

A Northeast Resource
Recovery Presentation



NRRArecycles.org
@nrrarecycles

RECYCLING 101 (& MORE)

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About NRRA

Introduction

NRRA is the oldest and largest cooperative-model recycling nonprofit in the US. We support small, rural communities in NH, VT, and MA with cooperative marketing, education, and technical assistance.

90% of New Hampshire towns and cities are NRRA Members!



NRRA is the oldest and largest cooperative-model recycling non-profit in the country.

Our mission is to partner with members to make recycling strong through economic and environmentally sound solutions.

We mainly support small, rural communities in NH, as well as VT and MA, with cooperative marketing, education, and technical assistance.

Our Impact

Fiscal Year 2023

***Our Mission:** Partnering to make recycling strong through economic and environmentally sound solutions.*



We helped our Members **recycle and manage:**

76.9 Million
Pounds of Material



We returned **revenue** to members:

\$2.21 Million
(\$2,209,542)



We helped **avoid** carbon dioxide emissions.

211 Million
Pounds of CO²



That's like **removing cars** from the road for a full year!

20,399
Passenger Cars



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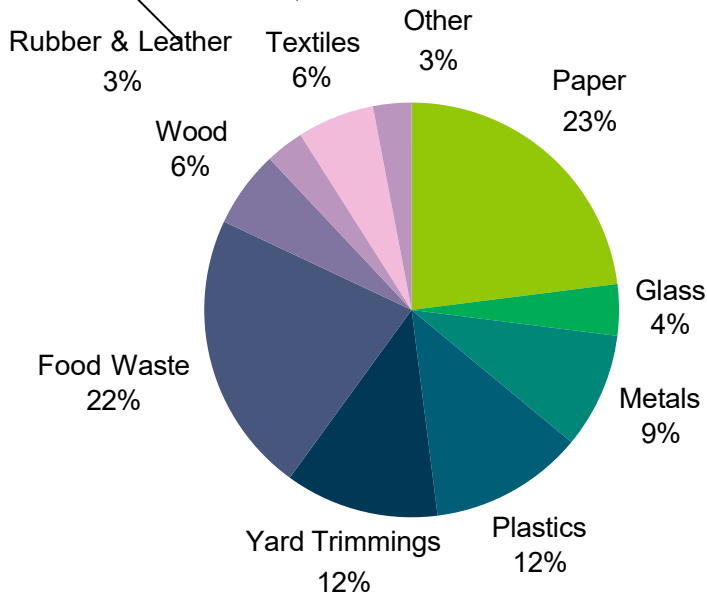
Let's Start with Trash

A Nationwide Look

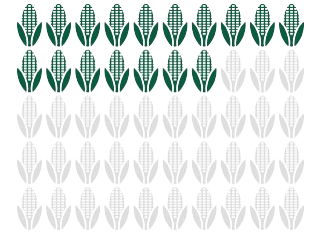


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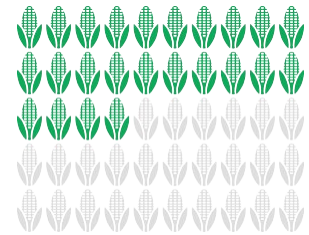
What's In The Trash?



34%
could be
composted



48%
(theoretically)
could be
recycled



Nationwide MSW Generated by Material based on weight

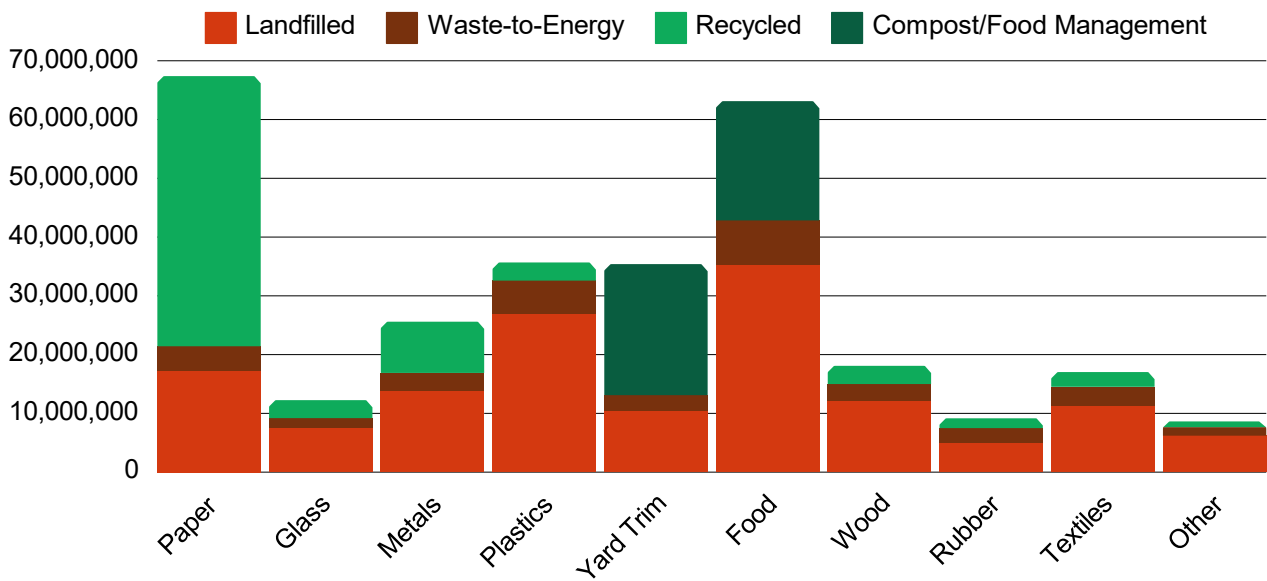


This is amount of NATIONAL municipal solid waste generated by material based on WEIGHT.

HIGHLIGHTS:

- Food Waste is the heaviest, followed by plastic and paper.
- 34% could be composted (food waste and yard trimmings)
- 48% could THEORETICALLY be recycled

What Happens to your Trash?



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Based on 2018 US nation-wide EPA data

What Happens to your Trash (again, Nationwide):

- Paper recycling is doing ok
- Need to improve glass, metals, and plastics
- In NH, Yard Waste is banned from being disposed of in a landfill.
- Need to continue to improve food waste diversion.

Solid Waste in NH

New Hampshire's Infrastructure



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6

Landfills

- 3 public landfills
- 3 private (limited service area) landfills

1

Waste-to-Energy Incinerator

The Wheelabrator in Concord is a waste-to-energy facility.

50%

Out of State Trash being landfilled in NH

Most out of state trash comes from MA

!

Turnkey Landfill in Rochester, NH

NH has the largest landfill in New England operated by Waste Management.

0

Materials Recovery Facility

A "MRF" mechanically separates single-stream or zero-sort recyclables

3 unlimited service area

- Mt. Carberry in Success; North Country Environmental Services in Bethlehem; Waste Management Turnkey in Rochester

3 limited service area

- Conway, Lebanon, Nashua

Wheelabrator waste-to-energy incinerator in Concord

NO MRFs.

NO anerobic digesters.

This means all single stream must be sent out of state to be processed.



State-wide look at recycling in NH

What percentage of communities in NH have their own municipal recycling facility?



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AUDIENCE INTERACTION SLIDE!

Ask: What percentage of communities in NH have their own municipal recycling facility?

By a show of hands, is it:

- 72%?
- 85%?
- 91%?

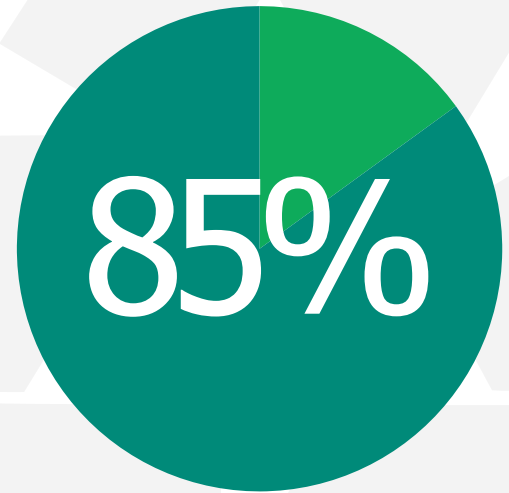
Click to pull in answer: 85%

State law requires that, "Each town shall either provide a facility or assure access to another approved solid waste facility for its residents."

What percentage of communities in NH have their own municipal recycling facility?



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What percentage of communities in NH have their own municipal recycling facility? By a show of hands, is it:

- 72%?
- 85%?
- 91%?

Answer: 85%

State law requires that, "Each town shall either provide a facility or assure access to another approved solid waste facility for its residents."

Recycling Processing

Materials Processed in New Hampshire



Electronics

Processed in Dover, NH

Electronics are sorted, dismantled, and mechanically separated. Valuable materials such as gold, copper, glass, and aluminum are then recovered to be reused.



Cardboard

Processed in Claremont, NH

Cardboard is made into large sheets of kraft paper for brown paper grocery bags, lawn bags, and packing material.

- Most vendors are based in NE, but not a lot recycling in NH.
- Some process and then send further afield
- Are we sending everything overseas? Generally, no.

It is a global market (eg scrap metal)



Recycling in your Town

Like money?
Try recycling!



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REVENUE

Earned by **selling high quality recyclable material** to responsible vendors.



DISPOSAL COSTS

Decrease as material is diverted from the solid waste stream and is recycled instead.



- Revenue is EARNED and Disposal Costs are AVOIDED.
- Disposal costs are how much it costs for waste to be landfilled or incinerated.
- Waste diversion can help avoid the higher cost of municipal solid waste disposal. (Though not always true with single and dual stream recycling when markets are down.)
- The cost of landfilling and incineration will continue to rise, so diversion is key.

EXAMPLE:

Typically the cost to recycle is less than the cost to throw that material away. Waste may cost \$100 a ton to landfill or incinerate. A recyclable may sell for \$140 a ton revenue. So if you recycle it, you would BOTH get the \$140 for the sale of the recyclable, PLUS \$100 to avoid landfilling. So now that recyclable is worth \$240!

Recycling Example

Aluminum Cans



Saves MONEY

It's cheaper to recycle aluminum versus extracting new aluminum through mining and processing ore.



Saves ENERGY

Recycling aluminum saves **more than 90%** of the energy needed to create new aluminum.



Saves Natural RESOURCES

Nearly 75% of all aluminum produced is still in use today!

In addition to saving money or generating revenue, waste diversion saves energy and natural resources.

IMPORTANT:

Recycling helps to save valuable landfill capacity for waste that cannot be diverted.



Why doesn't my town recycle EVERYTHING?

You need 3 things to decide:



Amount

Economy of Scale: How much of an item do you have to recycle?



Location

Transportation & Processing: Where is the location of the processing facility in relation to the community?



Cost

Markets & Materials: Are you offering high quality materials (clean, dry, and uncontaminated?) Is the market good?

Recycling is a manufacturing process.

Machinery is used to create new items on a large scale.

NEED:

- Amount (economy of scale)
- Location (transportation and processing)
- Cost (look at the market and the quality of the materials)

A Note on Contamination

Recycling is a manufacturing process - machinery is used to create new items on a large scale. When can then better understand why contamination is such a problem. Just as you wouldn't want contamination in other manufacturing, contamination in recycling is also problematic.

Percent of Contamination Found:

Source Separated Recyclables



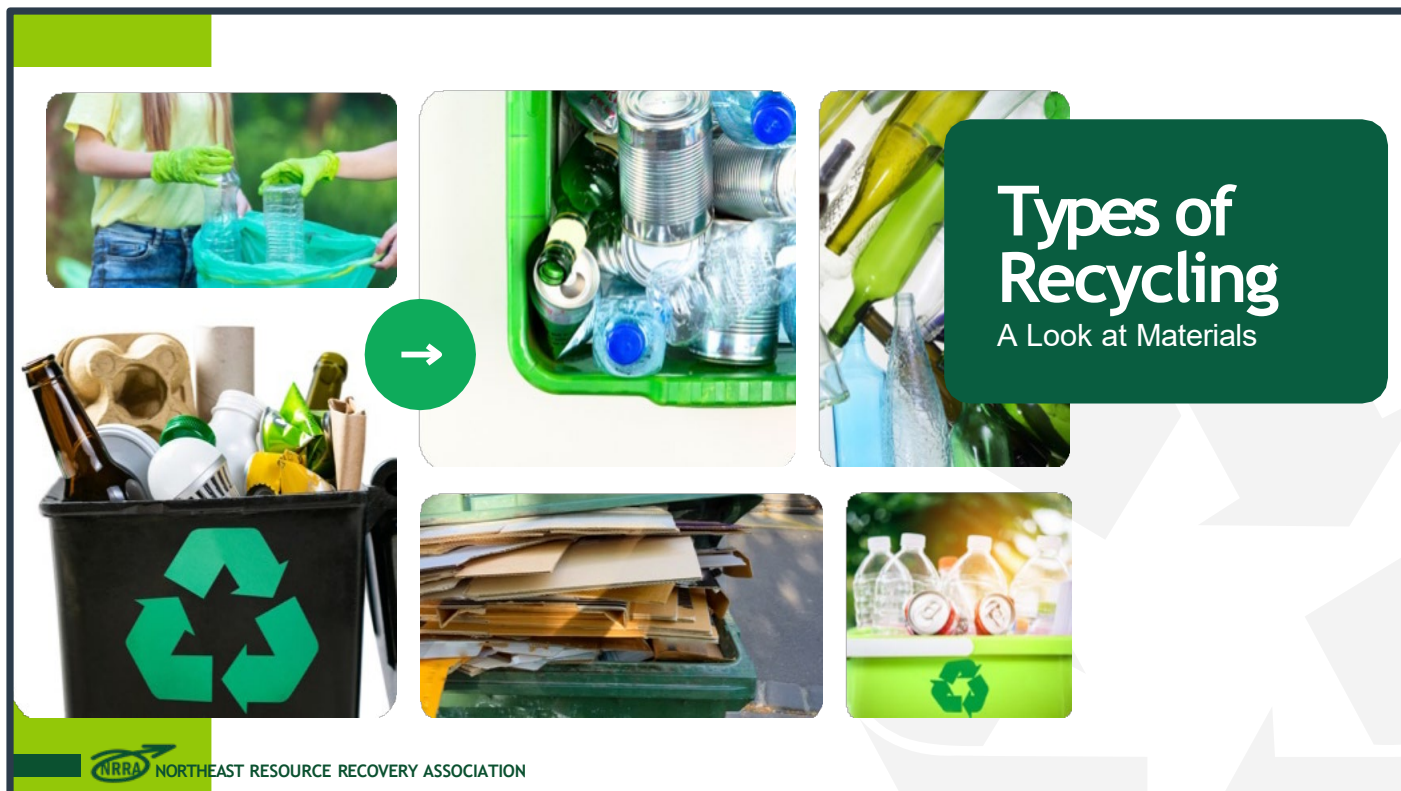
Single and Dual Stream Recyclables



Recycling is a manufacturing process. Machinery is used to create new items on a large scale.

Just as you wouldn't want contamination in consumable items you use daily, you don't want contamination in the raw materials being recycled back into a usable item.

Contamination tends to be much lower in source separated recyclables opposed to single/dual stream recyclables (eg. clamshells, Dunkin Donuts cup, etc.)



Types of Recycling

A Look at Materials

Types of Recycling - Materials



Mixed Paper Recycling

Magazines, Paperboard, Mixed Paper, and Junk Mail



Magazines become:

- paperboard
- telephone directories
- newspaper

Paperboard, Mixed Paper, and Junk Mail become:

- paper backing on roofing shingles
- paper towel and toilet paper rolls
- new paperboard packaging

Paper & Cardboard Recycling

Cardboard, Notebook and Computer Paper



Cardboard Becomes:

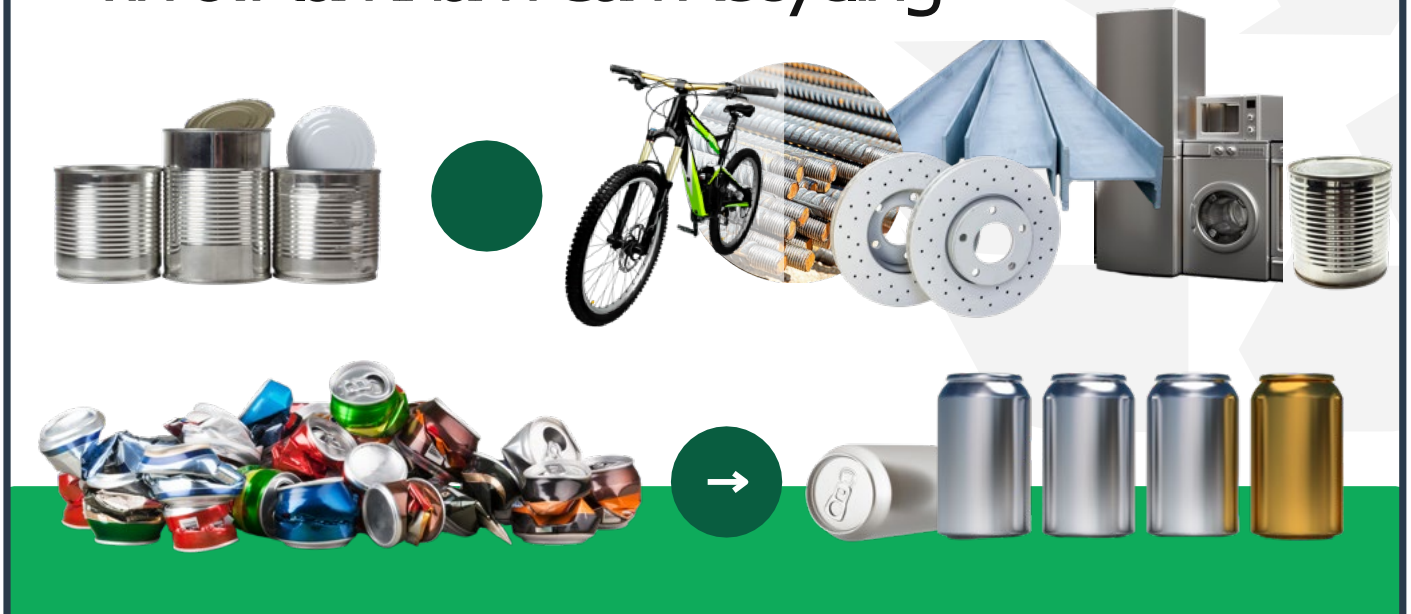
- Paper bags
- New cardboard
- Paperboard
- Cardboard Medium (the corrugated middle part)

Notebook & Computer Paper:

- paper towels
- facial tissue (kleenex)
- toilet paper
- napkins
- new notebook paper
- new computer paper



Tin & Aluminum Can Recycling



Tin (steel) Cans:

- bike parts
- rebar
- car parts
- steel beams
- appliances
- new cans

Aluminum:

- new aluminum cans

Glass & Plastic Recycling

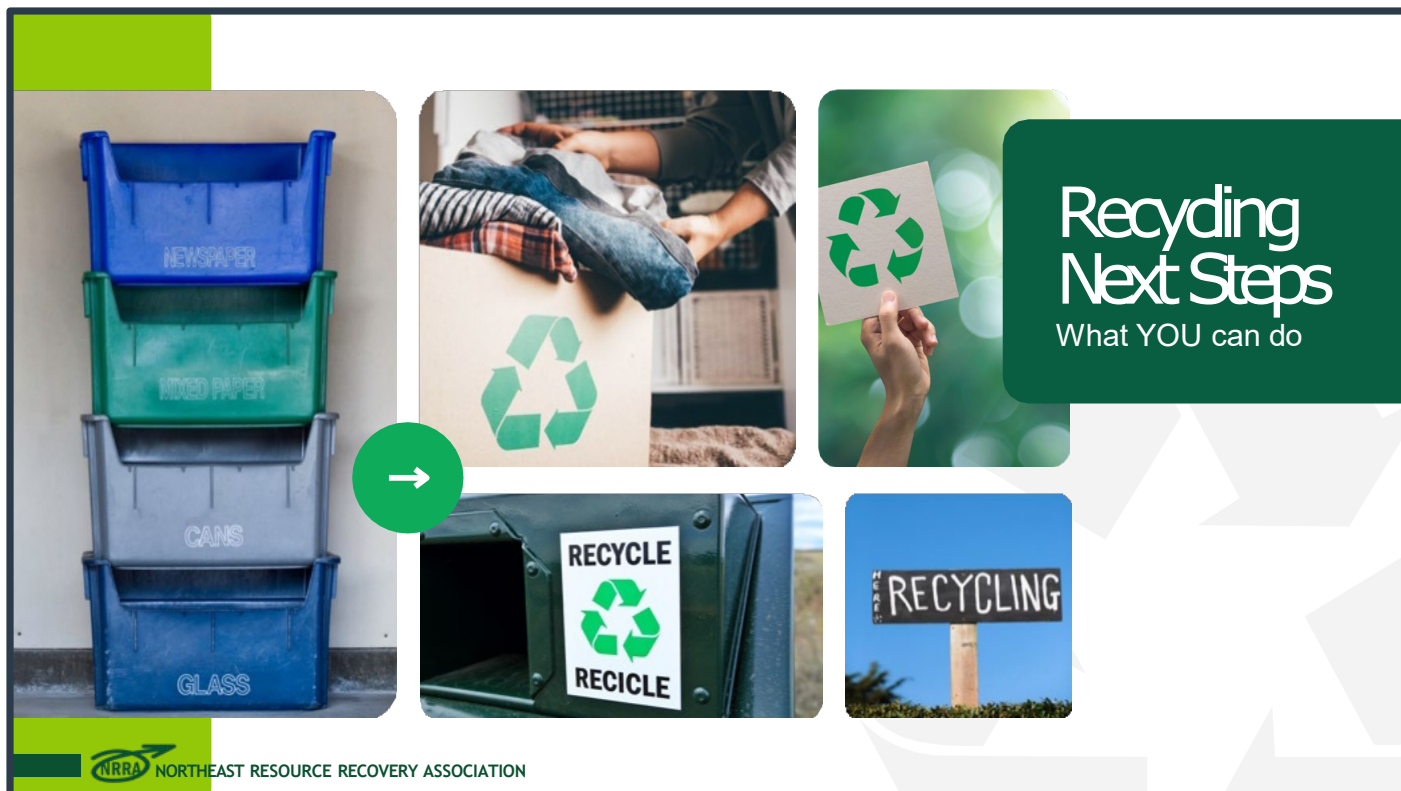


Glass can become:

- new glass bottles
- new jars
- fiberglass
- sand used in construction projects (PGA - processed glass aggregate)

Plastics can become:

- carpet
- backpacks
- polar fleece
- sleeping bag & ski jacket insulation
- plastic lumber for decking, docks, and outdoor furniture
- play sets
- new plastic bottles
- buckets
- containers
- frisbees
- stadium seats



Recycling Next Steps



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Recycling Realities in NH



Solid Waste Disposal is **Expensive**

New England has the **highest cost for trash disposal** in the entire country.



Lack of **State Support**

We lack the grants, technical assistance, and state-level policies that support recycling and solid waste management.



Lack of **Infrastructure**

We lack infrastructure such as a MRF or anaerobic digester for solid waste diversion.



NH Solid Waste Working Group

Formed in October 2022, SWWG is looking at policy and regulatory changes to solid waste management in NH.

- **SOLID WASTE IS EXPENSIVE** Waste reduction, like recycling and composting, is more financially valuable in NH because New England has the highest cost for trash disposal in the entire country.

- **LACK OF STATE SUPPORT**

We lack the grants, technical assistance, and state-level policies that support recycling and solid waste management. This is why the NH Solid Waste Working Group was such an important creation at the state level.

- **LACK OF INFRASTRUCTURE**

We lack infrastructure such as a MRF (Materials Recovery Facility) or anaerobic digester that are often necessary to scale-up solid waste diversion.

- **SWWG:** looking at policy and regulatory changes

- Upcoming grants from NHDES for waste reduction and food diversion



Possible Solutions

Options that have worked in other states



Bottle Bill

Deposit-refund system incentivizes bottle recycling through a minimum refundable deposit (*requires legislative action*)



Extended Producer Responsibility (EPR)

An environmental policy approach that shifts the responsibility for the full lifecycle of a product upstream toward the producer and away from municipalities.



Waste Bans

Enacted on the state level (such as the NH Yard Waste Ban), waste bans restrict the type of items that can be disposed of within the state.

POSSIBLE Solutions:

1. Bottle Bill

- Requires a minimum refundable deposit on beer, soft drink and other beverage containers in order to ensure a high rate of recycling or reuse.
- The deposit-refund system was created by the beverage industry as a means of guaranteeing the return of their glass bottles to be washed, refilled and resold.

2. Extended Producer Responsibility (EPR)

- An environmental policy approach in which a producer's responsibility for a product is extended to the post-consumer stage of a product's life cycle.
- The shifting of responsibility (physically and/or economically; fully or partially) upstream toward the producer and away from municipalities; and
- The provision of incentives to producers to take into account environmental considerations when designing their products.
- While other policy instruments tend to target a single point in the chain, EPR seeks to integrate

signals related to the environmental characteristics of products and production processes throughout the product chain.

(Additional info: EPRs place primary responsibility on the producer, or brand owner, who makes design and marketing decisions. It also creates a setting for markets to emerge that truly reflect the environmental impacts of a product, and to which producers and consumers respond.)

Examples from other states include:

- Paint Stewardship Program (ensures leftover paint is properly managed in a manner that is sustainably funded)
- Carpet Stewardship Program (ensures discarded carpet becomes a resource for new products)
- Mattress Stewardship Program (aims to reduce illegal dumping, increase recycling, and substantially reduce local gov. costs for end-of-use management of used mattresses)

3. Waste Bans

- enacted on the state level
(such as the yard waste ban)

- By cutting down on disposal, waste bans also help states capture valuable resources, save energy, reduce greenhouse gas emissions, and lessen reliance on landfills and incinerators.

Full Cost Accounting

The **TRUE COST** of trash & recycling



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Full Cost Accounting can help towns:



EDUCATE
their residents



Make **DATA-DRIVEN**
decisions and program
changes



Used for **FINANCIAL**
PLANNING, fee & rate
setting, and vendor
negotiations.

By creating a Full Cost Accounting model and accounting for everything, including MSW, recycling, composting, labor wages and benefits, disposal costs, administration costs, and utilities, a facility or town can determine what changes may need to be made to support the town's solid waste program.

FCA focuses on three major types of costs: up-front costs, operating costs, and back-end costs.

While initially setting up a Full Cost Accounting model for your town can take time, once it is complete, it is easy to update over time to look for areas of inefficiency and smooth out the peaks and valleys of expenses over time.

C&D Densification

Reduce bulk, Increase weight



Backhoe

Often the easiest - use the town's backhoe to crush your C&D can. You can get up to 20% more weight in!



Auger

Little more expensive and limitations on type of waste it can handle, but can increase weight up to 40%.



Precrusher

Pricier than an auger, but saves about 40% over an open top,

1. Backhoe crush

2. Auger

- No large amounts of sheetrock, rugs, long boards, plywood

3. Precrusher

- Same container as MSW compactor

4. Shredder (not shown)

- Just in case you wanted to spend the big bucks...
- Add a conveyor with a magnet and you could save a lot!!



FLOOR SCALE



TRUCK SCALE



The Benefit of a Scale

A scale is a necessary tool all transfer stations and recycling centers should consider.

Scales **streamline weight-based pricing** and provide towns, taxpayers, residents, and customers a **fair and accurate** way to charge for disposal of everything from MSW and common recyclables, to trickier items such as shingles and electronics.

We recommend all transfer stations and recycling centers have a floor scale.

FLOOR SCALES

- Cost range: \$1000 - \$3000
- Can use town appropriations, a grant from NH the Beautiful, or a USDA community facility loan or grant to cover the purchase cost.
- All weather indoor scale life expectancy: 20+ years
- No license required to operate.
- Must be registered with the state and calibrated annually.
- Recommended for every facility, no matter how small the town or community is.

TRUCK SCALES

- Cost range: \$50,000 - \$100,000+
- Requires town appropriations, bond, or a USDA community facility loan or grant to cover the purchase cost.
- Pit scale life expectancy: 40+ years (with no salt erosion)
- Ground scale life expectancy: 20+ years
- Requires a licensed public weighmaster to operate.
- Must be licensed, inspected, and tested annually.
- Choice to invest in a truck scale depends in large part on the quantity of materials that go through the facility and will differ from town to town.

Pay As You Throw (PAYT)

PAYT is a waste reduction model where residents pay for the trash they produce.

PAYT is also known as "unit-based pricing."

Customers (residents or visitors) pay for the amount of waste they generate, versus a "flat rate" program where everyone pays the same amount no matter how much - or how little - waste they create.

PAYT has been shown to decrease MSW and increase recycling, as residents do not have to pay to recycle.



The basics of implementing a PAYT system:

1. PICK A PROGRAM

Bag Program, Punch-card system, Sticker or Tag system, Weight-based system, Cart or Can system.

2. EDUCATE: including your town officials (Select Board), town administrator, director of public works, and of course, your residents and other community members!

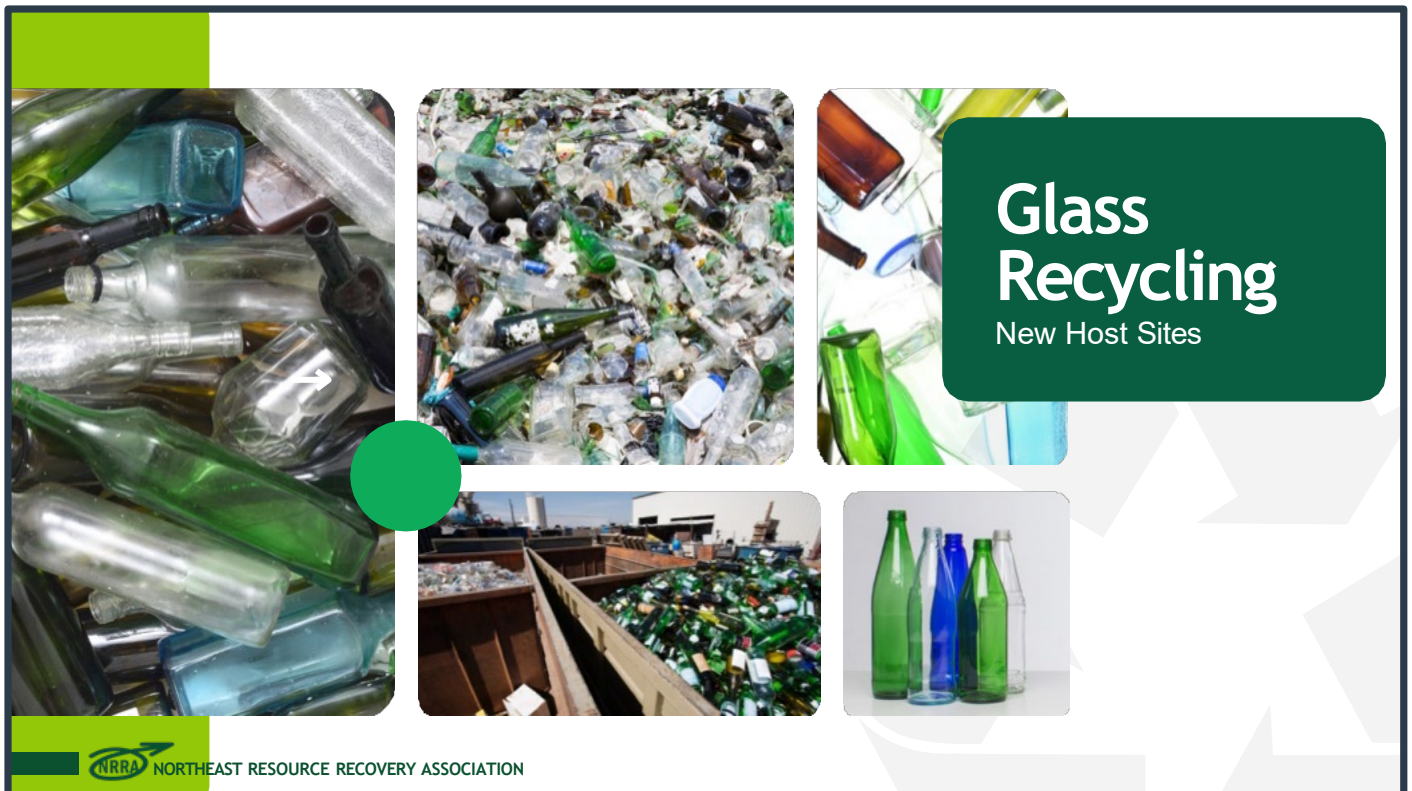
Folks need to know WHAT program you are implementing, HOW it works, and WHY it's important.

Education needs to start EARLY. Aim for at least 6 months to a year prior to program implementation.

3. BUDGET: prior to starting a new PAYT program, create a separate PAYT budget. This will help capture and track the costs and revenues specific to the program. You will also want to decide what costs your PAYT program will include and estimates for the total waste once PAYT is established, start-up and on-going costs, and an estimate for the per container price needed to meet program costs.

4. POLICY: How will you accommodate low-income, physically handicapped, and elderly residents? How will you accommodate residents of multi-family units?

5. PUT IT TO THE VOTERS: Create a warrant article for the annual meeting to adopt PAYT. This should be the final step and, once complete, you're ready to begin your new PAYT program!



Glass Recycling - new host sites

Tools for NRRA Members

Visit nrrarecycles.org for more information



Recycling 101 Presentation

Designed for residents and decision-makers



Customizable Recycling Brochures

Recycling education in printable postcards & handouts



Site visits by experienced NRRA staff

Assistance is only a phone call away - we can help over the phone or in-person on-site



Grant Opportunities

National, State, and Local grant opportunities for municipalities and recycling committees



*Sign up on
the NRRA
website!*

SIGN UP

Full of Scrap Newsletter

*NRRA's bi-weekly
newsletter*

NRRA Listserv

*Exclusive for
Members. Open to
operators, DPW, and
town administrators
(not for residents)*

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Connect With Us

Contact Information



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