

Becoming RAD

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Agenda



- Brief Introduction to the RAD Program
- Overview of RAD Partners & Achievements
- Closer Look at RAD Partnerships
 - Puget Sound Energy
 - Commonwealth Edison
- Questions



Introduction to the RAD Program



- **What is RAD?**
 - A voluntary partnership program that helps protect the ozone layer and reduce emissions of greenhouse gases
 - Recognizes partners that commit to collecting and disposing of old refrigerated appliances using the best environmental practices available and going beyond what is required by federal law

What is Required by Law?



- **Federal Regulations**

- Section 608 of the Clean Air Act requires the recovery of ODS and HFC refrigerant prior to appliance dismantling or disposal ([40 CFR Part 82 Subpart F](#))
- Subtitle C of the Resource Conservation & Recovery Act (RCRA) and Subpart D of the Toxic Substances Control Act (TSCA) require proper management and storage of universal waste (e.g., **mercury**), **used oil**, and **PCBs** (40 CFR Parts [273](#), [279](#), [761](#))

How Do Partners Go Beyond?



- In addition to complying with federal regulations on recovery of refrigerant, used oil, mercury, and PCBs, partners:
 - Recover appliance **foam**
 - Promote **recycling** of all durable goods
 - Promote the permanent retirement of old, inefficient appliances to **save energy**

What are the Benefits?



- ✓ Ozone Layer Protection
- ✓ Climate Benefits
- ✓ Cleaner, Safer Communities
- ✓ Energy Savings

Why Join?



- Partners are **publically recognized** by EPA for:

- Protecting the ozone layer and reducing 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, PCBs

- RAD helps partners achieve and **track environmental benefits**



EPA's RAD program launched in October 2006 to protect the ozone layer, cut greenhouse gas (GHG) emissions, and prevent contamination. The RAD program invites retailers, recyclers, manufacturers, state and local governments, universities, and other recycling organizations to become partners. The RAD program also seeks to increase RAD outreach to promote the program to potential partners.

In 2015, the U.S. Environmental Protection Agency (EPA) welcomed the Delaware Department of Health and Social Services (DHSS) as the first state partner in EPA's Responsible Appliance Disposal (RAD) program, a nationwide effort to protect the ozone layer and reduce emissions (GHGs) by properly disposing of old refrigerators, air conditioning units, and other refrigerants. These old appliances contain chemicals like HCFCs, HFCs, and PFCs, which have a higher global warming potential than carbon dioxide in the atmosphere. DHSS, in partnership with RAD, is collecting and recycling old environmental equipment going beyond federal law.

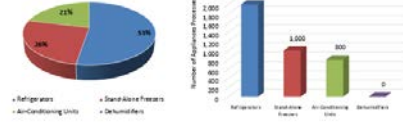


Step 5: Key Messages and Figures to Promote Program's Benefits

Restatement: This section is repeat of the information below is for reference only and is not prepared based on data contained in the Step 2 worksheets. The purpose of this worksheet is for EPA to provide RAD2 partners with key messages and figures to promote the benefits of their appliance disposal program.

RAD Results

In 2017, RCF collected and processed a total of 2,800 refrigerant-containing appliances using best environmental practices. As a result, RCF successfully reduced emissions of ozone-depleting substances and greenhouse gases to help reduce energy consumption, increase the recycling of durable materials, and exceed the program's goal of 100% collection.



Climate Benefits

In 2017, RCF achieved a reduction of 6,430 metric tons of carbon dioxide equivalent, which is equal to:

- greenhouse gas emissions from 175 passenger vehicles driven for one year (car)
- carbon dioxide emissions from 952 homes' energy use for one year (car)
- carbon dioxide emissions from 201,320 household lamps switched to LEDs

Of these emissions reduced, 88.6% was attributed to recycling or disposing refrigerators, 14.4% to recycling or disposing from blowing agents, 2.7% to recycling durable materials (which avoids the need to produce virgin materials), and 14.3% to recovering old units from the grid.



Why Join?



- RAD provides partners with a variety of **tools and resources** related to responsible appliance disposal
- RAD provides access to a national network of like-minded organizations to encourage partners to **exchange information and share best practices**



Multifamily Appliance Recycling Programs

RAD Non-Energy Benefits (NEBs)

Sally Hamlin— U.S. EPA
Mike Butkus— ComEd
Jason Christensen— Cadmus Group
Christine Gajewski— ICF International

June 2, 2016

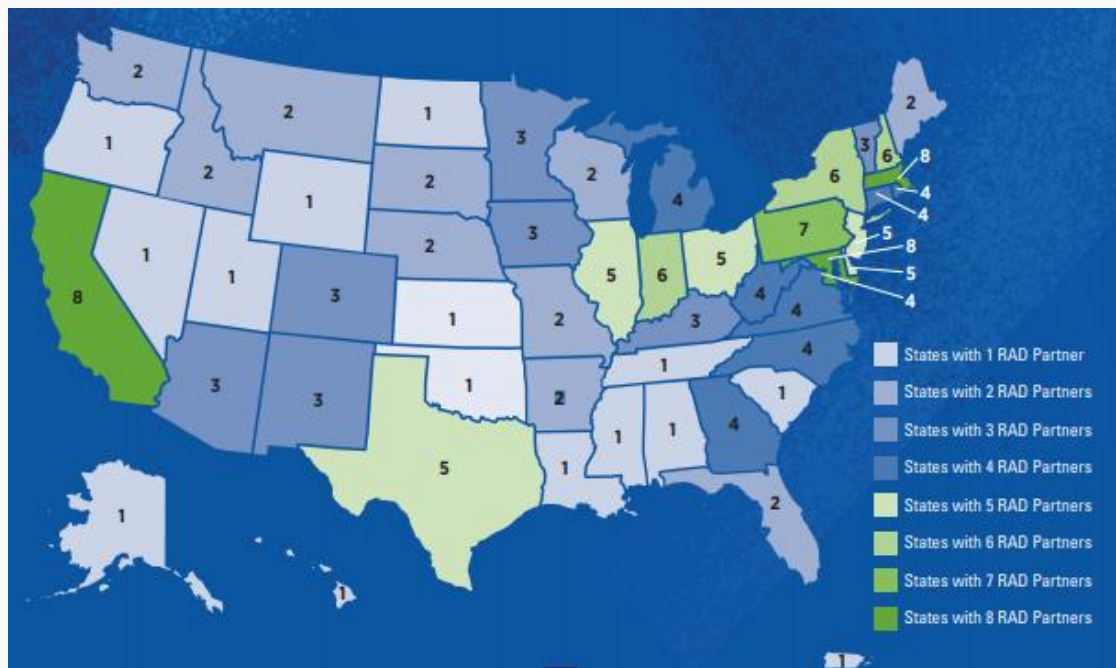
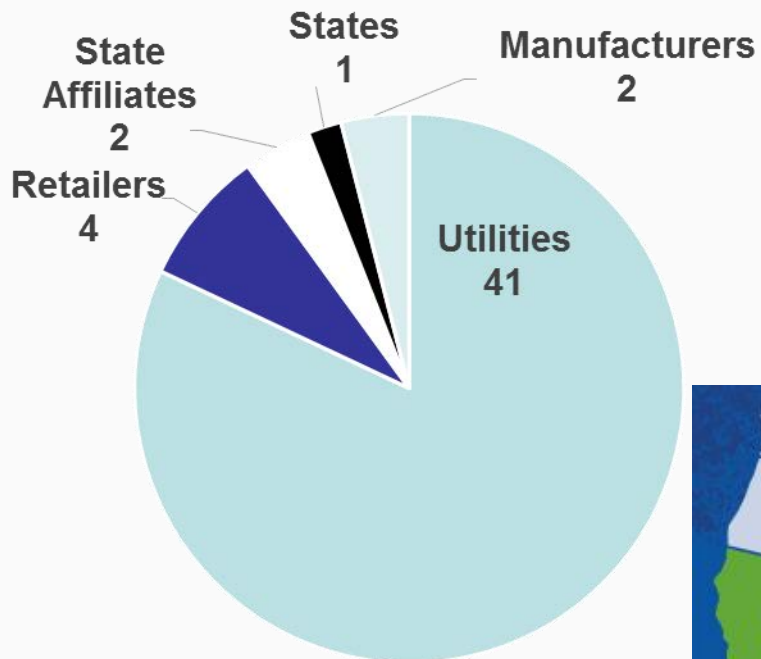
Electric





Overview of RAD Partners & Achievements

Who are RAD Partners?



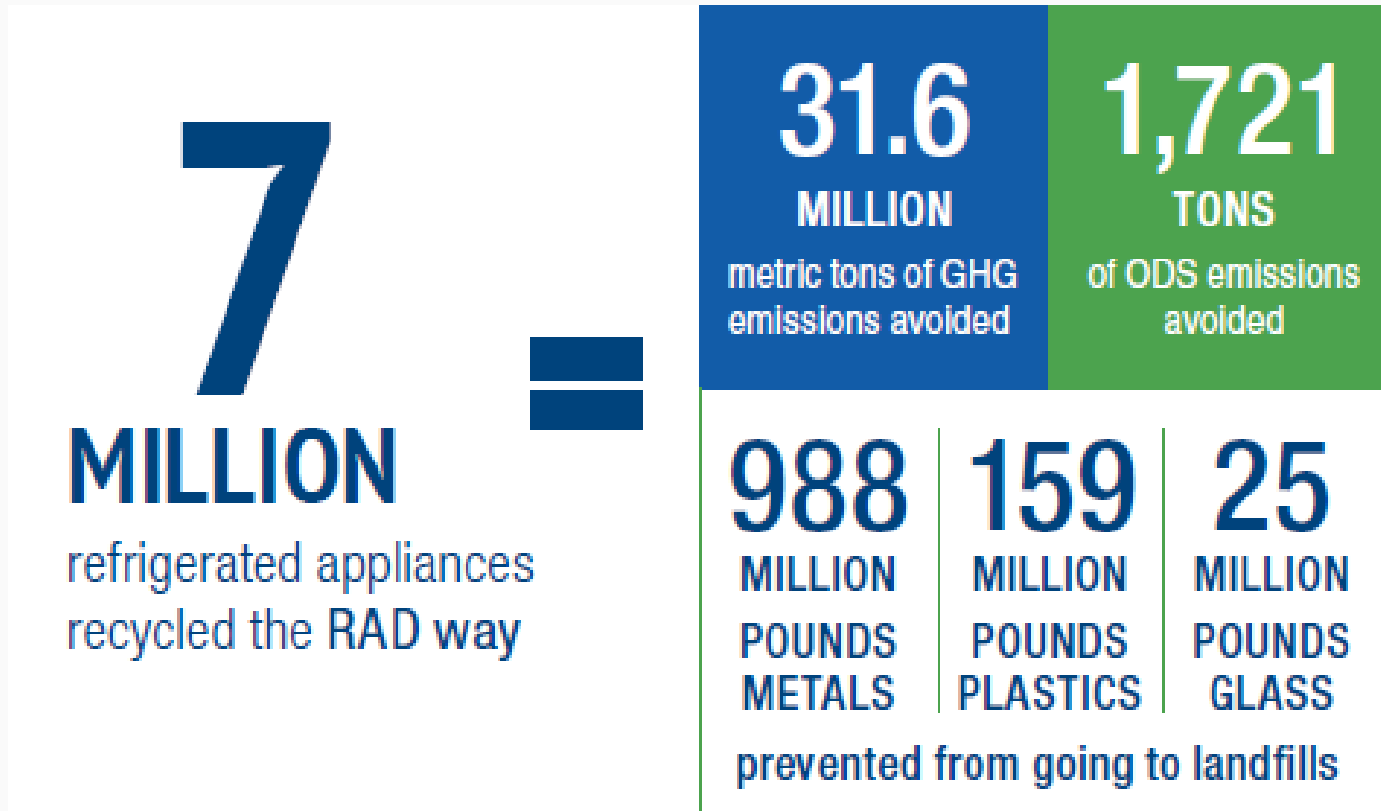
Partners & Affiliates



Partner Achievements



- From 2007-2016, partners recycled nearly **7 million** refrigerated appliances the “RAD way” resulting in:





Close-up: Puget Sound Energy's RAD Partnership

Holly Mulvenon

Program Overview



Single Family - Refrigerator and Freezer Recycling Program

- PSE residential electric customers will receive up to \$25 rebate in the form of check

Contractor for 2018 – 2019 is ARCA

- 1-877-577-0510 or www.pse.com/recycle

Criteria for participation:

- Must be a PSE electric customer
- Customer must own the unit and it must be 7.75-30 cubic feet
- Unit must be in working (cooling) order
- Unit must be plugged in the night prior to pickup
- Unit can be the primary or secondary appliance in resident
- Limit of 3 units per single family resident



Program Overview



Multifamily - Refrigerator Recycling Program

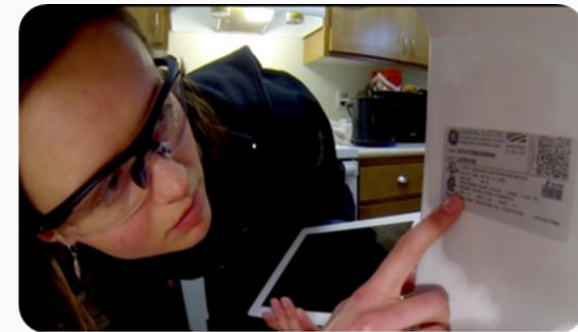
- Coordinate with property owners and management
- PSE field team completes ongoing site audits to inform property owners of their qualification for all rebate opportunities.
- Appliance owner receives \$25/unit incentive check.

Contractor for 2018 – 2019 is ARCA

- 1-877-577-0510 or www.pse.com/multifamilyretrofit

Criteria for participation:

- Must be a PSE electric customer
- Customer must own the unit and it must be 7.75-30 cubic feet
- Unit must be in working (cooling) order
- Unit must be plugged in the night prior to pickup
- Unit can be the primary or secondary appliance in resident



Partnership Best Practices



- **Make it easy for the customer**
 - Customers have one point of contact for the entire process.
- **Limited Time Offers**
 - PSE offers double incentives for limited time periods to help drive volume.
- **Leave Behind Kit**
 - The Single Family program offers a Leave Behind Kit to all participants as a thank you for participating. The kit includes an ENERGY STAR® LED, WaterSense® showerhead and three aerators. Also a brochure highlighting other PSE programs.

PSE Program Achievements

- 2018 rated #1 out of 11 PSE Energy Efficiency programs surveyed by PSE for customer satisfaction
- Single Family program has 3,583 refrigerators and 1,024 freezers recycled in 2017, a 40% increase from 2016
- The program began in 2007 for secondary units. PSE has worked with regulators over years and been able to expand the program to primary refrigerators, as well as commercial customers

RAD Program Achievements



- 58,131 units collected
 - Metal: 7,990,957 pounds
 - Plastic: 818,725 pounds
 - Glass: 177,910 pounds
 - Plus refrigerant, oil, and mercury-containing components
- 362 million kWh saved
- 434,000 metric tons GHG emissions avoided, which equals:
 - Nearly 47,000 homes' energy use for one year
- 25,000 tons ODS emissions avoided
 - Ozone depletion causes increased amounts of UV radiation to reach the Earth's surface which can cause a range of health effects, including skin cancer, cataracts, and suppression of the immune system

Benefits of RAD Partnership



- Provides customers an environmentally responsible way to dispose of old appliances
- Ensures components are recycled using RAD best environmental practices
- Helps PSE meet savings targets and reduce carbon footprint



Close-up: ComEd's RAD Partnership Fridge & Freezer Recycling (FFR) Program

**Violeta Gonzalez
Senior Program Manager**

Program Overview



ComEd.
Energy Efficiency Program

WE'LL SEND YOU \$50!



**FRIDGE &
FREEZER
RECYCLING**

ComEd.com/
FridgeRecycling

ComEd. | powering lives

Program Overview



- RAD partner since 2008 when EE launched
- Consistent \$50 incentive for recycling an old, working refrigerator or freezer since 2015
- Program Requirements
 - Units must be 10-30 cubic feet
 - Units must be working
- 81,000 units recycled last year

Partnership Best Practices



- ComEd manages all program marketing efforts
- Monthly bill inserts serve as a foundation
- Key message elements:
 - Free pickup
 - \$50 incentive
 - Environmentally responsible recycling (FAQs, Inserts, Leave Behind)
- Targeting 35+ suburban demographic

Program Best Practices



Spring cleaning just got twice as rewarding.

REWARD 1: Get rid of that old, working fridge or freezer! We'll pick it up for FREE and you'll get \$50.

REWARD 2: Feel good knowing that it'll be recycled in an environmentally responsible way.

- Foam, glass, metals and plastics are recycled into commonly used products
- Oil, refrigerants and mercury are disposed of by qualified handlers

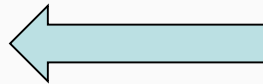
Schedule your FREE pickup today.
855-433-2700 | ComEd.com/FridgeRecycling



ComEd. powering lives
An Exelon Company

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The ComEd Energy Efficiency Program is funded in compliance with state law. 01022189136

- Bill Insert
 - Size: 3.5" x 8.5"
 - Reach: 1.9 million households each month



- Leave Behind Brochure for customers that are more environmentally conscious



ComEd. Energy Efficiency Program

THE POWER OF RECYCLING



- 1 OIL & REFRIGERANT** is simultaneously evacuated from the compressor and cooling circuit of each refrigerator and freezer. The oil can be used for cleaning purposes or in other industrial equipment while the refrigerant and capacitors containing PCB are properly disposed of or recycled by qualified handlers.
- 2 FOAM INSULATION** Approximately 10 pounds of foam insulation, containing ozone-depleting chemicals, is shredded under negative air pressure, and the harmful chemicals are converted to benign byproducts such as salt water.
- 3 GLASS** Approximately 5 pounds of tempered glass found in refrigerators can be used as an aggregate in potting soil and as aggregate material in types of concrete.
- 4 MERCURY CONTAINING DEVICES** are found in some refrigerators and freezers. These switches and thermostats are removed and shipped to a qualified handler for proper disposal.
- 5 METALS** Each refrigerator and freezer contains approximately 125 pounds of steel and 5 pounds of copper and aluminum. The steel is recycled into products such as construction rebar to reinforce concrete, while the copper is used to make electrical wire and aluminum is used to make beverage cans.
- 6 PLASTICS** Approximately 25 pounds of plastic in each unit can be recycled into products such as cell phones, computer cases, and other molded components.



Partnership Best Practices



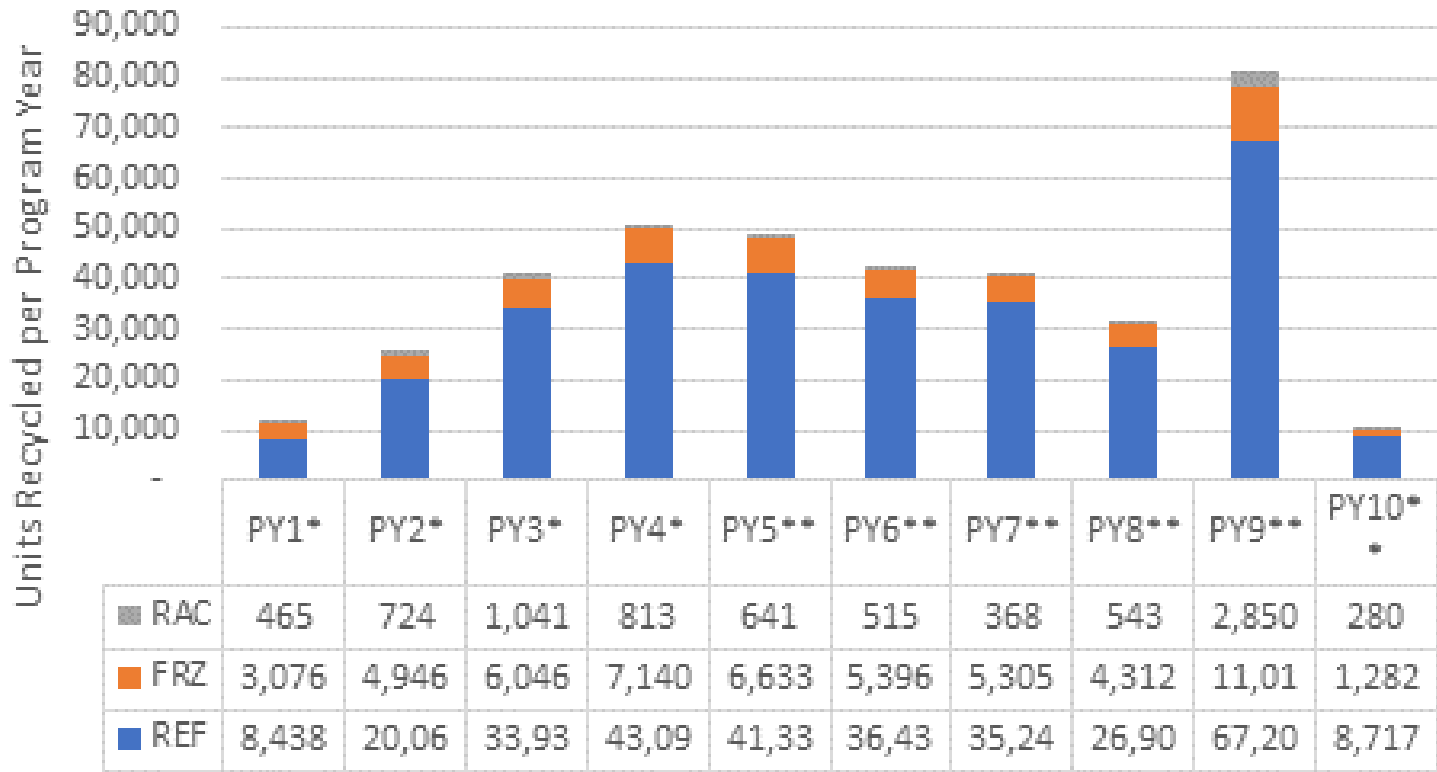
- Enrollment
- Establish Pickup Window
- Day of Collection
- Resolve Customer Issues (if any)
- Incentive Fulfillment



ComEd Program Achievements



ComEd Fridge and Freezer Recycling



ComEd Program Achievements



- As of 2017, recycled 370,000+ refrigerators, freezers, and AC units
- January – March 2018, recycled nearly 10,000 refrigerators & freezers
- PY10 goal is 45,000 units (refrigerators, freezers, and AC units)
- High customer satisfaction (97%) due to convenience and customer service in the field

RAD Program Achievements



- 316,261 units collected
 - Metal: 41,419,680 pounds
 - Plastic: 7,390,088 pounds
 - Glass: 974,549 pounds
 - Plus refrigerant, oil, and mercury-containing components
- 2.8 trillion kWh saved
- 3.0 million metric tons GHG emissions avoided, which equals:
 - Over 325,000 homes' energy use for one year
- 134,000 tons ODS emissions avoided
 - Ozone depletion causes increased amounts of UV radiation to reach the Earth's surface which can cause a range of health effects, including skin cancer, cataracts, and suppression of the immune system

Benefits of RAD Partnership



- Automated chain of custody for easy tracking
 - Enrollment
 - Collection
 - De-manufacturing



Benefits of RAD Partnership



- Reclam recycles 95% of unit components
 - Recovers and destroys ozone depleting substances
 - Materials are automatically separated
 - Recycle to make items such as rebar, electrical wire, cell phone cases, soda cans, other



How to Become a RAD Partner

How to Become a RAD Partner



If your utility is already disposing of appliances using RAD best practices, it's easy!

- Review and sign non-binding partnership agreement
- Report program information annually
- An example partnership agreement is available on the RAD website at:

<https://www.epa.gov/rad/example-rad-partnership-agreement-form>

The image shows a preview of the EPA's Responsible Appliance Disposal Program (RAD) Example Partnership Agreement form. The form is titled "EPA'S RESPONSIBLE APPLIANCE DISPOSAL PROGRAM EXAMPLE PARTNERSHIP AGREEMENT" and features the EPA logo at the top. It is divided into several sections:

- PROGRAM EXPECTATIONS:** This section outlines the program's goals, including the recovery and management of refrigerants and the disposal of appliances. It references 40 CFR 12.124 and 12.126, and states that the program is voluntary and non-binding.
- PROPER RECOVERY AND STORAGE:** This section details the requirements for the recovery and storage of refrigerants, including the use of EPA-approved recovery equipment and the requirement to store refrigerants in approved containers.
- DISPUTE RESOLUTION:** This section describes the process for resolving disputes between the parties, including the requirement to attempt to resolve disputes through informal discussions before seeking formal resolution.
- GENERAL TERMS:** This section includes provisions regarding the agreement's duration, the parties' obligations, and the requirement to sign the agreement on behalf of the parties.

The form also includes a signature block for the authorized company representative and the EPA representative, along with fields for name, address, city, state, zip, telephone, and email. At the bottom, there is contact information for the EPA, including the address: 1200 Pennsylvania Ave., NW, Washington, DC 20460, and phone numbers: (202) 245-9711 and (202) 245-3442.

If your utility is not already disposing of appliances using RAD best practices, but is interested in partnering with RAD, contact Sally Hamlin.



Questions?

For More Information



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