

The background features a series of concentric circles in various shades of green, from dark forest green to bright lime green. Interspersed among these circles are several thick, curved arrows pointing in a clockwise direction, creating a sense of continuous motion and a circular flow.

CREATING A  
**CIRCULAR  
ECONOMY**

SUSTAINABILITY REPORT 2014

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## MESSAGE FROM OUR CEO



### THE EVOLUTION OF WASTE MANAGEMENT

Our last report focused on “Embracing the Zero Waste Challenge.” This year we’re looking more to the here and now — while maintaining sight of that challenge. We’re focusing on the hard choices confronting our customers, our company and others who want to get to zero waste.

The environmental service industry plays a critical role in preserving global natural resources. One of the great benefits of recycling is its value to the global good. The U.S. Environmental Protection Agency (EPA) estimates that the 87 million tons of municipal solid waste recycled and composted in 2012 saved more than 1.1 quadrillion BTUs of energy — enough to power 10 million

households for a year.<sup>1</sup> These life cycle savings from recycling are seen throughout the value chain, from the trees that are preserved to the barrels of oil avoided. Our role in conserving resources is a point of pride because of Waste Management’s aspiration to hand the planet to the next generation in better condition than when we received it. It’s also an achievement our customers share when we collaborate.

But to be sustainable over time, our operations must make economic sense. We continued to make good progress toward our 2020 sustainability goals during this 2012–2013 reporting period. In two of our four goals, however, we’ve faced some challenges.

**Recycling:** By 2013, recycling represented the majority of our company’s non-collection revenues. Over the past several years, the waste stream has changed dramatically due to changes in consumer purchasing behavior. Our materials recovery facilities were built to handle 80 percent paper and 20 percent bottles and cans. Today, they receive 50 to 60 percent paper and 40 to 50 percent bottles and cans. These changes in consumer purchasing increase recycling processing costs and decrease

overall commodity revenues. In 2013, we managed 15 million tons of recyclables, a jump from 12.9 million tons in 2012. But our percentage of revenue from recycling decreased. This is attributable to a dip in prices for recycling commodities, changes in the mix of materials we receive and demand for cleaner recyclables from our end markets.

Single stream curbside recycling demonstrably increases the volume of recyclables collected. That’s why more and more communities are adopting it. But it also opens the door for increased volumes of non-recyclable material in recycling bins, which contaminates the materials and often causes the materials to not be recycled. It also drives up operating costs. For our recycling business to remain sustainable, we need to address the economics of recycling. We have focused on operational excellence, and on asking our customers to improve the quality of the material that we receive at our recycling facilities to match what recycling commodity markets demand. It’s also become clear that better consumer education on how to recycle is sorely needed. That is why we’ve launched a new

Waste Management education program called Recycle Often. Recycle Right.<sup>SM</sup>, which relies on partnerships with customers at every level, to highlight what can — and can't — be recycled and to instill the principles of sustainable recycling.

**Waste-based energy:** Our waste-based energy revenues and generation were flat in 2013. Natural gas is a low-cost alternative to our waste-based energy, and we recognize that achieving our 2020 goal of 2 million households served will be challenging.

Our landfills produce gas sufficient to power over 470,000 households, and we will continue to invest in these projects. As an expert in landfill gas to energy, we will look for opportunities to expand our services to landfills owned by others.

In July 2014, we announced an agreement to sell Wheelabrator Technologies, our waste-to-energy business, to Energy Capital Partners (ECP). Our core strength is in supplying feedstock to waste-to-energy facilities rather than selling the electricity they generate. Once this transaction closes in late 2014 or early 2015, we will enter into long-term waste

supply agreements with ECP. We will still use our waste to create energy, but ownership of the energy will go to ECP, which has deep expertise in energy markets.

Going forward, we will continue to explore opportunities for innovation in converting waste materials into energy and other low-carbon products. But we will be very deliberative in making strategic investments in innovative technology projects — perfecting the technical processes, understanding optimal logistics and matching end-use products to market demand. We are seeing public interest in smaller-scale projects that convert waste to fuel, and we are commercializing plants that convert post-recycled residuals into industrial fuel products. We still believe investing in “green” is good for the long-term health of both our company and our planet.

**Fleet emissions and efficiency:** Solid progress continues in converting our fleet to natural gas to reduce carbon emissions and offer our communities quiet, reliable service. In this respect, we benefit from the low cost of natural gas. Our fleet now stands at more than 3,000 natural gas collection vehicles, the largest heavy-duty fleet of its kind in North America.

**Protecting habitat:** We continue to see tangible and intangible benefits from our wildlife habitat conservation efforts. These projects are good for the environment, good for the communities in which we operate and gratifying for the employees who demonstrate leadership by developing and maintaining these projects.

The challenges of 2013 made us smarter, and I am immensely proud of what our employees accomplished. They served our customers well, helped their neighbors and communities and delivered strong results for our investors. And they did it all with a keen eye on ethics, safety and protecting the environment.

Thank you for reading our sustainability report, and thank you for your engagement with us as we continue our journey — together — toward a sustainable future for all.

Respectfully,



**DAVID P. STEINER**

President & Chief Executive Officer

**WASTE MANAGEMENT IN SUMMARY**  
 AS OF YEAR-END 2013

Waste Management, Inc. (NYSE: WM), based in Houston, Texas, is the leading provider of comprehensive waste management and environmental services in North America.



We create enough energy to power more than 1.1 million homes every year.



We manage over 15 million tons of recyclable commodities.



We dedicate 27,000 protected acres to wildlife habitat.

landfill-gas-to-energy projects  
**137**

million customers  
**+21**  
 collection operations  
**390**

thousand employees  
**43**

billion in capital expenditures  
**\$1.3**

billion in free cash flow  
**\$1.3**

million returned to shareholders  
**\$922**

billion in revenue  
**\$14**

traditional recycling facilities; 50 are single stream and 12 are for construction and demolition material recycling  
**120**

transfer facilities  
**310**

organics processing facilities  
**36**

secondary processing facilities  
**18**

active hazardous waste underground injection facility  
**1**

active hazardous waste landfills  
**5**

active solid waste landfills  
**262**

waste-to-energy plants  
**17**

independent power production plants; 2 produce renewable energy  
**4**

natural gas fueling stations; 27 serve the public  
**58**

ENERGY

PEOPLE

FINANCIALS

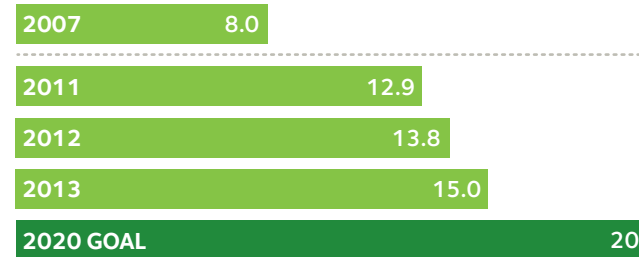
LANDFILLS

OTHER FACILITIES

## GOALS AND PROGRESS TO DATE

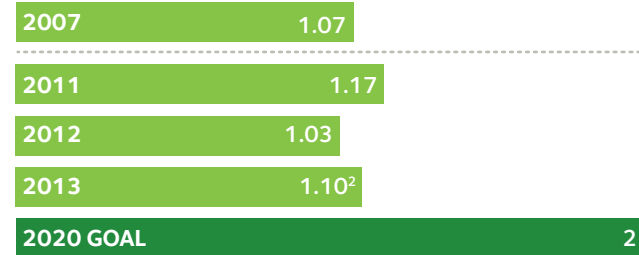
### RECYCLABLES MANAGED

(million tons)



### WASTE-BASED ENERGY PRODUCTION

(million households)



### FLEET EMISSIONS

(percent reduction in carbon dioxide equivalent (CO<sub>2</sub>e) emissions)

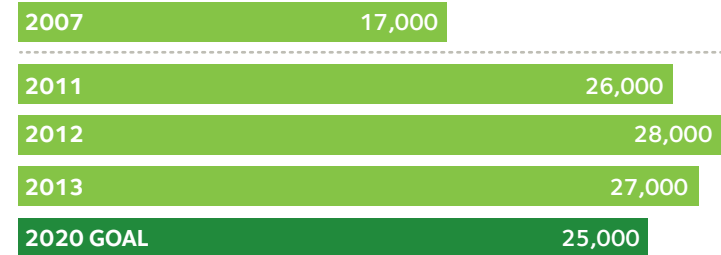
2007 emissions: 2.13M tons CO<sub>2</sub>e



### NUMBER OF WILDLIFE HABITAT PROGRAMS



### NUMBER OF ACRES PROTECTED

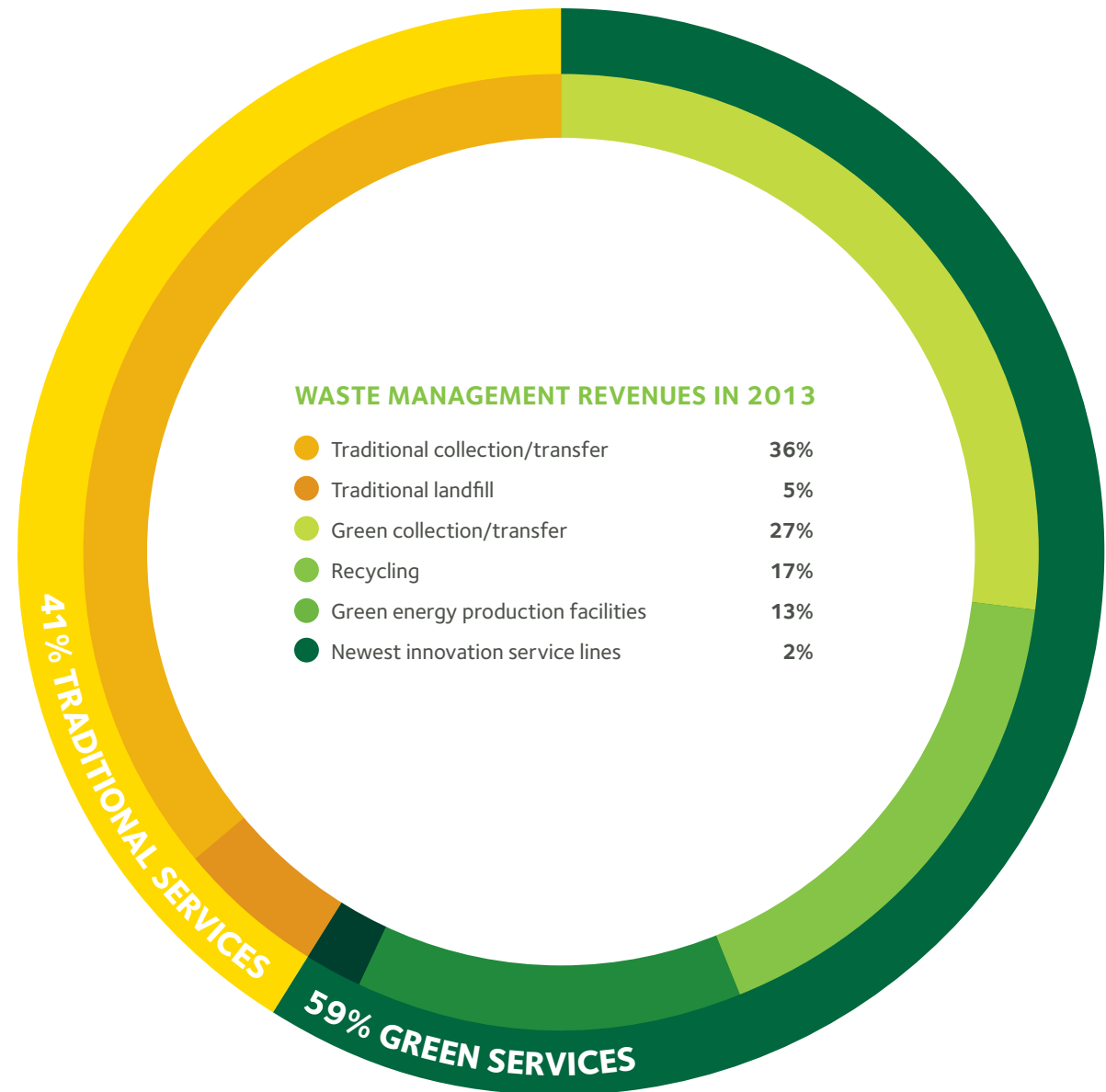


## OUR BUSINESS MIX

### “GREEN” VS. TRADITIONAL SERVICES

Six years ago, we began reporting on our activities in a new way. We distinguished our operations that extract value from waste — what we term “green services” — from those that isolate waste in safe disposal sites (the traditional model). We described this allocation in terms of the revenue generated from each of these activities.

Green services include all forms of recycling, as well as waste-to-energy and landfill-gas-to-energy projects and revenue from collections that feed these projects. The green category also includes our consulting work helping other enterprises reduce and recycle waste as well as produce green energy. And it includes our work with partners to develop new ways to convert waste into valuable resources, in particular the development of new low-carbon fuels and even chemicals not derived from fossil fuels.



## OUR BUSINESS MIX

We strive to extract more value from the materials we manage, reducing what is ultimately disposed of in landfills. This goal challenges us to re-evaluate what we think of today as “waste” products, envisioning them instead as feedstocks available to create energy or new products. The idea is that we can reuse materials in a “circular economy” that operates as a true closed-loop system, where little is wasted.

We know there is a lot of work ahead to make this vision a reality. But we’re committed for the long term because we see the potential to radically transform the way we all define — and interact with — waste. And in that transformation, we see opportunities for our business.

Not surprisingly, the global recession has had an impact on our business mix — that is, on the relative proportions of revenue we derive from each area of our operations. For two consecutive

years, our recycling operations have faced low commodity prices and higher operating expenses. In 2013, our green collection/transfer revenues increased 3 percent over 2011, but like the rest of our industry, we are subject to the market forces that influence demand for the materials we collect, including cardboard and paper, glass and plastic, industrial and commercial waste, and food. Faced with difficulty finding economically viable markets for many of these materials, our recycling revenues were essentially flat.

In 2013, we brought three new landfill-gas-to-energy facilities on line. We now have 137 of these facilities in operation, which collectively generate 676 megawatts of power annually. Our waste-to-energy production was essentially flat in 2013, with new projects in development but not yet approved for construction.

Revenues from our innovative service lines were also flat in 2013, a reflection of the fact that some emerging technologies take several years for proof of concept. Waste Management continues to be a leader in developing technologies and processes to repurpose the broad range of materials that we handle for our customers. But we’ve learned that getting feedstocks ready to be transformed is often complex and challenging. With the low cost of natural gas, the economic downturn, and less venture capital flowing into alternative energy, we also know that these innovative businesses are going to take some time to become established.

In 2013, we tapped into expertise across the company by gathering a technology council to help guide our evaluation of new technologies and provide essential knowledge of logistics, operations and the regulatory context relevant to new offerings in our industry.



## AWARDS AND RECOGNITIONS

### 2014 WORLD'S MOST ETHICAL COMPANIES

Ethisphere Institute

For the seventh consecutive year, Waste Management was named one of the World's Most Ethical (WME) Companies by the Ethisphere Institute, a research-based organization that promotes best practices in corporate ethics and compliance. One hundred and forty-four companies were recognized on the organization's 2014 WME list. According to Ethisphere, the list "recognizes companies that truly go beyond making statements about doing business 'ethically' and translate those words into action."



Waste Management was included on the Dow Jones Sustainability Index (DJSI) World and North America lists from 2012 through 2014. Waste Management has been listed on the DJSI indices for 10 of the past 11 years. The DJSI tracks the performance of the world's leading companies in terms of economic, environmental and social criteria, primarily for investors who want to take sustainability into account in their portfolios.



In 2014, we were recognized by the CDP (formerly Carbon Disclosure Project) for the depth and quality of our climate change data. While we have reported our greenhouse gas (GHG) emissions to the CDP for more than a decade, this is the first year we were included on the CDP's S&P 500 Climate Disclosure Leadership Index. According to the CDP, inclusion in this index signifies that a company has provided comprehensive information about the measurement and management of its carbon footprint, its climate change strategy and risk management processes and outcomes.

## ADDITIONAL AWARDS RECEIVED IN 2012 AND 2013



### Sustainable Business Recognitions

RobecoSAM Gold Class Sustainability Leader,  
2013 Sustainability Yearbook — KPMG  
International

Global Benchmark Index Company  
— FTSE4Good

Best Corporate Citizens, Services Category —  
*Corporate Responsibility Magazine*

Top S&P Companies for Integrated Reporting  
(runner-up) — Investor Responsibility Research  
Center Institute

U.S. 50 (most advanced U.S. companies) —  
Euronext Vigeo

Top 25 Sustainable Brands on Twitter  
— TriplePundit

Leader in Sustainability Consulting —  
*Environmental Business Journal*

Sustainable Business Award — *Utah Business*  
magazine

Sustainable Action Award, for WM Saint  
Nicéphore — Québec Association for Energy  
Advancement



### Environmental Recognitions

Conservation Education Award — Wildlife  
Habitat Council

Corporate Habitat of the Year — Wildlife  
Habitat Council

Earth Day Award — Westchester County

“Green-ovation award” for gas-to-liquids  
project, Oklahoma City, Oklahoma — U.S.  
Environmental Protection Agency, Region 6

Virginia Environmental Excellence Program  
“superior” performance award — Virginia  
Department of Environmental Quality

Excellence in Environmental Education  
Award — Colorado Alliance for Environmental  
Education

Alternative Fuel Fleet Leader, for Waste  
Management of Florida — Southeast Florida  
Clean Cities Coalition

Litter Prevention Award, for WM of Kansas —  
Keep America Beautiful



### Workplace Recognitions

Corporate Equality Index/Best Places to Work  
for Lesbian, Gay, Bisexual, Transgender Equality  
— Human Rights Campaign Foundation

Top 100 Ideal Employers for College Students  
— Universum

U.S. Secretary of Defense Employer Support  
Freedom Award (national finalist) — Employer  
Support of the Guard and Reserve

Top 100 Military Friendly Employer — *G.I. Jobs*  
magazine

Best for Vets Employer — *Military Times*

Top Veteran-Friendly Companies — *U.S.*  
*Veterans Magazine*

Most Valuable Employers for Military —  
CivilianJobs.com

Best Place to Work, for Wheelabrator Spokane  
— Association of Washington Business

## AWARDS AND RECOGNITIONS



### Customer Recognitions

Customer Service and Innovation Award — Home Depot

Supplier of the Year — Rio Tinto

Sustainable Partner of the Year — Balfour Beatty

Partner of the Year — City of Oceanside

For information on additional awards we've received, visit [www.wm.com/about/company-profile/awards.jsp](http://www.wm.com/about/company-profile/awards.jsp).



### AWARDS FOR THE WASTE MANAGEMENT PHOENIX OPEN<sup>4</sup>

Sport for the Environment Award — Beyond Sport

Gold Certification — Council for Responsible Sport

Crystal Award Winner — American Marketing Association Houston

Awards from the Professional Golfers' Association (PGA) Tour:

- Best Title Sponsor Integration
- Best Promotional Idea, for the Zero Waste Challenge
- Best Special Event
- Most Engaged Community

Zero waste to landfill with 10 percent incineration with energy recovery claim validation (highest designation attainable) — UL Environment

Top Project of the Year 2014 — *Environmental Leader*

Best of Our Valley Award, Best Sporting Event for 2012, 2013 and 2014 — *Arizona Foothills* magazine



## SUSTAINABILITY KEY PERFORMANCE INDICATORS

Key Performance Indicators	2011	2012	2013 <sup>5</sup>
Greenhouse Gas Footprint (metric tons CO <sub>2</sub> e)			
• Process	16,448,441	17,363,769 <sup>6</sup>	17,662,765
• Transportation <sup>7</sup>	1,773,307	1,729,547	2,114,250
• Energy use <sup>8</sup>	488,738	540,601	355,015
Potential Avoided Emissions <sup>9</sup> (metric tons CO <sub>2</sub> e)			
• Renewable energy generation	4,700,000 <sup>10</sup>	4,739,563	5,635,643 <sup>11</sup>
• Reuse and recycling of materials <sup>12</sup>	30,996,786	36,414,438	38,588,377
• Carbon permanently sequestered <sup>13</sup>	15,593,412	15,490,568	16,126,208
Waste-Based and Alternative Energy Benefits <sup>14</sup>			
• Tons of coal equivalent	6,089,000	6,220,000	6,144,562
Resource Savings Achieved through Recycling			
• Household equivalent	1.8 million	2.1 million	2.3 million
• Cars off road	6.3 million	7.0 million	7.6 million
Percent of Waste Management Modern Landfills with Off-Site Contaminated Groundwater <sup>15</sup>	0	0	0
Total Recordable Injury Rate	3.1	2.9	3.1
Vehicle Accident Recordable Rate (driver hours without a vehicle accident)	13,307 <sup>16</sup>	14,200	14,499
Charitable Giving	\$13,983,472	\$15,097,964	\$13,984,882

## ABOUT THIS REPORT

Through subsidiaries, Waste Management provides waste reduction consulting, collection, transfer, recycling, conversion, resource recovery and disposal services to residential, commercial, industrial and public-sector customers throughout North America. We serve over 21 million customers with environmentally sound management of solid wastes and the transformation of waste into usable resources.

We publish a detailed sustainability report every two years. This report updates our 2012 Sustainability Report, providing full-year data for 2012 and 2013 and discussing key developments in 2014 where information was available prior to publication. Notes on the scope of the data are included with the data charts or in endnotes. This report covers Waste Management's wholly owned operations, all of which are located in North America. An Appendix to this report, containing a wealth of supplementary information, can be found on our [website](#).

We focus our reporting on the following themes, which we have identified through internal and external consultation to be the most material:

- Focusing on our customers' sustainability needs
- Reducing and recycling wastes generated by others
- Converting waste into renewable energy, fuels and chemicals
- Managing our waste treatment, materials processing and disposal facilities to exceed regulatory obligations
- Serving as responsible stewards of the land

We routinely engage with stakeholders to re-evaluate the sufficiency and appropriateness of our goals and reporting.

### GLOBAL REPORTING INITIATIVE

This report is aligned with the Global Reporting Initiative (GRI) G3 Sustainability Reporting Guidelines at a self-checked application level of "B." The Appendix contains a complete index of GRI indicators. More information on GRI and the application levels can be found on the [GRI website](#).

### CONTACT US

We welcome your feedback on this report, as it helps us to improve future reports.

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OUR BUSINESS

# IN SERVICE OF A CIRCULAR ECONOMY: MINIMIZING WASTE AND MAXIMIZING VALUE

REDUCING WASTE  
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GROWING RECYCLING  
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EXTRACTING VALUE  
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RECOVERING ENERGY  
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HARNESSING ENERGY  
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## What if everything could be reused? No longer simply thrown away, but productively recaptured for a new use? In other words, what if waste as we know it disappeared?

From families that recycle diligently to businesses operating more sustainably, the world is beginning to view waste differently. So is Waste Management.

We have decades of experience identifying safe, end-of-life solutions for waste. Increasingly, we are turning our attention to giving that waste new life — contributing to a circular economy where more waste has a chance to be reclaimed, re-entering the supply chain as recycled material, electricity or fuel.

Much of what gets thrown away can have a second act. However, extracting the most value from waste requires exploring possibilities throughout the full value chain. We are working hard to expand and improve recycling, transform organic materials into useful products and energy, and extract energy from residual waste — with customers as our partners. We're even working with customers to redesign their products and services to generate less waste in the first place.







It will take creative approaches to handle the range of materials our customers can repurpose. We have been evaluating dozens of new technology options for the conversion of waste into products and energy. While identifying winning technologies and transitioning to them has proven to be more challenging — and much slower — than we originally envisioned, we have learned much and made clear, incremental progress.

We also partner with customers to share best practices to avoid creating waste at all, and to design goods and packaging for improved recyclability. This “design with intent” holds great promise for our efforts to move toward a true circular economy.

We want to create the partnerships and technologies that enable us to recycle everything we can and find opportunities to extract energy from everything else. We are committed for the long term and are excited about the possibilities of playing our part to bring the circular economy to life.



# REDUCING WASTE

Operating more sustainably is a goal for many Waste Management customers. Sustainability goals can be as complex as addressing climate change or as simple as increasing recycling. Waste Management Sustainability Services (WMSS) works closely with customers — from those just starting on the path toward sustainability to others already far into the journey — to create customized solutions that help them reduce waste of resources, water or energy.

Before materials end up in the waste stream, there are often steps that can be taken to eliminate the creation of the waste in the first place. The services WMSS provides are as varied as our customers and include everything from basic audits and waste assessments to complex, fully managed programs to help manufacturers achieve zero waste. With over 175 on-site programs, customers turn to WMSS to help design enterprise-wide sustainability goals and strategies, reduce material use, maintain compliance, improve recyclability and communicate results.

WMSS originated in 1997 and has held various names — from In-Plant Services to Upstream to Green Squad. Today WMSS is made up of close to 400 professionals committed to innovative approaches to sustainability. Since WMSS began tracking customer savings in 2003, our experts have delivered more than \$144 million in bottom-line value by increasing recycling and reuse and implementing process improvements and other operational efficiencies.

#### DESIGN WITH INTENT

Every day, countless tons of valuable materials are sent to a landfill instead of being returned to the value chain.

The reasons for this are many. Sustainable design initiatives often focus on reducing the amount of material and embedded energy in a product, but not on making the product — and its packaging — recyclable. Designers may work with traditionally recyclable materials but combine them in ways that make them difficult to disassemble, compost or recycle at end-of-life.

“Design with intent” aims to make products more sustainable and recyclable from the outset, taking a systems-thinking approach to product design. This approach considers three factors: material selection, ease of disassembly, and recycling infrastructure capabilities. The ultimate goal is to ensure that resources return to the value chain after a product’s use.

## WMSS SERVICES AT A GLANCE



### Designing for Recyclability

When a customer wants to eliminate waste, sometimes the best way to begin is “from the dumpster up.” That is, it pays to think through where a product goes when discarded, to understand how the material can successfully be recycled, or to determine if the waste created can be eliminated altogether. In June 2013, Waste Management and William McDonough teamed up to announce the Waste Management McDonough Sustainable Innovation Collaboration. The partnership’s mission is to work with retailers, producers, manufacturers and suppliers to foster product and packaging design innovations, also known as “design with intent,” to increase recyclability and lessen waste (see p. 18). The collaboration marries our practical knowledge of recyclability and logistics with William McDonough’s widely heralded design and materials science expertise.



### Testing Existing Product and Package Recyclability

Customers seeking brand distinction by offering recyclable products or using recyclable packaging need to know if their claims match what happens when their materials are, in fact, placed into the recycling bin. WMSS takes products through a typical recycling process to see which components can and cannot be recycled and to learn if there is a viable market for post-consumer materials in the recycling commodities markets.



### Creating Zero Waste Systems

Increasingly, companies and organizations are setting ambitious “zero-waste-to-land-fill” goals. WMSS helps customers achieve these goals by developing detailed road-maps for eliminating waste and executing this strategy on-site, often reducing source material and increasing recycling.



### Designing Events and Venues to Reduce Waste

Recycling in large stores, on college campuses or in public venues takes strategic planning. WMSS provides practical guidance about what can be recycled, helps to maximize recovery with strategic placement of recycling bins and supports cost control through careful program design and implementation. Our signature event, The Waste Management Phoenix Open, has achieved zero waste goals despite being the best-attended event on the PGA Tour (see p. 41).



### Analyzing, Improving and Reporting on Sustainability Progress

Reporting progress toward sustainability goals creates a virtuous cycle that can inspire employees and urge competitors to improve their own sustainability footprints. WMSS offers customers a

number of tools to measure, and then communicate, achievement:

- **Life cycle assessments** can compile the “big picture” on a product’s environmental impacts, by evaluating all stages of a product’s life — including raw material extraction, manufacture, distribution, use, repair and maintenance, and end disposal or recycling — and analyzing which stages have the greatest potential to avoid greenhouse gas emissions or conserve natural resources. See our [Life Cycle Thinking](#) report for more.
- **Vendor scorecards** help our customers assess whether vendors meet their supply chain sustainability goals, including compliance with sustainable purchasing policies and packaging requirements. The scorecards can then be used to create more sustainable purchasing programs, improve the design of products and packaging and eliminate waste.
- **ENSPIRE™**, Waste Management’s online business intelligence platform, aggregates and repackages raw sustainability data into one interactive

dashboard, helping to accurately track financial, environmental and social

performance; facilitate streamlined decision making; and simplify reporting.

### WASTE MANAGEMENT’S ENSPIRE™ BUSINESS INTELLIGENCE PLATFORM TRACKS SUSTAINABILITY GOALS



#### MATERIAL STREAMS

- Waste stream detail analysis
- Diversion
- Tonnage trends
- Compactor average tons and service frequency
- Waste reduction program implementation



#### PEOPLE, PLANET, PROFIT METRICS

- Sustainability project analysis
- Cost trends
- Savings trends



#### ENVIRONMENTAL FOOTPRINT

- Energy and water consumption and intensity tracking
- Normalized comparison across portfolio
- Certification tracking
- Pre-certification gap analysis
- Portfolio performance
- Zero waste initiatives
- GHG calculation



#### ENTERPRISE-WIDE SUSTAINABILITY PLANNING

- Frameworks for GRI standards
- Scorecards
- Supply chain management (key performance indicators)



### Assisting with Third-Party Verification

In a consumer landscape swimming with “green” claims, many of our customers seek external verification of their efforts to reduce waste, save energy and achieve other sustainability goals. WMSS serves as a guide through this process, including advising on these third-party rating and certification systems:



**BOMA 360**, from the Building Owners and Managers Association International, for validation of best-in-class management practices in building operations and maintenance; safety, security and risk management; training and education; energy, environmental and sustainability efforts; and tenant relations and community involvement



**Council for Responsible Sport** certifications that maximize opportunities at sporting venues to both recycle on-site and educate attendees about recycling



**ENERGY STAR** certification, including benchmarking with the ENERGY STAR Portfolio Manager® and validating applications



**UL Environment Zero Waste Claim Validation**, certifying best-in-class zero waste and zero-waste-to-landfill programs



**Leadership in Energy and Environmental Design (LEED)**, using our accredited consultants to certify entire green building projects or obtain individual credits



**Green Globes** certifications, a web-based program from the Green Building Initiative for green building guidance and certification that includes an on-site assessment by a third party for new buildings, renovations, building management and more

For more information, visit [Waste Management Sustainability Services](#).

## HELPING OUR CUSTOMERS REACH THEIR SUSTAINABILITY GOALS

We work with our customers to find ways to expand and improve recycling, transform organic materials into useful products and energy, and turn waste into energy. Below are just some of the projects through which we have helped customers meet their sustainability goals for one or more locations. Our website contains select [customer case studies](#).

Our website contains select [customer case studies](#).

### AUTO MANUFACTURERS

Converted more than 1,500 tons of trash to energy

Exceeded 10% waste-to-landfill reduction goal with a 14% actual reduction

Recycled 1,210 tons of cardboard and 123 tons of used oil

### RETAILERS

Diverted 275 tons of food waste from landfill for conversion to compost

Recycled more than 27,900 tons of commodities and materials

Recycled 38 tons of cooking oil

### MUNICIPALITIES

Diverted 10 to 12 million tons of waste from landfill each week

Using CORE equipment (see p. 44), piloted a project that at full scale will produce renewable energy sufficient to heat over 5,000 homes and reduce GHG emissions by 90,000 metric tons

Received state Governor's Sustainability Award for partnership with Waste Management that increased recycling volumes by 34% over 2 years and saved 81 tons of CO<sub>2</sub> emissions

### UTILITY

Achieved beneficial use of 500,000 tons of coal combustion byproducts projected for 2014

### SPORTING EVENT

Helped obtain "gold certification" from the Council for Responsible Sport for efforts to increase recycling and diversion rates



## REDUCING WASTE

**RECYCLING EXCHANGE CUSTOMERS**

Recycled 179 million pounds of materials that earned customers \$4 million in rewards by the 2013 anniversary of this partnership

**TIRE MANUFACTURER**

Achieved first-ever zero-waste-to-landfill validation from the global independent safety science company UL Environment

**UNIVERSITIES**

Achieved a 67% recycling rate on the way toward an 85% goal for 2014

Saw waste diversion rocket from 40% to 83% in just one football season

More than doubled the recycling rate from under 20% to 54.5% in 6 months

Achieved 50% improvement in diversion in the first year of a new recycling program

**CONFERENCE**

Diverted nearly 285,000 tons of materials from local landfills since project inception in 2011

**FOOD PRODUCER**

Reduced carbon footprint by 15,000 metric tons per year by using landfill gas to power greenhouse

**METALS MANUFACTURER**

Increased diversion from landfills up to 50% with on-site management program

**CONSUMER PRODUCT MANUFACTURER**

Reviewed more than 15 consumer products for ways to increase packaging recyclability under "real life" conditions at the typical materials recovery facility

**REAL ESTATE COMPANY**

Diverted 6.34 million bags of trash from landfill in 1 year

**APPLIANCE MANUFACTURER**

Avoided 15,668 metric tons of greenhouse gas emissions

**CHEMICAL COMPANY**

Reduced disposal costs by 10%

**HEAVY EQUIPMENT MANUFACTURER**

Saved \$1.9M in waste handling costs in 2012-2013, and by the end of 2014 will have 6 sites achieving over 90% diversion to compost





# GROWING RECYCLING



Waste Management handles more residential recyclables than any other company in North America, and we continue to invest in new recycling technologies and service platforms for standard as well as hard-to-handle household and commercial materials.

As the recycling landscape has evolved in recent years — for instance, with an increase in nonrecyclable items ending up in the recycling bin — we are working to educate consumers not only about the benefits of recycling, but also about what can and cannot be recycled. We have also supported the development of several consumer products that contain a high percentage of recycled content. And we continue to sponsor the Waste Management Phoenix Open golf tournament, which serves as a model for how to achieve high recycling rates at a large-scale public event.



**88%**

increase in amount of  
recyclables managed from  
2007 to 2013



**15M**

tons of recyclables extracted  
from the waste stream in 2013



**133**

materials recovery facilities  
owned by Waste Management  
as of mid 2014

Of these,

**49**

are single stream facilities and

**15**

are for construction and  
demolition waste

## EXPANDING OUR RECYCLING CAPACITY


We are well on our way to achieving our goal to manage more than 20 million tons of recyclable materials per year by 2020. In 2013, we extracted 15 million tons of recyclables from the waste stream — an 88 percent increase over our 2007 baseline and a 16 percent increase in just the past two years. That 15 million tons includes recyclables handled at the 120 materials recovery facilities (MRFs) we owned as of year-end 2013, as well as recyclables that we brokered and collected for processing at MRFs we do not own. It also includes 2.5 million tons of organics.

During the reporting period, we continued to invest in new recycling capacity. In January 2013, for instance, we acquired the recycling and resource recovery company Greenstar, LLC, and incorporated their 12 MRFs into our portfolio.




## THE ENVIRONMENTAL BENEFITS OF RECYCLING

In 2013, Waste Management recycled 12.451 million tons<sup>18</sup> of aluminum, cardboard, paper, scrap metals, plastics, wood pallets and glass. Those recycling efforts saved the following resources:

  
**43.4B**  
kilowatt-hours  
of electricity

  
**123M**  
mature trees

  
**62.7M**  
gallons of  
water

  
**38.6M**  
cubic yards of  
landfill space

  
**29.8M**  
metric tons  
of CO<sub>2</sub>e

## GROWING RECYCLING

## MINING OUR TRANSFER STATIONS AND LANDFILLS FOR RECYCLABLES

Although recycling rates have risen over the years, plenty of recyclable materials still end up at our transfer stations and landfills. To address this, we now “mine” the waste at many of our facilities for cardboard and metal that can be resold and recycled. This effort enables us to extract value from the waste stream while also reducing greenhouse gas emissions associated with using virgin materials in manufacturing.

We began mining in 2011 with a focus on pulling cardboard from our transfer stations. We developed a “playbook” for employees and provided on-site coaching on how to do this work. In 2013, we turned our focus to landfills and expanded the range of materials mined (at both our landfills and transfer stations) to include metals. Again we created a playbook for employees, who were also trained in the use of a small excavator equipped with a grapple magnet, which can pull metals from the waste. To date, we are mining materials at 117 of our transfer stations and 21 of our landfills.

### ANNUAL VOLUMES OF PAPER AND METAL DIVERTED AT OUR TRANSFER STATIONS

(tons)

2011	40,487
2012	179,476
2013	249,441





## INCREASING SINGLE STREAM RECYCLING

One of the primary drivers behind the growth in our recyclables business has been the increasing popularity of single stream recycling. Single stream recycling allows customers to mix recyclable paper, plastic, metal and glass in one large cart, rather than sorting these items into separate smaller bins. These mixed materials are then sorted at our MRFs.

Back in 2001, we became the first major national solid waste company to focus on single stream recycling. We continue to invest in it, and about two-thirds of our residential recycling is now single stream. Customers tell us they love the convenience of the large collection carts, and they respond accordingly by increasing the amount of material collected by an average of 40 percent. Studies show that a transition to cart-based, single stream recycling (from dual stream collection) is the most effective way to increase recycling.

Single stream has other benefits as well. A 2010 study by the Earth Engineering

Center at Columbia University that compared single stream to dual stream recycling found that single stream saved 0.901 metric tons of GHGs per ton of recyclables collected. This was due largely to the increase in recycling rates (and consequent reductions in the use of virgin materials for new products), as well as collection and processing efficiencies. Single stream recycling also has been shown to improve on-the-job safety for waste collection workers. In Madison, Wisconsin, the switch to automated, single stream collection led to a 36 percent reduction in on-the-job injuries, and increased automation at the MRF decreased job-related injuries there by 69 percent.

While the benefits of single stream recycling are clear, the process has also resulted in some unintended consequences. One is that consumers can get confused about exactly what is recyclable and what is not, and some err on the side of throwing almost everything into the cart and presuming it is all

recyclable. That false presumption has led to increased contamination in the loads coming into our MRFs, which, in turn, has led us to realize that there is a need for greater public education about recycling — including *how* to recycle (see p. 33).

### SINGLE STREAM RECYCLING COMPARED TO MULTI STREAM

**40%**

increase in  
collected materials

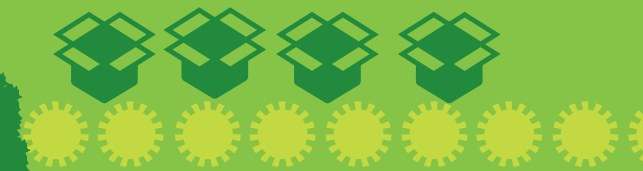
**0.901**

metric tons GHGs saved  
per ton of recyclables

**36%**

decrease in  
on-the-job injuries

## A TYPICAL SINGLE STREAM RECYCLING FACILITY

**MATERIAL IN-FEED**

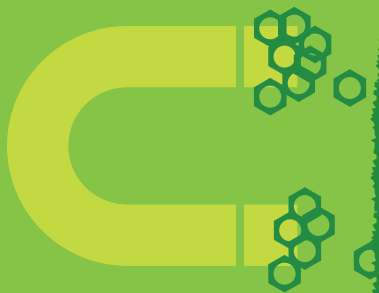
Trucks are weighed and directed to the tip floor. Material is unloaded, inspected and stored, until it's ready to be fed to a conveyor.

**PRE-SORT STATIONS**

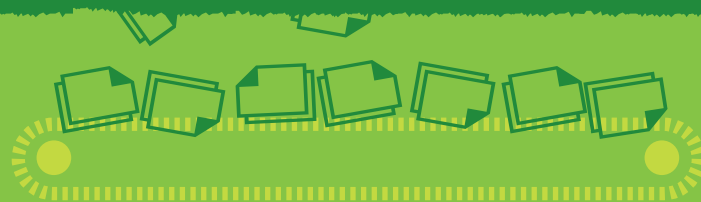
Sorters remove rejected items and film, which is vacuumed away. Bulky materials, inert materials and large pieces of plastic are also removed and in some cases sent for additional recycling.

**CORRUGATED SCREENS**

Material crosses a triple-deck old corrugated cardboard (OCC) screen, which skims off the OCC from the rest of the material stream. The OCC floats over the screen, where it is inspected before being conveyed to storage bunkers.

**STEEL MAGNET**

Next, a steel magnet removes and stores ferrous materials from the material stream.

**PAPER MAGNET**

Material left in the main flow is now mostly containers. These materials flow over a paper magnet, designed to extract paper from the stream. It uses powerful vacuum technology to hold two-dimensional paper flat to the conveyor, while round three-dimensional containers continue on the flow.

**NEWSPAPER SCREENS**

At this stage, the materials pass through a series of disc screens, which separate containers, cans and bottles from old newspapers and remove any remaining fiber material.

GRAPHIC CONTINUES ON THE NEXT PAGE

## GROWING RECYCLING

**GLASS SORTER**

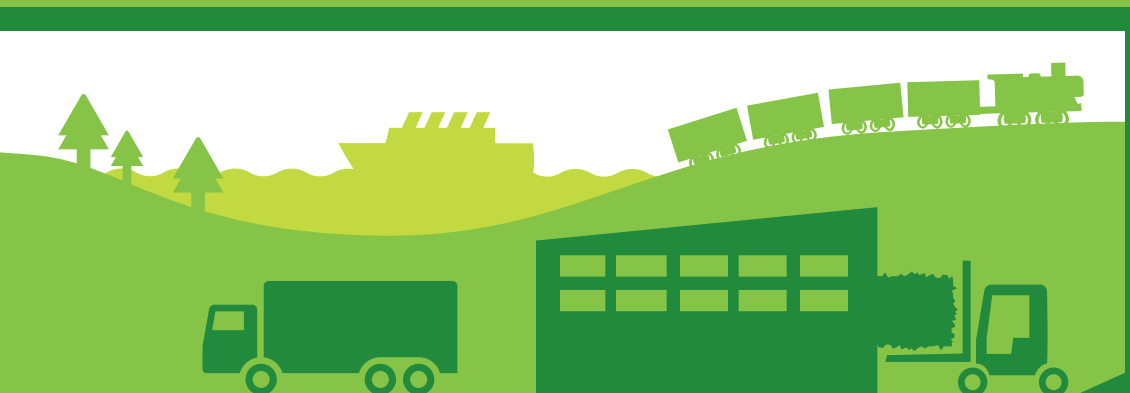
Whole glass bottles are broken and fed via conveyor belt to the glass crusher, which crushes the glass and moves it to a storage area.

**OPTICAL SORTING**

Bottles and cans that make it through the glass sorting area run through a series of optical scanners. These scanners separate out the last of the paper from the commingled stream, as well as PET soda/water bottles, HDPE milk/detergent bottles, and aseptic milk/juice cartons. Each are stored separately.

**EDDY CURRENT**

The remaining material is delivered to an eddy current that automatically separates aluminum by use of a rare earth electro current, which repels the aluminum over a baffle where it drops to a chute and is blown into a bunker for storage.

**SHIPPING**

Bales are shipped via truck, rail or ship to end users around the world, where they are used as feedstock for new products.

**FINISHED PRODUCT**

Forklifts move the bales to a finished product storage area where they are checked for quality.

**BALING**

Interior storage bunkers accumulate large quantities of each separated material stream, which are subsequently processed in ultra-high-efficiency equipment for compaction into "bales" for shipment to end-use markets.

## CHANGES AND CHALLENGES AT OUR RECYCLING FACILITIES

We are committed to investing in and increasing the productivity of our recycling operations. Significant recent changes in the larger recycling landscape have posed challenges we must overcome.

### CARDBOARD

We process a greater number of cardboard boxes from the residential stream due to the growth in e-commerce (i.e., mail order).



### GLASS

Glass still makes up the second-largest proportion of recycled material, but its use has dropped over the years. Glass is a low- or negative-value material — in many places, we are charged to recycle it because there is no marketable use for it near our facilities. Also, crushed glass is very abrasive and sharp and therefore hard on our equipment.



### PLASTIC

The amount of plastics in the waste stream has risen. The type of plastics has evolved as well, with more mixed and colored plastics ending up in the recycling stream. In addition, plastic containers have been “light-weighted” by manufacturers — for example, plastic water bottles weigh as much as 25% less than they used to weigh. While this has many benefits, including reduced shipping costs and GHG emissions for manufacturers, the greater volume of lighter-weight plastics in the waste stream means that we have to process more bottles to get a ton of material. Since our costs are incurred by the amount of material (volume) that we process, while our revenue is paid on weight, our costs per ton of material processed have increased.



### PAPER

Paper consumption and recycling are down, due in part to a 50% reduction in newspaper readership over the past decade. Our MRFs were built to process 80% paper and 20% containers. Today we are processing 60% paper and 40% containers at many facilities, and this change is inconsistent with our facilities’ designs. Of the paper we still receive, less of it is the newspaper that was once an important component of our recycling feedstock.



### METAL

Metal volumes and values have remained fairly consistent. Aluminum remains the highest value material for recycling because it has many uses (e.g., for cans, electronics and, increasingly, automobiles), and it can be recycled repeatedly without diminishing in quality.

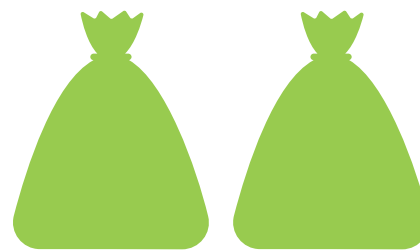


### Reducing Nonrecyclables

Nonrecyclables, or contamination in the waste stream, have increased over the years. We receive more nonrecyclable plastics, liquids and food-contaminated containers than ever before. We also receive odd and awkward nonrecyclables, such as bowling balls, garden hoses and electrical cords. The loads coming into our MRFs now average 16 percent contamination, although the percentage may be as high as 50 percent in some locations. As a result, our MRF processing costs have increased significantly over the past two years. Plastic films and bags are another key form of contamination. They get tangled in our equipment, and our crews must stop our machinery six to eight times a day to cut them out — a waste of time and money. Even though in some places we accept bundled plastic bags, we encourage customers to return their bags to retail collection sites instead. The market for clean, dry plastics collected in retail take-back programs is robust, while bags collected in curbside programs are wet and dirty and generally are not recyclable.

### Increasing Demand

At the same time, demand for clean, uncontaminated recyclables has grown. In 2013, the Chinese government began enforcing import regulations, known as Operation Green Fence, that prohibit the shipment of mixed plastics and place limits on contamination and moisture loads in paper. As a result, overall shipments to China have decreased (although ours have stayed about the same), and recycling processing costs have increased, as recyclers like us have made adjustments to adapt. All told, we export about a third of our recyclable materials — mostly to China, though to other countries as well.



## 6 TO 8

times per day our recycling crews must cut out plastic bags and film that jam our machinery



## EDUCATING CONSUMERS ABOUT RECYCLING

The public has clearly received the message that recycling is important. But the uptick in nonrecyclable material and contaminants at our MRFs has made us realize we need to add another element to the “recycle often” message — that is, to “recycle right.” We thus launched a new consumer-focused campaign in 2013 called Recycle Often. Recycle Right.<sup>SM</sup>

The campaign is intended to help consumers understand how important it is to recycle often *and* to recycle the right things. In 2013, we worked with outreach specialists both inside and outside the company to develop an educational toolkit, using proven tactics from the field of community-based social marketing. The toolkit includes graphic-based brochures and posters, websites, advertisements, radio clips, blogs, videos, local news articles and community events, as well as articles in national publications, to spread the message.<sup>19</sup>

We believe that recycling education is a shared responsibility with our municipal partners, and we are now working to share the toolkit broadly with customers and government agencies across the country. Our investment in the Recycle Often. Recycle Right.<sup>SM</sup> education program will help to ensure we are able to maintain the quality of recyclables being collected and is an important step in the evolution of sustainable single stream recycling programs.

## THREE KEY STEPS TO “RECYCLE RIGHT”



- 1 Recycle all bottles, cans and paper
- 2 Keep items clean and dry
- 3 No plastic bags

By simplifying our messaging to focus on the most common recyclable products, providing rules on how to recycle, and inspiring participation, Waste Management hopes to drive the right behaviors to meaningfully impact the amount of usable materials diverted from landfills.



**RECYCLE OFTEN.  
RECYCLE RIGHT.<sup>SM</sup>**

### Creating Recycling Rock Stars

In another recycling education effort, we sponsor a program for schoolchildren in the Pacific Northwest called Recycling Rock Star. Developed in consultation with Snohomish County, Washington, and early education and multicultural outreach experts, the program includes school assembly presentations, classroom workshops and technical assistance to schools.

The assemblies include a live theater show for grades K-6 about waste prevention and recycling. The classroom workshops combine hands-on activities with group games designed to get students to explore the impacts of their choices. In 2013, more than 6,000 students and teachers took part in one of the workshops.

Technical assistance is also offered to schools that would like to move from learning to action. We provide hands-on assistance relating to waste prevention and recycling, including site visits, materials such as containers and signs, data tracking and educational materials.

## Could Extended Producer Responsibility Policies Increase Recycling Rates?

Extended producer responsibility (EPR) is a public policy mechanism that puts responsibility on manufacturers to take back and recycle their products at the end of their useful lives. EPR has been employed in cases of hard-to-handle or toxic materials, such as paint, batteries, e-waste and sharps, among other items.

The question sometimes arises: Would expanding EPR to include traditional recyclables, such as paper and plastics, help to increase recycling rates? The evidence seems to indicate that it would not.

Canada and certain European countries, for example, have had EPR policies in place for years but still have low recycling rates (under 30 percent). European countries with high recycling rates may have EPR policies, but they also have high tip fees for landfill disposal and bans on landfilling certain materials. In the United States, several municipalities (notably San Francisco, Portland and Seattle) have achieved high recycling rates without EPR policies.

In short, increases in recycling most often come about due to public education, single stream recycling, “pay as you throw” systems, municipal mandates and incentives — not EPR.

### CITIES WITH NO EPR POLICY BUT HIGH RECYCLING RATES



## INCENTIVIZING RECYCLING

In 2013, we entered our third year as an investor and partner with Recycle Rewards, Inc., whose subsidiary, Recyclebank®, educates and engages people around curbside recycling and rewards them for taking small steps toward a more sustainable lifestyle. Since announcing the investment, we have provided more than 100 communities with access to Recyclebank's behavior change platform, leveraging education, outreach and rewards to drive real-world impact. The effort brings together Waste Management's curbside collection infrastructure with Recyclebank's vast online community, home recycling incentives and education platform, enhancing growth prospects for both companies and motivating and mobilizing more people and communities to recycle.

Recyclebank uses a mix of education, personal metrics and incentives from its reward partners to drive behavior change. Members learn how to make

smarter, more sustainable choices and are rewarded with points that can be redeemed for discounts and deals in their communities and with national brands. In 2014, Recyclebank introduced OneTwine.com, an online shop where residents and members can discover carefully vetted products that are better for them, their homes and their wallets. Members can use points they have earned from their recycling and other green actions at the checkout for savings of up to 25 percent.

Since Recyclebank's founding, its 4.5 million members have been rewarded for recycling nearly 2.3 billion pounds of waste in 300 communities. Recyclebank has earned a number of accolades over the years, including recognitions from the World Economic Forum, the United Nations Environment Programme, the U.S. Conference of Mayors and the non-profit organization B Lab.

# 100+

communities have access to Recyclebank's green education, outreach and rewards program



# 4.5M

members have been rewarded for recycling nearly

# 2.3B

pounds of waste in

# 300

communities since its creation

## EXPANDING RECYCLING OF HARD-TO-HANDLE MATERIALS

Recycling everything we can requires going beyond the cart or bin on the curb. To help our residential and commercial customers avoid tossing hard-to-recycle items in the trash, we have several initiatives designed to improve product reuse, recovery and recycling.

### Recycling Electronic Waste

Over the past several years, recycling options for cell phones, ink and toner cartridges, computers and other electronics have increased. Many of these products or their component parts can now be recycled or reused. But when disposed of improperly, they can leak toxins into the environment.

Waste Management operates several household product recovery businesses, and in recent years we began consolidating them under one organizational umbrella called the Product Recovery Group. Our Product Recovery Group now includes the following:

- **Tracker Services**, which provides mail-in recycling for compact

fluorescent bulbs, fluorescent tubes, batteries, small electronics and other common wastes

- **ReCommerce**, which resells working electronic devices — cell phones, tablets, computers, iPods, etc. — as well as ink jet printers and cartridges
- **E-cycling**, which tears electronics down to individual parts and sells them for their commodity value

In 2013, Waste Management recycled or resold 35,235 tons of these items, collected from cities, counties, and commercial and corporate partners across North America.

Our Loveland, Colorado, ReCommerce facility processes cell phones, laptop computers, iPods, tablets, and ink jet and toner cartridges for recycling or resale. The site earned Responsible Recycling (R2) and Recycling Industry Operating Standard (RIOS) certifications. R2/RIOS is a major certification process that covers, among other things, the way that e-waste is separated from traditional waste streams to ensure that materials such as lead, mercury and cadmium are handled properly.

## IN 2013, RECOMMERCE PROCESSED:



**1.4M**

cell phones



**2.4M**

ink jet and toner cartridges



**90K**

laptop computers



**4K**

tablets



**27K**

iPods

## PRODUCT RECOVERY GROUP OPERATIONS



Our electronics recycling facilities have also earned the Basel Action Network eStewards certification, as well as ISO 9001 and 14001 certifications. These kinds of external verification of facilities' environmental and social practices are

important to customers with sustainability and risk mitigation programs.

We work to ensure employee recycling of electronics as well, with an internal electronics recycling program for Waste Management offices.

### Providing Convenient, Home-Based Pickup for Hazardous Household Wastes

Waste Management's At Your Door Special Collection<sup>SM</sup> service provides our residential customers with an easy, safe and responsible way to dispose of the difficult, sometimes hazardous, and hard-to-recycle items that almost every household accumulates. At Your Door Special Collection collects automotive products, automotive and household batteries, garden chemicals, household chemicals, paint products, electronics, and other materials such as fluorescent lamps (CFLs and tubes) and thermometers.

The materials gathered through the service can often be recycled safely. In 2013, more than 86 percent of materials collected by the At Your Door Special Collection program were sent for recycling. Sometimes this material goes to Waste Management recycling facilities; other times it is recycled by third-party vendors.

At Your Door also offers safe and convenient management of home medical waste such as needles and lancets.

Municipalities sponsor this drop box program in partnership with Waste Management, enabling residents to either place their sharps in a pre-provided container and mail it back to Waste Management, or drop off their sharps in designated drop boxes in the community.

## +86%

of materials collected by the At Your Door Special Collection<sup>SM</sup> program were sent for recycling

### SANTA MONICA OPTS FOR HOME PICKUP OF HAZARDOUS WASTES

In 2013, Santa Monica, California, shuttered its household hazardous waste center, opting instead for the At Your Door Special Collection service we offer. The city pays Waste Management an annual fee so residents can make an unlimited number of pickup requests for paints, pesticides, automotive products and other items that can be dangerous to throw in landfills — instead of requiring residents to cart these items to a local household hazardous waste center. The program not only reduces vehicle trips by residents, but also saves the city roughly \$100,000 a year.





### Using DART to Facilitate “Green” Construction and Demolition

Our Diversion and Recycling Tracking Tool (DART) helps project planners, contractors, architects and building owners set “green” performance targets and measure their progress during construction, renovation and demolition projects. DART is used across the United States and Canada to track both materials reused on construction project sites as well as those processed for recycling off-site. The diversion rates and

documentation captured through DART support LEED certification and corporate sustainability reporting.

In 2013, more than 370,000 tons of diverted construction and demolition waste were tracked using DART. Our top 10 construction industry customers alone put more than 90,000 tons of materials to reuse and achieved a 70 percent diversion rate. These customers used DART to create diversion plans, monitor their progress and report

their final performance on a project-by-project basis. With a few keystrokes, they were able to see exactly how their project was performing.

### Recycling Fly Ash for Coal Power Plants

Air pollution regulations that require particulates to be captured rather than emitted have led to an increase in the carbon levels found in fly ash, a byproduct of coal combustion. Fly ash is commonly recycled by using it in concrete. But elevated carbon levels render the material less useful for this purpose.

That’s why Waste Management acquired Carbon Blocker™, a patented fly ash treatment system for coal-fired power plants. Carbon Blocker enables more fly ash to bypass the landfill and instead become a core component of concrete. Combining liquid chemistry and bulk powder handling, the system creates fly ash that can be used with predictable performance in air-entrained concrete.<sup>20</sup> Carbon Blocker can be permanently installed at power plants.



**373,934**

tons of construction and demolition waste diversion were tracked using DART in 2013

## GETTING HIGH-RECYCLED-CONTENT PRODUCTS TO CONSUMERS

While handling and processing waste and recyclables remains our primary business, Waste Management has branched out in recent years with a few select initiatives that help to “close the loop” on the materials life cycle — that is, developing and marketing products that are eco-friendly and contain a high percentage of recycled content.

### Waste Management-Branded Recycling and Trash Bags at Walmart

In 2014, Walmart launched two new Waste Management-branded products:

- Paper recycling bags (in two sizes) for residential customers to use for storing recyclables before transferring them to a larger recycling bin or cart. The bags, which contain facts and messages about recycling, are a better choice than storing recyclables in plastic bags, which are nonrecyclable and might mistakenly make their way to our MRFs.
- Premium trash bags (in two sizes) that are made with 65 percent recycled plastic.

These products will be on the shelves of 1,000 Walmart stores through the end of 2014, at which time the effort will be evaluated, with the potential of more stores being added in 2015.

### Diverting Plastics from Landfill with MicroGREEN

Every year in America, 58 billion paper cups and 47 billion water bottles are used and thrown away. In 2010, we made a strategic investment in MicroGREEN™, a company that uses technology to turn this problem into an opportunity.

MicroGREEN’s InCycle® cups incorporate up to 50 percent recycled content and are also 100 percent recyclable themselves. A life cycle analysis by Franklin Associates found that the InCycle technology compared very favorably to other disposable cups, requiring the lowest amount of energy to produce while producing the lowest amount of total solid waste.

In 2013, InCycle became the official hot cup on all Alaska Airlines flights, providing cost savings, greater stacking efficiency and lighter-weight loads. Previously, the

airline had used double-walled paper cups for coffee service. The InCycle cup saves Alaska Airlines 35 percent in cup costs, while conserving natural resources. MicroGREEN hopes to see the same results through its recent partnerships with United and Virgin Airlines.





## THE WASTE MANAGEMENT PHOENIX OPEN THE GREENEST SHOW ON GRASS

The Waste Management Phoenix Open (WMPO) is among the longest-running events on the PGA tour, attracting more visitors — more than 500,000 in one week — than any other. In 2013, the 78-year-old golf tournament set a sustainability milestone, becoming the first sporting event of its kind to attain “zero waste” status. In 2014, we repeated this zero waste status, diverting 100 percent of waste away from landfills. Put in simple terms: seven days, 563,000 fans, zero waste.

In total, the combined recycling, composting and waste-to-energy efforts from the 2014 event avoided 345 metric tons of greenhouse gas emissions. This equates to saving:



**632**

mature trees



**369K**

gallons of water



**471K**

kilowatt-hours  
of electricity



**969**

cubic yards of  
landfill space



## GROWING RECYCLING

As the title sponsor, we use the event to showcase our mission and our zero waste vision, diverting all tournament materials through reuse, recycling, composting or material recovery via waste to energy.

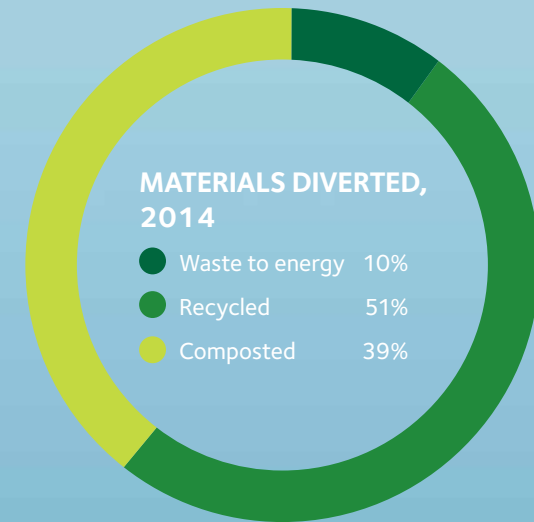
In 2012, we launched the Zero Waste Challenge, an initiative aimed at controlling event materials and educating attendees with an eventual goal of sending zero waste to the landfill. We hit our goal after just two events. There are no trash receptacles on the golf course — only recycling and compost bins for all public and back-of-house operations. We work with the Council for Responsible Sport, which formally recognizes the successful completion of socially and environmentally responsible sporting

events. In 2013, the Council awarded the WMPO with a Gold certification — the first such certification for a golf tournament. Waste Management also works with UL Environment for a third-party certification of the event's diversion, achieving a 100 percent landfill diversion rate with 10 percent incineration with energy recovery in 2014.

The event won the 2014 *Beyond Sport Awards Environment award* and was named Project of the Year by *Environmental Leader*.

Each year, we hold vendor meetings to explain what types of materials can be used, and we train more than 1,000 local volunteers to help fans properly dispose of their waste, from food to bottles.

Learn more about the [event](#).

**RECOVERED WASTE PER ATTENDEE**

(pounds)



**WM THINK GREEN.**

WASTE MANAGEMENT®



# EXTRACTING VALUE FROM ORGANICS

The United States produces a prodigious amount of food waste and yard trimmings. Combined, these organic materials comprise about 28 percent of the U.S. waste stream, making them an important target for recapturing value. While widespread organic waste collection may be economically challenging in some parts of the country, programs to divert organic wastes from landfills have been growing in communities where both the economic drivers and regulatory policies are favorable.

Waste Management provides food waste collection services to more than 700,000 residential and commercial customers and yard waste collection to even more. In 2013, we diverted 2.4 million tons of yard trimmings and food waste for beneficial use as compost, soil amendments and energy. As interest continues to grow, we have been working to expand the options for recovering value from organic waste.

### **COMPOSTING ORGANIC WASTE**

Most of the organic waste we collect goes to facilities that create marketable compost and soil amendment products. As of mid 2014, Waste Management operated or was a partner with the operator of 39 organics processing

facilities across the country to help us meet our customers' organics management needs.

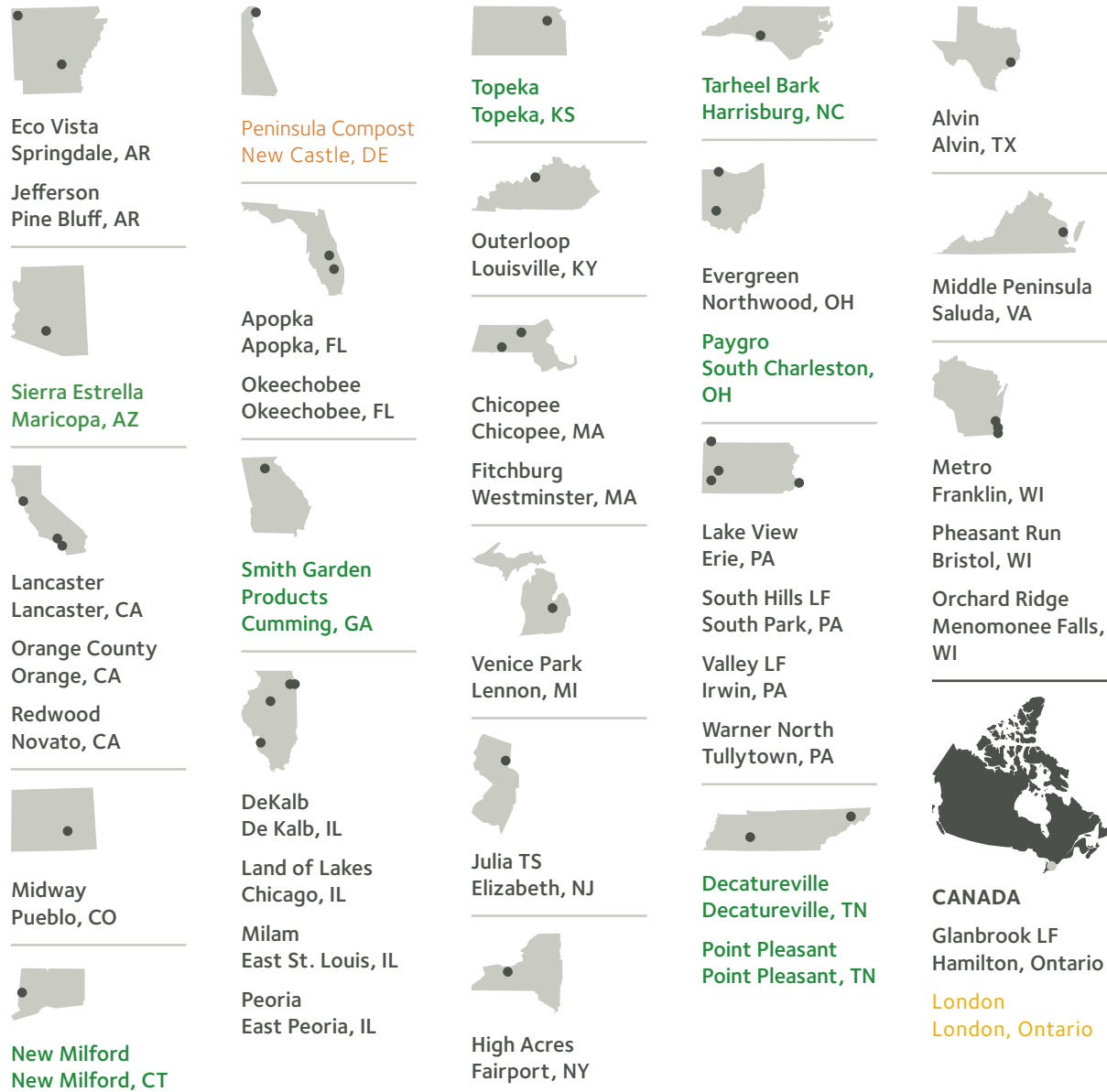
Strategic partnerships with, and investments in, organics innovators have allowed for expansion of our organics service offerings. In 2010, for example, Waste Management invested in Garick, a company that creates value-added products including compost, soils, organic fertilizer, mulch products and greenhouse growers' blends. Waste Management also invested in the Peninsula Compost Company, which owned and operated the now-closed Wilmington Organics Recycling Center in Delaware.

### **CONVERTING FOOD TO ENERGY**

While composting continues to be a key, low-cost solution for managing large volumes of organic materials, other technologies — such as our proprietary Centralized Organic Recycling equipment (CORG<sup>®</sup>) process — allow us to take advantage of the energy in organics to produce biogas for electricity and fuel.

Waste Management collects commercial food waste (from sources such as restaurants, food processing plants, schools and grocery stores), screens it through one of our CORG facilities to remove contamination (e.g., plastic, utensils, packaging, bones), and blends the waste into an engineered bioslurry similar in thickness to cooked oatmeal.

WASTE MANAGEMENT ACTIVE ORGANICS RECYCLING SITES IN MID-2014



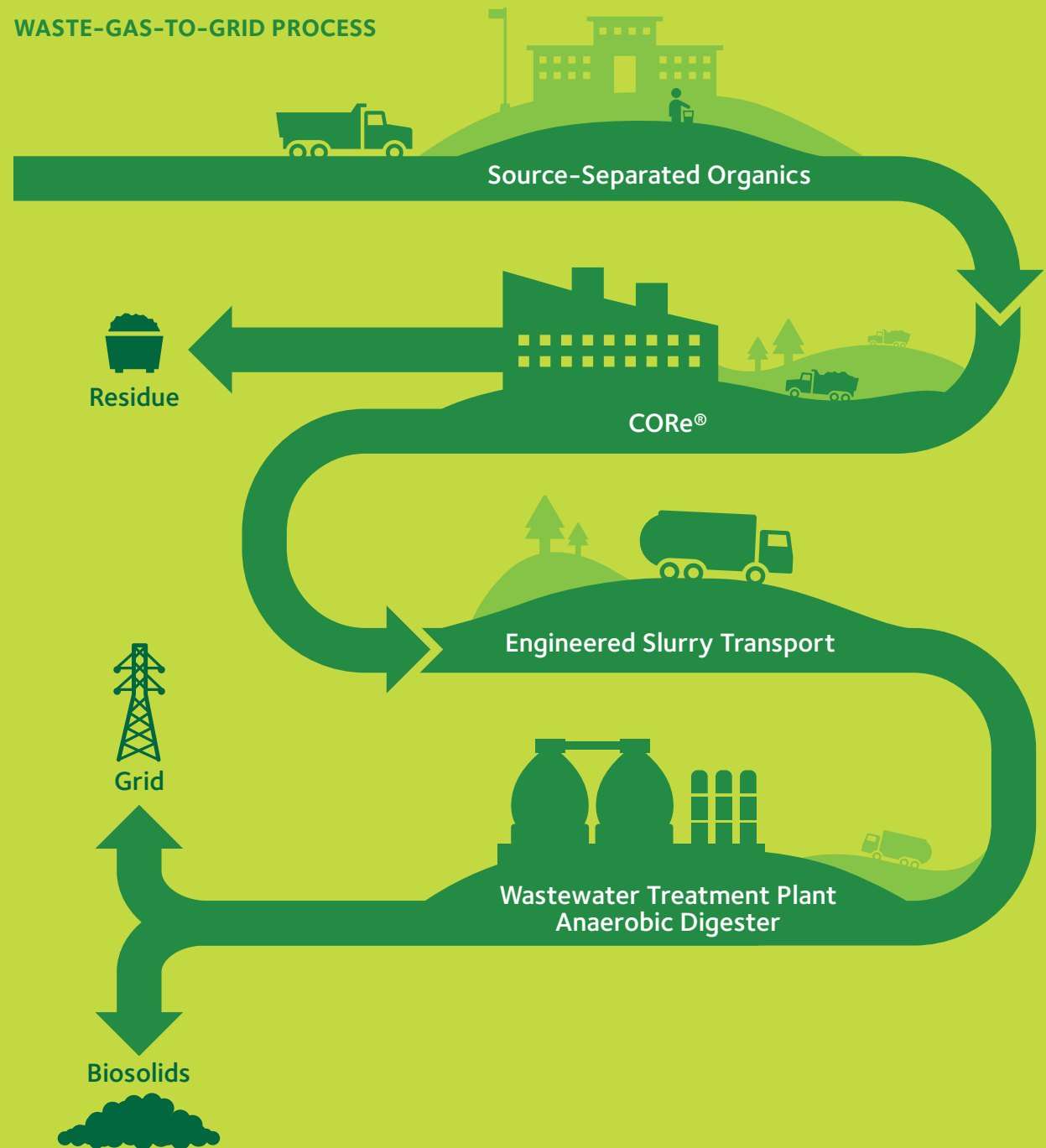
The slurry is loaded into tanker trucks at our facility for delivery to municipal wastewater treatment plants, where it is anaerobically digested to dramatically increase the production of biogas, a useful and renewable energy source. Adding just 7 percent additional organic material in the form of the engineered slurry to the plants' anaerobic digesters can increase energy output by over 70 percent. We are still piloting this technology, with CORE® projects in New York City and Los Angeles and another under development in Boston.

- WM active site
- WM partnership/Garick
- WM partnership/Peninsula (now closed)
- Harvest/WM site

## PILOT "WASTE-GAS-TO-GRID" PROJECT IN NEW YORK CITY

In December 2013, Waste Management and the New York City Department of Environmental Protection announced a partnership to reduce the amount of organic waste sent to landfills, while also producing a reliable source of clean energy. Waste Management's Varick I transfer facility began using our CORE<sup>®</sup> process to transform organic food waste, collected from local schools, into a liquefied feedstock. The feedstock is delivered in sealed tankers to the Newtown Creek Wastewater Treatment Plant in Brooklyn, where the slurry is added to wastewater sludge to increase the production of biogas. We are currently processing 10 tons per day of organic waste at the Varick I facility, and if this phase of the project is successful, there is potential to raise the capacity to 500 tons per day over the next three years. This New York City pilot project is one of the nation's first waste-gas-to-grid projects and has the potential to reduce annual greenhouse gas emissions by more than 90,000 metric tons.

### WASTE-GAS-TO-GRID PROCESS





# RECOVERING ENERGY FROM WASTE

As our customers seek ways to recover value from what would otherwise be wasted, we continue to develop cost-effective solutions for creating renewable energy from waste. At specially designed facilities, we can capture the energy value in household trash as well as business and industrial nonhazardous waste — and convert it into renewable electricity and fuel.<sup>21</sup>

### GENERATING ELECTRICITY AT OUR WASTE-TO-ENERGY FACILITIES

Our specially engineered “waste-to-energy” (WTE) plants convert municipal solid waste (MSW) into electricity through the use of carefully controlled combustion. In 2012 and 2013, our wholly owned Wheelabrator Technologies unit operated 17 WTE plants. Processing more than 23,000 tons of waste per day, these plants can produce 5.3 billion gross kilowatt-hours of power. In 2013, Wheelabrator sold more than 4.6 billion kilowatt-hours, enough to power over 529,000 homes, avoiding the equivalent of burning 3.65 million tons of coal. Wheelabrator also sold 2.1 million pounds of steam in 2013, up from 0.8 million pounds in 2007.

### WHEELABRATOR TECHNOLOGIES' WASTE-TO-ENERGY SALES

(billions of kilowatt-hours sold<sup>22</sup>)



In 2013, that was enough energy to power



**529K**<sup>23</sup>

homes

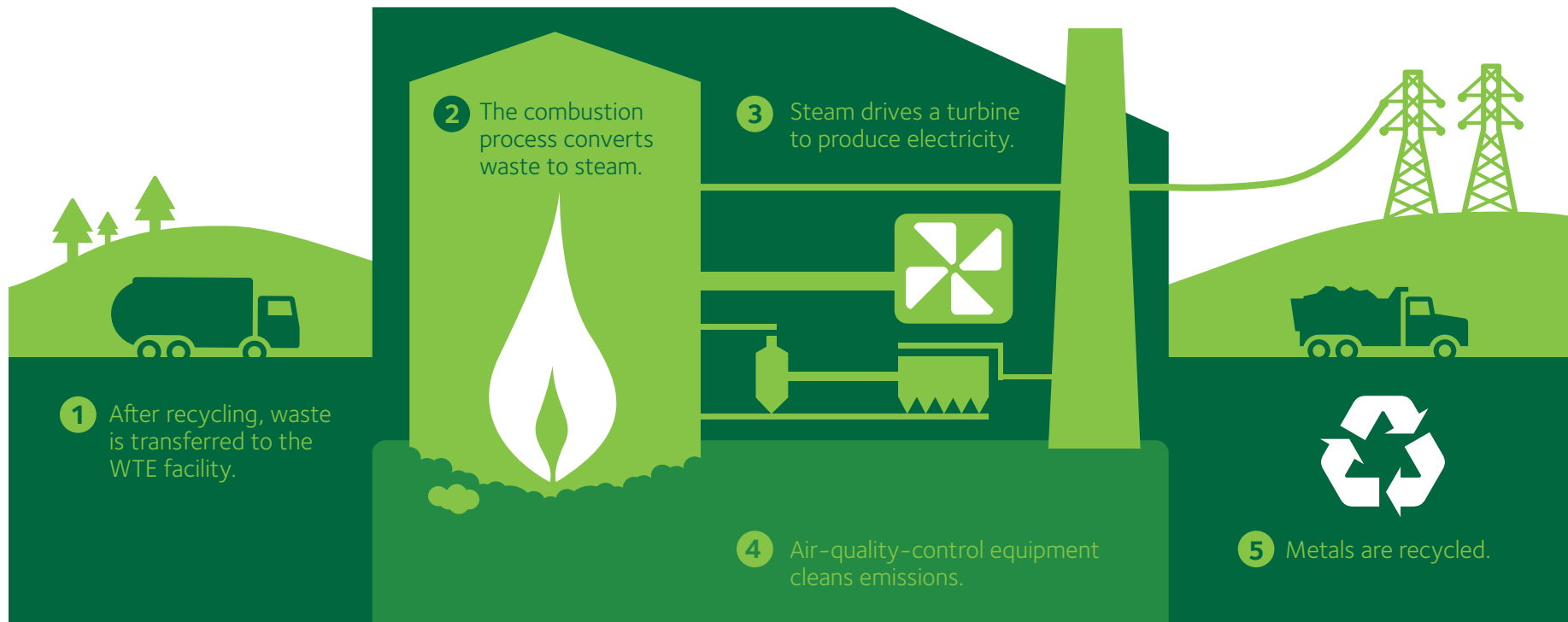
and avoid



**3.65M**<sup>24</sup>

tons of coal

## WASTE-TO-ENERGY PRODUCTION



## POLLUTANT REDUCTIONS

Pollutants	% Reduction
Dioxins and furans	99+%
Mercury	96%
Cadmium	96%
Lead	97%
Particulate matter	96%
Hydrogen chloride	94%
Sulfur dioxide	88%
Nitrogen oxides	24%

Our WTE plants use advanced emissions-control equipment to meet stringent air emissions standards, providing a cleaner alternative to the use of fossil fuels. In fact, the U.S. Environmental Protection Agency has described WTE facilities as having “less environmental impact than almost any other source of electricity.”<sup>25</sup> According to the EPA, MSW combustion facilities have reduced their emissions significantly between 1990 and 2005.<sup>26</sup>

Many of the communities we serve with our WTE facilities have implemented progressive waste prevention and recycling programs and have set ambitious goals for encouraging public participation and increasing recycling rates. WTE facilities also have positive economic impacts. A 2013 report by Governmental Advisory Associates found that the WTE sector’s direct and indirect contributions resulted in the creation of nearly 14,000 jobs;

## RECOVERING ENERGY FROM WASTE

\$890 million in combined wages, salaries and benefits; and \$5.6 billion in total national economic impact.<sup>27</sup>

In addition, our WTE plants can provide “green steam” — steam produced by renewable energy — to cities and facilities. In Baltimore, Maryland, for example, Wheelabrator has been partnering with Veolia Energy North America for 28 years to supply nearly half of the steam Veolia delivers to provide heating to 230 customers in the central business district and Inner Harbor East. The partnership reduces Baltimore’s greenhouse gas footprint by nearly

47,000 tons of CO<sub>2</sub>e per year, the equivalent of removing 8,400 cars from city streets. In 2013, Wheelabrator’s WTE facility in Peekskill, New York, announced a partnership with a commercial laundry company, White Plains Linen, to supply steam directly to its 100,000-square-foot facility. The steam will power laundry equipment and heating systems, reducing the facility’s annual natural gas usage by more than 900,000 therms and cutting its carbon footprint by 90 percent.

## PARTNERSHIP IN CHINA

China represents one of the fastest growing markets for environmental, energy and waste management. For nearly four years, Waste Management has been successfully collaborating with Shanghai Chengtuo (SCH), through our investment in SCH’s Shanghai Environment Group (SEG), to share best practices and help build and manage waste-to-energy facilities in China. Since the partnership began in 2010, SEG has grown from two to nine WTE plants in operation or under construction. In 2013, we restructured our partnership with SEG to convert our equity interest to an operations and technical services agreement.

## WHEELABRATOR AWARDS IN 2012 AND 2013 HIGHLIGHT ENVIRONMENTAL STEWARDSHIP

### Environmental Stewardship

Wheelabrator Gloucester received an Environmental Stewardship award from the New Jersey Department of Environmental Protection. The state’s stewardship program “recognizes businesses that voluntarily take measures to go above and beyond compliance with environmental laws and regulations.”

### Distinguished Service

The Elizabeth River Project in Virginia awarded Wheelabrator Portsmouth a Distinguished Service award for air emissions and odor control upgrades, as well as a River Star award for efforts to keep the Elizabeth River clean. Wheelabrator was cited as a Model Level business, the highest category awarded.

### Gold Excellence

The Solid Waste Association of North America named Wheelabrator Spokane as the winner of its Gold Excellence Award in the WTE category. The award recognizes Wheelabrator’s high-quality service; superior technical design; demonstrated excellence in health, safety and environmental compliance; and ongoing commitment to community engagement in Spokane, Washington.



## OUT OF THE ASHES

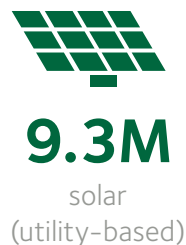
After energy is recovered from the combusted waste in a WTE plant, about 10 percent of the original volume remains as ash. This ash contains recyclable metals that can be recovered before the ash is sent to landfills. In 2014, to significantly enhance metals recycling at our WTE facilities, Wheelabrator formed a joint venture with Inashco, a Dutch specialist in the recovery of both ferrous and nonferrous metals from the ashes of WTE facilities. The new company, Eco Recovery Solutions, will use Inashco's patented and proprietary Advanced Dry Recovery technology to assist in the recovery of ferrous and nonferrous metals, including pieces of copper, zinc, lead and aluminum as small as 0.5 mm in size, a considerable advance compared with conventional technologies.

## WASTE MANAGEMENT – A MAJOR PRODUCER OF ELECTRICITY

As of 2011, Waste Management was reported to be the 100th largest electric power producer in the United States.<sup>28</sup> In 2013, our WTE facilities, along with our landfill-gas-to-energy facilities (see pp. 54–55) and two biomass plants, produced 10 million megawatt-hours — enough electricity to power over 1 million households, or the equivalent of over 6.1 million tons of coal. Based on data from the U.S. Energy Information Administration, Waste Management's total renewable energy production exceeded that of all U.S. utility-based solar production. The federal government designates waste as a renewable energy source, just like wind or solar power. But unlike wind and solar energy, which are variable in their daily, monthly and seasonal availability, waste-based energy is a base load source, available 24 hours a day, seven days a week.<sup>29</sup>

## U.S. RENEWABLE ELECTRICITY PRODUCTION IN 2013 BY ENERGY SOURCE

Net U.S. generation (megawatt-hours)



**10.0M**  
Waste Management  
total renewable energy

Source: [www.eia.gov/electricity/monthly/epm\\_table\\_grapher.cfm?t=epmt\\_1\\_01\\_a](http://www.eia.gov/electricity/monthly/epm_table_grapher.cfm?t=epmt_1_01_a)

## CREATING FUEL FROM WASTE

As part of our efforts to convert waste into energy, we are pursuing innovative technologies to help us turn waste into renewable fuels. Although many of these technologies are still in the pilot phase and will remain so for the next several years, we are excited about the potential they hold.

### Converting Mixed Waste to SpecFUEL®

One of our newest technologies is called SpecFUEL, a highly engineered fuel that can be utilized in industrial boilers and kilns as a supplement to or replacement for fossil fuels such as coal and petroleum coke. SpecFUEL is made from post-recycled mixed waste using a 13-step process involving sophisticated sorting equipment that removes recyclable metals, organics, PVC plastic and inert materials that are unsuitable for fuel. The remaining paper and plastic materials are then transformed into uniform, high-quality, high-energy-content fuel.

Using SpecFUEL in place of coal can cut emissions of air pollutants, reduce



greenhouse gas emissions by 15 percent on a life cycle basis and lower overall energy use by 52 percent. It can also divert up to 50 percent of our customers' waste streams from landfill disposal to beneficial reuse. Our SpecFUEL plant in Philadelphia, Pennsylvania, opened in early 2014 and is an important part of the city's sustainability initiatives.<sup>30</sup>

### Converting Plastics to Fuel

We have also been developing technology to transform plastics into fuel using pyrolysis, by which the chemical composition of organic material is changed through exposure to high temperatures. The technology is ideal to recover

additional value from hard-to-recycle plastics. Pyrolysis can transform these industrial and consumer plastics into a high-octane synthetic crude oil, which can be converted into ultra-low sulfur diesel as well as other transportation fuels and petroleum products.

Our first plastics recovery facility began its start-up phase in Portland, Oregon. The largest commercially operational waste-plastic-to-synthetic-crude-oil facility in North America, this facility processed 848 tons of plastics into 200,972 gallons of oil in 2013. The oil was delivered to a Tacoma, Washington, oil refinery at market rates.



# HARNESSING ENERGY AT THE LANDFILL

Materials that cannot be recycled, reused or converted to other uses will end up in a landfill, but they can still add value back into the supply chain. Conversion of landfill gas into energy enables these materials to be part of the circular economy.

Waste decomposing in landfills naturally produces methane, which is the major component in natural gas fuel and also a potent greenhouse gas. At our landfill-gas-to-energy (LFGTE) facilities, we capture this methane and use it as an alternative energy source, reducing methane emissions and helping to offset the impacts of energy production from the fossil fuels that might otherwise be used. As the largest LFGTE developer and operator in North America, we harness this energy to power homes, provide fuel for industrial uses and even fuel vehicles.

### USING LANDFILL GAS TO PRODUCE ELECTRICITY

Most of our LFGTE facilities convert landfill gas into electricity. In 2012 and 2013, we had 137 LFGTE projects, providing the equivalent of over

4.6 million megawatt-hours of electricity — enough to power more than 472,000 homes each year. This electricity generation replaces the need for burning 2.5 million tons of coal each year.<sup>31</sup>

### WASTE MANAGEMENT LFGTE ELECTRICITY PRODUCTION, 2007-2013<sup>32</sup>

	2007	2011	2012	2013
Number of projects	108	131	137	137
Megawatt-hours sold <sup>33</sup>	3.60M	4.51M	4.67M	4.63M
Number of households this could power <sup>34</sup>	383K	466K	470K	472K
Coal use this could avoid (tons)	1.87M	2.35M	2.52M	2.50M

### WASTE MANAGEMENT WINS AWARD FOR LANDFILL GAS CONVERSION

In February 2014, our Saint Nicéphore LFGTE facility in Quebec, Canada, received a Sustainable Action Award from the Quebec Association for Energy Advancement, which recognizes excellence in energy efficiency projects. The Saint Nicéphore project both produces electricity from landfill gas for Hydro-Quebec, a local utility, and uses residual heat created during power generation to maintain the temperature at local greenhouses. The process works in this way: We extract naturally occurring gas from the landfill, convert it into a fuel for our power generators, and send the water used to cool the generators to greenhouses operated by a neighboring business. The heated water is circulated to ensure an ideal ambient temperature for the production of tomatoes, even during the harsh Canadian winters. The process also substantially reduces the consumption of diesel fuel normally used to heat the greenhouses, avoiding use of more than 500,000 gallons of diesel annually.

## LANDFILL-GAS-TO-ENERGY PRODUCTION



**1** The cycle begins with the collection of residential and commercial waste. Recyclables are separated, and the remaining waste is then transported to Waste Management landfills for permanent disposal.

**2** Much of this waste, including food, paper and cardboard that are not otherwise diverted, is organic in nature. Bacteria digest this organic waste and produce methane gas and carbon dioxide as natural byproducts.

**5** The gas is piped to an electricity generating plant, on-site or off-site, where it is used as fuel to turn engines or turbines to generate electricity. Landfill gas may also be piped off-site to industrial customers for use as an alternative fuel source.

**4** At the compression facility, the landfill gas is de-watered, filtered and pressurized.

**3** The methane gas is recovered via a series of wells drilled into the landfill. These wells are connected by a common pipe system that collects the gas and transports it to a nearby compression facility.



## USING LANDFILL GAS TO CREATE NATURAL GAS FUEL

Waste Management is also pioneering efforts to convert landfill gas into natural gas fuels. In October 2013, our Milam Landfill in Fairmont City, Illinois, hosted a groundbreaking ceremony for an on-site renewable natural gas facility, which will begin operations in late 2014. Milam is our third project using landfill gas to power natural gas vehicles, in addition to our Altamont Landfill in California and a landfill in Ohio.

In collaboration with Ameren Illinois, a utility focusing on electricity and gas delivery, the new Milam facility will convert landfill gas into pipeline-ready natural gas and inject it into Ameren's gas distribution network. The facility will have the ability to process approximately 3,500 standard cubic feet per minute of incoming landfill gas — as much gas as it takes to fuel about 400 of Waste Management's compressed natural gas (CNG) collection trucks each day and more than 10 percent of the gas used in our entire CNG fleet. In Illinois, we currently operate more than 100 CNG trucks, displacing

approximately 1 million gallons of diesel fuel annually. By capturing and treating the landfill gas rather than burning it, the facility will also reduce emissions of carbon monoxide, nitrogen oxides and particulate matter from the landfill by around 60 percent.

## USING LANDFILL GAS TO CREATE OTHER FUELS AND PRODUCTS

As part of our efforts to turn landfill gas into valuable commodities, we have invested in the development of gas-to-liquids (GTL) technology. The technology provides a method of converting landfill methane to syngas (a mixture of mostly hydrogen and carbon monoxide, with smaller amounts of carbon dioxide and methane) and then to new, high-value materials for the transportation and chemical industries. This GTL technology offers another option for the use of landfill gas, especially for facilities that cannot economically convert landfill gas to electricity.

In 2014, Waste Management announced a joint venture with NRG Energy, Ventech Engineers International and



Velocys to use smaller-scale GTL technology to convert landfill gas, co-fed with natural gas, into renewable fuels and chemicals, such as cleaner-burning diesel and multi-purpose industrial wax. We helped to pioneer the use of this kind of technology by building and operating a demonstration unit at our East Oak Landfill, located just outside of Oklahoma City, which has since accumulated more than 10,000 hours of successful operation and received a "Greenovation" award from the U.S. Environmental Protection Agency in May 2014. As part of the joint venture, the first commercial facility is now under development and will also be located at the East Oak Landfill.

OUR OPERATIONS

# COMMITTED TO SUSTAINABILITY, OUR EMPLOYEES AND OUR COMMUNITIES

SUSTAINABILITY  
PERFORMANCE  
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CREATING A  
GOOD PLACE  
TO WORK  
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WORKFORCE  
SAFETY  
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ENGAGING WITH  
COMMUNITIES  
PAGE 87



# SUSTAINABILITY PERFORMANCE



Even as we help our customers manage their environmental impacts and opportunities, we carefully manage our own. Across the range of our operations, we strive to conserve water and energy; reduce our greenhouse gas emissions; and avoid adverse impacts on land, water and air. We also work to enhance the communities where we do business by preserving wildlife habitats.

### **MANAGING WASTE DISPOSAL AND MINIMIZING IMPACTS**

Waste Management provides solid waste collection services to more than 21 million customers in North America — from residential households to public venues to large companies with hundreds of locations. All told, after recycling or diverting various materials for reuse (see pp. 14–52), we safely manage the disposal of nearly 100 million tons of waste annually, including common municipal trash and highly specialized materials such as medical and industrial waste. To handle this volume, Waste Management operates the largest network of landfills in our industry, and we work hard to minimize the impact of those facilities on neighbors and the environment.

#### **Securing Waste in Modern Landfills**

Modern landfills are the products of sophisticated engineering, providing both secure containment systems for the disposal of waste and the opportunity to capture value through the conversion of waste to energy.

Waste Management's modern landfills in the United States were developed under the federal Resource Conservation and Recovery Act (RCRA), which requires rigorous siting evaluation, site characterization and scientific engineering design, as well as a comprehensive permitting and regulatory approval process that includes public notification and comment. RCRA standards also require a range of measures to prevent environmental contamination, including the use of engineered liners and covers, collection

and control systems for landfill gas, and collection and treatment systems for leachate (water that accumulates in and percolates through waste).

Our modern sites are designed and operated to ensure that our landfills go beyond regulatory requirements. We continually monitor and work to improve the safety and environmental security of our disposal facilities, and we are committed to reporting the results of these efforts. We strive to avoid conditions that cause concern for neighbors and communities, including odors and noise, regardless of whether those conditions are covered in our regulatory obligations.

We also work with waste sector experts to understand what happens within landfills after they are closed. Studies

have shown that modern municipal solid waste landfills tend to improve predictably over time, steadily producing less gas and less (and cleaner) leachate.<sup>35</sup> Many of our landfills are designed and managed to ensure they can be used after closure for commerce, industry, conservation and recreation (e.g., conversion into parks for wildlife and the general public).<sup>36</sup>

### Protecting Surface Water and Groundwater

Waste Management utilizes extensive engineering controls and practices to protect surface water and groundwater, and we continually seek to improve these controls and practices. Throughout 2012 and 2013, we piloted and then launched a new initiative to rethink landfill design and operation to avoid creating “contact water,” or water that comes in contact with waste or contaminants. We cannot stop the rain and the snow, but we can reduce the ways that precipitation seeps into landfills. We have created a toolkit of best management practices that are

### EXPANDING DISPOSAL SERVICES FOR THE OIL AND GAS INDUSTRY

**Our new Energy Services line of business provides single source environmental management services to the oil and gas industry, including liquid and solid waste treatment, recycling, and disposal processes. We ensure all waste residuals are stored in a lined, sealed and permitted location. In 2013, we acquired two North Dakota energy services companies, Summit Energy Services and Liquid Logistics, to enhance our service offerings to oil and gas customers operating in the prolific Bakken Shale formation, one of the largest U.S. oil and gas fields.**

being implemented first at 23 top-priority sites before being rolled out more broadly.

We maintain a comprehensive network of more than 6,000 groundwater-monitoring wells around our facilities, and every landfill uses monitoring strategies (many involving sophisticated statistical evaluations) to ensure that water quality in adjacent surface water and groundwater bodies is not impacted. We are happy to report that our modern MSW landfills are all performing as designed, and not a single one has had to take corrective actions to clean up groundwater under neighboring properties.

To make sure that remains the case, we employ a staff of more than 100 professional engineers, environmental scientists, regulatory experts and technicians who work to ensure that every facility implements best management practices to protect surface water, storm water and groundwater from any potential impacts from our operations. We use managed basins, tanks, containment structures and separators to redirect for proper disposal and treatment any contact water that is created. We also have been auditing our on-site wastewater treatment plants to optimize efficiency.

## OPERATING A CLEAN AND EFFICIENT TRUCK FLEET

Our fleet of more than 32,000 collection and support vehicles is one of the most visible symbols of our company — and a potential source of some of the greatest reductions in our carbon footprint. Garbage trucks, outfitted with heavy machinery and carrying tons of waste, are among the least fuel-efficient vehicles on the road. The frequent stops that occur as trucks service customers along their routes further lower fuel economy. To reduce these impacts, Waste Management is utilizing cleaner vehicles and fuels and minimizing the number of miles our trucks cover.

In 2007, we set a goal of reducing our total fleet carbon dioxide emissions by 15 percent below 2007 levels by 2020. Meeting that goal would reduce fuel use by 350 million gallons, reduce carbon dioxide equivalent emissions by about 3.5 million metric tons and save \$1 billion in operating costs. We are excited to report that we have exceeded that goal and done it several years ahead of schedule — reducing fleet CO<sub>2</sub>e emissions by 18 percent below 2007 levels in 2013.

## Transitioning to Natural Gas Vehicles

One of our primary strategies for reducing emissions is to transition our collection fleet of nearly 19,000 vehicles from diesel to cleaner-burning natural gas. With more than 3,000 natural gas collection trucks on the roads in North America, Waste Management has the largest fleet of vocational heavy-duty natural gas trucks in the United States. We are continuing to expand this fleet as we buy new vehicles — more than 90 percent of the trucks we purchased in 2013 had natural gas engines.

When we replace an old diesel truck (2006 or older) with a new natural gas one, it reduces our diesel fuel use by an

average of 8,000 gallons per year and our greenhouse gas emissions by about 22 metric tons per year (the equivalent of a 21 percent emissions reduction per truck). Natural gas fueled trucks are also quieter than diesel and cut smog-producing nitrogen oxide emissions by up to 50 percent compared to the cleanest diesel trucks.

To help others evaluate the benefits of transitioning fleets to natural gas, Waste Management participated in a project conducted by the National Renewable Energy Laboratory (NREL) to develop a model to analyze the costs, benefits and performance tradeoffs associated with switching from diesel to natural gas.

## FLEET SNAPSHOT 2013

**32,174**

trucks total

**18,949**

collection vehicles

**3,075**

natural gas vehicles  
(year-end 2013)

**\$315M**

investment in natural  
gas vehicles

**1,745,919**

tons of CO<sub>2</sub>e emissions

**26**

hours of yearly driver training  
for existing drivers

**66-106**

hours of yearly driver training  
for new drivers

(driver training hours include  
classroom and on-road time  
(see pp. 83–86))

Diesel and natural gas collection trucks at one of our locations were outfitted with data loggers for several weeks to gather in-use engine performance data and to enable drive-cycle and route analysis. The data will help NREL compare different types of trucks operating along their daily routes.

We also have continued to work with the U.S. Environmental Protection Agency's SmartWay Transport Partnership, which assists companies seeking to make improvements in their fleets' environmental performance and provides models for tracking fuel consumption and efficiency.<sup>37</sup> Waste Management, which first joined SmartWay in 2010 and renewed its partnership status in 2014, was the first company with a vocational fleet (e.g., construction, utility, refuse vehicles) to become a SmartWay Partner.

We have begun tracking emissions per mile for nitrogen oxides (NOx), particulate matter up to 2.5 microns and up to 10 microns in size (PM 2.5 and PM 10), and greenhouse gases as an indicator of progress in greening our fleet.

### WASTE MANAGEMENT EARNS 5-STAR CERTIFICATION FROM EVERGREEN FLEETS

In 2013, Evergreen Fleets, a program created by the Puget Sound Clean Air Agency and Western Washington Clean Cities, awarded 5-Star Certification to Waste Management's Pacific Northwest Market Area. Evergreen Fleets is a voluntary certification program that recognizes fleets that save fuel, improve operational efficiencies and reduce harmful air emissions. The certification is based on our aggressive investments in trucks fueled by compressed natural gas instead of diesel, sophisticated software to track fuel economy and use, fuel-efficient driver training program, and green vehicle and engine right-sizing purchasing policies. This is our fourth year of certification and our first year achieving certification at the 5-star level.

#### WASTE MANAGEMENT FLEET AVERAGE EMISSIONS

(grams/mile)

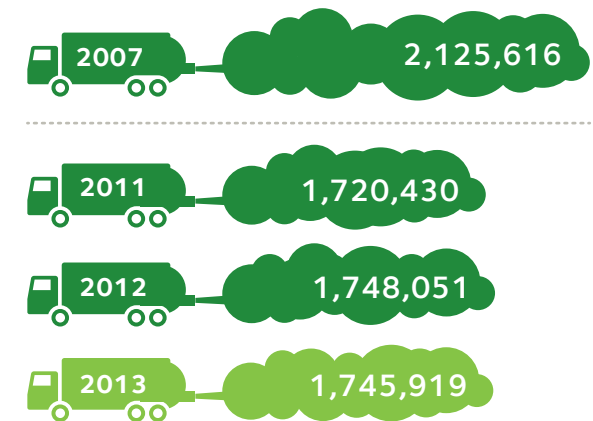
	2007	2011	2012	2013
NOx	24.9	17.7	17.4	14.7
PM 2.5	0.954	0.694	0.668	0.579
PM 10	0.983	0.716	0.689	0.597
GHG <sup>38</sup>	3,073	3,166	3,158	3,118

Our fleet average emissions are calculated across our entire fleet of on-road diesel, gasoline, liquified natural gas and compressed natural gas vehicles. This table reflects the grams of emissions per mile traveled. Nitrogen oxide and particulate matter emissions are calculated using the EPA's 2012 SmartWay model. GHG emissions are calculated using the EPA's SmartWay model for CO<sub>2</sub> emissions and The Climate Registry's model for nitrous oxide and methane emissions.

For more on our fleet improvements, see pp. 18–19 in the Appendix.

#### OUR FLEET EMISSIONS OVER TIME

(tons CO<sub>2</sub>e)



Emissions data have been recalculated using the 2012 (most recent) SmartWay model.



### HEAVY DUTY FUEL EFFICIENCY LEADERSHIP GROUP SUPPORTS NEW STANDARDS

Waste Management is a founding member of the Heavy Duty Fuel Efficiency Leadership Group, an informal alliance of the country's largest truck fleets, top engine manufacturers and leading technology suppliers. In 2014, the Leadership Group released a statement of principles it hopes will inform federal regulators as they develop the next fuel efficiency and greenhouse gas emissions standards for medium- and heavy-duty trucks, which are set to be finalized in March 2016. By contributing to the Leadership Group's dialogue with the Obama Administration, as well as participating as the first vocational fleet member of the EPA's SmartWay Partnership program, we hope to share our experience and successes with federal agencies and inform rule development.

### Producing and Providing Fuel

As we transition our fleet to run on natural gas, we have recognized the need for more fueling stations that support these types of engines. That's why a core element of our fleet transition strategy has been building our own fueling infrastructure — both to refuel our vehicles and to sell compressed natural gas to other commercial fleets and individuals. In 2013, we opened our 50<sup>th</sup> natural gas fueling station in North America, and by mid-year 2014, we were operating 67 fueling stations in the United States and Canada. In partnership with our CNG station manager PetroCard, our stations are open to the general public in Arizona, California, Florida, Illinois, Kentucky, Maryland, Minnesota, New Jersey, New York, Pennsylvania, Tennessee, Utah and Washington state, while some of our other stations provide access for fueling by municipal bus fleets or other third parties.

We also have plants that convert landfill gas into natural gas for use in vehicles — thereby powering trucks with the very

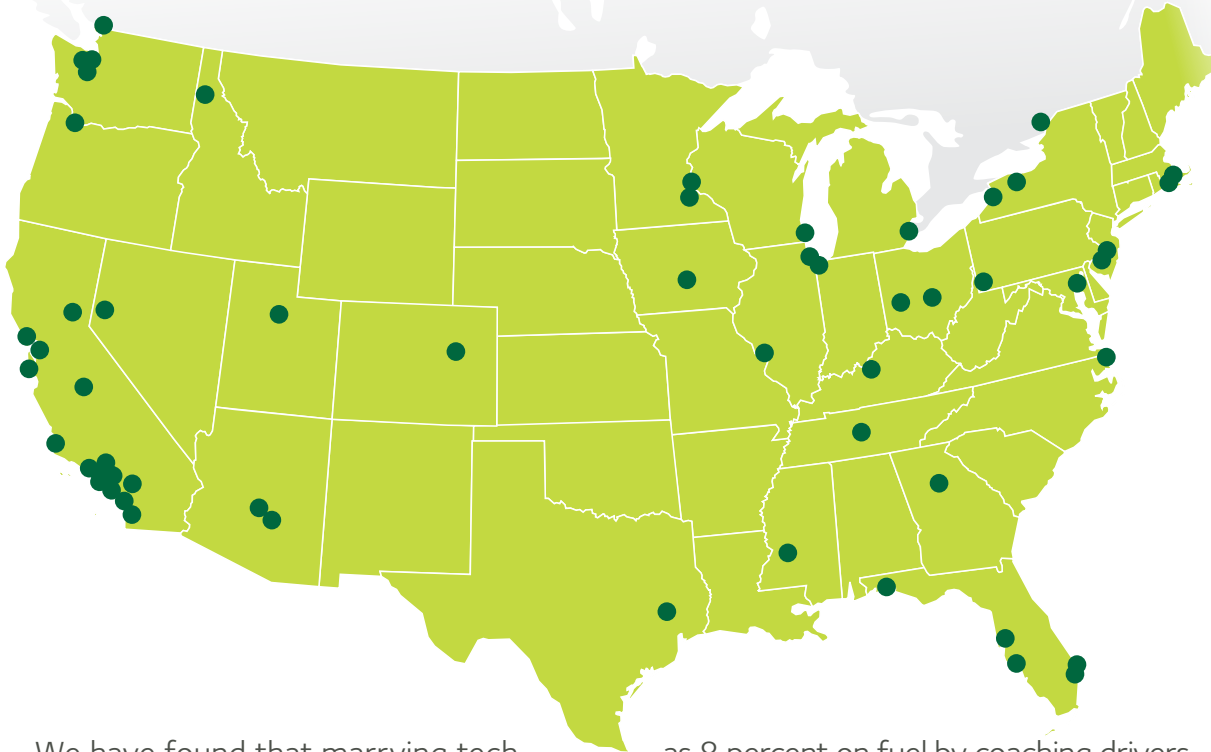
waste they are collecting. For instance, at the Altamont Landfill in California we have collaborated to build the world's largest plant to convert landfill gas to liquefied natural gas (LNG), producing 13,000 gallons of LNG per day and helping to power truck fleets — ours and others — in California. We are also opening another on-site renewable natural gas facility at our Milam Landfill in Illinois, which will convert landfill gas into pipeline-ready natural gas that can be used as a transportation fuel. (See pp. 53–56 for more on the ways we convert landfill gas into energy.)

### Reducing Truck Miles

Another key strategy for reducing emissions from our fleet involves using new technologies to reduce the miles our trucks need to travel. Our Service Delivery Optimization (SDO) initiative, begun in 2012, helps us streamline routes for our fleet, cutting the amount of fuel we need and lowering our carbon footprint. Our goal is to have 80 percent of our 15,000 collection routes optimized with SDO by the end of 2014.



## WASTE MANAGEMENT'S NATURAL GAS FUELING STATIONS



We have found that marrying technology — such as our Efficiency Management and Planning (EMAP) on-board computing system — and logistics management processes with the skills of our drivers allows us to cover routes more efficiently. One key part of SDO is DriveCam, a video recorder mounted on the windshield of our collection vehicles that is automatically activated by sudden movements (e.g., hard braking, sudden acceleration); in some districts, we believe we can save as much

as 8 percent on fuel by coaching drivers on proper acceleration, deceleration and speed limits. (See pp. 83–84 for information on the safety benefits of DriveCam.) By the end of 2013, we had deployed our EMAP on-board computing system in 87 percent of our fleet.

We have also pursued innovative ways to eliminate unnecessary collection trips altogether. For example, our Solar Compactor, which debuted in 2009, is a self-powered, solar-powered



compactor (developed in collaboration with BigBelly® Solar) that uses internal sensors to determine when trash needs to be compacted, thereby giving each 35-gallon receptacle a 180-gallon capacity. When the compactor is full, it wirelessly signals for pickup. The Solar Compactor reduces the number of collection trips required for each receptacle, which is especially valuable and needed in high-traffic public areas and urban centers.



Similarly, our convenient Bagster service (also known as “dumpster in a bag”) eliminates the need to deliver dumpsters to customers by offering a convenient and more sustainable collection solution for a variety of projects. Available for purchase at more than 4,400 retail locations across the United States and Canada, Bagster is simple to set up and strong enough to hold up to 3,300 pounds of debris or waste, making it suitable for anything from home renovations to disaster cleanup. When customers are finished with their projects, Waste Management can collect up to 15 full Bagsters on a single collection route.

### **ADDRESSING OUR GREENHOUSE GAS EMISSIONS**

Every day, our customers approach us to help them address the challenges posed by climate change by reducing their greenhouse gas emissions. This work is also a strategic imperative for our business. Using our own GHG footprint as a guide to identifying emission reduction challenges and opportunities, we are continuing to expand the volume and



scope of our recycling operations, exploring new options to produce low-carbon fuels from waste, steadily converting our fleet from higher to lower carbon fuels, improving energy efficiency, increasing our use of renewable energy and providing consulting services to customers who want to reduce their carbon footprints. In all of this work, we marry strategic business planning with life cycle thinking, evaluating how greenhouse gas emissions can be eliminated or sharply reduced.

Three of our sustainability goals for 2020 help drive progress toward GHG emission reductions: doubling our renewable energy generation, increasing the amount of recyclable materials we manage to 20 million tons, and cutting our fleet emissions by 15 percent (which, as noted earlier, we have already accomplished).

These goals build on our tradition of climate leadership within our industry. Waste Management was one of the founding members of the Chicago Climate Exchange (CCX), and we fulfilled our commitment to the CCX by reducing our GHG emissions 6 percent below our 1998–2001 baseline average by 2010. We were also a Climate Action Leader in

the California Climate Action Registry, which was succeeded by the Climate Action Registry (CAR), where we are now a GHG offset developer. In 2011, we generated our first verified offsets under the CAR protocols. In addition, we are an Emissions Performance Generator under the Alberta Environment GHG Reduction Program, where we elected to approach compliance for our one subject landfill facility aggressively; instead of paying an emissions fee or buying offsets, we installed a landfill gas collection system to reduce GHG emissions from the site. In 2013, we joined the Business Council on Sustainable Energy, a business coalition dedicated to implementing market-based approaches to reducing pollution and GHG emissions by providing a diverse, secure mix of energy resources, including renewable energy, for consumers and businesses.

Our approach continues to evolve as we focus on implementing sustainable business practices company-wide that provide energy, fuel and commodity savings while reducing GHG emissions.



### INCREASING WASTE MANAGEMENT'S CLIMATE RESILIENCE

**Waste Management understands the need for resilience in the face of a changing climate, and we have been investing in the infrastructure needed to enable us to perform our essential services, even in the face of increasingly severe weather events.**

**For instance, when Superstorm Sandy made landfall in New Jersey in 2012, it hit an area where we have a very high concentration of hauling and disposal sites. Long before it came ashore, however, we were able to anticipate its path, plan our operations and gauge its potential impact, thanks to an internally developed web mapping tool called Waste Analysis and Visualization Explorer (WAVE). When Sandy hit, WAVE displayed the company's operations located within the projected path of the storm and continually updated the storm's track with real-time information from the National Hurricane Center. This information allowed us to prepare operational support before it was needed — instead of reacting once the storm passed.**

## Our Greenhouse Gas Footprint — An Overview

We were the first major company in our industry to assess comprehensively the greenhouse gas footprint of all our facilities in North America over which we exercise ownership or operational control. Over the past five years, we have updated our carbon footprint and tracked our progress in reducing it.

Our direct emissions have varied over time due to a variety of factors. For instance, since moisture in the waste matrix contributes to increased production of landfill gas, the severe drought that affected much of the United States in 2011 profoundly reduced landfill gas generation that year. 2013 saw a small bump in process emissions, but it was attributable to our use of revised global warming potentials from the Intergovernmental Panel on Climate Change's Fourth Assessment Report. Absent that change, our process emissions would have shown a 16 percent reduction due to improvements in our gas collection and landfill cover, as well as a change in the EPA's estimates for methane oxidation. See pp. 27–29 in the Appendix for a closer look at our GHG footprint and a description of the methodology we use.

## WASTE INDUSTRY GREENHOUSE GAS FOOTPRINT

**Overall, the waste sector is a very small contributor to U.S. greenhouse gas emissions, with emissions from landfills, wastewater treatment and composting accounting for just 1.9 percent of total U.S. GHG emissions in 2012. From 1990 to 2012, net methane emissions from landfills decreased by approximately 30 percent as a result of decreases in the amount of decomposable materials (i.e., paper and paperboard, food scraps and yard trimmings) discarded in landfills and increases in the amount of landfill gas collected and combusted.**

Source: EPA, Inventory of U.S. Greenhouse Gas Emissions and Sinks, 1990–2012, EPA 430-R-14-003 (Washington, DC: EPA, April 2014).

## WASTE MANAGEMENT GREENHOUSE GAS FOOTPRINT

	2011	2012	2013 <sup>5</sup>
<b>GHG Emissions (metric tons CO<sub>2</sub> equivalent)</b>			
Process	16,448,441	17,363,769 <sup>6</sup>	17,662,765
Transportation <sup>7</sup>	1,773,307	1,729,547	2,114,250
Energy use <sup>8</sup>	488,738	540,601	355,015
<b>Potential Avoided Emissions<sup>9</sup> (metric tons CO<sub>2</sub> equivalent)</b>			
Renewable energy generation	4,700,000 <sup>10</sup>	4,739,563	5,635,643 <sup>11</sup>
Reuse and recycling of materials <sup>12</sup>	30,996,786	36,414,438	38,588,377
Carbon permanently sequestered in landfills <sup>13</sup>	15,593,412	15,490,568	16,126,208

## A GUIDED TOUR OF GHG EMISSIONS IN OUR VALUE CHAIN

Waste Management's operations have a range of impacts on greenhouse gas emissions, including through our direct emissions of carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>) and other GHGs, our use of electricity (leading to indirect emissions), and our activities (e.g., recycling, energy generation) that have the effect of avoiding emissions elsewhere. While not all of these are part of our "official" carbon footprint – biogenic CO<sub>2</sub> emissions from waste, for instance, are viewed by the EPA's Science Advisory Board as carbon neutral<sup>39</sup> – we think it is important to understand how our operations affect GHG emissions throughout our value chain.

### DISCARDED MATERIALS

Many of the **materials** our customers buy, use and eventually discard contain carbon. When discarded materials are burned or decompose, they release CO<sub>2</sub> and/or methane, two important greenhouse gases.



### COLLECTION

Our **collection** trucks emit CO<sub>2</sub> from the combustion of diesel and other fossil fuels.




### TRANSFER FACILITIES




**Transfer facilities** process wastes and direct them to waste-to-energy plants or landfills. Transfer facilities have direct CO<sub>2</sub> emissions from the use of fuel on-site and indirect GHG emissions due to their use of electricity. At some facilities, materials coming into the transfer station can be "mined" for valuable recyclables such as cardboard.

### RECYCLING FACILITIES

Our **recycling** facilities process wastes to recover resources that can be used to make new goods. These facilities have direct CO<sub>2</sub> emissions from the use of fuel on-site and indirect GHG emissions due to their use of electricity. Recycling paper, plastics, aluminum, glass and other materials can avoid GHG emissions by: decreasing the amount of energy needed to convert raw materials into usable commodities; conserving landfill capacity; preventing the mining and initial processing of petroleum products, metal ores and sand; and preventing the harvesting of trees, thereby allowing forests to continue to sequester (i.e., store) carbon dioxide from the atmosphere. (See pp. 24–42 for more on our efforts to grow recycling in North America.)

#### KEY

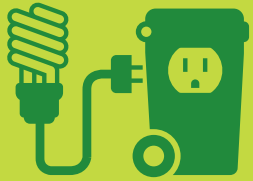
-  Manmade CO<sub>2</sub> emissions
-  Biogenic CO<sub>2</sub> emissions
-  Methane emissions

-  Indirect emissions
-  Avoided emissions, or replaces fossil fuels
-  Refrigerant emissions



GRAPHIC CONTINUES ON THE NEXT PAGE

## SUSTAINABILITY PERFORMANCE



### CO<sub>2</sub> WASTE-TO-ENERGY PLANTS

CO<sub>2</sub>

Waste Management's 17 **waste-to-energy** plants emit about 65 percent biogenic CO<sub>2</sub> and 35 percent manmade CO<sub>2</sub> as carbon-containing waste is burned to produce renewable electricity. These plants also avoid CO<sub>2</sub> emissions that would result from burning fossil fuels to generate the same amount of electricity. Metals are recovered at waste-to-energy plants for recycling, thereby avoiding additional GHG emissions needed to produce metal from ore. (See pp. 47–52 for more on our efforts to divert waste into energy products.)

### CO<sub>2</sub> LANDFILL-GAS-TO-ENERGY PLANTS



Our 137 **landfill-gas-to-energy** projects use landfill gas as fuel, releasing biogenic CO<sub>2</sub> but preventing the release of methane and avoiding CO<sub>2</sub> emissions that result from burning fossil fuels. (See pp. 53–56 for more on our efforts to convert landfill gas to energy.)

### CO<sub>2</sub> BIOMASS PLANTS



Waste Management operates two power plants fueled by waste biomass (i.e., not biomass harvested for the purpose of energy generation). These plants emit biogenic CO<sub>2</sub> and also avoid the CO<sub>2</sub> emissions that would result if fossil fuels were used to generate the same amount of electricity.



### CO<sub>2</sub> LANDFILLS

CO<sub>2</sub>CH<sub>4</sub>

Waste typically includes a mix of biogenic carbon-containing materials (e.g., paper, wood, food waste) and manmade carbon-containing materials (e.g., plastics, tires, synthetic textiles) — as well as inert materials (e.g., metal, glass, stone). Some of the carbon-containing waste in **landfills** decomposes, creating GHGs — mostly methane and CO<sub>2</sub>. Some of the carbon-containing waste in landfills does not decompose but instead remains intact, sequestering the carbon indefinitely.<sup>40</sup> Modern landfills prevent most of the methane from escaping through use of gas collection and landfill cover management systems. We are working with the EPA and the California Energy Commission to better understand and quantify methane emissions from landfills. (See pp. 59–60, as well as pp. 8–17 and pp. 29–30 in the Appendix, for more on how we manage landfills.)

### CO<sub>2</sub> FLARING

Collected landfill gas may be **flared** (burned), which converts methane into biogenic CO<sub>2</sub>.



### CO<sub>2</sub> OFFICES/ADMIN BUILDINGS



GHG emissions associated with our offices and similar facilities include CO<sub>2</sub> from on-site energy use, indirect emissions from electricity use and emissions of greenhouse gases associated with refrigeration.<sup>41</sup>





## CONSERVING ENERGY AND USING RENEWABLE ENERGY AT OUR FACILITIES

Waste Management is both a major supplier and a user of renewable energy, increasingly utilizing sources such as wind, solar, waste heat and landfill gas to power our facilities. Since our energy use costs are generally equal to about 3 percent of our total revenues, we also encourage energy efficiency and conservation initiatives throughout our company.

To expand our renewable energy production and develop new uses for closed landfill sites, we are working with the New Jersey Department of Environmental Protection and PSE&G to accommodate large-scale solar energy production (23 megawatts of solar power) at the closed Parklands and L&D Landfills, the latter of which is an EPA Superfund site. The projects, which are expected to be completed in 2014 and 2015 respectively, support the EPA's "RE-Powering America's Land" initiative, which encourages renewable energy development on current and formerly contaminated lands, landfills and mine

RACKING FOR THE SOLAR PANEL SYSTEM BEING INSTALLED AT THE PARKLANDS SITE



sites when it is aligned with the community's vision for the site. We are pursuing similar solar power projects at other closed sites, including the Hunt Road Landfill in Massachusetts.

Other ways we work to conserve energy and utilize renewables at our facilities include the following:

- Wind- and solar-driven landfill gas control devices
- Wind- and solar-driven leachate extraction pumps
- Landfill gas produced on-site for use by nearby facilities
- Waste heat to power other devices on-site (being piloted at a number of sites)
- Variable frequency drives to reduce electricity use
- Energy efficiency audits to identify potential energy savings at our facilities



## CONSERVING WATER AT OUR FACILITIES

In a world in which freshwater supplies are under increasing stress, it is of fundamental importance that we use water sparingly in our operations.

Using the World Business Council for Sustainable Development's Global Water Tool, we have found that 27 percent of our market areas are located in water-stressed regions — a finding that has driven us to implement a wide range of water conservation efforts, including the following:

- Installing high-efficiency plumbing fixtures during building retrofits and fixture change-outs and reducing the amount of water needed for landscape irrigation at our facilities. For instance, at our LEED Gold Vehicle Maintenance Facility in Moreno, California, we achieved a 54 percent reduction in water used for the building and a 59 percent reduction in water used for landscape irrigation.
- Using rainwater and non-potable water to wash trucks and control dust

## WATER CONSERVATION AT THE PHOENIX OPEN

Each year, more than 500,000 people flock to the Waste Management Phoenix Open PGA Tour golf tournament in water-stressed Arizona. To mitigate the impact of the tournament, we have used it as a forum to highlight possibilities for reducing and reusing water.

**At the 2013 tournament, volunteers and employees were educated on water and energy conservation measures, hand-washing stations used hand sanitizer instead of water, and we sponsored a "graywater" initiative — rerouting drain water from kitchens, laundries and hospitality areas for portable restrooms throughout the course. These measures saved 4,800 gallons of fresh water. (See pp. 41–42 for more on the Phoenix Open.)**

and installing biotreatment systems at some facilities to capture and reuse 100 percent of the water used to wash our trucks. For example, in 2003, we installed an automated system at our Austin Community Landfill in Texas that uses recycled water under high pressure to remove mud from truck tires before the vehicles enter nearby public roads. Water from the tire wash system is directed into a large concrete collection basin, and impurities are removed before the water is reused.

- Conserving and reusing reclaimed wastewater in boilers for steam turbines at select renewable energy projects.

- Using wastewater instead of potable water when constructing landfill units, where environmentally appropriate and allowed under state regulation.

In addition to conserving water, Waste Management works to maintain or improve the quality of local water supplies and to replenish subsurface water supplies. In some instances, we use methods such as reverse osmosis to treat and return water from industrial use to the environment at drinking water quality. At some facilities we design "zero discharge" storm water management infrastructure (e.g., infiltration galleries, percolation basins) to replenish groundwater resources.

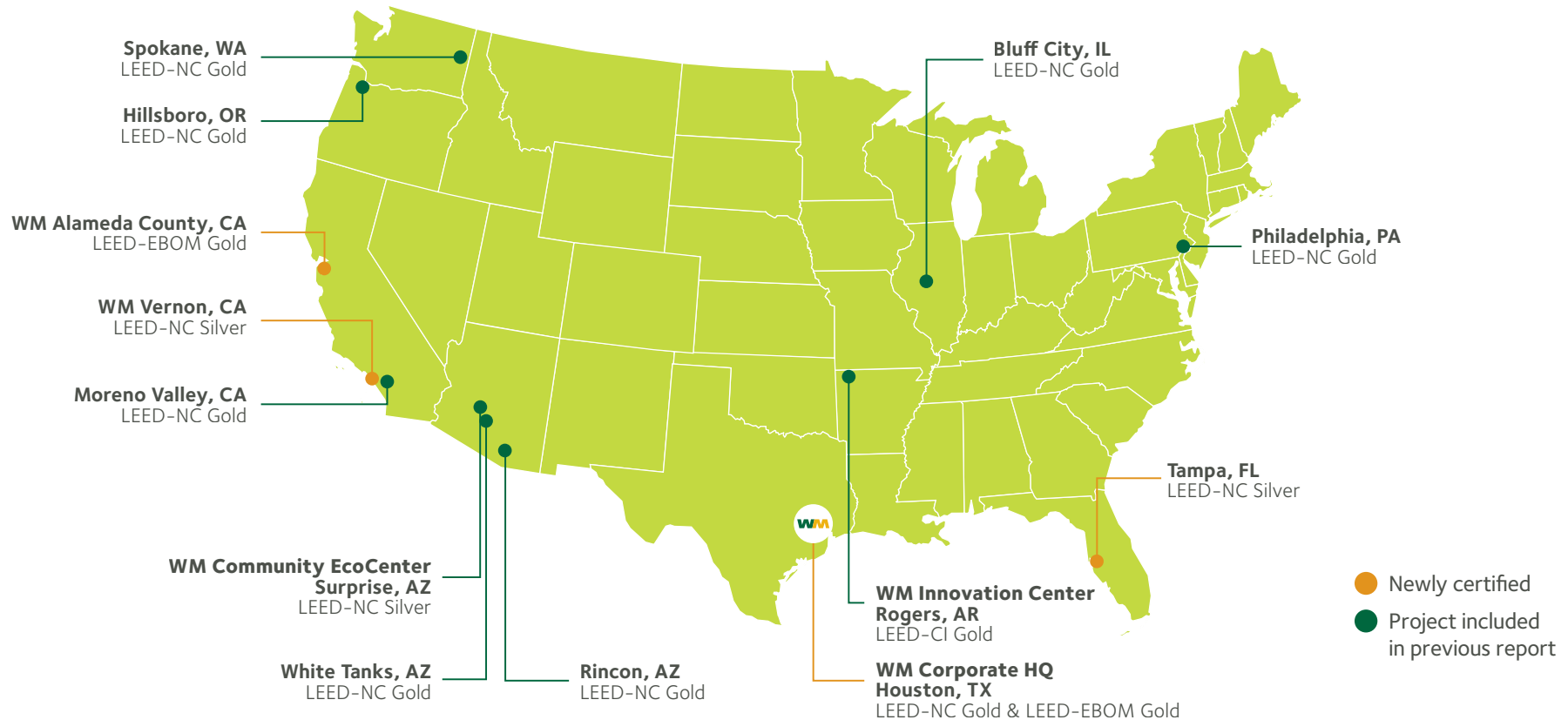
## MAKING OUR BUILDINGS MORE SUSTAINABLE

Our efforts to conserve water and energy and to use renewable energy come together in our buildings, where we are implementing a range of sustainability practices to reduce environmental impacts, improve

operational efficiencies and achieve cost savings. Several of our facilities, including our company headquarters in Houston, Texas, are certified under the U.S. Green Building Council's LEED standards, a globally recognized

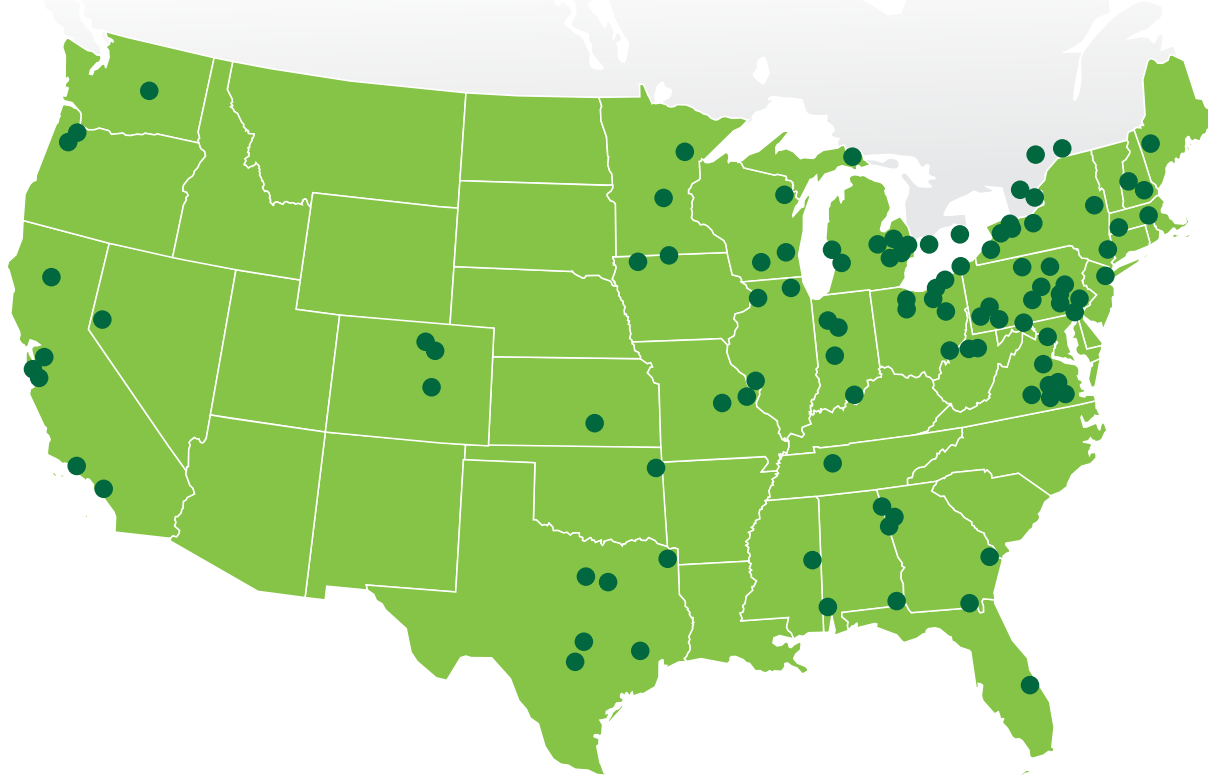
green building certification program. For more information on our LEED-certified facilities, see pp. 31–32 in the Appendix.

### WASTE MANAGEMENT LEED SITES 2013\*



\* LEED-NC is for new construction, LEED-EBOM is for existing buildings' operation and maintenance, and LEED-CI is for commercial interiors.

## WASTE MANAGEMENT LOCATIONS WITH WHC-CERTIFIED PROGRAMS



### PROTECTING AND ENHANCING WILDLIFE HABITATS

Waste Management owns a wide range of properties — large and small, urban and rural. At our larger properties, in the substantial areas that we set aside as buffer zones, we make a concerted effort to enhance the natural value of the land, provide habitat for wildlife and offer educational opportunities and aesthetic amenities to the surrounding community.

One of our key partners in protecting and enhancing wildlife habitats is the Wildlife Habitat Council (WHC), a nonprofit organization that promotes and certifies habitat conservation and management on working lands. Back in 2007, we set a goal of having at least 100 facilities and approximately 25,000 acres of land certified by the WHC as conservation and wildlife habitat by 2020. We exceeded that goal in 2010

— and our commitment to habitat conservation remains strong. We continue to engage with the WHC on creative ways to go beyond certified habitats to include smaller sites and additional opportunities to engage business in habitat conservation.

By the end of 2013, we had 132 WHC-certified programs at 112 facilities (mostly landfills, but also some other types of sites), with more than 27,000 acres created, enhanced or protected for wildlife across North America. These include 112 Wildlife at Work certifications (shown on the map) recognizing commendable wildlife habitat management and environmental education programs at individual sites, as well as 20 Corporate Lands for Learning certifications recognizing community-oriented educational efforts.

Through the WHC's participation in the Conservation Registry, all of our programs are included in an online, interactive database that tracks and maps conservation, restoration and wildlife habitat enhancement projects across the world, allowing us to better understand and convey the impact of our conservation programs.

Waste Management's conservation and habitat work is designed to help protect pollinators, such as bees, birds and butterflies, as well as other plant and animal species. In the United States, pollinators are in a particularly tenuous situation due to loss of habitat and other factors affecting their well-being. Yet without their services, crop yields and food supplies could be diminished, and people could face rising prices for food, affecting the global economy. We have more than 50 programs dedicated to protecting pollinators. For example, our Williamson County Landfill in Texas is creating pollinator gardens, and our Kirby Canyon Landfill in California is undertaking extensive efforts to support the bay checkerspot butterfly (see call-out). In addition, our Kahle Landfill in Owensville, Missouri, is focusing on removing invasive cool season grasses so native warm season grasses can repopulate the area, improving habitat for upland grassland birds such as the northern cardinal and the pileated woodpecker.

### WASTE MANAGEMENT LANDFILL WINS CORPORATE HABITAT OF THE YEAR AWARD

Waste Management's Kirby Canyon Recycling and Disposal Facility, located in Morgan Hill, California, won the Wildlife Habitat Council's prestigious Corporate Habitat of the Year Award in 2013, selected from more than 600 sites in 46 states and 12 countries. Of the property's approximately 827 acres, about 600 are devoted solely to habitat enhancement projects and scientific study. The ecosystem is one of the San Francisco Bay region's few remaining serpentine-soil grasslands that support the bay checkerspot butterfly, a federally listed threatened species. In early 2013, to help re-establish the butterfly in areas where it has gone extinct, Kirby Canyon, in cooperation with the Creekside Center for Earth Observation, provided 10,000 larvae for translocation to two other sites in the area — Tulare Hill in Santa Clara County and Edgewood Natural Preserve in San Mateo County.

We also believe that it is essential to show the value of biodiversity to our children and to instill in them the importance of being good environmental stewards. We have therefore incorporated STEM (science, technology, engineering and math) education into most of our wildlife habitat programs. For example, the Bat Conservation Project at the El Sobrante Landfill in Northern California asks students to use problem solving, collaboration and a hands-on approach to solve environmental issues utilizing engineering

and math skills. This project also helps teachers fulfill Common Core education standards by promoting group learning and discussion.

Beyond the wildlife habitats certified at our active and closed facilities, we lease our unused property for productive use by farmers and ranchers. As of 2013, more than 20,000 acres in the United States and Canada were used for this purpose.



# CREATING A GOOD PLACE TO WORK

We can't have a strong business without the daily contributions of our approximately 43,000 employees. We know that the success of each employee is what enables Waste Management to succeed, and we strive to give our people the tools they need to develop and excel in their careers.

Creating trust and respect for one another is a cornerstone of our vision for an inclusive and welcoming workplace. Our values, which are embodied in our employee Code of Conduct and related training, provide the foundation for our company practices, guiding our business decisions, our people and our company culture. For the last seven years, we have been named to the Ethisphere Institute's list of the "World's Most Ethical Companies." For 2013 and 2014, we were one of only two companies listed in the environmental services category.

Read more about our values [here](#).





## DIVERSITY AND INCLUSION

We must have a vibrant and diverse workforce that reflects the diversity of the customers and communities we serve. As an equal opportunity employer, we are committed to an employment environment free from discrimination. Employment decisions are made by placing the most qualified person in each job without regard to race, color, sex, pregnancy, sexual orientation, gender identity, religion, marital status, age, national origin, disability, veteran status, citizen status or other protected group status as defined by federal, state or local laws.

As of December 2013, 37 percent of our employees were minorities and 17 percent were women. Twenty-three percent of our executive leadership team was minority or female. Among company officials and managers, about 18 percent were minority and 18 percent were women. Our Board of Directors was 13 percent minority and 13 percent female.

## WASTE MANAGEMENT WORKFORCE 2013

By ethnic group, in the U.S.

	Waste Management Workforce	All Private Industry Workforce <sup>42</sup>
American Indian or Alaskan Native	0.7%	0.6%
Asian	1.6%	5.7%
African-American	15.5%	13.9%
Caucasian	60.5%	64.8%
Hispanic	20.8%	13.4%
Multi-Race	0.5%	1.2%
Native Hawaiian or Pacific Islander	0.4%	0.4%

By age, in the U.S. and Canada

Age Group	% of Workforce
Veterans (born 1922–1943)	0.8%
Baby Boomers (born 1944–1960)	36.1%
GenXers (born 1961–1980)	45.0%
Millennials (born 1981–2000)	18.1%

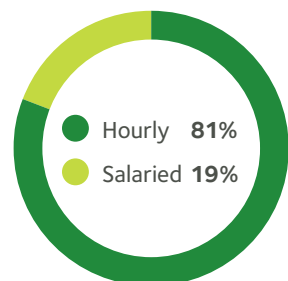
## WASTE MANAGEMENT AND VETERANS

At Waste Management, we place special emphasis on hiring veterans. In 2013, 7 percent of all our U.S. hires were military veterans. We are frequently lauded for our outreach, including the following recent recognitions:

- Department of Defense 2013 Freedom Award Finalist (Employer Support of Guard and Reserve)
- *G.I. Jobs* 2010–2014 “Top Military Friendly” employer
- *Military Times* 2010–2014 “Best for Vets” employer

## WASTE MANAGEMENT EMPLOYEES

approximately 43,000 total



## ENGAGEMENT AND RETENTION

We encourage communication among company leaders and employees at all levels. Our senior leaders operate with an open door — and open email — policy. Each quarter, our senior leadership team hosts a Town Hall-style meeting at our Houston headquarters. Employees unable to attend are invited to submit questions by email, and direct responses are sent in reply. Responses are often included in our company's weekly internal newspaper.

We value employee engagement. In 2013, the Waste Management Drivers Council, consisting of 17 drivers (one from each market area in the organization) was formed to capture the wisdom of our frontline employees. The group provided feedback on removing barriers that prevent drivers from delivering exceptional customer service. The Council is tapping the knowledge and experiences of employees to improve training, solve problems and deliver first-rate customer service. At the end of 2013, we built on this success with a new Route Managers Council.

All employees participate in forms of coaching, feedback, annual performance review and development. We believe environmental excellence and compliance are the hallmarks of sustainability and reflect Waste Management's core values; compliance with applicable regulatory standards and internal policies and procedures is part of the performance review structure for employees.

As part of our commitment to developing talent, we formed a mentorship program in 2013 designed to build bench strength at mid and senior management levels. Protégés in this program are paired with senior leadership and, through regular meetings and conversations, are coached and encouraged to expand their knowledge of our business and leadership principles. This program is a component of our succession planning and leadership development process.

Engagement with employees helps reduce employee turnover. Training is one of the ways we work to retain employees. Our employee turnover rate has been steadily increasing over the last few years (see charts), largely

because of improvements in the U.S. economy. We work continuously to reduce turnover despite the fact that the largest sector in our workforce — truck drivers, route managers and maintenance workers — is composed of highly skilled and certified professionals much in demand as the economy rebounds.

Reorganization is a fact of life in a rapidly changing, dynamic business sector. Waste Management provides transition assistance (severance benefits and outplacement services) to eligible employees whose employment is terminated in connection with a reorganization event.

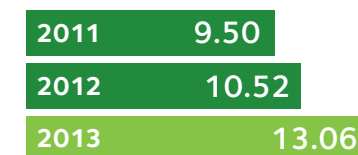
### TOTAL EMPLOYEE TURNOVER RATES

(percentage)



### VOLUNTARY EMPLOYEE TURNOVER RATES

(percentage)



### **Waste Management University: Learning and Development**

Waste Management University (WMU) provides learning and development solutions to meet the needs of our business and our people. We offer training programs delivered face-to-face as well as virtually through mobile and online communications. The goal is to provide continual learning opportunities in specific business competencies, such as professional development, sales, leadership, technical training and compliance training. Our approach is “learner-centric” and provides a mix of options accessible to employees. All employees participate in annual training that includes job-specific programs as well as access to a variety of offerings for professional development.

WMU is using technology to deliver “just-in-time” learning, streamline the learner’s experience, create online communities to build collaboration, and provide individualized development plans. The company partners with colleges and credit-granting organizations to provide employees (and, in

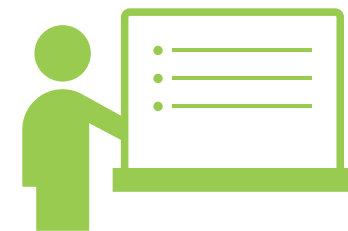
some cases, their families) with tuition discounts, scholarships, grants, waived fees and customized programs. Our focus is to create a continuous learning culture that drives performance and improves talent.

Each major Waste Management department conducts job-specific training and development. In 2014, we initiated a series of “Operator Science” videos to reinforce safety rules and best practices with our frontline landfill and transfer station managers. At our recycling facilities, we use classroom and hands-on training to reinforce best practices on safety, workforce conditions, maintenance, emergency preparedness and process efficiency.

One of the most critical positions in the company is fleet technician, and we work hard to attract and develop the best talent in the industry. We launched a Technician Advantage Program to begin developing diesel school students before graduation to transition into full-time employees. Employees obtaining Automotive Service Excellence

certification are eligible for pay incentives in competitive markets.

Our Fort Myers, Florida, Training Center was developed to standardize training with a goal of reducing driver and fleet technician new-hire turnover by 50 percent and reducing the number of vehicle accidents by 61 percent. The center includes classroom work, interactive self-paced computer lab learning, hands-on learning stations, actual and simulated driving and immediate coaching and feedback from skilled driver trainers. From January 2012 to March 2014, more than 2,000 drivers trained at the center in intense, two-week sessions.



**~43K**

employees participate in  
annual training from  
Waste Management University



# WORKFORCE SAFETY

The federal government ranks trash and recycling collection among the top 10 most dangerous jobs in the United States, with drivers and collectors facing risks from motor vehicle crashes and unique workplace hazards. Facility workers must be constantly vigilant when working with sophisticated equipment that can cause serious harm if operated improperly. Despite a 40 percent reduction in industry fatality and injury rates between 2001 and 2009, the industry rates increased between 2010 and 2012.

## OUR PROGRAMS

At Waste Management, the safety of our people has always been our highest priority. More than a decade ago, we created a robust safety philosophy called Mission to Zero™ (M2Z). The core of the M2Z philosophy is zero tolerance for unsafe behaviors by all employees, with a goal of eradicating all accidents and injuries by coaching and building knowledge.

We focus on helping our employees perform their jobs safely so they return home to their families at the end of every day. Our safety program includes thorough training, standardized rule-books and a suite of industry-leading programs such as the recent installation of video event recorders in more than

95 percent of our collection vehicles across the United States (see more on DriveCam on pp. 83–84).

Thanks to rigorous classroom instruction, route observations, driver training, data monitoring, safety competitions, and tailored programs based on specific job categories, we have witnessed marked improvements in our accident and injury rates. These include the following:

- A decrease of 86 percent in our Total Recordable Injury Rate (TRIR) — e.g., non-fatal illnesses and injuries — between 2000 (when M2Z was launched) and 2013. For 2013, our TRIR of 3.1 put us significantly below the 2012<sup>43</sup> industry average of 5.4.

- A 92 percent improvement in our Vehicle Accident Recordable Rate (VARR) from 2005 (when we established this indicator and initiated new and enhanced driver training programs) to 2013.

As part of our commitment to the safety of our employees and the communities we serve, each year Waste Management invests approximately \$500 million in the maintenance of collection vehicles and \$100 million in maintenance and repairs for heavy equipment. We inspect each vehicle twice daily to ensure proper operation and tie preventative maintenance inspections to vehicle usage rates.

Waste Management is consistently recognized among the best in our industry for our comprehensive approach to safety. Each sector of our company has safety programs that are customized to the jobs performed. Safety performance and policies are shared with employees on a regular basis. We encourage active engagement between employees and leadership, with a recently formed Drivers Council and a Route Managers Council providing input on safety policies and best practices.

We also work actively with our trade association, the National Waste & Recycling Association (NW&RA), in its efforts to improve industry safety through training and compliance with regulations, industry standards and company rules and policies, as well as through improvements in roadway regulations. For example, Waste Management and the NW&RA have worked in Alabama, Florida, West Virginia, Wisconsin and other states to include sanitation vehicles in “Move Over” laws, which require drivers to change lanes or slow down when

## OPTIMIZING OUR PERFORMANCE

**Launched in 2012, Service Delivery Optimization (SDO) significantly changed how we manage our collection and maintenance operations. By improving our systems through technology — including onboard computers, routing software and cameras — we can have a big impact on safety, doing a better job of setting expectations and enhancing employee communications. While SDO is essential to boosting worker safety, it’s also improving environmental services (see p. 63).**

**A critical element of SDO is DriveCam (see pp. 83–84), the new safety technology that we have installed in our fleet of collection vehicles. By engaging drivers in their own performance and providing positive reinforcement, as well as constructive coaching, we’re better able to improve our safety results through our workforce’s spirit of continuous improvement.**

certain types of emergency and public service vehicles are parked on the side of the road.

### Injury Rate Over Time

As a testament to our extensive safety programs, we are proud to report that we have seen a substantial decrease in our injury rates, which are consistently better than the overall industry average. In compliance with the Occupational Safety and Health Act of 1970, we record work-related injuries and illnesses and report them to the Occupational Safety and Health Administration (OSHA). The federal agency uses this information to

calculate organization- and industry-specific injury and illness incident rates (per 100 employees), including the Total Recordable Incident Rate (TRIR) and the Days Away, Restricted or Transferred (DART) case rate.

Our TRIR has improved 65 percent between 2003 and 2013. Our 2013 TRIR of 3.1 is 43 percent better than the 2012 industry average of 5.4 (which is the most recent government statistic available). We are also pleased to report a decrease of 64 percent in our DART rate between 2003 and 2013. Our 2013 DART of 2.4 is 29 percent better than the 2012 industry average of 3.4.



Another indicator of a company's safety performance and efficacy is the Experience Modification Rate (EMR), which is determined by the National Council on Compensation Insurance. Waste Management is consistently below the industry average of 1.0, as seen in the chart below.

### Vehicle Safety and Driver Training

With roughly 17,000 Waste Management trucks on the road each day, vehicle safety is one of our highest priorities. Our investments in fleet safety, driver training and onboard equipment have helped us decrease reported vehicle accidents by 62 percent from 2007 through 2013.

A key element of our vehicle safety program is a new program that uses DriveCam, which provides a platform

for coaching and building knowledge, thereby improving safe driving and reducing collisions. Roughly the size of one's palm, DriveCam is a video event recorder mounted on the windshield of our collection vehicles. The recorder is triggered by certain vehicle behaviors, such as aggressive braking, hard cornering, swerving or a collision. Once an event is captured, the device sends the event to DriveCam personnel, who analyze the occurrence and then send information back to Waste Management field managers for performance coaching.

DriveCam provides our field managers with leading indicators of improper driving habits or potential issues with specific driver behavior. These insights allow us to proactively coach our drivers and reduce the frequency and severity of collisions. Historically, personal observations and incident records were the primary tools available to our managers to identify opportunities for improvement with our drivers. DriveCam provides a unique ability to observe leading indicators of collisions and preemptively

### EXPERIENCE MODIFICATION RATE (EMR)

More than 25 points better than the industry standard

INDUSTRY STANDARD	1.00
2011	0.72
2012	0.74
2013	0.71

### TRIR

28% improvement since 2007

	2007	2011	2012	2013 <sup>44</sup>
Waste Management	4.3	3.1	2.9	3.1
Industry-wide average	6.4	4.9	5.4	N/A

### DART

8% improvement since 2007

	2007	2011	2012	2013 <sup>44</sup>
Waste Management	2.6	2.4	2.2	2.4
Industry-wide average	4.1	3.0	3.4	N/A

Source: Bureau of Labor Statistics, Incidence Rates of Non-Fatal Occupational Injuries and Illnesses (data for the waste management and remediation services industry)

**VEHICLE ACCIDENT RECORDABLE RATE**

Driver hours without a vehicle accident

2007	2011 <sup>45</sup>	2012	2013
8,974	13,307	14,200	14,499

coach drivers to reduce the probability of future collisions. DriveCam also allows us to appreciate the ways our professional drivers avoid collisions with defensive driving techniques. We use these events to document and disseminate best practices among our drivers, featuring the best examples of defensive driving in our “DriveCam Play of the Month.”

DriveCam began on a pilot basis in 2012 and is now installed in 95 percent of all of our collection vehicles in the United States. In addition to reducing the number of collisions, DriveCam is contributing to reductions in claims, fuel and maintenance costs. In fact, DriveCam has been so successful that we’re now offering it to our employees to use at home. Through the DriveCam for Families Program, employees in the United States and Canada are

automatically eligible to receive the program at a 30 percent discount. Although it works the same as Waste Management’s program, the home version video can only be accessed by the family.

For more on DriveCam, watch this [video](#).

**Training**

In addition to DriveCam, we provide on-the-job training and evaluation programs for our drivers that meet and/or exceed U.S. Department of Transportation (DOT) requirements. Newly hired drivers undergo more than 80 hours of training, in both the classroom and on the road with an experienced driver. We conduct driver briefings each morning before drivers begin their routes. As part of the training process, evaluations are given at 30, 60 and 75 days. We monitor to assure compliance with federal regulations for the maximum number of hours spent behind the wheel and require all drivers to pass a general physical and meet

**DRIVECAM DRIVER OF THE YEAR**

Out of 500 companies that use DriveCam technology, Waste Management employee Dennis Burrell was recognized by DriveCam as Driver of the Year for 2013 in the waste services category. Burrell, who was also a finalist for Waste Management’s Driver of the Year Award, has more than three decades of experience operating a front-end loader.

“We’re safer now because of DriveCam,” Burrell said. “It keeps you on your toes, makes you slow down and be cautious. I’ve never taken any chances just to finish up a few minutes sooner. DriveCam reinforces that.”

## WORKFORCE SAFETY

DOT physical requirements. Training is one of the ways we work to reduce turnover and retain employees. As the U.S. economy has improved, there is greater competition for commercial drivers and more opportunities for employment elsewhere. Better training can lead to increased retention as well as safer employees.

Our Driver Training Center in Fort Myers, Florida, provides hands-on as well as computer lab courses and classroom training on critical safety rules and operating practices, with interactive stations devoted to procedures such as safe lifting, Hazardous Energy Control Program (Lock-Out/Tag-Out), and vehicle inspections, among others.

The safer our employees are, the more successful we are as a company for our customers, our shareholders and the communities that we serve.

### Protecting “Lone” Workers

Whether it’s a closed landfill, a renewable energy plant or a recycling

drop-off facility, Waste Management has a number of locations across North America that may be staffed by a single person at certain times. While this makes for an efficient operation, it also comes with a risk: What if a lone worker needs emergency assistance while on the job?

Through Waste Management Security Services, a branch of the company committed to protecting the safety of employees and customers, operators now have a tool that can offer protection while on the job. The Loner

Safe Monitoring Device is about the size of a cell phone and attaches to a belt. Its motion sensors detect when an employee has been motionless for a period of time, which triggers an alert. Unless the alert is deactivated, a signal is sent to Waste Management’s Security Operations Center in Houston, Texas, which attempts to contact the employee or emergency responders. The device also features a silent panic button and GPS tracking in case a worker falls or an impact occurs.

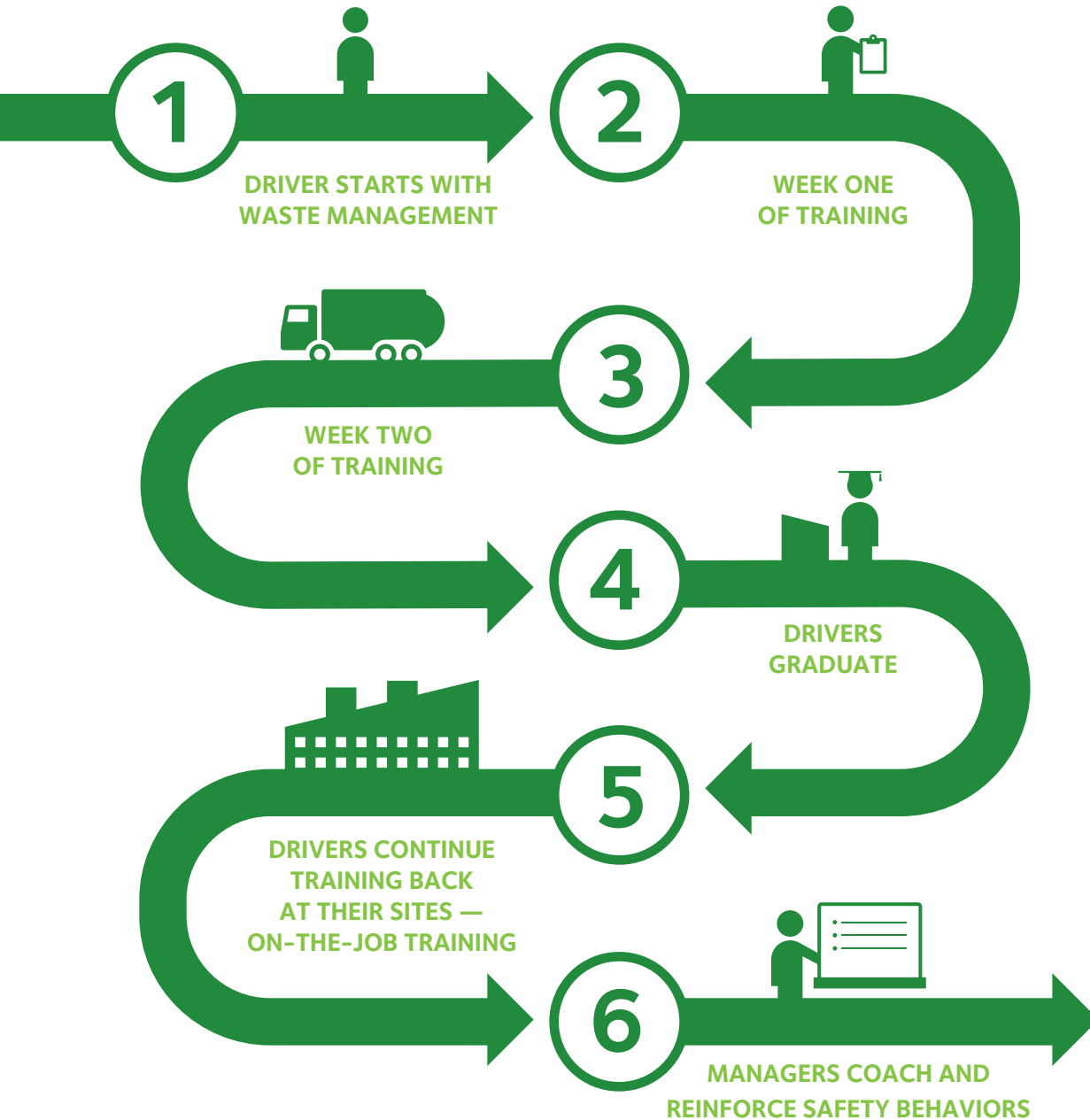
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### VIDEO SAFETY TRAINING

**In 2013, we continued our monthly video series (called the Driving Science Series, or DSS) for our hauling operations. These video messages are designed to improve each driver’s knowledge and awareness of refuse truck dynamics and performance, leading to safer habits behind the wheel.**

**We also launched two new video series, called our Operator Science Series (OSS) and Maintenance Science Series (MSS), for our heavy equipment operators and maintenance technicians. Modeled after the DSS series, these messages address specific hazards to be managed by our landfill and maintenance professionals.**

SAMPLE OF COURSE CURRICULUM AT DRIVER TRAINING CENTER



**WEEK ONE TOPICS**

- Check in and receive required personal protective equipment
- Code of Conduct/meal break training
- Safety rules book
- Safe driving practices
- Life critical rules
- Performance management for drivers
- Department of Transportation training
- Driver Vehicle Inspection Report
- Hazard Energy Control Program

**WEEK TWO ACTIVITIES**

- One-on-one training on driving course
- Drivers complete hands-on learning stations
- Drivers watch videos in computer lab
- Drivers complete driving course evaluation
- Drivers complete written test
- Drivers receive feedback from trainers

**NUMBER OF DRIVERS COMPLETING TWO-WEEK TRAINING, BY LINE OF BUSINESS**

	2012	2013
Residential	597	672
Commercial	96	89
Roll-off	177	246



# ENGAGING WITH COMMUNITIES

Waste Management provides services to more than 21 million customers. But we do it one city, one neighborhood, one business and one home at a time. This makes us an integral part of every community where we operate.

We have a stake in helping to make our cities, towns and counties better places in which to work and live — not just for today, but for the future. It's a responsibility we take to heart. Our vision is to be a trusted and valued partner, working hand-in-hand with the communities where we operate. Our efforts focus on making these communities cleaner, safer and more vibrant.

The events and organizations that we support are as varied as the thousands of communities and individuals that we serve. We concentrate on initiatives that enhance our environment, promote education and improve the livability of our communities, priorities that tie directly to our company's four key sustainability targets for the year 2020:

increasing recycling; producing renewable energy; reducing fleet emissions; and preserving wildlife habitat.

We have long been involved in environmental projects that preserve and protect healthy ecosystems, and we optimize our work with national organizations such as Keep America Beautiful (KAB) and the Wildlife Habitat Council (WHC). KAB and WHC national programs allow us to have an impact at the local level at hundreds of sites across our operating areas. Our employees also work in partnership with community-based groups, including conservationists, universities and environmental organizations, to support healthy ecosystems.

#### OUR COMMUNITY OUTREACH VISION

To be a trusted and valued community partner.

#### OUR MISSION

Preserving the environment and increasing the environmental services we provide through the cultivation of goodwill, education, open communication and the development of strategic relationships with the communities where we operate, serve or want to serve.

#### COMMUNITY OUTREACH PILLARS

 Environment

 Education

 Community vitality



## OUR OUTREACH PILLARS

### Preserving the Environment

Through our partnerships with national and local environmental organizations, we tap our assets — including land and people — to help protect the environment for the long term. The programs we support teach the fundamentals of habitat protection, conservation and biodiversity, helping us create environmental “ambassadors” who, in turn, help spread the word about environmental responsibility.

Most notably, our long-standing partnership with the Wildlife Habitat Council has resulted in the creation of 132 projects at 112 Waste Management sites that were certified by the Wildlife Habitat Council as of 2013. Together, these properties encompass 27,000 acres for the preservation of native plants and wildlife. These facilities often are paired with community environmental education programs that occur both on- and off-site. We exceeded our 2020 goal for habitat conservation in 2010 and continue to expand certified sites to include small urban habitats at transfer stations, recycling facilities and other smaller Waste Management facilities. (See pp. 73–74 for more on our efforts to protect and enhance wildlife habitats.)

### FROM WASTELAND TO PARKLAND

What once was a post-industrial wasteland in New Jersey is now a 74-acre riverfront park, thanks in part to an innovative partnership between Waste Management, environmental agencies and local government officials.

The former PJP Landfill in Jersey City had been used as a disposal site by local business and hauling companies for nearly a century before its closure in 1973. The property was declared a federal Superfund site in 1983. Waste Management became involved after acquiring a local hauler, which was one of the many previous users of the landfill.

Among the responsible parties at PJP, Waste Management stepped forward to work closely with regulators, local government and the community to find a way to transform an environmental problem into a significant local asset. Our role went well beyond the design, construction and routine maintenance of the government-approved remedy. We worked with the community to develop a long-term vision for the property, aligning with the urban renewal and quality-of-life goals of the people of Jersey City.

The remediation work included a cap cover system sloped to accommodate future development as a municipal park while protecting groundwater, restoration of wetlands along the shoreline, planting of grass and wildflowers, and creation of access roads.

The successful completion of the park, which opened in 2012, aligns with one of our key transformational goals: to know our customers and serve them better than anyone else. Through the proactive management of this project, we helped to transform the local landscape, increase city tax rolls and create a valuable public asset that will continue to provide benefits for many generations to come.



## Educating the Public

As a provider of environmental solutions, we want to help educate consumers and young people about how their personal actions impact their communities. That's one reason why we run programs that cover topics such as the proper way to recycle and which materials, if handled incorrectly, can harm the environment.

In 2013, we held environmental education sessions with more than 200,000 students in grade schools and universities across the United States. One forum featured third-generation ocean explorer Fabien Cousteau, who spoke with approximately 150 middle school students at the 19<sup>th</sup> annual Wheelabrator Symposium for Environment and Education. With help from teachers and employees of Wheelabrator Technologies, the young teens from 15 middle schools along the East Coast had identified environmental issues in their communities and then dedicated months of preparation and service to finding and implementing solutions. The symposium at which Cousteau spoke offered students the chance to come together to celebrate this series of green community projects.

We also use national environmental days of observance, such as Earth Day and Keep America Beautiful's America Recycles

Day, to educate the public on ways they can protect the planet's natural resources. On Earth Day, Waste Management teamed with the Houston Air Alliance to provide environmental education to thousands of Houston residents. Attendees were invited to play recycling games, take quizzes on wildlife habitat preservation and earn prizes such as plants that could be replanted at home. Meanwhile, more than 125 employees from southern Florida welcomed nearly 1,000 students and their families to the fifth annual Earth Day Open House at Monarch Hill Renewable Energy Park. The day featured landfill tours, photo shoots with former Miami Dolphins players, and hands-on activities — all while raising thousands of dollars for 11 local elementary schools.

In 2013, we launched a new Recycle Often. Recycle Right.<sup>SM</sup> community education campaign highlighting the importance of recycling more materials and making sure only recyclables are placed in recycling bins (see p. 33). This education campaign, which is being reinforced at events across the country, is continuing into 2014 and beyond.



### Promoting Community Vitality

Whether sponsoring local community initiatives or working with nonprofits to raise environmental awareness, we look for ways to be a good neighbor.

Through our partnership with Keep America Beautiful and several other environmental organizations, Waste Management engages in hundreds of community environmental education and beautification initiatives that highlight our desire to help create and maintain vibrant communities. In 2013, we provided 40 grants to various nonprofit environmental organizations and KAB affiliates with programs focused on community beautification and recycling education. Several grants, for example, paid for waste receptacles in municipal parks.

### 2013 KEY COMMUNITY STATISTICS



**\$13.98M**

total corporate  
charitable contributions  
(cash and in-kind donations)



**200K**

young people educated  
on environmental  
stewardship



**27K**

acres protected  
for wildlife habitat across  
132 programs at 112  
Waste Management facilities



**8.5K**

trees planted in  
collaboration with the  
Arbor Day Foundation



## STAKEHOLDER ENGAGEMENT

Waste Management values open dialogue with the diverse stakeholders that have an interest in our business and hold us accountable to our principles. We engage broadly, and at every level, with industry peers and with multi-stakeholder groups to discuss the issues affecting our business and the ways in which our operations may affect others. Insights from these engagements help shape our strategic plans and business targets and are especially important for guiding our work within our communities.

We take a systematic approach to stakeholder engagement, and we identify and regularly engage with key stakeholders, from environmental groups to business and manufacturing leaders, from government associations to scientific academies. (See detailed stakeholder list in the Appendix starting on p. 36.) These stakeholders can be found across multiple sectors and deep within our communities. All are essential in helping our company stay abreast of current trends, perspectives and policy matters

that might affect our industry, our customers and our communities.

We interact with stakeholders in a variety of ways. When working on facility upgrades and new construction, we map our community footprint and seek to engage groups and individuals in open dialogue through Community Advisory Councils or more informal routine interactions, open house events, public meetings, tours or other outreach opportunities. We also host sustainability forums with our larger customers that focus on ways to reduce costs, lessen environmental footprints and increase the reuse of resources.

Participation in policy discussions supplements our dialogue at the local level and ensures that we are working with stakeholders from many perspectives. We believe it is important for stakeholders from different viewpoints to meet together in a sustained effort to find common ground and mutual understanding of difficult environmental challenges.

The years 2012 and 2013 continued to be active ones, with company representatives serving on a number of boards

and advisory councils, as noted in the Appendix in the list starting on p. 36. A particular focus for Waste Management continues to be active engagement on environmental justice (EJ). (See more on environmental justice on p. 94.)

One of the central principles of the environmental justice movement is that community members speak for themselves. We agree — and for that reason we have been the principal sponsor for scholarships for the National Environmental Justice Conference and Training Program. This annual event, co-sponsored by major federal agencies and members of the private sector, brings together officials from various levels of government charged with protecting human health, the environment, and economic prosperity and equality for all, along with the many stakeholders who share that commitment. Waste Management is pleased to be able to promote these interactions on important policy issues involving environmental justice.

Other engagement activities of note in this area include the following:

- Memberships in Pennsylvania and California EJ advisory councils
- Chair of the Business Network for Environmental Justice
- Speaker at the U.S. Environmental Protection Agency training program on engaging community groups in the permitting process
- Member of the EPA's National Environmental Justice Advisory Council work group on public engagement in the permitting process
- Member of the EPA Science Advisory Board's work group on technical guidance to implement environmental justice throughout the EPA's regulatory programs

Our focus on community engagement and the important issue of environmental justice is consistent with our work to expand the scope of our community partnerships through the Wildlife Habitat Council and Keep America Beautiful.

As we have reflected upon the evolution of waste management in the United

States and globally, we sponsored two terms of a coalition of community advocates; environmentalists; federal, state and local government representatives; businesses; and academics brought together to recommend how to drive more sustainable materials management practices. The world's resources are finite, and efforts to transform and reuse rather than dispose of discarded materials must be consistent with environmental excellence and social justice. It makes sense for a broad-based coalition to take up this challenge.

The central premise of sustainable materials management is that producers of

goods and services step back, analyze the impacts of their actions, and recognize the need to couple environmental and social good with economic progress. The Sustainable Materials Management Coalition first reported in 2012 on how governments, businesses and stakeholders should think about the most productive and sustainable ways to use, reuse and transform wastes. The Coalition then asked a representative group of its members to report on the benefits of "life cycle thinking." The resulting report in 2013 sought to educate policymakers and the general public on the promise life cycle thinking

**"Life cycle thinking is a fancy term that speaks to an important process. When end users purchase a good or service, they don't always see the larger sequence of events that preceded their purchase. How were the raw materials sourced and what were the environmental implications of that step? How was the product manufactured, and what environmental footprint did that phase leave behind? How do the end users consume the product? And how will they dispose of it?"**

— **Barry Caldwell,**  
Senior Vice President, Waste Management

“Our collaboration with the Sustainable Materials Management Coalition has been particularly fruitful as the SMMC works to make sustainable materials management and life cycle thinking accessible.”

— **Mathy Stanislaus,**

Assistant Administrator, U.S. Environmental Protection Agency

holds for a planet with finite resources. Life cycle thinking is centered in respect for environmental impacts in the community and offers a means to factor broadly distributed goods, such as clean air and water, into economic policy and decision making.

In 2014, the Sustainable Materials Management Coalition will turn its attention to the issue of increasing recycling throughout the country.

### **Environmental Justice and Corporate Disclosure**

In recent decades, low-income communities and communities of color in the United States have raised the concern that, when compared to more affluent communities, they have borne a disproportionate environmental burden. These communities and their advocates have

called for fairness in the siting of landfills, waste-processing facilities and other industrial facilities — an element of what is frequently referred to as “environmental justice.” This is a concern that Waste Management takes very seriously.

For more than 20 years, we have expressed our commitment to environmental justice through direct and sustained collaboration with regulators, community groups, academics, advocates and others in industry to ensure that communities that host our facilities are treated fairly. But more than that, we want to assure our stakeholders that our facilities are distributed equitably across the country and are not concentrated in communities where race or lower income might affect fair access to the local decision makers who determine where industrial facilities can be sited.

We disclosed the demographic footprint of our landfills and waste-to-energy facilities in our 2010 Sustainability Report.<sup>46</sup> We believe we were the first company to do so. Using the methodology designed by environmental justice experts and recommended by the EPA, we mapped our landfills and waste-to-energy facilities — the sites for which local community groups and national advocacy organizations most frequently raised concern. Following the 2010 report, we reached out to environmental justice advocates and other stakeholders for feedback. They told us they were encouraged by our disclosure, but they urged us to go further and map the location of all of our operations. In response, we disclosed in our 2012 Sustainability Report our comprehensive footprint, which is repeated in the Appendix of this report on p. 35.

Our facilities are generally as likely to be located in communities above the state average income level as below — approximately the “half above, half below the average” of a normal, random distribution. Out of 1,423 facilities, 58 percent are located in communities



## ENGAGING WITH COMMUNITIES

with higher non-Hispanic white representation than the state average, and 48 percent are in communities with higher incomes than the state average.

We will update our footprint again with each new census or when Waste Management undergoes an acquisition or divestiture sufficient to change our demographic footprint in a meaningful way (whichever comes earlier).<sup>47</sup>

## CHARITABLE CONTRIBUTIONS

Waste Management supports communities across the United States and Canada by making charitable contributions to a wide range of programs and activities. We aim to provide funds in ways that best benefit local needs — whether it's writing a check, participating on local boards or sharing our expertise. Wherever possible, we engage with stakeholders in our communities to identify their biggest areas of need.

### Promoting Volunteerism

Waste Management allows employees to take eight hours per year of "paid time on" for volunteer efforts. In 2013, volunteers reported contributing 1,664



### A DRIVER'S MISSION

It was 2007 — the beginning of the country's economic recession — and Waste Management commercial driver Arnold Harvey was working the overnight shifts in the Maryland community of Gaithersburg, a suburb of the nation's capital. Over the course of several weeks, he watched as the number of homeless — including children — steadily increased.

The suffering he saw broke his heart and he pledged to do something about it. He started a collection drive among his coworkers to gather food and clothing. Over time, customers began to hear about his efforts and also began to support the cause.

Ultimately, Harvey and his wife, Theresa, cashed out their stocks and retirement funds and used the money to start a food pantry. The organization, God's Connection Transition, currently feeds approximately 5,000 families a month. Harvey, who was recently profiled in *People* magazine and on Fortune.com for his efforts, partners with a number of grocery stores and retailers to gather food and other goods for individuals in need.

In 2013, Waste Management contributed more than \$11,500 to Harvey's organization and in 2014 expanded collaboration with other local businesses to leverage support for this project.

## ENGAGING WITH COMMUNITIES

hours during paid working hours. This total does not reflect the thousands of hours we know our employees volunteer on their own time but chose not to track. As part of our work with Keep America Beautiful and the Wildlife Habitat Council, we encourage our employees to volunteer in their local areas on projects we sponsor throughout the year.

At Waste Management, we pride ourselves on having an employee base dedicated to stabilizing and revitalizing our operating communities through kind acts of volunteerism.

### Planting Trees and Preserving Habitats Through Cause Marketing

Our cause marketing initiatives encourage existing and new customers to sign up for services. In exchange, we fund various programs that promote healthy and balanced ecosystems within communities.

### CHARITABLE GIVING

Year	Cash Contributions	In-Kind Donations	Total
2011	\$11,044,496	\$2,938,976	\$13,983,472
2012	\$11,941,437	\$3,156,527	\$15,097,964
2013	\$11,554,171	\$2,430,711	\$13,984,882

For the last several years, we have joined forces with the Audubon Society and the Arbor Day Foundation to raise awareness among our customers of social concerns while promoting practices that make communities more vital.

Our Audubon Society partnership, which takes place around Earth Day, supports the conservation of valuable migratory bird habitats in environmentally sensitive areas. For each new customer that signs up in this promotion, we support additional areas of habitat along the Texas Gulf Coast. The 2013 Earth Day promotion created more than 180 new business accounts and supported 46 acres of habitat.

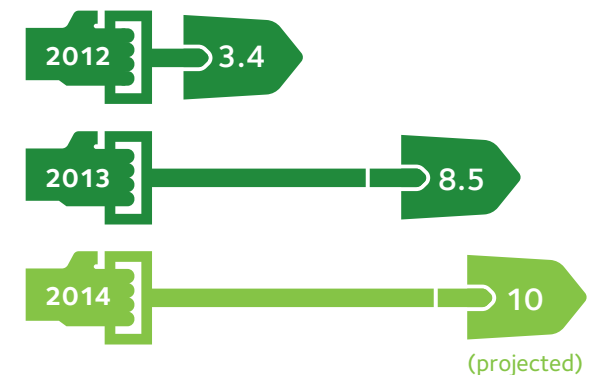
The collaboration with the Arbor Day Foundation, meanwhile, helps in conserving natural habitats, particularly in urban areas where approximately 4 million trees are lost annually. We run

promotions to plant trees on behalf of customers who add new services with Waste Management.

This collaboration also indirectly supports and brings awareness to some of our other sustainability goals. For example, by meeting our recycling goal of managing more than 20 million tons of recyclables annually, we can save the equivalent of more than 120 million trees a year.

### ARBOR DAY FOUNDATION PROMOTION

(thousand trees planted)



### Support When Disasters Strike

When disasters strike, Waste Management responds with recovery efforts — particularly when the disasters happen in our areas of operation. In May 2013, a deadly tornado touched down in Moore, Oklahoma. Almost immediately, Waste Management began organizing employees to assist in the recovery effort. We sent in teams from neighboring states to help manage the massive amount of debris. We focused especially on the Crutcho Public School, which is located in the community near one of our landfills. Crews from Waste Management assisted with the cleanup, which included salvaging for supplies, desks and other equipment that could be saved.

Several Waste Management employees, as well as members of their extended families, either lost homes during the tornado or suffered significant property damage. The Waste Management Employees Care Fund, a nonprofit entity, was available to provide short-term financing assistance to those facing unexpected hardships.

In addition, Waste Management donated \$50,000 to the American Red Cross Disaster Relief Fund to support response efforts to tornados in Oklahoma and Texas.

In late 2013, Waste Management responded to the Typhoon Haiyan disaster in the Philippines and a rash of tornadoes in the Midwestern United States with a \$25,000 donation to the American Red Cross and its Natural Disaster Relief Fund. We also agreed to match up to \$25,000 of employees' personal contributions to the relief efforts in the Midwest or the Philippines.

In the spring of 2014, the small town of Oso, Washington, was hit with a massive mudslide and flood. The disaster took out the entire community, killing more than 40 people and destroying dozens of homes. Waste Management serviced the community, and several of our employees lived in or near the area. We contributed \$5,000 to the community relief fund and supplied containers in support of the volunteers and workers in the rescue effort.



Disaster relief donations:

**\$50K**

in support of response efforts to tornados in Oklahoma and Texas

**\$25K**

in response to the Typhoon Haiyan disaster in the Philippines and a rash of tornadoes in the Midwestern United States

**\$5K**

in support of the community relief fund for the mudslide and flood disaster in Oso, Washington

## SUSTAINING COMMUNITIES

We contribute to our communities in many ways beyond just charitable donations. Our day-to-day operations — from employment of 43,000 people, to the taxes we pay, to the supplies and materials we purchase — help boost economic growth in the areas where we operate. Our strong relationships with our stakeholders aid in our ability to address community needs by identifying points of common intersection, where the community and our company have vested interests.

In many of the municipalities in which we do business, we also provide other economic contributions as part of our commitment to the municipality. Our major projects often pay “host fees” to municipalities in which they are located. We recognize that communities in which we locate are providing

an environmental service to a broad geographic area, not just to the residents of the community that houses our facilities. In consideration of that benefit, our host fees help pay for projects and services that local communities offer their residents such as, for example, new recycling services or new school equipment.

### A Watchful Eye

For more than a decade, our Waste Watch community program has trained our sanitation workers to keep their eyes open for suspicious activities in their communities.

Many of our drivers are out in the wee hours of the morning. They are, in many ways, the eyes and ears of the neighborhoods where they work. Introduced in 2004 in Forest Grove, Oregon, the program has trained thousands of our

## WASTE MANAGEMENT'S ECONOMIC BENEFITS

**\$14M**

charitable contributions

**\$310M**

diverse supplier spending

**\$580M**

taxes paid (real estate and income taxes, U.S. and Canada)

**\$7.2B**

supplier spending

**\$440M**

local spending (host fees)

**\$3.6B**

employee wages and benefits

**\$683M**

shareholder dividends

### TAXES PAID IN 2012-2013<sup>48</sup>

	Real Estate Taxes 2012	Real Estate Taxes 2013	Income Taxes 2012	Income Taxes 2013
United States	\$63.4 million	\$64.5 million	\$333.5 million	\$470.1 million
Canada	\$4.4 million	\$4.7 million	\$32.1 million	\$41.0 million

employees in 279 communities across the country on how to spot unusual, and potentially dangerous, situations. The program teaches drivers to look and listen for suspicious activities and emergency situations and then report their observations to public safety and local law enforcement agencies.

To enter the program and be recognized as a Waste Watch Certified Driver, a driver must participate in a formal training program, which includes instruction from corporate security and local law enforcement personnel, and then pass a written examination.

We also partner with other safety-related organizations and programs, including Amber Alert, the National Center for Missing & Exploited Children, Community Crime Stoppers and the U.S. Department of Homeland Security.

Over the years, the Waste Watch program has received widespread national acclaim, earning recognition from local municipalities and the National Sheriffs' Association's Award of Excellence in Neighborhood Watch. Our

drivers have been lauded for reporting suspicious activity ranging from thefts to vandalism. Drivers have also helped save lives by calling in emergency medical assistance for individuals observed to be in physical distress.

Recent examples include the following:

- An Oregon driver, who passed an elderly man standing on the side of the road. Recognizing potential confusion on the man's face, the driver pulled to the side of the road and stayed with him to get a name and address. He then contacted local authorities, as he learned to do in Waste Watch training.
- A Florida driver who witnessed a theft in progress — within two months of completing Waste Watch training. He contacted law enforcement, leading to an arrest in the case.
- A state of Washington truck driver who came upon a woman who had slipped in her driveway. The driver alerted 911, made her secure and comfortable, and stayed until medical assistance arrived.
- Texas drivers who spotted a suspect identified by police as having attempted sexual assault. An immediate call to the police led to the suspect's apprehension.
- A team of New York drivers who saw a house in flames and used their truck's fire extinguisher to save the family's home.

The Waste Watch community program has trained thousands of employees in



**279**

communities  
across the country



## ENDNOTES

- <sup>1</sup> See [www.epa.gov/osw/nonhaz/municipal/infographic/index.htm](http://www.epa.gov/osw/nonhaz/municipal/infographic/index.htm).
- <sup>2</sup> This total includes landfill gas to energy, waste to energy, solar, waste-based fuel and steam.
- <sup>3</sup> In 2011, we began to participate in the Wildlife Habitat Council's "lands for learning" projects, which supplement its initial place-specific focus. From 2011 on, our numbers reflect both "lands for learning" projects and specific habitat sites.
- <sup>4</sup> See pp. 41–42 for more on the Waste Management Phoenix Open, a Professional Golfers' Association Tour event we have sponsored. In 2013, the tournament became the first sporting event of its kind to attain "zero waste" status.
- <sup>5</sup> Beginning with our 2013 emissions reporting, we are using the modified 100-year global warming potentials (GWPs) promulgated by the U.S. Environmental Protection Agency (EPA) in November 2013. Pertinent to our carbon footprint, the EPA revised the GWP for methane from 21 to 25 and the GWP for nitrous oxide from 310 to 298.
- <sup>6</sup> We have corrected our 2012 process number to include power generation and refrigerants used at sites included in previous years' calculations but exempted by the EPA's GHG reporting rule. We are including these units for consistency over time, amending last year's reporting number.
- <sup>7</sup> We have changed our methodology for calculating fleet efficiency to conform to the EPA's most recent (2013) SmartWay Truck Tool. In order to evaluate relative emissions and progress toward our 2020 transport emissions reduction goal, we have recalculated our 2007 baseline for collection vehicles and our 2011–2013 emissions using the 2013 tool. In addition, we have changed our database for making these SmartWay calculations from our prior reliance on fuel logs to the use of records compiled for tax credit and fee purposes. The tax documentation reflects fuel purchased in a year, including some insignificant amounts of fuel stored rather than used in a given year. We believe the corporate tax records are more complete than the facility-specific fuel logs. The transition to these records accounts for part of the increase in emissions from 2012 to 2013. Note that our transportation emissions reported here include those from both our collection fleet and our non-collection "yellow iron" (i.e., off-road equipment such as forklifts and excavators) used on site. A small amount of fuel in this category is used for non-transportation purposes (e.g., running emergency generators or barbeque grills on site), but we do not subtract these from our transportation totals.
- <sup>8</sup> We are in transition in the way we track electricity data. In 2013, we hired a third party to assist in developing and reporting electricity data, making use of the enterprise accounting system's coding of accounts paid. We believe that this accounting system is more accurate than our previous estimation, which used a representative sample of Waste Management operations to project entity-wide emissions. We believe our previous estimations, in fact, erred on the high side. The dramatic reduction in energy use in 2013 is thus likely due in large part to overestimation in prior years rather than a true reduction from previous emissions. In 2014, we will continue to refine our procedures for calculating energy use, with a goal of developing a more comprehensive energy conservation program.
- <sup>9</sup> We are reporting these data to inform our customers and the public about the potential GHG reduction benefits associated with carbon storage in landfills, our renewable energy production and the value of the recyclable materials we collect and process. We are not presuming to characterize how emerging regulatory programs will allocate credit for these avoided emissions, so we do not claim these greenhouse gas reduction benefits as our own nor attempt to deduct these reductions from our carbon footprint.
- <sup>10</sup> Renewable energy from our waste wood plants in 2011 inadvertently was omitted from our 2012 report. This has been corrected.
- <sup>11</sup> Increases in productivity in 2013 include running our waste-to-energy plants at higher capacity and including energy generated from wind projects in our calculations.
- <sup>12</sup> The greenhouse gas savings figures for 2011 and 2012 were based upon estimates made using the National Recycling Coalition (NRC) Environmental Benefits Calculator. Consistent with our efforts to align our reporting more closely with current EPA methods where possible, we have converted our estimates of the benefits of recycling to those developed using the EPA's Waste Reduction Model (WARM), which reports benefits in MTCO<sub>2</sub>e (the measure consistent with the other units reported in this chart). Our 2011 and 2012 emissions remain those calculated using the NRC model, but they have been converted to MTCO<sub>2</sub>e for purposes of comparison. (Note that our 2012 report erroneously stated the recycling savings were already expressed as MTCO<sub>2</sub>e.) Also note that the EPA has yet to include updated GWP numbers in its WARM software. In our calculations, we assume that, by recycling, we divert materials from the average landfill nationally, not solely from our modern landfills with landfill-gas-to-energy capacity. If instead our recycling were to divert materials only from our own modern landfills, the emissions reductions achieved by recycling would only be 31,613,385 in 2013. Note also that the increase in emissions reductions realized by recycling does not correspond arithmetically to the increase in total tons recycled. That is because paper recycling achieves very high emissions reductions, and the relative proportion of paper in the recycling stream is declining as consumers shift from paper-based information to electronics (e.g., from newspapers to e-readers).
- <sup>13</sup> For a discussion of the protocols that govern this calculation of carbon storage or sequestration, see pp. 27–29 of the Appendix.
- <sup>14</sup> Tons of coal equivalent is calculated based on the equivalent number of households that could be powered by Waste Management energy production. Note that standard industry assumptions about household energy use differ for the waste-to-energy and landfill-gas-to-energy sectors: Standard waste-to-energy reporting is 1,000 households per installed megawatt, while the household conversion for landfill-gas-to-energy is based upon U.S. Energy Information Administration data that is updated yearly. We have not included the energy value of our wind projects in this entry because there is no sector conversion template comparable to that for waste to energy and landfill gas to energy.
- <sup>15</sup> Modern landfills are post-1993 and are permitted under 40 CFR Part 258 Subtitle D. Off-site contamination is regulatory corrective action required to address off-site impacts to groundwater.
- <sup>16</sup> The Vehicle Accident Recordable Rate for 2011 was restated to account for resolutions of vehicle accident investigations that were made following the publication of our 2012 report.



- <sup>17</sup> Numbers do not add up due to rounding for each commodity.
- <sup>18</sup> This figure does not include mixed recyclables (i.e., low-volume recyclables not otherwise enumerated) or organics.
- <sup>19</sup> To view one of the videos, see [www.youtube.be/yv2WayK-eUs](http://www.youtube.be/yv2WayK-eUs).
- <sup>20</sup> See [www.flyashdirect.com/concrete](http://www.flyashdirect.com/concrete).
- <sup>21</sup> Waste to energy has long been recognized — in federal law and elsewhere — as a renewable energy source. See [www.wte.org/faq#renewable](http://www.wte.org/faq#renewable).
- <sup>22</sup> Renewable energy figures include 17 WTE plants and two biomass-to-energy plants, one using waste wood and the other waste wood and tires. Output in any given year will fluctuate somewhat, reflecting positive or negative economic trends as manifested in the generation of more or less waste. Note that this number includes only energy sold, not the additional energy generated but used to power the facilities themselves. We are no longer including energy from the Frackville waste coal facility in Pennsylvania because it is not deemed “renewable” by the EPA, although it is included in state “renewable portfolio” standards. In 2013, Wheelabrator produced 401,891 MWh of power at its Frackville independent power facility.
- <sup>23</sup> Calculations are based on standard WTE industry reporting: 1,000 households per installed megawatt.
- <sup>24</sup> Avoided coal use is based on the amount of coal needed on a heat input basis to replace the renewable fuels used for electricity generation.
- <sup>25</sup> See [www.wte.org/userfiles/file/epaletter.pdf](http://www.wte.org/userfiles/file/epaletter.pdf).
- <sup>26</sup> See [www.epa.gov/solidwaste/nonhaz/municipal/wte/airem.htm#1](http://www.epa.gov/solidwaste/nonhaz/municipal/wte/airem.htm#1).
- <sup>27</sup> See Eileen Brettler Berenyi, Governmental Advisory Associates, Nationwide Economic Benefits of the Waste-to-Energy Sector, August 2013, available at [www.wte.org/userfiles/files/130820%20Berenyi%20Nat%271%20WTE%20Economic%20Benefits.pdf](http://www.wte.org/userfiles/files/130820%20Berenyi%20Nat%271%20WTE%20Economic%20Benefits.pdf).
- <sup>28</sup> See [www.ceres.org/resources/reports/benchmarking-air-emissions/view](http://www.ceres.org/resources/reports/benchmarking-air-emissions/view).
- <sup>29</sup> Waste Management also produces a small amount of power from wind. In 2013, we sold enough wind power in Oregon to power nearly 24,000 households. This power is not included in our reporting on our renewable energy sales, which are limited to base load power production.
- <sup>30</sup> Our first SpecFUEL® plant in San Antonio, Texas, will close in 2014. That pilot facility paved the way for development of our second plant that serves the City of Philadelphia.
- <sup>31</sup> Note that Waste Management’s figure includes landfill gas used to generate electricity as well as used directly as a fuel, for example, by a nearby manufacturing plant or in leachate evaporation projects. The U.S. Energy Information Administration reports electrical production from power plants using landfill gas as fuel. See [www.eia.gov/electricity/monthly/epm\\_table\\_grapher.cfm?t=epmt\\_1\\_01\\_a](http://www.eia.gov/electricity/monthly/epm_table_grapher.cfm?t=epmt_1_01_a).
- <sup>32</sup> For 2013, we have modified our reporting to reflect the most current EPA values for global warming potential. Over 95 percent of produced landfill gas renewable energy is sold in any given year. The numbers in the table reflect power sold.
- <sup>33</sup> We have switched our reporting to reflect megawatt-hours sold, not megawatts installed.
- <sup>34</sup> The household conversion is based upon U.S. Energy Information Administration data that is updated yearly.
- <sup>35</sup> UIC, Terra-Dynamics, and Geosyntec, Municipal Solid Waste Landfill Leachate Characterization Study (Raleigh, NC: Environmental Research and Education Foundation, 2007).
- <sup>36</sup> See [www.wm.com/sustainability/protection-and-management.jsp](http://www.wm.com/sustainability/protection-and-management.jsp).
- <sup>37</sup> Emissions were estimated using the EPA’s NONROAD 2012 and SmartWay 2012 models for particulate matter and nitrogen oxides, while California Climate Registry conversion factors were used to estimate emissions of carbon dioxide, methane and nitrous oxide, the primary greenhouse gases. Waste Management vehicle duty cycles are significantly different from the on-road long-haul vehicles for which SmartWay is designed. The addition of heavy compacting machinery to our trucks, combined with frequent route stops and idling while the machinery operates, equates to an effective 30 percent reduction in fuel economy. We are taking the lead in working with SmartWay in the near future to refine their model to better address our vocational fleet.
- <sup>38</sup> Note that our fleet emissions reduction goal is for overall emissions, not a reduction normalized by mile or number of vehicles. Our emissions reductions come from a combination of cleaner engines, shifts to natural gas vehicles, and on-board computing and other logistics management tools to improve routing and fuel efficiency.
- <sup>39</sup> See [www.yosemite.epa.gov/sab/sabproduct.nsf/57B7A4F1987D7F7385257A87007977F6/\\$File/EPA-SAB-12-011-unsigned.pdf](http://www.yosemite.epa.gov/sab/sabproduct.nsf/57B7A4F1987D7F7385257A87007977F6/$File/EPA-SAB-12-011-unsigned.pdf).
- <sup>40</sup> Both the UN Intergovernmental Panel on Climate Change and the EPA’s National GHG Emissions Inventory account for carbon sequestration of undecomposed wood products, yard trimmings and food wastes disposed of in landfills.
- <sup>41</sup> GHG emissions from refrigerant use are de minimis and therefore are not reflected in the summaries on p. 67 and 69.
- <sup>42</sup> Source: EEO1-2012 filings.
- <sup>43</sup> Government statistics for 2013 were not yet released when this report was produced.
- <sup>44</sup> Industry-wide data was not yet available for 2013 when this report was produced.
- <sup>45</sup> The VARR rate for 2011 was restated to account for resolutions of vehicle accident investigations that were made following the publication of our 2012 report.
- <sup>46</sup> Our 2010 report can be found at [www.wm.com/sustainability/index.jsp](http://www.wm.com/sustainability/index.jsp).
- <sup>47</sup> Note that because we report our demographic footprint by line of business, it is easy to identify the impact of divestiture of an individual line of business (e.g., our waste-to-energy and alternative power facilities).
- <sup>48</sup> Waste Management realized substantial proceeds from the sale of our operations in Puerto Rico in 2014. We repatriated the accumulated cash from our Puerto Rico operations and paid corresponding U.S. taxes on the distribution.