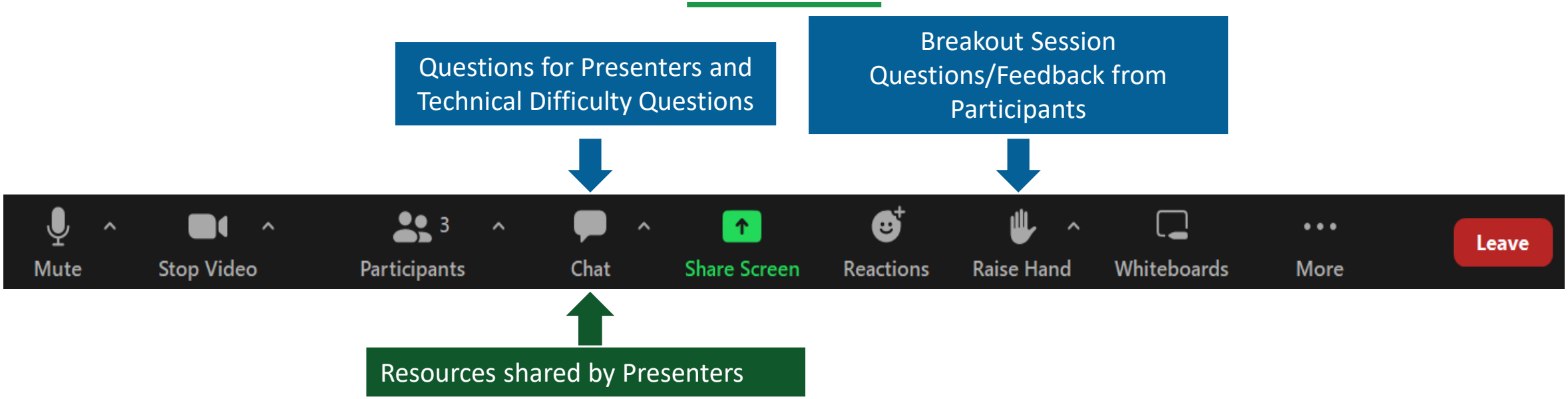
Collection Best Practices Working Session: Collection Systems and Locations for Small Format Batteries

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

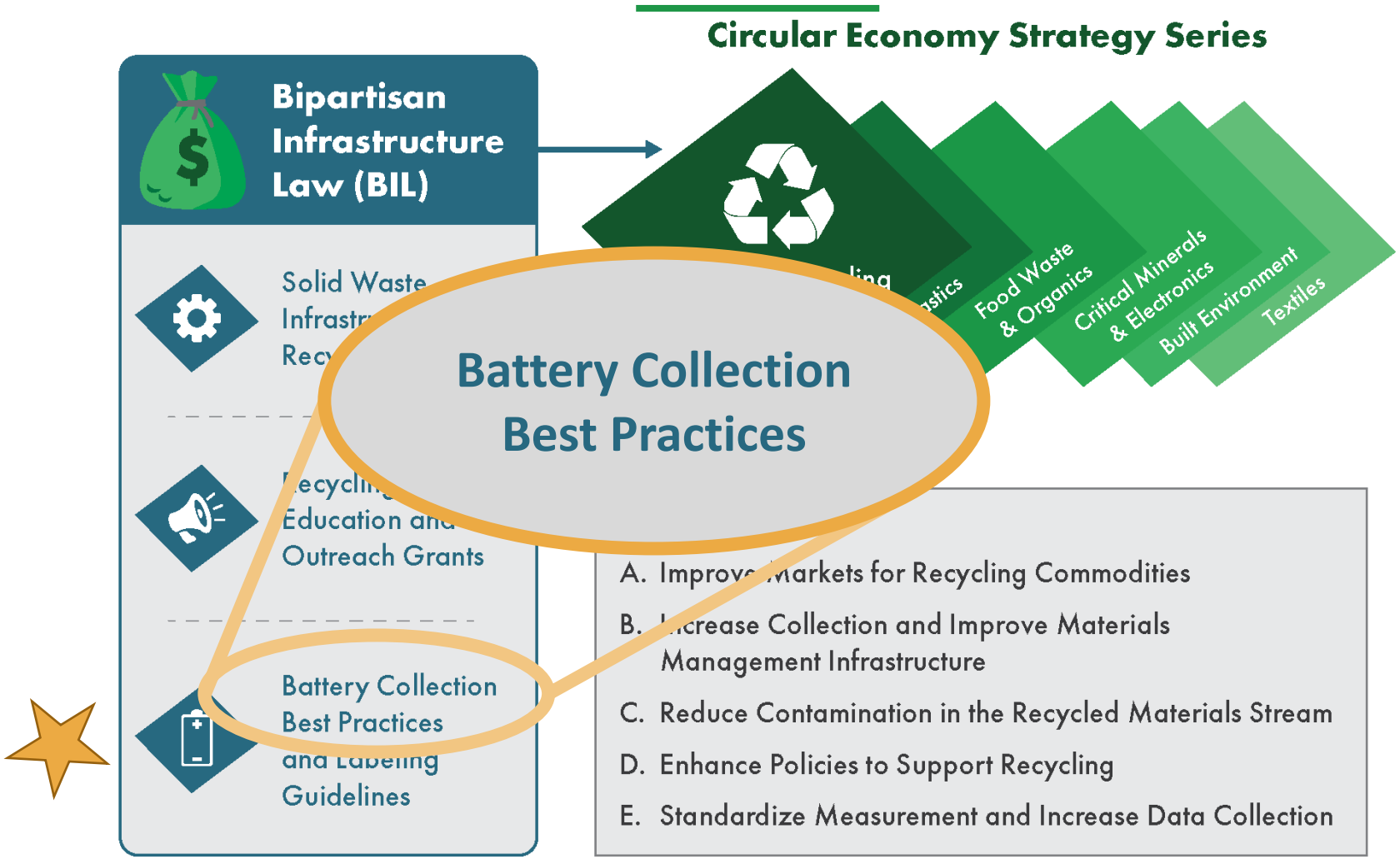
1. Welcome, agenda review and logistics
2. Scope and focus of today's discussions
3. Universal waste primer
4. Conversation starter presentations – Vermont and California Examples
5. Breakout discussions
6. Closing/recap

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
- Vison 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 uninterruptable power supplies (UPS), power tools, power banks.	E-mobility including e-bikes, e-scooters. Outdoor power equipment. Portable power stations.	All scales of automotive starting and motive vehicle batteries. Materials handling equipment (forklift, crane, etc.) Recreational (golf carts, marine equipment, recreational vehicles, etc.)	Residential, including power wall, backup generators. Grid, including utility, solar, wind. Off grid and microgrid. Commercial, including building systems, data centers, server rooms, medical and hospital equipment, retail backup power.

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 uninterruptable 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 TSDF 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

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
AGENCY OF NATURAL RESOURCES
Department of Environmental Conservation

CSWD
Chittenden Solid Waste District

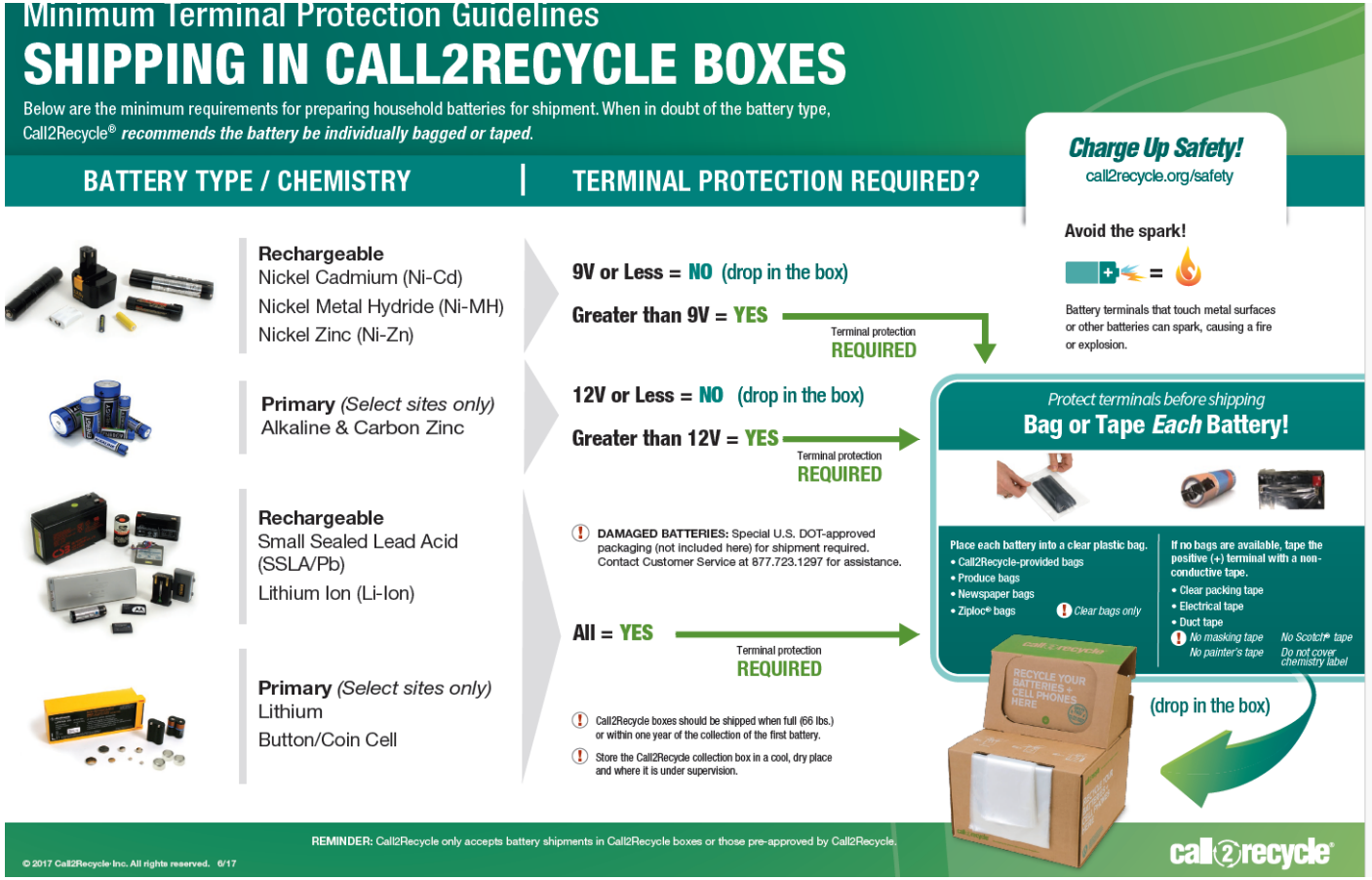
Vermont's Primary Battery Stewardship Program

- 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.

- 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.

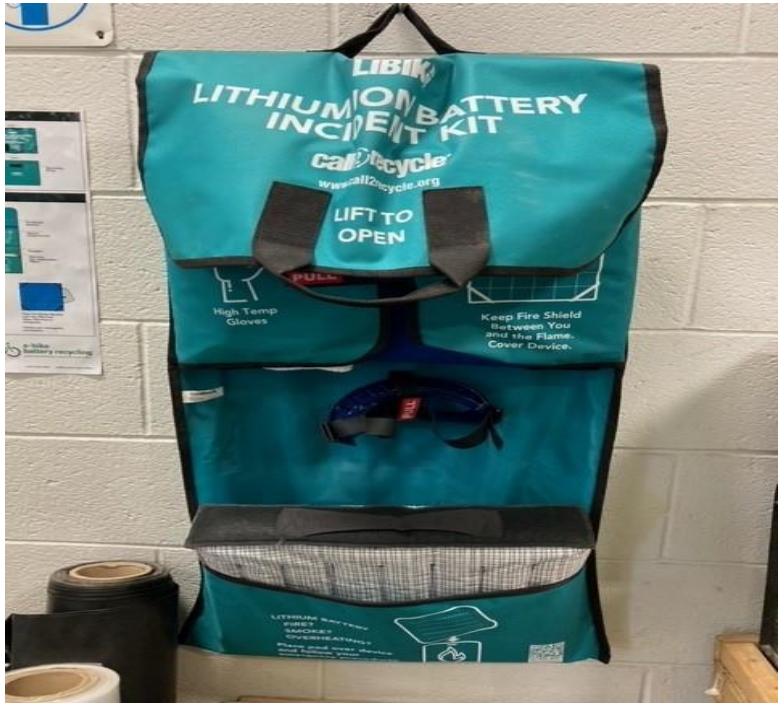


Collection Box Instructions

- 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

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802-522-5926
Mia.roethlein@vermont.gov
http://dec.vermont.gov/waste-management/solid/product-stewardship/primary-batteries

CSWD
Chittenden Solid Waste District

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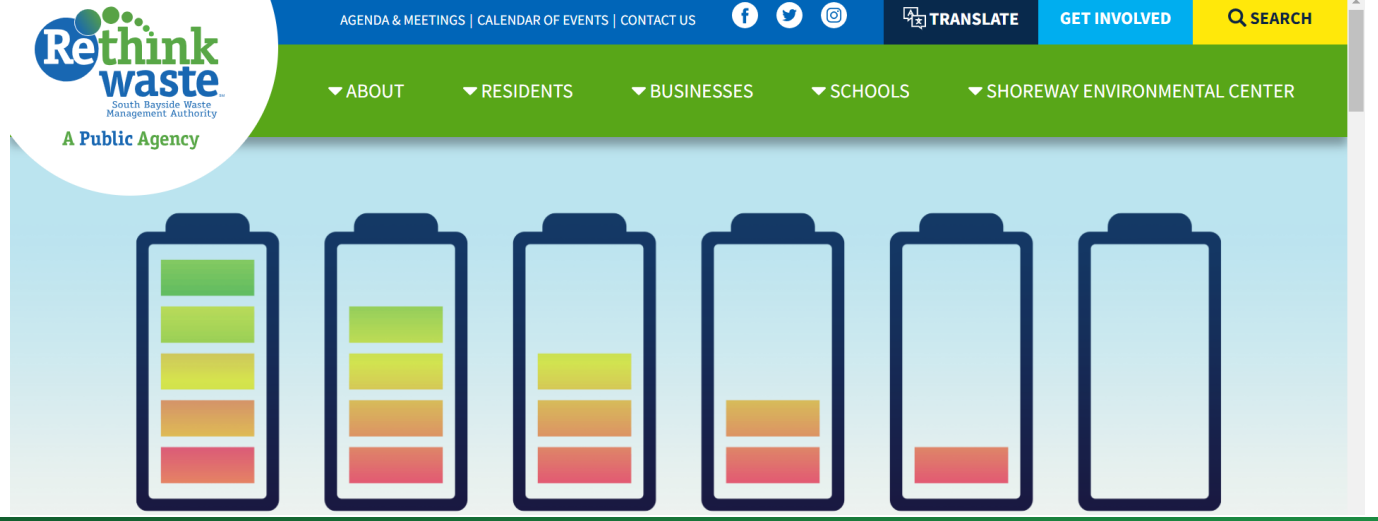


Conversation Starter: RethinkWaste

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

Rethink waste℠
South Bayside Waste Management Authority

A Public Agency

Outline

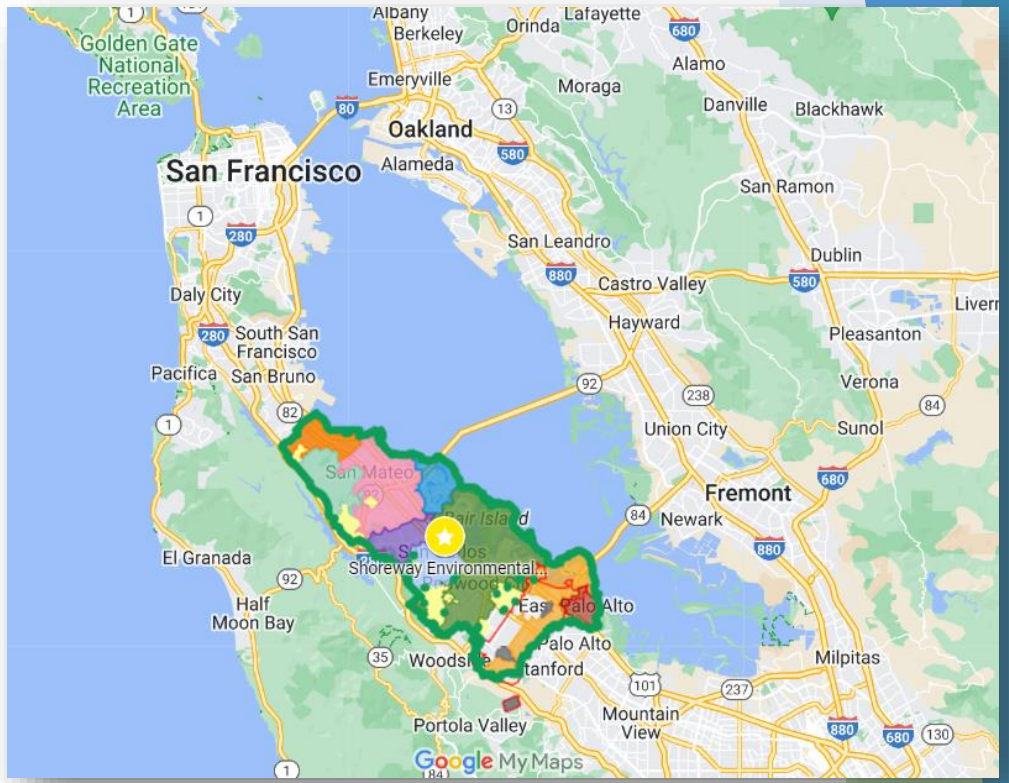
- Who We Are
- History / Our curbside battery collection program and changes
- Lessons learned & challenges
- Outreach and next steps

Rethink waste
South Bayside Waste Management Authority
A Public Agency

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



CITY OF BELMONT · THE CITY OF BURLINGAME · CITY OF EAST PALO ALTO · CITY OF FOSTER CITY · TOWN OF HILLSBOROUGH · CITY OF MENLO PARK · Redwood City · CITY OF SAN CARLOS · CITY OF SAN MATEO · COUNTY OF SAN MATEO · WEST BAY SANITARY DISTRICT

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Who we are

11 Member Agencies

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Shoreway Environmental Center

Contractors

Recology San Mateo County
WASTE ZERO

Collection Service Provider

sbi
South Bayside Industries

Facility Operator

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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

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Changing Our Program

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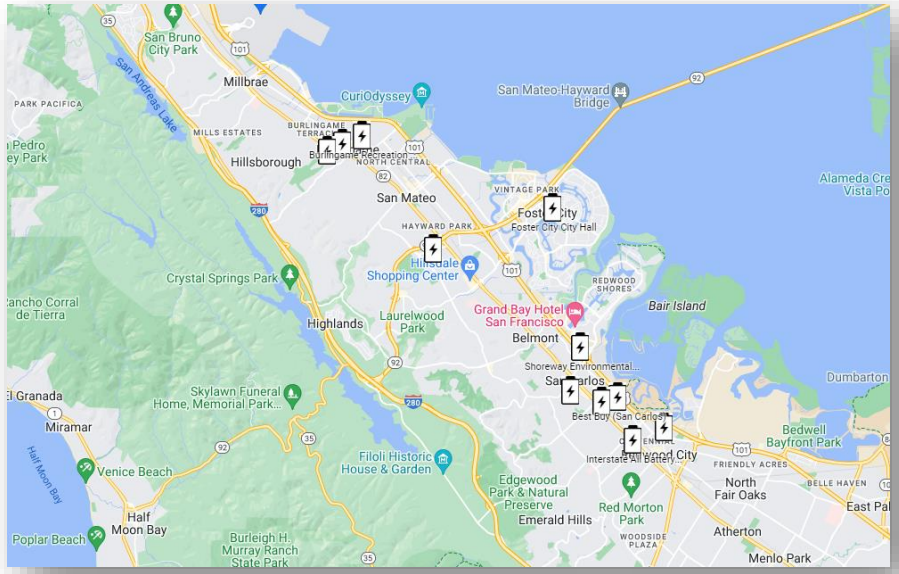
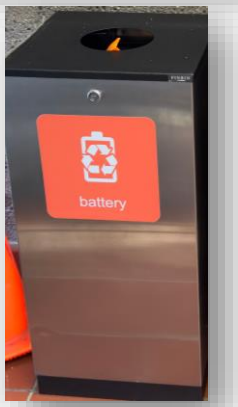
Multi-Family Program & Drop off Locations

Original bucket

Updated 2018

Household battery drop off locations





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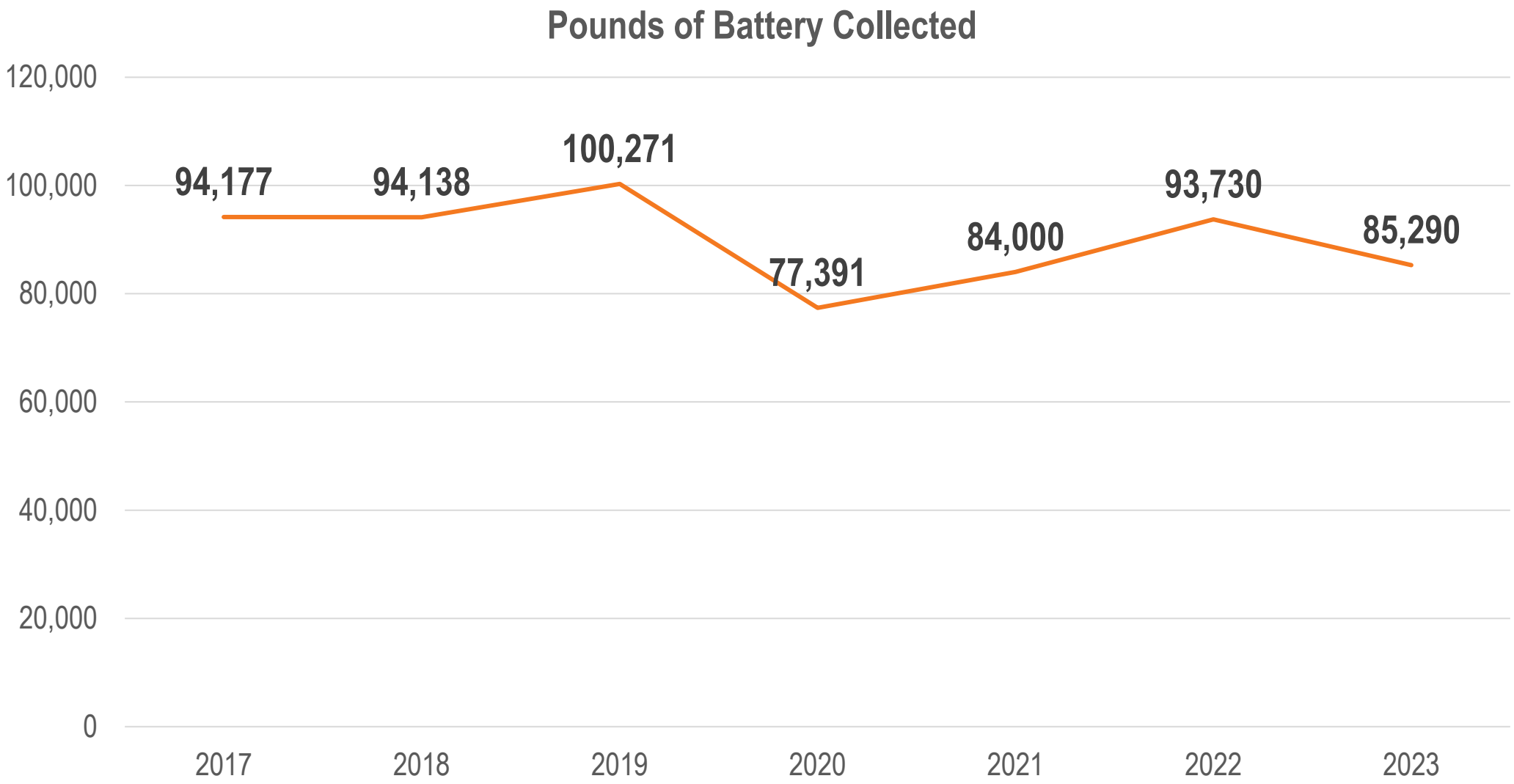
Curbside Battery Program Over the Last Few Years



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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

Daly City pilot

SF battery instructions on all black garbage carts

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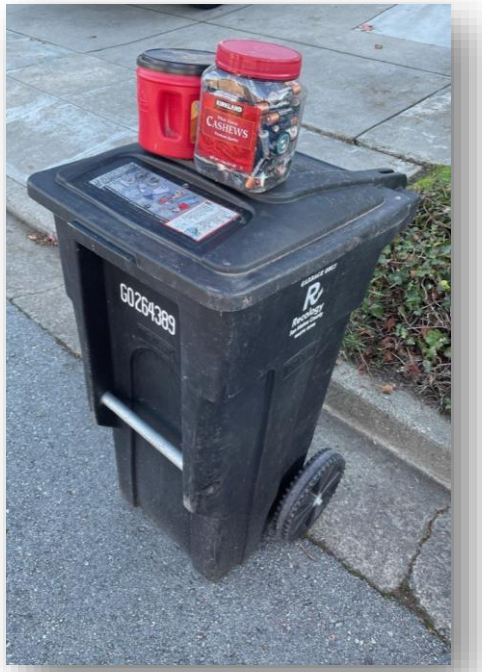
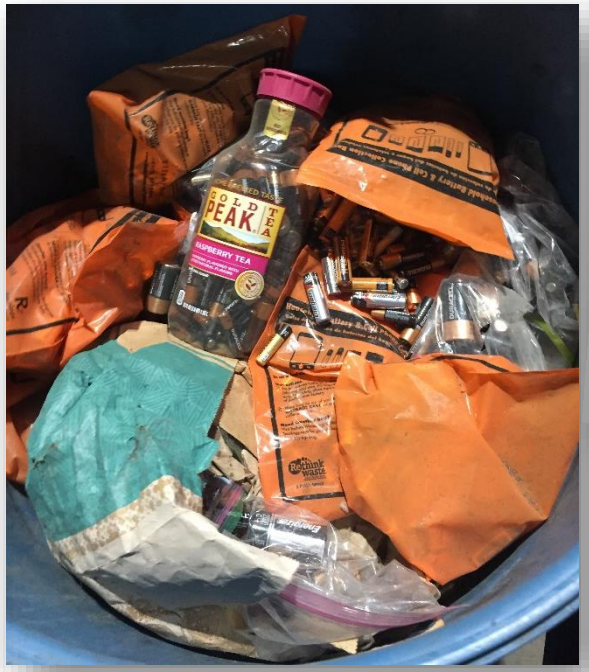
Lessons Learned / Challenges

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





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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)

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Thank you! Any Questions?

Julia Au

Senior Outreach, Education and Compliance Manager

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RethinkWaste.org | RethinkBatteries.org

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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