



A Guide to Resource Recovery

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A QUASI-PUBLIC AGENCY

The Rhode Island Resource Recovery Corporation (Resource Recovery) is a quasi-public agency. “Quasi-public” means that we were created by the state to do the state’s work, but we are not a true department of the state. Resource Recovery is self-funded through service fees and does not receive state funding, nor are we state employees. In many ways we operate like a private business, with a single shareholder—the state. While a typical private business might seek to be profitable and grow, we simply aim to bring in the funds necessary to run our operations and fulfill our everyday mission. Resource Recovery does share any profit received from the sale of mixed recyclables with our municipalities to support their local waste and recycling programs. Though we cannot anticipate nor plan for it, at times, the State of RI has required Resource Recovery to transfer monies to the state’s general fund.

OUR EVERYDAY MISSION

The mission of the Rhode Island Resource Recovery Corporation is to provide safe, environmentally compliant, clean and affordable solid waste and recycling services for the Rhode Island community.

BOARD OF COMMISSIONERS

Resource Recovery is governed by a Board of Commissioners. Per § 23-19-6, it consists of nine members: eight from the general public (three of whom must reside in the Town of Johnston) and the Director of the RI Department of Administration, or his/her designee. The Governor of the State of Rhode Island submits a list of Board nominees to the Rhode Island Senate for their Advice and Consent. The Senate conducts hearings in either the Judiciary Committee or in the Environment and Agriculture Committee, which if the nominees are approved, passes the names on to the full Senate for confirmation. Commissioners serve until they are nominated for another term or are replaced. Current Commissioners are listed below.

- Michael F. Sabitoni of Johnston (Chairman)
- Geri-Ann DiPaolo of North Providence (Vice Chair)
- Jeanne Boyle of East Providence (Treasurer)
- Geoffrey S. Kirkman of Providence
- Judith Kawa of Johnston
- Hon. Charles Lombardi of North Providence
- Rhonda Sasa of Johnston
- Joseph B. White, Esq. of North Kingstown
- Director of RI Department of Administration, Michael DiBiase (or designee)

LEADERSHIP AND STAFF

The Board employs an Executive Director to administer, manage, and direct the offices and business of Resource Recovery subject to the policies, control, and direction of the Commissioners. The Executive Director reports to and is accountable directly to the Board, pursuant to Resource Recovery's by-laws. Our leadership is listed below.

- **Joe Reposa** | Executive Director
- **Christine Jocelyn** | Human Resources Director
- **Michael McGonagle** | Director of Information Systems and Business Analysis
- **Dean Huff** | Chief Financial Officer
- **Jared Rhodes** | Director of Policy and Programs
- **Brian Card** | Director of Engineering
- **Gary Maddocks** | Director of Security, Building and Grounds Maintenance



We have 110 FT employees and 7 PT—about 2/3 work out in the field, and the other 1/3 in administration, including our Executive Director and all of our administrative, financial, information technology, security, human resources, engineering, operations, policy, and programs staff. We take pride in our professional organization.

BRIEF HISTORY

- 1974:** Created by RI General Assembly (RI Solid Waste Management Corporation)
- 1981:** Purchased Silvestri landfill in the Town of Johnston
- 1986:** RI Recycling Act became law (1st statewide mandatory recycling)
- 1988:** Materials Recycling Facility opened, first programs began
- 1993:** Phase I (original, unlined dump) closed
- 1993:** Phase II of Central Landfill begins (sanitary landfill, lined)
- 1994:** Municipal leaf and yard debris composting begins
- 1995:** First major Materials Recycling Facility expansion
- 1995:** *Maximum Recycling* program piloted in Foster and Scituate
- 1996:** Changed name to RI Resource Recovery Corporation
- 1996:** Signed agreement with EPA to cleanup Phase I
- 1996:** *Maximum Recycling* program implemented statewide
- 1997:** Landfill Expansion Phase III began
- 1999:** Landfill Expansion Phase IV began
- 2001:** Took over Eco-Depot program for Household Hazardous Waste
- 2003:** Statewide e-Waste recycling offered
- 2004:** Landfill Expansion Phase V began
- 2005:** ReStore program for recycling plastic bags and film began
- 2006:** Phase 1 cleanup successfully completed
- 2011:** Received *Wildlife at Work* certification from WHC
- 2012:** Second major Materials Recycling Facility expansion
- 2012:** *Recycle Together RI* program launched statewide
- 2013:** Received Gold Award in Recycling Systems from SWANA
- 2015:** Landfill Expansion Phase VI began
- 2016:** Implemented Recycle Across America standardized labels (1st state in the nation)
- 2016:** Received Biggest Safety Improvement Award from SWANA
- 2018:** Received Gold Award for Public Awareness Campaign from SWANA

MUNICIPAL PROGRAMS

Resource Recovery does not provide bins/carts to individuals, and does not manage collection service or local drop-off facilities. Each city and town has unique trash/recycling programs. The Department of Public Works is most often the local contact for trash and recycling. The RI General Assembly has mandated that cities and towns reach a recycling rate of 35% and a diversion rate of 50%. Different states measure recycling and diversion rates in different ways. The way in which a state defines “recyclables” determines what materials are in or out of the equations. At the present time, RI municipalities use the following when referring to the goals:

Mandatory Recycling Rate =
$$\frac{\text{weight of recycling bin/cart contents} + \text{leaf and yard debris} + \text{scrap metal} + \text{textiles}}{\text{the above numerator} + \text{refuse}}$$

Diversion Rate =
$$\frac{\text{weight of recycling bin contents} + \text{all other materials NOT sent to landfill}}{\text{the above numerator} + \text{refuse}}$$

Resource Recovery publishes an annual “How is My City or Town Doing?” report on our website that includes these rates, and other figures.

COSTS

Rhode Island has some of the lowest trash and recycling fees in New England. Rhode Island cities and towns pay a disposal fee of \$47 for each ton of trash, and pay no disposal fee for recyclables. Recycling isn’t totally free, because cities and towns still have to pay someone to bring the recyclables here for processing, but Resource Recovery is able to keep the municipal (city/town) price low through revenue earned from commercial trash disposal. Each city and town in RI is given a set amount of trash they can bring here at the low \$47/ton rate. This amount is called their “municipal solid waste cap”. The caps are calculated based on the city or town’s population, the previous year’s total statewide municipal solid waste (MSW) generated, and a solid waste diversion goal. Commercial waste carries higher tipping fees which essentially subsidize the lower municipal one, and fund all of our “free” programs and services, including the municipal composting program, Household Hazardous Waste (HHW) program, and all of our educational programs and support.

EDUCATIONAL PROGRAMS AND SUPPORT

We have a long history of educational programs and support: facility tours/field trips, presentations/speakers, MaxMan (RI’s recycling superhero!) appearances, tabling at community events, student project support, help starting or improving waste and recycling programs, and event recycling services. We are dedicated to extending the life of the landfill by teaching Rhode Islanders about the 4 Rs: Reducing the waste we create in the first place, reusing materials as much as possible, recycling right, and letting organic waste rot into rich compost.

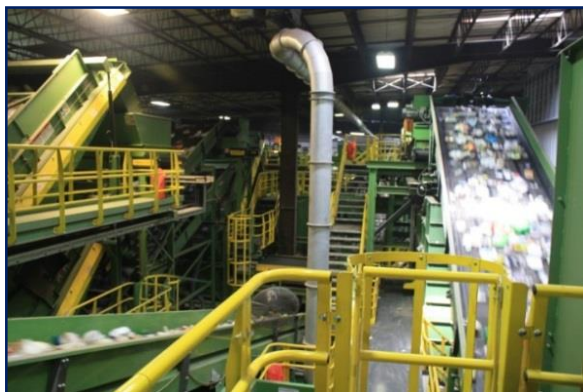
OPERATIONS

Resource Recovery’s 1,200 acre facility in Johnston is home to five major operations:

1. Materials Recycling Facility for bin/cart recyclables
2. Small Vehicle Area for special/bulky item drop-off
3. Eco-Depot for household hazardous waste
4. Compost for leaf & yard debris
5. Central Landfill for trash

On the following pages you can learn more about each operation.

Materials Recycling Facility (MRF)



FAST FACTS

Nickname: MRF (pronounced “murf”)

Cost: Initial \$12 million + \$17 million retrofit

Size: 76,550 square feet; one of the largest in New England

Staff: 61 employees

Maximum processing rate: 800 tons/day

Current processing rate: 385 tons/day

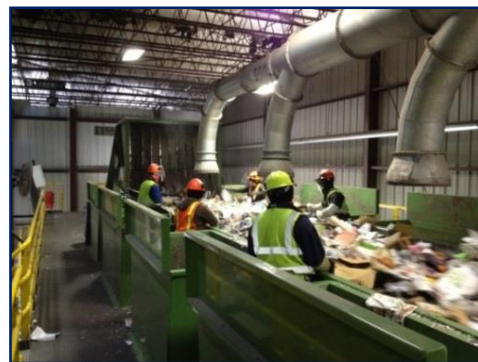
Materials processed: (1) paper, cardboard, and cartons (2) metal cans/lids, and foil, (3) glass bottles and jars, (4) plastic containers

TIPPING

After passing over the scale in their truck, mixed recyclables begin their journey through the MRF once they are unloaded onto the floor. All recyclables can be mixed together, and any that aren’t mixed will be mixed anyway, as they enter the MRF. Loads are inspected by our workers for contamination and potential hazards. If a load carries too much improper material, it is rejected, sent to the landfill, and the source is notified. The material to be sorted is loaded onto the conveyor belt and into the MRF.

SORTING

Sorting of recyclables happens manually, mechanically, and optically. At any given point you see a worker sorting, he or she is either manually picking out what doesn’t belong or picking out a particular material for separation. Manual sorting is most important at the very start of the sorting process, as items that are too large and too dangerous to go through the system are removed. Mechanically we use things like magnets, screens, crushers and conveyors to separate out materials from one another. Optically, we use scanners that recognize items based on the reflectivity of light off their surface and pair this with blasts of compressed air, to sort items from each other.



STORAGE CONTAINERS/BALES

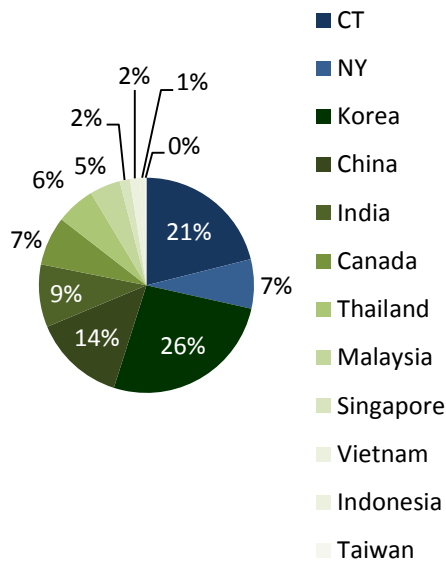
Individual types of materials finally make their way into their respective storage containers. They are then baled for shipment to our buyers. This means they are tightly compressed into the large cubes you can see around the facility. Plastic and aluminum bales weigh in the 900 - 1,200 lb. range, fiber materials are in the 2,200-2,400 lb. range and tin bales are in the 1,600 to 1,800 lb. range.

BUYERS (RECYCLERS)

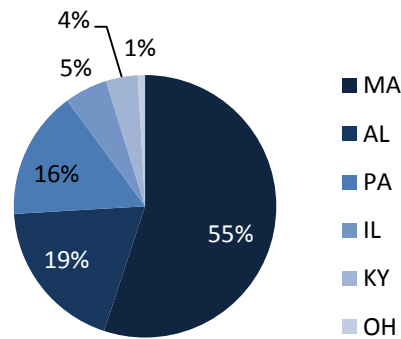
Bales are transported to facilities in the U.S., Canada, and overseas. Sometimes we know exactly what RI’s recyclables turn into next (e.g. our aluminum cans become aluminum cans again) and sometimes we just know the potential range of new uses. The following chart displays our latest data on what materials are going where.

RI's mixed recycling : where does it go next?

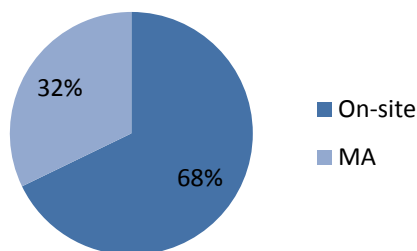
paper,
cardboard
and cartons



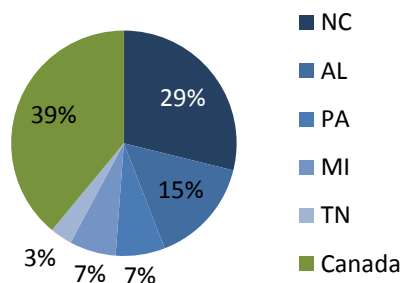
metal
cans, lids
and foil



glass
bottles
and jars



plastic
containers



WHAT CAN BE RECYCLED? VS. WHAT IS RECYCLED HERE?

These are two very different questions! Theoretically, almost everything can be transformed into something else. So *can* any given product be recycled somewhere in the world now or somehow in the future? Probably. However there are some other questions we must ask before we determine if something is recycled here. The answers to questions like this determine why we do or do not recycle certain items in RI at any given time:

- Is there anyone willing to buy this material (i.e. is someone out there transforming this material into something else)? Note that we are always looking for new potential markets!
- If so, can we collect the volume that they require in the condition they want on the schedule they need?
- Does our current plant support the type of separation and baling that would produce the quality of the material they need?
- After the costs of collecting, hauling, sorting and baling are we getting enough money back to at least break even?

If something is not currently accepted in RI's mixed recycling program, it is because we cannot yet answer "yes" to **all** these questions.

MIXED RECYCLING PROGRAM

Below are the four categories of materials we accept in your recycling bin/cart. Note that some of the items we accept cannot be sold to recyclers yet; however, if you follow these basic guidelines, you'll be a great recycler!

Paper, cardboard, and cartons: Paper and cardboard should be mostly clean and dry (a little grease on a pizza box is OK) and be flattened. Cartons must be empty at a minimum, and rinsed whenever possible. Place plastic tops back on to cartons prior to recycling. *No shredded paper, and no napkins, tissues or paper towels.*

Metal cans, lids, and foil: That's it—no other metal. For example, a metal frying pan is not a can, lid, or foil, so it doesn't belong in your bin or cart. Containers must be empty at a minimum, and rinsed whenever possible. Foil should be clean and bunched up.

Glass bottles and jars: That's it—no other glass. For example, a drinking glass is not a bottle or jar, so it doesn't belong in your bin or cart. Containers must be empty at a minimum, and rinsed whenever possible. Remove metal tops from glass bottles and jars first, and recycle separately.

Plastic containers: That's it—no other plastic. For example, a plastic coat hanger is not a container, so it doesn't belong in your bin or cart. Containers must be empty at a minimum, and rinsed whenever possible. Place plastic tops back on to containers prior to recycling. No foam containers, or plastic containers that held flammable materials like motor oil, antifreeze, pesticides or herbicides. **No plastic bags, bags of bags, or recycling inside of bags!**

RECYCLE ACROSS AMERICA

On Earth Day, 2016, Rhode Island became the first state in the nation to adopt the Recycle Across America standardized bin labeling solution. These labels are proven to increase recycling and decrease contamination. Free labels are available to public schools and government agencies, as well as to any private businesses or institutions who participate in RI's recycling program.



Small Vehicle Area (SVA)

Our Small Vehicle Area (SVA) offers easy access to special/bulky item recycling, as well as to disposal. The SVA is a self-serve operation, but a friendly attendant is always available to assist and direct you.

Below is a list of the categories of materials we accept at the SVA. You must review our full materials acceptance criteria and pricing on our website prior to using the SVA. We only take specific items within these categories, and some carry a fee.

- Appliances ("White Goods")
- Batteries
- Books and Media
- Bulky Rigid Plastics
- Cardboard (Oversized)
- Concrete/Asphalt/Brick/Rock
- Construction & Demolition (C&D) Debris
- Cooking Oil
- Electronic Waste (e-waste)
- Foam
- Mixed Recycling (MRF)
- Motor Oil and Filters
- Scrap Metal
- Shredded Paper
- Solid Waste (trash)
- Textiles
- Tires



Eco-Depot

HOUSEHOLD HAZARDOUS WASTE

Eco-Depot is the name for our free service for disposing of residential household hazardous waste (HHW) in an environmentally responsible way. Hazardous substances are toxic, corrosive, flammable, or reactive. If you see terms on a product's label like "caution," "hazardous," "danger," "flammable," or "poison," dispose of these with extra care!

EXAMPLES

Car & rechargeable batteries, gasoline, oil and latex paints & paint thinners/strippers/varnishes/stains, fluorescent bulbs, pool chemicals, fertilizers and pesticides, propane tanks, bug spray, anti-freeze, drain openers, motor oil/filters, nail polishes, arts & crafts chemicals, charcoal lighter fluids, flea dips/sprays/collars, mercury thermostats, metal polishes, disinfectants, concrete cleaner, oven cleaner, rug/upholstery cleaner, moth balls, shoe polish, windshield wiper fluid and residential sharps.

HISTORY

Since we began the program in 2001, we have offered more than 654 collections and safely recycled or disposed of approximately 12.6 million pounds of HHW and served over 175,000 Rhode Islanders.



COLLECTION

We host collection days in Johnston and at other spots around the state on certain Saturdays. You must make an appointment. Residents can access the full calendar of event dates, and make an appointment on our website.

WHAT HAPPENS TO IT

In partnership with Clean Harbors, Inc., we consolidate like-substances and separate others before shipping them to be treated. Latex paint gets remanufactured for industrial and commercial uses. Flammables and other combustibles are sent to waste-to-energy facilities and are used to make electricity. Mercury gets reclaimed for different purposes, too. Anything that can't be recycled or repurposed is safely disposed of in one of two special hazardous waste landfills out-of-state (Chattanooga, TN, and El Dorado, AR). No hazardous waste is landfilled here.

Compost Operation



LEAF & YARD DEBRIS

We turn leaf and yard waste from both residents and commercial landscapers into RI Class "A" compost that is also certified for use in organic growing. The certification is overseen by the RI Dept. of Environmental Management. We process about 40,000 tons of leaf and yard debris each year through a windrow (row-like pile) process. The leaf bags that residents use are chipped up using a tub grinder to help speed decomposition. Materials move through the series of windrows with help from a windrow turner that straddles the piles. This machine turns the pile from the inside out. Turning is very important to provide the necessary oxygen for fast decomposition. It

also helps to cool the piles and prevent fires. Finished compost is used in some municipal projects, sold through Casella Organics wholesale, and sold directly to RI residents. You can find out more on our website.

COMPOSTING AT HOME

Composting at home is a great way to turn food scraps and leaf and yard waste into a rich soil amendment for lawns and gardens. It also diverts those materials from the landfill where they will not break down easily. Excavations into sanitary landfills like ours find organic food items intact after many, many years! In 2015, our waste characterization study found that 16% of what's going into the Central Landfill is compostable. That is a huge chunk of our waste stream! Resource Recovery sells compost bins to residents. When you purchase a bin we provide you with educational materials to get you started, and ensure you are using best practices in managing your compost. As part of our educational programming, Resource Recovery also offers free home composting workshops to community groups.



CENTRAL LANDFILL

ELEVATION AND FOOTPRINT

The landfill's elevation varies depending on where you are standing. The landfill's depth ranges, but you can think of it as being about 250 feet from its base. The very top is about 560 ft. above sea level, versus the 575 ft. when it was first capped. Though settlement of the landfill is dependent on compaction, weather (moisture), and waste type, the majority takes place in the first several years, which can fluctuate and be as much as 10 ft./year. At 560 ft. the landfill is not the highest point in RI. The highest point in RI is Jerimoth Hill (812ft. above sea level) in Foster. In fact there are numerous hills in Western Rhode Island that are taller than the landfill. As far as man-made structures go, there are six buildings taller than the landfill in Providence. At the top of the landfill on a clear day you can see: Providence, the Fall River landfill, the Jamestown Bridge, and the Newport Bridge. The current disposal footprint of the landfill is approximately 290 acres.

PHASES

There are currently six "phases" or sections of the landfill. Phases I-IV are closed. Phase V remains active & Phase VI is now in use, and is the most current permitted phase of the Central Landfill. The entire Phase VI expansion is broken up into areas which make construction easier. This expansion requires the removal and relocation of much of the existing infrastructure, including the tipping facility, the compost area, the administrative building, and the small vehicle area just to name a few.



CLOSURE

Presently, we expect to reach capacity in the current landfill operations in 2034, considering all disposal and recycling rates remain the same. As rates often change, the actual date of closure is quite fluid. When the landfill closes there are some alternatives for us: (1) Find another city/town to build a landfill (no city/town is jumping at this!), (2) attempt to expand the current facility (this would be expensive and require land acquisitions and wetlands relocations), (3) ship it out of state (expensive) and (4) incinerate (we are currently prohibited from this by RI law). Moral of the story: We must continue to reduce, reuse, recycle and rot (compost) to the greatest extent possible.



SANITARY LANDFILL DESIGN

The landfill is not a dump. It is an environmental engineering marvel. We are heavily regulated by the Rhode Island Department of Environmental Management and the U.S. Environmental Protection Agency. As a sanitary landfill, trash is compressed to take up as little space as possible, and is kept separate from the surrounding environment. Trash is placed, buried, and covered in such a way that it has little to no contact with air, light, water, animals, or people. This means that even biodegradable materials decompose incredibly slowly in the landfill.

Baseliner

Designated areas where land will be prepared for trash ("cells") are planned for 12-18 months of capacity at a time. Primary and secondary liner systems (made of plastic, clay and sand) are constructed to separate the trash from the surrounding environment. These are designed to keep wastewater ("leachate") from passing through as well. Primary and secondary leachate flow is monitored daily.

Leachate collection and treatment

On average, over 200,000 gallons of wastewater comes from the Central Landfill each day. This includes (1) water that has percolated through the trash and into the baseliner's pipes, (2) leachate that is captured from the perimeter of the unlined Phase I, (3) water that comes out when we de-water our gas wells and pipes, and (4) gas system condensate that is removed as part of the gas extraction from the landfill. Each phase of the landfill is designed and built to collect the wastewater that is generated from that phase. This is accomplished with the use of various pumping stations located around the perimeter of the landfill. You will notice these on site as either small buildings near the toe of slope for gravity systems or large pipes rising up out of the cell for the newer cells, where pumps are used to pull the liquid out of the cell. This liquid is collected and conveyed to two large storage tanks (750,000 gallons each) located at the southeast corner of the Central Landfill. One of the main purposes of collecting leachate in these tanks is to equalize the flow and characteristics of the leachate and make the mixture more consistent for treatment at the plant, where wastewater is denitrified by microbial life. Eliminating large changes in flow and characteristics allows the leachate pre-treatment facility to maintain a consistent food source for the microbes. This optimizes biological conditions for treating the leachate.



In 2015, we built a new sewer pipe / pump system and a new wastewater pre-treatment plant that allowed us to begin discharging our wastewater to the Narragansett Bay Commission (NBC) Fields Point treatment facility. This construction was necessary to comply with their regulations, which has limits on acceptable nitrogen levels in wastewater that is sent out from our facility. The total cost of the project was \$40 M. The new pre-treatment plant alone cost \$27 M, and is designed to treat a maximum daily flow of 650,000 gallons of wastewater.

Groundwater monitoring



Groundwater wells around the perimeter of the property are used to monitor the groundwater. Water samples are pulled and tested on a quarterly basis, both for the EPA and the RI DEM programs. Monitoring and reporting is in place to make sure that all systems are functioning and that there are no detrimental impacts to the environment from the operations.

Active face

This is where trash trucks arrive on any given day. Bulldozers and compacters are constantly trying to get as much trash in the smallest amount of space possible. Trash is not just dumped anywhere. Our engineers use a scientific process to dictate exactly where trash is placed each day for the landfill to operate properly. In addition, the machinery is now equipped with GPS technology so the operators can see exactly where and how they are placing the trash each day. There is constant road-building going on to get trucks to the ever-moving active face.



Daily cells and cover

Each day the compressed trash is covered with 6-8" of soil material or an approved alternative cover. This is done to seal in the trash, helping to reduce odors and keep animals from digging in. We leave no open trash pits. We are primarily using gravel and Posi-shell, a spray-applied coating similar to stucco, to cover the trash each day. We can also use contaminated soil, when available.

Cap

We seal off a completely filled section of the landfill with another complex system of layers, in an effort to make it water-tight. In some places, grass is planted on to prevent erosion, and is mowed to keep the growth of trees and bushes from occurring (roots could potentially damage the capping system). In other places, synthetic grass is now being used to minimize the maintenance required and the possibility of erosion entering the waterways. When compared to the construction and maintenance of the traditional cap, ClosureTurf™ reduces the carbon footprint by 75%. Using the alternate cap provides an additional 2.5 feet of airspace, extending the life of the landfill. It prevents erosion and makes for cleaner stormwater runoff in our retention ponds—this means less pond dredging is required, which means lower maintenance costs and less disturbance of the pond habitat. It prevents animals from digging into the cap and possibly damaging it. We have plenty of wild area surrounding the landfill, and we will continue to focus on habitat improvements in those natural areas. Finally, it creates the ideal foundation for adding a solar cap in the future, something we are still pursuing.

Stormwater controls

To further protect the capping system we build a series of horizontal benches around the landfill, along with downchutes positioned vertically on the slope of the landfill, to guide rainwater away from the cap and eventually into the swales around the perimeter. The stormwater, which does NOT contain any water that has percolated down through the landfill (i.e leachate), is then collected in eight sediment/retention ponds which surround the landfill (six collect stormwater from our property and two from Shun Pike). These ponds allow sediment to settle out before the water goes back into Cedar Swamp Brook (then to Upper Simmons Reservoir).

Erosion control

You will also see hay bales and silt fences surrounding parts of the landfill. These are temporary controls used to further prevent erosion. We are always searching for new technologies to enhance our ability to protect the environment.

Landfill gas

Decomposing trash in landfills continuously produces gases like methane and carbon dioxide. We collect this gas through a system of collection pipes and wells, and transform it to electricity in a power plant, which is the largest landfill gas collection plant east of the Mississippi. You can see the many wells sticking out around the landfill. More are located in the newer phases because the peak of off-gassing happens early on in the decomposition process. Each year, enough electricity is produced to power 28,000 homes. Collecting these gases not only reduces our need to burn fossil fuels for energy, but it also keeps these greenhouse gases from entering the atmosphere and contributing to global climate change.



Power plant

The facility built by Broadrock Renewable Energy (the company who owns the gas collection system and power plant) is located directly across from the Resource Recovery entrance. Landfill gas is collected and processed through a clean-up system to remove impurities like sulfur and siloxanes prior to sending it to plant. This plant includes a waste-heat recovery system (referred to as “co-generation”) that can make the plant much more efficient, creating nearly 50% more electricity than a standard plant.

Flares

Flares (which look like large candlesticks) are a safety mechanism. They ensure that the gas has somewhere to go if the power plant can't keep up with the rate the gas is being produced or if the power plant is down for emergencies. The new power plant described above was designed to handle close to 100% of the gas collected by the operator. Flares burn gases in a safe manner to protect the environment and are also regulated by RI Department of Environmental Management and the U.S. Environmental Protection Agency. Broadrock Renewable Energy has installed anti-perching crowns on the flares to protect birds.

Meters

We have meters that measure the flow of gases and leachate, some of which run on renewable energy (wind & solar). We are constantly measuring, testing and making adjustments to our systems. We would not be able to operate if we did not meet all the regulations set forth for us by the DEM and EPA.

Environmental Stewardship

SUPERFUND SITE

Back when Phase I was built, wastes that are now defined as hazardous were not regulated, and were buried in the landfill like regular waste. In addition to this burial practice, Phase I was also not lined the way new phases are now. Because of this, Phase I has more potential negative environmental impacts and requires more attention. Phase I is a designated "Superfund Site" by the U.S. EPA and they oversee the on-going remediation of this area, funded by Resource Recovery. This area is now stable and does not pose any significant risk to the surrounding area.

CEDAR BROOK SWAMP

We had to permanently relocate the surrounding Cedar Swamp Brook during the construction of Phases 4 and 5. We've since completed restoration of the stream as close to its natural state as possible.

LITTER CONTROL

It is important for us to be a good neighbor to our host community. We have both permanent and moveable litter fences surrounding the landfill. The moveable fences allow for adaptation to current wind conditions (you will see wind "socks" which indicate the wind's direction). Plastic bags are the main component of landfill litter because they are light and easily carried away by the wind. We have a litter crew whose job it is to collect the litter from these fences and the surrounding areas. We have seen a decrease in littering recent years, due to our ReStore program, which requires large grocery stores, pharmacies, and all big-box stores in RI to have recycling collection in place. People are also using paper, and switching to reusable bags.



POST-CLOSURE

Even with all of our engineering and environmental regulations, the landfill will continue to produce gas and leachate as long as decomposition is taking place. Decomposition will continue for a very, very, **very** long time. As this process continues, the landfill will continue to settle a little each year. This means the landfill area cannot be used for any other permanent structures. Resource Recovery has to have a long-term plan in place to manage the landfill area post-closure.

CONSERVATION CERTIFICATION

In 2011 and 2013 our facility was designated as a *Wildlife at Work* site by the Wildlife Habitat Council, and in 2016 we were awarded with WHC's new *Conservation Certification*. We join Fidelity Investments in Smithfield, RI as the only other site in Rhode Island to have this special designation. Through the program we have collaborated with groups like the Audubon Society of RI, the RI Wild Plant Society, the Boy Scouts, the Ocean State Bird Club, and Resource Recovery volunteers on species monitoring as well as many habitat improvement projects. We've built bird boxes, nesting tubes, snags, sunning spots, and a pollinator garden and continue to plant native RI species while removing non-native species that are invasive.



National Waste & Recycling Statistics

Source: *United States Environmental Protection Agency*

FOOTPRINT

In 2014, solid waste generation amounted to 4.4 pounds, per person, per day. This is about the same as in 2013, and is one of the lowest rates since before 1990.

RECOVERY

In 2014, Americans recovered 1.1 pounds per person, per day with recycling and 0.4 pounds per person, per day with composting. Americans combusted or discarded in 2.9 pounds per person per day of MSW.

ENERGY

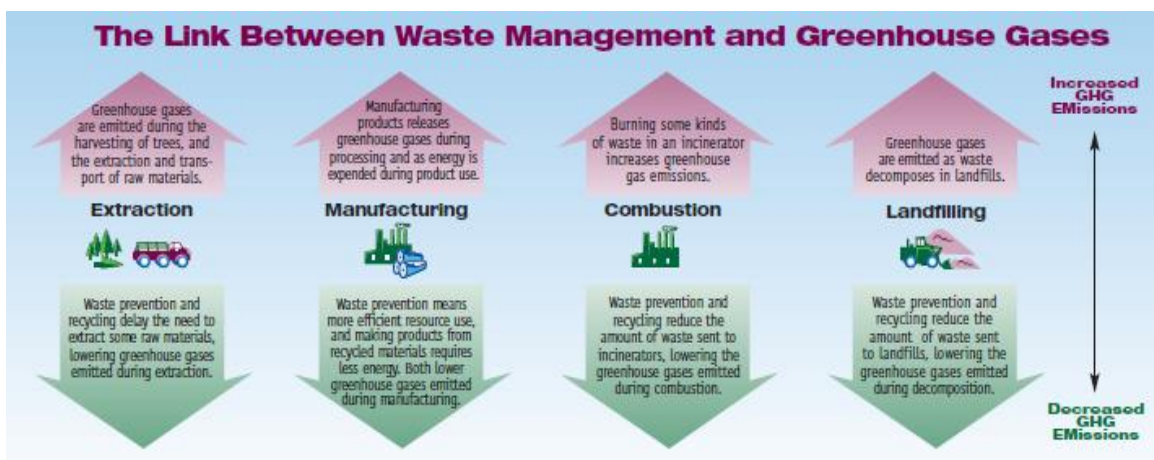
Recycling one milk jug saves the amount of energy it takes to run a laptop for over 9 hours. Recycling one aluminum can saves the energy needed to drive a 32mpg car 8 miles.

ECONOMY

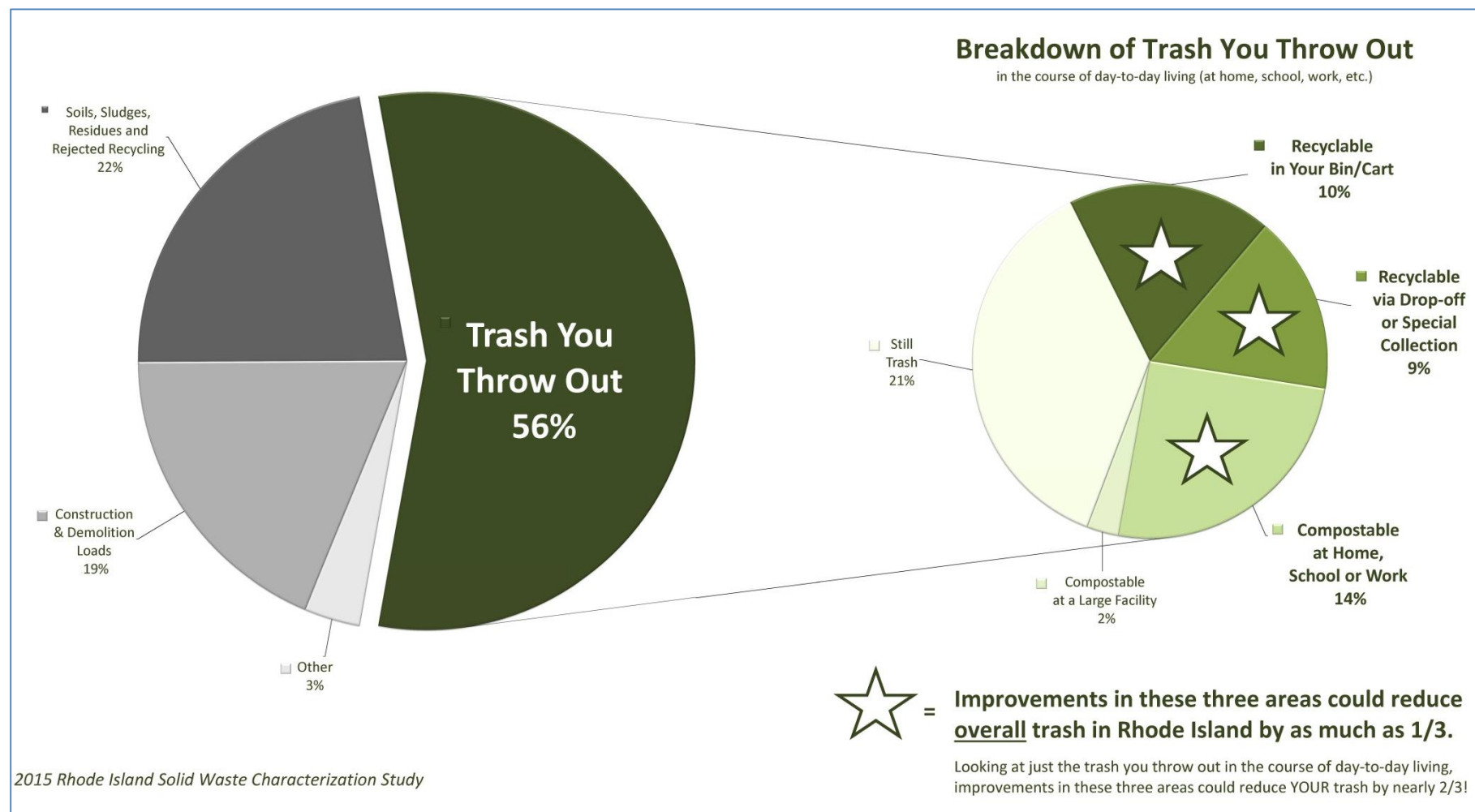
Recycling and reuse employs approximately 1.1 million people, generates an annual payroll of nearly \$37 billion, and grosses over \$236 billion in annual revenues. It is 5:1 in job creation as compared to trash disposal.

CLIMATE CHANGE

The harvesting, extraction, transportation, manufacturing & disposal of products greatly contribute to greenhouse gas emissions. "Nationally, in 2014, Americans recycled and composted over 89 million tons of municipal solid waste. This provides an annual reduction of more than 181 MMTCO₂ E, comparable to the annual GHG emissions from over 38 million passenger vehicles."



Rhode Island's 2015 Waste Characterization Study Results



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