Florida Recycles Day
Friday, November 15
9:00 am – 3:00 pm
Patel College for Global Sustainability at the University of South Florida

- 8:30 am **Check in begins**
  - Coffee & pastries sponsored by **Publix**
- 9:00 am **Welcome**
  - **Liz DeWitt, Chair – Florida Recycling Partnership Foundation**
    - liz.dewitt@flabev.org
  - **Karen Moore – Florida Department of Environmental Protection**
    - Karen.S.Moore@floridadep.gov
  - **Dr. Pradeep Haldar – USF Patel College for Global Sustainability**
    - phaldar@usf.edu

- **Florida's Commitment to Recycling**
  Liz DeWitt, President/CEO Florida Beverage Association & Chair of the Florida Recycling Partnership Foundation – Moderator

  - FDEP Study on Capacity
    - Hannah Sackles – University of Florida
      - hsackles@ufl.edu
  - State of the Recycling Markets
    - Gene Jones – Southern Waste Information eXchange (SWIX)
      - gene@swixusa.org
  - Investment in infrastructure
    - Mike DeClerck - WM
      - mdeclerc@wm.com

- **FDEP Recycling Recognition Awards Presentation**
  Karen Moore, Florida Department of Environmental Protection

    - Dan Pellowitz, Executive Director - Solid Waste Authority of Palm Beach County
        - dpellowitz@swa.org
    - Kari Hodgson, P.E., Division Director - Solid Waste - Collier County
        - Kari.Hodgson@colliercountyfl.gov
    - Baker County

- **"Take Charge Florida" - The importance of recycling batteries**
  Lindsay Hempfling, Bealls – Moderator

    - "Take Charge Florida" – Florida's new educational program about batteries
        - Karen Moore – FDEP
            - **Karen.S.Moore@floridadep.gov**
    - How one local government is handling batteries –
        - Travis Barnes, Hillsborough County Solid Waste
            - BarnesT@hcfl.gov
    - What's happening in other states?
        - Morgan Crapps, Redwood Materials
            - morgan@redwoodmaterials.com

- **Lunch sponsored by Coca-Cola Beverages Florida**

  Grab your box lunch and return to the auditorium to network
  After you are finished, please take your containers and uneaten food to our recycling room next door. There you can recycle the boxes, aluminum cans and plastic bottles and place food waste in the composting bin. We have a sharing table for unused items!

- **FRPF Recycling Champion Award Winners**
  Liz DeWitt, FL Beverage Association & Chair of the FRPF

    - USF Stavros Center Sustainability Superheroes Program
        - christine.danger@sdhc.k12.fl.us
    - Goodwill Industries Suncoast & Hillsborough County Solid Waste Department - Donation & Waste Diversion Program
        - Kenneth.Karbowski@goodwill-suncoast.com
        - GallagherD@hcfl.gov
    - Collier County's Preserve Our Paradise: Reduce, Reuse, and Recycle
        - Kari.Hodgson@colliercountyfl.gov
    - Coca-Cola Beverages Florida Closed Loop Recycling Value Assessments
        - eblack@cocacolaflorida.com
        - jomitchell@cocacolaflorida.com
    - Desert Wireless Recycling Continual Recycling
        - Aron Harris aron@desertwr.com

- **From Waste to Resources: Innovative Recycling Strategies for Campaign Signs, Building Materials, Textiles and Food Waste**
  Kayla Caselli, Sustainability Coordinator for the City of Tampa – Moderator

    - Campaign signs
        - Kyle Pukylo – NuCycle Energy
        - kpukylo@nucycleenergy.com
    - Building materials
        - Ty Chiles – Cemex
        - tyrone.chiles@cemex.com
    - Textiles
        - Donn Githens, Goodwill Manasota & Raymond Randall, WM
        - donn.githens@gimi.org
        - rrandall@wm.com
    - Food Recovery
        - Brian West, Publix
        - Brian.West@publix.com

- **Wrap up and thank you**

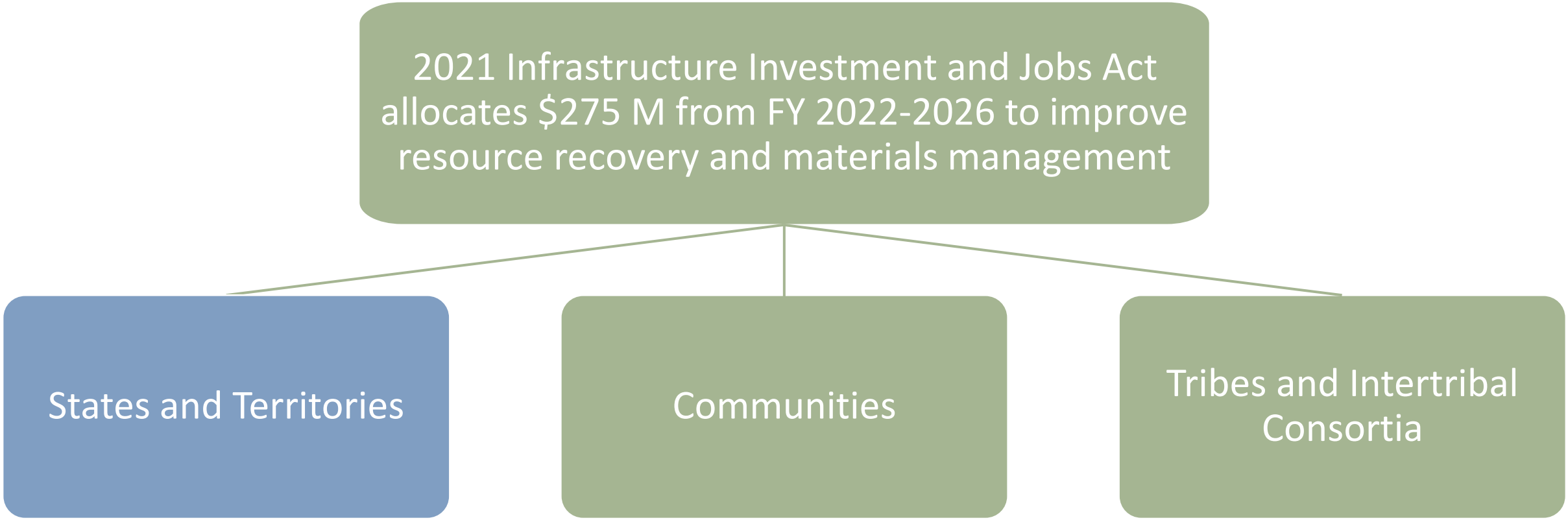
- **Thank you to our sponsors:**

Florida Solid Waste Capacity Study

Researchers: Hannah Sackles, Malak Anshassi, Yalan Liu, Tim Townsend

FDEP: Karen Moore, Chris Perry

Solid Waste Infrastructure for Recycling (SWIFR)



https://www.epa.gov/infrastructure/solid-waste-infrastructure-recycling-grant-program

Florida SWIFR Activities

1) *Capacity Study*
2) *Away from Home Waste and Recycling Study*
3) *Update WasteCalc Activity*

Investing in America through the
Bipartisan Infrastructure Law
Solid Waste Infrastructure for Recycling
State and Territory Grant Fact Sheet

Florida

Grant Recipient Information

Name: Florida Department of Environmental Protection

EPA Information

Region: EPA Region 4

Highlights

- Assess the need for infrastructure development in the resource recovery sector.
- Investigate waste generated by tourists.
- Add life cycle assessment to tool for estimating waste composition and materials disposal.

Overview of Florida's Planned Activities

Florida intends to use this grant funding in three efforts. The first is the Waste Management System Capacity Study, in which Florida will assess existing processing, treatment, and disposal capacity at Florida's solid waste management and recycling facilities, identifying where infrastructure development is needed in the resource recovery sector. This study will allow for more effective plans that increase recycling and waste diversion, leading to improved waste management infrastructure and capacity. The second effort, the *Away from Home Waste and Recycling Study*, will evaluate how much of Florida's solid waste generation and disposal is attributable to out-of-state and in-state visitors, as well as what types of waste those visitors generate. This study will help identify opportunities to improve recycling rates for specific materials (e.g., aluminum cans, plastic bottles). In the third effort, Florida will update WasteCalc, the statewide tool used for estimating waste composition and materials disposal. By incorporating life cycle assessment measures into the tool, Florida can help counties understand the potential environmental impacts associated with their waste generation and management practices, informing strategies for waste reduction and recycling.

SWIFR Grants for States and Territories

The 2021 Bipartisan Infrastructure Law provides the largest EPA investment in recycling in 30 years to support National Recycling Strategy implementation and build a circular economy for all. As part of the Investing in America agenda, this funding can be used to develop or update plans to advance post-consumer materials management, implement those plans, and to improve data collection efforts. These grants also advance the Justice40 Initiative, which aims to ensure that 40% of the overall benefits of certain Federal investments flow to disadvantaged communities that are marginalized, underserved, and overburdened by pollution.

EPA will make the award to Florida once all legal and administrative requirements are satisfied.

SWIFR Community Grant Fact Sheet

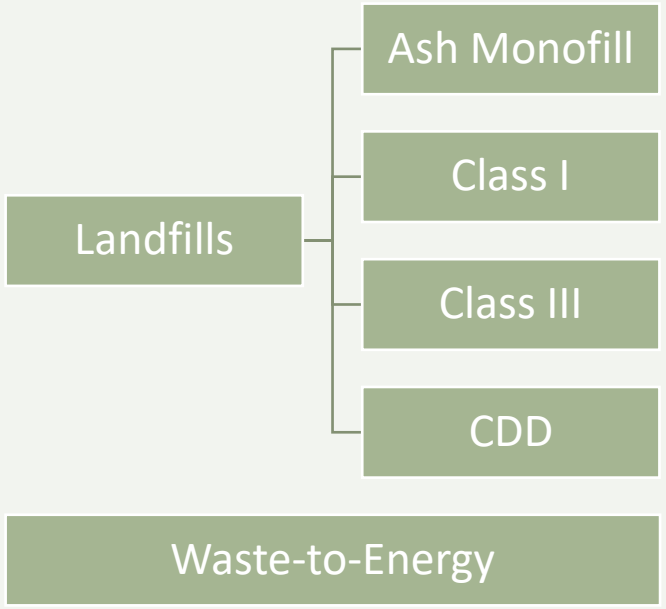
Nassau County SWIFR Community Grant Fact Sheet

EPA 530-F-23-008-FL
epa.gov/infrastructure/SWIFR
September 2023

https://www.epa.gov/infrastructure/recycling-grant-selectees-and-recipients

Facilities of Interest

Disposal



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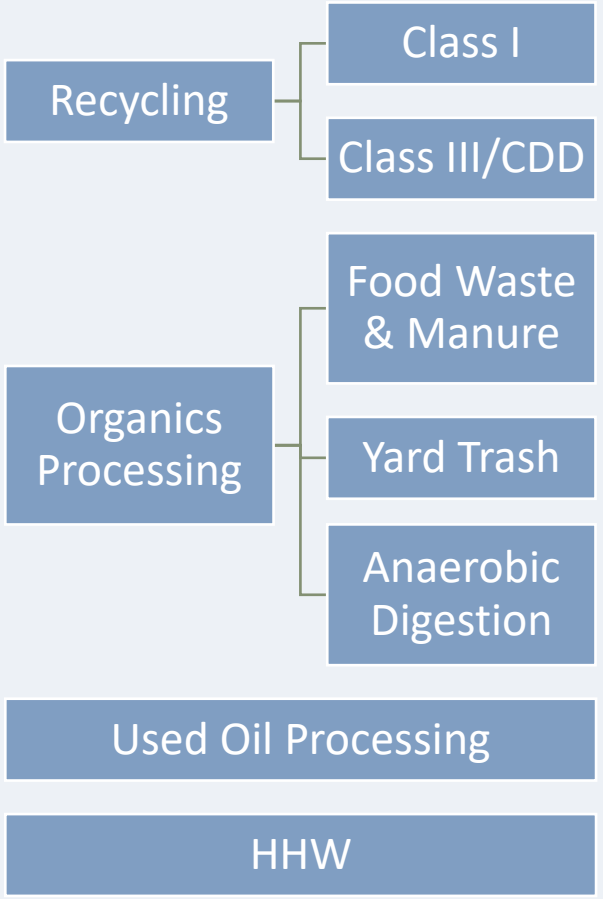


Class I Landfill Capacity

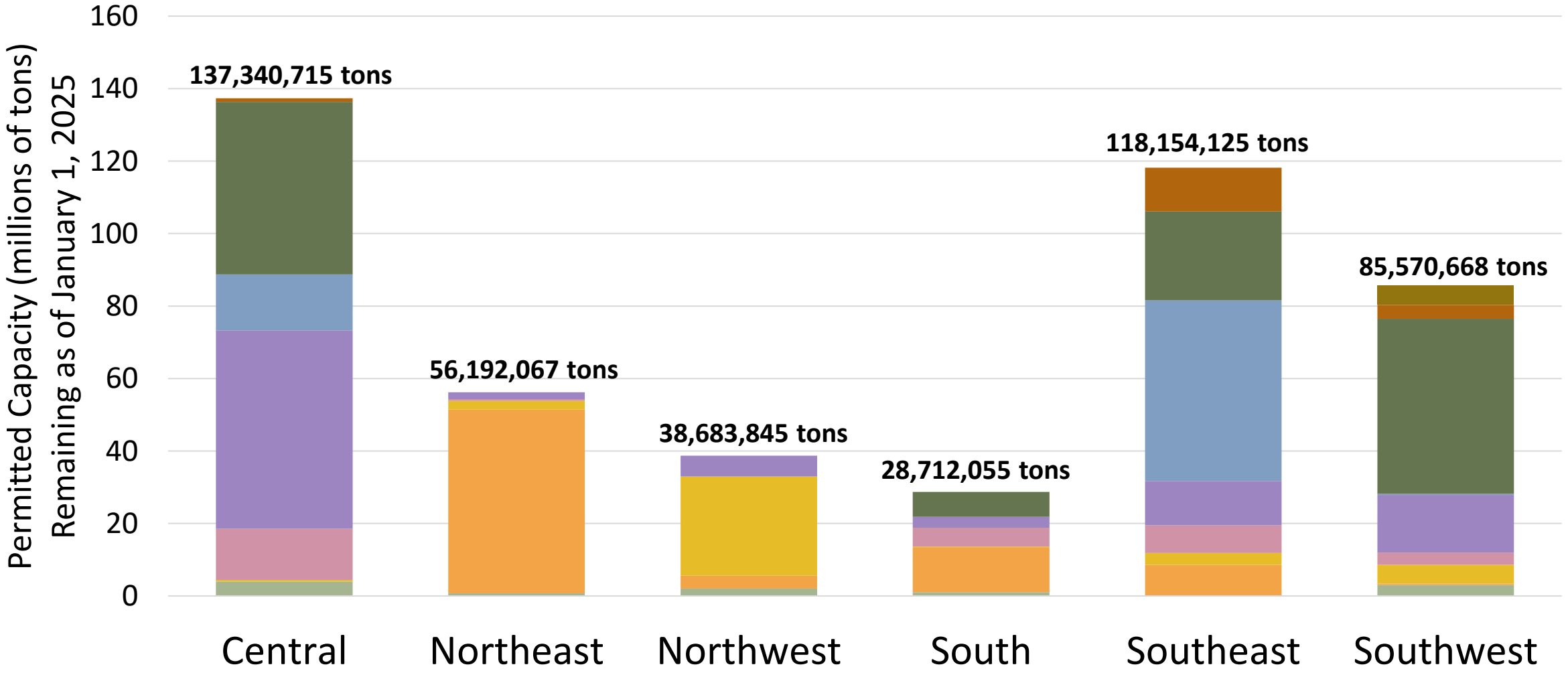
F.A.C. 62-701.500.13: Recordkeeping. In addition to records and reporting required by other sections of this chapter, the landfill owner or operator shall: (c) Maintain an annual estimate of the remaining life and capacity in cubic yards of the existing, constructed landfill and an annual estimate of the life and capacity in cubic yards of other permitted areas not yet constructed. The estimate shall be made and reported annually to the Department.

https://www.flrules.org/gateway/ruleno.asp?id=62-701.500

Method

1) Use OCULUS to search for:
   - Site life estimate
   - 2023 tonnages
   - Permit applications
2) Verify information with facility operators
   - Tonnages, density, and site life estimate
   - Potential for future expansions
3) Normalize each facility's capacity estimate to a single date
   - January 1st, 2025

Remaining Permitted Capacity by District as of January 1, 2025



Central District Example

Approach:

1) Determine tons landfilled in each facility in 2023

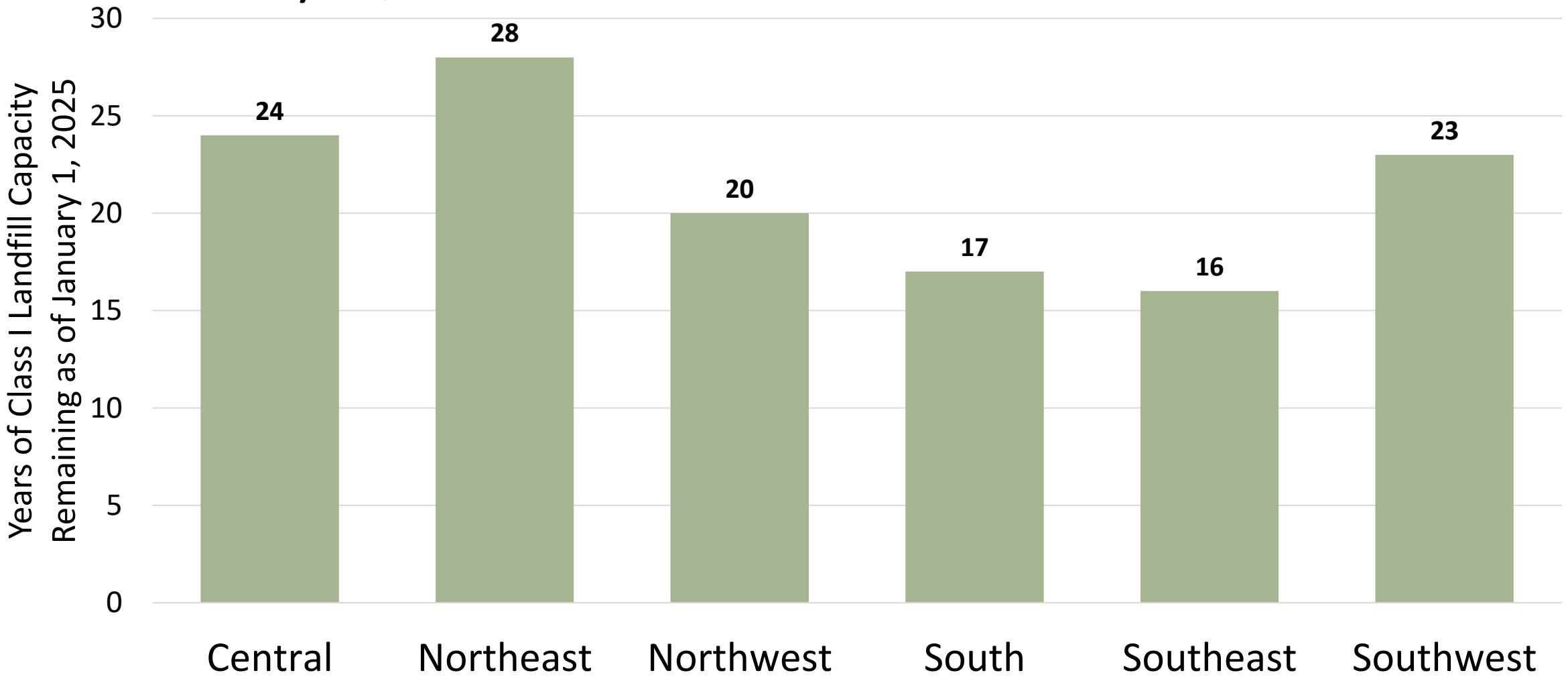
Obtained from Solid Waste Quantity Report and verified with operators

2) Apply 1% increase in waste generation for projections

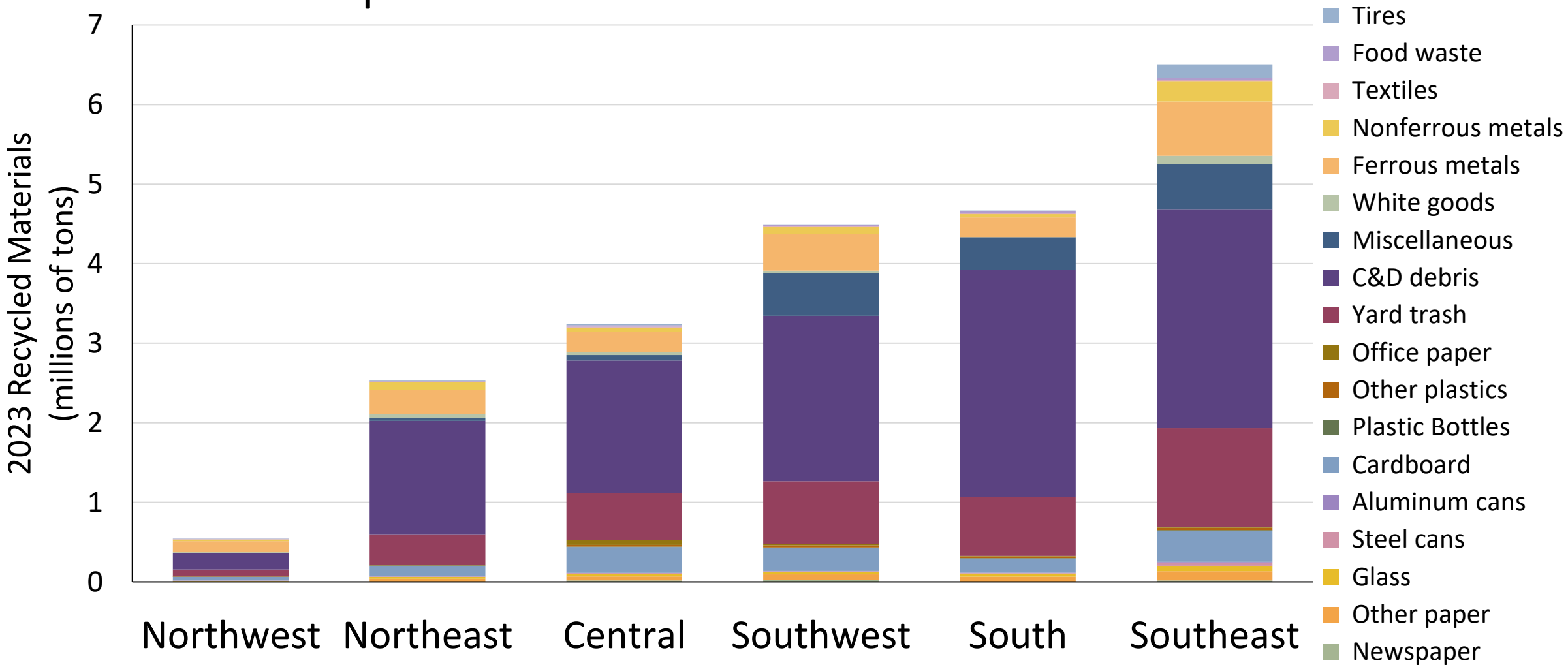
3) Project the remaining capacity (in tons) after accounting for waste disposed in each calendar year

Calendar Year	Waste Received (tons/year)	Increase in Waste Generation	Remaining Tons
2025	5,169,728	0.01	137,340,715
2026	5,221,425	0.01	132,119,290
2027	5,273,640	0.01	126,845,651
2028	5,326,376	0.01	121,519,275
2029	5,379,640	0.01	116,139,635
2030	5,433,436	0.01	110,706,199
2031	5,487,770	0.01	105,218,428
2032	5,542,648	0.01	99,675,780
2033	5,598,075	0.01	94,077,706
2034	5,654,055	0.01	88,423,650
2035	5,710,596	0.01	82,713,054
2036	5,767,702	0.01	76,945,352
2037	5,825,379	0.01	71,119,973
2038	5,883,633	0.01	65,236,341
2039	5,942,469	0.01	59,293,872
2040	6,001,894	0.01	53,291,978
2041	6,061,913	0.01	47,230,065
2042	6,122,532	0.01	41,107,533
2043	6,183,757	0.01	34,923,776
2044	6,245,595	0.01	28,678,182
2045	6,308,051	0.01	22,370,131
2046	6,371,131	0.01	15,999,000
2047	6,434,842	0.01	9,564,157
2048	6,499,191	0.01	3,064,966
2049	6,564,183	0.01	-3,499,216
2050	6,629,825	0.01	-10,129,041

Remaining Permitted Capacity by District as of January 1, 2025



Recycling Data – 2023 FDEP Annual Solid Waste Reports



https://floridadep.gov/waste/waste-reduction/content/2023-solid-waste-management-report

Recycling Facilities

F.A.C. 62-701.710: Recordkeeping. (a) Operational records shall be maintained to include a daily log of the quantity of solid waste received, processed, stored, and removed from the site for recycling or disposal, and the county of origin of the waste, if known. These records shall include each type of solid waste, recovered materials, residuals, and unacceptable waste which is processed, recycled, and disposed. Such records shall be compiled on a monthly basis and shall be available for inspection by the Department. Records shall be retained at the facility for three years.

https://www.flrules.org/gateway/RuleNo.asp?ID=62-701.710

Method

1) Identify facilities from the FDEP list of Recovered Materials Dealers which process two or more material types
2) Contact facility operators to determine current permitted capacity and potential future capacity
   - e.g., possible capacity expansions due to increased service area, equipment upgrades, operational changes

Next Steps…

data collection and analysis

Thank you for your time!

Please connect with us!

1) *Do you have facility capacity data that you can share?*
2) *Have you conducted a waste composition study in the past 5 years?*
   - *County, municipality, or facility level*
   - *Recycling or MSW materials*
3) *Do you have connections to the tourism industry?*
   - *Hotels, attractions, food and beverage, transportation*

hsackles@ufl.edu
manshassi@floridapoly.edu
yalanliu@fau.edu

Southeast Recycling Markets Update

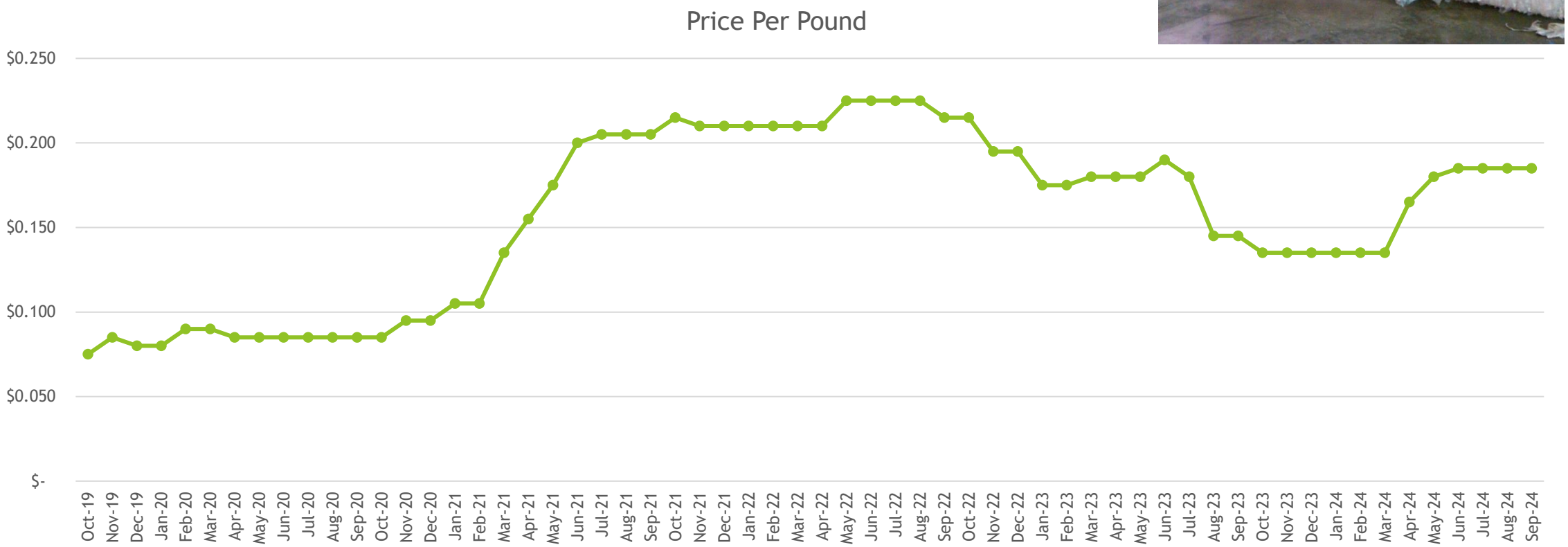
Reporting Period:
July – September, 2024

Gene Jones
Executive Director
Southern Waste Information eXchange, Inc. (SWIX)
Phone: 850-386-6280
Email: gene@swixusa.org

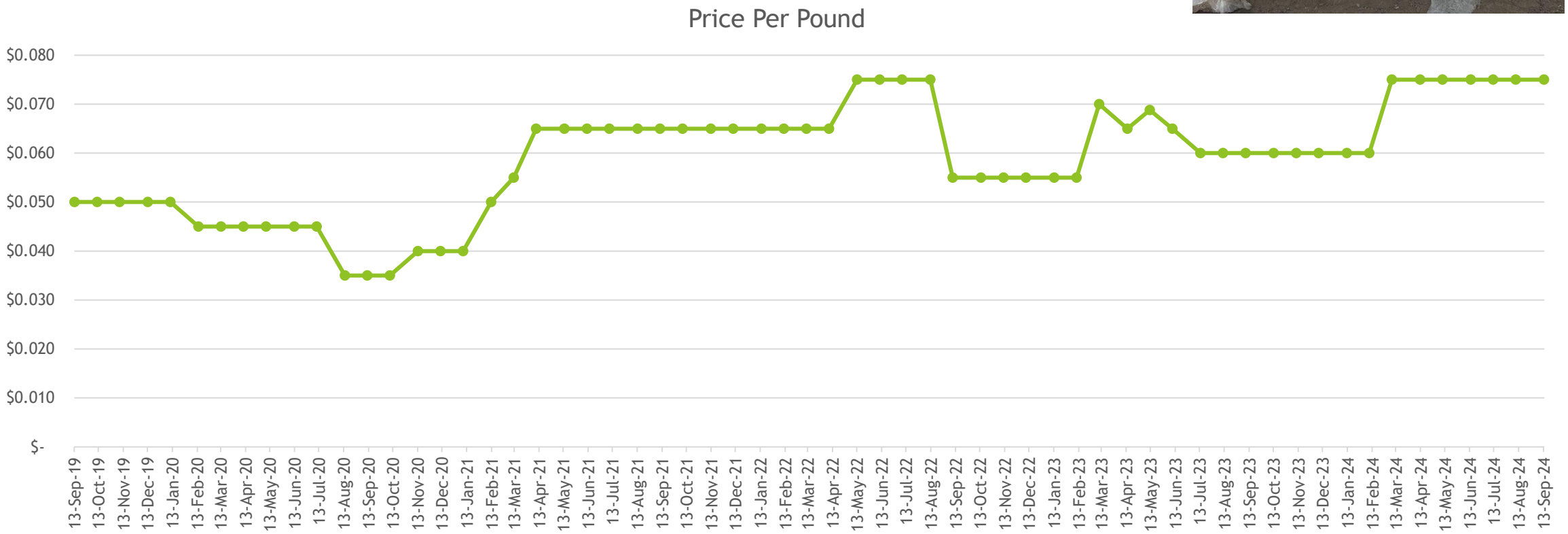
PET (Baled)
Price Per Pound

HDPE (Baled)
Price Per Pound

LDPE Film (Grade - A)
Price Per Pound

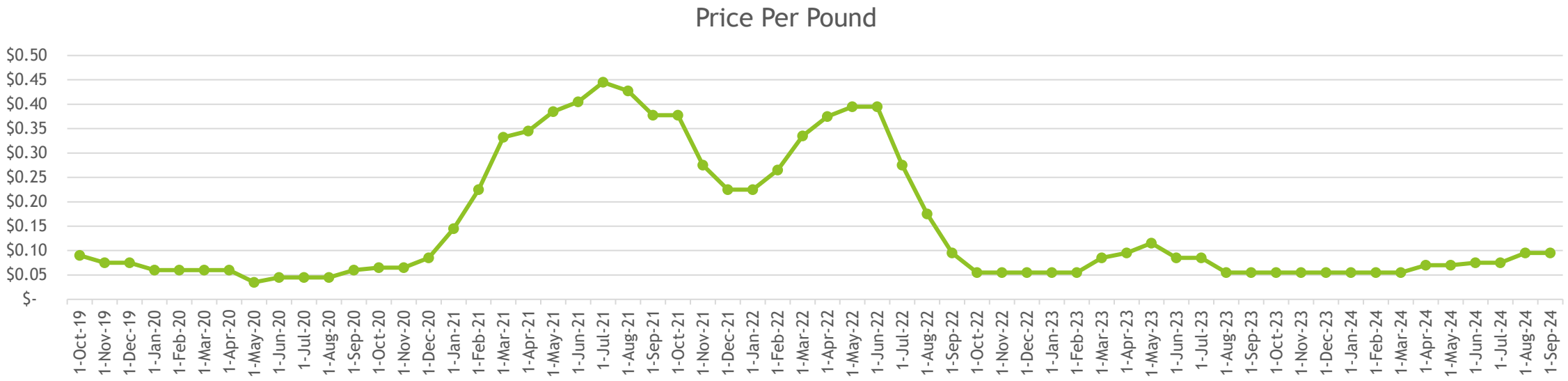


LDPE Film (Grade - B)
Price Per Pound

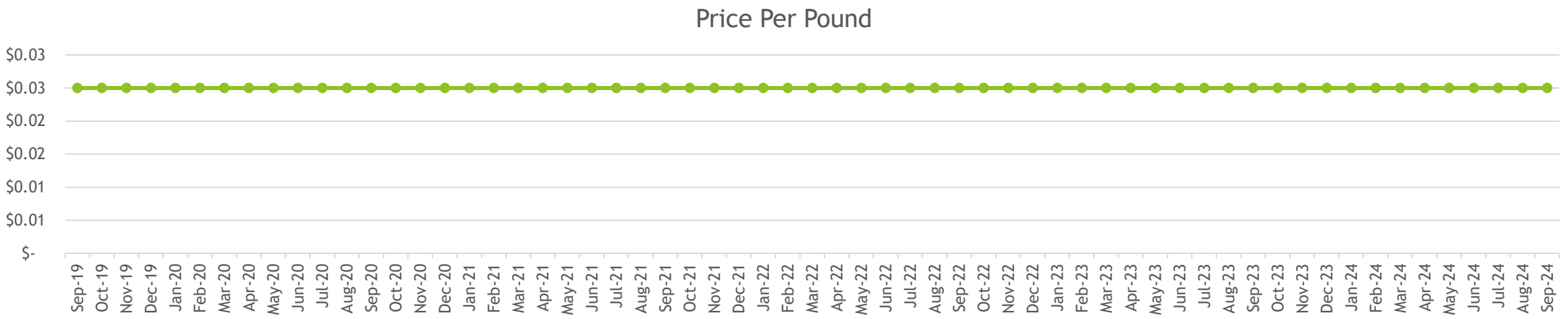


LDPE Film (Grade - C)
Price Per Pound

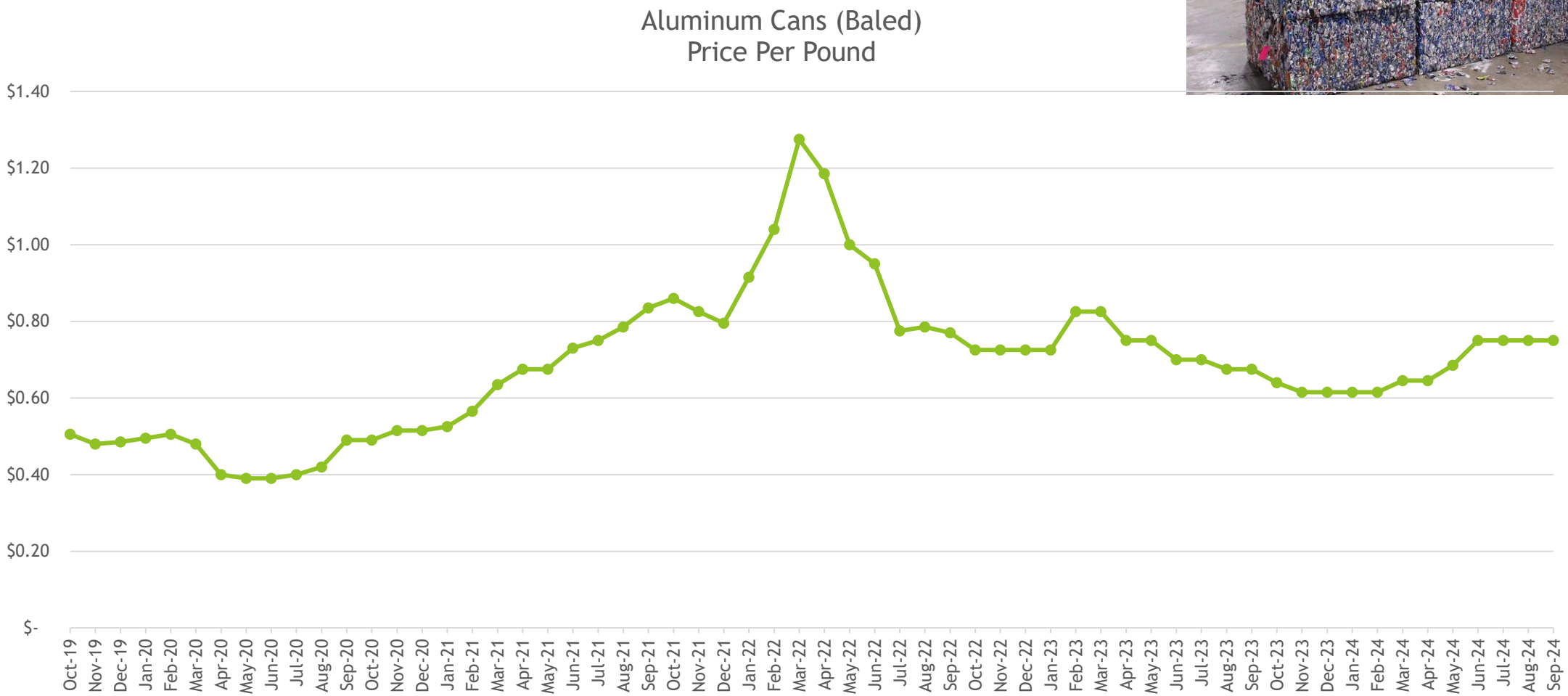
PP (Baled)
Price Per Pound



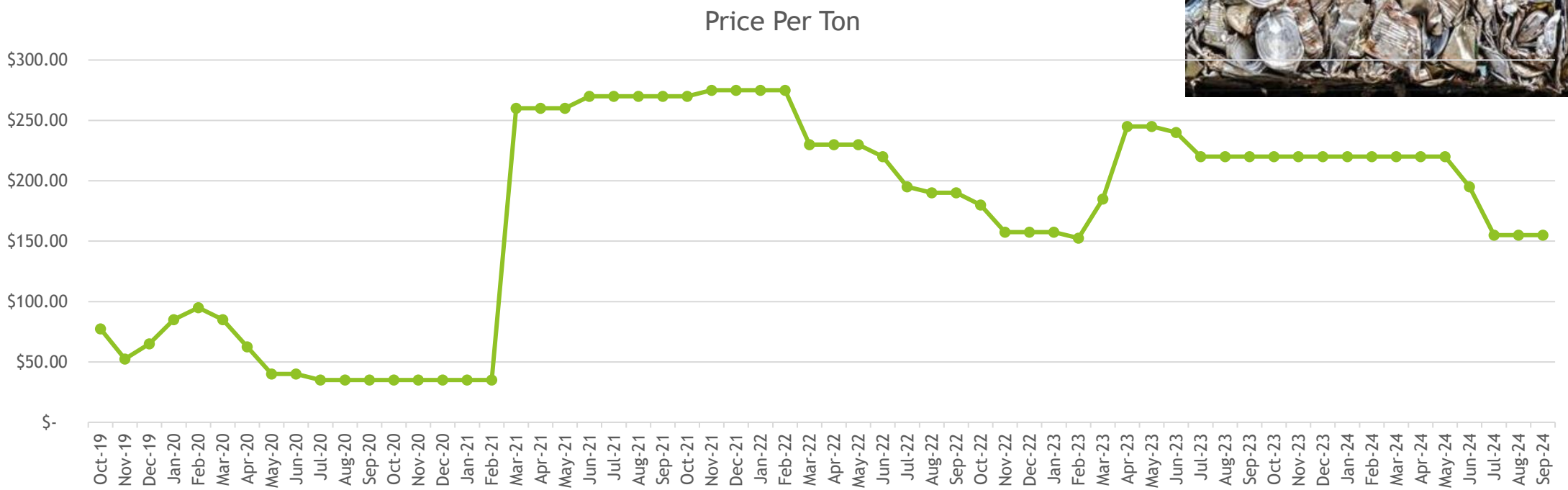
EPS (Baled)
Price Per Pound



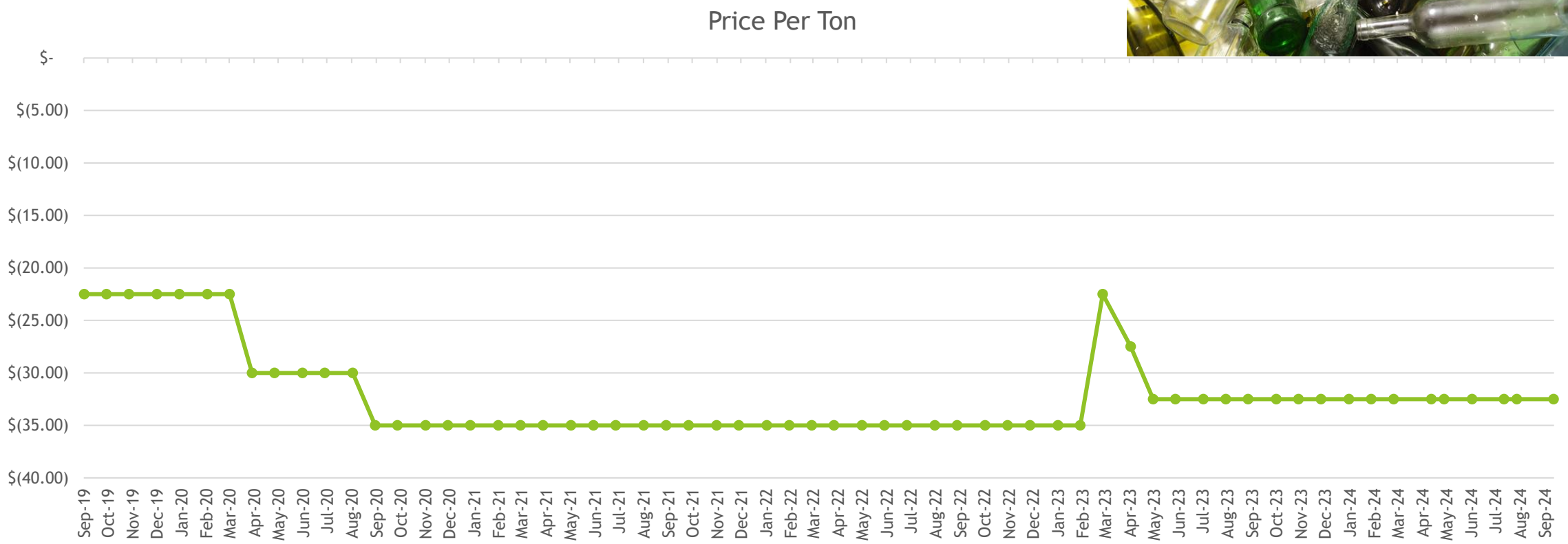
Aluminum Cans (Baled) Price Per Pound



Steel Cans (Baled)
Price Per Ton



Glass 3 Mix
Price Per Ton



OCC (Baled) Price Per Ton

Mixed Paper Price Per Ton

White Ledger (Baled) Price Per Ton

Summary Table of Market Changes from 2nd Quarter 2024 and 3rd Quarter 2024

Market Data Changes For Florida Recycling Markets:

Material	2nd Quarter 2024	3rd Quarter 2024	Percent Change
PET (Baled) - Price Per Pound	$ 0.180	$ 0.218	21%
HDPE (Baled) - Price Per Pound	$ 0.210	$ 0.100	-52%
LDPE Film (Grade A) - Price Per Pound	$ 0.185	$ 0.185	0%
LDPE Film (Grade B) - Price Per Pound	$ 0.075	$ 0.075	0%
LDPE Film (Grade C) - Price Per Pound	$ 0.010	$ 0.010	0%
PP (Baled) - Price Per Pound	$ 0.075	$ 0.100	33%
EPS (Baled) - Price Per Pound	$ 0.025	$ 0.025	0%
Aluminum Cans (Baled) - Price Per Pound	$ 0.750	$ 0.750	0%
Steel Cans (Baled) - Price Per Ton	$ 195.000	$ 155.000	-21%
Glass 3 Mix - Price Per ton	$ (32.500)	$ (32.500)	0%
OCC (Baled) - Price Per Ton	$ 115.000	$ 115.000	0%
Mixed Paper (Baled) - Price Per Ton	$ 77.500	$ 77.500	0%
White Ledger (Baled) - Price Per Ton	$ 180.000	$ 180.000	0%
Average Blended Value Per Ton	$ 124.81	$ 125.390	<1%

Blended Average Value of Baled Recyclables as of September 2024 Price Per Ton

Updated Florida Recycling Markets Average Blended Value Calculation - 3rd Calander Quarter 2024									
Selected Recyclable	Total Generation in Tons *	Percent of Generation in Calculation	Total Recycled in Tons*	Percent of Recycled in Calculation	Percent Recycled	Price per Pound**	Price per Ton**	Total Value	% of Total Value
Glass	1,122,994	17%	201,944	12%	18%		$ (32.50)	$ (6,563,180.00)	-2.98%
Aluminum Cans	218,545	3%	25,408	1%	12%	$ 0.75	$ 1,500.00	$ 38,112,000.00	17.32%
Plastic Bottles (PET)	730,302	11%	46,993	3%	6%	$ 0.22	$ 435.00	$ 20,441,955.00	9.29%
Steel Cans	505,035	8%	62,588	4%	12%		$ 155.00	$ 9,701,140.00	4.41%
OCC	3,284,760	50%	1,292,183	74%	39%		$ 115.00	$ 148,601,045.00	67.54%
Office Paper (Mixed)	772,232	12%	125,677	7%	16%		$ 77.50	$ 9,739,967.50	4.43%
Totals	**6,633,868**	**100%**	**1,754,793**	**100%**	**26%**			**$ 220,032,927.50**	**100.00%**
						Average Blended Value per Ton:		**$ 125.39**	

* Florida Department of Environmental Protection, 2022 Solid Waste Management Report

** Secondary Materials Pricing, RecyclingMarkets.net

Market Analysis Recap:

- **Recycled paper** prices did not increase. Nonetheless, their streak of rising or level prices has lasted for more than a year. Southeast prices remain above national averages.
- Even though demand for new boxes is soft, prices for old corrugated containers (OCC) and residential mixed paper (RMP) prices remain strong.
- Normally, lessened demand should drive prices down. However, 2023 saw five mills increasing their capacity to use OCC and RMP and another new facility opened early this year. This new capacity is working hard to establish supply lines. It has the advantage of lower cost, higher efficiency equipment, giving it a price advantage over older, more costly capacity. As a result, some older mills closed or took ”economic downtime”.
- Recycled paper exports are declining significantly this year. At the current pace, exports will drop by about one million tons.
- As a result, the lessened competition from higher paying export markets is taking pressure off recycled paper prices.
- Pricing remains strong largely because supply remains soft. Big box stores and other commercial OCC generators are supplying less high quality OCC due to continued weakness in consumer product unit sales. Even with a rise in e-commerce, residential supply is not filling the gap.
- Recycled paper prices normally soften as the weather turns colder. The bulk of new box orders have been filled in advance of holiday shopping. Production eases as mills start to take maintenance downtime.
- OCC price has softened a bit nationally. It should go down a bit more by the end of the year. RMP should also soften. The unusual circumstances in the paper industry caused by new capacity continue to support solid prices for both.

Market Analysis Recap:

- **Recycled plastic** prices are showing continual growth, with one major exception.
- Natural high-density polyethylene (HDPE) prices continue the rise that began in January. It has recovered from its 2023 price crash as brands begin to slowly increase their recycled content.
- PET prices normally go down in August due to high supply of used bottles versus the lower post Labor Day demand for beverages. This year prices rose in August and remained the same in September. This unusual activity appears to be caused by increase exports to Mexico and elsewhere.
- Polypropylene (PP) prices rose due to a new wash line opening at the KW facility in Alabama.
- Colored HDPE was the one exception to rising plastic markets. It has sunk to an unusual low. New housing starts in the second quarter of the year were down for the fifth straight year. Prices starting falling in May and are now down by almost two-thirds. Mortgage prices are starting to go down, but don't expect a burst in construction until spring of next year.

Market Analysis Recap:

- **Aluminum can** prices rose in late May and are still at that strong level. Normally, those prices, like PET's, go down in August due to a supply demand imbalance. Their continuing strength is similar to the strength of paper prices. U.S. capacity to make new cans out of old cans expanded last year. This new demand is chasing supply which has remained flat.
- **Steel** can prices did not change in the last three months. They are about three-quarters of their price at the beginning of the year. Steelmakers recent quarterly reports note lower sales due to declining U.S. manufacturing activity. The current price is a good price. If manufacturing continues to lag, expect further decline in recycled steel can prices.

Note: Market Analysis Recap Conducted by Chaz Miller, President, Miller Associates

Sources:

- American Forest & Paper Association
  https://www.afandpa.org/priorities/recycling
- Institute of Scrap Recycling Industries, Inc.(ISRI)
  https://www.isri.org
- 2020 State of Curbside Recycling
  The Recycling Partnership
  https://recyclingpartnership.org/stateofcurbside/
- 2022 Solid Waste Management Annual Report
  Florida Department of Environmental Protection
  https://floridadep.gov/waste/waste-reduction/content/2022-solid-waste-management-report
- Plastics News
  https://www.plasticsnews.com
- Paper Stock Report
  http://paperstockreport.com
- RecyclingMarkets.net
  https://www.recyclingmarkets.net
- Resource Recycling Magazine
  https://resource-recycling.com/recycling/magazine
- Waste360
  https://www.waste360.com
- Waste Dive:
  https://www.wastedive.com

Recycling Investment Update

2024 and Beyond

Forward Looking Statements

This document contains forward-looking statements, including all statements regarding future events, future investments and all outcomes or benefits of such investments. Such statements are based on the facts and circumstances as of the date the statements are made and are subject to risks and uncertainties that could cause actual results to be materially different. Please see Part I, Item 1A of the Annual Report on Form 10-K, and subsequent Forms 10-Q, available at investors.wm.com for information regarding such risks and uncertainties. WM assumes no obligation to update any forward-looking statement.

WM is the Largest Recycler in North America

15.2M tons of material recovered in 2023

Providing Critical Solutions for Key End-Market Users

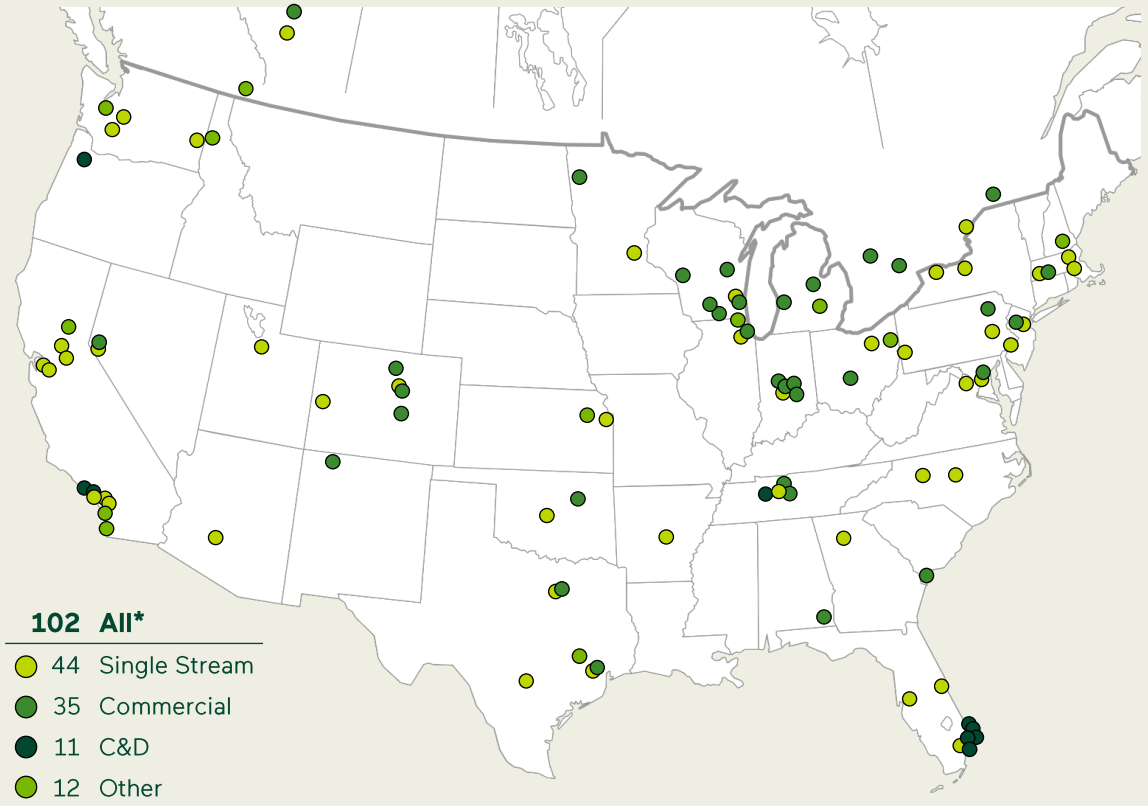
Recycling Facilities
~5M

Brokerage
~4M

Managed via third-party processors
~1M

Other[1]
~5M

Our Recycling Facilities Process 5M Tons[2]



[1] Other includes fly ash, construction & demolition wood, e-waste and other specialty materials.
[2] All data based on tons in 2023.
* Not included in map is facility in Netherlands

Strong and Growing End-Market Demand

Increasing Commitments from Manufacturers... → ...Resulting in Heightened Demand for Recyclables... → ...and Potentially Favorable Legislative and Regulatory Tailwinds

CPG and Packaging Companies Setting Goals Around:

- Recycled Content
- Material Recyclability
- Recycling Rates
- Material Reduction

Packaging, Consumer Product, and Retail Companies Expected to Drive Significant Demand Growth through 2030[1]

4-5x

expected increase in demand for plastics materials alone[1]

Minimum Content Legislation

- **Passed** in 5 states (CA, CT, ME, NJ, WA); potential for "halo effect" as producers align across footprint

Extended Producer Responsibility (EPR) Laws

- **Passed** in 5 states (CA, CO, ME, MN, OR) and 9 Canadian provinces (AB, BC, MB, NB, NS, ON, QC, SK, YT)

1. Source: EPA, IHS, McKinsey circular model and base year 2019.

Unlocking Volume in New Markets Through 2026

Expanding to Communities that Lack and Need Access

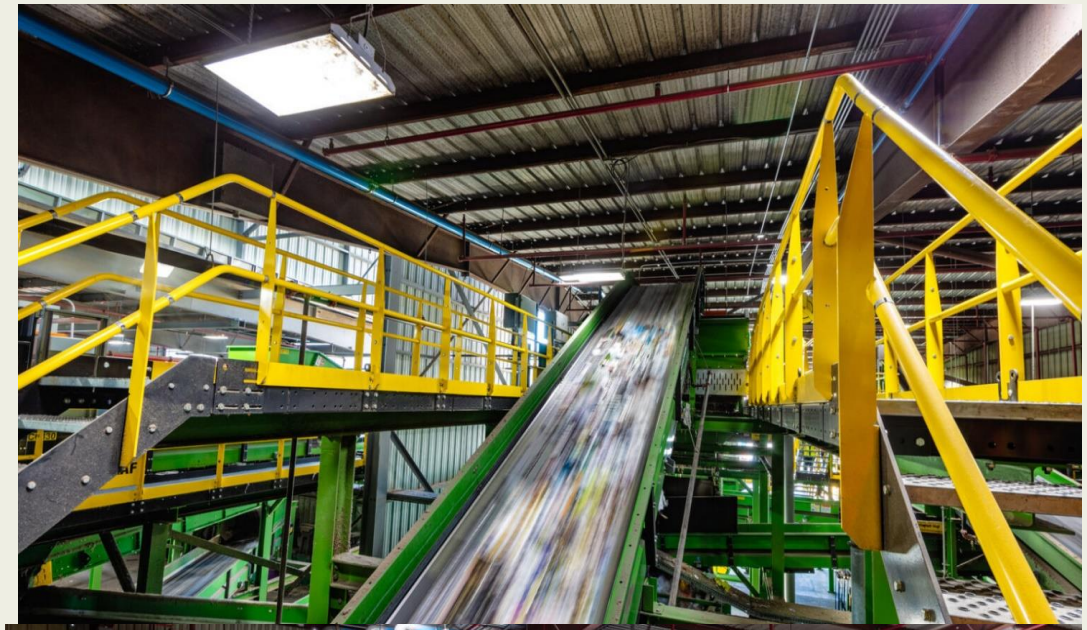
Plans to enter 12 new markets
- Focusing on high-growth population areas
- Leveraging existing facilities[1] where possible to create hub-and-spoke model

Targeting 2 additional markets[2]
- Planning to continue strategic expansion

Expected additional annual capacity totaling ~2.0M[3] tons with new markets
- Internalizing existing volumes
- Expanding service offerings

1. Including transfer stations and other non-recycling WM facilities
2. These markets not reflected on map
3. Total capacity encompasses 12 new markets and 2 additional markets

State-of-the-Art Recycling Facility Overview



State-of-the-Art Recycling Facilities Expected to Accomplish the Following:

- → **Increase** capacity/throughput
- → **Reduce** labor costs
- → **Improve** commodity recovery and material quality
- → **Maximize** material values

Increasing Commodity Capture to Help Boost Revenue

Generating higher quality material from inbound feedstock

- **Fiber**: separating higher-value paper products
- **Plastics**: further separating resin types by grade/color
- **Glass**: producing higher quality 3-mix product for end-markets
- **Residue:** reducing recyclable content within residue

Recently Upgraded Recycling Facilities

Pittsburgh Recycling Facility
In May 2024, WM announced that it completed nearly $23 million in automation upgrades at its Pittsburgh Recycling Facility. The upgraded facility is expected to be able to process up to 25 tons of material per hour.

Germantown Recycling Facility
In April 2024, WM announced the completion of nearly $39 million in automation upgrades to its Germantown Recycling Facility. The updated facility is expected to process up to 70 tons of material per hour.

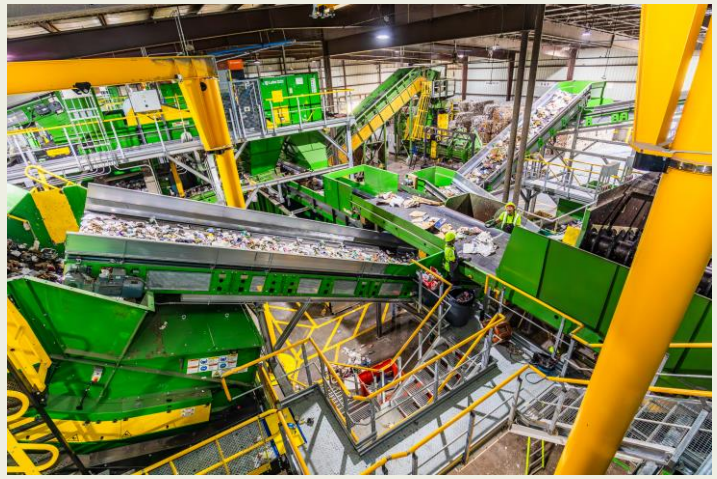
Cascade Recycling Facility
WM has invested over $40 million in the Cascade Recycling Center, which is WM's second actively operating automated recycling facility in the state.

Cleveland Recycling Facility
WM has invested approximately $30 million to help drive circularity in the State of Ohio, by investing in a state-of-the-art single stream recycling facility in Cleveland.

WM is Committed to Investing in Florida

Florida-Specific Investment 2022 – 2025 and beyond

Over $207M in capital investment……and counting!



2022

- WM Recycling Deerfield East C&D (New Construction) $20M
- WM Recycling Oaks Rd (Davie) C&D equipment upgrades $10M
- WM Existing facility upgrades $5.7M

2023

- WM Recycling Miami C&D (new system in existing asset) $15M
- WM Existing facility upgrades $5.2M

2024

- WM Recycling Fort Walton Beach (New Construction) $30M
- WM Recycling Brevard (equipment upgrades $18M
- WM Existing facility upgrades $3.0M

2025

- WM Recycling South Florida (New Construction) $80M
- WM Recycling Orlando C&D (New Construction) $19M
- WM Existing facility upgrades $1.5M

2026 - 2028

- **WM is actively examining additional recycling growth infrastructure opportunities in Florida**

WM is Proud to Announce Plans for the Construction and Operation of a State-of- the-Art Single Stream Recycling Processing Center in Pembroke Pines Florida

- WM's Reuter Recycling Materials Recovery Facility (MRF) is already the largest volume single-stream Materials Recovery Facility in the southeastern United States.
- This new facility will be built to process up to 60 tons per hour and extract 75% more recycling materials from the process residue, ensuring the long-term viability of sustainable recycling programs throughout South Florida.

WM Recycling South Florida

WM Recycling South Florida

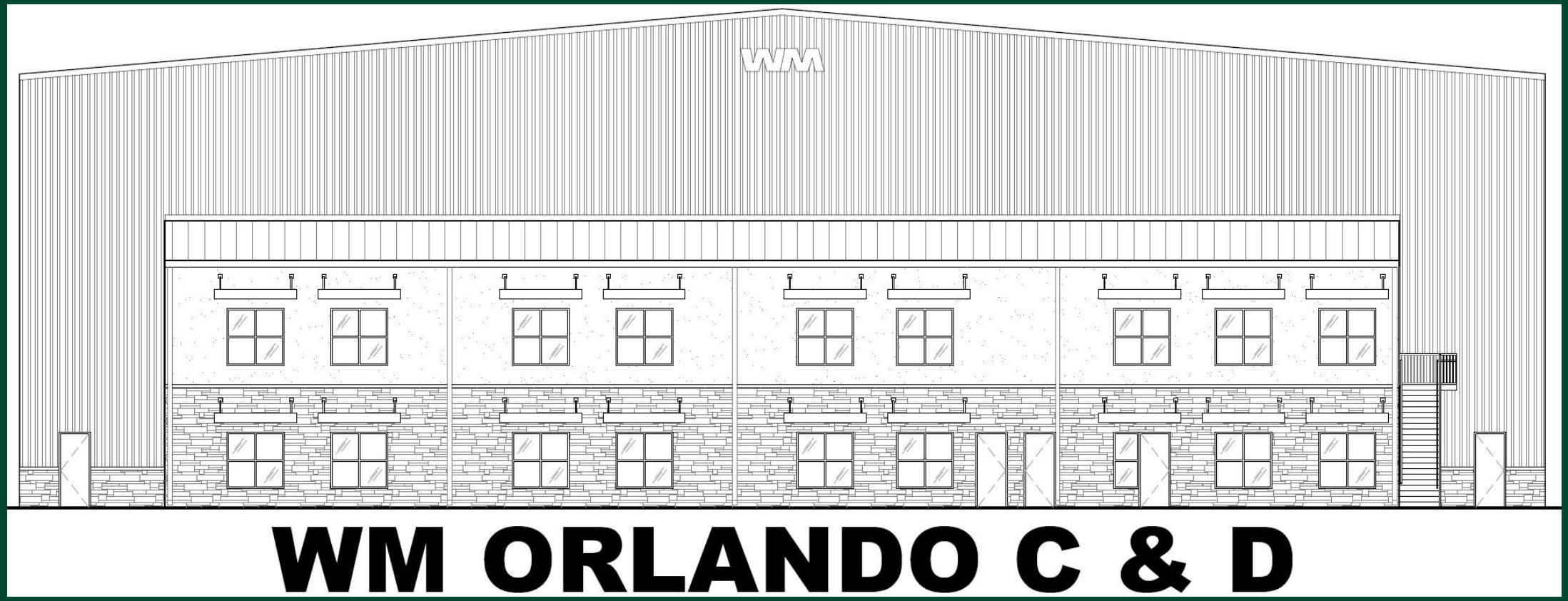
WM Recycling Fort Walton Beach

WM Recycling Brevard

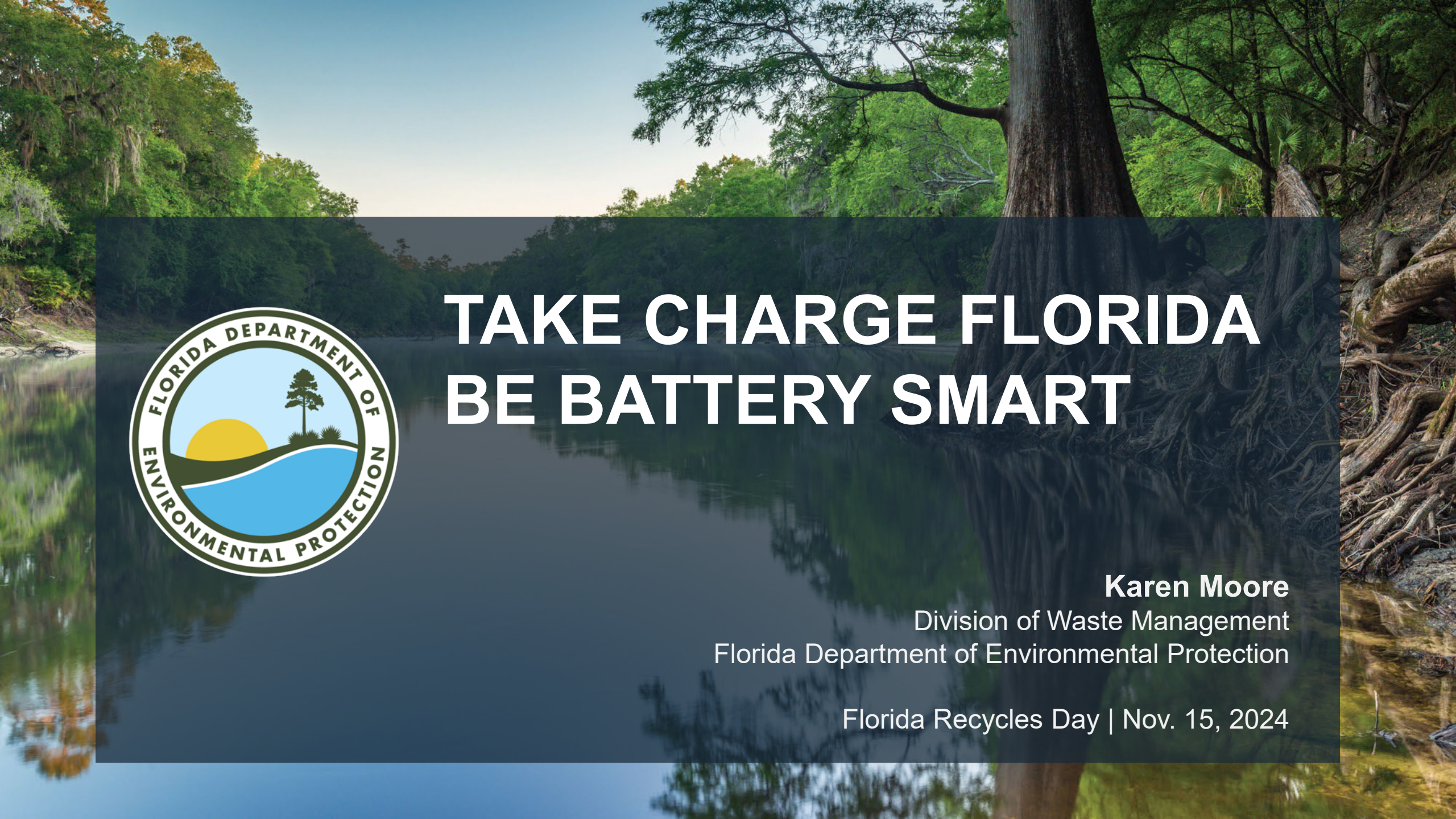
WM Recycling Deerfield C&D

WM Recycling Miami C&D

WM Recycling Orlando C&D



Questions?



TAKE CHARGE FLORIDA
BE BATTERY SMART

Karen Moore
Division of Waste Management
Florida Department of Environmental Protection

Florida Recycles Day | Nov. 15, 2024

DIFFICULT TO MANAGE WASTE STREAMS

LITHIUM-ION BATTERIES

- Considered to be Ignitable (D001) and Reactive (D003).

- Mismanagement and damage to batteries make fires more likely.

- U.S. Environmental Protection Agency's (EPA) May 24, 2023, guidance:
  - https://www.epa.gov/recycle/used-lithium-ion-batteries
  - Lithium-ion batteries are likely hazardous waste at end of life.
  - Can be managed under Resource Conservation and Recovery Act's (RCRA) streamlined Universal Waste Rules until they reach a destination facility.
  - Not universal waste if damage breaches individual cell casing.
  - Electronic Vehicle (EV) batteries are not household hazardous waste if removed at a business such as a dealership, scrap yard or auto repair facility.

- Can be recycled to conserve resources, and recycling opportunities expected to grow significantly over the next several years.

TAKE CHARGE FLORIDA

BE BATTERY SMART

TAKE CHARGE FL

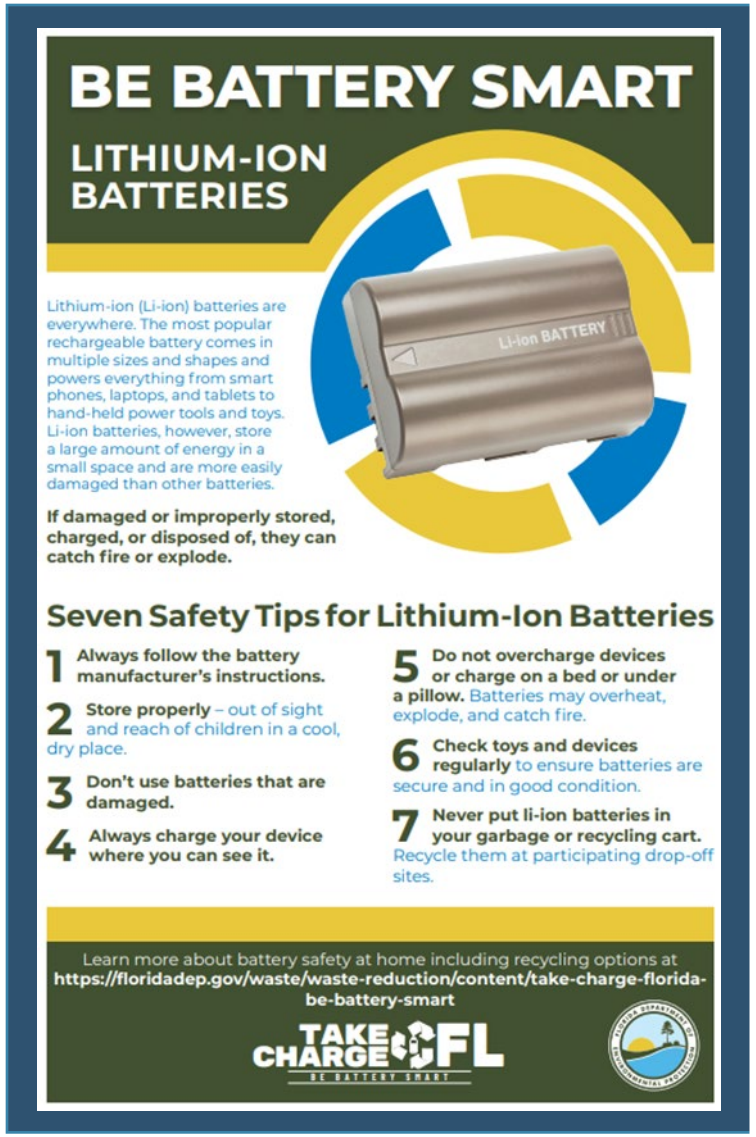
BE BATTERY SMART

LI BATTERY EDUCATION OPPORTUNITY

- URL link for listing of takeback locations.
- Guidebook for safe handling and storage.
- Safety tips to keep children safe.
- Easy to use battery identification chart.
- PDFs available for download and customization.

https://floridadep.gov/waste/waste-reduction/content/take-charge-florida

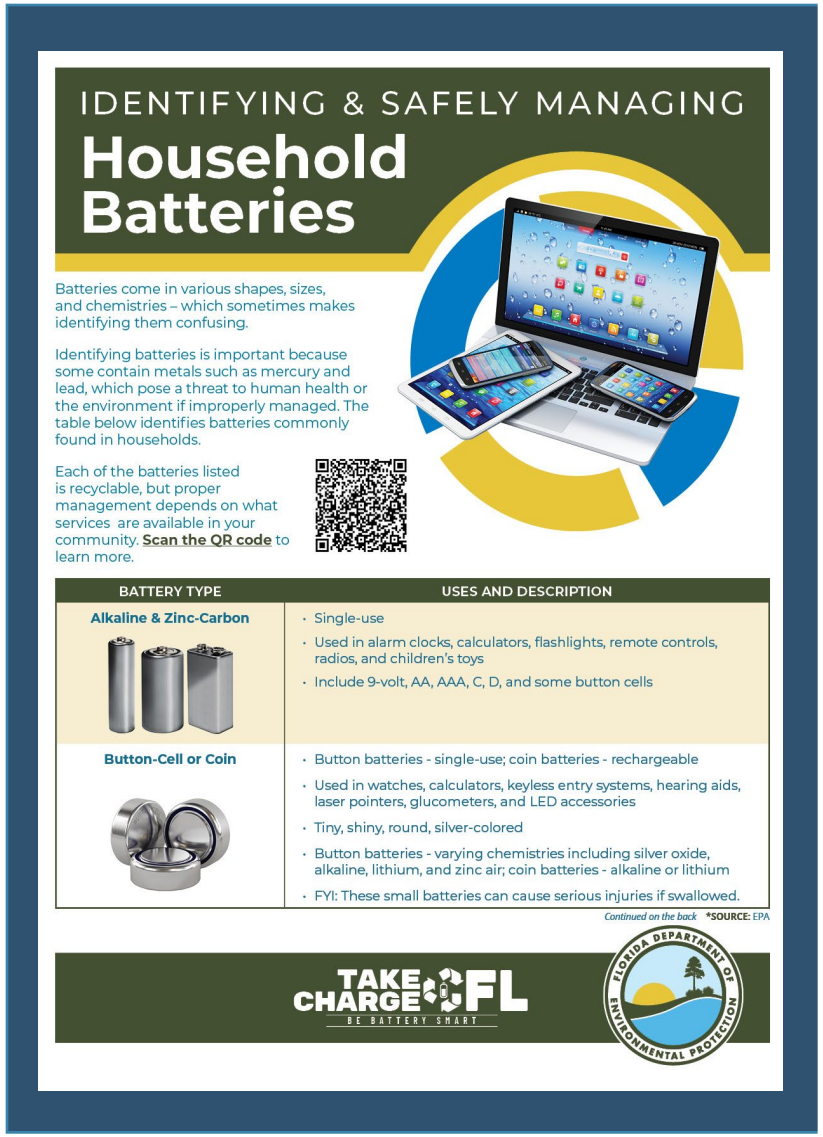
LITHIUM-ION BATTERY SAFETY



TAKE CHARGE FL
BE BATTERY SMART

- County or city can customize.
- Follows EPA best management practices.
- Offers recycling location finder.

BATTERY IDENTIFICATION



IDENTIFYING & SAFELY MANAGING

Household Batteries

Batteries come in various shapes, sizes, and chemistries – which sometimes makes identifying them confusing.

Identifying batteries is important because some contain metals such as mercury and lead, which pose a threat to human health or the environment if improperly managed. The table below identifies batteries commonly found in households.

Each of the batteries listed is recyclable, but proper management depends on what services are available in your community. **Scan the QR code** to learn more.

BATTERY TYPE	USES AND DESCRIPTION
Alkaline & Zinc-Carbon	· Single-use · Used in alarm clocks, calculators, flashlights, remote controls, radios, and children's toys · Include 9-volt, AA, AAA, C, D, and some button cells
Button-Cell or Coin	· Button batteries - single-use; coin batteries - rechargeable · Used in watches, calculators, keyless entry systems, hearing aids, laser pointers, glucometers, and LED accessories · Tiny, shiny, round, silver-colored · Button batteries - varying chemistries including silver oxide, alkaline, lithium, and zinc air; coin batteries - alkaline or lithium · FYI: These small batteries can cause serious injuries if swallowed.

Continued on the back *SOURCE: EPA

TAKE CHARGE FL
BE BATTERY SMART

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

TAKE CHARGE FL
BE BATTERY SMART

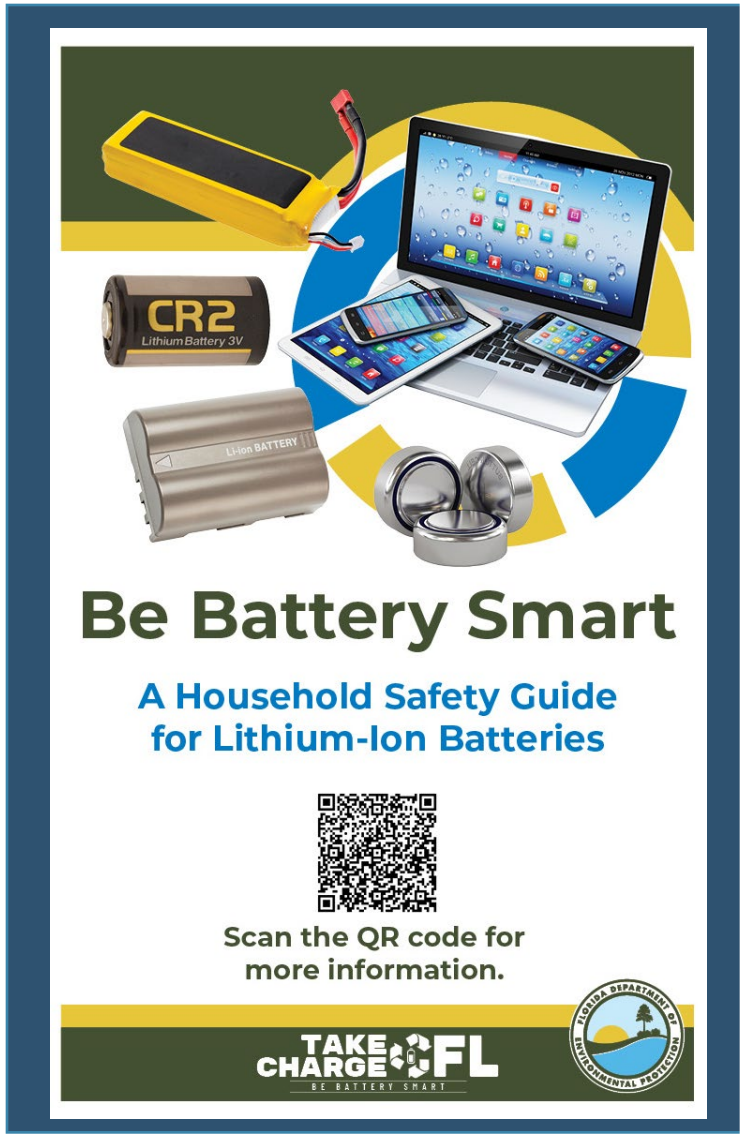
- Different types and uses.
- Recycling options.
- Safety concerns for children.

EVERYDAY BATTERY SAFETY

TAKE CHARGE FL
BE BATTERY SMART

- Product identification.
- Storage tips.
- Proper recycling.

BATTERY SMART GUIDEBOOK



TAKE CHARGE FL
BE BATTERY SMART

- Household safety.
- Proper installation.
- End-of-life management.

COIN AND SMALL BATTERY POSTERS

TAKE CHARGE FL
BE BATTERY SMART

- Safety tips including swallowing risks.

BATTERY RECYCLING

https://floridadep.gov/waste/waste-reduction/content/take-charge-florida

TAKE CHARGE FL
BE BATTERY SMART

Where to Properly Recycle Batteries

Many Florida counties have household hazardous material collection programs and/or single-day collection events that accept certain types of batteries – both single-use and rechargeable. To determine if your community has access to a program or event, reference our HHW Coordinator Listing.

Rechargeable batteries can be properly recycled at major retailers (e.g., Lowe's, Best Buy, The Home Depot) that participate in the Call2Recycle program. The program is free to residents and accepts Lithium Ion (Li-ion), Nickel Cadmium (Ni-Cd), Nickel-Metal Hydride (Ni-MH), and Nickle Zinc (Ni-ZN) as well as small lead-acid batteries. To find a recycling location near you visit Call2Recycle.

Single-use batteries weighing up to 11 pounds including AA, AAA, 9V, C, D, button cells and small lead-acid batteries can be recycled through the Call2Recycle program at limited locations of participating retailers.

Rechargeable batteries can be properly recycled at Batteries Plus retail locations. To find a recycling location, visit Batteries Plus.

THANK YOU

Karen Moore
Permitting and Compliance Assistance Program
Division of Waste Management
Florida Department of Environmental Protection

Contact Information:
850-245-8864
Karen.S.Moore@FloridaDEP.gov

For more information on recycling in Florida, visit:
FloridaDEP.gov/waste/waste-reduction/content/recycling.

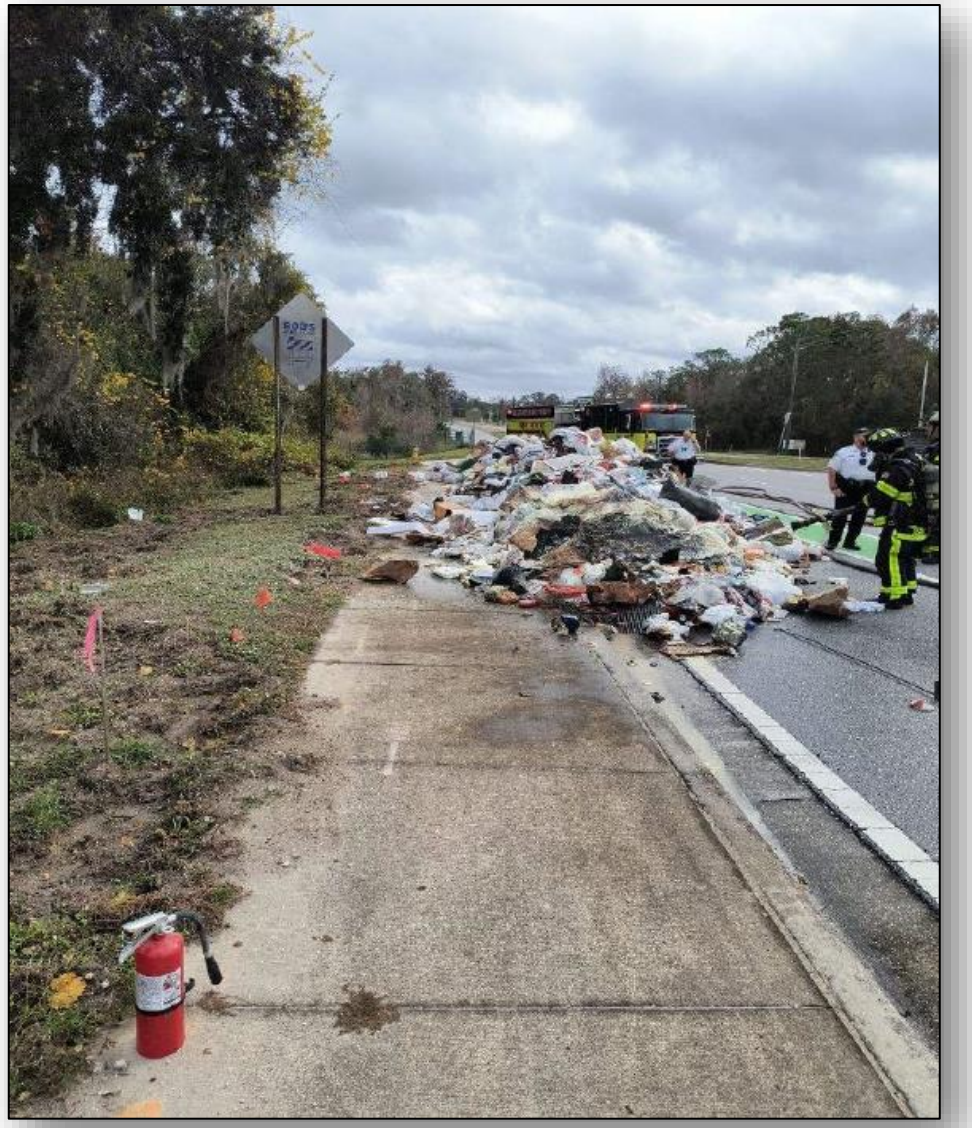
BATTERIES:
Local Management Perspective

Hillsborough County Florida

Hot Load Jan. 2024

RESIDENTIAL HOT LOAD

Lithium Ion Battery / Circuitboard



HCFL.gov/Batteries

HOT LOAD TRACKER

Root Cause

- Majority unknown with so many potential causes
- 4 out of 20 were known batteries
- Began tracking FY2023

Commercial or Residential

- Residential is primary source
- 16 / 20 residential hot loads

20 Hot Loads Since FY23

HOT LOAD TRACKER

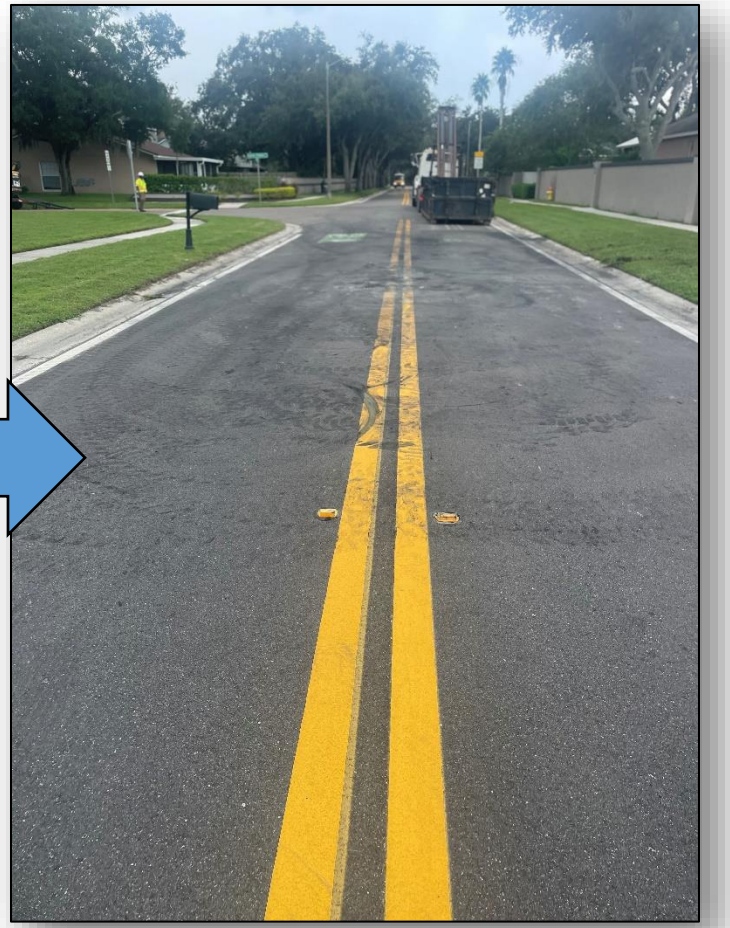
Date of incident	Commodity	Commercial or Residential	Fire Department Contacted	3rd Party Clean-Up Required	Disposal Facility	Root Cause
1/9/2024	Garbage	Residential	Yes	Yes	LANDFILL	Battery with a circuit board
2/6/2024	Recycle	Residential	Yes	Yes	LANDFILL	N/A
2/13/2024	Garbage	Residential	Yes	Yes	LANDFILL	Battery Jumper
6/4/2024	Recycle	Residential	Yes	Yes	LANDFILL	N/A
6/12/2024	Recycle	Residential	Yes	Yes	LANDFILL	N/A
7/3/2024	Garbage	Commercial	Yes	Yes	LANDFILL	N/A
9/18/2024	Recycle	Residential	Yes	Yes	LANDFILL	Battery
7/30/2024	Transfer Truck	All Waste	Yes	No	NWTS	Unknown
10/1/2024	Garbage	Residential	Yes	Yes	LANDFILL	N/A
10/25/2024	Garbage	Residential	Yes	Yes	LANDFILL	Mircowave

Date of incident	Commodity	Commercial or Residential	Fire Department Contacted	3rd Party Clean-Up Required	Disposal Facility	Root Cause
12/17/2022	Garbage	Residential	Yes	Yes	Landfill	Unknown/Possible lithium battery
2/21/2023	Recycle	Residential	Yes	Yes	Landfill	Pendng
2/25/2023	Garbage	Residential	Yes	Yes	Northwest	Unknown
3/17/2023	Recycle	Residential	Yes	Yes	Northwest	Unknown/Hot coals
4/24/2023	Recycle	Residential	Yes	Yes	Landfill	Unknown
4/24/2023	Recycle	Residential	Yes	Yes	Landfill	Unknown
4/24/2023	Garbage	Residential	Yes	Yes	Landfill	Aerosol container
7/12/2023	Garbage	Commercial	Yes	Yes	Pending	Improper Chemical disposal (30 bottles of muriatic acid + 5-gallon buckets of oxidizer)
7/14/2023	Garbage	Commercial	Yes	Yes	Enviro Solutions, Mulberry FL	Improper Chemical disposal (1 gal of muriatic acid, 5-gal buckets of oxidizer and chlorine tablets)
9/9/2023	Garbage	Commercial	No	Yes	SE Landfill	Unknown

RECYCLING TRUCK HOT LOAD

Potential Culprits: gas/chemical can and a vape unit

WM dispatched a cleaning crew to pressure wash the affected roadway to ensure the area is thoroughly cleaned and safe



The second roll-off box is being transported to offload the remaining burn debris at the Southeast Landfill

EDUCATION RESIDENTS

How to Dispose of Batteries

Where?

- Five (5) Locations | All Community Collection Centers
- HCFL.gov/Batteries

When?

- Six (6) Days per Week
- Monday through Saturday
- 7:30 AM to 5 PM

How?

- Hillsborough County Resident
- Show Photo ID
- No charge

Page 10 Hillsborough County [Recycling Guide]

REGIONAL EDUCATION CAMPAIGN

Launched Earth Day 2024 across Tampa Bay

Uniform message and imagery

Feedback for posters came from public and private sectors and from surveying the public

REGIONAL EDUCATION CAMPAIGN

youtube.com/watch?v=CoE8Jv8f1QE

QUESTIONS?

Travis Barnes, MPA, LEED AP

Division Director Sustainability & Disposal Operations

(p) (813) 209-3085

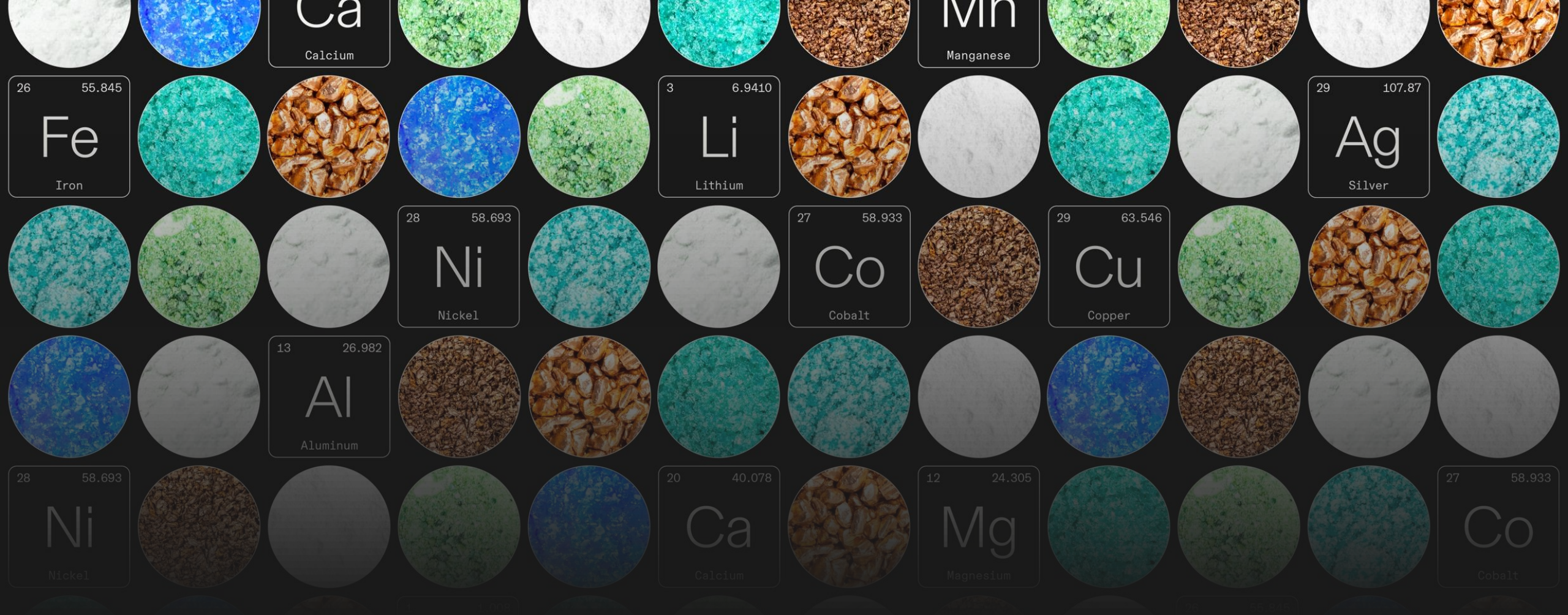
(e) BarnesT@HCFL.gov

Hillsborough County Solid Waste Management
HCFLGov.net/recycling
813-272-5680

City of Tampa Department of Solid Waste & Environmental Program Management
tampagov.net/solid-waste
813-274-8811

City of Temple Terrace Public Works Department
templeterrace.com/182/Public-Works
813-506-6570

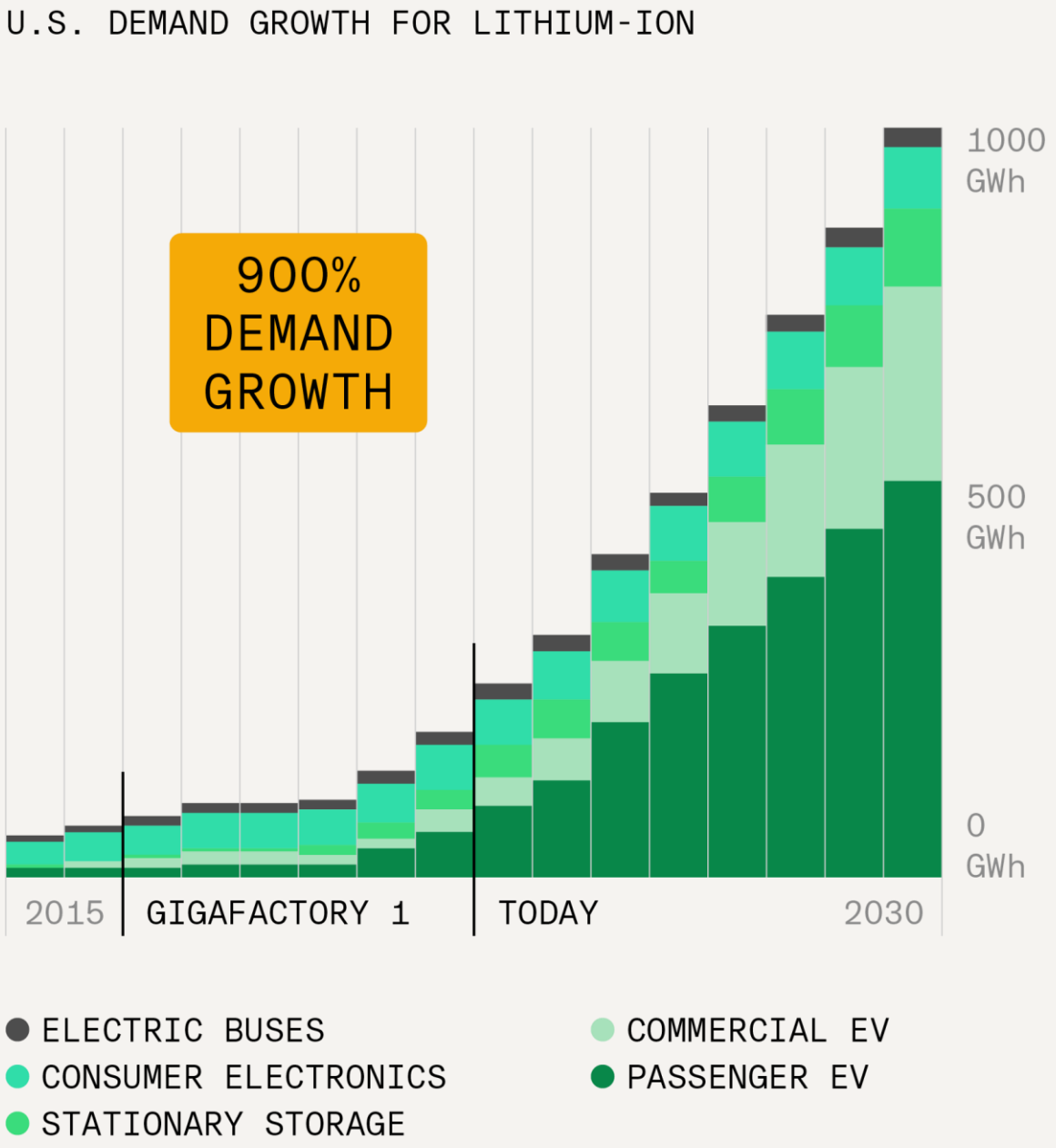
Plant City Solid Waste Department
plantcitygov.com/solid-waste
813-757-9208



REDWOOD MATERIALS

Florida Recycles Day

Increase supply of battery materials



Redwood’s focus

Increase the supply of battery materials

01

Reduce the cost of batteries

02

Reduce the environmental impact of batteries

03

Battery materials make up significant % of vehicle cost

~15% OF VEHICLE COST

40%
of vehicle cost

BATTERY PACK

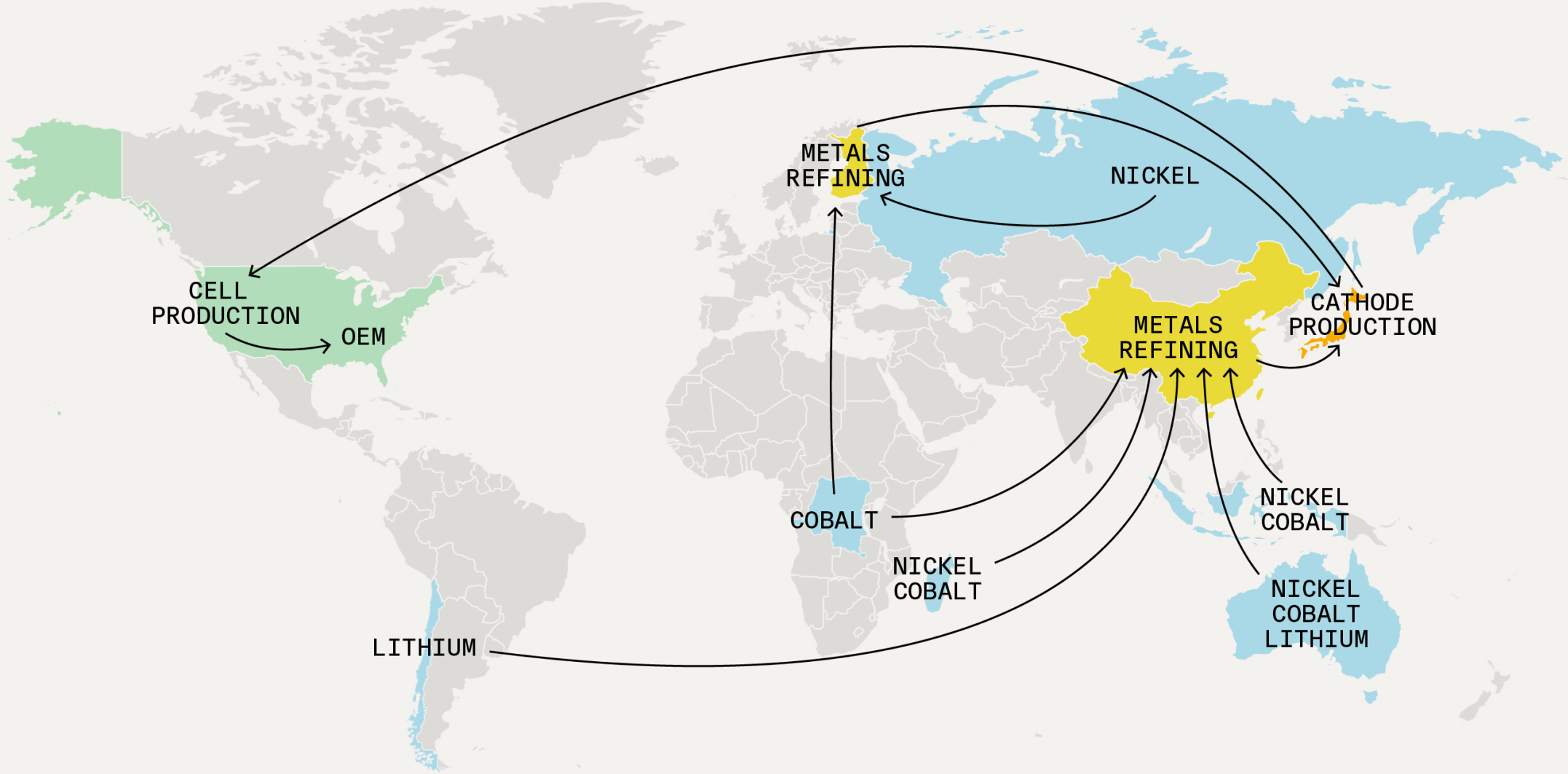
50%
of battery pack cost

BATTERY CELL

60–80% of cell cost

BATTERY MATERIALS (CATHODE + ANODE)

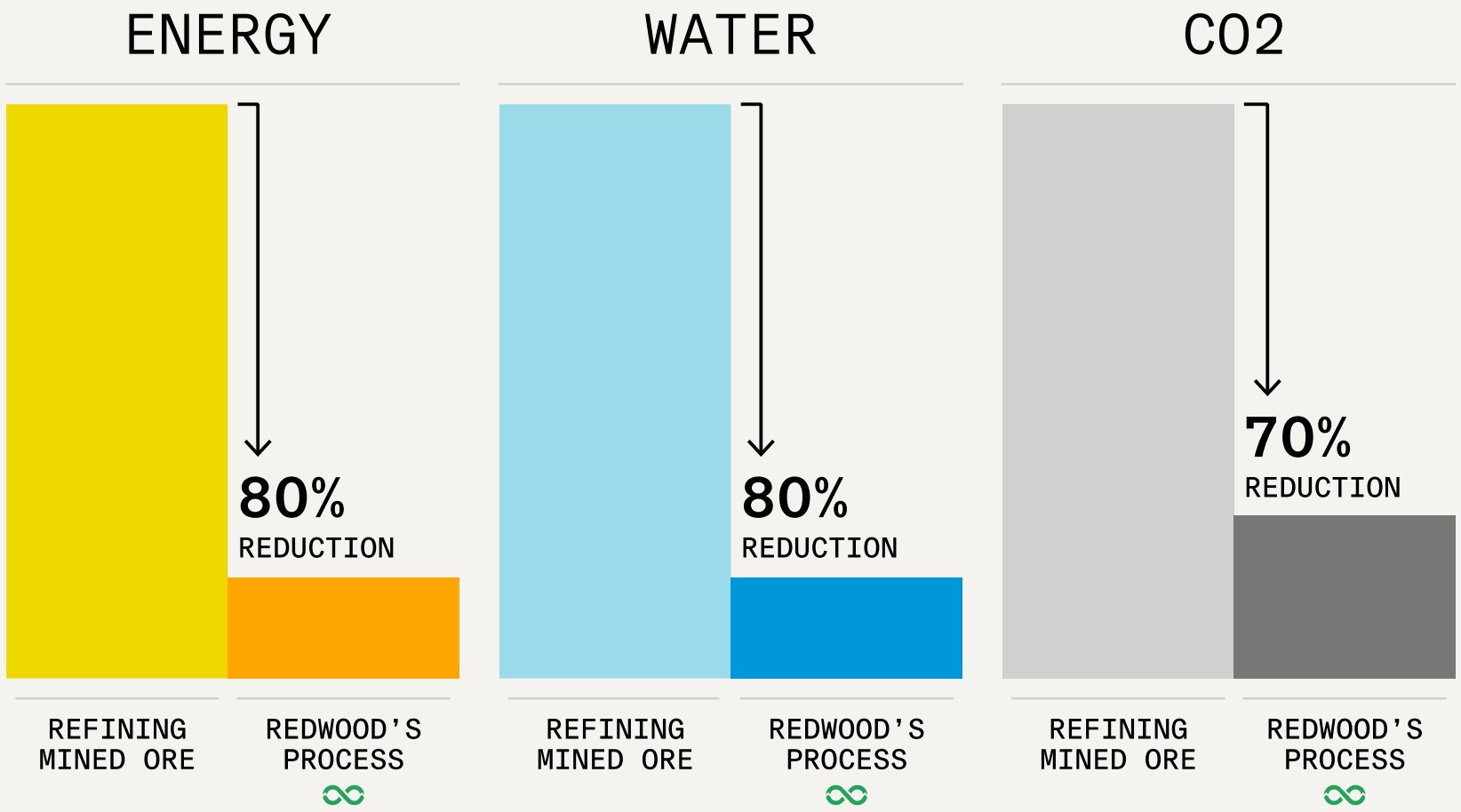
The current 50,000+ mile cathode supply chain



Reduce the environmental impact of batteries

RESOURCE CONSUMPTION AND EMISSIONS

REFINING MINED ORE VS.
RECYCLING AND REFINING BATTERIES



Source: Stanford University Precourt Institute of Energy

What we do

REDWOOD MATERIALS

Collection & logistics

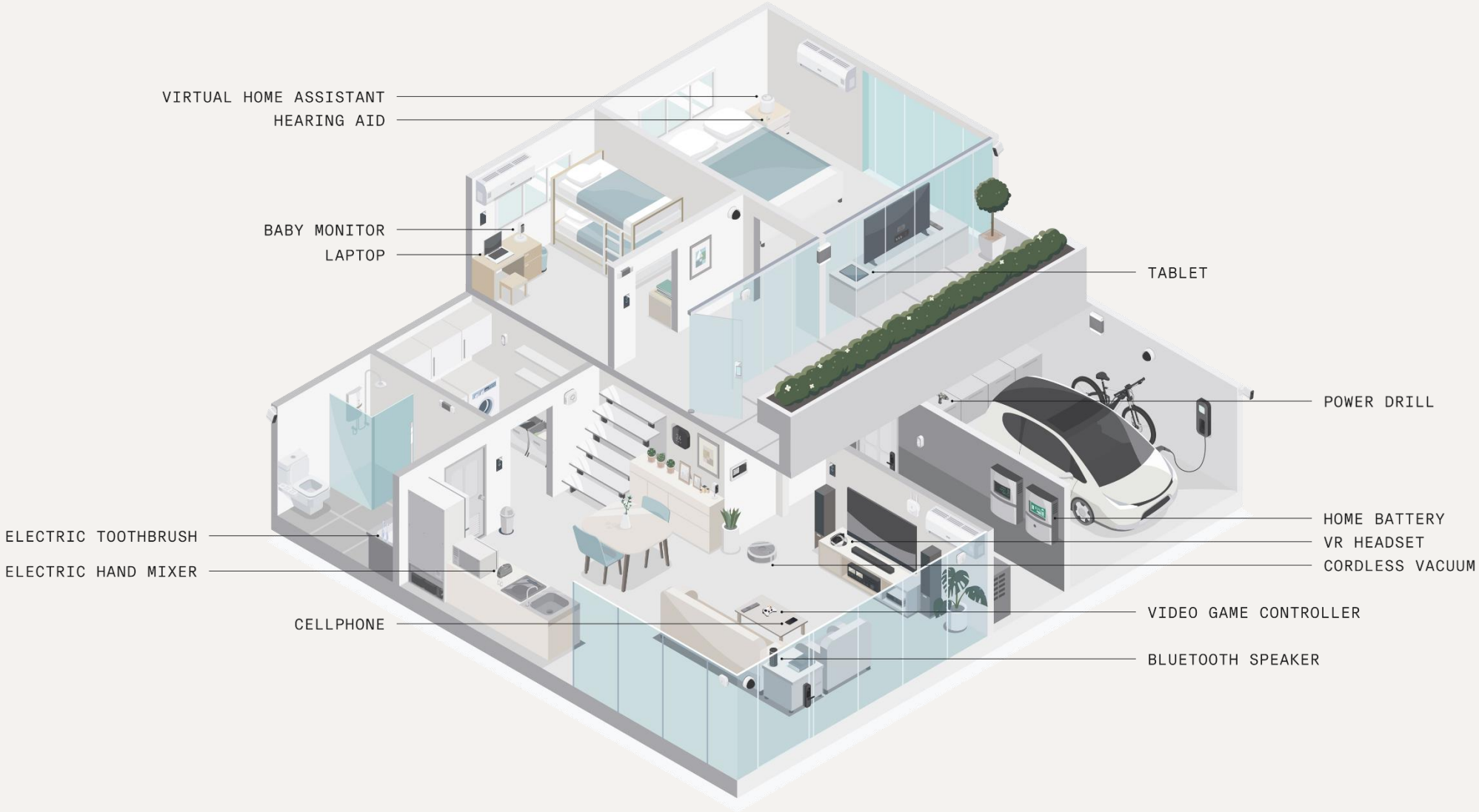
Recycling

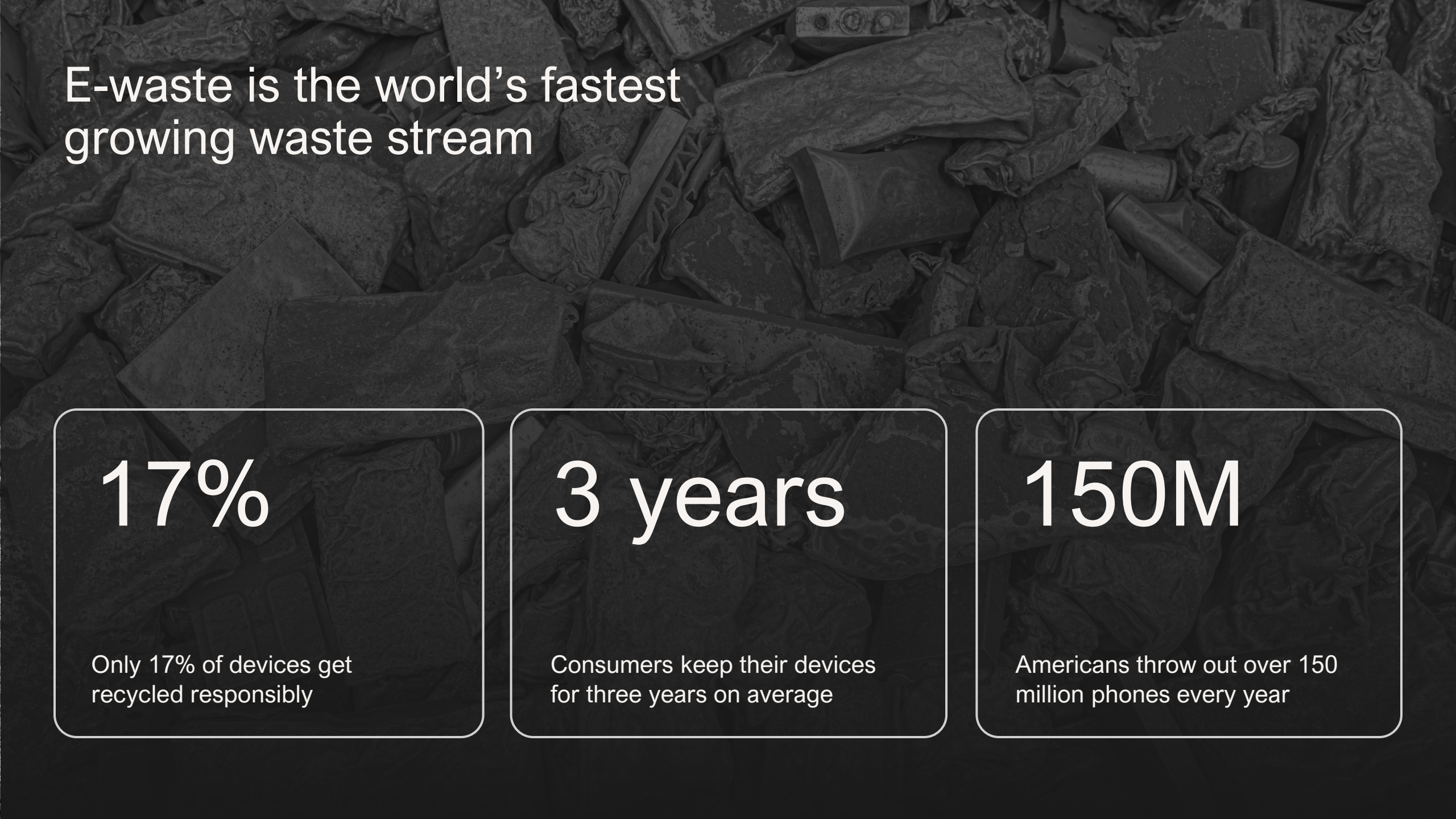
Refining

Manufacturing battery materials

878 GWh of cell manufacturing plants in North America by 2030

Lithium-ion in the home





E-waste is the world’s fastest growing waste stream

17%

Only 17% of devices get recycled responsibly

3 years

Consumers keep their devices for three years on average

150M

Americans throw out over 150 million phones every year

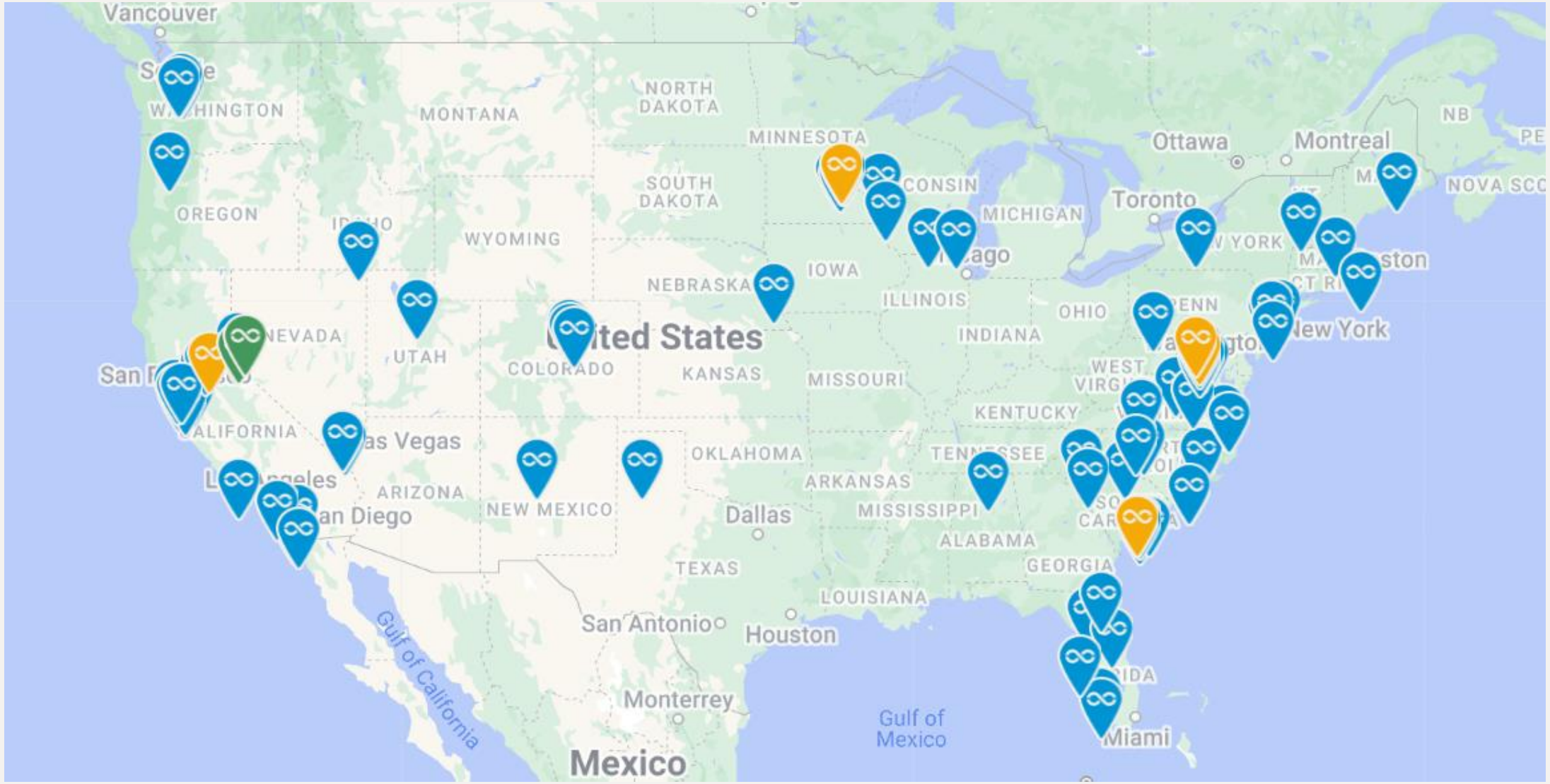
Redwood’s consumer recycling program

NATIONWIDE DROP-OFF LOCATIONS

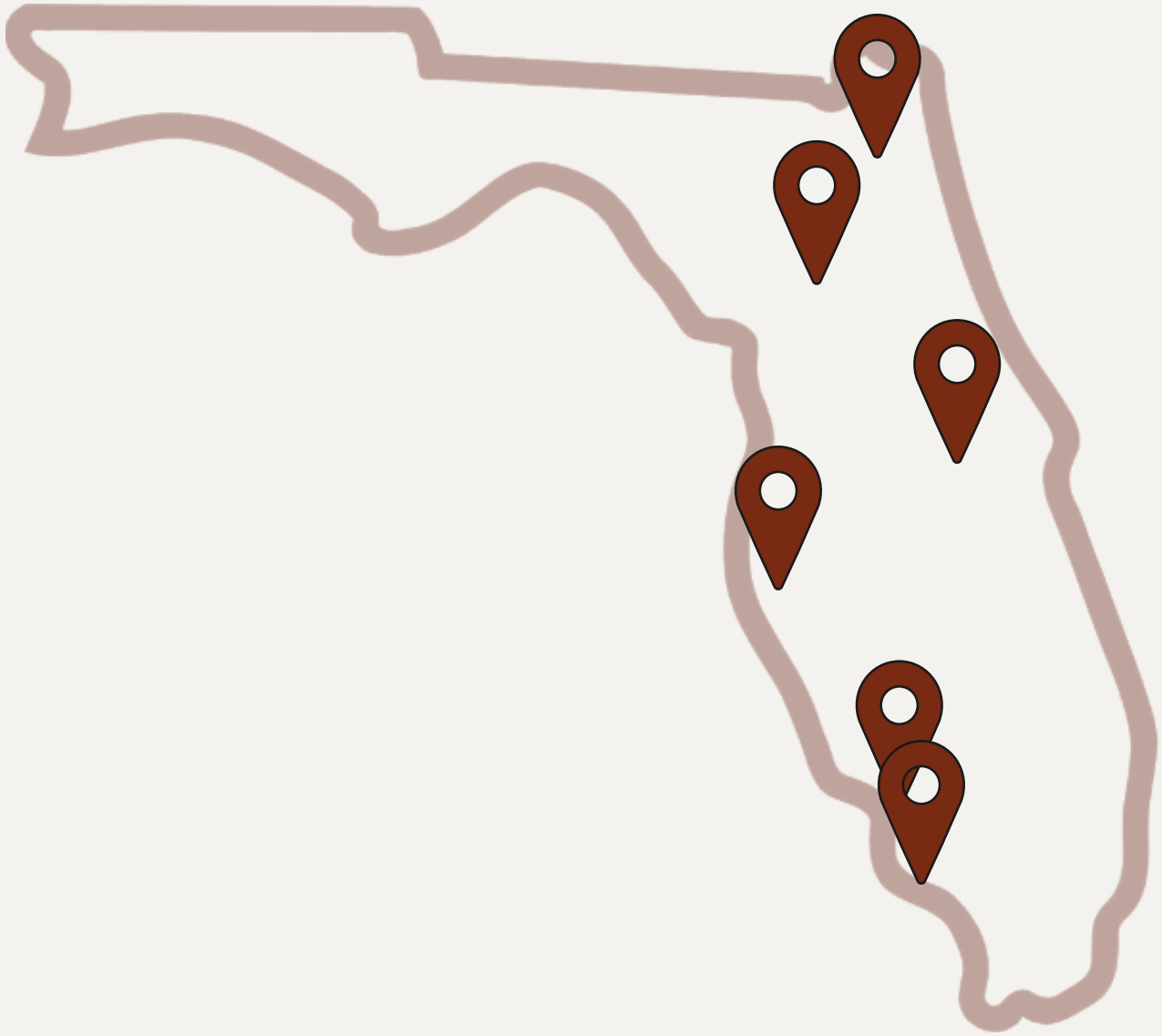
COMMUNITY COLLECTION EVENTS

DIRECT MAIL

Redwood Materials Consumer Recycling Locations



Redwood Materials Consumer Recycling Locations in Florida



Audi Orange Park
Jacksonville, FL

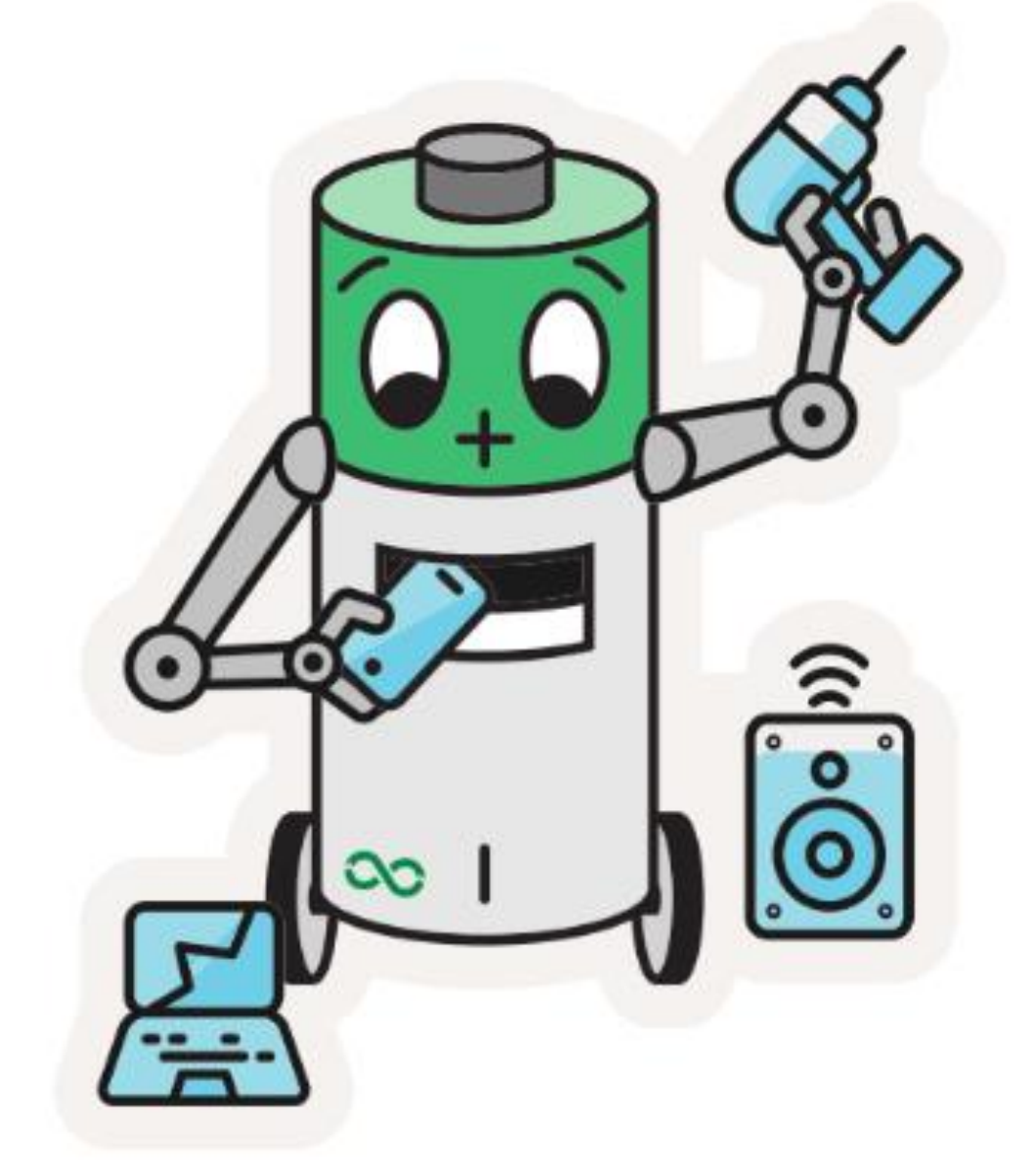
Audi North Orlando
Stanford, FL

Audi Gainesville
Gainesville, FL

Rad Power Bikes
St. Petersburg, FL

Audi Fort Myers
Fort Myers, FL

Audi Naples
Naples, FL



REDWOOD MATERIALS

take action SC
ENVIRONMENTAL EDUCATION PARTNERSHIP

SOUTH CAROLINA K-12 BATTERY COLLECTION PROGRAM

Offering K-12 battery recycling programs at no cost to schools, with teacher and student participation incentives.

Thank you

REDWOOD MATERIALS