Old RTUs – Turning a Liability into an Asset

Advanced RTU Campaign
11a-Noon ET
September 12, 2017
Advanced RTU Campaign
Marta Schantz
Waypoint Building Group
What is the Advanced RTU Campaign?

National Campaign to promote high-efficiency RTU solutions

- High-efficiency RTU replacements and new installations
- Advanced control retrofits for existing units
- Quality Installation and Quality Maintenance
- Advanced FDD – new!

www.advancedRTU.org
1. Planned replacement with high-efficiency RTU
   - RTUs > 10-15 years old, 20% - 50% energy savings
2. Advanced RTU control retrofits
   - RTUs > 7 tons and > 5 years of service life, 20% - 50% energy savings

Lots of resources to guide you through the process!
NEW CASE STUDY
Fontana Unified School District
Innovative Approach to RTU Replacement for Schools
NEW CASE STUDY

Arbys Inc.

Innovative Approach to RTU Management & Maintenance
Join the Campaign

- **Participants** are building owners, managers, and operators (83)
- **Supporters** provide technical services, products, and information (227)
Old RTUs – Turning a Liability into an Asset
Michael Deru
National Renewable Energy Laboratory (NREL)
Why Do We Care About RTUs?

>15 million units sold since 1996
> 50% commercial floor area in U.S.
What’s in an RTU?

A 10 ton RTU has

- 1,100-1,600 lb of steel, copper, aluminum, other metals, plastic, refrigerant, oil
- The 10-35 lb of refrigerant has the largest potential environmental impact
Environmental Impact of Refrigerants

Refrigerant management ranked as the #1 solution to impact climate change

Atm CO2-eq reduction

- Refrigerant Management
- Wind Turbines (Onshore)
- Reduced Food Waste
- Plant-Rich Diet
- Tropical Forests
- Educating Girls
- Family Planning
## Refrigerants 101

<table>
<thead>
<tr>
<th>Ref. Family</th>
<th>Examples</th>
<th>ODP</th>
<th>GWP (100 yr)</th>
<th>Safety Rating</th>
<th>Toxicity</th>
<th>Flammability</th>
<th>Comments</th>
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<tr>
<td>CFC</td>
<td>R12</td>
<td>1</td>
<td>10,900</td>
<td>A1</td>
<td>Low</td>
<td>Zero</td>
<td>1930s to 1996</td>
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<td>HCFC</td>
<td>R22</td>
<td>0.055</td>
<td>1,800</td>
<td>A1</td>
<td>Low</td>
<td>Zero</td>
<td>No new systems after 2010 90% reduction by 2015 Zero by 2020</td>
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<td>HFC</td>
<td>R410A</td>
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<td>2,100</td>
<td>A1</td>
<td>Low</td>
<td>Zero</td>
<td>HFC phase down in EU and CA Court ruled on EPA phase down plans</td>
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<tr>
<td>HFC</td>
<td>R32</td>
<td>0</td>
<td>675</td>
<td>A2L</td>
<td>Low</td>
<td>Mild</td>
<td>Approved for self-contained room A/C</td>
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<tr>
<td>HFO</td>
<td>R1234</td>
<td>4</td>
<td>2,100</td>
<td>A2</td>
<td>Low</td>
<td>Mild</td>
<td>Used in auto A/C</td>
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<tr>
<td>Natural</td>
<td>R744 (CO₂)</td>
<td>0</td>
<td>1</td>
<td>A1</td>
<td>Low</td>
<td>Zero</td>
<td>Efficiency challenges in A/C</td>
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<tr>
<td>Natural</td>
<td>R717 (ammonia)</td>
<td>0</td>
<td>&lt;1</td>
<td>B2</td>
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<td>Mild</td>
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<td>Natural</td>
<td>R290 (propane)</td>
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<td>20</td>
<td>A3</td>
<td>Low</td>
<td>High</td>
<td>Approved for self-contained room A/C</td>
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</tbody>
</table>
Refrigerant Management Regulations

- **Maintenance and Handling**
  - **1/1/2017**
    - Used HFC, HCFC, and CFC refrigerants must be reclaimed by a certified technician for reuse in a different owner’s system
  - **1/1/2018**
    - Only certified technicians can purchase HFCs
    - Technicians must be certified to open HFC appliances
    - HFC appliances must be properly evacuated prior to disposal
    - Records must be maintained for disposal of appliances with 5-50 lb of HFC refrigerant
  - **1/1/2019**
    - Tighter leak detection and repair regulations for units with ≥50 lb of HFC refrigerant
Do You Know Where Your Old RTUs Go?
Old RTUs – Turning a Liability into an Asset

Jason Benton and Josh Marler

AES Reclaim
HVAC RECYCLING

“Turn Liabilities into Assets”
NEW CHANGES TO EPA REGULATIONS

2017 Amend to Section 608 Refrigerant Management Regulations

The proposed updates include strengthening leak repair requirements, establishing recordkeeping requirements for the disposal of appliances containing five to 50 pounds of refrigerant. **Effective January 2018**

**Environmental Question:** Do you know where your end of life HVAC equipment ends up?

Did you know that expired HVAC ranks as one of the most environmentally damaging waste streams?
Improving the Quality & Cost of HVAC Recycling

The Current Process for HVAC Recycling **CAN Be Improved**

**Current Process for Expired HVAC Equipment**

**Scenario 1**
- Contractor has sole discretion over what to do with the equipment (in many cases the scope of work states “contractor must properly dispose of expired equipment”)
- Provides little to no documentation on the removal of refrigerants
- Don’t pass on any financial value from refrigerant or newly purchased reusable parts

**Scenario 2**
- Contractor is required via specification to properly document refrigerant removal
- Disposes of expired units via the crane company or local salvage yard
- This process provides no cash value from refrigerant or newly purchased reusable parts
Improving the Quality & Cost of HVAC Recycling

The Recommended Process for HVAC Recycling

**SUMMARY:** Many customers have found that their contractors were making after-project profits without passing any of the value on to them, **while the customer should be sharing in the recycling profits!**

**Best Practices for Expired HVAC Equipment**

- YOU should make the decision on how your equipment is recycled and stored
- All required EPA documentation for disposal by unit and project needs to be provided
- You should directly benefit from the recovered R22 banking program through direct payment or third party banking.
- All reusable parts <2 years old should be cataloged and stored so that you can access and use them to their fullest value
Best Practices for Process
The Current Process for HVAC Recycling CAN Be Improved

Customer

Include Forms Included in Project Specification

Recycle Partner or Contractor

Coordinate Pick-up of Expired Equipment

Receive the HVAC Equipment into Inventory

Recover Refrigerant & Bank for Future Customer Use

Remove & Inventory Equipment <2 Years Old

Disassemble Expired Equipment & Sort All Materials

Submit Landfill Avoidance Report to Customer
1 Page to Add to Bid Notifications

SECTION 01 7419
EQUIPMENT RECYCLING

PART 1 – GENERAL

1. WORK INCLUDED
A. HVAC/RTU salvage, on-site storage, and coordination of third party removal. For all projects with greater than 50 Tons of combined HVAC equipment.

2. PROVISIONS
B. Contractor shall be responsible for all costs associated with equipment handling and coordination with third-party vendor.
C. Removal of any salvageable equipment or materials from the Academy Sports Site, other than as described herein, is prohibited. Not applicable to regions outside the continental U.S.

3. CONTACT INFORMATION
D. AES RECLAIM:
   Phone: (334)283-6578
   Fax: (334)283-5447
   Email: CustomerName@AESreclaim.com

PART 2 – PRODUCTS

2.1 RECYCLABLE MATERIALS
A. Recyclable Materials:
   1. Recyclable materials include end-of-life HVAC equipment.
   2. HVAC equipment refrigerant will be reclaimed off-site by AES Reclaim.

3.1 CONTRACTOR RESPONSIBILITIES
A. Contractor shall be responsible for the removal and replacement of HVAC equipment listed and shown on the project documents.
B. If required, contractor shall remove all control equipment from existing units, returning components to the Academy Construction Manager.
C. Contractors shall coordinate with the designer on site for temporary storage of equipment on grade in a secure location.
D. Contractor shall complete the AES “Request for Equipment Pickup” form and coordinate pickup with AES at least one week in advance of pickup date. Notify, AES immediately of any schedule changes (i.e., weather, permit, etc.).
E. Contractor shall provide all labor and equipment to load equipment and materials onto AES provided trailers.
F. Equipment must have all external accessories such as economizers and outdoor air hoods, removed to allow for safe transportation. All removed components shall be securely placed inside unit cavity.
G. Loading time for trailers/flatbeds must not exceed four (4) hours. Contractor shall be responsible for charges if loading times exceed 4 hours or if number of trailers exceed the estimate.

END OF SECTION

Specification Paperwork Example
Ideally, it’s a 1-Step Process

1 Page Request for Pickup

HVAC-Refrigeration Salvage
REQUEST FOR INFORMATION

Attn:____________________________________ Date:________________________

Store #/Location:__________________________

For Full Truckload projects: The awarded HVAC contractor shall be responsible for the removal and replacement of all rooftop equipment units listed and shown on the project documents. For all projects with greater than 50 Tons of combined HVAC equipment. The awarded contractor shall also be responsible for coordinating with AES Industries, Inc. for the existing rooftop equipment units to be removed from the site. The existing rooftop equipment units shall be loaded at the site onto the AES trailers within two hours of the scheduled pickup time.

For ALL projects: The awarded contractor shall be responsible for all labor and equipment required to load the units onto the AES trailers. If our trailer(s) do not show up on time, AES Industries shall be responsible for freight and rigging charges required for unit storage and eventual recycling.

AED Industries, Inc. shall comply to and follow EPA Clean Air Act, Title VI, Section 608 and Code of Federal Regulation Title 40, Part 82 when removing air conditioning or refrigerated equipment units. AES shall document all removed rooftop equipment units recording their identification numbers, model and serial numbers, the amount of refrigerant recovered from each unit, the date of decommissioning, including the company name and signature of an on-site supervisor. The awarded contractor shall continue to provide for all other documentation for new rooftop equipment units installed in accordance with the specifications and required project close-out documents.

Questions: Please complete all fields and call Cliff Jones 334-799-6333 or email cjohnes@aescurb.com

REQUESTED PICKUP DATES & TIME:

DATE ____________________________ TIME __________________________________

CONTACT NAME:_____________________ CONTACT PHONE:___________________

PICKUP ADDRESS:

Shipping Coordination
Cliff Jones x307 cjohnes@aescurb.com

Shipping Coordination
George Lasher x216 glasher@aescurb.com

This form completed by: __________________________ Date:________________________

Please refer all inquiries to one of the following:

AES Industries, Inc. Tallassee, AL (334) 283-6578

Department Code Name Ext. Date
Shipping Coordination Cliff Jones x307 334-799-6333
Shipping Coordination George Lasher x216 glasher@aescurb.com

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Customers who promote sustainable practices through their participation in the Recycle Program, save millions of pounds of resource from landfills each year.

SUMMARY: By measuring and reporting on your environmental output, you can show stakeholders how you can turn liabilities into assets!
Asset Utilization Report
Inventory Reporting Available for Requested Assets for Reuse

Take Advantage of All Your Reusable Parts:

- All your facilities & contractors should have the ability to pull from inventory of reclaimed parts
- Parts should be shipped at little or no cost to the customer
- Compare year-after-year usage of assets across your portfolio
RETAILERS WHO RECYCLE & REUSE

Recycling & Reuse Program Success
Thank you!

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