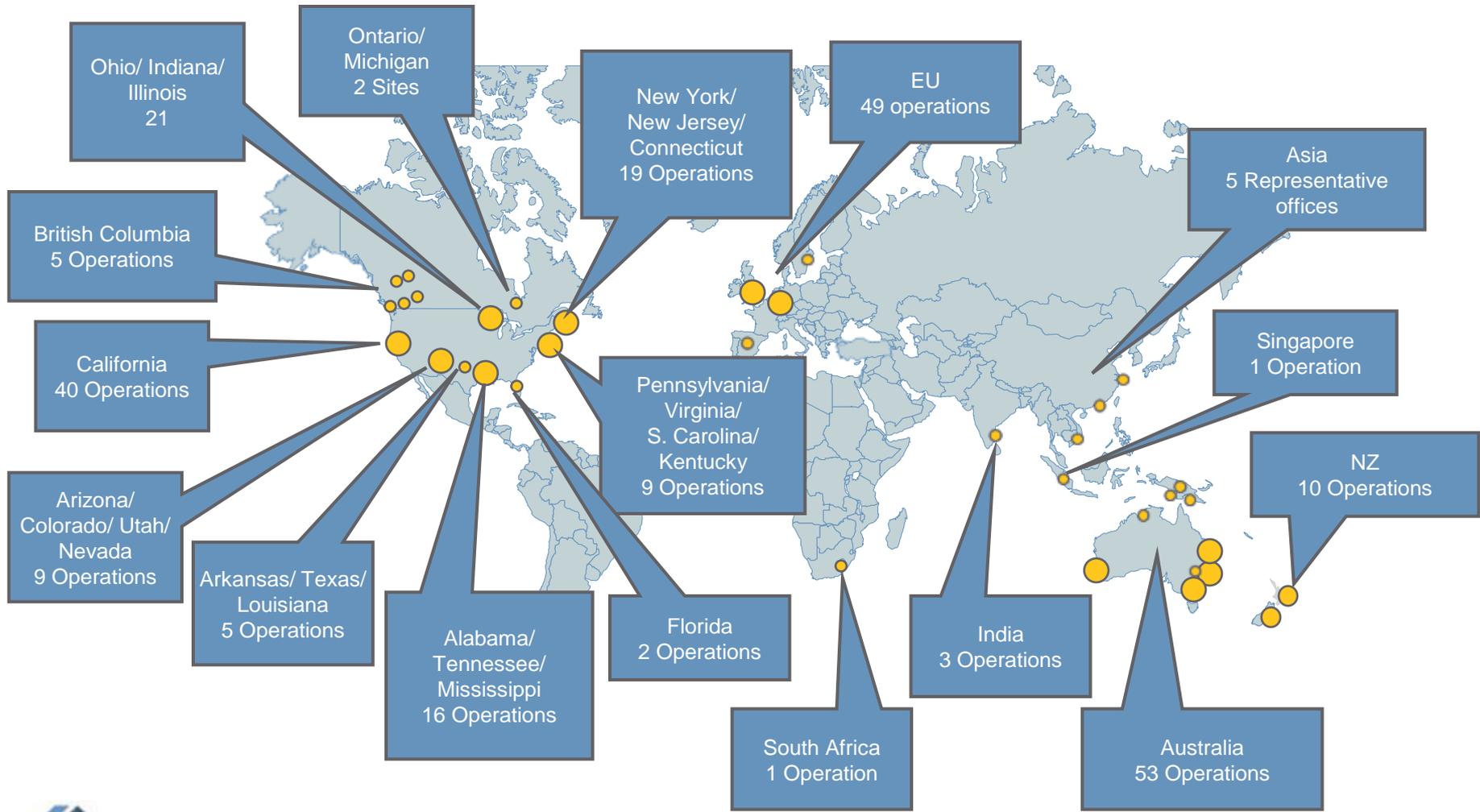


Recycling Markets and CRT Glass



Renee St Denis, Vice President
Sims Recycling Solutions
March 20, 2014

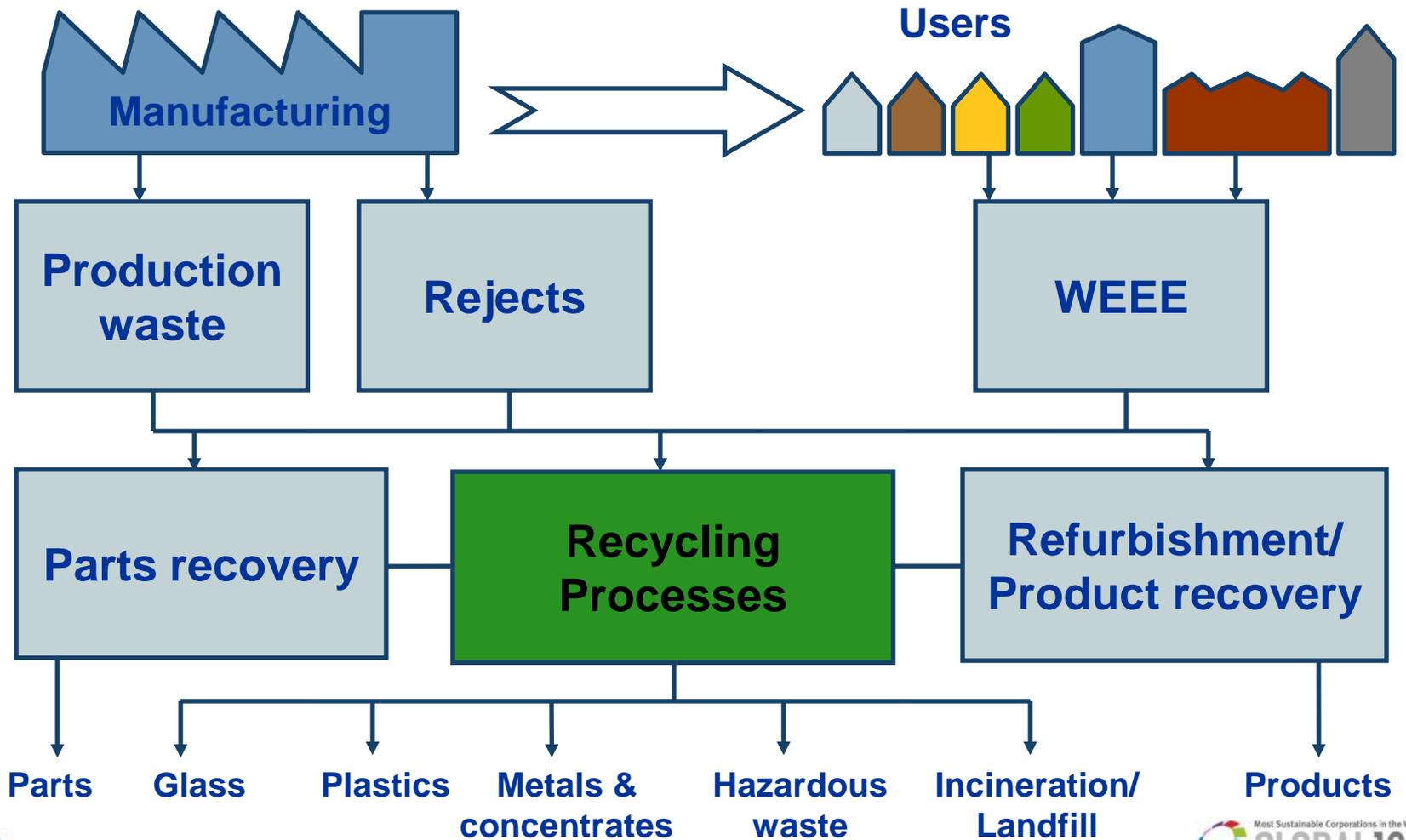
Sims Metal Management: 250+ Locations



Sims Recycling Solutions - Global Overview

- The world's largest electronics recovery and recycling company
- Over 2000 employees, ~600 in US
- 2013 FY production = ~500,000 tons of electronics recycled, >100,000 tons (200 million pounds) in US
- Many facilities “multi-service”
- Circa 2million individual assets recovered for reuse / year
- Over 15m individual Integrated Circuits recovered
- Exposure to many differing legislative models

Electronics Lifecycle

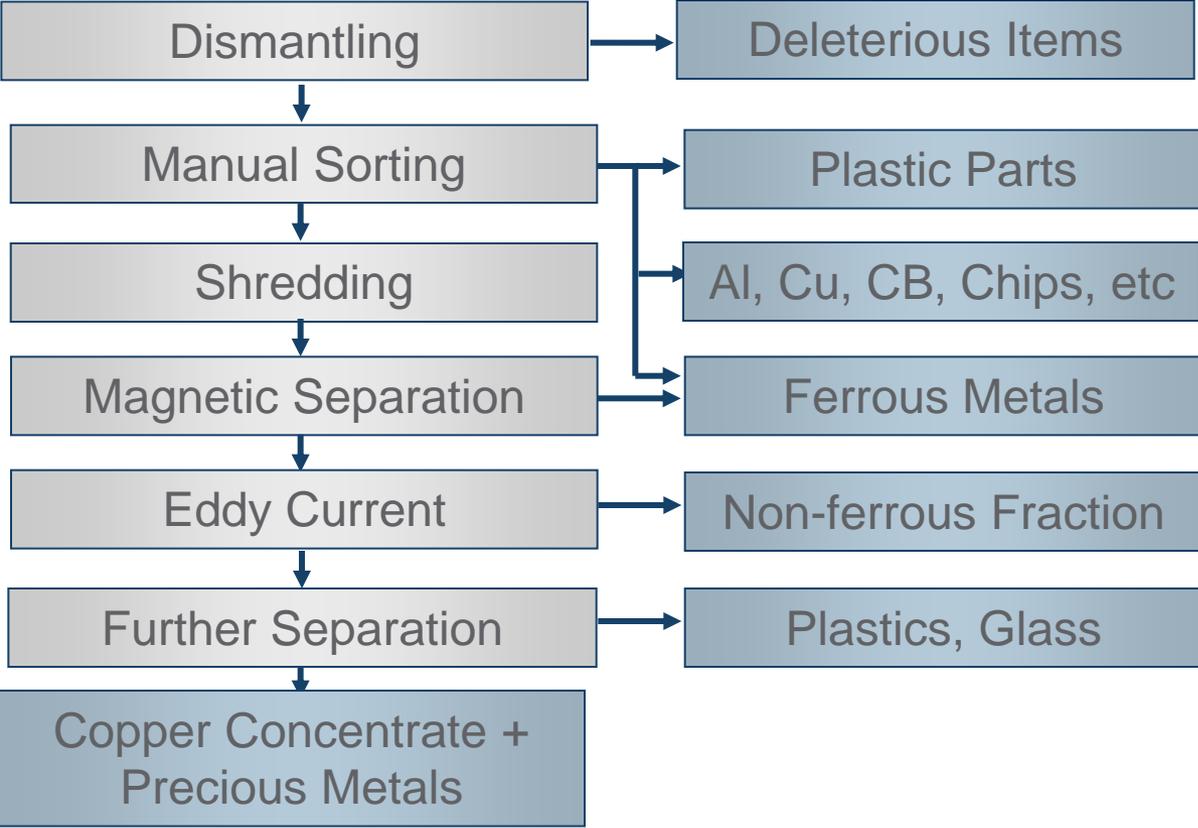


Typical Sims Recycling Facility

- Shipping and Receiving
- Decontamination
- Manual disassembly
- Material reduction processes (e.g. shredders)
- Material separation processes (e.g. magnets, eddy currents, air tables)



Electronics Recycling Process



Economics of Electronics Recycling

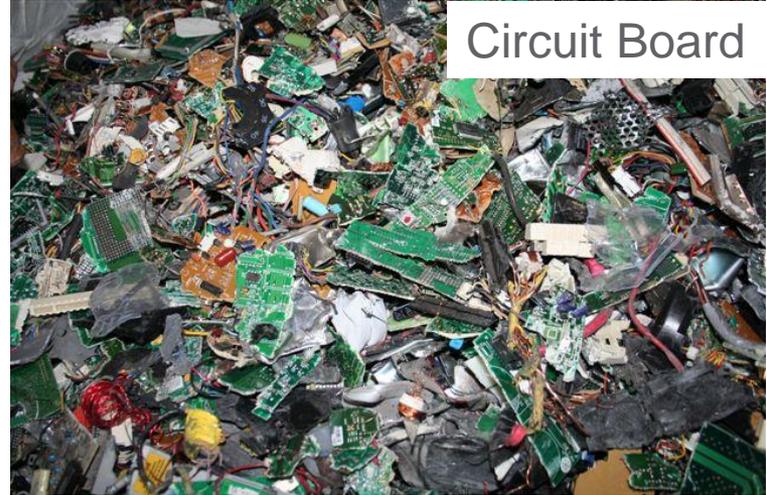
- Very simple math:
Cost of acquisition, separation and preparation of commodity materials less **value of commodity materials** determines profit or loss
- Collection and transportation (acquisition) are often the biggest expenses
- Processes can be manual or automated
- High quality processes that protect workers and the environment require high \$\$ investment
- Commodity values play important role (gold, steel, plastics) and are most volatile of all factors

High Volume Output Commodities

Ferrous



Circuit Board



Non-Ferrous



Plastic

Example: Desktop PC

Cost Element	Cost Estimate/Pound
Collection	-.04
Transportation	-.05
Commodity generation	-.13
Commodity value	+.42
Avg weight	22 pounds
Total	\$4.35 profit

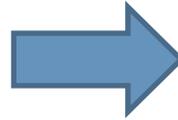
What CRT Piles Really Look Like



Glass Transformation



Hand breaking
“Automated” cutting
Shredding



Coating removal
Sorting
Polishing

Recycling/Disposal Options for CRT Glass

- Glass to Glass
 - One manufacturing plant left in world; located in India; ong term prospects are limited
- Lead Smelters
 - Requires long distance transportation
- Glass Furnaces
 - Unproven technology; requires large investment
- Alternate Daily Cover
 - Most states reject as appropriate for their covered products
- Manufacture of Other Products
 - Requires extensive material prep; often requires export
- Application to Roadbed
 - Not approved in US
- Landfill
 - May defeat the purpose of producer responsibility law

Example: CRT Monitor

Cost Element	Cost Estimate/Pound
Collection	-.04
Transportation	-.05
Commodity generation	-.09
Commodity value	-.06
Avg weight	31 pounds
Total	\$7.44 loss

Example: CRT TV

Cost Element	Cost Estimate/Pound
Collection	-.04
Transportation	-.05
Commodity generation	-.09
Commodity value	-.08
Avg weight	70 pounds
Total	\$18.20 loss

How Much Glass is There?

- 7.2 million tons awaiting eventual disposal – 85% thought to be discarded in next 10 years
- >12 billion pounds in the next decade!?!?!?!?
- Piles of glass are everywhere:
 - August 2012 – 1.2 million pounds in mid-Atlantic
 - September 2013 – 8 million pounds in Arizona
 - February 2014 – 1 million pounds in New Jersey
 - March 2014 – 6 million pounds in Cincinnati
- What is industry capacity?
- What is the cost?
- Who will pay?