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Environmental and
Energy Study Institute

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CONGRESSIONAL BRIEFING

**Rethinking Reduce, Reuse, and Recycle:
Policies and Programs to Address Waste**

Tuesday, April 20, 2021

About EESI...



NON-PROFIT

Founded in 1984 by a bipartisan Congressional caucus as an independent (i.e., not federally-funded) non-profit organization



NON-PARTISAN

Source of non-partisan information on environmental, energy, and climate policies



DIRECT ASSISTANCE

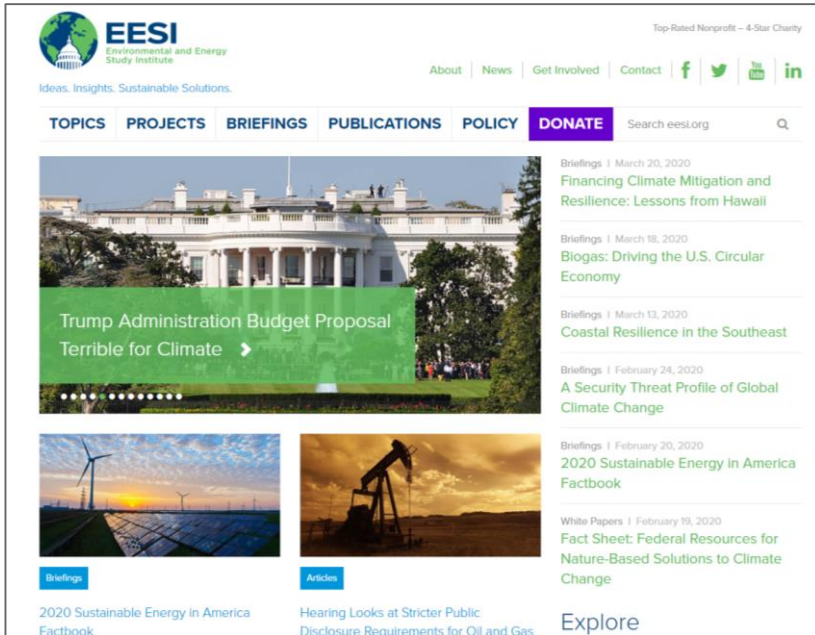
In addition to a full portfolio of federal policy work, EESI provides direct assistance to utilities to develop “on-bill financing” programs



SUSTAINABLE SOCIETIES

Focused on win-win solutions to make our energy, buildings, and transportation sectors sustainable, resilient, and more equitable

...About EESI



HILL BRIEFINGS

Video recordings and written summaries of Congressional briefings



CLIMATE CHANGE SOLUTIONS

Bi-weekly newsletter with all you need to know including a legislation tracker



SOCIAL MEDIA (@EESIONLINE)

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FACT SHEETS

Timely, science-based coverage of climate and clean energy topics



Rethinking Reduce, Reuse and Recycle

David Allaway

Oregon Department of Environmental Quality

Environmental and Energy Study Institute

April 20, 2021



Today's presentation

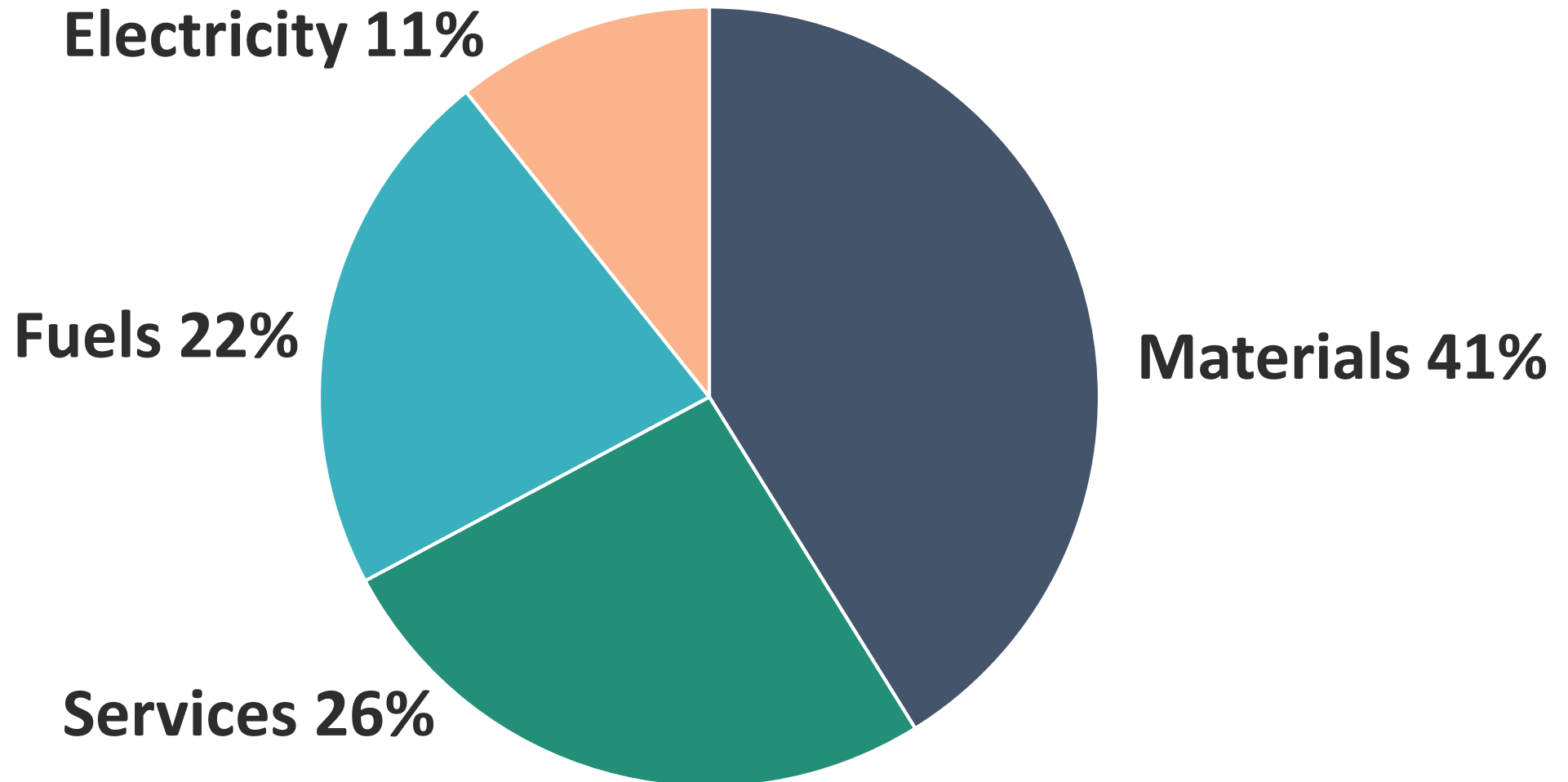
- The environmental impacts of waste . . . and materials
- An abbreviated history of waste and recycling in the US
- Modernizing recycling in Oregon



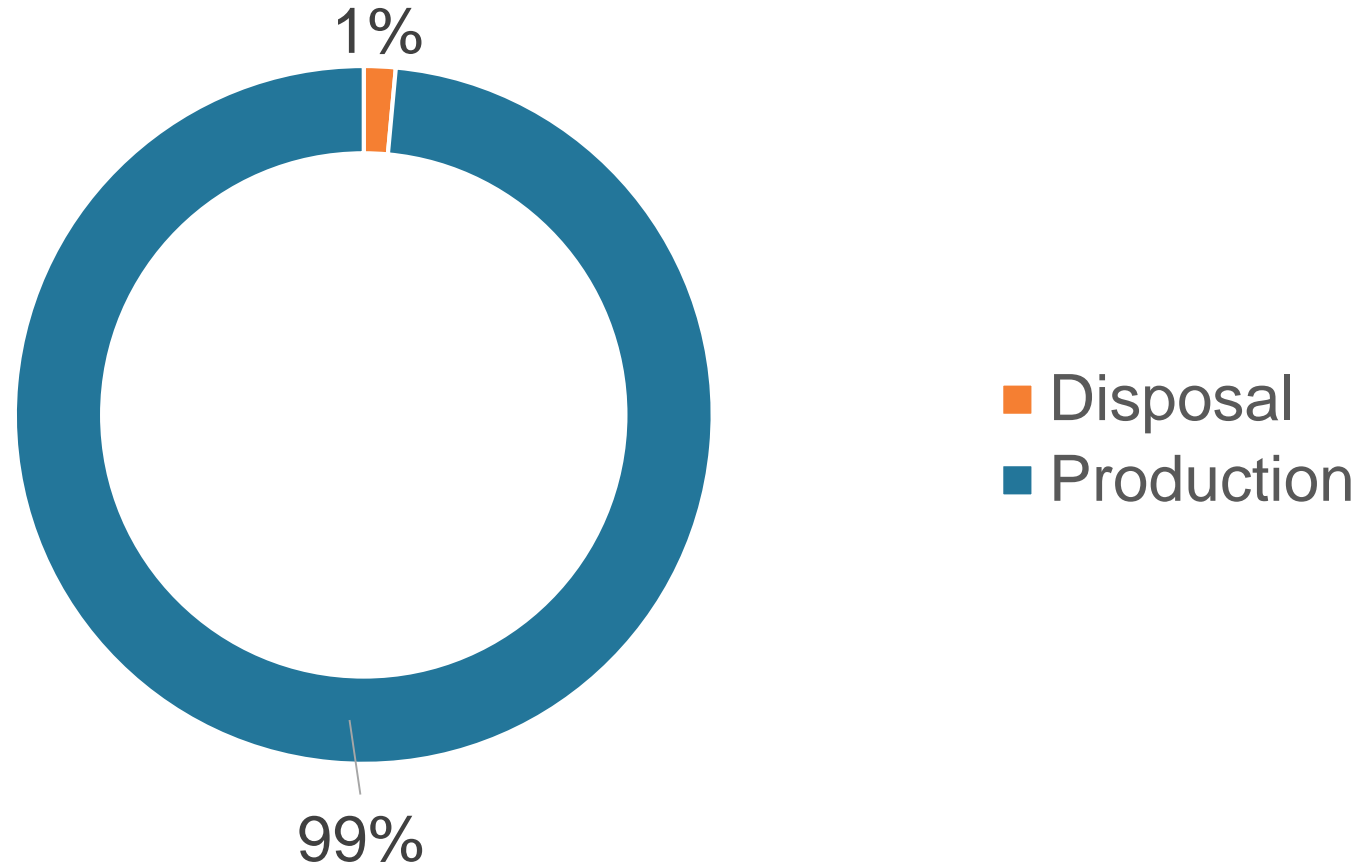
Waste . . . or materials?



Oregon's consumption-based greenhouse gas emissions (2015)



Oregon's consumption-based greenhouse gas emissions (2015) – materials only



Recycling's benefits are largely upstream

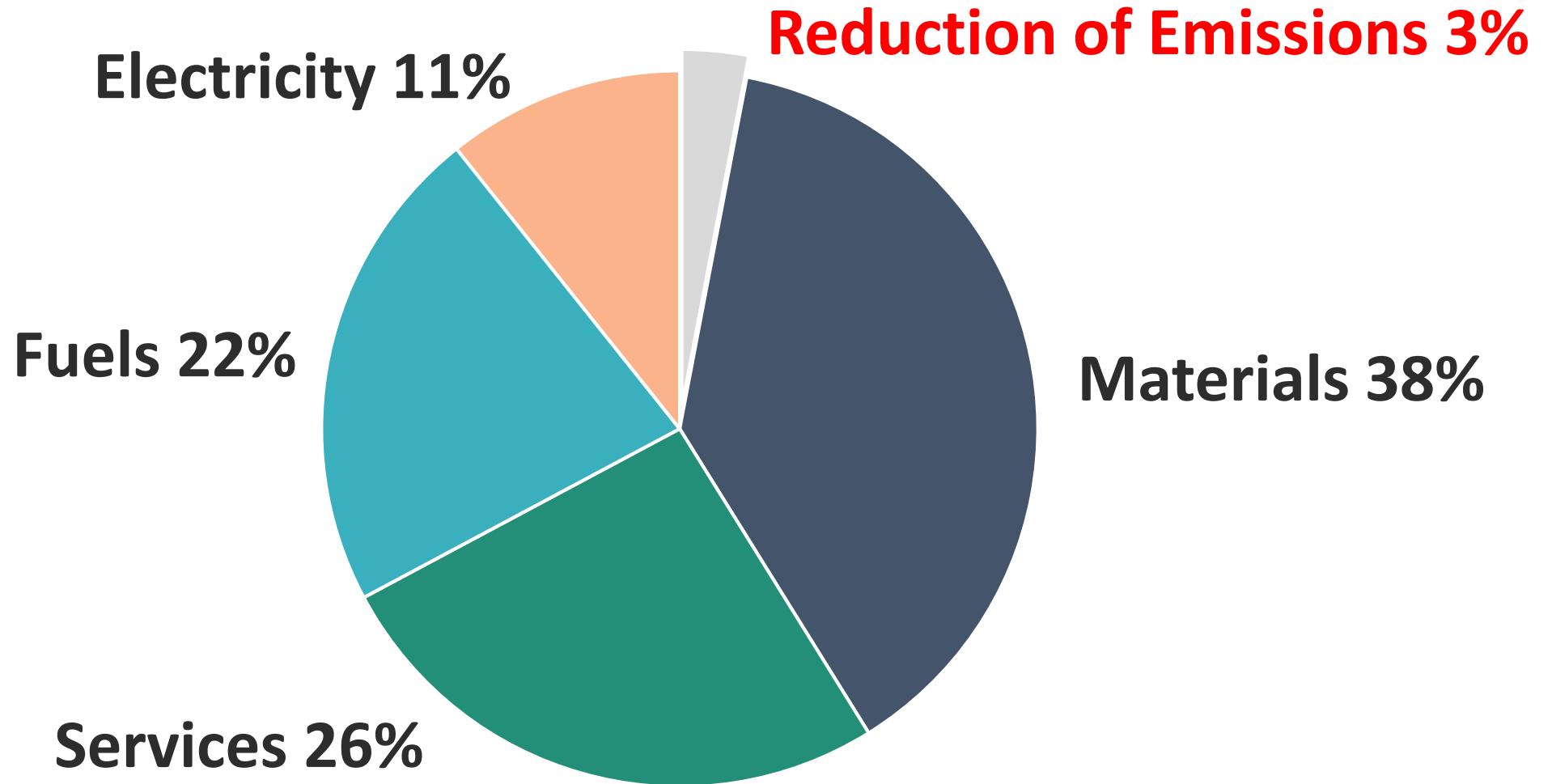


Done poorly, recycling can harm people and the environment

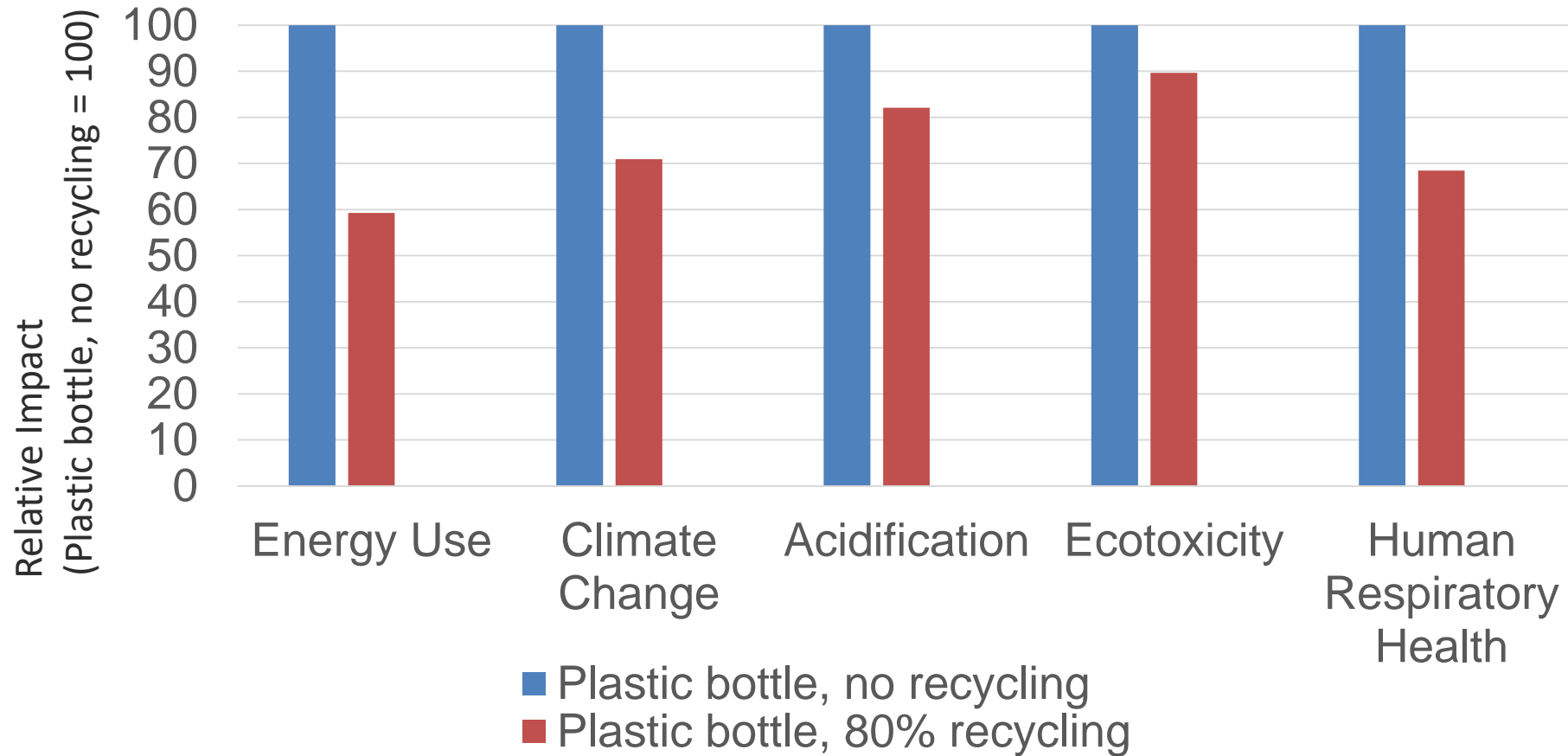


Photos: Megan Ponder

Oregon's consumption-based greenhouse gas emissions (2015) with 90% recycling/composting

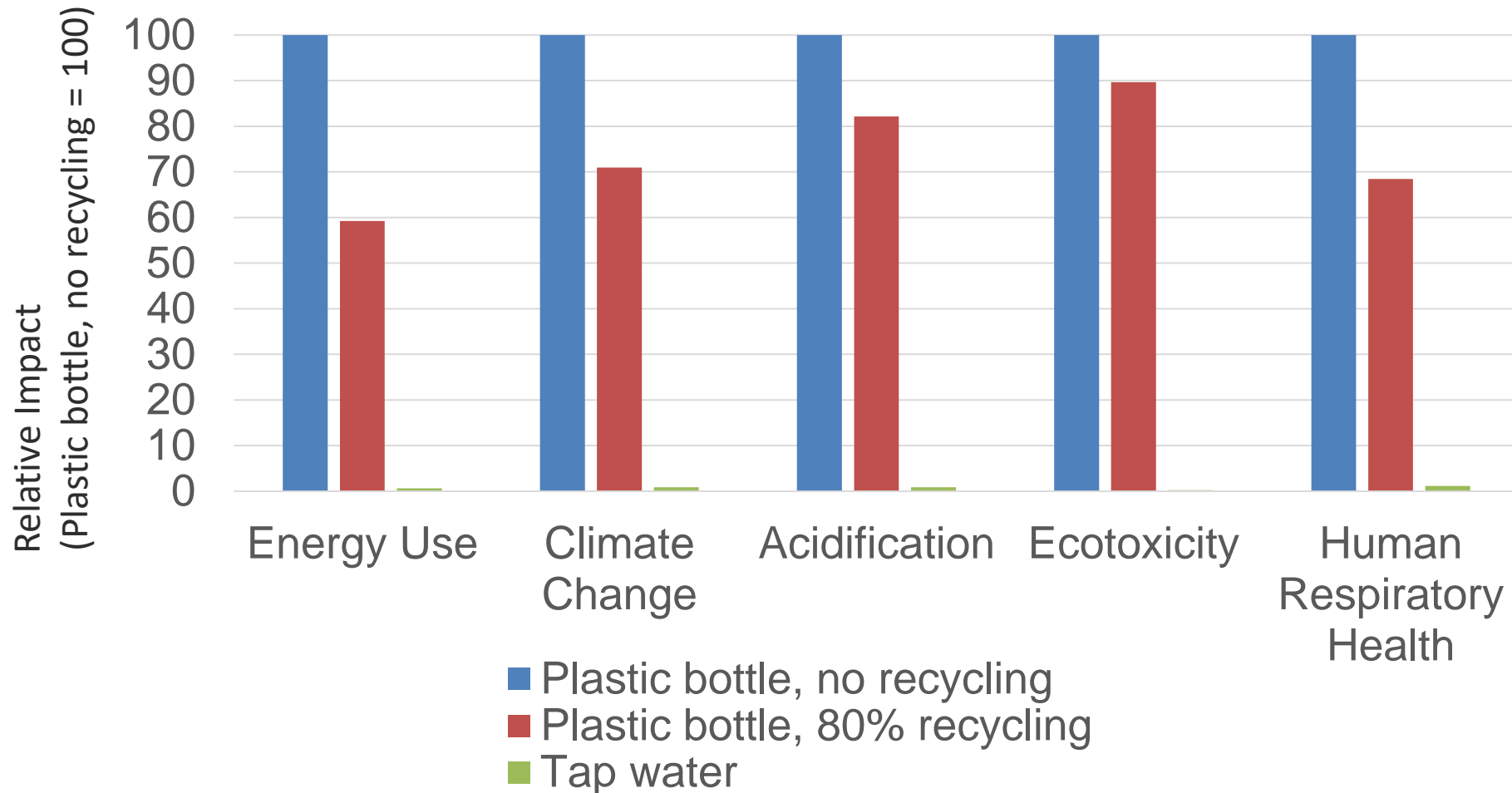


Drinking water options: dispose, recycle, or reduce?



Source: Oregon DEQ

Drinking water options: dispose, recycle, or reduce?



Source: Oregon DEQ

An abbreviated history of waste collection



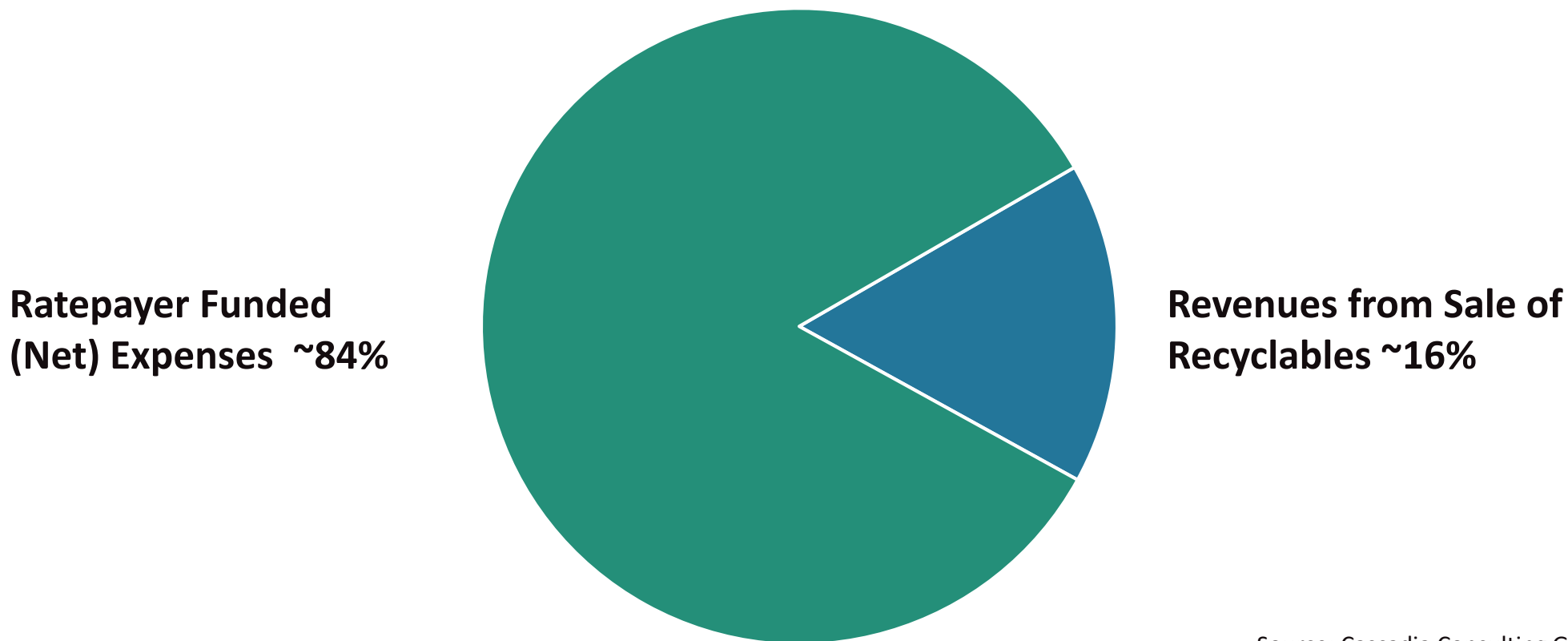
An early image of the sanitation department collecting trash, circa late 1890s. Photo courtesy DSNY.



Volunteers help sort recycling at the Arcata Community Recycling Center (ACRC) in the 1970s. Photo from the ACRC Facebook page.

In Oregon, public recycling is primarily paid for by ratepayers

Estimated Oregon 2018 Public Recycling System Gross Expenses (in 2020\$): \$267 million



Source: Cascadia Consulting Group/Oregon DEQ

Is recycling promoted to distract the public and policymakers from other solutions?



Key challenges

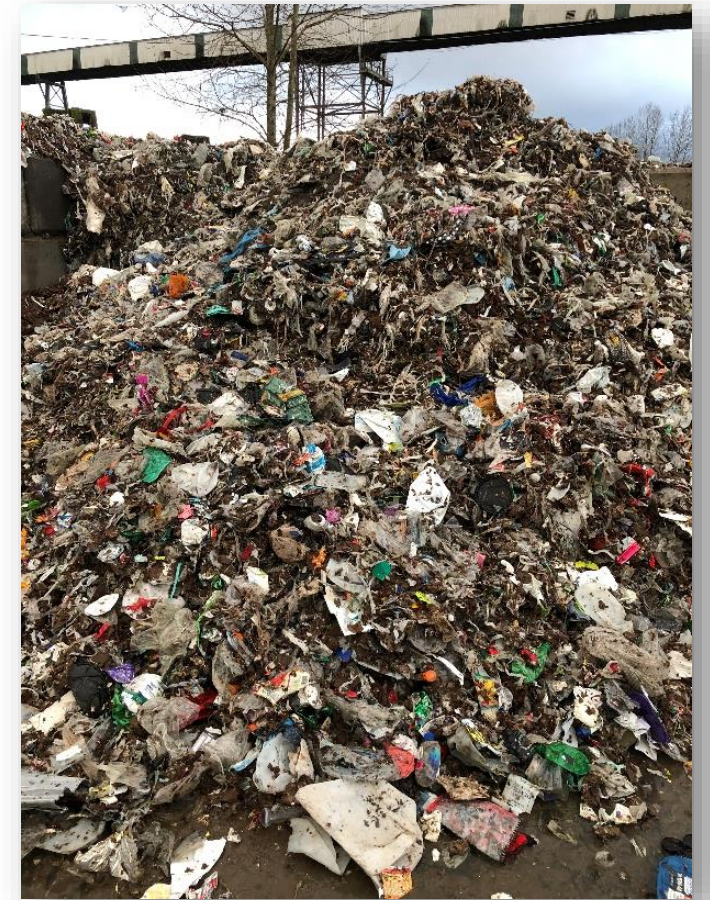
- Public confusion and contamination
- Volatile and increasing costs
- Inconsistent collection opportunities
- Inadequate processing
- Social inequities in both benefits and burdens
- Loss of public trust and concerns over environmental damage



Photos: Megan Ponder

Root causes

- Market prices don't reflect environmental benefits
- Oregon's laws are outdated
- Current producer actions are inadequate



A proposed policy update for Oregon

Oregon's Plastic Pollution
and Recycling Modernization
Act (SB 582A):

A unique, “shared
responsibility” proposal





Thank you

Contact: **David Allaway**
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IOWA DEPARTMENT OF NATURAL RESOURCES

LEADING IOWANS IN CARING FOR OUR NATURAL RESOURCES

IOWA WASTE EXCHANGE

HISTORY

- Established in 1990 by the Iowa State Legislature to divert waste materials from Iowa's sanitary landfills. (Iowa Code section 455E.11 – Groundwater Protection Fund).
- Funded by a percentage of Landfill tipping fees. Funding has primarily stayed at the same level since program inception. **650-Percent ROI**. Funding is awarded through a competitive RFP process.
- FREE, CONFIDENTIAL AND NON REGULATORY.
- Began as a pilot program at Indian Hills Community College.
- Began with ten “Boots on the Ground” IWE Area Resource Specialists, housed regionally at Community Colleges and Council of Governments. Through attrition and by design there are now five “Boots on the Ground” specialists who serve the state.
- A program of the Iowa Department of Natural Resources. Formerly administered under the Iowa Economic Development Authority. Administration responsibilities shifted to the Iowa Department of Natural Resources in 2006.

Iowa Waste Exchange

STATISTICS

1990-2021

4,178,000



**TONS OF WASTE
DIVERTED**

119,689,146



**DOLLARS SAVED
BY IOWANS**

Includes \$105,142,116
From Diversion
\$14,547,031 Other Savings

67,197



CLIENTS SERVED

- Agricultural Pursuits
- Business/Industry
- Schools/Colleges
- Governmental Entities
- Municipalities
- Hospitals and Clinics
- Non Profits
- Private Citizens



SERVICES PROVIDED

- Identify Marketable Waste and Revenue Streams
- Administer Waste Sorts
- Locate Markets for Value Added Byproducts
- Locate Byproducts for Production
- Write/Review Grants, Loans, SOPs, Hazardous and Non Hazardous Waste Management Plans
- Present at Conferences, Workshops, Lunch and Learns and Other Public Speaking Events
- Author Guest Articles
- Administer/Organize Special Projects and Collection Events

Iowa Waste Exchange

IWE handles all materials from tankers of industrial sludge to stuffed animals.



Twelve tons of *Scholastic Readers* from Iowa Schools matched to Southern U.S. Schools affected by hurricanes.



Construction and Demolition assistance. Including Iowa's Derelict Building Program.



Ten tons of lab supplies matched to volunteers in the Gulf to test animals following an oil spill.



Mattresses, furniture and other supplies matched to domestic abuse shelters, homeless shelters and transitional housing agencies.



Food waste is a priority for the IWE. IWE assists food manufacturers, C-Stores, Schools and others in diverting food materials.



50,000 square feet of carpeting matched to tornado victims.



Two semi loads of off spec washing machine windows used in an interior art installation.



Occasionally manufacturers and businesses will find some interesting inventory that they need assistance with. Such as antique Coke coolers



Contact Information

Web Link to the Financial & Business Assistance

<https://www.iowadnr.gov/Environmental-Protection/Land-Quality/Waste-Planning-Recycling>

Web link to the Iowa Waste Exchange

<https://www.iowadnr.gov/Environmental-Protection/Land-Quality/Waste-Planning-Recycling/Iowa-Waste-Exchange-IWE>

Contact -

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Jennifer.Wright@dnr.iowa.gov

Envision Charlotte:

Public, private, plus partnership, creating and implementing sustainable projects for Charlotte with measured results and replicable solutions.



ENVISION
CHARLOTTE

WHAT IS THE CIRCULAR ECONOMY?

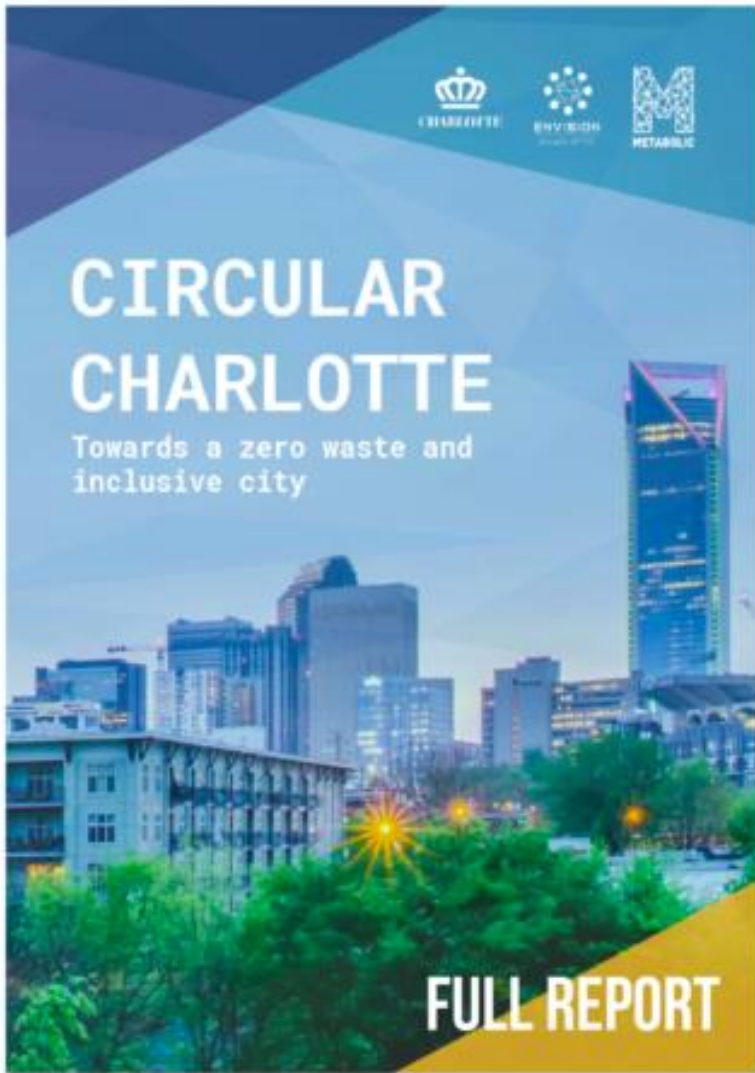
What is a circular economy?

Looking beyond the current take-make-waste extractive industrial model, a circular economy aims to redefine growth, focusing on positive society-wide benefits. It entails gradually decoupling economic activity from the consumption of finite resources, and designing waste out of the system. Underpinned by a transition to renewable energy sources, the circular model builds economic, natural, and social capital. It is based on three principles:

Design out waste and pollution

Keep products and materials in use

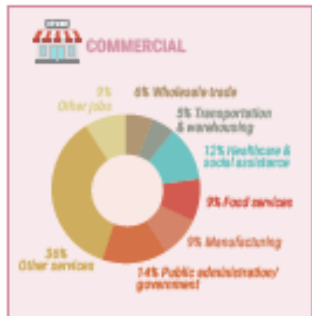
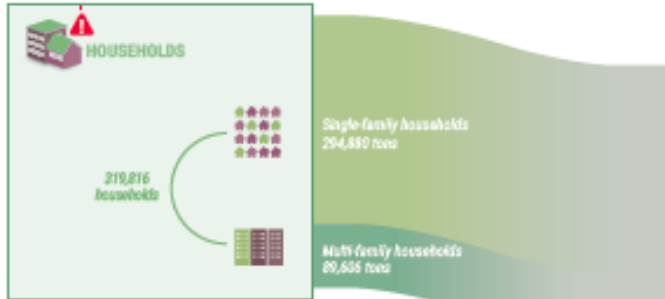
Regenerate natural systems



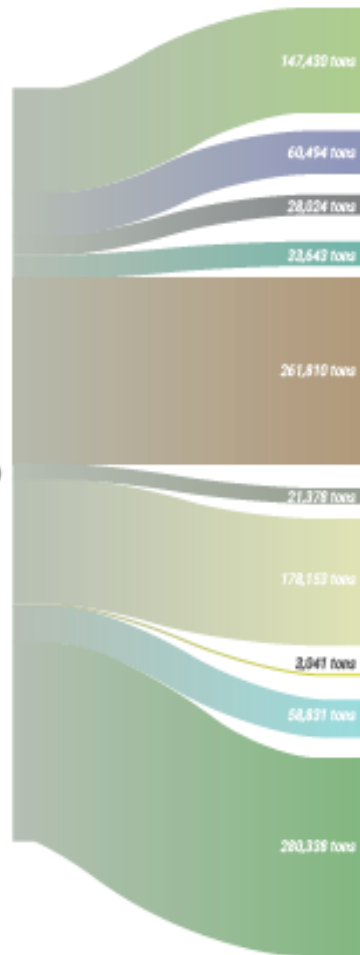
In 2018, Metabolic was hired to do a study and create a short and long term strategy for our city's transition to the circular economy.

CHARLOTTE'S WASTE FLOWS

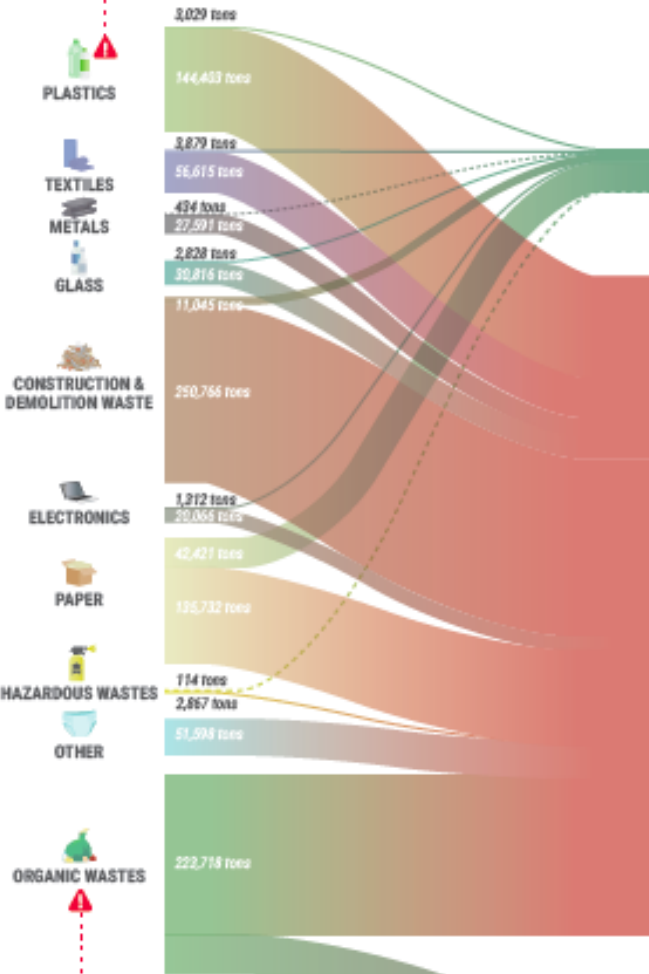
Lower recycling rates for multi-family households



TOTAL WASTE
(1,064,063 TONS)



HOPE & PET ending up in landfill despite regulations



Recycling program only costs \$7/ton, compared to \$33/ton for landfill

RECYCLING
(66,354 TONS)

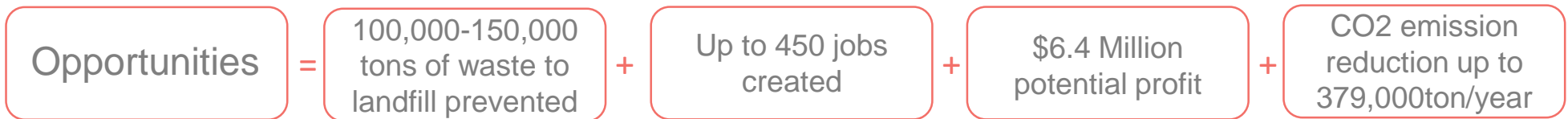
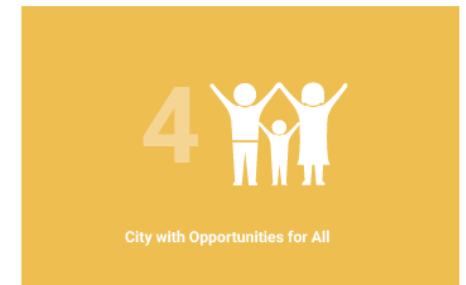
26.3% content could be recycled with existing programs

LANDFILL
(944,171 TONS)

COMPOSTING
(56,620 TONS)

Charlotte's transition to the Circular Economy

Short term focus areas:
Innovation Center (June 2021)
Plastics
Organics
Textiles
Concrete



Current curbside recycling has a success rate of only 11% in Charlotte and a national average of 35%

SmartC Recycling

Charlotte has over 147,000 tons of plastics in waste stream with only 3,000 tons being diverted

Project Goals

- Reduce contamination
- Control material destination
- Increase landfill diversion



Recycling Program - 3 Month Pilot program

Project concept

- Individuals opt in to recycling materials via a smart bag that they register online or app.
- They fill the bag and request pickup online or app.
- Bag is picked up and contents are examined for compliance and points.
- Individual receives new bag.
- Materials are baled and sold to Coca Cola Consolidated Partners

Components:

- Bags – bags have a tag that contains QR code and RFID chip and have clear instructions on what materials to include
- App/Website – Individuals have an account where they register their bags via QR code and track points/impact
- Logistics – Drivers pick up and drop off bags via dynamic routing
- MicroMrf – materials are baled at MicroMrf – sold to Coca Cola Consolidated Partners



Results/feedback

Bags –

- overall size was good, would like a hook to hang
- Pick up on average was every 3 weeks
- Bags were returned full, 1% contamination (40% current average)

App –

- Need to simplify too many steps for each action
- Registration needs to be easier
- Could be a website that is designed to be used on a phone, reduce cost/updates, more accessible
- Clarification of program ie new bags are dropped off when full ones are picked up and need to be registered. Could explore idea that bags are inspected and emptied at individuals home and same bag left.

Why did people participate –

- 97% Wanted to know materials were being recycled



SmartC Recycling Next Steps:

- Hyper focused micro mrf (materials recovery facility) process 25,000 households
- Continue plastic bottles and aluminum
- Add additional 'bags' for desired materials ie bubble wrap, air pillows
- Track and monitor
 - Equipment cost (less sorting)
 - Truck efficiency (smaller trucks, less road wear)
 - Contamination rates (self sorting)
 - Additional collections (typically not curbside recycled)



Amy Aussieker
Executive Director

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www.envisioncharlotte.com



ENVISION
CHARLOTTE




BRIGHTMARK

REIMAGINE WASTE

Bob Powell, Founder and CEO



An underwater photograph showing a large amount of plastic debris, including fragments of plastic and fishing nets, floating in the water. The water is a deep blue color. A large, semi-transparent teal circle is overlaid on the center of the image, containing white text.

**By 2050, there will be more
plastic in the ocean than fish.**

**Agriculture accounts for 10% of
U.S. greenhouse gas emissions.**

We need circular solutions
that eliminate waste and
reuse our resources.



Renewable Natural Gas (RNG)



Plastics Renewal

Plastics Renewal Facility

 Ashley, Indiana

In 2021, our Ashley, Indiana facility will convert 100,000 tons/year of mixed plastic waste into:

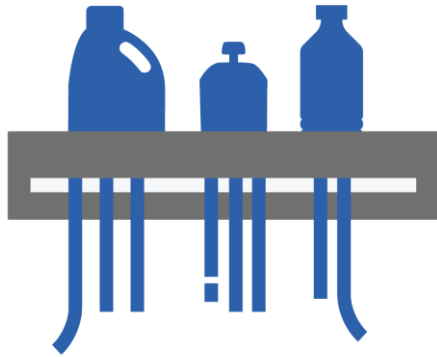
18 million gallons of ultra-low sulfur diesel & naphtha blend stocks

6 million gallons of wax



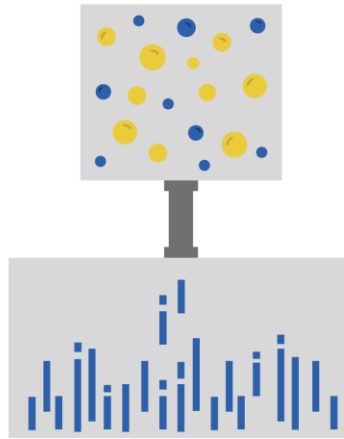
Pellets made from mixed plastic types 1-7.

Our Plastics Renewal Technology



Step 1

Once the plastic waste is collected, it is prepped for conversion by shredding, removing metals, drying, and pelletizing.



Step 2

The pelletized plastic material is then heated and vaporized in an oxygen starved environment.

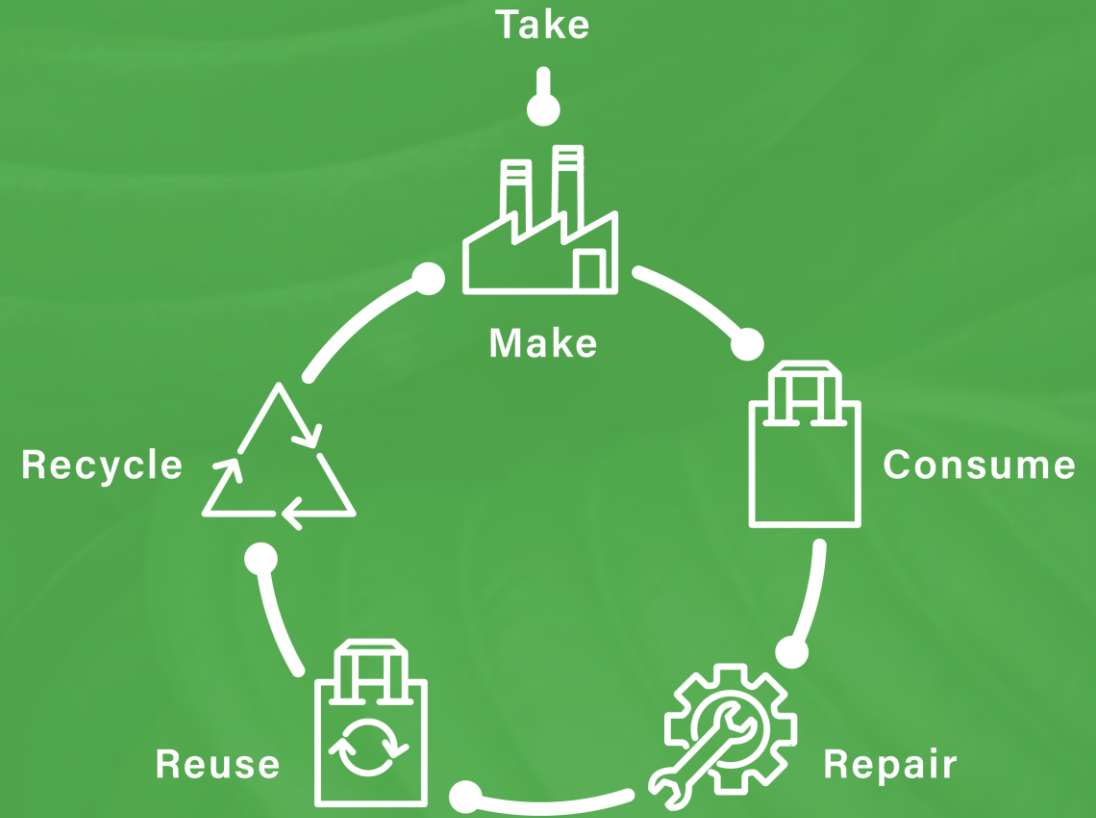


Step 3

The vapor is captured, cooled into a hydrocarbon liquid and processed into commercial grade ultra-low sulfur diesel, naphtha (feedstock for plastic resins) and wax.

Closing the Loop

- Our plastic renewal technology will close the loop and create circularity -- taking post-use plastics, breaking them down and turning them into the feedstocks for making renewed plastics.
- Our products made from recycled plastic feedstocks have significantly reduced greenhouse gas emissions profiles compared to virgin plastics made from crude and natural Gas.
- 70-80% of the plastics we recycle using this technology can be made into new plastics with recycled content.
- All future Brightmark facilities we employ fully circular, plastics-to-plastics technology.



Our world needs live and GHG saving plastic items therefore, we must support technologies that can take existing plastic products, break them down into plastic precursors and make new plastics.

Renewable Natural Gas Projects

Anaerobic digestion technology captures raw biogas, cleans, upgrades, and compresses it into renewable natural gas.


29 projects

across seven states

31968.37 tons of CO₂

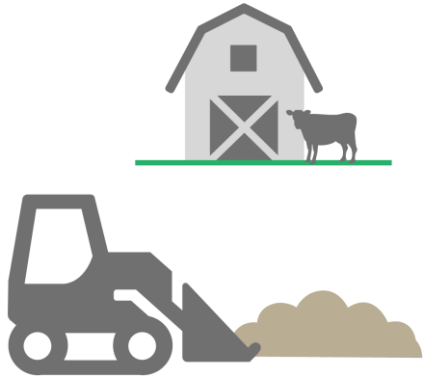
offset to date

RNG from dairy manure can reduce **GHG emissions 400%** when it is used to replace traditional vehicle fuels.



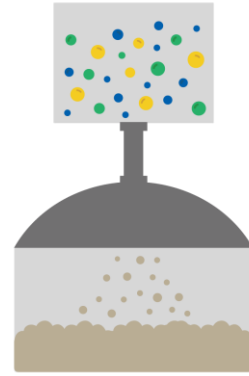
Biogas is captured in the digester.

How Renewable Natural Gas is Made



Step 1

Dairy, food, animal, and other organic waste is collected from the farm.



Step 2

Dairy waste is processed by the digester, which releases biogas/methane. Biogas is captured in the digester.



Step 3

The biogas is then processed into renewable natural gas. The RNG is injected into a pipeline for distribution.



Step 4

The remaining digestate is turned into commercial fertilizer or given back to the farm.

In the Next Five Years

Divert 8.4 million metric tons of plastic from landfills and the natural environment

and use that plastic waste to

produce 1.7 million tons of feedstocks necessary to remake plastics, and create a truly circular process

Offset 22 million metric tons of CO₂ with our Renewable Natural Gas projects

**Our future depends on us.
Let's make it bright.**



BRIGHTMARK
REIMAGINE WASTE

Brightmark.com

Policy & Good Data are Drivers for Sustainable Change

Sarah K. Nichols

Sustainable Maine Director

Natural Resources Council of Maine

EESI Waste Policy and Program Briefing 4.20.2021



We waste more than we recycle

...and we are making more waste than ever

RECYCLE
CENTER
CLOSED
LEAVE NOTHING



Packaging

**Municipalities &
Our Environment**

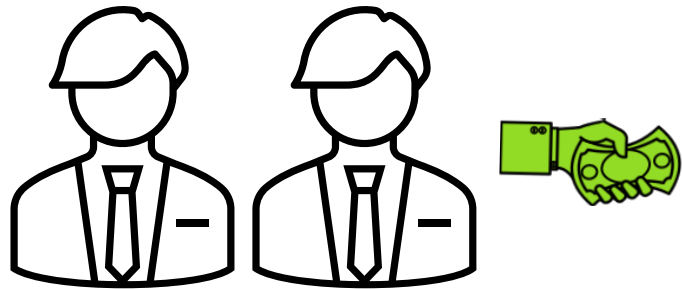
EPR for
Packaging
works all
over the
world



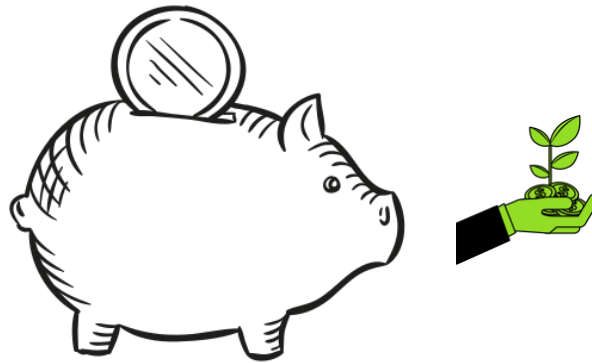
Natural Resources
Council of Maine

EPR for Packaging in Maine

Fees go to **New Stewardship Organization** that has contracted with Maine DEP



Producers pay fees based on the packaging they sell to consumers in Maine



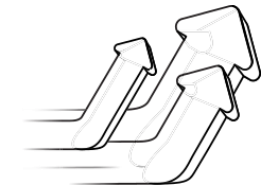
Towns get compensated for managing waste created by Producers



Operations & Infrastructure



Public Education



Increasing Access

Sister Policies to EPR System



Ban problem materials:
And switch to reuse/refill



Create incentives:
Per-unit fees and Deposit-
Return



Establish packaging rules:
Recycled content standards

The States Need Better National Data



Thank you!



Natural Resources
Council of Maine

Protecting the Nature of Maine

www.nrcm.org



Visit www.recyclingreform.org for more info on EPR for Packaging in Maine

Reach me at sarah@nrcm.org or (207) 430-0170



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