

EPA's Responsible Appliance Disposal (RAD) Program:

RAD and Tribal Communities



Presenter: Sally Hamlin



► RAD Program Manager

Presenter: Amanda Freele



- ▶ Institute for Tribal Environmental Professionals (ITEP) Intern
 - ▶ EPA's Stratospheric Protection Division (SPD) under RAD

Presenter: Paula Robertson

- ▶ RAD Partner: Sacramento Municipal Utility District (SMUD)
- ▶ Program Manager for Refrigerator Recycling Program



Welcome!

Background



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graph TD; A[Background] --> B[What is RAD?]; B --> C[RAD Process]; C --> D[Why should you join?]; D --> E[What are the benefits?];
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What is RAD?

RAD Process

Why should you join?

What are the benefits?

Background

- ▶ It is estimated that more than 13 million refrigerators/freezers are disposed of annually in the U.S.
- ▶ Federal Law requires refrigerants are recovered prior to disposal but does not require appliance foam blowing agents to be recovered
- ▶ Foam containing HFCs in refrigeration units contributes to climate change and older models may contribute to ozone depletion
- ▶ Responsible Appliance Disposal (RAD) Program encourages proper handling of appliance foam







Responsible Appliance Disposal (RAD) Program

What is RAD?

- ▶ Voluntary partnership program to dispose of old refrigerated appliances using best environmental practices available - going beyond federal requirements to protect Earth's climate and ozone layer

This means:

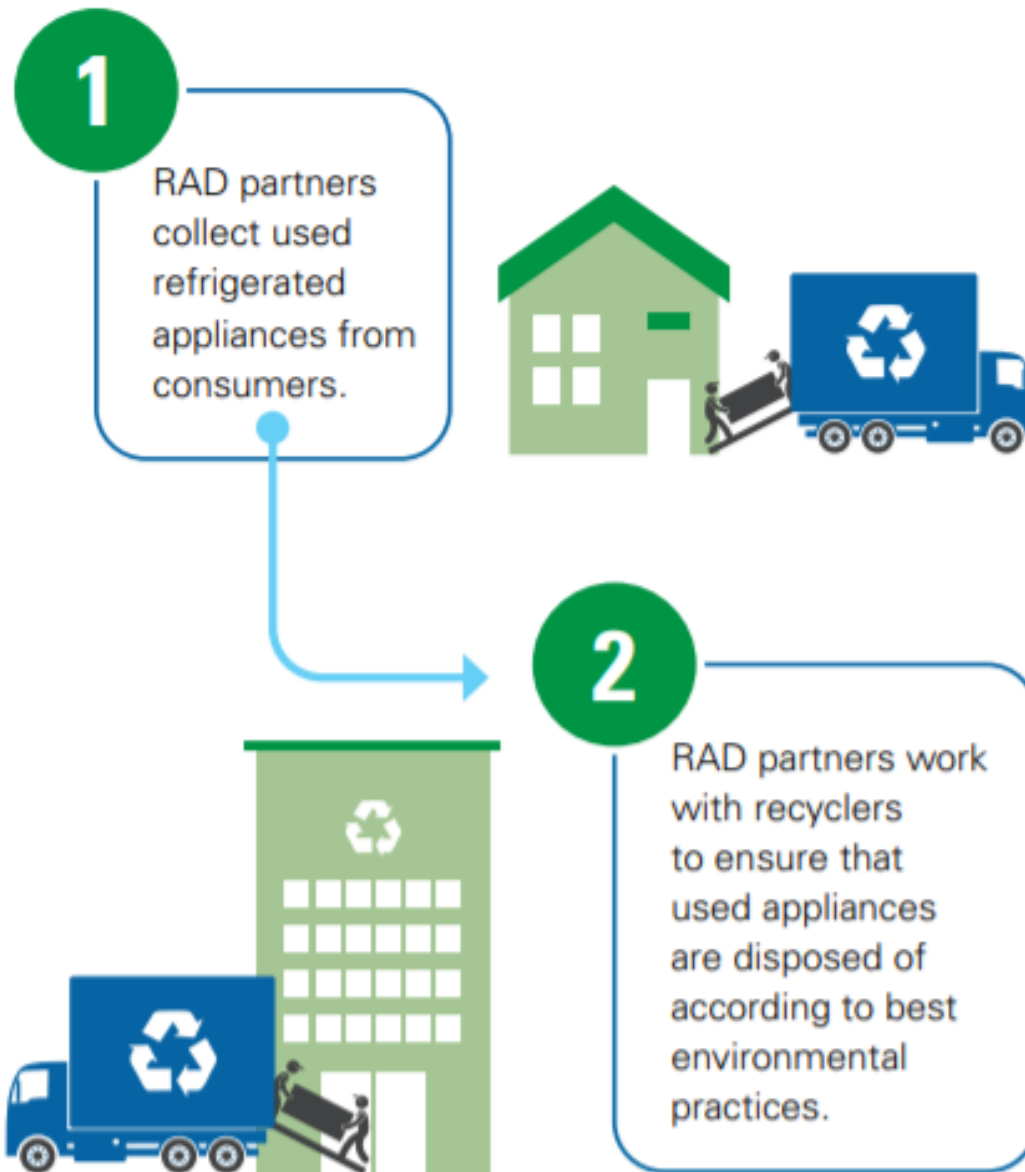
-  Complying with laws on the recovery of refrigerant, used oil, and PCBs
-  Recovering appliance foam
-  Promoting recycling of all durable goods
-  Promoting the permanent retirement of old, inefficient appliances to save energy



RAD Process



How Does RAD Work?



2019 RAD Results

In 2019, RAD partners collected:



513,508
Refrigerators



64,956
Stand-Alone
Freezers



17,967
Air-Conditioning
Units



12,733
Dehumidifiers

2019 and Cumulative RAD Partner Achievements

Properly Handled Hazardous Waste

Properly disposed of:

2019 BENEFITS

CUMULATIVE BENEFITS

44,000

gallons of used oil

809,000

gallons of used oil

2,000

PCB-containing
capacitors

321,000

PCB-containing
capacitors

13,000

mercury-containing
components

209,000

mercury-containing
components

Reduced Greenhouse Gas Emissions

Achieved a reduction of:

2019 BENEFITS

CUMULATIVE BENEFITS

2.3 million
MTCO₂eq

metric tons of carbon dioxide equivalent

38.2 million
MTCO₂eq

Ozone Layer Protection

Avoided the release of:

2019 BENEFITS

CUMULATIVE BENEFITS

65 ODP tons

ozone depletion potential (ODP) weighted tons of
refrigerants and foam-blowing agents

1,942 ODP tons

Recycled Durable Materials

Recycled rather than landfilled:

2019 BENEFITS

CUMULATIVE BENEFITS

96 million lbs

million pounds of durable materials

1,465 million
lbs

Energy Savings

Reduced energy use by:

2019 BENEFITS

CUMULATIVE BENEFITS

2.1 billion kWh

kilowatt hours

29.5 billion kWh

RAD partners have processed a total of **8,932,000** units since program inception in 2007, resulting in environmental benefits equivalent to the:



Carbon sequestered by **50 million** acres of U.S. forests in one year.



Carbon dioxide emissions from 4.4 million homes' energy use for one year.



Carbon dioxide emissions from 4.9 trillion smartphones charged.



Greenhouse gas emissions avoided by 13 million tons of waste recycled instead of landfilled.

How to Become a Partner

- ▶ RAD partnerships take effect when a partnership agreement is signed by the partner and EPA.
- ▶ This is a non-binding statement of the Parties' mutual understandings. This Agreement is NOT legally binding and does not create any right, obligation or benefit enforceable by law or equity against the EPA or the Partner, or any other person.
- ▶ Contact Sally Hamlin - RAD Coordinator



EPA'S RESPONSIBLE APPLIANCE DISPOSAL PROGRAM

EXAMPLE PARTNERSHIP AGREEMENT

This voluntary partnership agreement ("Agreement") between _____ (Partner name) (herein referred to as the "Partner") and the U.S. Environmental Protection Agency ("EPA") reflects the Partner's commitment to participate in EPA's Responsible Appliance Disposal Program (herein referred to as the "Program"). The Partner and EPA are referred to collectively as the "Parties" in this Agreement. The goal of the voluntary Program is to reduce emissions of ozone-depleting substances (ODS) and greenhouse gases (GHGs) through the collection and proper disposal of refrigerant-containing appliances. This Agreement takes effect when signed by both Parties. As described in the "Dispute Resolution" section of this document, either Party can terminate this Agreement.

The Program promotes the proper disposal of older household appliances, namely refrigerators, freezers, window air conditioning units, and dehumidifiers, in order to prevent emissions of ODS and GHG refrigerants and foam-blowing agents. The Program is also expected to save landfill space, save energy used by older appliances, lead to the recovery of valuable materials for use in making new products (e.g., metals, plastics, glass), and prevent the release of hazardous substances—including PCBs, mercury, and used oil. The responsibilities of each Party are summarized below.

EPA'S RESPONSIBILITIES


- Serve as a technical clearinghouse on responsible appliance disposal program development and implementation.
- Calculate annual and cumulative Program benefits in terms of ODS and GHG emission savings and equivalents and, as available, potential cost savings.
- Provide Partner recognition for achievement through press releases, brochures, articles, and awards.
- All information submitted to EPA will be treated in accordance with the EPA regulations at 40 CFR Part 2, including the provisions on protecting confidential business information (CBI). For information to be treated as CBI, it must be designated as CBI at the time of submittal. EPA will protect CBI to the maximum extent of the law.

PARTNER RESPONSIBILITIES

- Encourage the retirement of old, energy inefficient refrigerators, freezers, window air conditioning units, and dehumidifiers, and implement best practices for the recycling/disposal of these units, including: proper recovery and reclamation or destruction of refrigerants; proper recovery and reclamation or destruction of insulating foam; safe disposal of hazardous waste products, including PCBs and mercury; proper recycling of used oil, and recycling of all recoverable, durable materials.
- Consistent with the Program objectives, report available information annually including: the number of appliances collected; type and quantity of refrigerants reclaimed/destroyed; type and quantity of foam blowing agent reclaimed/destroyed; weight of metals, plastics, and glass recycled; and quantity of hazardous waste products managed and used oil recovered.
- Exchange information on Program development/implementation and best practices with other Program partners.
- Appoint a representative as Responsible Appliance Disposal Program Coordinator and notify EPA of any change in the designated liaison.

https://www.epa.gov/sites/production/files/2016-10/documents/example_rad_partnership_agreement_form.pdf

Advantages of Being a Partner

- 
- A close-up photograph of a child's hands holding a small globe of the Americas. The child's fingers are visible, and the globe shows the outlines of North and Central America with various country names and city labels. The background is a soft-focus green.
- ▶ RAD Partners are **publicly recognized** by EPA for:
 - Protecting the ozone layer and reducing greenhouse gas (GHG) emissions
 - Saving landfill space and energy by recycling rather than landfilling durable materials
 - Keeping communities safe by avoiding the release of used oil, mercury, and PCBs

Advantages of Being a Partner


- ▶ **Benefits tracking** - EPA helps RAD partners calculate annual and cumulative program benefits
- ▶ **Access to EPA RAD logo**
 - Distinguish your organization as an industry leader
 - Show others how you are protecting the environment and benefiting communities
 - Communicate your environmental commitment to consumers, customers, and other target audiences



Advantages of Being a Partner

► Tools and Resources

- Partner case studies
- Disposal and recycling fact sheets
- Guidance documents
- Materials communicating the benefits of RAD



Thank you for recycling your refrigerated appliance with a proud partner of EPA's Responsible Appliance Disposal (RAD) Program.

Partners of EPA's RAD Program commit to collecting and disposing of old refrigerated appliances using best environmental practices. Recycling with a RAD partner will:

- Reduce your household energy consumption, which will save you money
- Avoid the release of ozone-depleting substances (ODS) and greenhouse gases (GHGs)
- Save landfill space and energy by recycling—rather than landfilling—the metals, plastics, and glass contained in your appliance
- Avoid the release of used oil, mercury, and polychlorinated biphenyls (PCBs), which can cause adverse human health effects

Benefits Achieved by RAD (2007-2019)

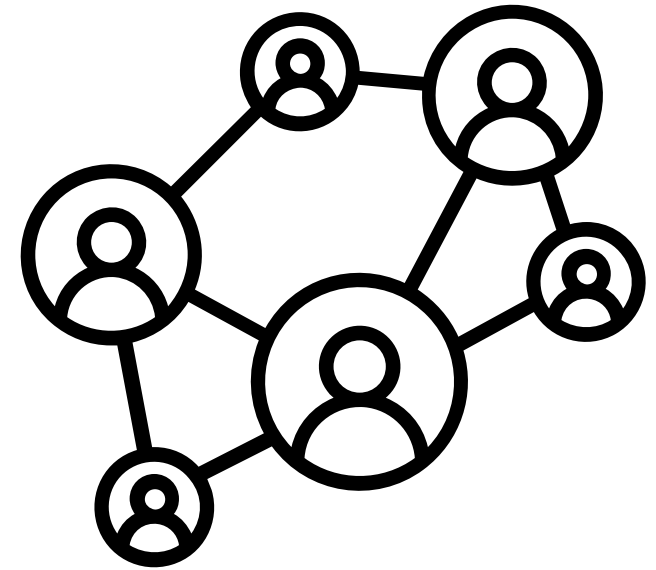
8.9 MILLION refrigerated appliances recycled the RAD way	=	38.2 MILLION pounds less of ODS emissions avoided	1,942 TONS of ozone-depleting substances avoided
		1.22 BILLION POUNDS OF METAL prevented from going to landfill	216 MILLION POUNDS OF PLASTIC prevented from going to landfill

To learn more, visit: epa.gov/rad

Advantages of Being a Partner

► Access to National Network

- Exchange information and best practices with other partners
- Build relationships with industry peers
- Participate in partner-only webinars and meetings
- Leverage RAD partnerships to make your program more efficient and effective



RAD Partners and Affiliates

Utilities



RAD Partners and Affiliates

Retailers and Manufacturers

sears®



GE APPLIANCES
a Haier company

State and Local Governments



Waste Removal Service Providers



Affiliates



DELAWARE HEALTH AND SOCIAL SERVICES
Division of Public Health



west virginia department of environmental protection

RAD Recyclers



CLEAResult®

Key Recycling



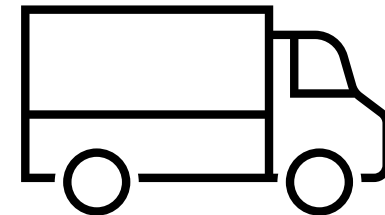
Recleim



SCS LOGISTICS

Becoming an Affiliate

- ▶ Affiliates promote the program to potential partners and increase environmental benefits for their states and communities
- ▶ Serve as technical resources and provide recognition to partners within their state
- ▶ Optional
 - ▶ Hold a pick-up event (Example: one time a year or every other year)
Example: Yakama Nation Pilot Program





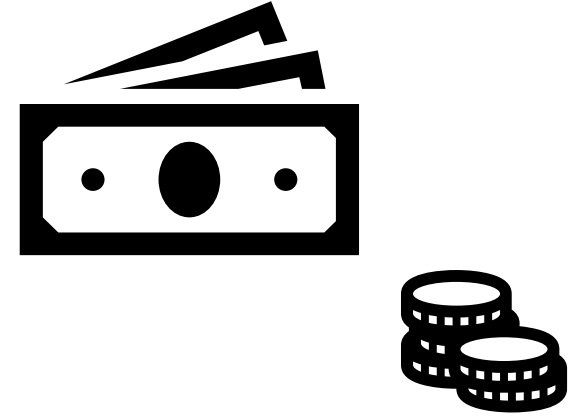
Yakama Nation Pilot Program



- ▶ Yakama Nation Grant for Project in 2009
- ▶ Community Marketing and Outreach
 - Spread the word
- ▶ Refrigerated Appliance Collection
 - Own trucks to transfer appliances to recycler
 - Awarded \$30 for appliance (Increase Recommended)
 - Refrigerated Appliances Recycled
- ▶ Community Benefits
 - Avoid illegal dumping of appliances, prevent pollution through proper recycling, educate residents about proper disposal, employ local residents, promote solid waste services of Yakama Nation and potentially add bulky pick-up to services

Potential Assistance Resources

RAD does not offer financial assistance



- ▶ Indian General Assistance Program (GAP)
 - ▶ Funding to recycle residential appliances
 - ▶ Section on "developing and implementing solid and hazardous waste programs on tribal lands"

<https://www.epa.gov/tribal/indian-environmental-general-assistance-program-gap>

- ▶ Environmental Justice Small Grants Program
 - ▶ The program is designed to help communities understand and address exposure to multiple environmental harms and risks.
 - ▶ Environmental Justice Small Grants fund projects up to \$75,000, depending on the availability of funds in a given year

<https://www.epa.gov/environmentaljustice/environmental-justice-small-grants-program>



Recycling Facilities

- ▶ Facilities that are sent refrigerated appliances for best recyclable practices
- ▶ Locations mainly in the East
- ▶ Methods for foam recovery are manual or fully-automated
- ▶ Adelmann processing
- ▶ Potential partners may have adequate recycling facilities

Find Recycling Facilities Servicing RAD Partners in your State



Search for Recycling Facilities Servicing RAD Partners

Search all columns:

Filter by	Filter by			Filter by	Adelmann
State Served	Facility Name	Address	Phone Number	Foam Recovery Method	Foam Processing Method
CA	ARCA Recycling, Inc.	15058 Shoemaker Ave. Santa Fe Springs, CA 90670	310-223-2800	Manual (saw and scrape/filet)	Adelmann
FL	Recleim	118 Hard St., Graniteville, SC 29829	803-392-7808	Fully-automated	Adelmann
GA	Recleim	118 Hard St., Graniteville, SC 29829	803-392-7808	Fully-automated	Adelmann
IL	Recleim	1601 E. Fourth St., Lima, OH 45804		Fully-automated	Adelmann

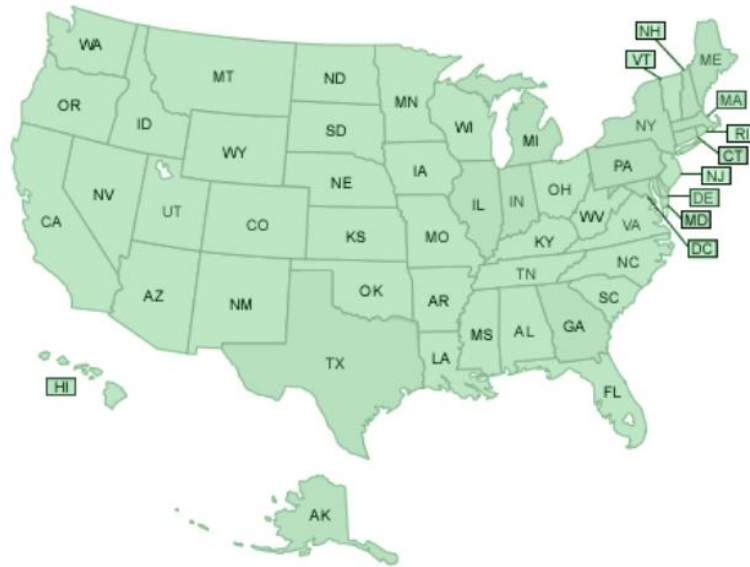
<https://www.epa.gov/rad/find-recycling-facilities-servicing-rad-partners>

Partners in Your Area



- ▶ Existing RAD partners may be available in your area for appliance pick-up
 - ▶ Utilities, Retailer, and Manufacturers (common: customer of their services or appliances)
- ▶ Special rebates from certain partners such as Energy Star

Find RAD Partner Programs in Your State



Program Name	State	Partner Type
Select	Select	Select
AEP Indiana Michigan Power	IN, MI	Utility
AEP Ohio	OH	Utility
Alameda	CA	Utility
Appliance Smart	GA, MN, OH, TX	Retailer
Baltimore Gas & Electric	MD	Utility
BSH Home Appliances	FL, IL, NC, NJ, TX	Manufacturer
Butler County Recycling and Solid Waste District	OH	State and Local Government Agency

Hear From a RAD Partner!

- ▶ Paula Robertson: Program Manager for Refrigerator Recycling Program
- ▶ Sacramento Municipal Utility District (SMUD)



SMUD's Responsible Appliance Disposal (RAD) Recycling Program

Paula Robertson, Program Manager for Refrigerator Recycling Program

August 3, 2021



Powering forward. Together.



Agenda

- Overview of SMUD's RAD Recycling Program
- SMUD's 2019 RAD Results
 - Energy Savings, Climate and Environmental Benefits

Overview of SMUD's Recycling Program

- SMUD has been a RAD partner since 2007 and has recycled thousands of refrigerators and stand-alone freezers responsibly each year.
- SMUD puts out a Request For Proposal (RFP) to select the recycler and ARCA has been recycling for SMUD since 2016.
 - Now, SMUD/ARCA offer free pick-up.
 - In the past, SMUD offered a \$50 rebate.
- In July, ARCA started working with Schnitzer Steel to collect old non-working units from landfills.

SMUD-ARCA Partnership



SMUD®

Powering forward.
Together.

We provide **safe, no-contact
pick-up for FREE** and we'll
recycle it responsibly.



We're committed to doing what's best for our customers and staff. Due to the impact of COVID-19, we're only collecting refrigerators and freezers* from the outside of customer residences (garage, patio, porch or behind garage) at this time. By moving your refrigerator or freezer ("appliance") outside prior to your pick-up appointment, you'll enable our staff to safely collect and recycle it without physical contact with you. Thank you for your understanding.

Schedule your pick-up

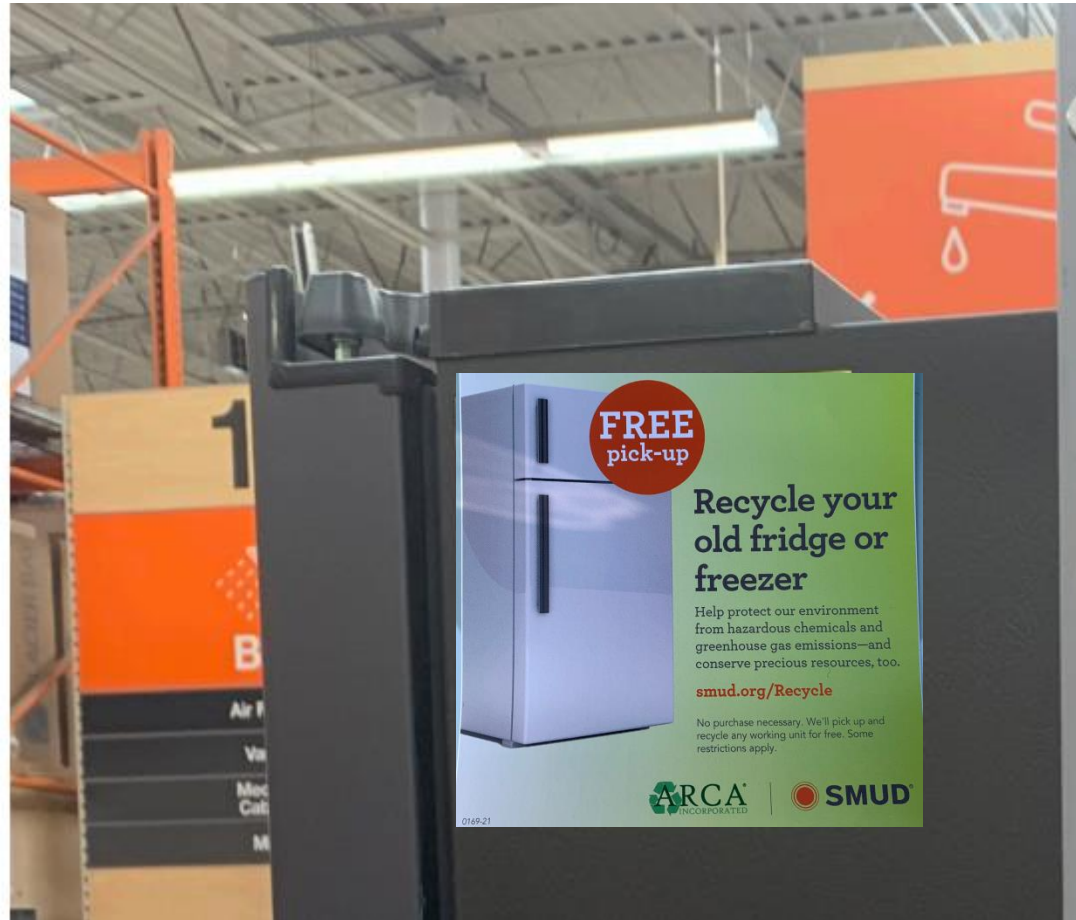
Is the appliance(s) in working condition? *

☐ Yes ☐ No

Last name: (as it appears on your bill) *

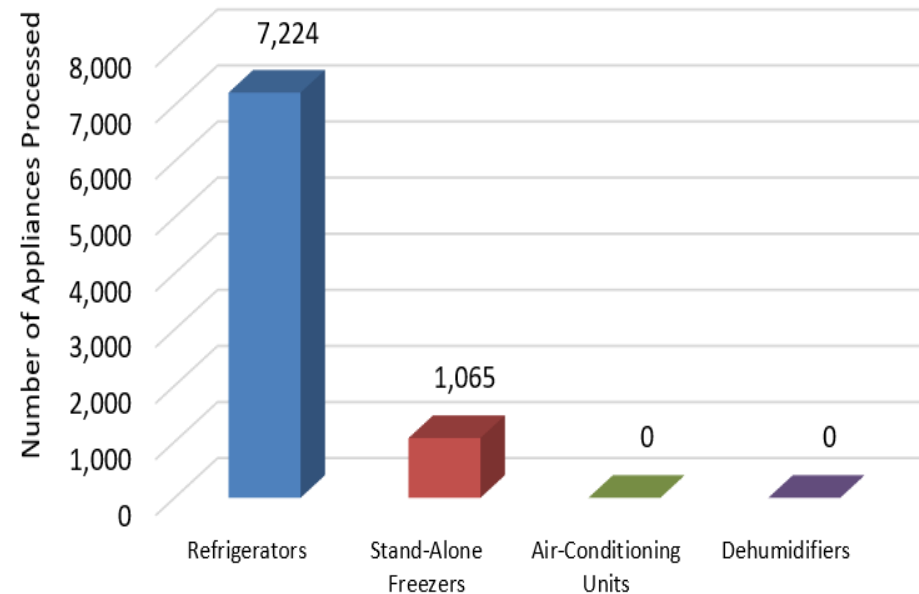
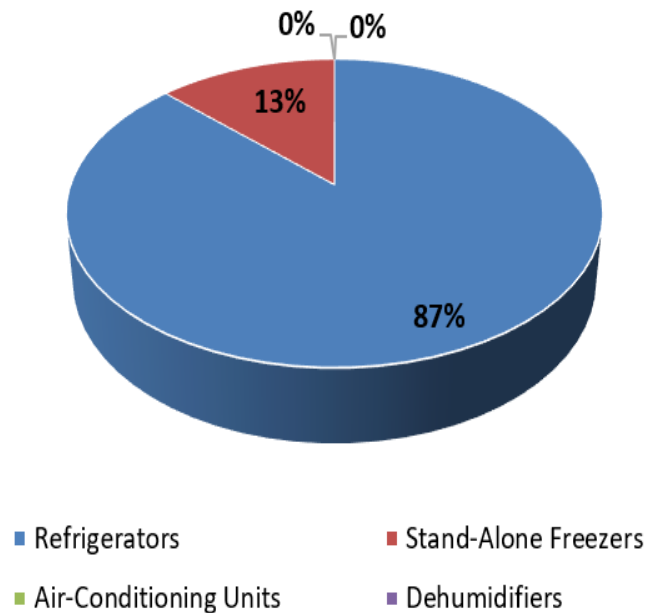
EXAMPLE: Smith

Recycling signage in retail



2019 RAD total results

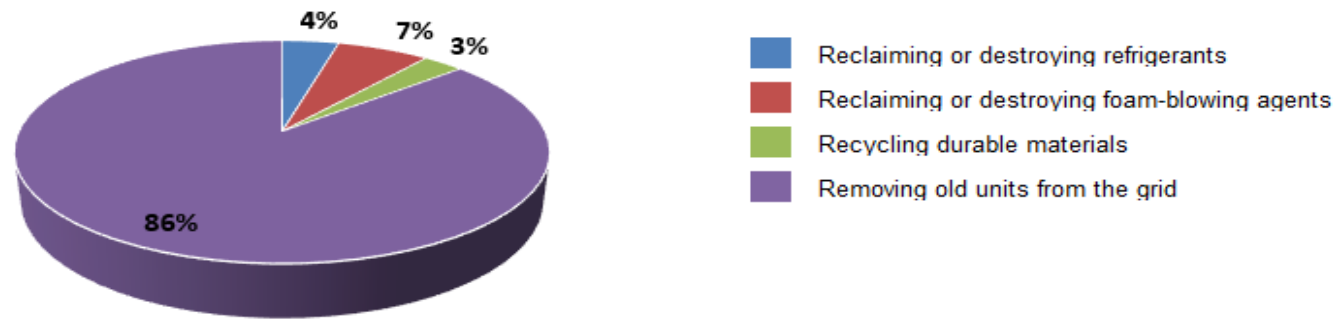
- In 2019, SMUD collected and processed 8,289 refrigerators plus stand-alone freezers.



2019 SMUD RAD climate benefits

In 2019, SMUD achieved a reduction of 45,771 metric tons of carbon dioxide equivalent, which is equal to:

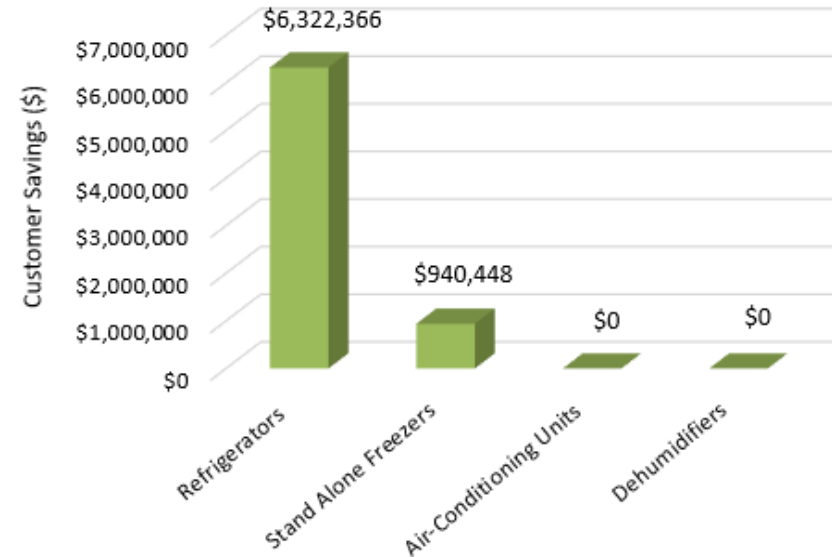
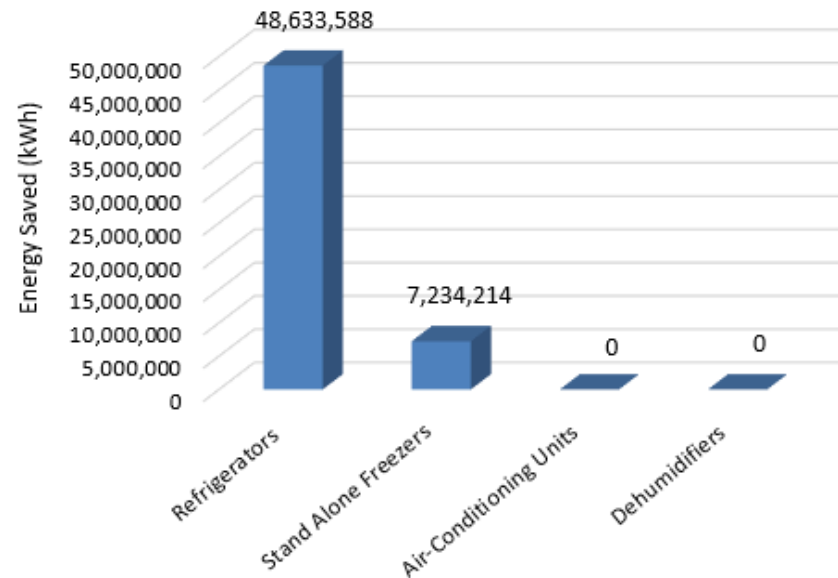
- greenhouse gas emissions from 9,703 passenger vehicles driven for year. (-or-)
- carbon dioxide emissions from 5,493 homes' energy use for one year
- carbon dioxide emissions avoided from 1,739,293 incandescent lamp switched to LEDs.



Of these emissions reduced, 4.1% can be attributed to reclaiming or destroying refrigerants, 6.7% to reclaiming or destroying foam-blowing agents, 2.9% to recycling durable materials (which avoids the need to produce virgin materials), and 86.3% to removing old units from the grid.

2019 SMUD RAD energy savings

In 2019, SMUD reduced energy use by 55,867,802 kWh, which is estimated to have saved customers \$7,262,814 on electricity bills.



2019 RAD environmental benefits for communities

In 2019, SMUD protected the environment by keeping recyclable materials out of landfills and ensuring the proper handling of hazardous waste:

Materials prevented from going to a landfill:

- 1,160,460 lbs. of ferrous metals (e.g., steel)
- 58,023 lbs. of non-ferrous metals (e.g., copper)
- 123,270 lbs. of plastic
- 26,584 lbs. of glass
- 572 gallons of used oil
- 1 PCB-containing capacitors
- 266 mercury-containing capacitors

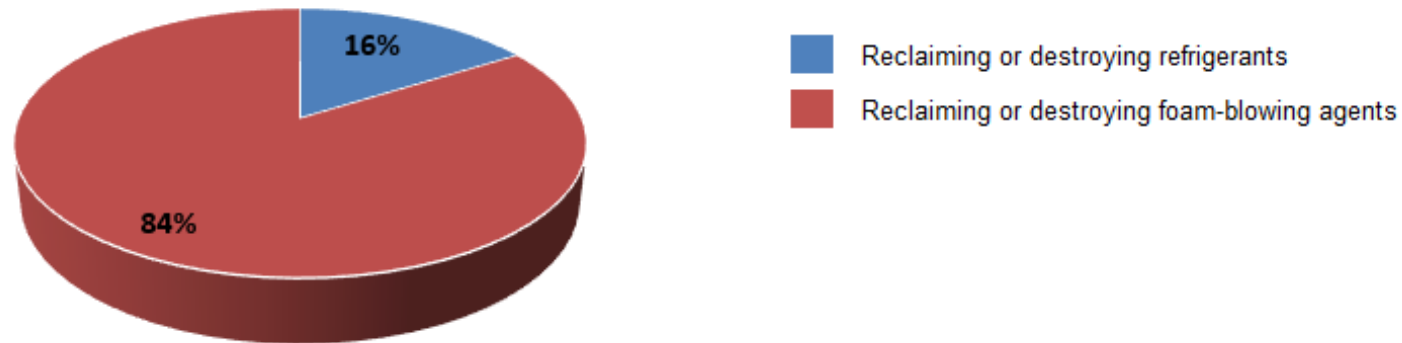


If released into the environment, used oil can leak into groundwater and major waterways and pollute drinking water sources. In addition to used oil, appliances may contain toxic chemicals and heavy metals—namely PCBs from capacitors and mercury from thermostatic switches. PCBs are regulated by EPA as toxic substances; they may cause cancer and liver damage and can have negative impacts on the neurological development of children, the human reproductive system, the immune system, and the endocrine system. Mercury is toxic and causes a variety of adverse health effects, including tremors, headaches, respiratory failure, reproductive and developmental abnormalities, and potentially, cancers.

Stratospheric ozone benefits

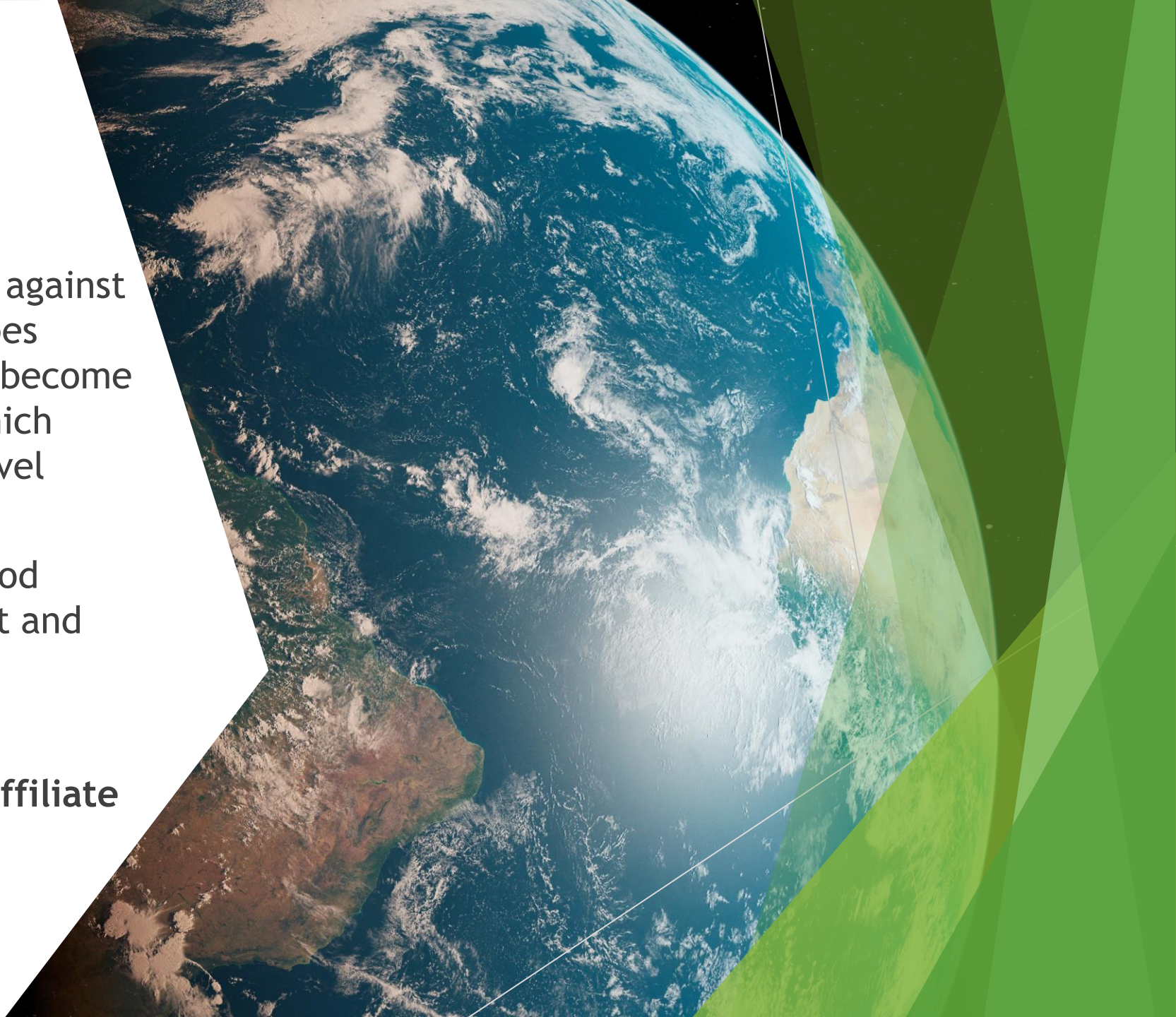
In 2019, SMUD avoided the release of 651 ODP-weighted kg of ozone depleting substances (ODS) which otherwise would have contributed to stratospheric ozone depletion. Ozone depletion causes increased amounts of UV radiation to reach the earth's surface.

Of the ODS emissions avoided, 16% can be attributed to reclaiming or destroying refrigerants and 84% to reclaiming or destroying foam-blowing agents.



The RAD Future

- ▶ Continue building resilience against climate change with us. Tribes exercise their own rights to become partners of the program, which connects us on a national level against climate change.
- ▶ Go beyond regulations as good stewards of the environment and protectors of Mother Earth
- ▶ **Become a RAD partner or affiliate**
 - ▶ Contact Sally Hamlin



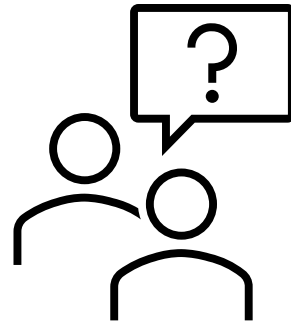
Reminder

- ▶ Unless called to speak, please keep your speaker on **MUTE**
 - ▶ If joining by phone, unmute by entering *6
- ▶ During Q&A session:
 - ▶ Raise your **HAND** to ask to speak 
 - ▶ Open **CHAT** to submit questions or ask to speak 
 - ▶ Please indicate your **NAME** and **AFFILIATION**
 - ▶ Please be mindful of time to allow others opportunity to ask questions or speak
- ▶ If your internet connection is unstable, turning off your **VIDEO** might help

Questions/Feedback

We want to hear from you!

- ▶ Are you handling refrigerated appliance foam? If so, how?
- ▶ If you are a utility, do you have any energy saving programs?
- ▶ What advice would you give RAD to better work with you?
- ▶ How do you see the RAD program working for your community?



Thank You!

- ▶ Questions?
- ▶ For more information contact:

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