FLORIDA RECYCLING PARTNERSHIP FOUNDATION

UF UNIVERSITY of FLORIDA

The Foundation for The Gator Nation

INVESTIGATING THE ECONOMICS OF CURRENT AND FUTURE RECYCLING PROGRAMS IN FLORIDA

2022

FRP
FLORIDA RECYCLING PARTNERSHIP FOUNDATION

ABOUT THE STUDY

From January – May 2022, the Florida Recycling Partnership Foundation (FRPF) and the University of Florida (UF) conducted a study on the environmental and business impacts of discontinued municipal recycling programs in Florida.

The study, "Investigating the Economics of Current and Future Recycling Programs in Florida," contains crucial insights for state and municipal leaders to address challenges impacting Florida's recycling system.

THE STATE OF PLAY

Over the last several years, recycling processing costs at materials recovery facilities have **increased from about $50 per ton to over $100 per ton**, leading some municipalities to question if they should eliminate their recycling program altogether.

At least six cities in Florida, including Deltona, Bradenton, and Deerfield Beach, have ended curbside recycling for residents.

Deltona, for example, ended its curbside recycling when costs to process and recycle paper products reached $80 per ton.

KEY INSIGHTS

The study uncovered three key insights about Florida's recycling programs:

The elimination of municipal recycling programs **is not an effective strategy** to contain costs and manage the environmental impact of waste.

Florida municipalities should consider a **market-based recycling system,** which means targeting high-value recycling commodities, such as plastic bottles, jugs, and tubs; aluminum and steel cans; and newspaper and cardboard to generate savings and mitigate the impact of waste on the environment.

Recycling **education is essential to a circular economy,** and municipalities should work with producers to invest in educational initiatives.

ELIMINATION OF MUNICIPAL RECYCLING PROGRAMS IS NOT AN EFFECTIVE STRATEGY

The elimination of municipal recycling programs is not an effective strategy to contain costs and manage the environmental impact of waste.

Elimination of recycling systems saves municipalities very little money – **only roughly $1 to $12 per household per year.**

Eliminating recycling systems increases annual household waste management-based greenhouse gas (GHG) emissions **roughly 1 to 20 times the current average.**

Community curbside recycling systems only account for **16% to 26% of the overall cost** of waste management systems in Florida.

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MARKET-BASED RECYCLING SYSTEMS

Florida municipalities should consider a market-based recycling system targeting high-value recycling commodities, such as plastic bottles, jugs, and tubs; aluminum and steel cans; and newspaper and cardboard. This strategy can ultimately produce cost and GHG emissions savings that are greater than eliminating recycling programs altogether.

A Market Approach:

Generates significant savings of **$12 to $37 per household**

Reduces annual household waste management-based GHG emissions by nearly 4 to **5.5 times** the current average

Benefits of Targeting High-Value Recycling Commodities:

Prioritizing high-value recycling commodities can benefit Florida's recycling programs and its environment. Metals, like aluminum and steel cans, represent less than 1% of Florida's recycling stream, yet they offer significant GHG emissions offsets if they are better prioritized for collection

Can achieve the same GHG emissions reductions as recycling as much as 40% of the total waste stream if recycled at high rates – or the equivalent of taking 145,000 gas-powered vehicles off the road for one year

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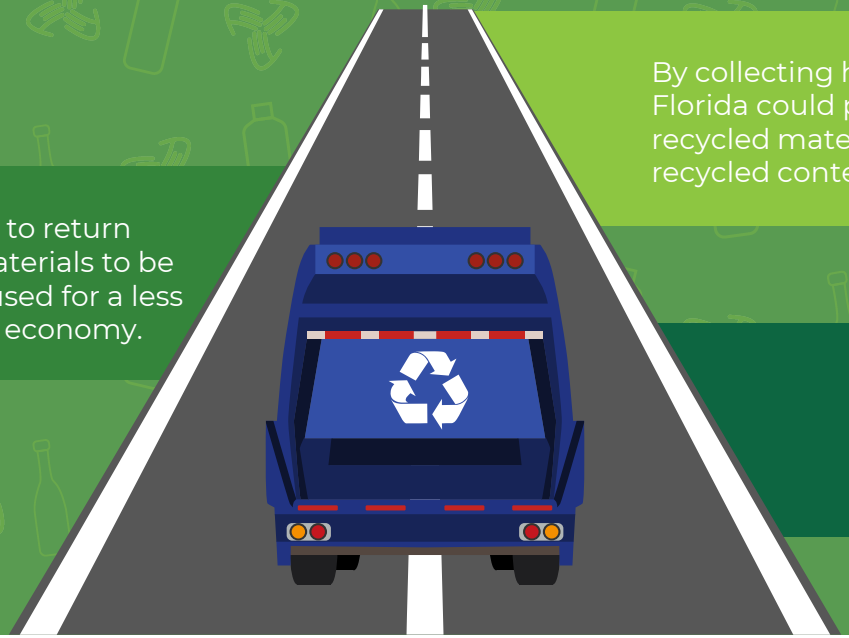
RECYCLING EDUCATION

Educational programs are vital to a well-functioning market-based recycling system. Municipalities should work with their residents and businesses; recycling processing and collection partners; and national, regional and local environmental groups to invest in these vital education programs.



By collecting high-value recycling commodities, Florida could provide producers with enough recycled materials to meet **100%** of their 15% recycled content targets.

Recycling programs allow citizens to return plastic, metal, paper, and other materials to be broken down, redesigned, and reused for a less resource-and-emissions-intensive economy.

Many Americans are confused about the recyclability of certain materials, which currently results in higher recycling costs.

INVESTIGATING THE ECONOMICS OF CURRENT AND FUTURE RECYCLING PROGRAMS IN FLORIDA

June 2022

Prepared for:
Florida Recycling Partnership Foundation

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Sustainable Materials Management Research Laboratory
Department of Environmental Engineering Sciences
Engineering School of Sustainable Infrastructure and Environment

Recycling Challenges

- Asian markets no longer accepting materials
- More and more contamination in recyclables stream
- Fluctuating market prices
- Need environmental and economic evaluation of future recycling programs

Source: https://www.nytimes.com/2018/01/11/world/china-recyclables-ban.html
https://www.recyclingtoday.com/article/recycling-market-development-necessary-now/

Plastics Pile Up as China Refuses to Take the West's Recycling

The time is right for recycling market development

Recycling represents a tangible solution for climate action and is an engine for economic development.

December 31, 2021
Bryce Hesterman & Melissa Radiwon

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Municipal / IC&I

Recycling Challenges

- Elimination or suspension of recycling programs

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27 June, 2018

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Orange County Utilities Launches Recycling Improvement Pilot Program

UPDATE: Due to inclement weather and to gather more data, this pilot has been extended from six weeks to eight weeks.

THANK YOU

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ASK THE EXPERTS | LEGAL NOTICES

Port Orange eliminates glass from recycling

By Diane M. Carey dcarey@hometownnewsmediagroup.com Oct 3, 2019 0

M&A | ESG | Workforce | Collection | Recycling | Organics | Landfill

Lake Worth, Florida reverting to dual-stream collection next month

Published Sept. 4, 2018

WASTEDIVE Deep Dive Library

M&A | ESG | Workforce | Collection | Recycling

DIVE BRIEF

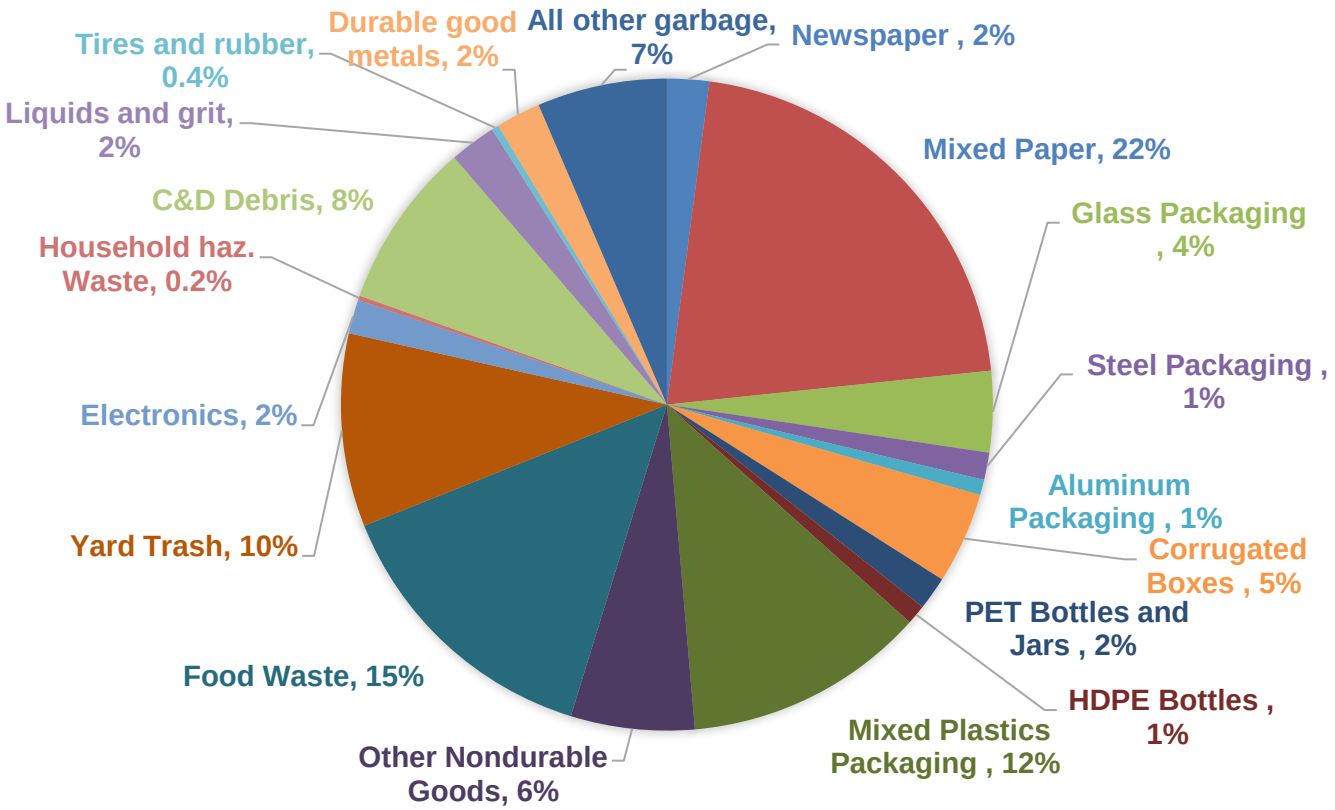
Deltona, Florida suspends curbside recycling indefinitely

Published Jan. 9, 2019

Source:
https://www.wastedive.com/news/lake-worth-florida-dual-stream-collection/531504/
https://newsroom.ocfl.net/media-advisories/press-releases/2018/06/orange-county-utilities-launches-recycling-improvement-pilot-program/
https://www.hometownnewsvolusia.com/news/port-orange-eliminates-glass-from-recycling/article_92f2fdd4-e53b-11e9-8acb-c3b6e83253a6.html
https://www.wastedive.com/news/deltona-florida-suspends-curbside-recycling-indefinitely/545651/

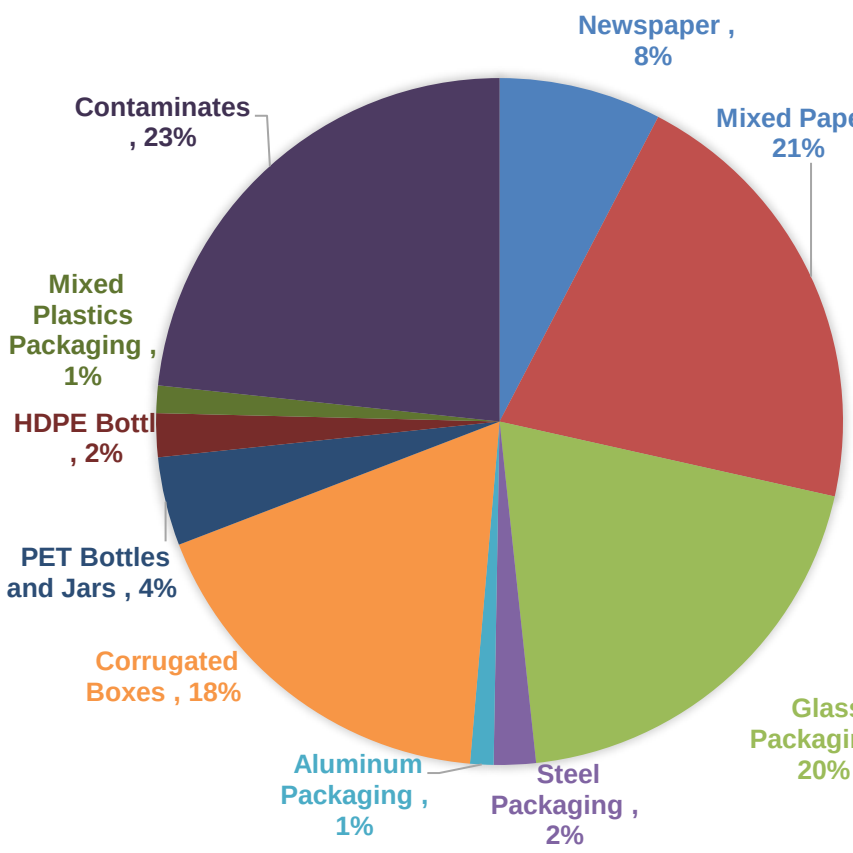
Focus on Single-Family Residents

- Using DEP data, estimated mass flows of garbage and recyclables and their corresponding costs for 2011 and 2020

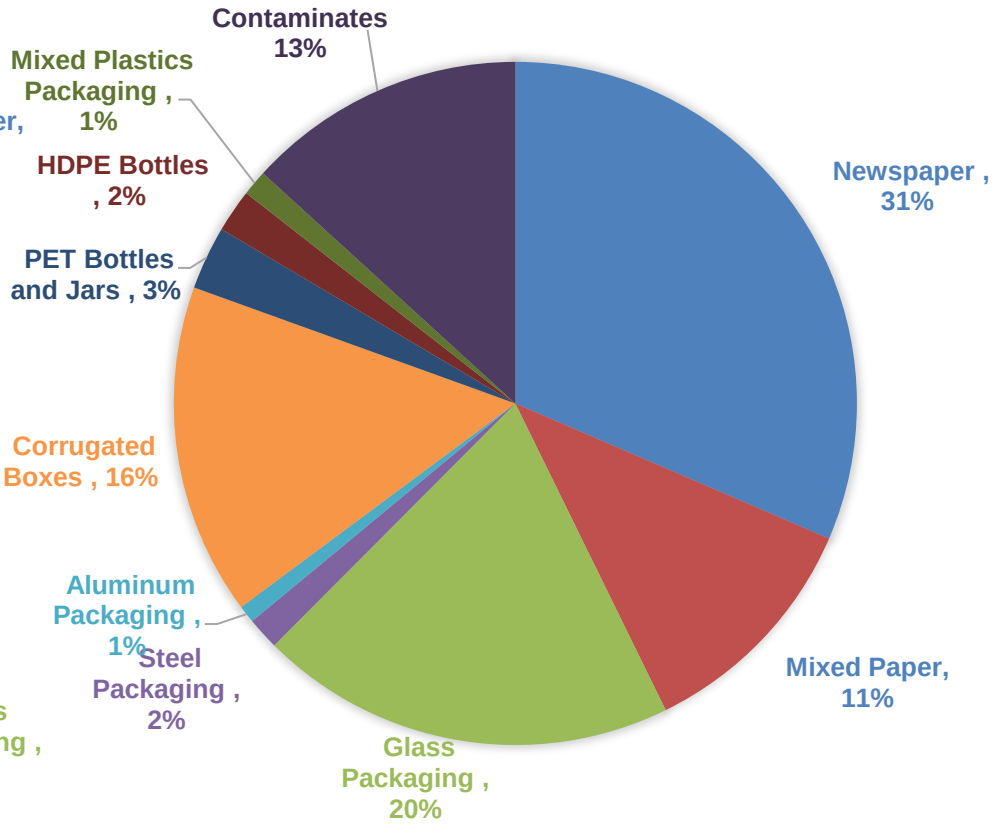


Average Florida single family residential garbage bin composition

Recycling Bin Composition

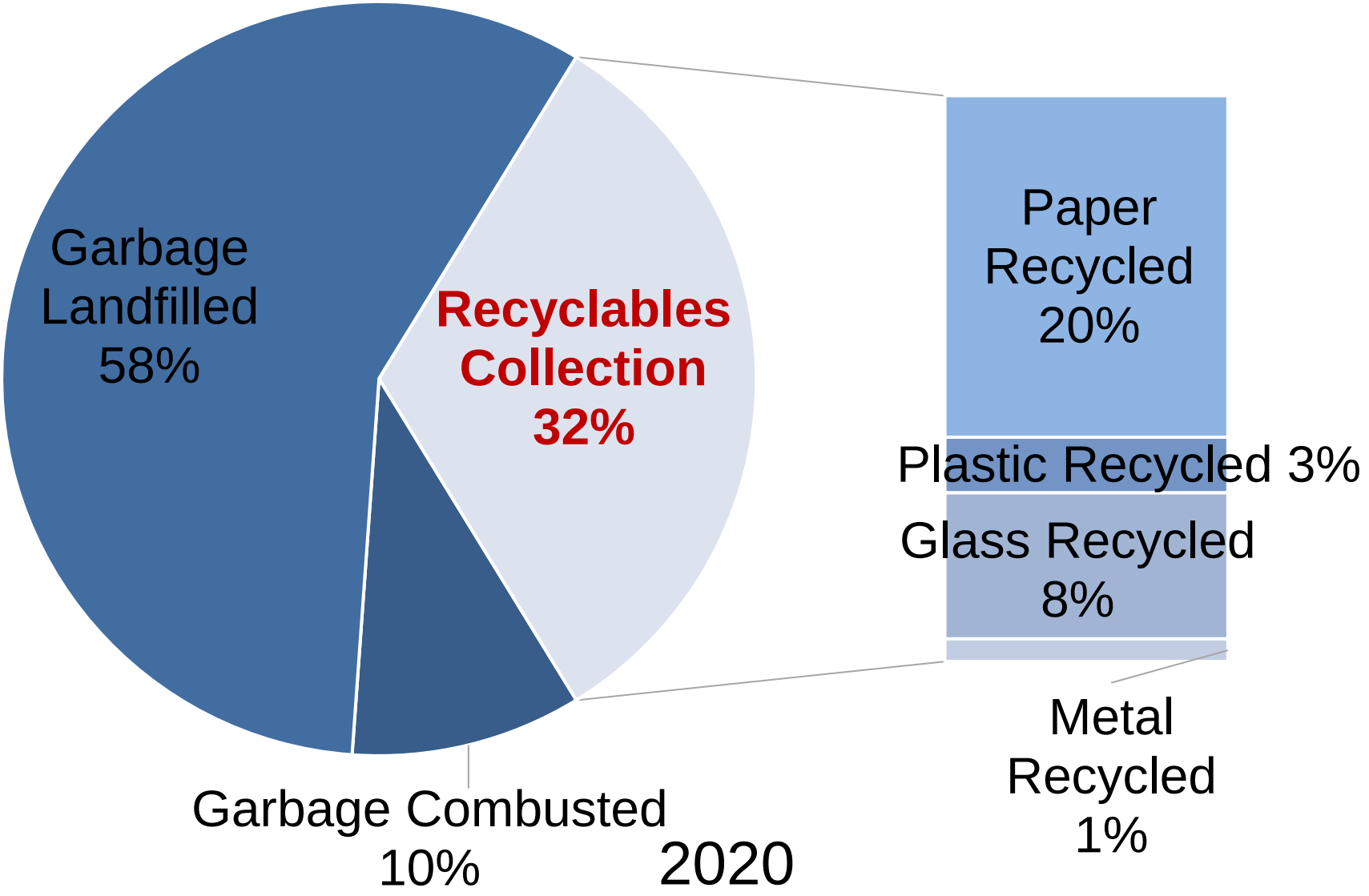


Average 2020 Florida MRF outgoing composition

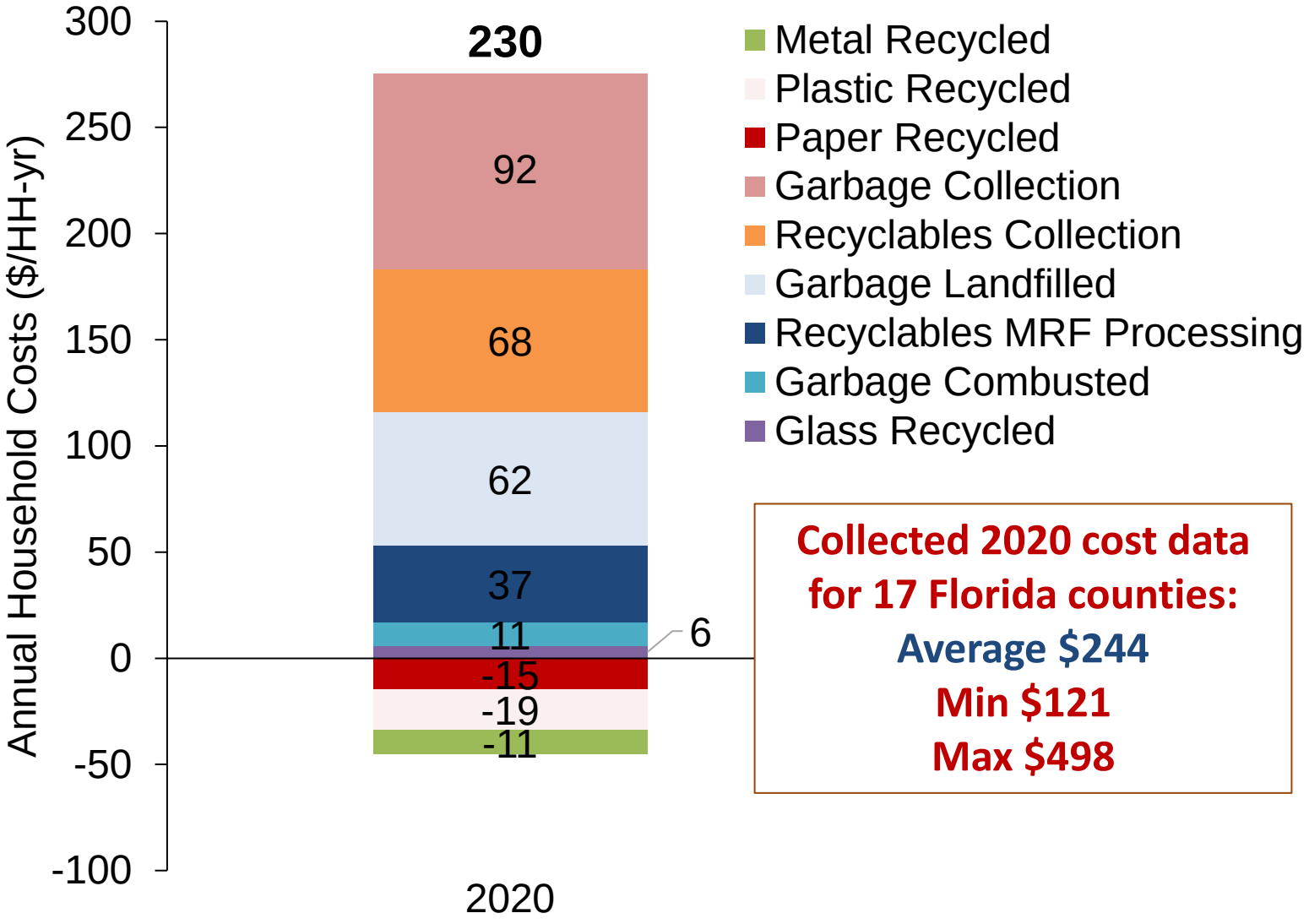


Average 2011 Florida MRF outgoing composition

Mass Flow

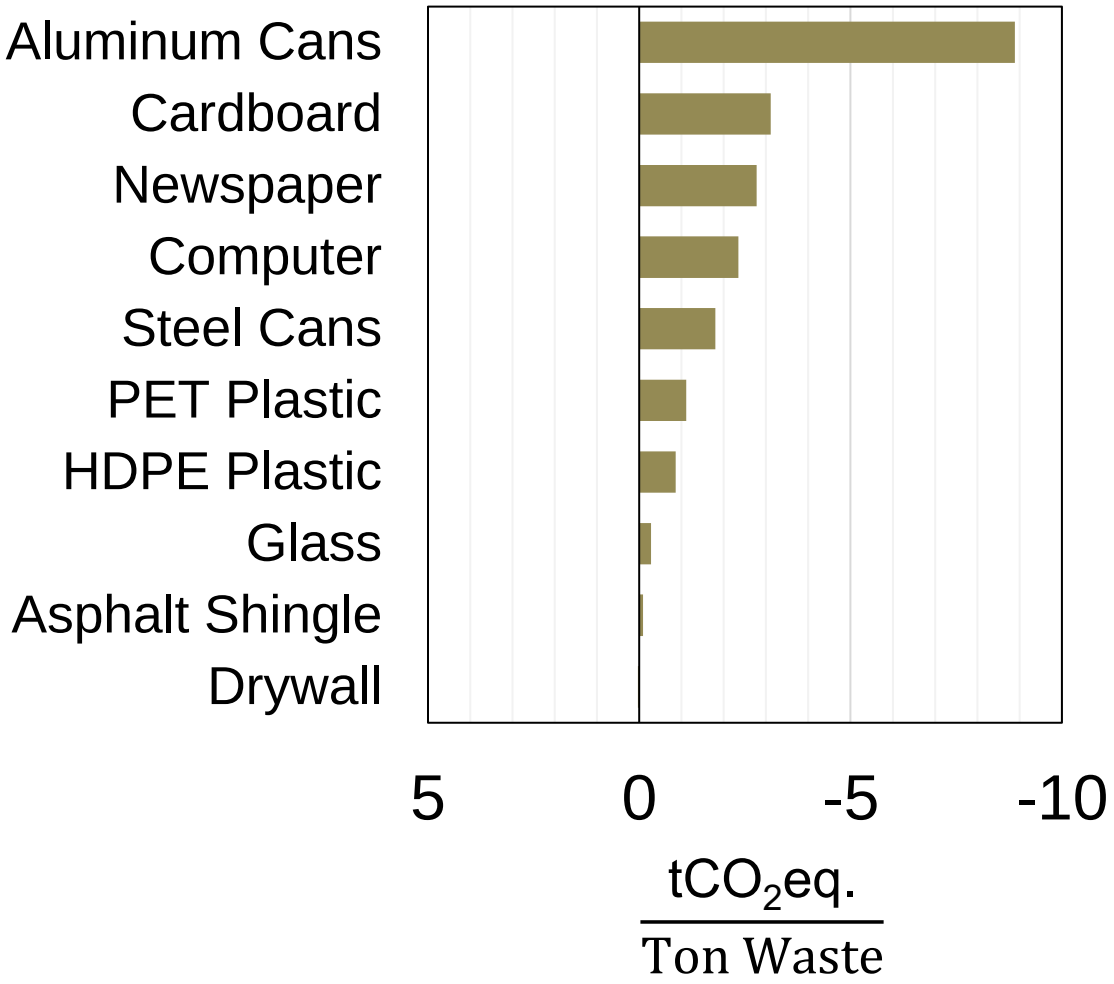

Garbage Landfilled 58%
Recyclables Collection 32%
Garbage Combusted 10%
2020
Paper Recycled 20%
Plastic Recycled 3%
Glass Recycled 8%
Metal Recycled 1%

Economics

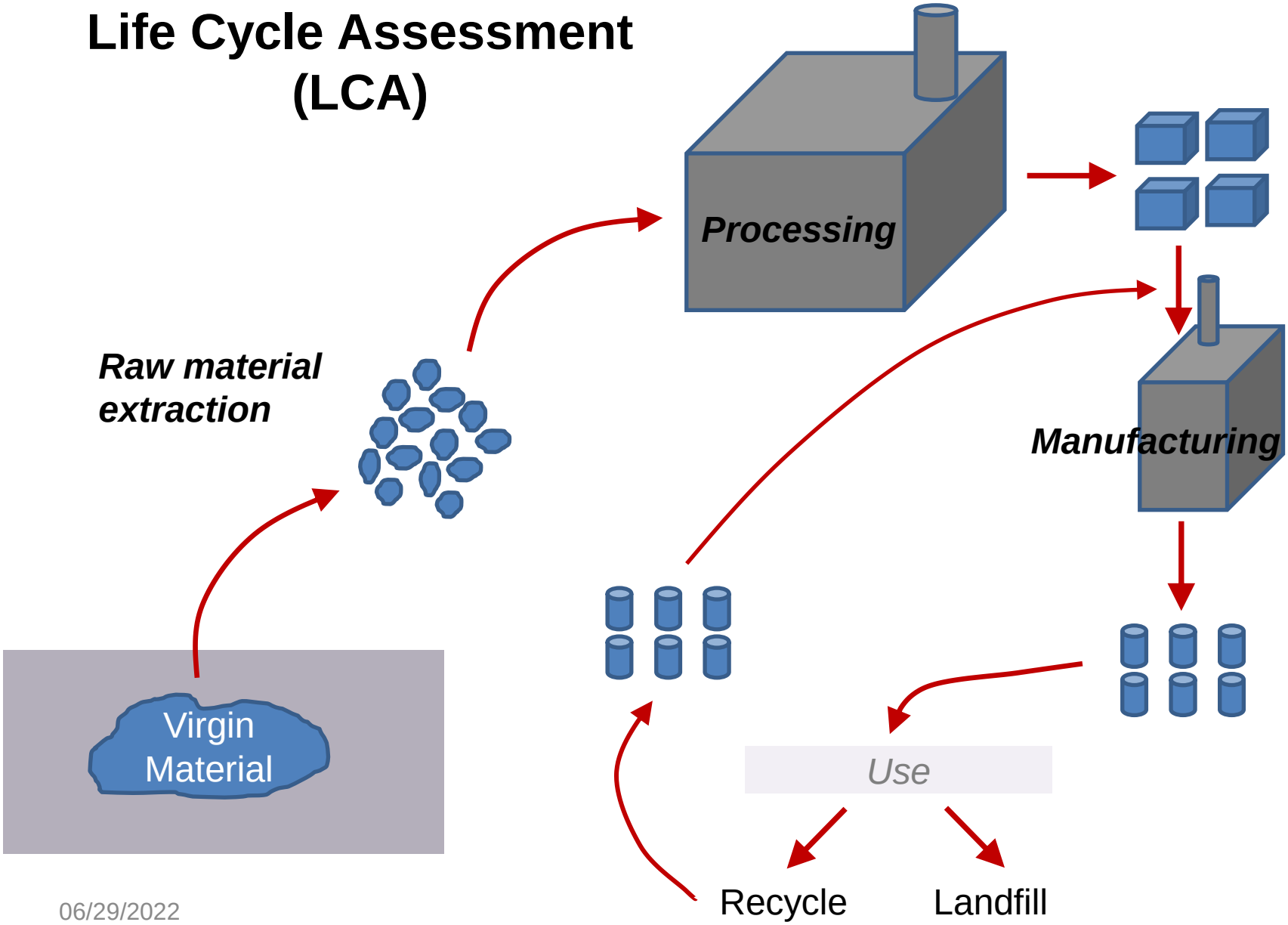


Collected 2020 cost data for 17 Florida counties:
Average $244
Min $121
Max $498

Environmental Impacts of Recycling



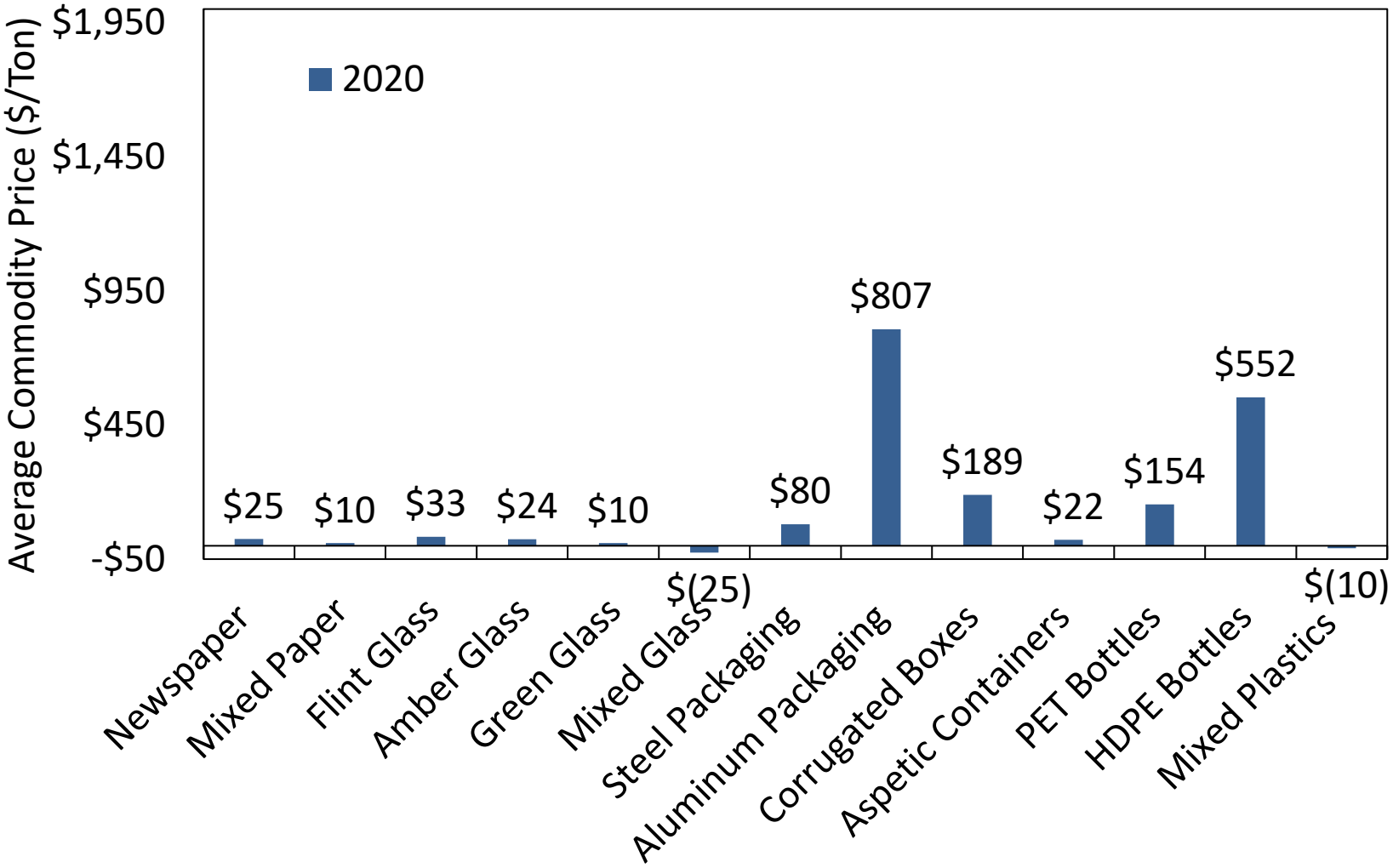
Life Cycle Assessment (LCA)



Alternative Recycling Approaches

- Biweekly recyclables collection
- Increase participation rate
- Increase recycling rate
- **Eliminate recycling**
- Eliminate certain materials from program
- **Target recycling certain materials only**

Historic Commodity Prices ($/ton)



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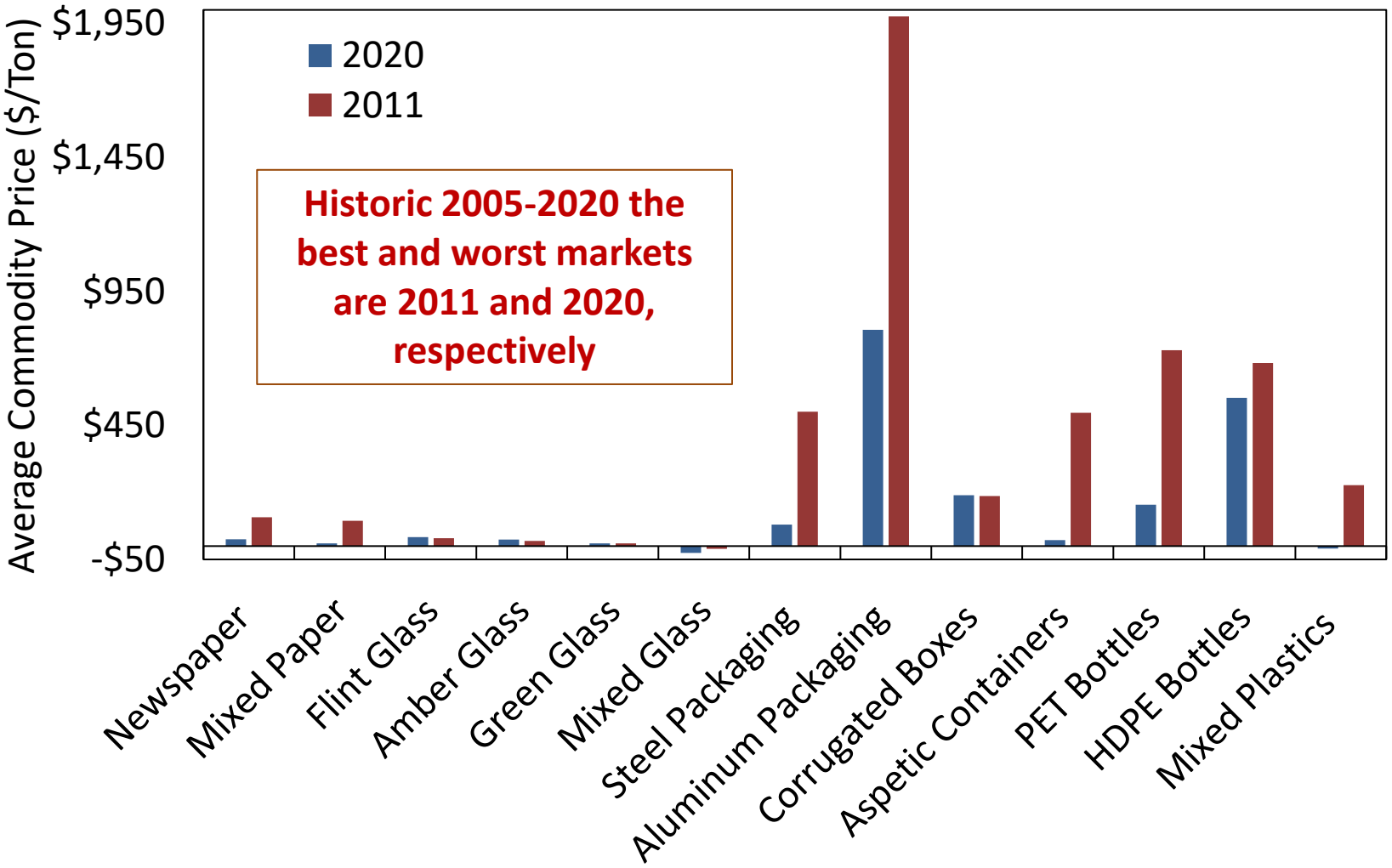

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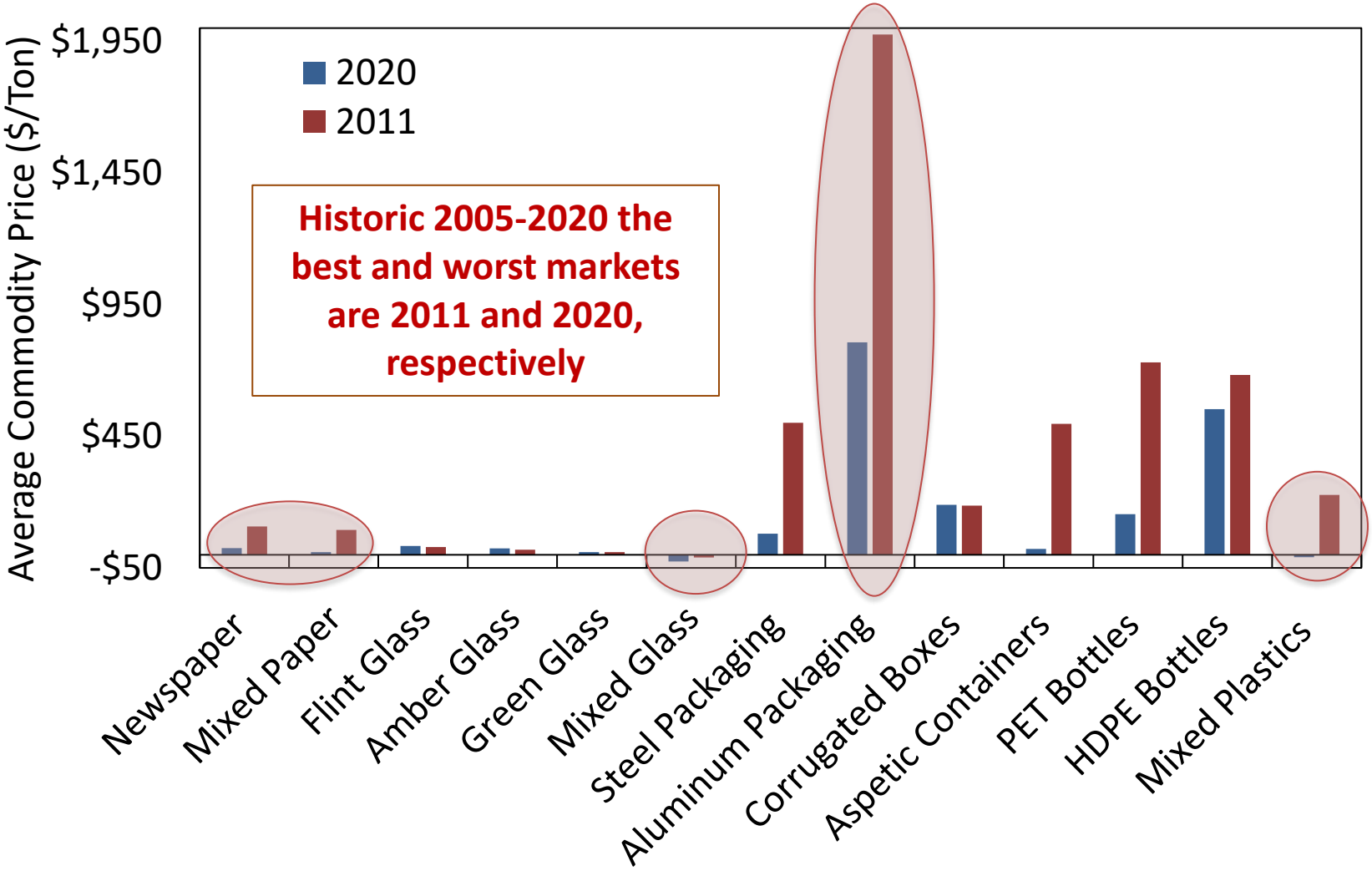
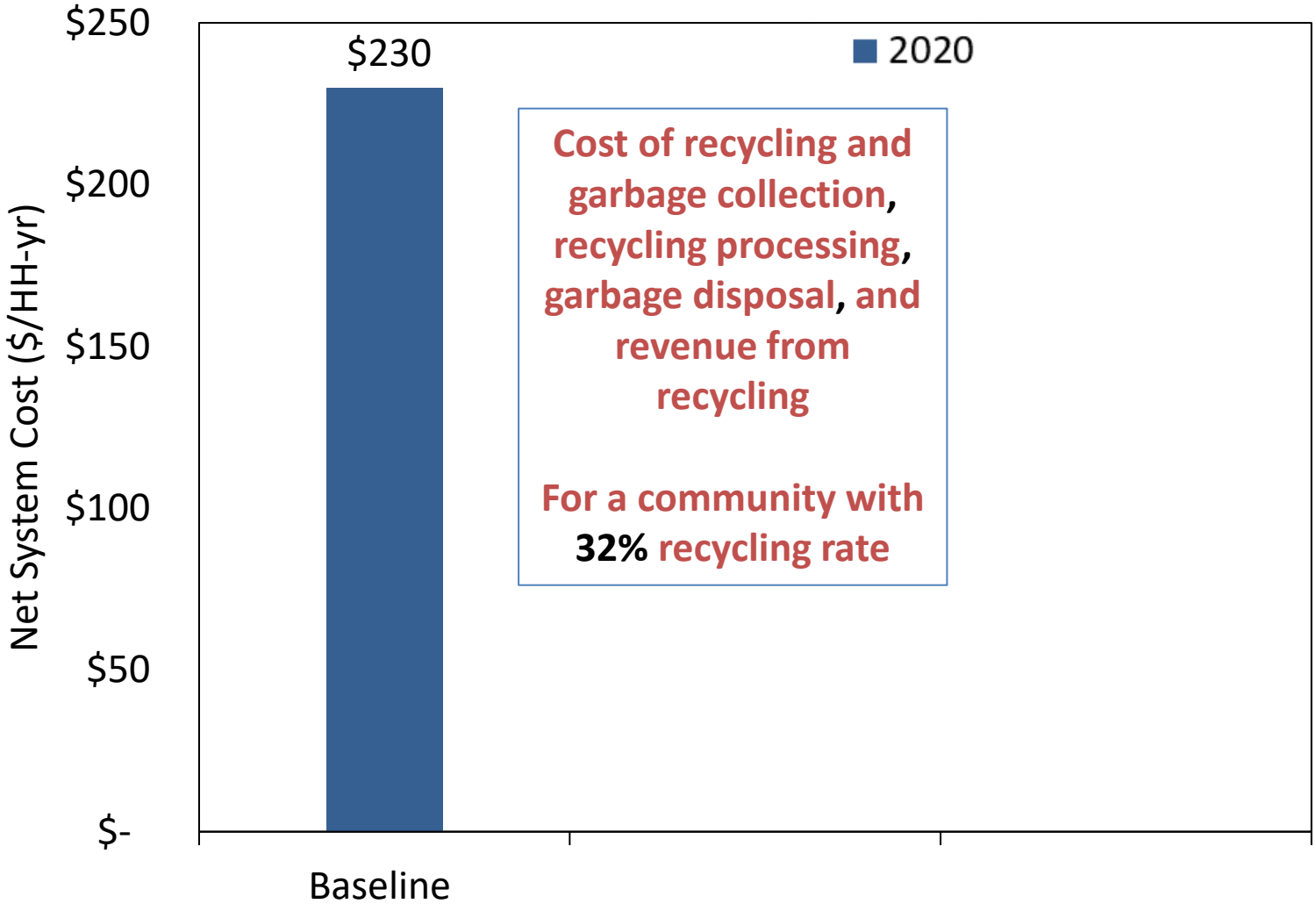


Waste Management System Cost ($/HH-yr)



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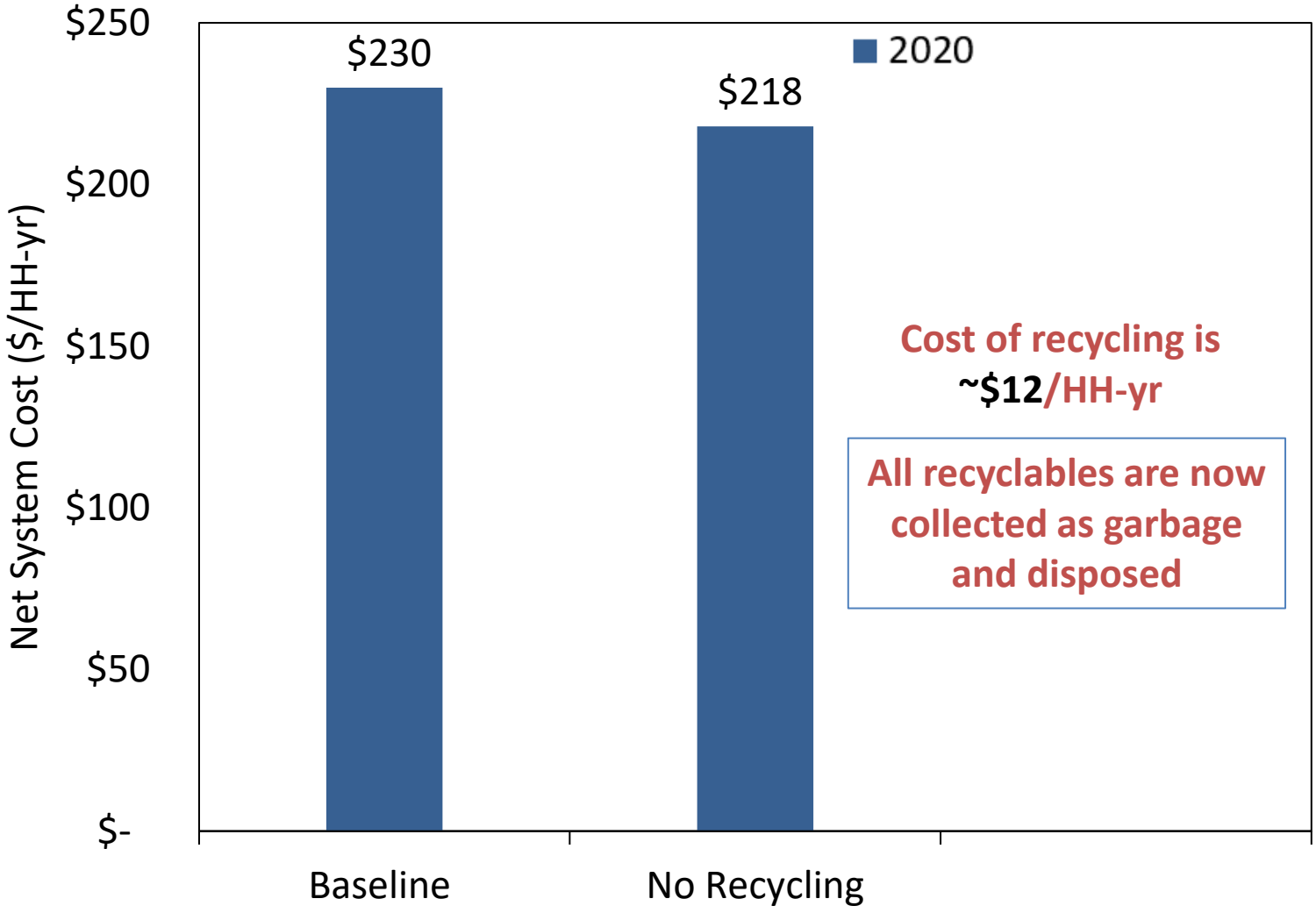

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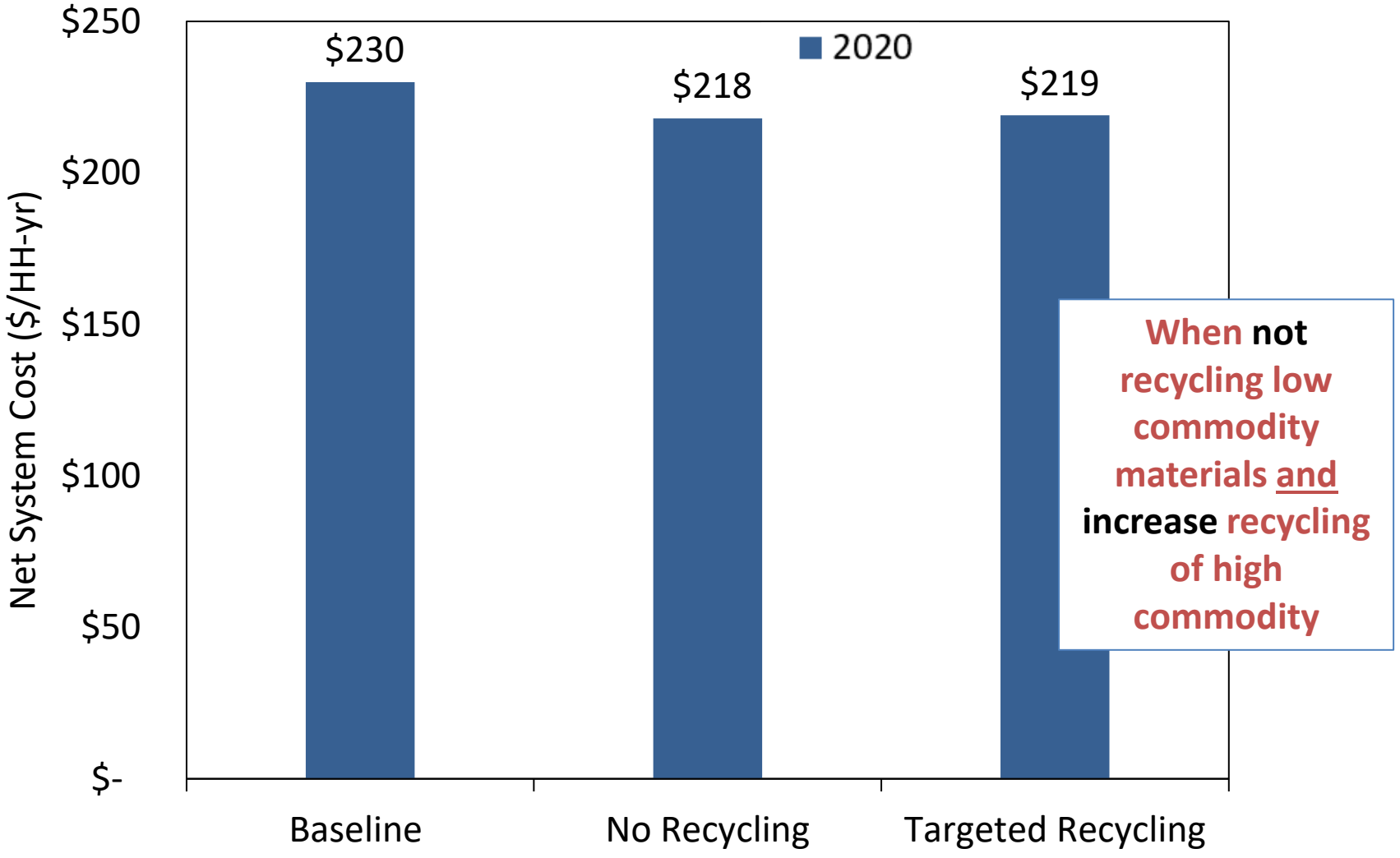

When **not** recycling low commodity materials and **increase** recycling of high commodity

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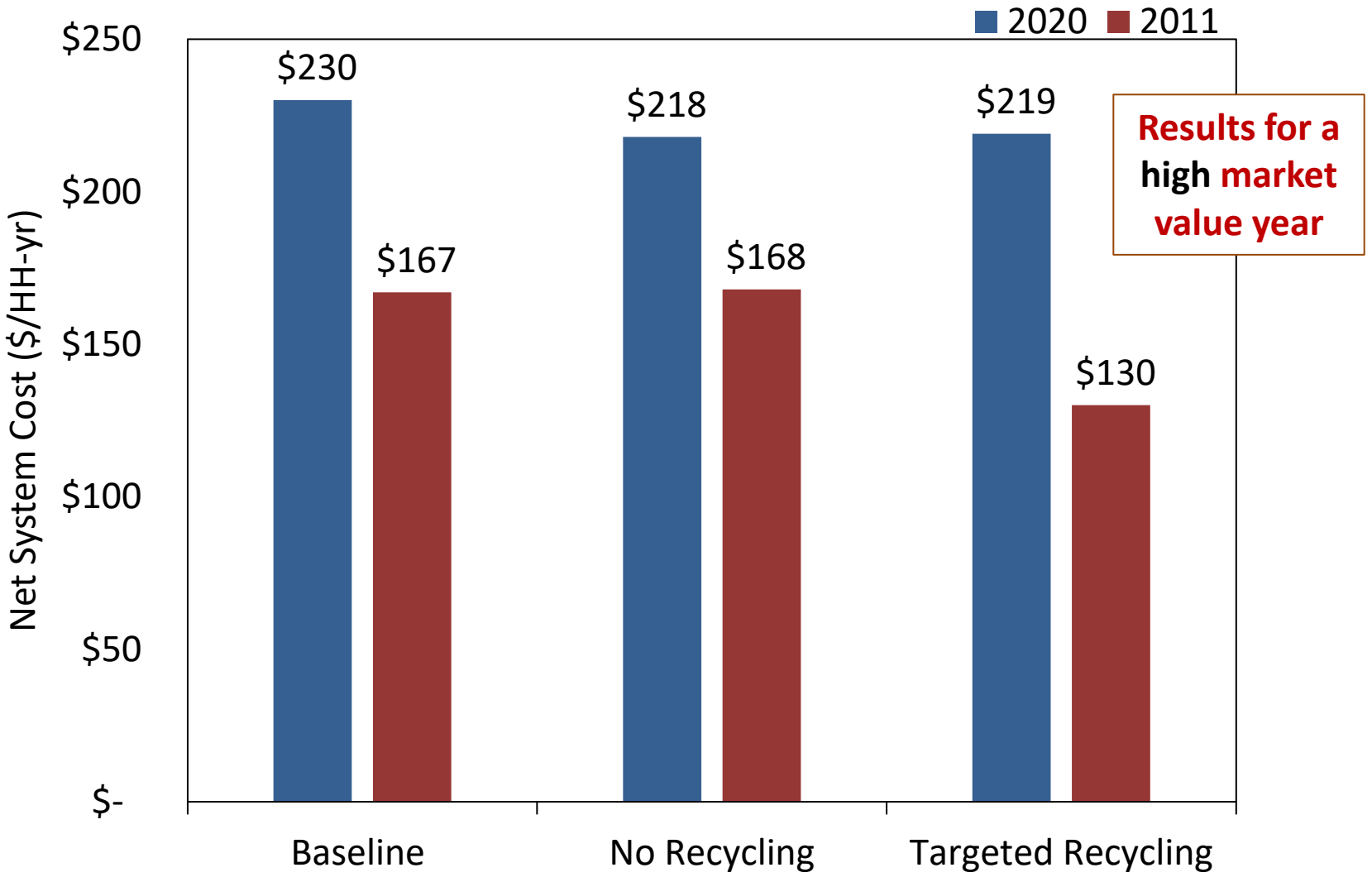

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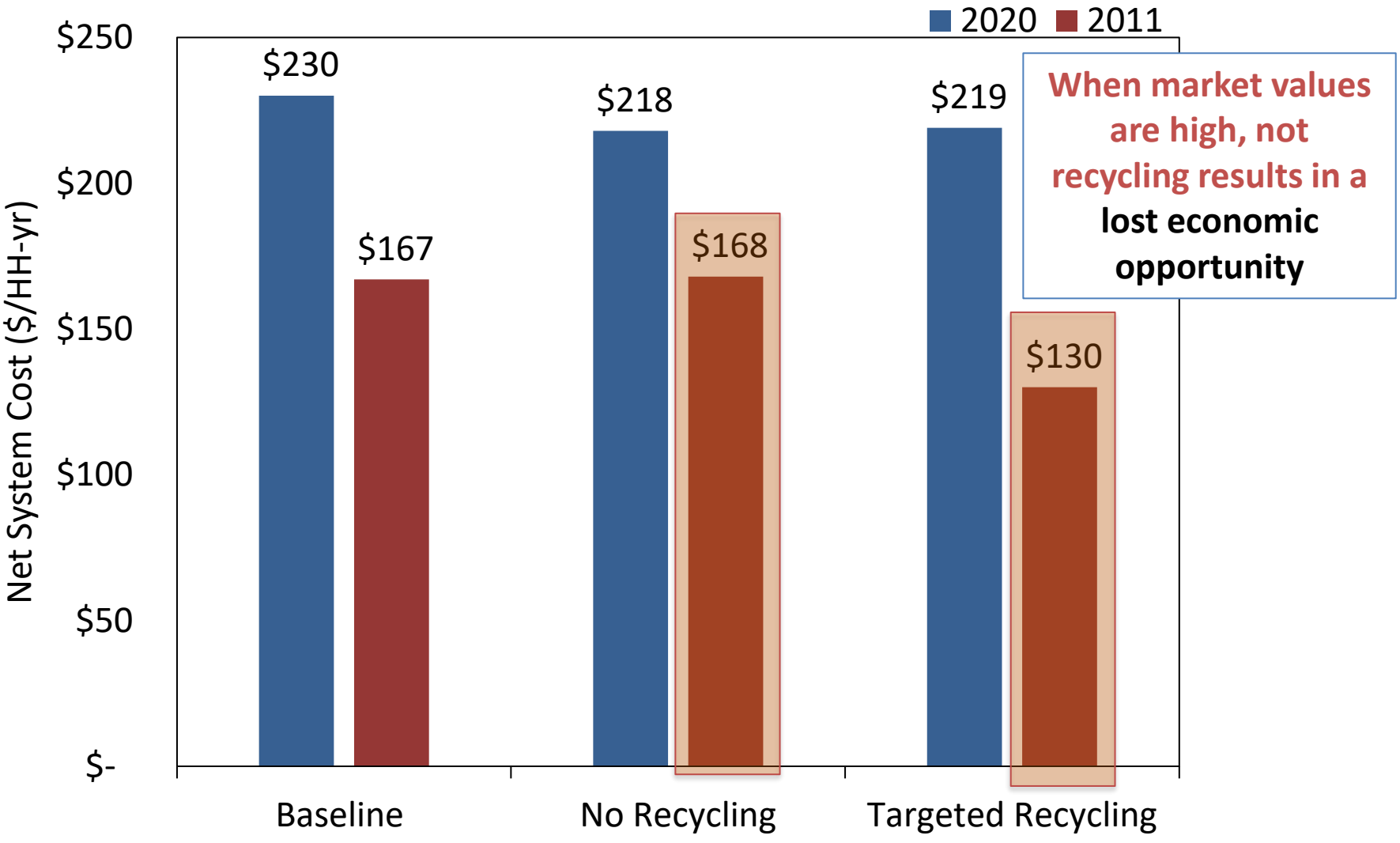
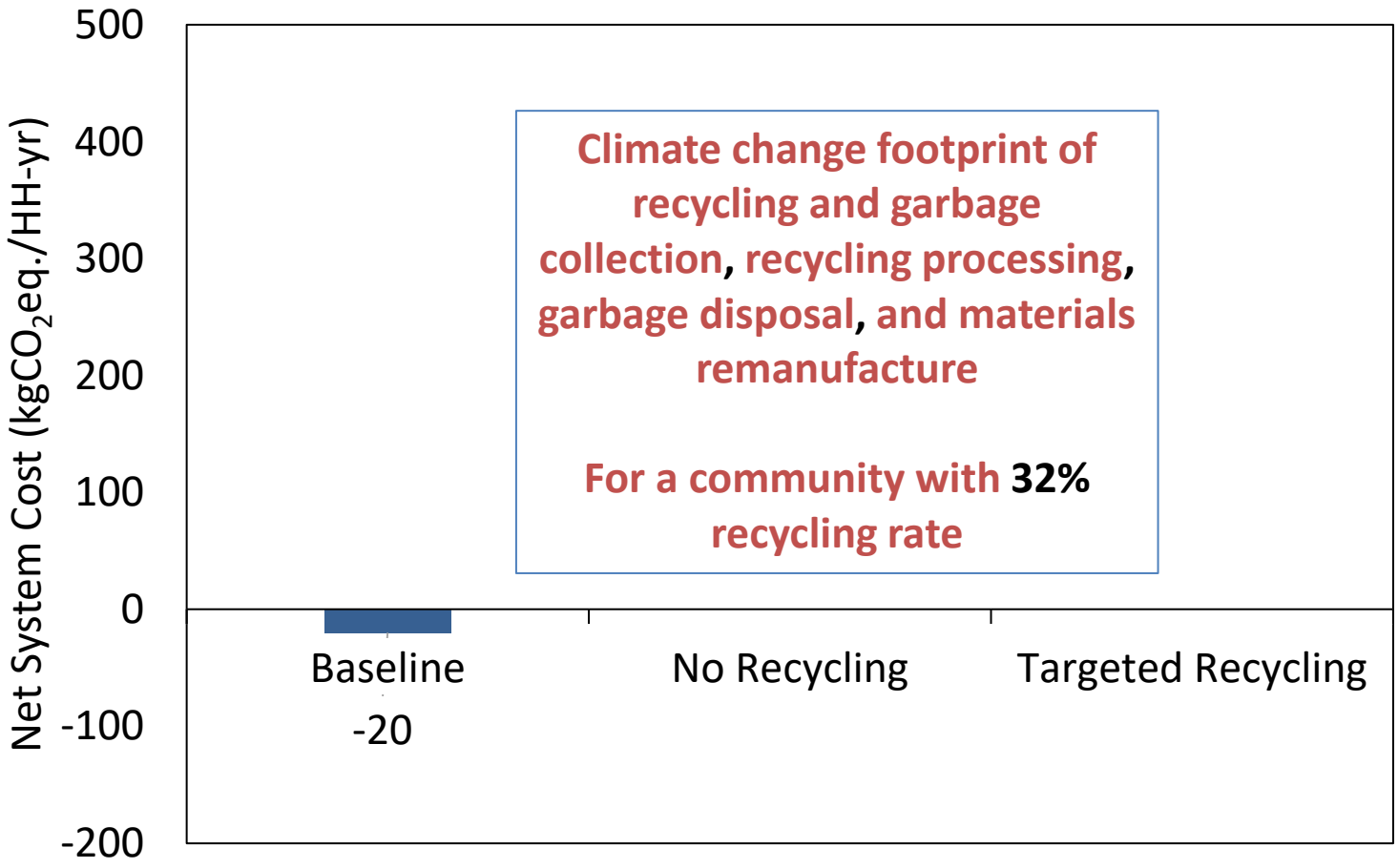
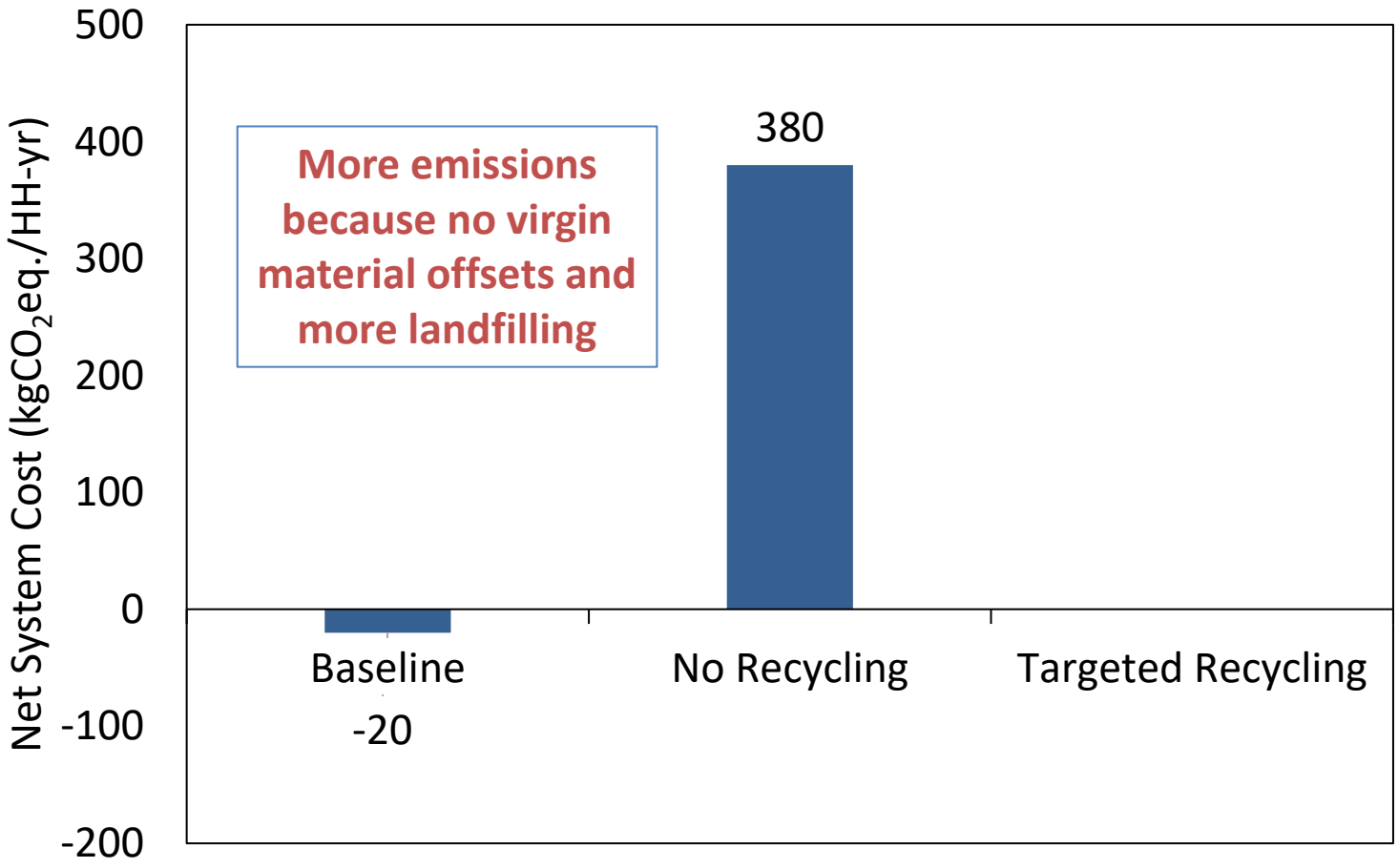


When market values are high, not recycling results in a **lost economic opportunity**

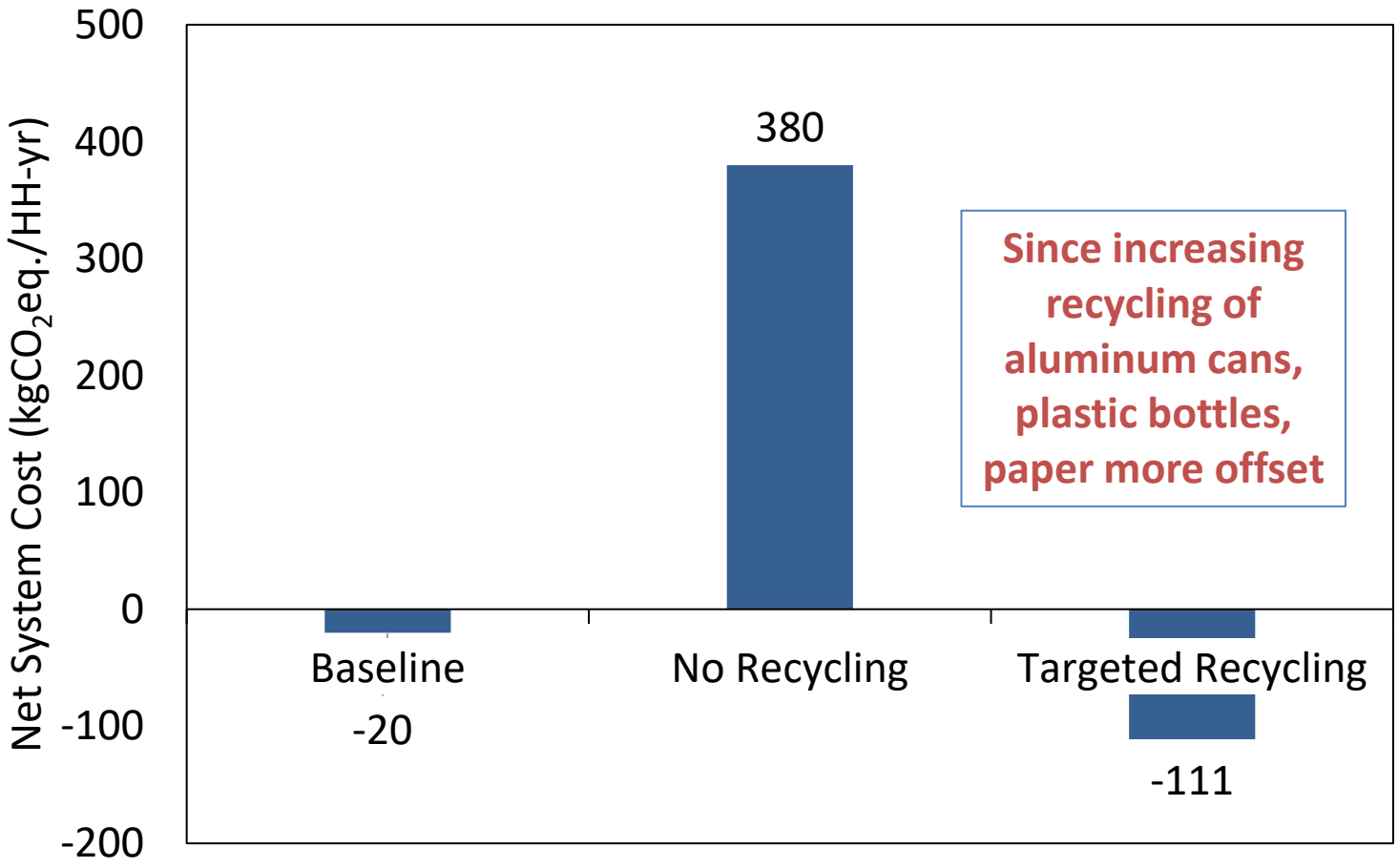
Climate Change Impact



Climate Change Impact

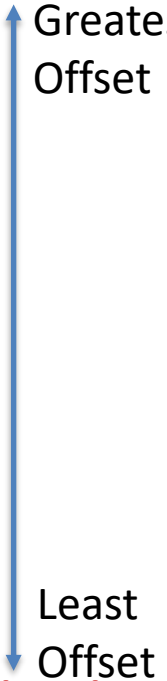


Climate Change Impact



Understanding Each Material's Impacts

GHG Emissions Offset When Recycled
Aluminum Cans
Mixed Paper*
Corrugated Paper*
Office Paper*
Newspaper*
Steel Cans
PET Bottles
Mixed Plastics
HDPE Bottles
Glass



Depends on whether including the assumption that recycling paper results in soil carbon storage for not harvesting trees** ***(if not including it all expect for newspaper would be lower than glass)

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PET Bottles
Mixed Plastics
HDPE Bottles
Glass

Greatest Offset

Least Offset

Commodity Value
Aluminum Cans
HDPE Bottles
PET Bottles
Steel Cans
Office Paper
Corrugated Paper
Mixed Plastics
Newspaper
Mixed Paper
Glass

Greatest Value

Least Value

Depends on whether including the assumption that recycling paper results in soil carbon storage for not harvesting trees** ***(if not including it all expect for newspaper would be lower than glass)

Demand for Recycled Materials

- Several states passed mandates for min recycled content requirements (California, New Jersey, Washington, Oregon)
- In Florida, 2021 consumption of plastic PET liquid refreshment bottles 0.01 tons/person
- If had a 15% min recycled content and assuming PET bottles recycled at 50% we can meet target

More States Consider Minimum Recycled Content Requirements

Thursday, February 18, 2021

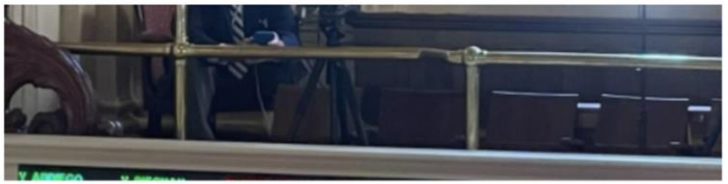
As we reported in October 2020, California became the first state in the U.S. to require a minimum post-consumer recycled resin in plastic bottles (see CA to Require Minimum Recycled Content in Plastics Bottles). Other states may follow California's lead. Washington, New Jersey, and Oregon are three states where legislatures have introduced bills requiring the use of post-consumer recycled content in certain types of packaging.

Bill to Increase Post-Consumer Recycled Content for Plastics Passes!

MONDAY, JANUARY 10, 2022

Share

Trenton - Today, the New Jersey Assembly voted 48-23-3 and the New Jersey Senate voted 22-15 to approve the Recycled Content bill (S2515/A4676)



Let’s recap the findings!

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Elimination of recycling systems in Florida is **NOT** an effective strategy to curb costs or the environmental impact of waste.

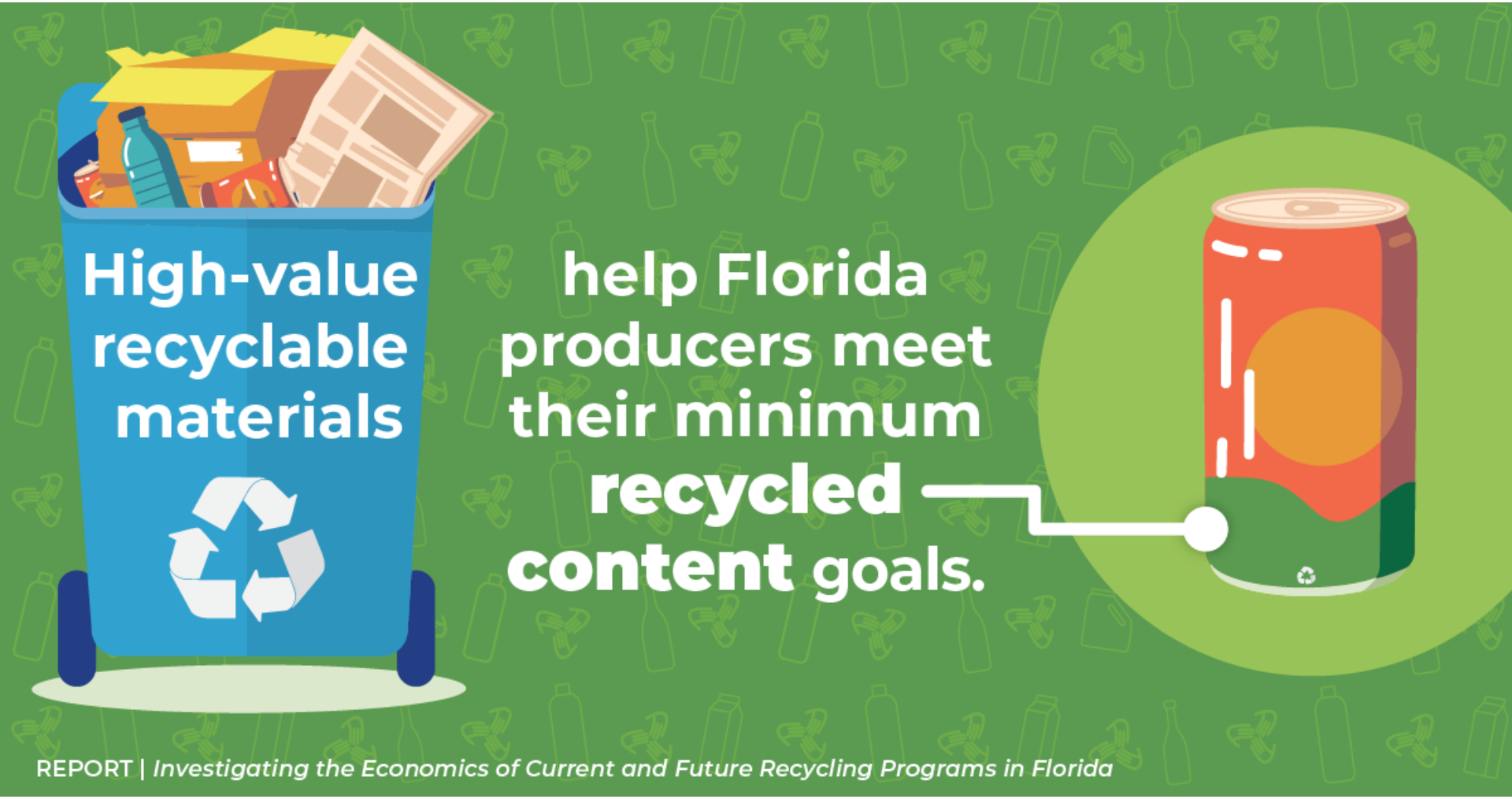
REPORT | *Investigating the Economics of Current and Future Recycling Programs in Florida*


Eliminating recycling programs increases annual household emissions by 1 to 20 times the current average.
REPORT | Investigating the Economics of Current and Future Recycling Programs in Florida

A market-based recycling system in Florida could lower the cost of recycling programs and protect our state's environment.

REPORT | *Investigating the Economics of Current and Future Recycling Programs in Florida*


Recycling high-value materials at high rates can achieve the same emissions reductions as recycling 40% of Florida's total waste stream.
REPORT | Investigating the Economics of Current and Future Recycling Programs in Florida
CO_2


High-value recyclable materials
help Florida producers meet their minimum recycled content goals.
REPORT | Investigating the Economics of Current and Future Recycling Programs in Florida

Recycling programs are essential to create an economy that is less resource and emissions intensive.

REPORT | *Investigating the Economics of Current and Future Recycling Programs in Florida*

Educational programs are vital to a well-functioning, high-value recycling system in Florida.

REPORT | *Investigating the Economics of Current and Future Recycling Programs in Florida*

For a copy of the study

Go to

www.flrecycling.org

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Thank You for Your Time!

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E·S·S·I·E
Engineering School of Sustainable Infrastructure & Environment

https://faculty.eng.ufl.edu/timothy-townsend/research/florida-solid-waste-issues/tool-to-track-progress-toward-smm-goals/

TOOL TO TRACK PROGRESS TOWARD SMM GOALS

SUSTAINABLE LANDFILL PRACTICES

CONSTRUCTION AND DEMOLITION DEBRIS

An Integrated Tool for Local Government to Track Materials Management and

Progress Reports

Progress Report 1: HC19PR01

Progress Report 2: HC19PR02

Thank you!

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