

# Electronics Recycling



New Hampshire Solid Waste Facility Operator Training  
March 28, 2017

# Workshop Overview

- ▶ What do we mean by electronics?
- ▶ Electronics recycling in New Hampshire & around the region
- ▶ Types of electronics recyclers
- ▶ Videos of electronics recycling
- ▶ Electronics recyclers - certification & why it matters
- ▶ Electronics recyclers serving New Hampshire
- ▶ Other opportunities for recycling electronics
- ▶ Recycling markets

# Learning Objectives

- ▶ Familiarity with the how electronics recycling industry works
- ▶ Knowing who the electronics recyclers are in New Hampshire
- ▶ Understanding the role of certification in the recycling industry
- ▶ Getting your questions answered

# What are Electronics?

- ▶ Computers, televisions, monitors, printers & peripherals
- ▶ Cell phones, iPods, tablets & e-readers
  - Including CRTs



# New Hampshire Law

- ▶ Disposal ban for video displays larger than 4 inches
  - Televisions, computers monitors whether CRT, LCD or plasma screens
- ▶ Universal Waste Rule
  - CRTs
  - Batteries - nickel-cadmium, small sealed lead acid, & lithium
- ▶ Permitting for electronics recyclers

# Why the Disposal Ban

- ▶ Disposal capacity
- ▶ Hazardous constituents, such as lead
  - CRTs contain 4 - 8 pounds lead each



# Permit Requirements

- ▶ New Hampshire:
- ▶ Federal: None. There are *no federal permit requirements*
  - EPA ID number is a shipping number

# Electronics Recycling in the Region

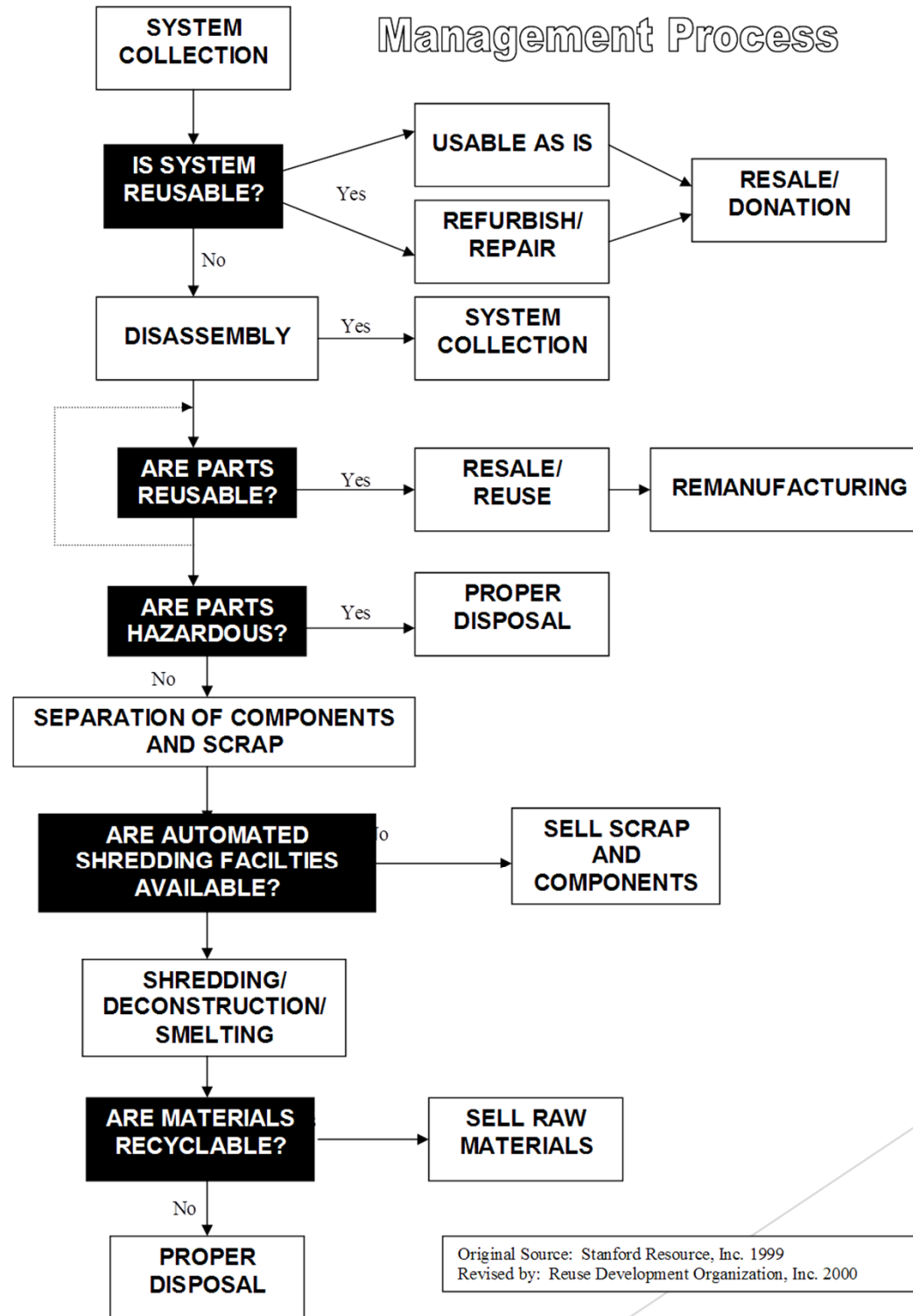
- ▶ Most New England states have manufacturer take-back laws for consumer electronics
  - What is included & how they work varies by state
- ▶ All New England states have disposal bans
  - What is included & how they work varies by state



# Different Types of Recyclers

- ▶ Asset recovery
- ▶ Reuse / Repair / Remanufacture
- ▶ Demanufacturing
- ▶ Shredding
- ▶ Broker

# Flowchart of Electronics Management Process



Original Source: Stanford Resource, Inc. 1999  
Revised by: Reuse Development Organization, Inc. 2000

# Asset Recovery

- ▶ Manages surplus property from government & large companies
- ▶ May remanufacture, demanufacture, &/or sell units “as is”, or resell components & parts

# Reuse/Repair/Remanufacture

- ▶ Reuse: Donates or sells whole unit electronics or parts for use for original purpose
- ▶ Repair: Repairs electronics for direct resale to consumers
- ▶ Remanufacture: Builds whole unit electronics from components or rebuilds electronics for resale to consumers, retailers or brokers

# Demanufacture

- ▶ Takes electronics apart
  - Resale of components & commodities
  - Preparation for shredding
- ▶ May sell workable devices “as is” to brokers, retailers, public
- ▶ Nominal repair/remanufacture for resale

# Shredding

- ▶ Puts whole unit electronics or parts through a shredder
- ▶ Shredder breaks up into smaller pieces
- ▶ Material separated & sold as commodities for recycling

# Broker

- ▶ Buys & sells
  - Whole unit electronics
  - Processed materials, such as circuit boards
- ▶ Can include specialization in reselling specialized or 'exotic' equipment
- ▶ Often, material goes overseas

## Videos

# Electronic Recycling Operations

- ▶ Wisconsin
- ▶ URT
- ▶ Good Point Recycling



# So, Electronics Should be Recycled - but by who?

Answer:

- ▶ Certified electronic recyclers

# What is a Certified Electronics Recycler?

Recycler that has had an assessment done by an independent, 3<sup>rd</sup> party organization that is qualified & licensed to issue certifications to a specific standard.

- ▶ Either R2 or e-Stewards

## What does that mean?

A certified electronics recycler is a *facility* that has received a 3<sup>rd</sup> party audit that verified that it meets the requirements of either the R2 or e-Stewards Standard.

# Electronics Recycler Standards Address

- ▶ Worker health & safety
  - Employee training, personal protective gear
- ▶ Regulatory & permitting compliance
  - Local, national & international
- ▶ Data security
- ▶ Hazardous waste management
- ▶ Insurance, Facility Closure Plans, & Financial Assurances

# Why It Is Important To Use A Certified Electronics Recycler

- ▶ Only way to ensure not “self-certifying” or making unsubstantiated claims
  - No federal laws or requirements specific to electronics recyclers
- ▶ Known set of performance standards that recycler is meeting
- ▶ Ensure that practices meet your expectations
- ▶ Auditing of recyclers by independent, 3rd party organizations that are qualified & accredited to issue certification to specific standard
- ▶ Financial assurances, insurance & closure plans

# Electronic Recyclers Serving New Hampshire

- ▶ NRRA “approved vendor” list
- ▶ e-Stewards & R2
- ▶ Out-of-state options

# Other Electronics Recycling Options - Manufacturer Take-Back Programs

- ▶ Staples
- ▶ Best Buy
- ▶ Goodwill/Dell Reconnect
- ▶ Call2Recycle - cell phones & batteries
  - Lowes, Staples, Radio Shack, Sears, Home Depot, Ace Hardware,
- ▶ Wireless carrier stores - such as Verizon, AT&T
- ▶ Brand owner mail back programs



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[Best Buy Recycling Standards](#)

[Recycling Program FAQs](#)

[Recycling for Businesses and Organizations with RecycleNation](#)



# Recycling Markets for Electronics

- ▶ Plastic
- ▶ Metals
- ▶ Circuit Boards
- ▶ CRT glass
- ▶ Other glass
- ▶ Batteries
- ▶ Hazardous components

# Plastic

- ▶ Plastic used in electronics is valuable and recyclable
  - Demanufactured into large pieces – such as casing
  - Ground up as part of shredding process
- ▶ Fate
  - Reused in electronics
  - Burned for energy

# Metals

- ▶ Aluminum, copper, precious metals, rare earths
- ▶ Fate
  - Recovered & reused

# Circuit Boards

- ▶ Low grade & high grade
- ▶ Fate
  - Reused as is
  - Repaired & reused
  - Smelting for metals

# CRT Glass

- ▶ Lead smelters
- ▶ Metal recovery - copper
- ▶ Glass-to-glass recycling
- ▶ Reused or resold
- ▶ Exported



## Other Glass

- ▶ Panel glass from CRTs
- ▶ Glass from other types of monitors
- ▶ Fate
  - Asphalt, abrasives, industrial applications

# Batteries

- ▶ Reused
- ▶ Recycled
  - Rechargeable

# Hazardous Materials

- ▶ Mercury containing lamps
- ▶ Batteries
- ▶ Toner cartridges



# Contact Information

- ▶ Lynn Rubinstein, Executive Director
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*See you at the next training - best management  
practices for collecting electronics for recycling  
April 6, 2017*