



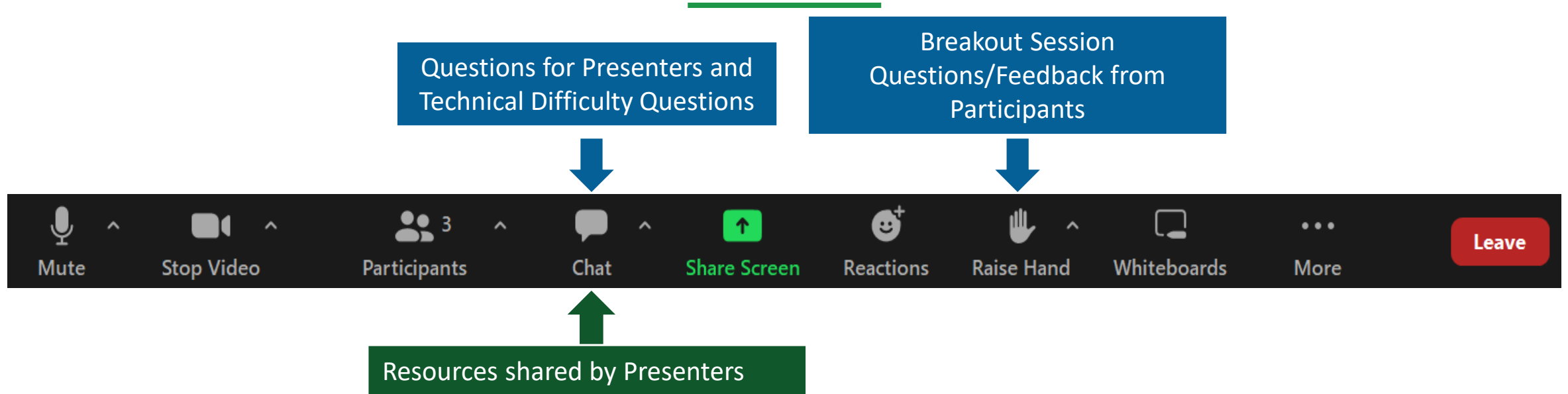
Collection Best Practices Working Session: Collection Systems and Locations for Small Format Batteries

April 11, 2024

U.S. Environmental Protection Agency (EPA)



Webinar Logistics



- **To ask a question:** Type your questions in the CHAT box during **plenary presentations**. Click on the Raise Hand icon and then unmute yourself in the **breakout sessions** when called on.
- **Technical difficulties?** Message us in the CHAT box or email Kyra.Hall@erg.com.



Welcome



Agenda Overview

1. Welcome, agenda review and logistics
2. Scope and focus of today's discussions
3. Universal waste primer
4. Conversation starter presentations – Vermont and California
Examples
5. Breakout discussions
6. Closing/recap



Breakout Session Stories

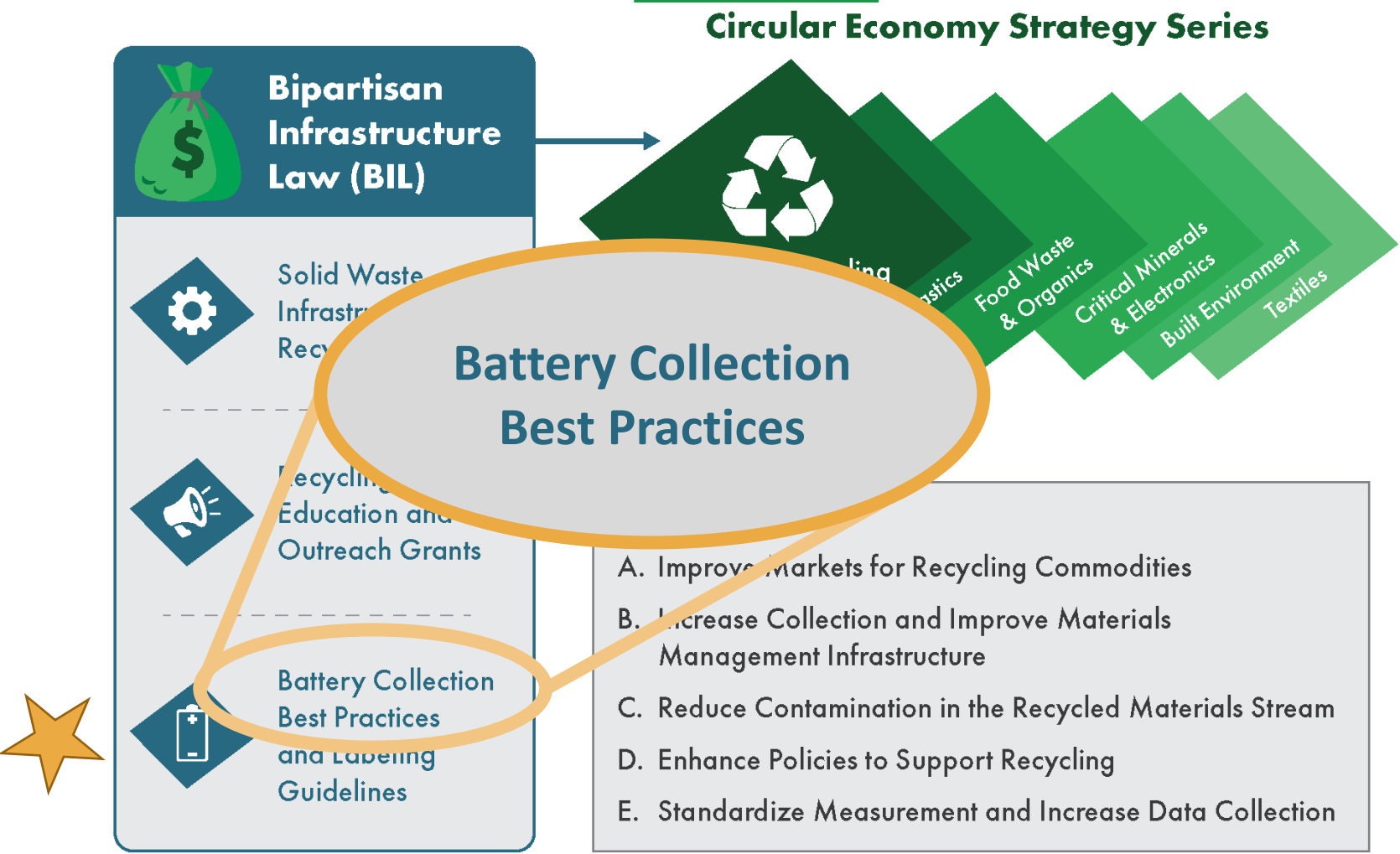
- Please use the "Raise Your Hand" function right now to indicate if you have a story to tell in the breakout so we can balance those across groups.



Scope and Focus



EPA's Circular Economy Initiatives



Vision for EPA's Resources & Guidance

Battery Collection Best Practices*

- EPA will develop best practices for state, tribal, and local governments to recycle batteries in a manner that is:
 - Technically and economically feasible
 - Environmentally sound and safe
 - Optimizing value and use of materials, including critical minerals
- Vision for Resources, published in 2025 and 2026
 - Best practices guidelines
 - Outreach materials
 - Case studies

**Section 70401(b) of the Bipartisan Infrastructure Law*



Scope of Batteries

Category	Small format consumer electric and portable batteries		Mid-format batteries	Large format vehicle and motive equipment batteries	Large format stationary storage batteries
Type	Single use (Primary)	Rechargeable (Secondary)	Rechargeable	Rechargeable	Rechargeable
Use	Removable or embedded in electronics and electric devices, such as watches, hearing aids, cameras, key fobs, toys, portable radios, flashlights.	Removable or embedded in electronics and electric devices, such as phones, computers, appliances, small uninterruptible power supplies (UPS), power tools, power banks.	<p>E-mobility including e-bikes, e-scooters.</p> <p>Outdoor power equipment.</p> <p>Portable power stations.</p>	<p>All scales of automotive starting and motive vehicle batteries.</p> <p>Materials handling equipment (forklift, crane, etc.)</p> <p>Recreational (golf carts, marine equipment, recreational vehicles, etc.)</p>	<p>Residential, including power wall, backup generators.</p> <p>Grid, including utility, solar, wind.</p> <p>Off grid and microgrid.</p> <p>Commercial, including building systems, data centers, server rooms, medical and hospital equipment, retail backup power.</p>



Scope of Small Format Consumer Electric and Portable Batteries

Category	Single Use (Primary)	Rechargeable (Secondary)
Use	Removable or embedded in electronics and electric devices, such as watches, hearing aids, cameras, key fobs, toys, portable radios, flashlights.	Removable or embedded in electronics and electric devices, such as phones, computers, appliances, small uninterruptible power supplies (UPS), power tools, power banks.
Chemistries	Alkaline Carbon-zinc Silver oxide Lithium metal	Lithium ion (including lithium polymer) Nickel-cadmium (Ni-Cd) Nickel-metal hydride (Ni-MH) Nickel-zinc (Ni-Zn) Small sealed lead acid
Weight Range	Up to 4.4 pounds	Up to 11 pounds
Watt-hour Rating	Up to 300Wh	Up to 300Wh



Focus for Today's Conversations

Collection Systems and Locations

- What system do you have in place to successfully collect small format batteries from consumers?
- What makes it successful? Lessons learned?
- Where are your collection locations? How do you ensure the entire community has service?
- What role are state policies playing in the design and implementation of your system?
- What types of resources could be helpful to enhance the success of your program?



Overview of Universal Waste and Batteries

Pat Wise

Program Analyst

U.S. Environmental Protection Agency



Battery Waste Regulation

- Many batteries are likely to be hazardous waste when discarded
 - Lead-acid batteries contain toxic lead and corrosive acid
 - Lithium-ion batteries are likely reactive and ignitable
- Non-hazardous batteries would be subject to state's solid waste regulation
 - States and tribes play a key role in implementing solid waste regulations
 - States may set more stringent requirements as well as having specific solid waste and recycling requirements or bans (e.g., state lead-acid battery landfill bans)
- All batteries can be managed as universal waste, regardless of whether they are actually hazardous



Universal Waste Basics

- Universal waste regulations are streamlined management standards for specific, relatively low-risk hazardous wastes that are commonly generated by a wide variety of establishments
 - Currently, there are five federal categories of universal wastes, including batteries
 - All states have a universal waste program for batteries
 - States may establish state-specific universal waste categories, such as electronics
- The participants in universal waste are:
 - Handlers
 - Small quantity handlers accumulate <5,000 kg of universal waste at one time
 - Large quantity handlers accumulate >5,000 kg of universal waste at one time
 - Transporters
 - Destination Facilities



Universal Waste Collection

- Universal waste handlers:
 - Can accumulate universal waste for one year
 - Must use proper packaging (prevent releases to the environment) and labeling (e.g., “Universal Waste – batteries”)
 - Must complete performance-based employee training (more stringent requirements for large quantity handlers)
 - Must obtain an EPA ID number (large quantity handlers only)
- Universal waste can be shipped from one handler to another, allowing consolidation
- In general, universal waste promotes collection (and therefore recycling) by streamlining hazardous waste management requirements



Universal Waste Battery Management Standards

- Must be managed to prevent releases to the environment
- Must contain any universal waste battery showing signs of leakage or potential leakage
- Allowed handler activities
 1. Sorting batteries by type
 2. Mixing battery types in one container
 3. Discharging batteries so as to remove the electric charge
 4. Regenerating used batteries
 5. Disassembling batteries or battery packs into individual batteries or cells
 6. Removing batteries from consumer products
 7. Removing electrolyte from batteries

Universal Waste Labeling

- Universal waste handlers:
 - Must label accumulation containers (applies to the *container* and not necessarily the *battery* or *device* itself)
 - Must fulfill fairly basic labeling requirements for accumulation containers (e.g., “Universal waste— batteries” or “Used batteries”)
- Universal waste applies to wastes and therefore does not mandate labeling of batteries as products (i.e., before they are waste)
- Universal waste requirements do not conflict with other labeling requirements, such as Department of Transportation requirements



Universal Waste Transportation

- Universal waste handlers:
 - May ship universal waste to and receive universal waste from other handlers
 - Must track their universal waste (large quantity handlers only)
 - Must follow applicable hazardous waste export requirements
- Universal waste transporters:
 - Are not required to use a hazardous waste manifest
 - Can only ship to a universal waste handler, a destination facility (permitted TSD or hazardous waste recycler that does not store), or a foreign destination
 - Must comply with relevant Department of Transportation regulations for transporting hazardous material, if appropriate



Universal Waste Recycling (or Disposal)

- Destination facilities
 - Can be RCRA permitted treatment, storage, or disposal facilities (TSDFs) subject to all applicable regulations and permitting requirements
 - Can be a recycler that does not store prior to recycling and therefore does not need a TSDF permit
 - Some battery recyclers currently operate without on-site storage
 - Must keep a record of each shipment of universal waste that they receive

Universal Waste and Battery Best Practices

- The universal waste and battery best practices programs share the goal of promoting safe, efficient battery recycling
- The programs have a few key differences
 - Best practices can apply anywhere in the battery lifecycle, whereas universal waste is specific to end of life
 - Universal waste is regulatory (mandatory) while best practices are voluntary
- Future work on collection and labeling best practices will keep the universal waste battery standards in mind and vice versa
 - Best practices will be informed by and likely more stringent than the minimum universal waste requirements
 - Lithium battery universal waste rulemaking project started recently



Universal Waste Update for Lithium Batteries

- EPA has announced a future rulemaking to tailor universal waste standards to lithium-based batteries
 - Intended to address the safety concerns associated with managing waste lithium batteries while still promoting their recycling
 - Regulations for the new lithium battery category will be different from the existing universal waste batteries standards discussed here
- Proposed rule expected summer 2025
 - Public comment period will open upon proposal's publication
 - This will be your chance to let EPA know what you think about the proposed new standards



Questions?

- Resources
 - [Universal Waste webpage](#)
 - [40 CFR 273 – Universal Waste regulations](#)
- Key universal waste batteries contacts at EPA
 - Patrick Wise
Universal waste batteries team, Recycling and Generators Branch
wise.patrick@epa.gov
 - Kathy Lett
Batteries subject matter expert, Recycling and Generators Branch
lett.kathy@epa.gov



Give your batteries
new life, Vermont.
Recycle Them!



Conversation Starter: Vermont

Mia Roethlein

Environmental Analyst

Vermont Department of Environmental Conservation

Gary Winnie

Hazardous Waste Facility Manager

Chittenden Solid Waste District



Vermont Primary Battery Stewardship Law and Battery Collection



Vermont's Primary Battery Stewardship Program



- ▶ Law signed by Governor Shumlin in May 2014
- ▶ Vermont is the first state to have a primary battery stewardship law.
- ▶ A Primary Battery is defined as a non-rechargeable battery weighing two kilograms or less, including alkaline, carbon-zinc, and lithium metal batteries.



Give your old batteries a new life, Vermont. **Recycle them!**



You can now recycle your single-use batteries in Vermont at no cost.

Simply bring your *rechargeable and single-use* batteries to any participating Call2Recycle® collection site.

Find one near you:

Visit call2recycle.org/vermont | Call **1-877-2-RECYCLE**

© 2016 Call2Recycle. All rights reserved.

- ▶ Requires manufacturers of primary batteries sold in Vermont (does not include batteries in products) to register with Vermont Agency of Natural Resources (ANR).
- ▶ Provide a Stewardship Plan to manage the proper recycling and/or disposal of all primary batteries sold in Vermont.
- ▶ ANR responsible for enforcement to ensure level playing field.
- ▶ \$15,000 annual fee submitted to ANR per Plan. Currently, one plan implemented by Call2Recycle.







- ▶ The Stewardship Plan(s) must establish a collection program supported by manufacturers for all primary batteries and provide a minimum of 2 collection facilities in each county in Vermont that operate year-round.
- ▶ Currently over 169 collection sites. Collection began January 1, 2016.
- ▶ The Plan must also allow any retailer that sells batteries and any municipality to serve as a collector for the program.



- ▶ Packaging, transportation, outreach and recycling are paid for by the manufacturer.
- ▶ Consumers are able to recycle their batteries at no cost.
- ▶ 96% of Vermonters live within 10 miles of a battery drop off location.
- ▶ Both primary and rechargeable batteries are collected in the same box allowing for convenience and increased recycling.
- ▶ Flame retardant liner and safety protocols on boxes and shipping-lithium and lithium ion.


Minimum Terminal Protection Guidelines SHIPPING IN CALL2RECYCLE BOXES

Below are the minimum requirements for preparing household batteries for shipment. When in doubt of the battery type, Call2Recycle® recommends the battery be individually bagged or taped.

BATTERY TYPE / CHEMISTRY	TERMINAL PROTECTION REQUIRED?
 <p>Rechargeable Nickel Cadmium (Ni-Cd) Nickel Metal Hydride (Ni-MH) Nickel Zinc (Ni-Zn)</p>	<p>9V or Less = NO (drop in the box)</p> <p>Greater than 9V = YES → Terminal protection REQUIRED</p>
 <p>Primary (Select sites only) Alkaline & Carbon Zinc</p>	<p>12V or Less = NO (drop in the box)</p> <p>Greater than 12V = YES → Terminal protection REQUIRED</p>
 <p>Rechargeable Small Sealed Lead Acid (SSLA/Pb) Lithium Ion (Li-Ion)</p>	<p>⚠️ DAMAGED BATTERIES: Special U.S. DOT-approved packaging (not included here) for shipment required. Contact Customer Service at 877.723.1297 for assistance.</p> <p>All = YES → Terminal protection REQUIRED</p>
 <p>Primary (Select sites only) Lithium Button/Coin Cell</p>	<p>⚠️ Call2Recycle boxes should be shipped when full (66 lbs.) or within one year of the collection of the first battery.</p> <p>⚠️ Store the Call2Recycle collection box in a cool, dry place and where it is under supervision.</p>

Charge Up Safety!
call2recycle.org/safety

Avoid the spark!



Battery terminals that touch metal surfaces or other batteries can spark, causing a fire or explosion.

Protect terminals before shipping
Bag or Tape Each Battery!

Place each battery into a clear plastic bag.


- Call2Recycle-provided bags
- Produce bags
- Newspaper bags
- Ziploc® bags

⚠️ Clear bags only

If no bags are available, tape the positive (+) terminal with a non-conductive tape.

- Clear packing tape
- Electrical tape
- Duct tape

⚠️ No masking tape **No Scotch® tape**
No painter's tape **Do not cover chemistry label**



(drop in the box)

Collection Box Instructions



- ▶ Municipal facilities can choose to sort and ship drums of batteries- Call2Recycle, Inc. will offset some labor costs associated with properly packaging batteries for shipment.
- ▶ Call2Recycle responsible for continuous outreach, collection site training and keeping online site locator map up to date:
<http://www.call2recycle.org/locator/>
- ▶ Collection sites include hardware, pharmacies, office supply, town libraries, transfer stations and HHW depots and events.
- ▶ Call2Recycle Guide:
<http://www.call2recycle.org/what-can-i-recycle/>

CSWD - C2R Partnership

Battery types	Previous to Program (7/2014)	Since Program
Ni, Lithium, Alkaline, SSLA, Cell Phones	60,013 pounds	336,774 pounds



Program Impact

- ▶ Program has been very successful. Over 400% increase in primary batteries collected and 40% increase in rechargeable batteries since before program.
- ▶ Vermonters collected 176,968 pounds of batteries for recycling in 2023.
- ▶ Feedback from the public and the municipalities has been very positive.
- ▶ Need to increase consumer awareness and actually taking the step to recycle.
- ▶ Safety and awareness will continue to be main focus moving forward.

Questions?



VERMONT

AGENCY OF NATURAL RESOURCES
Department of Environmental Conservation



Chittenden Solid Waste District

Mia Roethlein
VT DEC Solid Waste Program
802-522-5926
Mia.roethlein@vermont.gov

<http://dec.vermont.gov/waste-management/solid/product-stewardship/primary-batteries>

Gary Winnie
CSWD Hazardous Waste
Coordinator
802-863-0480
gwinnie@cswd.net



Conversation Starter: RethinkWaste

Julia Au

Senior Outreach, Education, and Compliance Manager

South Bayside Waste Management Authority/RethinkWaste





Curbside Battery Collection in San Mateo County, CA

Julia Au, Senior Outreach, Education & Compliance Manager

April 11, 2024



A Public Agency

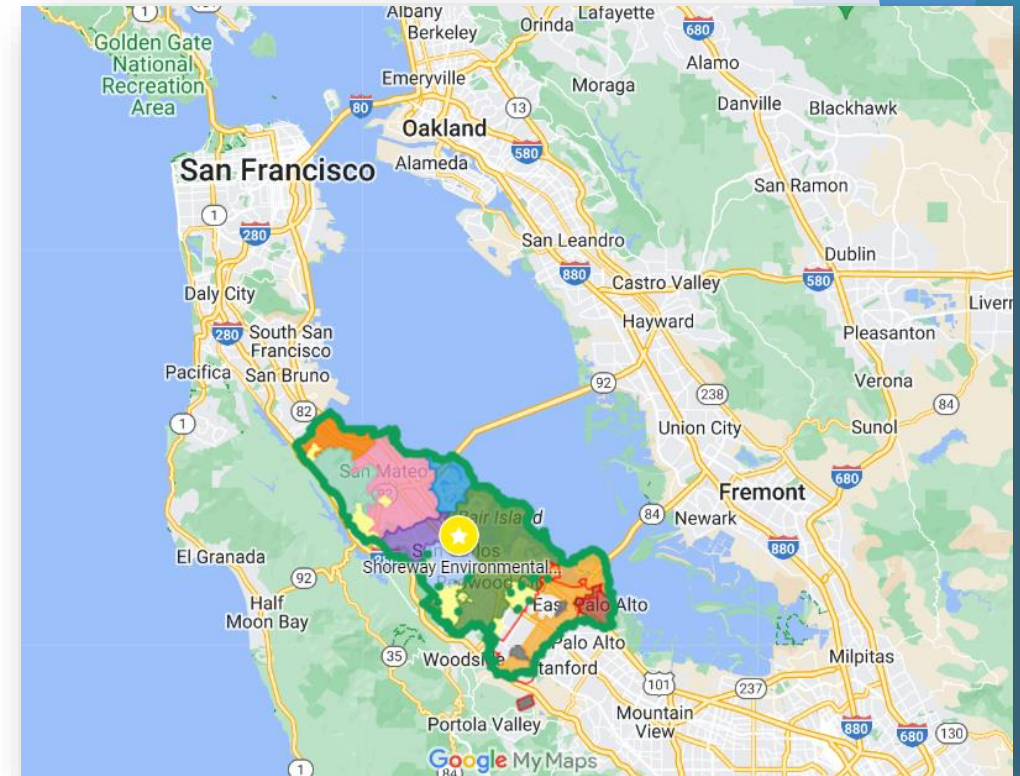
Outline

- Who We Are
- History / Our curbside battery collection program and changes
- Lessons learned & challenges
- Outreach and next steps



Who we are

- RethinkWaste = 11 public agencies in San Mateo County, CA
- Own and operate the **Shoreway Environmental Center in San Carlos, CA**
(Transfer Station & Materials Recovery Facility)
Handles around 450,000 tons of waste annually
- **Service Area population: ~428,000**
- 93,000 single-family homes



Who we are

11 Member Agencies



A Public Agency



Shoreway Environmental Center

Contractors



Collection Service Provider



South Bayside Industries

Facility Operator

History

October
2007

- Curbside battery and cell phone recycling program launched

September
2016

- Shoreway Environmental Center experiences major fire

September
2018

- Curbside battery and cell phone program changes
- Multi-family program changes



Changing Our Program

PROGRAM CHANGE

Household Battery and Cell Phone Collection Program

Who? All single-family households in the RethinkWaste service area*
Why? To protect the safety of our workers, recycling facilities and the environment. When batteries enter the recycling stream, they can get crushed by compactors and start fires. Batteries contain hazardous materials that can leach into the environment.
How? Place used batteries and cell phones into the zip-top bag and when nearly full, place bag ON TOP OF YOUR BLACK CART on collection day. For safety, place tape over both ends of each lithium battery and wrap cell phones in paper.



Starts Sept. 3, 2018

New  **Old** 

If you need additional bags, you may use ANY clear zip-top bag OR you can find orange bag pick-up locations at: RethinkWaste.org/batteries

What's Accepted

Yes All household-type batteries including AA, AAA, C, D, 9-volt and button batteries 

No Lead acid and automotive batteries 

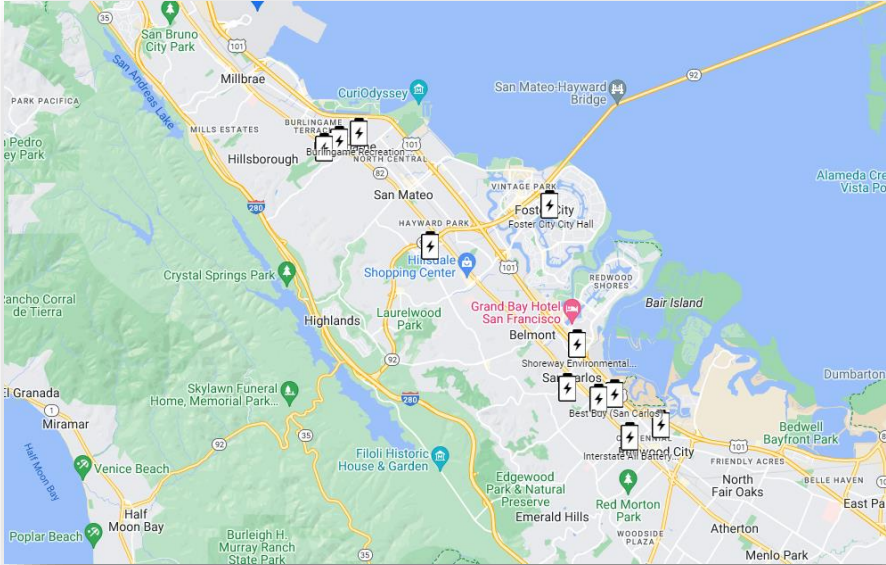
*Atherton, Belmont, Burlingame, East Palo Alto, Foster City, Hillsborough, Menlo Park, Redwood City, San Carlos, San Mateo, Parts of Unincorporated San Mateo County, West Bay Sanitary District

Multi-Family Program & Drop off Locations



Original bucket

Household battery drop off locations

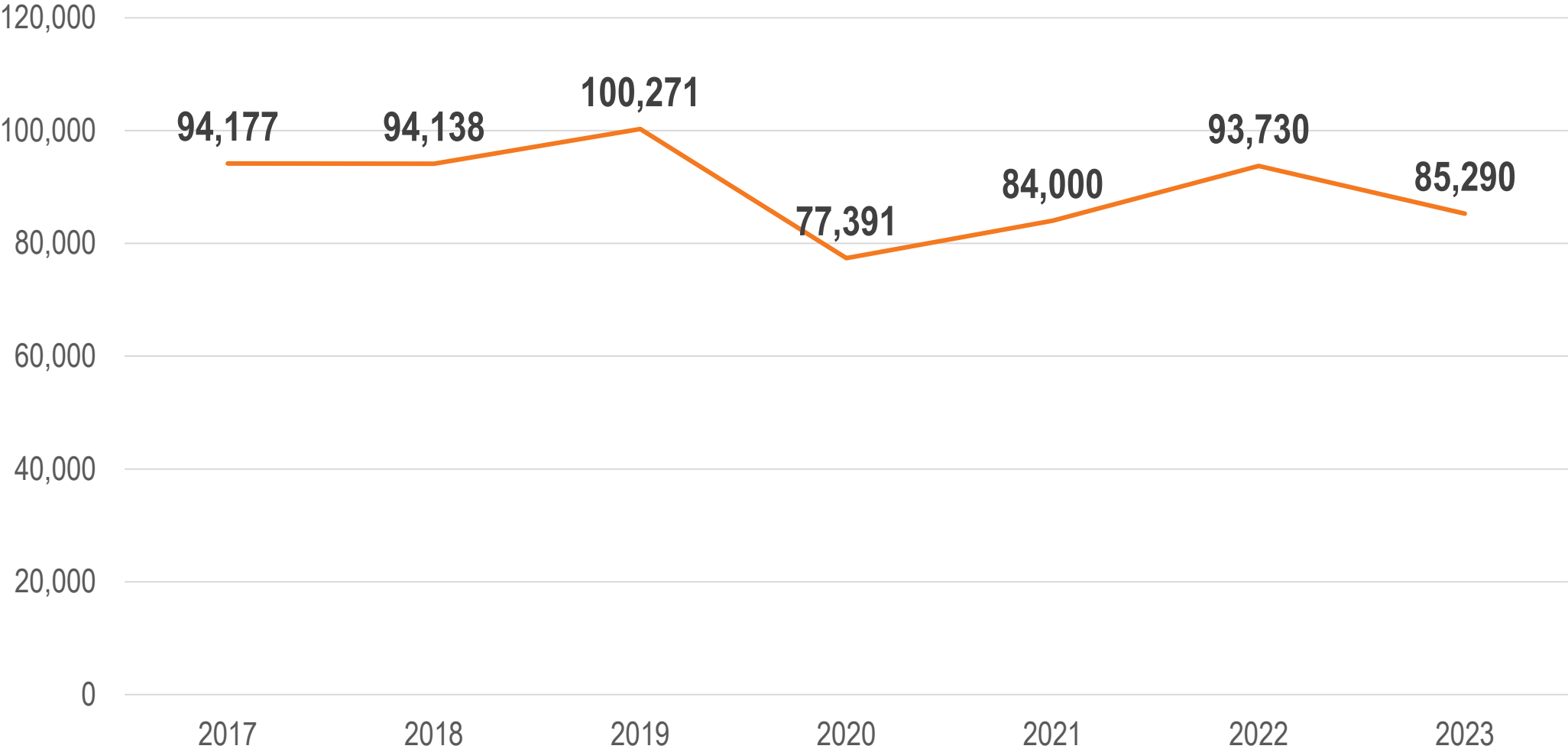


Updated 2018



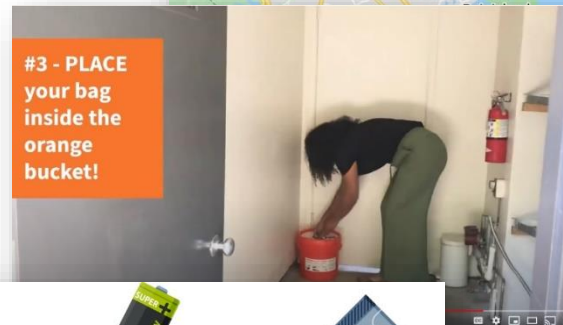
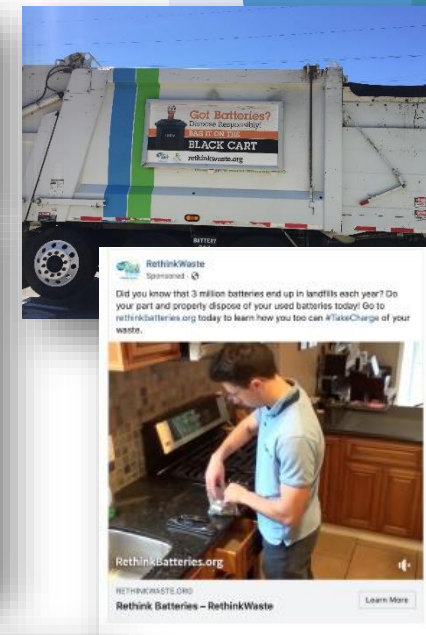
Curbside Battery Program Over the Last Few Years

Pounds of Battery Collected



Continuous & Direct Outreach

- 2018, 2020-2022, 2024
- Variety of outreach methods in multiple languages
 - Google search and display ads
 - Videos (live, animated, reels)
 - Social media ads
 - Newspaper ads
 - Trucks signs
 - Website updates
 - Spotify ads
 - Surveys



Other Outreach



San Mateo County started with these bags

Collaborative Outreach: Direct mail postcard

GOT USED MOTOR OIL, OIL FILTERS, OR BATTERIES?

DON'T TRASH THEM!

Safely dispose of them for **FREE** through your weekly curbside waste collection. See reverse side for detailed instructions.

Logos: RethinkWaste, San Mateo County Health Environmental Health Services, CalRecycle, Recycle Now.

Use motor oil, oil filters, and batteries can contaminate our soil, drinking water, and air if they end up in the landfill. Help protect your community by properly recycling these items.

WHAT TO DO WITH BATTERIES*

1. Tape the terminals of any lithium batteries with clear tape.
2. Collect all old batteries in a clear, sealed zip-top bag.
3. Place the bag on top of your black garbage cart on your regular collection day.

*Note: Lead-acid and car batteries must be dropped off at the Shoreline Environmental Center or a Household Hazardous Waste Center. Visit rethinkwaste.org/pe for more information.

WHAT TO DO WITH USED MOTOR OIL AND FILTERS**

1. Collect used motor oil in a clean, secure, and labeled screw-top container of one gallon or less.
2. Contain used oil filters in a clear, sealed zip-top bag.
3. Place your used motor oil and filters on the ground next to your blue recycling cart on collection day.

**Note: No other auto fluids or other fluids are accepted.

Learn more at rethinkwaste.org/curbside or call 650-802-3500



Daly City pilot

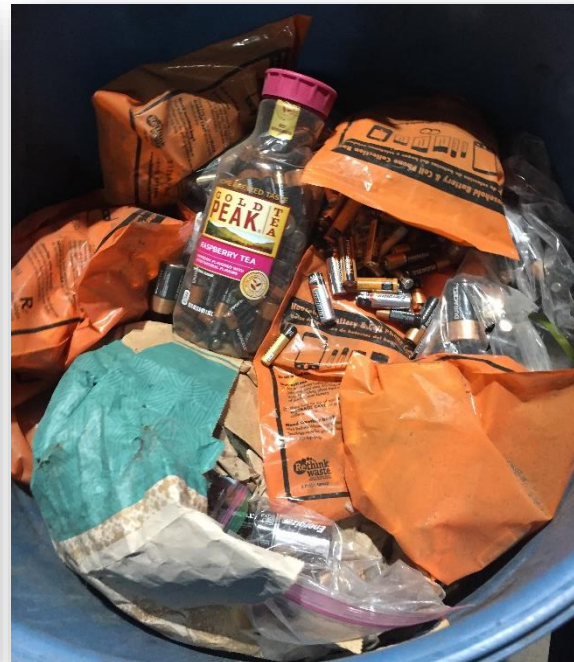


SF battery instructions on all black garbage carts



Lessons Learned / Challenges

- Using program properly
- Ensuring pick up
- Risks of battery fires
- Costs



COURTESY NOTICE:
You are receiving this courtesy notice because your batteries were found on the incorrect cart. Please put your sealed clear bag of batteries and cell phones **ON TOP OF THE BLACK GARBAGE CART** for pickup.

AVISO DE CORTESÍA:
Está recibiendo este aviso de cortesía porque sus baterías se encontraron en el carrito incorrecto. Por favor, coloque su bolsa transparente sellada de baterías y teléfonos celulares **ENCIMA DEL CARRITO NEGRO DE BASURA** por la recolección.

友情提示:
您收到此禮貌通知是因為您在錯誤的桶上發現了您的電池。請將裝有電池和手機的密封透明袋放在黑色的垃圾桶上邊頂部以便取走。

Thank you for properly disposing of your used batteries and cell phones! It helps keep our environment, the community, and your family safe.

Gracias por desechar adecuadamente sus baterías y teléfonos celulares usados! Ayuda a mantener seguro nuestro medio ambiente, la comunidad y su familia.

感謝您妥善處理用過的電池和手機! 它有助於保護我們的環境、社區和您的家人的安全。

Prevent battery fires by using clear tape over lithium-ion and 9-volt battery terminals.

Prevenga el incendio por baterías usando cinta transparente sobre los terminales de las baterías de iones de litio y de 9 voltios.

將鋰離子電池和9伏電池的兩端用透明膠帶貼住, 以防止電池起火。

**FOR MORE INFORMATION, PLEASE VISIT:
PARA MÁS INFORMACIÓN POR FAVOR VISITE:
想要瞭解更多資訊, 請訪問:**
RethinkBatteries.org

Rethink waste
A Public Agency

Recology
San Mateo County
WASTE ZERO

Continued Outreach & Next Steps

- Continue to track collected battery data and battery fires
- On-going outreach for safe and proper battery disposal, trying new methods and targeted to single-family and multi-family residents.
- California State Law AB 2440 (Irwin) and SB 1215 (Newman)



NEWSOM SIGNS BATTERY AND E-WASTE BILLS INTO LAW

SB 1215 (Newman)
Expands CA's landmark E-waste Recycling program to cover any product that contains a non-removable battery

AB 2440 (Irwin)
Establishes a manufacturer-run stewardship program for alkaline and rechargeable batteries & requires all retail chains that sell batteries to provide free collection for consumers

Thank you! Any Questions?

Julia Au

Senior Outreach, Education and Compliance Manager

RethinkWaste

jau@rethinkwaste.org

RethinkWaste.org | RethinkBatteries.org



BREAKOUT GROUPS

Agenda Overview

5 Minute Break

1. Introductions

2. Additional questions for plenary presenters

3. Short stories from those interested

4. Questions and discussion





REPORT OUT FROM BREAKOUT GROUPS

Closing and Next Steps

Ellen Meyer

Batteries and Critical Minerals Senior Scientist

Resource Conservation and Sustainability Division

U.S. EPA



Upcoming Small Format Consumer Electric and Portable Batteries Working Sessions

Meeting Focus	Meeting Topic	Meeting Date	Meeting Time	Format
✓ Labeling and Collection	Kickoff: Current Landscape and Engagement Overview	March 19, 2024	2:00-3:30 PM EDT	Virtual
✓ Collection	Collection Systems and Locations	April 11, 2024	2:00-4:30 PM EDT	Virtual
Labeling and Collection	Tribal Waste Management Webinar	May 2, 2024	1:00-3:00 PM EDT	Virtual
Collection	Safe Collection, Storage, and Transport	May 14, 2024	2:00-4:00 PM EDT	Virtual
Labeling	In-Person Meeting Participant Prep Call (placeholder)	June 6, 2024 (TBD)	TBD	Virtual
Labeling	In-person Intensive Session: Label Contents	June 12-14, 2024	9:00 AM-4:00 PM EDT	In-Person
Collection	Education and Outreach	June 20, 2024	2:00-4:30 PM EDT	Virtual
Labeling	Report Out from In-Person Intensive and Additional Input	July 16, 2024	2:00-4:00 PM EDT	Virtual



Next Steps

- Register for the May 14 Safe Collection, Storage and Transport meeting:
<https://www.zoomgov.com/meeting/register/vJItdOyurzgsGhQexgLHjVNfdRdCC7hd45k>
- Email batteries@epa.gov if you have an interesting story to tell about safe storage, transport, and recycling



Questions?

- Email batteries@epa.gov

