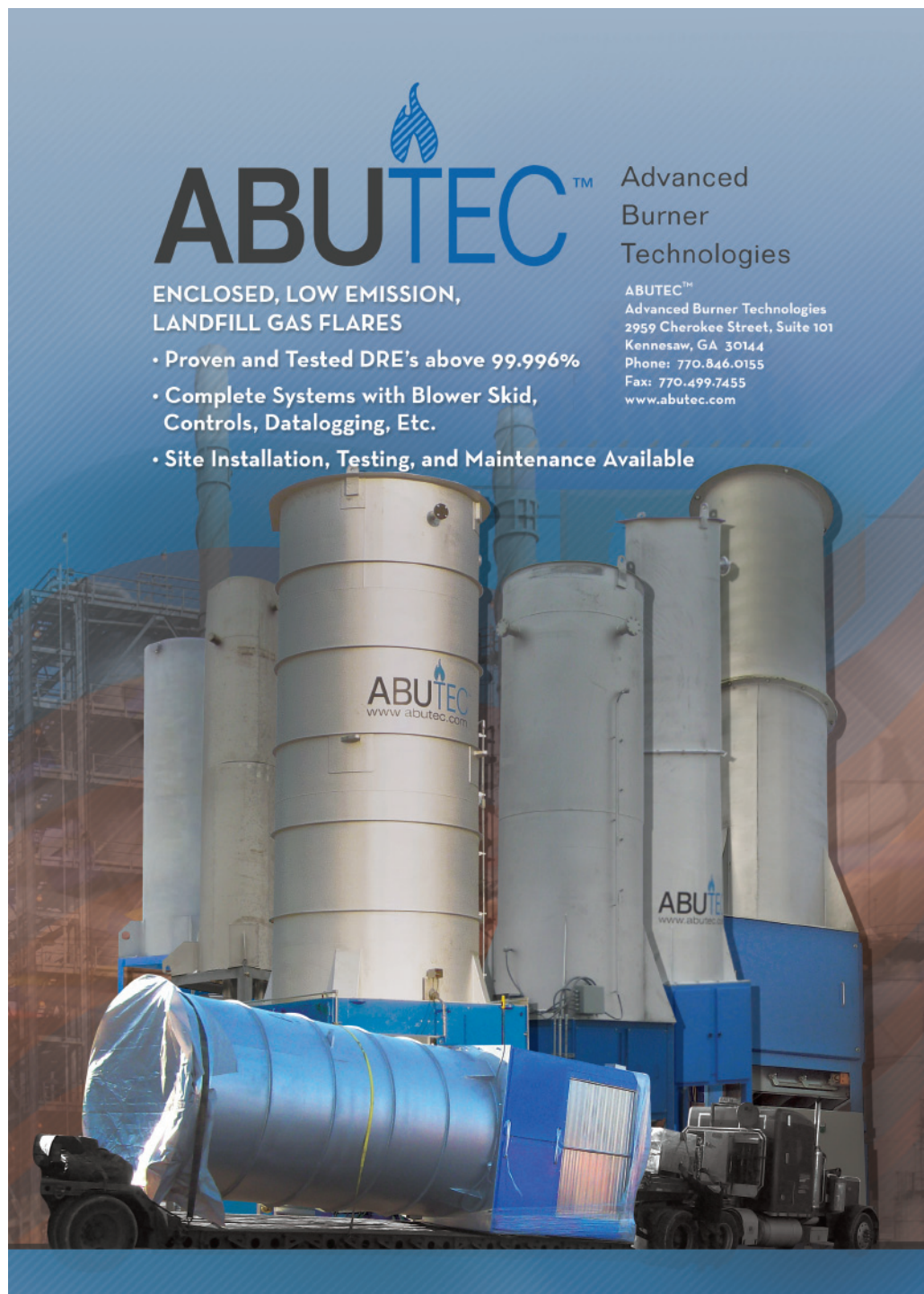
- 520,000 truckloads
- The volume of two Empire State Buildings
- Close to half the size of the Hoover Dam

*Efforts have reduced wastewater from landfill space by 17.6 million gallons, or:*

- 25.2 Olympic-sized swimming pools
- 220,000 bathtubs
- 2.2 million dishwasher cycles
- 11 million flushes of a low-flow toilet

tremendous amounts of education, proven performance and unrelenting dedication to innovation. "Since the beginning of the 20th century, our country has thrived within an industrial-economic model that's allowed us to modernize. While this has helped us thrive with groundbreaking technological advances, the byproduct of that model has been a cumbersome and rapidly expanding waste stream. As we approach a global population of 9 billion people, we find ourselves in a world of constrained commodities, reduced traditional energy reserves, overflowing landfills and shifting options. Every year, communities across America throw away millions of tons of aluminum, plastics, paper and other valuable resources that can be recycled or reused, turned into new products or made into green fuel. Up to 90 percent of trash goes into landfills, where it threatens our air, land and water without growing our economy. The first step in changing this trajectory is changing our perspective. This is the very reason for the ReCommunity Recovery Revolution."

Part of ReCommunity's mission is to educate their communities about the benefits and facts of recycling. Part of the educational process is to provide facility tours and a recycling education center for community members. Taking into consideration that school funding may make field trips to recycling facilities increasingly challenging, ReCommunity has begun to create a virtual educational platform on their Web site ([www.recommunity.com/education](http://www.recommunity.com/education)). The goal is to create a suite of interactive tools and videos for schools and organizations to learn more about the company's recycling facilities and the recycling process in general. Fielkow says, "This provides the experience and education one would receive when visiting a ReCommunity recycling facility."

The advertisement for ABUTECH features a large, detailed image of industrial equipment, specifically tall, cylindrical metal flares or incinerators, with a blue and white color scheme. The ABUTECH logo is prominently displayed in the upper left of the image area. To the right of the logo, the company name "ABUTECH" is written in large, bold letters, followed by "Advanced Burner Technologies" in a smaller font. Below the company name, the text "ENCLOSED, LOW EMISSION, LANDFILL GAS FLARES" is written in all caps. A list of bullet points follows, highlighting the company's capabilities: "Proven and Tested DRE's above 99.996%", "Complete Systems with Blower Skid, Controls, Datalogging, Etc.", and "Site Installation, Testing, and Maintenance Available". On the right side of the advertisement, the company's contact information is listed, including the address "2959 Cherokee Street, Suite 101 Kennesaw, GA 30144", phone number "770.846.0155", fax number "770.499.7455", and website "www.abutech.com". The background of the advertisement is a blue sky with a single tree on a green hill, which is the same image used in the top section of the page.

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## Looking Ahead

Striving to be the largest, most complete resource recovery operation in the nation, ReCommunity wants to have the best solutions that are continuously improved and tailored in the most productive fashion for community partners. "We are always rethinking conventional recycling and our role in building more vibrant American communities in the process," says Fielkow. "On our visionary pathway to zero waste, there are a host of efforts, investments and commitments

to innovation and technology, including: conversion of dual stream recycling into single-stream technology, innovative new recycling bins, new ways to secure active recycling behavior at home, at work and in our schools, as well as green transformational energy technologies that convert unrecycled commodities within the waste stream into environmentally-friendly energy feedstocks." | **WA**

*For more information about ReCommunity, or to learn more about what happens inside a recycling facility, visit [www.ReCommunity.com](http://www.ReCommunity.com).*

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## Choosing the Right Trailer for Your Needs

Jim Reeves

**Whether you are hauling wet waste or dry waste, scrap metal or construction debris, short hauls or long hauls, standard loads or over permitted loads, BE SURE TO TAKE THE RIGHT STEPS TO EVALUATE THE BEST TRAILER TO SUIT YOUR NEEDS.**

### IN TODAY'S CHANGING MARKET THERE ARE MANY

options for haulers to accomplish their goals. One of these options is to use roll-off trailers instead of roll-off trucks. There are many models of roll-off trailers, from a very short 25' 11" to 48' long to help customers attack different markets and minimize their capital expenditures.

### Short Roll-Off Trailers

The most popular of roll-off models is a short roll-off trailer that only measures 25' 11" long. They are popular because they are short, maneuverable and a reasonable, cost-effective alternative to a roll-off truck. When hooked to a tractor it is only about a foot longer than a standard roll-off truck tip to tip. This allows the trailer to be more maneuverable than a roll-off truck because the tractor-trailer pivots. For those in need of fitting in tight spaces, a shorter roll-off trailer is a better option because it can carry more weight than a truck and can still get into the limited space required. Shorter roll-off trailers usually sell for a fraction of the price of a new roll-off truck and in today's competitive market, spending less and being more productive is key for all businesses.

### Longer Trailers

For those who need to maximize payload and do not have a space issue, a 40' long trailer is a great option since

it is capable of carrying up to 38' long containers as well as the standard 22' containers. A 40' long trailer usually can payload more than 40,000lbs and these tandem axle trailers can be designed with a full frame for stability, maximizing payload while still operating at the 80,000 GVW (Gross Vehicle Weight) maximum legal limit.

### Oversize Trailers

Certain applications, such as scrap metal markets (up to 144,000lbs) or off-road applications require haulers to pick up enormous amounts of weight and permit their trailers to haul over the legal limit or run offroad. Conventional oversize trailers are built heavy and can haul more than 50 tons. These types of trailers are offered from 29' in length to 47' in length with two to eight axles. So, depending on container size and the State you operate in, make sure you design a trailer to suit your needs. In some states like Michigan and New York these trailers can be permitted up to 144,000lb and 102,000lb GVW respectively with the correct axle configuration.

For oversize containers or those applications where a lower center of gravity is key drop deck trailers are a good option to consider. These trailers range from 32' in length to 45'. Because they are lower to the ground than standard trailers or trucks drop deck trailers allow haulers to carry taller containers that would not be legal on a

#### From left to right:

- Single container trailer that will carry a container up to 38' long.
- Conventional oversize trailers are built heavy and can haul more than 50 tons.
- A 48' long two-box trailer is capable of carrying two containers up to 24' long or a single container 24' long if the material is very heavy. It is especially effective when hauling waste great distances.
- Single container trailer used for oversized containers.
- Short roll-off trailer that only measures 25' 11" long. They are popular because they are short, maneuverable and a reasonable, cost-effective alternative to a roll-off truck.

Photos courtesy of BENLEE.







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standard unit. These trailers also can be rated up to 80,000lb GVW depending on the length and axle configuration to allow haulers to maximize their payload.

### Pup Trailers

Pup trailers can hook to the back of a roll-off truck and carry one or two containers at once. Although they are more for local accounts, you can cut down mileage on your trip by picking up two containers at one location.

### Hauling Sludge or Hazardous Materials

When the application is hauling specialty waste such as sludge or hazardous materials, there are limited dumping facilities that take this material. In some cases, haulers may have to travel cross country to dispose of this waste. A 48' long two box trailer is capable of carrying two containers up to 24' long or a single container 24' long if the material is very heavy. It is especially effective when hauling waste great distances because, for example, when you are hauling hazardous or specialty waste (sludge, contaminated dirt, etc.), there are only a certain number of landfills in the country that accept that type of material.

This type of trailer is an 80,000lb GVW that can payload up to 40,000lbs depending on the container and tractor weight.

### Designing Your Own Trailers

When evaluating what type of trailer you would like to invest in, be sure to consider the size and dimensions of container—how big is the container you are going to be hauling? Another factor is looking at how much weight you will be hauling—will the material be scrap metal, dirt, sludge, C&D, liquids or something else? Finally, factor in the distance you will be hauling the material—is it local or do you need to travel to another county or city?

Whether you are hauling wet waste or dry waste, scrap metal or construction debris, short hauls or long hauls, standard loads or over permitted loads, be sure to take the right steps to evaluate the best trailer to suit your needs. | **WA**

*Jim Reeves is the marketing manager for BENLEE (Romulus, MI). He graduated from Clemson University in 1995 with a degree in Business Management and has been in the Waste and Recycling industries since 1996. He can be reached at (734) 476-4402, via e-mail at [jim.reeves@benlee.com](mailto:jim.reeves@benlee.com) or visit [www.benlee.com](http://www.benlee.com).*







## First of Four Parts Deciding on the Right Power Take-Off

Mikel Janitz

**Selecting the right power take-off requires meeting the speed, torque and horsepower requirements of the application. THERE ARE A FEW PITFALLS YOU SHOULD AVOID IN ORDER TO ENSURE YOU GET THE MOST OUT OF YOUR SYSTEM.**

### SELECTING THE RIGHT POWER TAKE-OFF (PTO) IS THE

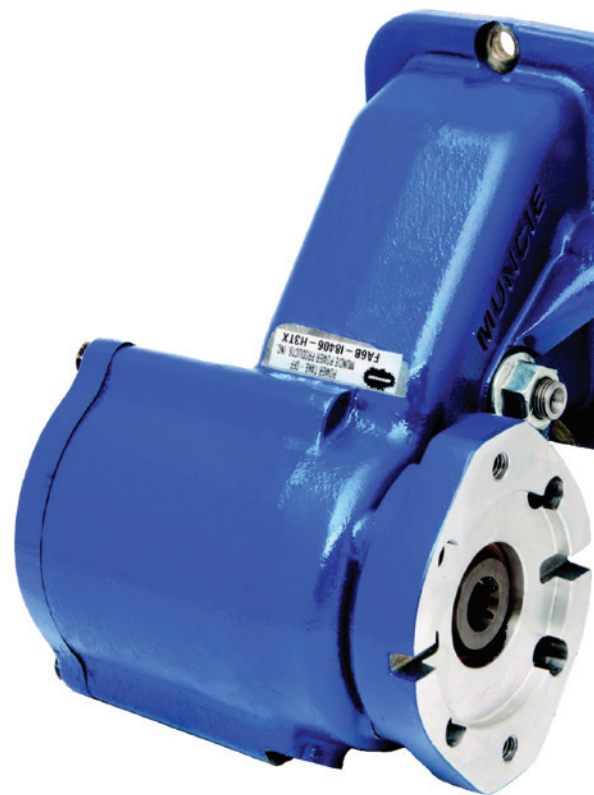
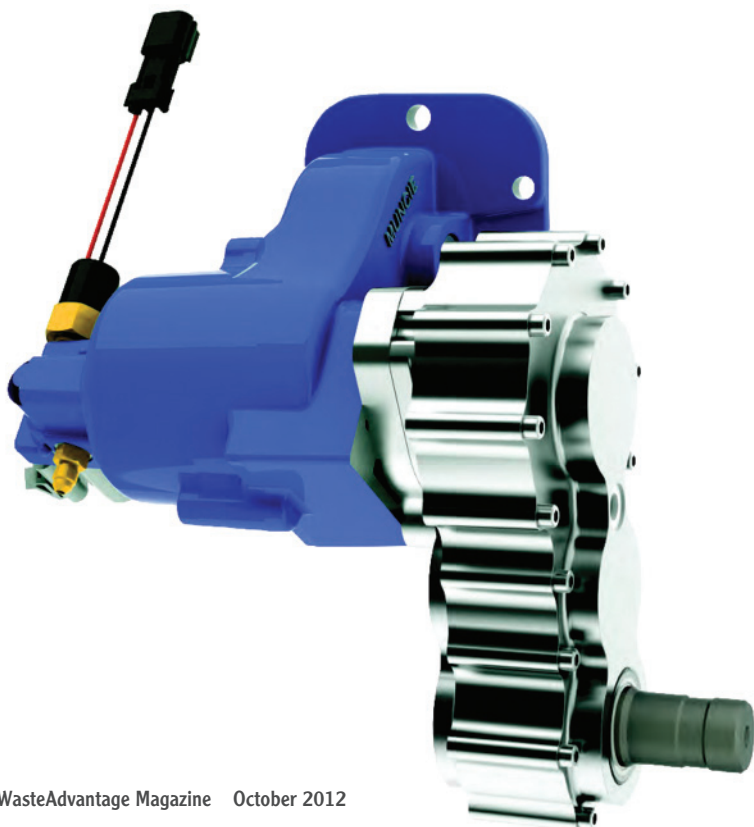
first step in creating a robust application solution. A power take-off is a gearbox attached to the transmission, which transfers power from the engine to a hydraulic pump or auxiliary components. There are a few particular details one needs to know and apply to make the most of a PTO investment. First, what is the vehicle you are up-fitting? What kind of work will you need to perform and how often is the job done (duty cycle)? Will the PTO fit the vehicle without frame or exhaust system modifications? Finally, will the PTO interface electrically, hydraulically and/or pneumatically with

the vehicle? Selecting the right power take-off requires meeting the speed, torque and horsepower requirements of the application. Given that, there are a few pitfalls you should avoid in order to ensure you get the most out of your PTO.

This article is the first in a four-part series designed to help end users, OEMs, installers and up-fitters pick, set up, troubleshoot and maintain vocational vehicles with mobile power units and auxiliary equipment. They will cover the important, and sometimes forgotten, topics needed to get the most out of their PTO.

Left: The GBFR allows for the mounting of driveshaft driven components on Ford SuperDuty 4x4 chassis. It is designed to clear the forward drive shaft and allow the PTO driveline to clear the transfer case.

Right: The FA6B Series PTO allows for mounting on a narrow frame chassis. The FA6B is designed to mount on the left side opening of the transmission. Images courtesy of Muncie Power Products.





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## Deciding on the Right Power Take-Off

### Engine

A refuse vehicle is a large investment. You weighed many of the factors in choosing it: gas vs. diesel, automatic vs. manual transmission and chassis make, etc. You need to select a PTO that works best for the vehicle. One basic consideration is: Is the refuse truck gas or diesel powered? This can be a big deal. Of high importance are the engine "signature" and its affect on the PTO's noise and torsional vibration. Gas engines typically run smoother and can provide for a quieter operation. Diesels usually provide more low speed torque capability. There are numerous locations to mount a PTO. For example, front engine mount, rear mount and side mount. For this, let's assume side mount is the best choice. Determine the location of the transmission's PTO aperture so that the PTO is oriented correctly. There are wiring considerations as well as exhaust routing to negotiate. Keep wires away from hot spots, like exhaust pipes, to reduce the likelihood of shorts.

### Transmission

Whether you choose an automatic or manual, it is important in PTO selection to determine the transmission make and model number as well as which PTO aperture is used. Most often, manual transmission PTOs use a "dog clutch" set up. This is where the drive gear freely rotates until a ring gear manually mates the transmission rotation to the PTO gear set.



The Auxiliary Power Drive SS88 Series Splitshaft PTO allows for mounting of two 8-bolt type PTOs behind the transmission on medium duty and heavy-duty vehicles.

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There is also an option to incorporate an electrically actuated version for manual transmissions. These "hot shifts", as they have been called, allow for manual transmissions to rotate the mesh gears with minimal noise and wear through the use of an electromechanical solenoid. Automatic transmissions typically incorporate clutch shift PTOs. These allow for PTO gear engagement while the transmission gear is rotating. This makes it possible to engage and disengage the PTO output shaft without bringing the vehicle to a complete stop, which is required with a manual transmission unless the electronic shift. Gears in clutch and electric shift PTOs typically show less wear over time as compared to other designs. That may affect maintenance cost in the long run.

### Size and Weight

While the physical size of the PTO is not the primary concern, one does have to pay attention to size and weight. Mounting space is at a premium and it is important that the PTO and hydraulic pump (if so equipped) fit within the available envelope space. The final location of the auxiliary equipment can be a driving factor when selecting a PTO. Many refuse vehicles use extended shafts between PTOs and pumps. This configuration allows for larger pumps where they could not fit before.

### Duty Cycle

Now that we have a solid understanding of the vehicle, we can now begin planning for the work it performs (duty cycle). Is it a single function or are there multiple tasks to consider? Knowing the type of work is important, as this defines the duty cycle. PTO duty cycles are classified as intermittent or continuous. Think of it this way: if the PTO is to run for more than five minutes out of a 15-minute period, it is continuous duty. Intermittent duty cycles are those, which last for less than five minutes at a time a few times a day. It is fair to say refuse vehicles are continuous duty applications. The PTO's torque and horsepower ratings are reduced for continuous duty applications. If this is miscalculated, the life of the PTO will be much less than expected.

Selecting a PTO is all about finding a way to get the required work done. Work in this example is force times distance. Speed is rotations per minute (RPM) and power is the rate of doing work, horsepower (HP). When selecting a PTO for a particular task it is important to consider the application. What will the PTO drive? How fast will it need to rotate? What is the torque requirement? These questions are functions of speed, torque and power. A PTO's speed

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## Deciding on the Right Power Take-Off

is often stated in terms of a percentage of engine speed. A PTO's horsepower is directly proportional to the output shaft RPM. This means that the faster it turns, the more horsepower is produced. However, it is also important to realize that a PTO's torque rating is constant no matter how fast it is turning. Torque is the limiting factor. If torque loads are too large for too long, the PTO can be damaged.

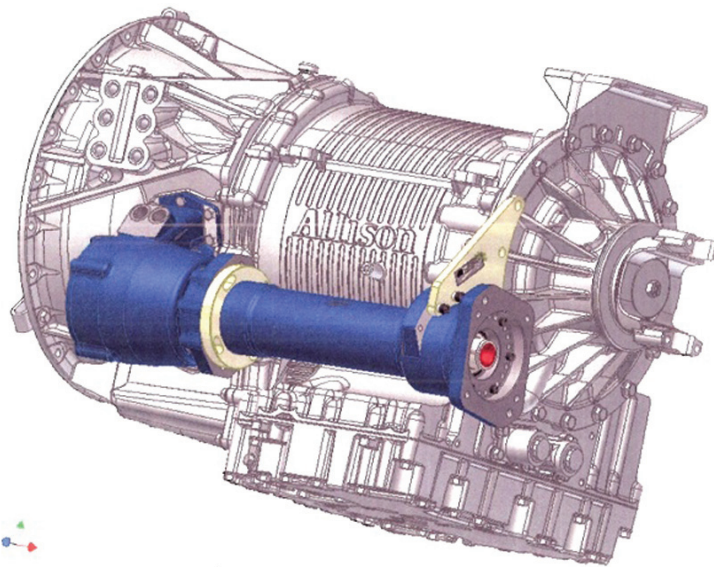
## Rotation and Installation

The direction of rotation can also be an important consideration. PTOs rotate either the same as the engine crankshaft rotation (abbreviated as CRNK), or opposite the crankshaft rotation (abbreviated as OPP). Typically a good rule of thumb is that PTOs mounted on automatic transmissions provide a CRNK rotation and those on manuals provide an OPP rotation. If in doubt, use a manufacturer's Web site to select the PTO. It is easy to navigate and investigate options.

Correctly installing the PTO on the refuse truck is key to durability and performance. When selecting a PTO, it is important to know the vehicle and chassis. It is not recommended to make modifications to vehicle components without first consulting the manufacturer. This could void warranties and create possible safety concerns. Speak to application engineers to resolve any questions and they will help you select the right PTO and accessories for the job.

## Replacement

The last issue to think about is what not to do when you are selecting a PTO. If you are replacing an existing PTO, the simple method is to replace it with the exact model. However, be careful. There is a reason you are replacing it. Make sure you follow the earlier steps to ensure you are getting the best PTO for the job. Make sure pump size and flow rates have not increased over time. Make sure torques have not increased. A reputable manufacturer can help you walk through these steps. Don't make a purchase based on price



A constant drive PTO mounted to a typical transmission coupled to an extended shaft. This configuration allows for more room and larger pumps to be used in refuse vehicles.

alone. There are non-standard parts and replacement units that look the same, but do not offer the performance and overall level of service of a leading manufacturer. Time is money and getting the job completed is vital. Don't buy a PTO on price alone or because a particular model is readily available. Don't sacrifice reliability, durability and performance for convenience. Select the right PTO for your refuse vehicle even if it takes a little extra time. You will save money in the long run and have piece of mind knowing you made the right decision.

Selecting a PTO, or any other mobile power system component requires study, planning and some expertise. There are typically many good selections, a few really good choices and then there is the optimum selection. Be sure to contact your local distributor or call the manufacturer directly to help you through the selection process. Incorporating the above concepts and thinking through the entire application can specify the best PTO for your refuse needs. | **WA**

Part two of this series will discuss critical features to consider during the installation phase.

*Mikel Janitz is the Manager of Engineering for Muncie Power Products (Muncie, IN), a global leader in power take-offs and a worldwide organization dedicated to solving the vocational industry's mobile power issues. Mikel graduated from Oklahoma State University with a BS and MS in Engineering and Engineering Management. He can be reached at [mjanitz@munciepower.com](mailto:mjanitz@munciepower.com) or visit [www.munciepower.com](http://www.munciepower.com).*

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## Marketing and Implementing Emerging Waste Conversion Technologies: The Local Effect

Teno A. West, Esq.

**The search for clean, affordable alternatives for waste disposal has presented an opportunity for emerging waste conversion technologies to make a breakthrough in the U.S. market. PARTNERSHIPS BETWEEN PRIVATE COMPANIES AND LOCAL GOVERNMENTS MAY VERY WELL HOLD THE KEY TO SUCCESS.**

### **SOLID WASTE MANAGEMENT IN THE U.S. HAS ALWAYS**

been a uniquely local endeavor. Typically, landfilling has provided the most efficient and least expensive option for solid waste management by local governments. Recently, there has been an increasing demand for clean, affordable alternatives to landfilling and other traditional forms of waste disposal. Throughout the world, mainly in Europe and Japan, emerging waste conversion technologies have found success marketing and implementing their technologies. In the U.S., unique challenges have led to a relatively slow growth in the successful development of emerging waste conversion technology projects. These unique challenges include navigating the nuanced permitting and environmental review processes, garnering local project acceptance, combating environmental opposition, solving waste aggregation problems and other considerations.

One factor bearing heavily on the success of a project is the acceptance of the project by the affected local community and government. Just as solid waste management is a local responsibility, so too, is the task of

handling—in all aspects practical, political, economic, etc.—the issues presented by the various solid waste management tools available, including waste conversion technology. Garnering support from, and partnering with, a local government provides invaluable, if not necessary, aid to a company as it attempts to navigate the permitting and procurement requirements at the local and state levels, deliver the proper message necessary for the development of local acceptance, and aggregate the appropriate and sufficient feedstock of waste necessary to the success of the project. This article will address some of the issues facing companies attempting to implement waste conversion technologies throughout the U.S. with a special emphasis on the positive impact of a local government partnership.

### **Zoning, Permitting and Environmental Review**

Once the proper locality is chosen as a fit for a particular conversion technology, the need to develop local backing and support for the project is necessary. The zoning and planning processes, including permitting and licensing, is intimately local. Regulations governing these processes vary greatly from municipality to municipality and decision-making rests almost exclusively with the state and/or local government. While it is true that a private company has the right and the ability to seek permits, licenses and zoning approvals without local support for the project, as a practical matter, if the local government is generally unsupportive, the project faces almost certain death.

Waste conversion projects, even when backed by local community leaders and government, can take a long time to wind through the legal maze of zoning, permitting, procurement and environmental review. If the local community leaders and government, for whatever reason, do not support the project, then regardless of the scientific and/or empirical reasons supporting the implementation of the proposed technology in that municipality, the process may simply stall during the permitting, zoning, etc. processes. On the other hand, with local community





and governmental support for the project, the approval process likely will not stall (and may even be “fast-tracked”) and the project will stand a much stronger chance of implementation and success. Therefore, partnership with the local government within the zoning and permitting area is key to project success.

## Environmental Opposition And Developing Local Acceptance

Environmental group opposition to waste conversion technology is extremely potent in the U.S. Given the general distrust of waste-to-energy (and, by extension, waste conversion) technologies prevalent throughout the U.S., the NIMBY (“not in my backyard”) phenomenon is ever-present in municipalities, and local residents are easily persuaded to join the cause of environmental groups against waste conversion once it is proposed in their community. Combating this phenomenon is difficult and total local acceptance is almost always impossible. However, partnership with a local government maximizes the potential for local acceptance of a proposed project in a number of ways, despite the NIMBY phenomenon.

Before a partnership is pursued, a concerted effort must be undertaken to determine the appropriate size of the project to be constructed. Recycling and zero-waste policies are, at least ostensibly, the dominant solid waste goals in most municipalities. Waste conversion is viewed by many as an enemy to these policies because it is thought that once such a facility is built, waste production becomes incentivized (and recycling dis-incentivized) in an effort to “feed the beast.” This view can be minimized, by making a concerted effort to appropriately size the proposed project to the community’s waste needs. Smaller facilities cost less, produce less emissions and process less waste, thus

helping to undercut the common environmentalist argument that such waste conversion technology will incentivize waste production and dis-incentivize recycling. While economic feasibility will play a large role in determining the appropriate size of a proposed project, it behooves the private company to assess the waste needs of the community and, in terms of size, narrowly tailor its proposed facility to those needs. Despite the “zero-waste” moniker, it is undisputed that not all waste can be recycled and some amount of waste will always need to be disposed. Thus, if the proposed project is thoughtfully sized according to the subject community’s waste disposal needs, taking into account their recycling goals as well, it can be marketed as a friend—not a foe—to recycling and zero-waste. Indeed, some studies suggest that waste conversion technology actually fosters increased recycling—that phenomenon must be emphasized and supported. For example, conversion technologies operate more efficiently with homogenous feedstocks, and thus require pre-sorting of feedstock material, which increases recycling.

Once proper sizing is accounted for, the company must establish a local presence and must educate the local community and its leaders with respect to the benefits of the proposed project. To this end, partnership with a local government sends a unified and consistent message about the benefits of waste conversion technologies to the local community. While a private company might attempt to get its message out regarding the environmental benefits of a proposed waste conversion project and the significant cost savings that such technology might provide, the message of community benefit becomes much more credible when it resounds through a partnership formed with the local community leaders and the people’s local representatives.

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### Availability Of Appropriate Feedstock

Undoubtedly, one consideration that companies must address is the availability of appropriate and sufficient feedstock for their proposed technology. The feedstock, which may include municipal solid waste, food waste and biomass, among others, is the material that fuels the waste conversion process and will vary depending on the material being disposed of and the particular type of technology that is used. Without this, the technology will be unable to fulfill its purpose—turning trash into energy in an environmentally sound manner. Partnership with the local government can provide the necessary means to ensure such feedstock.

Construction of waste conversion facilities is expensive and the project developer will be expecting that the money saved by not landfilling waste, and the money earned by selling electricity, will not only pay for the facility but also bear a profit at some point. Without an appropriate feedstock, this goal is unattainable. Complicating the matter, however, is that many private waste management companies that are contracted to haul municipal waste also own landfills and are able to landfill the waste at inexpensive costs. Therefore, these companies often have little incentive to bring the waste to a waste conversion facility. If there is no mechanism—be it legal, contractual or economic—for diverting that waste to its waste conversion facility, the project will fail.

The concept of MSW diversion to certain designated areas by law or contract is known informally as “flow control” and is an extremely useful tool for aggregating waste as a feedstock for waste conversion facilities. If the municipality can dictate where its trash goes, it can appropriately feed its waste

conversion facility, create inexpensive energy, and cleanly dispose of its non-recyclable trash without threatening recycling and “zero-waste” efforts. Thus, partnership with local government can have a significant impact regarding waste aggregation. If the local community leaders believe in and support the waste conversion technology project, there is more incentive to implement some form of flow control to help achieve project success. And, through a partnership with local government, the company will have potential access to a guaranteed tonnage of waste, which will position the project for success and, ultimately, benefit both the company and the local community.

### An Emerging Opportunity

The search for clean, affordable alternatives to landfilling and other traditional forms of waste disposal has presented an opportunity for emerging waste conversion technologies to make a breakthrough in the U.S. market. Partnerships between private companies and local governments may very well hold the key to success. | **WA**

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## Rail Freight Traffic: A Leading Economic Indicator

Darell Luther

**Emerging market opportunities are important to the recoupment of the railroads traffic base. WASTE, SCRAP AND RELATED COMMODITIES ARE A SMALL PART OF THE OVERALL RAIL TRAFFIC BASE but are seen as growth areas to railroads.**

**IT'S OFTEN QUOTED IN THE ECONOMIC SECTORS** that rail freight traffic is a leading indicator of future economic health of our country. The rail freight traffic indicator most closely watched is weekly originated rail carload traffic trends of major U.S. railroads. Weekly originated carloads are tracked in 19 commodity groups and one *Other* category (see Figure 1, page 34). These originated rail carloads are the originated shipments categorized in each commodity group that are moved via rail in the U.S., a count, if you will, of new commodity movement by rail.

Waste & Nonferrous Scrap and Iron & Steel Scrap play a small yet important role in the rail freight indicator world. It's telling as a downstream indicator in the basket of originated rail carload indicators that if these commodities are doing well the economy has stabilized and economic recovery tends to be more imminent.

Overall, there were 9,597,499 rail carloads originated in the cumulative 34 weeks ending August 25, 2012 and Waste & Nonferrous Scrap and Iron and Steel Scrap comprised 259,488 of the rail carloads or 2.7 percent of the total originated rail carloads. This may seem like a small piece of the overall pie, but according to economist and Bloomberg Brief contributor, Michael McDonough, there is an 82.4 percent correlation between the U.S. gross domestic product and waste and scrap originated rail carload shipments. This is the highest correlation of any commodity group depicting a reliable prediction of the country's future economic health.

Waste & Nonferrous Scrap reflects a decrease of 3.7 percent in originated rail carloads from the cumulative 34 weeks ending August 25, 2012 compared to the same timeframe ending 2011, which reflected 108,290 railcar loads and in 2012 reflected 104,238 railcar loads.

Iron & Steel Scrap reflect a decrease of 4.2 percent in originated rail carloads from the cumulative 34 weeks ending August 25, 2012 compared to the same timeframe in 2011, which reflected 162,088 railcar loads and in 2012 reflected 155,250 railcar loads.

### The Commodity Basket

Looking back at the cumulative 34 weeks ending August 25, 2012 ([www.aar.org](http://www.aar.org)), freight carloads origin-

ated are at 9,597,499—down 2.4 percent, or 234,063 carloads, from the same time period in 2011. The losses are led by coal at minus 402,237 originated carloads and in second place is grain at minus 75,764 originated carloads. It is not surprising that the leader in the gain side of the equation is petroleum products at plus 94,562 originated carloads followed closely by motor vehicles and equipment at plus 89,427 originated carloads. The third place gainer is crushed stone, sand and gravel with plus 39,553 carloads. Of interest to economic measures is that lumber and wood products are trending up with a positive gain of 11,911 carloads when compared to the same 34 weeks in 2011. The balance of the commodities is somewhat stagnant when comparing originated carload statistics.

So what does this tell us about the U.S. current and future economic health? Let me first qualify this question with what I'm about to espouse. I'm no economist. If we segregate these carload origination indicators into two broad categories reflecting better economic times and two broad categories reflecting worse economic times, we get a better picture of the economy and what's likely to occur in the future.

### Upside Indicators

#### Basic Industries

On the growth side, one will see the petroleum industry is driving growth in crude oil shipments and considering the time, cost and political agenda that it takes to get a pipeline in place will continue to do so for the foreseeable future. Notwithstanding originated rail carloads, a pipeline may cause some downside if we don't increase refining capacity by simply moving supply closer to a chokepoint. This industry is also partially supporting growth in stone, sand and gravel shipments in the developments of infrastructure for drilling and accommodations for workers.

#### Consumer Confidence

Outside of basic industries it's somewhat surprising to see motor vehicle growth up so significantly. This tells me that there was either pent up demand that was held back during the early recession of 2009 – 2010 or we're gaining consumer confidence. I'm hoping it's the







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## Weekly Traffic of Major U.S. Railroads

For the Week Ending August 25, 2012

Traffic Originated						
	Week 34 Ending August 25, 2012			Cumulative, 34 Weeks Ending August 25, 2012		
	2012	2011	Change	2012	2011	Change
<b>Carloads Originated</b>						
1. Grain	18,954	18,060	5.0 %	673,055	748,819	-10.1 %
2. Farm Products, Ex. Grain	887	701	26.5	27,312	29,108	-6.2
3. Metallic Ores	7,827	9,490	-17.5	243,274	246,239	-1.2
4. Coal	125,291	134,334	-6.7	3,942,217	4,344,454	-9.3
5. Crushed Stone, Sand & Gravel	21,461	19,135	12.2	621,419	581,866	6.8
6. Nonmetallic Minerals	4,956	5,159	-3.9	160,537	170,036	-5.6
7. Grain Mill Products	9,146	9,230	-0.9	323,932	323,472	0.1
8. Food & Kindred Products	6,576	6,283	4.7	220,314	215,496	2.2
9. Primary Forest Products	1,605	1,569	2.3	51,172	50,490	1.4
10. Lumber & Wood Products	3,314	2,743	20.8	106,691	94,780	12.6
11. Pulp, Paper & Allied Products	5,957	6,272	-5.0	206,128	203,875	1.1
12. Chemicals	29,343	29,929	-2.0	1,013,933	1,026,724	-1.2
13. Petroleum Products	11,125	7,143	55.7	326,214	231,652	40.8
14. Stone, Clay & Glass Products	8,145	7,741	5.2	255,382	243,136	5.0
15. Coke	3,294	3,462	-4.9	117,447	116,636	0.7
16. Metals & Products	10,752	11,222	-4.2	364,836	347,778	4.9
17. Motor Vehicles & Equipment	15,613	14,591	7.0	525,172	435,745	20.5
18. Iron & Steel Scrap	4,695	4,954	-5.2	155,250	162,088	-4.2
19. Waste & Nonferrous Scrap	2,981	3,488	-14.5	104,238	108,290	-3.7
20. All Other Carloads	5,120	3,999	28.0	158,976	150,878	5.4
<b>Total</b>	<b>297,042</b>	<b>299,505</b>	<b>-0.8 %</b>	<b>9,597,499</b>	<b>9,831,562</b>	<b>-2.4 %</b>
<b>Intermodal Units Originated</b>						
Containers	218,557	203,577	7.4 %	6,970,740	6,593,552	5.7 %
Trailers	29,807	32,460	-8.2	1,006,940	1,104,184	-8.8
<b>Total</b>	<b>248,364</b>	<b>236,037</b>	<b>5.2 %</b>	<b>7,977,680</b>	<b>7,697,736</b>	<b>3.6 %</b>
<b>Estimated Ton-Miles (Billions)</b>						
Estimated Ton-Miles (Billions)	34.6	34.6	0.0 %	1,098.4	1,115.2	-1.5 %

**Figure 1**

Emerging market opportunities are important to the recoupment of the railroads traffic base. Waste, scrap and related commodities are a small part of the overall rail traffic base but are seen as growth areas to railroads. Figure courtesy of the Association of American Railroads.

latter but we'll see if the numbers continue to be supported. Lumber and wood product shipments are up 11,911 railcar loads and are a reflection of a solid upswing in housing starts. This upswing should transfer through to slight increases in the waste management business as well as housing starts reflected in June 2012 are at 760,000, up from 711,000 from the same time last year and the highest since 2008. This should translate into a better waste stream at some point in the future.

### Downside Indicators

#### Weather

We have some 40 states in drought condition in the U.S. That has a major effect on the small grains and whole grain supply. The number one feed grain

is corn in this country and although it isn't harvested yet, it is projected to be significantly less than projected in January of this year. It may end up at a record low harvest. The largest impact corn has is the price of foodstuffs and protein feeding. In addition, it may have an effect on gas prices as when distilled into an ethanol additive. There's nothing we can do about weather but deal with it the best we can in our individual situations.

#### Competing Products and Politics

Coal originations are off some 400,000 railcar loads. Coal accounts for the single most carloads of any commodity transported by rail. It pays for the infrastructure of the rail systems in this country. Coal is being affected



by natural gas prices being low and projected to remain so for the near future. However, if left to normal capitalistic pricing, coal and natural gas will eventually find a price and supply equilibrium that is beneficial to the consumer. Coal is also being negatively affected by political agendas and special interest groups as well.

So what do all these indicators have to do with the waste-by-rail options for waste and scrap materials? On the plus side, as basic industries gain traction and consumer confidence ticks upward, we move into different weather patterns, and as energy policies and politics shake out we, as general consumers and producers of goods and services, generate more waste and scrap materials. This theoretically creates more demand for transportation options. At this time if the correlation between waste and scrap material rail carload originations and the gross domestic product hold, we see a slight wavering of economic stability and economic recovery. However, it's a perfect time to negotiate logistics options as capacity is available in many sectors.

## Explore Rail Options

Emerging market opportunities are important

to the recoupment of the railroads traffic base. Waste, scrap and related commodities are a small part of the overall rail traffic base but are seen as growth areas to railroads, particularly at times like these when there are high fixed cost assets (rail and track infrastructure) not being fully used.

In the September edition of *Waste Advantage Magazine*, we wrote on "Using Rail to Transport Waste: Quantifying the Economics". In that article we espoused quantify your rail economics by putting together the pieces (origin, rail, unload) of the jigsaw puzzle. Judging by the rail traffic carload originations, it appears that the railroads could use the business and should be somewhat amenable to discuss opportunities with new customers or customers bringing on new business. | **WA**

*Darell Luther is president of Forsyth, MT-based Tealinc Ltd., a rail transportation solutions and railcar leasing company. Darell has more than 24 years of rail, truck, barge and vessel transportation experience concentrated in bulk commodity and containerized shipments. He can be reached at (406) 347-5237, via e-mail at darell@tealinc.com or visit www.tealinc.com.*



*Waste Advantage Magazine* in conjunction with Tealinc, Ltd. is offering a free high level market study for a potential customer that has truck-rail, truck-rail-barge or truck-rail-truck logistics in place or that they are considering. Tealinc will help with the research, providing guidance on what data is required and organizing the information and determining the final costs of putting together the move to support your market reach or cost reduction efforts. Tealinc and *Waste Advantage Magazine* reserve the right to use the necessary information in published monthly Waste-by-Rail articles with no restrictions on disclosure of costs. All names and exact markets can remain private in order to hold the participant in confidence. Tealinc's intent is to use a real-life scenario in their monthly articles to demonstrate how to conduct a market study to assess multiple logistics options to enhance the economics of your bottom line or to penetrate markets possibly using different transport options. If you are interested, please contact *Waste Advantage Magazine's* Editorial Director, Angelina Ruiz at angelina@wasteadvantagemag.com.



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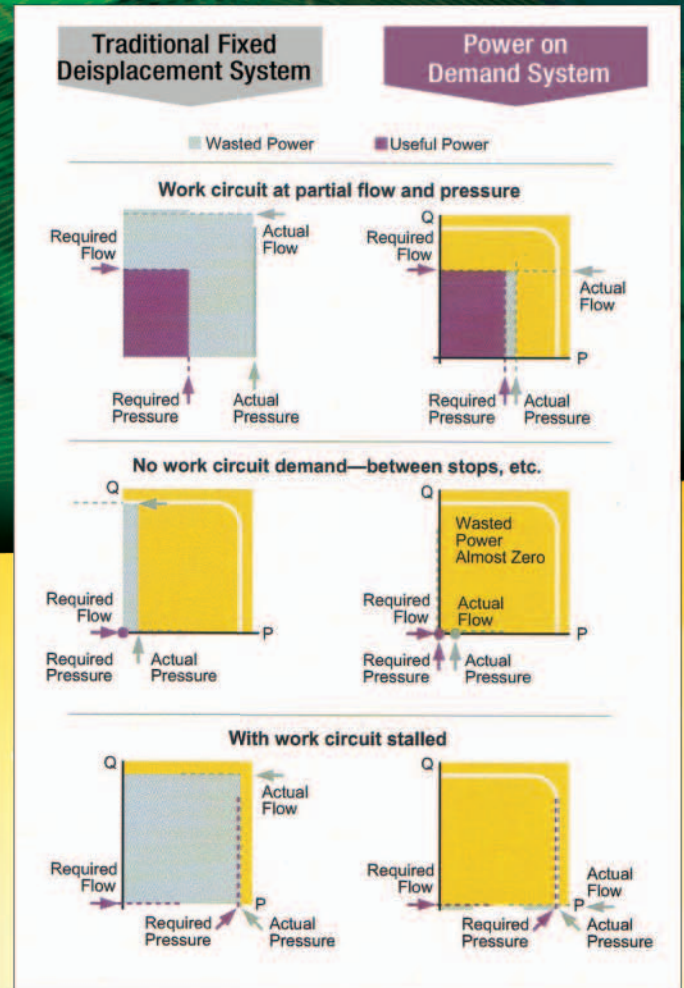


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## The Science Behind Zero

John Wayhart

**How many employees  
work for zero accidents  
WHEN MANAGEMENT IS  
NOT AROUND?**

**LAST MONTH'S ARTICLE** (*WASTE ADVANTAGE Magazine*, September 2012) discussed how to evaluate the Reach of Influence your owner, senior executive team and operations management has within your organization and revealed that the greater the Reach of Influence (ROI), the larger Return on Investment (ROI) your safety, insurance and risk management process will receive. Now, we switch our focus to the effects of a positive culture on your operations. Culture can be defined in a very simplistic way. What do your employees do when nobody's watching? More importantly, how do your employees perform and what safety measures are still intact when a manager or supervisor is not around?

### Deoxyribonucleic Acid

Huh? You may be scratching your head wondering what that term means or what exactly it has to do with your waste and recycling facility.

Deoxyribonucleic Acid is the scientific term for DNA. While we're not talking actual genetics, the makeup of your company and its employees is what structures workplace culture. Because most companies have some sort of defined culture, how you demonstrate yours is certainly important and can mean the difference between a safe workplace, an incident or even death. Additionally, a strong culture brings the following elements to your company:

- Attraction of top talent
- Retention of key employees
- Safe operations
- Lower incidents and claims
- Customer satisfaction
- Synergy towards a common goal

- Effective communication

By creating an effective workplace culture with a good gene pool (employees who know and understand the value of safety, as well as embrace safety precautions when there are no supervisors present), your facility will be reap the above mentioned benefits.

### Photosynthesis

Keeping with the science theme, photosynthesis is a process used by plants and other organisms to convert the light energy captured from the sun into chemical energy that can be used to fuel the organism's activities. This same mechanism can be transferred to your operation. Teach employees safety efficiency and how it can lower workers' compensation costs and lead to a healthier workforce. During the process, employees should capture that information, understand proper techniques and protocols, and then use that knowledge to fuel the success of their day-to-day activities. Just as this process helps plants grow and flourish, it can also teach responsibility and a self-maintained culture without the continued guidance of the executive and management teams. Will your plants still grow without someone consistently overseeing the garden?

### Atoms

Don't neglect the small stuff when striving to create an environment where employees are reliable and self-accountable for a Zero Accident Culture. Reward and highlight employees who report to work every day injury-free. Focus on employees who do what's right the first time—whether it be a financial incentive or something as simple as an "employee of the week." Evaluate with your team's every near miss and dissect how it happened, the process that led to it and steps for future improvements. Talk about cleanliness, housekeeping and how first impressions are lasting to customers. The "small stuff" makes a difference. The atoms are what help companies achieve the larger goals, customers and profits. When the small stuff matters, everything—including employee buy-in and safety precautions—begin to improve.







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### **The Scientific Method**

Science labs were my worst nightmare in high school and college. I loathed filling out all the components of the Scientific Method and just wanted to do the experiment and see a result. I now have a greater appreciation towards the method of madness and firmly believe it comes in handy when trying to mix together a positive culture. To avoid a smoke explosion during lab, or more appropriately, an incident on the worksite, follow these steps.

#### **Purpose**

What's the problem? For our purposes, let's say it's enabling employees to embrace a Zero Accident Culture when management is not around,

which in turn, creates a positive culture that reduces incidents and increases employee engagement.

#### **Research**

More and more companies are stating zero as their ultimate goal and specific objective in the ability to lower their cost of risk. Based on the size of your operation, research what an appropriate and attainable goal should be for your organization. Examine successful, safe companies in industries with similar risk. Find ones with an Experience Modification Rating (mod) of 1.0 or lower, and discover the financial and intangible impact a lower mod number brings (see **Experience Modification Rating sidebar**). Observe the influence of a positive culture on employees. Research the cost

## The Science Behind Zero

for a safety consultant, training or other preventative measures and compare it to the cost savings similar companies are experiencing through a lower mod number.

### Hypothesis

Based on your research, predict the outcome of the problem. Determine which avenues are the most cost-effective and appropriate for your organization, taking into consideration all the variables and controls (more applicable science terminology). From there, set forth measurable short and long-term goals that are difficult, but attainable.

### Experiment

Develop a timeline and procedure to test the hypothesis. Don't roll out every measure at once, so as not to overwhelm employees. Throughout the "experiment" phase, embrace the small stuff (atoms) and recognize successes. Also, begin your photosynthesis stage of teaching employees to be self-reliant and accountable for their actions when you're not there. This is the time to test the different safety avenues that can lead to Zero Accident Culture.

### Analysis

Record the results. Analyze which measurable short and long-term goals

were hit or missed and why. Determine whether employees are making proactive steps in working for zero accidents and engaging within the culture of the organization. This phase should never be complete. Owners and senior management must continually analyze and evaluate to keep improving.

### Conclusion

Determine what areas were the most successful, and how you can continue or improve upon it. For example, if monthly safety trainings saw the largest improvement in lowering back soreness and injuries, find additional training options such as videos and guest speakers.

### Becoming Einstein

If every employee took a personal responsibility for his/her own safety on the job with zero retribution from anyone in the organization, you will begin to achieve greatness in workplace excellence. | **WA**

*John Waybart is a Senior Vice President at Assurance (Schaumburg, IL). With more than 29 years in the insurance and risk management industry, his expertise lies in providing solutions for a wide range of businesses including the waste and recycling industry. In 1989, John trademarked the Zero Accident Culture® and continues to teach, coach and mentor this process to help drive down the cost of risk to improve operational effectiveness and financial results. John can be reached at (847) 463-7161 or jwaybart@assuranceagency.com.*

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LEVEL SURFACE  
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WDNOT106

**NOTICE**  
PLEASE  
CLOSE COVERS

WDNOT116

**NOTICE**  
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PUBLIC USE  
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BE PROSECUTED

WDCAU101

**CAUTION**  
DO NOT PLAY IN, ON  
OR AROUND OR OCCUPY  
THIS CONTAINER FOR  
ANY PURPOSE

WDCAU106

**CAUTION**  
KEEP HANDS  
CLEAR OF THE  
HOPPER

WDCAU111

**CAUTION**  
KEEP  
OUT

WDCAU114

**CAUTION**  
THIS COMPACTOR  
STARTS  
AUTOMATICALLY

WDCAU115

**CAUTION**  
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SWITCH TO OFF POSITION,  
REMOVE KEY AND  
BLOCK OFF TRASH CHUTE

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**CAUTION**  
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**DANGER**  
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FREQUENT STOPS  
AND BACKING

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**DANGER**  
DO NOT  
ENTER

WDDAN107

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WasteAdvantage Magazine October 2012 41



# Mitigating Risk in the Development of Emerging Technologies

Susan Robinson

**In order to develop profitable, sustainable projects, it is helpful to GATHER AS MUCH INFORMATION AS POSSIBLE AS EARLY AS POSSIBLE.**

**OVER THE DECADES, WASTE MANAGEMENT (WM) HAS** seen its business evolve. What started as a waste services company grew when recycling was added to the portfolio. Now, the company is in the process of transforming itself into a materials management company. One of the first moves that the company made as part of this transformation effort was to create a dedicated department to evaluate and invest in technologies that make the best use of WM's assets and expand sustainable materials management options.

We've been at this for more than five years now—as an investor, joint venture partner and as a developer. We are also a feedstock provider, a processor and user of finished products such as biofuel. We now have experience with multiple projects—either on our own or with partners. Through it all, we've learned quite a bit from our multi-project, multi-level, multi-year involvement.

## Great Technologies Don't Guarantee Success

Many projects look great on paper, but ultimately fail. Permitting issues, feedstock quality or preprocessing requirements, technology surprises and unexpected costs, funding shortfalls or a lack of an offtake contract for the finished product can all hinder success. WM has invested in more than two-dozen projects through its corporate venturing team. While many appear to be on their way to successful commercialization, over a period of five years it is not surprising that several have not played out as we had hoped. More often than not, the “bones” of the project are sound, but success remains elusive. While we work hard to minimize the risk of failure before making an investment, it is important to enter into these ventures understanding that there are many unknowns and that success is by no means a certainty. Hence, our decision to create a portfolio to spread our risk across multiple companies.

Waste Management's Organic Growth Group maintains a pipeline of companies that come to us for funding, purchase or partnerships—all of which we evaluate with the knowledge that we have gained as we continue to invest in this space. For example, when evaluating possible new investments, we have learned to look at a series of factors beyond the technology itself, the management team and financing. We also evaluate investments based on our knowledge of feedstock realities, processing limitations, logistical synergies and the political/

regulatory environment. We are careful to understand the components of the waste stream as well as our ability to access it (i.e., flow control and regulations).

What can we say about reducing development costs and increasing the opportunity for success? Many of the following lessons may seem obvious in hindsight, but have been learned the hard way by many technology companies.

## Location, Location, Location

Location plays an important role when siting conversion technologies. From permitting to community acceptance to pricing structures, selecting the best location for a facility plays a significant role in mitigating the risk of failure. Co-location at an existing solid waste facility often makes sense because of opportunities for efficiencies with existing permits, roads, water, scales, etc. Co-location can have drawbacks as well depending on the priorities of the onsite staff, the status and complexity of ongoing permitting processes, and the expectations of the surrounding community. While most of our projects have been co-located, in some cases, new challenges may outweigh potential cost savings.

## Engage Experts During the Permitting Process and Use Industry-specific Experts to Address Feedstock and Pre-processing Needs

- **Permitting.** Several companies have done an excellent job of choosing States and counties that are receptive to new technology opportunities. Other States are less receptive to innovation, or may be challenged to find the time and resources to be open to innovative projects. We've learned that we need to understand this context before we endure an extended permitting process. To avoid this in the future, we pulled together our regulatory experts on air, water and environmental planning to review our projects and develop a consolidated checklist on what to know about each potential new location. This combined knowledge of operational logistics, federal, state and local laws is now used to help WM and our partners to reduce permit time and costs.

- **Materials Sourcing and Pre-processing.** Many project developers have a lot of knowledge about their own technology, but often very little about solid waste regulations, handling and material processing equipment. This lack of broader industry knowledge can spell disaster for a project.



Too often, engineers and developers fall into the trap of looking at national waste characterization charts and graphs and declaring it to be “just garbage.” The waste stream may look homogenous at a large scale. In reality, feedstock varies by season, geography, local industry, local events and it varies according to the quality of local recycling programs. Problems arise when the developer: 1) Doesn’t understand the feedstock well enough to know what pre-processing is required; 2) Does understand the feedstock, but not the pre-processing equipment requirements; 3) Simply underestimates equipment requirements and costs.

- Technology providers rarely accurately assess and plan for adequate pre-processing of materials. As hard as it is to add this cost upfront, it is much more expensive to address this need after the fact. We recognized early on the role that processing would play in managing waste in the future. More material would be processed in some way to create end-material of higher value. Unless the material collected is completely separated at the source (which it rarely is), all of the technologies that we have heard about require processing of some type. We anticipate separating recyclables first, then processing the residual into energy. Over time, we can ensure that material will flow to higher and better uses as technologies develop. Our processing must be flexible for this purpose. There are compelling reasons why garbage is heavily regulated across the U.S.. It is complex and can be hard to handle. The public expects new technologies to be at least as safe and environmentally protective as the waste handling options they replace. Public acceptance depends upon evaluating—and avoiding—potential environmental concerns.

## Engage Stakeholders Early

Local stakeholders, the community and NGOs (non-governmental organizations) can kill a project just as effectively as failed technology or funding issues. Know, respect and involve the community. Several of our partner technologies have commented on the important role that buy-in from their local communities has played in moving their projects forward. Gaining an early understanding of the local community and regulators, and responding thoughtfully to their views, can help avoid unnecessary costs later in the process. Even when an investment doesn’t turn out as we had hoped, we learn about the process, the technology, feedstock requirements and potential product end markets. And, we incorporate what we’ve learned into our decision making process.

## Gather As Much Information as Possible

In order to develop profitable, sustainable projects, it is helpful to gather as much information as possible as early as possible. Asking tough questions early can be inconvenient, but it is the best way to ultimately ensure the success of a project. You’ve heard it before, but the devil really is in the details. Over the past five years, we have experienced unexpected costs increases and have sometimes been surprised by details that were not envisioned in the initial “plan.” The good news is, however, that we have gained enough experience with these projects to anticipate the hurdles, plan for them and work our way to success. | **WA**

*Susan Robinson is Director of Federal Public Affairs at Waste Management (Houston, TX), where she works directly with the company’s Organic Growth Group, working to develop innovative technologies. She can be reached at (425) 825-2011 or via e-mail at [srobinson@wm.com](mailto:srobinson@wm.com).*

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# Billing Case Study



## Action Carting Saves Time, Money with Automated Billing

By taking a proactive, technology-focused approach to billing, ACTION CARTING HAS ACHIEVED SIGNIFICANT TIME AND MONEY SAVINGS WHILE IMPROVING INTERNAL EFFICIENCY AND SCALABILITY.

**ACTION CARTING IS A LEADING SOLID WASTE** collection and environmental services company based in Newark, NJ that serves the five boroughs of New York and Northern New Jersey. Their customers include iconic local landmarks like Yankee Stadium and the Empire State Building as well as hospitals, restaurants, construction companies and business customers of just about every type. The company processes approximately 13,000 invoices a month.

### The Challenge

Action Carting outsourced the delivery of their bills to a print and mail service. They were generating PDF files to send to the third-party printer, who would then print, stuff and mail the invoices. Chief Financial Officer, Brian Giambagno, evaluated the process and concluded that the company was missing a big opportunity by transferring PDF files; he knew they could do so much more by proactively using the data contained in the invoices to



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Amount: 0.00  
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Pay Date: 07/30/2012

<input type="checkbox"/>	Invoice #	Inv Date	Due Date	Total Due	Amt Paid	Open Balance	Pay Amt	DnId
<input type="checkbox"/>	0000927059	03/26/2012	DueUponReceipt	1,470.61	1408.40	0.00	0.00	N
<input type="checkbox"/>	0000949172	04/26/2012	DueUponReceipt	1,408.40	1408.40	0.00	0.00	Y
<input type="checkbox"/>	0000965116	05/26/2012	DueUponReceipt	1,408.40	1408.40	0.00	0.00	N
<input type="checkbox"/>	0000927057	03/26/2012	DueUponReceipt	1,176.17	1113.96	0.00	0.00	N
<input type="checkbox"/>	0000949170	04/26/2012	DueUponReceipt	1,113.95	1113.95	0.00	0.00	Y
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<input type="checkbox"/>	0000927058	03/26/2012	DueUponReceipt	1,116.07	1053.86	0.00	0.00	N
<input type="checkbox"/>	0000949171	04/26/2012	DueUponReceipt	1,053.86	1053.86	0.00	0.00	Y
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Invoice Gateway for Action Environmental Services 7/30. Images courtesy of Billtrust.



streamline operations. Giambagno and his team assessed their options and asked several companies to present billing solutions that would improve their operations.

## The Solution

After evaluating the options, Action Carting selected Billtrust (Hamilton, NJ), a premier provider of outsourced billing solutions. Billtrust's flagship product and service suite, called CompleteBilling, provides Action Carting with a fully integrated service that includes paper, fax, e-mail and online billing (EIPP). In addition, the company provides expert bill design, in-bill marketing services, and an integrated online customer service tool called CustomerCare. Billtrust outlined a strategy that would improve the use of data while cutting costs, reducing the time required to process bills and increasing billing practice sustainability. "The other two companies proposed printing solutions," observes Giambagno. "Billtrust outlined a technology solution. That's what sold us on them—they proposed an approach where we could accomplish much more than just a more efficient print and mail process."

By taking a holistic approach to the billing process, Billtrust was able to deliver significant improvements, including:

- Conversion of 32 percent of customers to an electronic billing process within six months, exceeding the 25 percent within one-year goal.
- An online portal customers use to view and print bills, which eliminates the need for Action Carting personnel to field calls and print and mail invoices that are misplaced.

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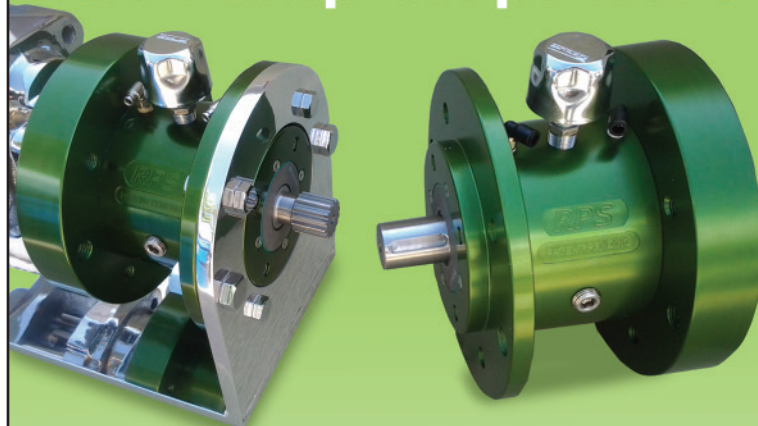
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Payment Date	Amount	Create Date	Status	Confirmation Number	Payment Account	Payment Method	Action
+ 2012-07-24	401.61	2012-07-24	Complete	9272265506202	My Checking Account	Online	
+ 2012-07-17	450.00	2012-07-17	Complete	9272265471260	My Checking Account	Online	
+ 2012-07-02	979.88	2012-07-01	Complete	9272265380530	My Checking Account	Online	
+ 2012-05-04	900.00	2012-05-04	Complete	9272265073798	My Checking Account	Online	

Invoice Gateway for Action Environmental Services 8/17.

- An automated process to handle billing exceptions, which used to be managed by manually flagging bills with stickers containing special processing instructions.
- A seven-day reduction of the billing cycle, with customers receiving bills faster and making payments faster.

Billtrust exceeded the Action Carting team's expectations by delivering cost savings and cutting time requirements. However, the Action Carting team reports that the "soft cost" impact may be even greater than the savings generated by elimination of postage and paper. "Our billing department is now more scalable," Giambagno reports. "By automating manual processes and dramatically reducing customer phone calls on billing issues, our partnership with Billtrust has increased our billing group's capacity to handle new customers. We're a growing company, and we can now add new customers without having to increase headcount."

### Meeting Environmental Sustainability Goals

The Billtrust partnership has also helped Action Carting bolster its environmental sustainability goals and improve customer communications. The drive toward paperless billing has significantly reduced the company's carbon footprint, and Billtrust was instrumental in persuading customers to adopt electronic billing by conducting a customer call campaign to increase participation in the paperless program.

The dynamic invoice messaging capabilities Action Carting now enjoys improve customer communications and reduce call volumes, especially around issues like holiday pickups. The company used to get hundreds of phone calls from customers asking about holiday pickup schedules, but since they can now add messages about these types of issues directly to the invoice, call volumes have dropped precipitously. "Invoice messaging also supports our social media outreach," says Action Carting Marketing Analyst, Jenna DiBella. "We invite customers to interact with us via social media channels on our invoices, and it drives traffic to social media platforms like our Twitter feed, where we give tips on green practices and provide other critical information our customers need to know. The invoice messaging and social media outreach work hand-in-hand."

By taking a proactive, technology-focused approach to billing, Action Carting has achieved significant time and money savings while improving internal efficiency and scalability. The company's partnership with Billtrust has improved its sustainability and expanded its customer communications capabilities. | **WA**

For more information about Billtrust, call (888) 580-2455 or visit [www.billtrust.com](http://www.billtrust.com). For more information about Action Carting, visit [www.actioncarting.com](http://www.actioncarting.com).

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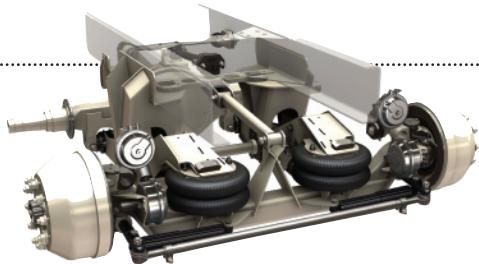


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(Skokie, IL) unique formula of new Oil Eater Wash makes it easier to easily wash away diesel, grease, dirt and bird droppings from trucks and heavy equipment with spot-free results. The eco-safe, ultra-concentrated wash is a high-foaming, low VOC cleaner/degreaser that can be diluted up to 100:1. It is non-acid, non-corrosive, non-hazardous and completely biodegradable.

It works in hard and soft water, lubricates brushes, is safe on proportioners, and is ideal for automatic and high-pressure self-service systems. It is safe on aluminum, paint, glass, rubber and vinyl when used as directed. Oil Eater truck wash is available in a 5-gallon pail and 30- and 55-gallon drums. A sample is available upon request.

FOR INFORMATION, CALL (800) 528-0334 OR VISIT [WWW.OILEATER.COM](http://WWW.OILEATER.COM).



RIDEWELL's (Springfield, MO) 209 series "60/40" suspension has the capacity of a tandem drive axle, but maneuvers like a single. Its design offers 60/40 load distribution between drive and non-drive axles, while maintaining proper drive line and caster angles. Weight distribution is maintained throughout the full range of articulation and is automatic—no driver control required (or allowed). The 46,000lb. capacity suspension offers a weight savings of 1,500 to 2,000lbs. over traditional tandem drive axles.

FOR MORE INFORMATION, CALL (877) 434-8088 OR VISIT [WWW.RIDEWELLCORP.COM](http://WWW.RIDEWELLCORP.COM).

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## Breakthroughs and Innovations

SP INDUSTRIES, INC. (Hopkins, MI) has introduced the first line of industrial, electro-mechanical compactors completely absent of hydraulic fluid. These environmentally-friendly, ground breaking units use a solid steel screw shaft powered by an electric motor that pushes the ram through the compaction chamber.

This design eliminates the potential for hydraulic fluid spills in and around customer facilities, providing contamination-free operation in all applications and for all industries. The new EM Series incorporates a 24-volt control system that allows for safer operation and a built-in grease system automatically lubricates the shaft. These units free up floor space as well by removing the need for bulky power units used with traditional compactors, while boasting multi-cycle programming and adjustable ram force pressure settings. Finally, the motor remains protected by a soft-start system and full-load indicator to prevent surges or overamping.



As with all SP equipment, the EM Series is completely customizable and can be integrated into almost any system that they manufacture, including their specialty cart dumpers, chutes and decks.

**FOR MORE INFORMATION, CALL (800) 592-5959 OR VISIT [WWW.SP-INDUSTRIES.COM](http://WWW.SP-INDUSTRIES.COM).**



3 Yard Shown

RUDCO PRODUCTS INC. (Vineland, NJ) is a leading manufacturer of waste, recycling, environmental material and construction equipment and has earned a long-standing reputation from more than 80 years of manufacturing and design experience. This has led to an excellence in product development and durability. Rudco produces steel refuse containers for the waste and scrap industries. Over the years, they have continued to expand their product line to include a wide variety of equipment to serve the solid, liquid, scrap, recycling environmental and material handling industries. Rudco's Rear Load Containers feature:

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- Solid pick up bar
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**FOR MORE INFORMATION, VISIT [WWW.GREENSORB.COM](http://WWW.GREENSORB.COM).**

The BENLEE (Romulus, MI) Super Mini Roll Off truck replacement is a game changer when it comes to hauling standard roll off containers. A short roll off trailer, only 25' 11" long, when it is connected to a standard tractor it is less than 2' longer than a standard roll off truck. Also, because the tractor trailer pivots it is more maneuverable than a roll off truck.

The Super Mini is designed to payload 50 to 90 percent more than a roll off truck depending on individual state laws. It only weighs 11,600lbs and will legally GVW 69,500lbs on Federal highways. When you estimate the weight of a tractor at 16,000lbs and a container at 6,000lbs, you can legally haul 35,900lbs of payload. The Super Mini can haul more weight legally on every trip.

Cost and fleet uptime are additional advantages. The Super Mini can save haulers over \$100,000 especially if they have an underused tractor. Also, the Super Mini will last more than 25 years. Fleet uptime is increased because haulers can disconnect the Super Mini from the tractor and haul different types of trailers.

The BENLEE Super Mini out performs standard roll off trucks in every way. It is more maneuverable, carries more weight, and costs much less. It also has many design advantages such as 1" chromium trivalent plated hydraulic lines, 1" Parker 3000psi hoses, sheaves and rollers with internal grease grooves, LED lights, and Wheel Checks.

**FOR MORE INFORMATION, CONTACT  
JIM REEVES AT (734) 476-4402 OR  
E-MAIL [JIM.REEVES@BENLEE.COM](mailto:JIM.REEVES@BENLEE.COM).**





# WasteAdvantage<sup>magazine</sup>

## The Advantage in the Waste and Recycling Industry

 Recycling  Transfer Stations  Landfills

*Waste Advantage Magazine's* Recycling/Transfer Stations/Landfills (R/T/L) section has become a very important part of our readership. Our timely, relevant editorial in this section—products/services releases, statistics, short tips, etc.—provides you, our R/T/L professionals, with the useful information that you need when making that important purchasing decision.

By making this important move, *Waste Advantage Magazine*, provides something for everyone in the waste and recycling industry and makes it the most complete one-stop-shop publication available today. We look forward to expanding our coverage of this segment of the industry and hearing your feedback.

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## Recycling

### 7 Benefits of Selling Recyclables Domestically

Jennifer Brown

#### HOW CAN WE BE GREEN, CREATE JOBS, STIMULATE THE ECONOMY AND

make money all at the same time? Recycling. Scrap materials are now the nation's largest export category by volume, and continue to set yearly records. In 2010, nearly \$30 billion in recycled commodities were sent overseas.

With cheap overseas freight, offshore options may seem like a tempting outlet, but there are a number of other factors to be considered.

#### Environmental

The fuel required to send scrap more than 6,000 miles is clearly not very environmentally friendly, or for that matter, efficient. A large part of sustainability is dealing locally, however, besides just transportation energy, what happens to these materials once they get there? With regulations severely lacking, harmful chemicals are often leached into the air and water; in addition poor working conditions often result in a low-quality product. By keeping scrap local, we can save energy in transportation as well as know where and how it is being used.

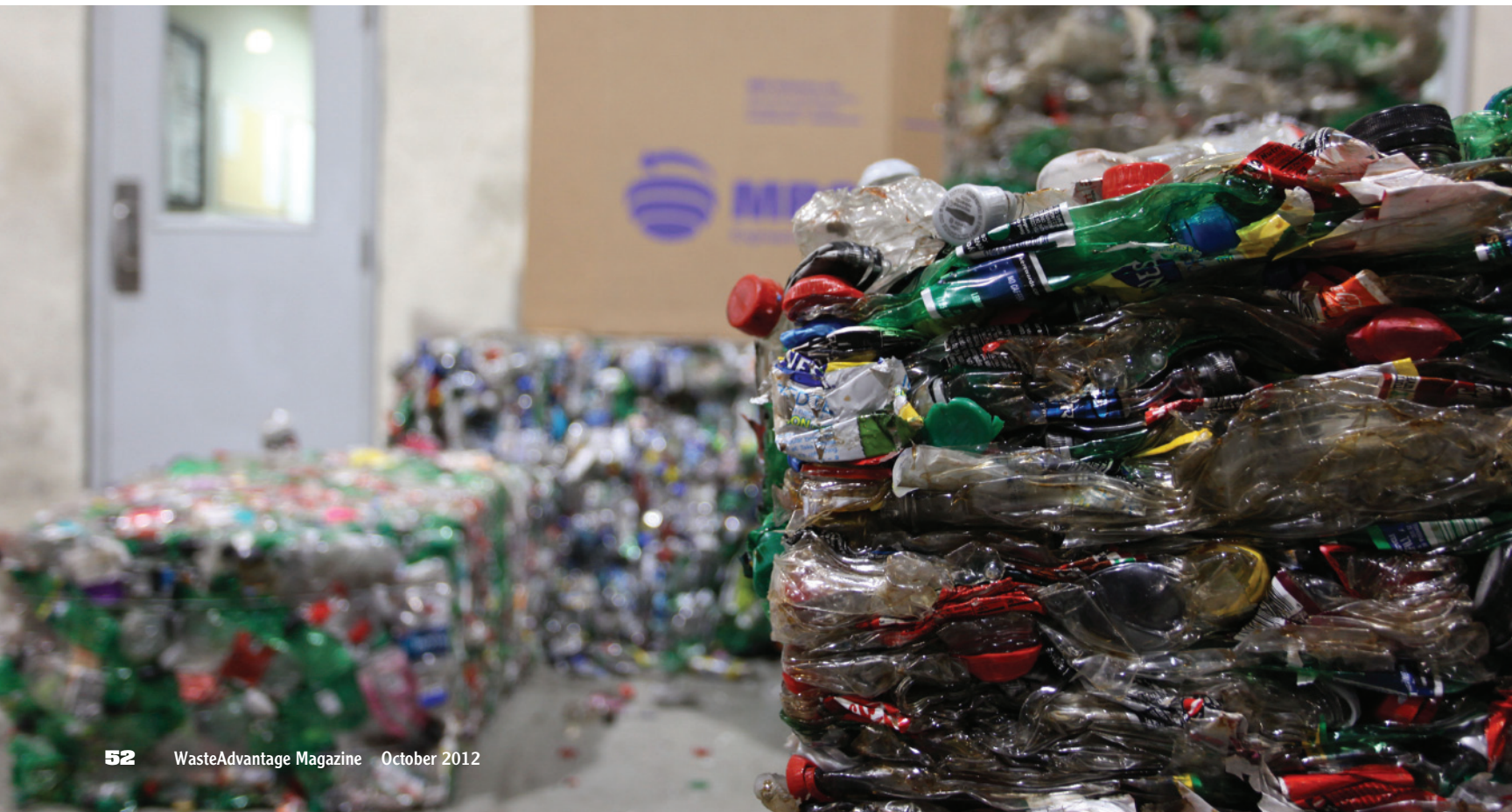
#### Natural Resources

Most people don't consider our waste as a natural resource, but this is very much the case. Glass, aluminum, paper and plastic are all valuable resources with a high demand right here in the U.S. Plastic is especially interesting since it is produced from oil—the same oil that we work very hard to secure. What are we doing with it? Even for those materials hard to recycle, plastic to oil technology is here, and it works.

#### Stability

With fluctuating currencies and an array of outside forces, export markets are notoriously unstable. When prices drop overseas or demand decreases, MRFs are left with bales piling up and no alternative outlets. For example, what happens if the market drops during the long commute across water? If you haven't received payment in advance, bales can be turned away for any number of reasons. Since overseas transitions take significantly longer to organize and execute, there is an increased risk of these market fluctuations as well as the

PET Bales ready for processing at MRC Polymers. Images courtesy of MRC Polymers.





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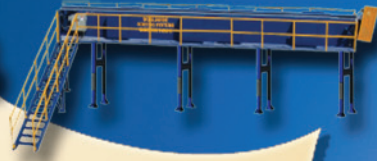
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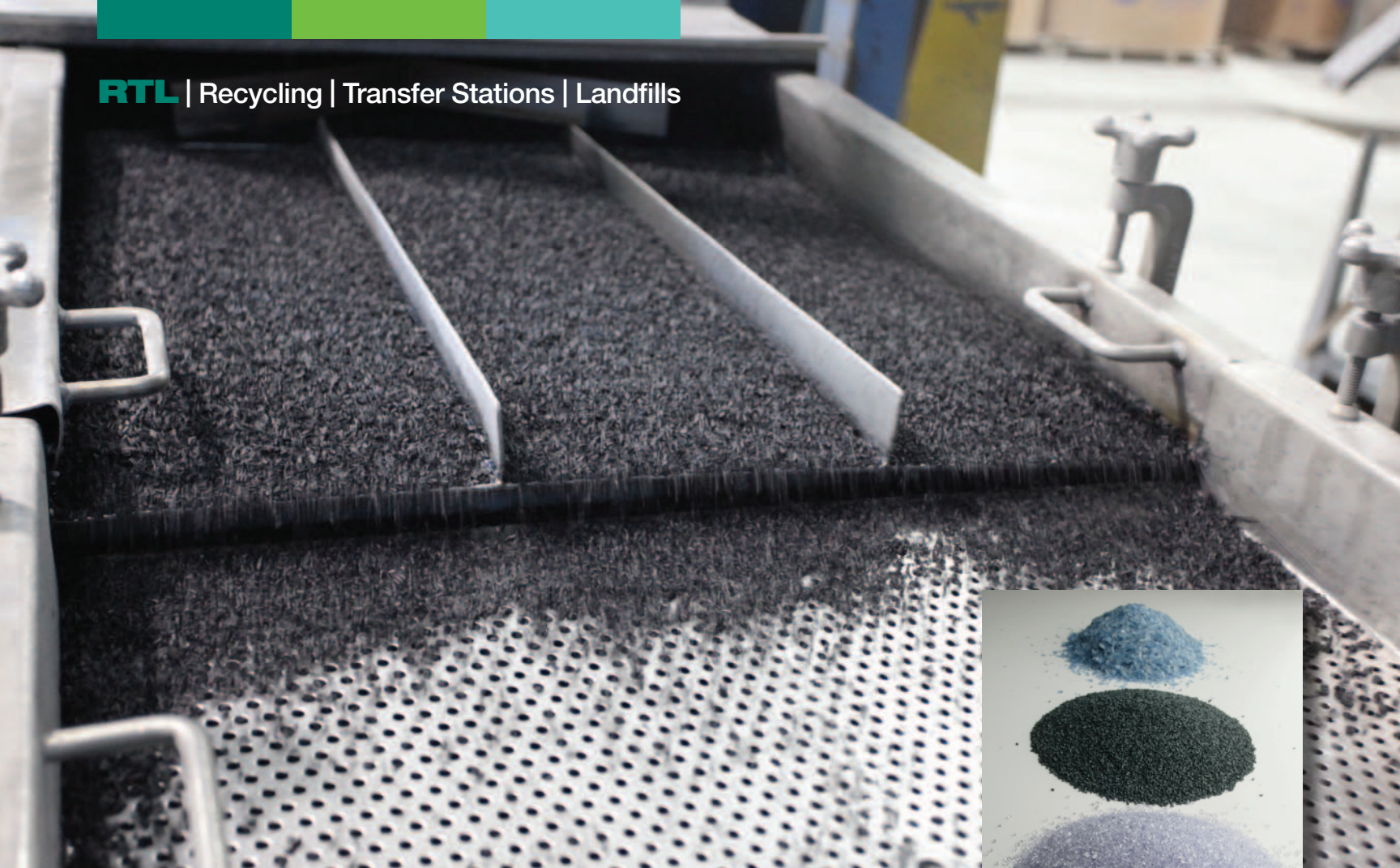
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Recycled engineered resin pellets, for replacement of virgin plastics.

challenge of arranging delivery at crowded ports within specific windows of time. Keeping material in the U.S. eliminates these risks and leads to reliable pricing for future planning and projections.

## Quality

Offshore buyers often have a higher tolerance for unwanted material, essentially allowing MRFs to lower the quality of their bales. Although it may be tempting for operators wanting to move material, it can come back to bite them in the end. When offshore demand drops, MRFs are stuck with low quality bales, worth less and harder to sell domestically. Getting used to poor quality is bad for the industry as a whole and certainly moves us in the wrong direction. There is value in consistency; if quality is consistent across the industry, it is easier for everyone to sell their bales and create flexibility across the board.

## Relationships

Relationships are important. Establishing consistent relationships abroad is a challenge for many reasons. There is often a strong language barrier, which could lead to miscommunications and ultimately dollar signs. It is much harder to fully understand your customer's process, which means you must learn to understand how to improve efficiencies for both parties. As collection infrastructure develops abroad, processors will lessen their demand for imported recyclables. Trying to create relationships overseas also means an opportunity cost for local relationships. Deciding to choose an overseas buyer could put a sour taste in the mouths of your local buyers. When export prices drop, those



Recycled Polycarbonate and ABS pellets and regrind.

domestic buyers may not be so keen to help you unload your material—especially not for the previous price. Overall, building and nurturing domestic relationships allows for stronger partnerships and limitless growth opportunities for both parties.

## Conflict Resolution

There is nothing fun about shipping something 6,000 miles only to have it rejected and returned to you. Not only are conflicts more likely to occur when selling abroad, but they're also more challenging to resolve. Payment disputes in particular can be a lost cause; you may end up tracking down people in towns no one has ever heard of. Dealing with customs can be frustrating; restrictions and laws that aren't clear or not regularly enforced leads to uncertainty. When you're dealing with something considered "waste", many countries fear hazardous material and unwanted risk. Most likely you will have to pay someone to help you navigate customs policies, adding more time and cost. Dealing locally provides the comfort of clear U.S. laws and regulations along with the ability to solve conflicts in a much more simple and timely manner.



## Jobs

Last, but certainly not least, we need jobs and the recycling industry can provide them. Technology has improved and recycling can be profitable. Processing material here supports our communities and keeps money local, benefitting everyone. According to the Institute for Local Self-Reliance, out of every 10,000 tons of solid waste going to landfills, one job is created. That same amount of waste—kept out of landfills—can create 10 recycling jobs or 75 materials reuse jobs. By selling recyclables domestic, more workers will be needed to collect, sort and process the material. Recycling creates jobs that require people with a broad range of skill levels and experience.

The recycling industry is at a unique point in its history and growing faster than ever, not just in the quality of material, but also in technological capabilities. Recycling makes sense—environmentally and economically. Recycling is a readily available practical solution to recover valuable natural resources, conserve landfill space, reduce material costs and lessen total energy consumption. | **WA**

*Jennifer Brown is Business Development Analyst at MRC Polymers, Recycling Solutions (Chicago, IL) with a focus on developing cutting edge, sustainable plastic processing. MRC has 30 years of experience in compounding engineered resins from post-industrial and post-consumer waste streams. Jennifer can be reached at (773) 890-5566 or via e-mail at [Jbrown@mrcpolymers.com](mailto:Jbrown@mrcpolymers.com).*



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# Recycling

## 10 Tips for Staying Waste-Free at Work

Mary Mazzoni

### IT'S TOUGH TO KEEP ENVIRONMENTAL IMPACT AT A MINIMUM WHILE

you're away from home. And when you're in a highly-regimented environment like the office, reducing waste and shrinking your footprint can seem next to impossible. But don't fret, eco-minded employee. You can easily cut office impact by making a few quick adjustments to your daily routine. Check out these 10 simple tips for staying waste-free at work, and cut the footprint of your workday in half.



### #1: Pack Your Own Lunch

Bringing your own lunch and snacks to the office in reusable containers not only reduces packaging waste, but can also put thousands of dollars back into your pocket annually.

A survey of 1,000 workers conducted by finance recruiting firm Accounting Principals revealed that the average American worker spends \$37 per week on bought lunch, adding up to \$2,000 a year (there's that pay increase you've been looking for).

The same survey found that 50 percent of the American workforce spends \$1,000 per year on coffee. So, bring your morning cup to work in a reusable mug, and use office coffee machines to save on cash and reduce hard-to-recycle coffee cup waste.

To get you started on your low-waste, low-budget revolution, check out these sustainable lunch and snack recipes that are perfect for the office, and banish those vending machine trips for good.



### #2: Make Supplies Last Longer

Reaching for a dried-out pen during a stressful workday can make you want to pull your hair out. But it can also lead to prematurely tossing your supplies. Are there really ways to make office supplies last longer? Absolutely. The ink in your pens, highlighters and markers tends to dry up faster if they aren't being used regularly. So, try using your writing implements one-at-a-time to ensure they won't end up forgotten in the back of your desk.

And try to keep your pen tips clean. Inks naturally coagulate at the tip of your pen, making them trickier to write with over time. To avoid plastic waste (and frustration), wipe the tip of your pen with a cloth after each use, and store pens with tips pointing upward to prevent clogging.

Also, keep all pens, markers and glue sticks in a cool, dry place – like inside a desk drawer or closet. Heat and exposure to direct sunlight can cause inks and glues to dry up and harden.



### #3: "Precycle" Your Office Supplies

"Precycling" refers to the simple act of reducing non-recyclable waste before it starts. The term typically applies to choosing products packaged in materials that are easily recyclable, but it can also apply to your office supplies. Opt for supplies that are easy to reuse or recycle to stop waste in its

tracks. When faced with a decision as to which supplies to use, try asking yourself: Can I recycle or reuse this? A simple change in mindset could mean lighter waste bins all year long.

Not sure where to start? Try using paper clips instead of staples for easy reuse, and opt for crumpled newspaper instead of bubble wrap to protect items during shipping. At your desk, invest in a reusable tape dispenser to halt plastic dispenser waste, and reuse items like folders and media boxes for as long as possible before throwing them out.



### #4: Green Your Commute

Commuting to work can be stressful—not only for you, but also for the environment. The average American family's weekday commute produces around 7,000 pounds of carbon emissions every year, according to a study conducted by the Union of Concerned Scientists. The good news is that reducing your driving, even slightly, can carry huge environmental benefits. Driving a mere 10 percent less, by walking, cycling, carpooling or taking public transit, can reduce greenhouse gas emissions by 440 to 1,763 pounds per year depending on the vehicle, according to the nonprofit ecology group Biosphere Institute of the Bow Valley.

If you're lucky enough to live close to your workplace, try walking or biking to shrink your carbon footprint, or opt for public transportation for a low-waste, low-stress commute. If your office is on the other side of town, try carpooling with coworkers a few times a week to reduce environmental impact. Carpooling with two other passengers creates a mere 0.05 pounds of carbon emissions per person, per mile—even in an average car getting about 23 miles-per-gallon, according to Sightline Institute. A "vanpool," with six occupants in total, comes in at less than 0.04 pounds of CO<sub>2</sub> per mile, the research group found.

As an added bonus, carpoolings is also a great way to bond with your coworkers and form relationships you may not have had otherwise. So, round up the gang and hop in the car for a commute that's low-waste and fun.



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### #5: Reduce Paper Use

The average office worker in the U.S. uses 10,000 sheets of copy paper each year. That's 4 million tons of copy paper used annually—leaving plenty of room to reduce paper use and shrink your office footprint. Avoid using paper by e-mailing important documents to coworkers and clients, and using presentations rather than handouts at weekly staff meetings. To further reduce paper consumption, only print documents when you absolutely have to, and try to use both sides of the paper whenever possible. For paper you do use, always remember to recycle. The EPA estimates that if an office building of 7,000 workers recycled all of its paper for a year, it would amount to taking 400 cars off the road.



### #6: Be Ready with Resuables

From impromptu lunch outings and office birthday parties to lunch-break errands and shopping trips, there are loads of opportunities to get stuck with single-use products during your workday. Reduce the disposable plates, cups, silverware and shopping bags that you contribute to our waste stream by being prepared with reusable alternatives ahead of time. Keep a disposable-free survival kit, including reusable coffee mugs, water bottles, dishware and shopping bags, at your desk to help you reduce waste before it starts.



### #7: Shrink Your Energy Footprint

Computers, printers and other office necessities can use up loads of energy, racking up enormous bills and expanding the footprint of your workplace. While office energy use may seem nearly impossible to avoid, you can dramatically cut down on your kilowatt hours with a few easy steps.

If you work from home, put all of your electronics on a power strip, and flip the switch off when items are not in use to avoid vampire power. And take a moment to adjust your computer's settings to optimize battery usage and hibernate after a period of inactivity.

If you work in an office, talk to your supervisors and IT department about adjusting the settings on all of your office computers and installing power strips. Your bosses will likely be receptive when you tell them how much money it could save.



### #8: Take Paperless Notes

Taking notes is a natural way to get the creative juices flowing. But why take notes on paper when waste-free alternatives abound? Most word processing software includes an easy highlighter tool to mark important sections of your notes. But if you're going to take e-notes, you might as well opt for a program

that can multi-task. Try an online note-taking program (like Evernote or UberNote) that allows you to bookmark sites of interest, jot down ideas and collaborate with multiple users.

Ditch the endless stream of adhesive paper notes by downloading a free app like Sticky Notes for your computer or the official Post-It app for your smartphone. If you're still craving the pen and paper, invest in a whiteboard or chalkboard for your desk, so you can jot down notes and erase them at your leisure without the waste.



### #9: Cut Back on Packing Waste

Packing and shipping can create loads of office waste, but you can still do your part to keep those trash cans empty. When shipping, try to pack boxes as densely as possible to avoid cardboard waste, and reuse the same boxes when you can. For boxes that can't be reused: compost them! If you work in an office building or don't have a compost pile for your

home office waste, many farmers accept compostables for use in fertilizing their crops. Talk to a local composter about starting a partnership with your office and sending all of your boxes there.

When transporting office supplies from one office to another, ditch the cardboard boxes in favor of a reusable solution like Rent-a-Green Box. Featured on Earth911 in 2010, this "zero-waste pack and move solution" rents out reusable, recycled-content containers for a fraction of the cost (and waste) associated with cardboard moving boxes.



### #10: Help Give Co-workers The Green Bug

Sharing eco-minded ideas with coworkers is a great way to make sure your whole office gets in on the waste-reducing action. Try giving out reusable water bottles, coffee mugs and shopping bags at the office on holidays to encourage fellow employees to reduce waste. Or send out a mass email about useful file-

sharing tools provided by your workplace to remind coworkers of alternatives to printing.

When discussing your values with coworkers, remember to frame the conversation as providing information, not dissing their habits. For example, if you notice a coworker tossing a plastic bottle in the trash, politely telling him about a recycling bin in the next room will yield far better results than berating him about his disposal habits. With the right approach, you can get everyone in your office excited about going green. | **WA**

*Mary Mazzoni is a staff writer for Earth911 based in Phoenix, AZ. This article was reprinted with permission from [www.earth911.com](http://www.earth911.com). Visit the original link at <http://earth911.com/news/2012/08/13/10-tips-waste-free-workplace/10>. Earth911.com hosts the nation's largest recycling directory and writes daily stories to help you reduce, reuse and recycle more. Visit [www.earth911.com](http://www.earth911.com) to read the latest ideas and tips to minimize your impact and learn how you can recycle more where you live.*



## Resource Spotlight

### EPA's Superfund Program

#### **SUPERFUND IS THE NAME GIVEN TO THE ENVIRONMENTAL PROGRAM**

established to address abandoned hazardous waste sites. It is also the name of the fund established by the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended (CERCLA statute, CERCLA overview). This law was enacted in the wake of the discovery of toxic waste dumps such as Love Canal and Times Beach in the 1970s. It allows the EPA to clean up such sites and to compel responsible parties to perform cleanups or reimburse the government for EPA-led cleanups.

#### **How Superfund Works**

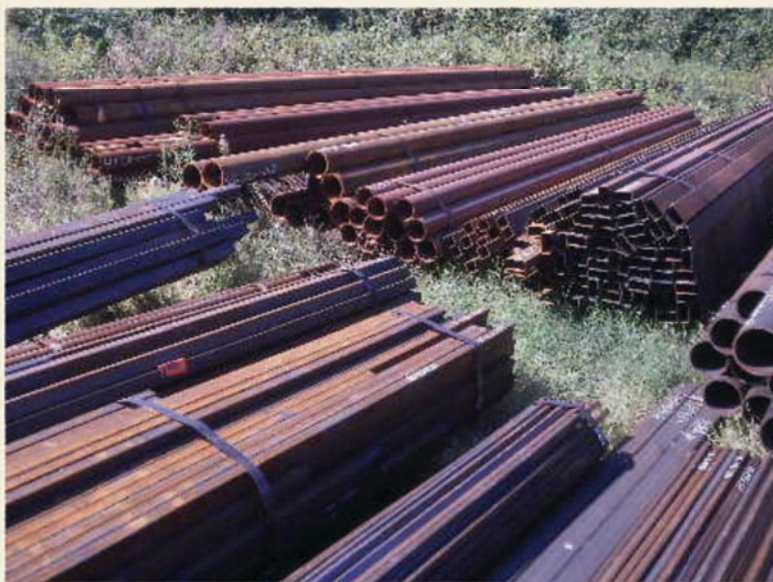
The Superfund cleanup process is complex. It involves the steps taken

to assess sites, place them on the National Priorities List, and establish and implement appropriate cleanup plans. This is the long-term cleanup process.

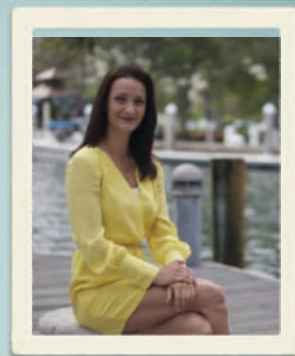
In addition, the Agency has the authority to:

- conduct removal actions where immediate action needs to be taken
- enforce against potentially responsible parties
- ensure community involvement
- involve states
- ensure long-term protectiveness

The blueprint for these activities is the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), a regulation applicable to all federal agencies involved in responding to hazardous substance releases. Over the past 20+ years, the EPA has located and analyzed tens of thousands of hazardous



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waste sites, protected people and the environment from contamination at the worst sites, and involved others in cleanup.

## Who Implements Superfund

EPA's Office of Solid Waste and Emergency Response (OSWER) in Washington, D.C. oversees the Superfund program. The Office of Emergency Management within OSWER is responsible for short-term responses conducted under the authority of Superfund. The Office of Superfund Remediation and Technology Innovation, and the Federal Facilities Response and Reuse Office, also within OSWER, have the lead for managing the long-term Superfund response program, the latter for responses involving Federal Facilities. In addition, OSWER manages the federal Brownfields program.

## Cleanup Process

The Superfund cleanup process begins with site discovery or notification to EPA of possible releases of hazardous substances. Sites are discovered by various parties, including citizens, State agencies and EPA Regional offices. Once discovered, sites are entered into the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS), EPA's computerized inventory of potential hazardous substance release sites (search CERCLIS for hazardous waste sites). Some sites may be cleaned up under other authorities. EPA then evaluates the potential for a release of hazardous substances from the site through these steps in the Superfund cleanup process. Community involvement, enforcement and emergency response can occur at any time in the process. A wide variety of characterization, monitoring and remediation technologies are used through the cleanup process. The process is as follows:

- *PA/SI (Preliminary Assessment/Site Inspection)*—Investigations of site conditions. If the release of hazardous substances requires immediate or short-term response actions, these are addressed under the Emergency Response program of Superfund.
- *NPL Listing (National Priorities List) Site Listing Process*—A list of the most serious sites identified for possible long-term cleanup.
- *RI/FS (Remedial Investigation/Feasibility Study)*—Determines the nature and extent of contamination. Assesses the treatability of site contamination and evaluates the potential performance and cost of treatment technologies.

- *ROD (Records of Decision)*—Explains which cleanup alternatives will be used at NPL sites. When remedies exceed 25 million, they are reviewed by the National Remedy Review Board.

- *RD/RA (Remedial Design/Remedial Action)*—Preparation and implementation of plans and specifications for applying site remedies. The bulk of the cleanup usually occurs during this phase. All new fund-financed remedies are reviewed by the National Priorities Panel.

- *Construction Completion*—Identifies completion of physical cleanup construction, although this does not necessarily indicate whether final cleanup levels have been achieved.

- *Post Construction Completion*—Ensures that Superfund response actions provide for the long-term protection of human health and the environment. Included here are Long-Term Response Actions (LTRA), Operation and Maintenance, Institutional Controls, Five-Year Reviews, Remedy Optimization.

- *NPL Delete (National Priorities List Deletion)*—Removes a site from the NPL once all response actions are complete and all cleanup goals have been achieved.

- *Reuse (Site Reuse/Redevelopment)*—Information on how the Superfund program is working with communities and other partners to return hazardous waste sites to safe and productive use without adversely affecting the remedy.

## Superfund Community Involvement

Community involvement is the process of engaging in dialogue and collaboration with community members. The goal of Superfund community involvement is to advocate and strengthen early and meaningful community participation during Superfund cleanups. Superfund community involvement staffs at headquarters and in the regions strive to:

- Encourage and enable community members to get involved
- Listen carefully to what the community is saying
- Take the time needed to deal with community concerns
- Change planned actions where community comments or concerns have merit
- Keep the community well informed of ongoing and planned activities
- Explain to the community what EPA has done and why

—From [www.epa.gov/superfund](http://www.epa.gov/superfund). For more information on how EPA cleans up Superfund sites and administers the Superfund program, visit the Web site.

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## Landfills

### Location Restrictions

#### **EPA REGULATIONS ESTABLISH SPECIAL SITING RESTRICTIONS AND**

performance standards for six types of MSWLF site locations: airports, 100-year floodplains, wetlands, fault areas, seismic impact zones and unstable areas. These six types of locations are sensitive areas that warrant additional regulatory controls. While all six location restrictions apply to new and laterally expanding MSWLF units, existing units are subject only to airport safety, floodplain and unstable area controls. Because these landfill siting regulations involve substantial geological investigation, certain terms used in the regulations are unusually technical.

#### **Airport Safety Controls**

Landfills can attract birds seeking food or nesting sites; therefore, landfills that are located near an airport may pose a risk of collisions between birds and aircraft. The airport safety restrictions define a danger zone in which special care must be taken to ensure that the likelihood of collisions between birds and aircraft is reduced. These provisions apply to new MSWLFs, existing MSWLFs and lateral expansions located within 10,000 feet of any airport runway used by turbojet aircraft, or within 5,000 feet of any runway end used by piston-type aircraft only. The owner and operator of any unit located within these areas must demonstrate that the management practices of the landfill will minimize the incidents of bird hazards for aircraft.

Provided the owner and operator can make this demonstration, the airport safety criteria do not prohibit the disposal of solid waste within the specified distances. Likewise, the airport safety restrictions do not impact the location of airports or airport runways. However, in accordance with Federal Aviation Administration (FAA), municipal landfills and lateral expansions proposed within a five-mile radius of any airport runway end used by turbojet or piston-type aircraft must notify the affected airport and the FAA in writing of such a proposal.

The Aviation Investment and Reform Act for the 21st Century, which includes provisions that amend the MSWLF location criteria, was signed into law on April 5, 2000. The amendments come after Congress found that collisions between aircraft and birds have resulted in fatal accidents and pose special dangers to smaller aircraft. Since landfills have an inherent nature to

attract birds, the law prohibits the location of new MSWLFs within six miles of airports served by general aviation aircraft and regularly scheduled flights of aircraft designed for 60 passengers or less. This restriction does not apply to existing landfills or expansions of existing landfills.

#### **Floodplain Controls**

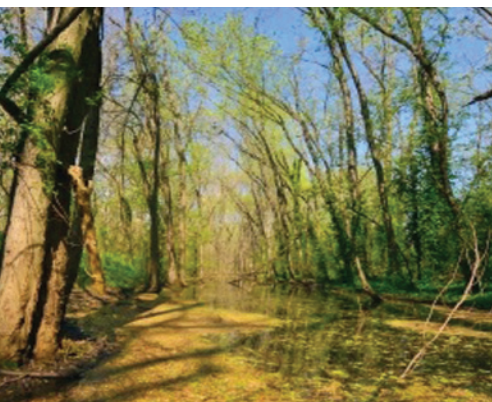
Floodplain regulations establish guidelines that must be followed when a new or existing MSWLF or a lateral expansion is located in a 100-year floodplain. A unit subject to these provisions must be designed and operated to minimize its effect on both the 100-year flood flow and the temporary water storage capacity of the floodplain. The unit's owner and operator must provide evidence that the landfill will not restrict the flow of the 100-year flood, reduce the temporary water storage capacity of the floodplain or result in washout of solid waste.

#### **Wetlands Controls**

Swamps, bogs, marshes and other wetlands are unique, critical ecosystems that serve an important role in flood control, help filter wastes from water, provide an important breeding ground for fish and wildlife, and constitute an important recreational resource. EPA has placed a high priority on wetlands protection, but believes an outright ban of new MSWLFs or lateral expansions in wetlands could severely restrict the sites available for new or expanding landfills. Thus, the Agency developed guidelines for the limited siting of MSWLFs in wetlands. New units or lateral expansions are banned from wetlands unless the owner and operator make the following demonstrations to the Director of an approved state:

- rebut the presumption that a practicable alternative site is available
- show that landfill construction and operation will not violate certain state and federal standards designed to protect water quality and wildlife
- demonstrate that the MSWLF unit will not cause or contribute to significant degradation of wetlands
- demonstrate that steps were taken to achieve no net loss of wetlands.

Because these demonstrations must satisfy the Director of an approved State, §258.12(a) effectively bans the siting of new MSWLF units and lateral



expansions in wetlands in unapproved states. The Agency intends to keep these wetlands location restrictions consistent with all CWA regulatory modifications. As §404 of the CWA evolves in accordance with the wetlands protection program, EPA will modify relevant portions of §258.12 accordingly.

### **Fault Area Controls**

Fault area restrictions ban the siting of new MSWLFs and lateral expansions within 200 feet of a fault that has experienced displacement in Holocene time (i.e., the past 11,000 years). This restriction reflects the Agency's belief that, in general, a 200-foot buffer zone is adequate to protect engineered structures, such as a new MSWLF, from seismic damage. However, in a State with an approved permitting program, the owner and operator may demonstrate that a setback distance less than 200 feet will prevent damage to the structural integrity of the unit and will be protective of human health and the environment.

### **Seismic Impact Zones**

In unapproved states, new MSWLFs and lateral expansions cannot be sited in a seismic impact zone. However, in a State with an approved permitting

program, a MSWLF may be located in a seismic impact zone if the owner and operator can prove that all containment structures, liners, leachate collection systems and surface water control systems are designed to resist the anticipated movement in geologic features at the site.

### **Unstable Area Controls**

Any location susceptible to events or forces capable of impairing a landfill's structural integrity is classified as an unstable area. Owners and operators must assess onsite and local factors, including soil conditions and geologic features, to determine whether an area is unstable. Unstable areas can include poor foundation conditions, areas susceptible to mass movement and karst topography. New and existing MSWLFs and lateral expansions must not be located in an unstable area unless the owner and operator can demonstrate that engineering measures in the unit's design are sufficient to ensure that the integrity of structural components (e.g., composite liner and final cover) will not be disrupted. | **WA**

—From [www.epa.gov/osw/inforesources/pubs/training/mswlf05.pdf](http://www.epa.gov/osw/inforesources/pubs/training/mswlf05.pdf)



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**NORTHSHORE MANUFACTURING** (Two Harbors, MN) recently introduced a new grapple to its waste handling attachments, the Waste Handling/Sorting Grapple. This grapple is designed to work both on Builtrite Stationary Electric Material Handlers and up to 22 Metric Ton Excavators. It is ideal for grabbing, loading and sorting solid waste, C&D waste, wood waste, etc. Key features/benefits/options include:

- Wristing styled head allows for precise picking, sorting and placement
- Large capacity with 52" (1,321mm) width and 73" (1,854mm) opening
- High pressure hydraulic cylinders and hydraulic manifolds
- Heavy duty rotation group, including 20" bearing and heavy duty hydraulic motor which does not require a case drain line
- Made in the U.S.A.

**FOR MORE INFORMATION, CALL (218) 834-5555 OR VISIT WWW.BUILTRITEHANDLERS.COM.**



**ECO GREEN EQUIPMENT** (Salt Lake City, UT) has been designing and manufacturing equipment for the recycling industry since 2001 and is emerging as a leader in providing cost-effective, turnkey tire recycling systems. Their main focus is to provide custom designed tire recycling systems that deliver optimum production for a variety of applications such as TDF (Tire Derived Fuel), rubber mulch and crumb rubber. They have manufactured and installed recycling systems in countries all over the world, including the U.S., Canada, Mexico, South America, South Africa, Iraq and China. These systems are specifically designed and tailored to fit the diverse needs of their global customers.

Eco Green's two-shaft shredders are designed with an aggressive low RPM, high torque shredding technology. As the primary shredder it quickly and easily shreds tires into ruff strips ready for further processing. The shredder blade thickness ranges from 1" to 6" (25 mm to 152 mm) depending on the type of tires, throughput and desired end product. Eco Green's shredders can process OTR tires, large truck tires and car tires at a rate of up to 10 tons an hour.

**FOR MORE INFORMATION, CALL (801) 505-6841 OR VISIT WWW.EGTIRESHREDDERS.COM.**



**ELECTRONICS RECYCLING SERVICES** (Scarborough, ON), a leading international e-waste management and electronics recycler, has developed a family of usable building and decorative materials including plastic lumber and a marble compound from discarded electronics by-products. These plastic and glass materials are expected to dramatically diminish the amount of discarded waste from obsolete electronics.

Founded in 2003, Electronic Recycling Services is a family-owned business with more than 25 years in the electronics recycling industry. The company has locations in California, Georgia, Iowa, Ohio, Mexico, Germany, Hong Kong and China.

**FOR MORE INFORMATION, VISIT WWW.ERS-INTERNATIONAL.COM.**



## RTL | Recycling | Transfer Stations | Landfills

WITT INDUSTRIES (Mason, OH) expands their popular GeoCube family of indoor recycling containers with a new, larger 36-gallon capacity model, the addition of a recycle blue color as an option on all sizes, an improved bag holder retainer band, and a new "combination" top for cans and paper. Additionally, the decals used to clearly identify the recycling stream for each particular "cube" have been changed to a new, cleaner, more readable typeface design. With these additions, the popular GeoCube family is even more functional—making the separation of waste from recycling easy in a small footprint. GeoCubes can be mixed and matched for unique combinations, making them an attractive and functional choice for airports, shopping malls, auditoriums, hotels, schools and universities, and other public and private areas. Compact, and constructed of fire safe steel, GeoCubes offer a variety of tops including round for cans and bottles, slotted for paper, square for waste or recycling, and a new combination for cans/bottles and paper. Each unit features an improved retainer band that keeps the plastic bag line secure during waste and recycling collection.

FOR MORE INFORMATION, VISIT (800) 543-7417 OR VISIT [WWW.WITT.COM](http://WWW.WITT.COM).



QUALITY RECYCLING EQUIPMENT (Hendersonville, NC) announces their partnership with Recycling Machinery of Europe in order to offer Lollini machines to the North American market. Four generations of innovation produced the MAX500, a powerful logger baler, to compete with and dominate similar machines in reliability, ease of use and cost. A single operator can run the equipment to produce neat, square bales, and the MAX500 can be customized with a crane, range of speeds, and a diesel or electric motor on either a fixed base for your yard or a mobile trailer. Both ferrous and nonferrous material can be baled in the MAX500 in variable sizes to meet your needs.

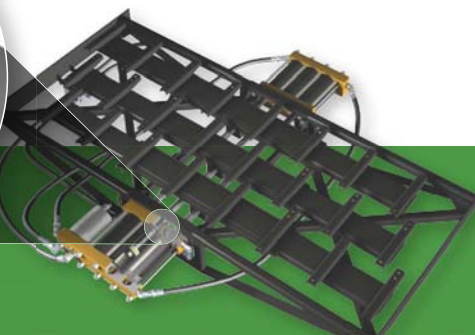
Lollini also produces a line of shear balers, the ALC series, with differing sizes of charging box and a shearing head with a choice of 400 to 1,000 metric tons of cutting force. These machines can be customized as well to be either fixed or mobile and with either a diesel or electric motor. All Lollini balers are lined with Hardox for wear resistance and Weldox for structural resistance and can operate normally from temperatures of 14°F to 104°F. A special kit allows for more extreme operating temperatures from -22°F to 140°F.

A proven track record of reliability with more than 1,300 machines produced and running in the last 25 years makes the Lollini line of balers and shears a perfect choice for your next investment. Priced competitively for the American market, these machines are an easy choice to make.

FOR MORE INFORMATION, CALL (800) 696-2110 OR VISIT [WWW.QUALITYRECYCLING.COM](http://WWW.QUALITYRECYCLING.COM).



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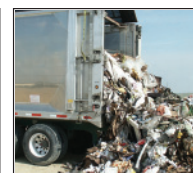
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BRITESPAN Building Systems (Wingham, ON) is growing again, adding another building to their current product line. The new building series, called the ACCENT is less expensive versus the truss style buildings and has nice vertical side walls for great storage capacity. There are two different styles of the ACCENT buildings available: a 26' wide low clearance and a 28' wide high clearance. The high clearance model provides over 18' clearance to the center of the building. These buildings can be constructed to any length needed and can be easily expanded.

The ACCENT buildings are ideal for protecting your valuable toys or equipment from the harsh elements. Whether it's for 4-wheelers, golf carts or RV and boat storage, the options are endless. The ACCENT building can be customized to suit your needs with doors, ends and various foundations options.

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