



Electronics Recycling

*A national perspective on
challenges and successes*



Neil Peters-Michaud
E-Cycle WI Stakeholder Meeting
May 7, 2014



PRESENT

FUTURE

PAST

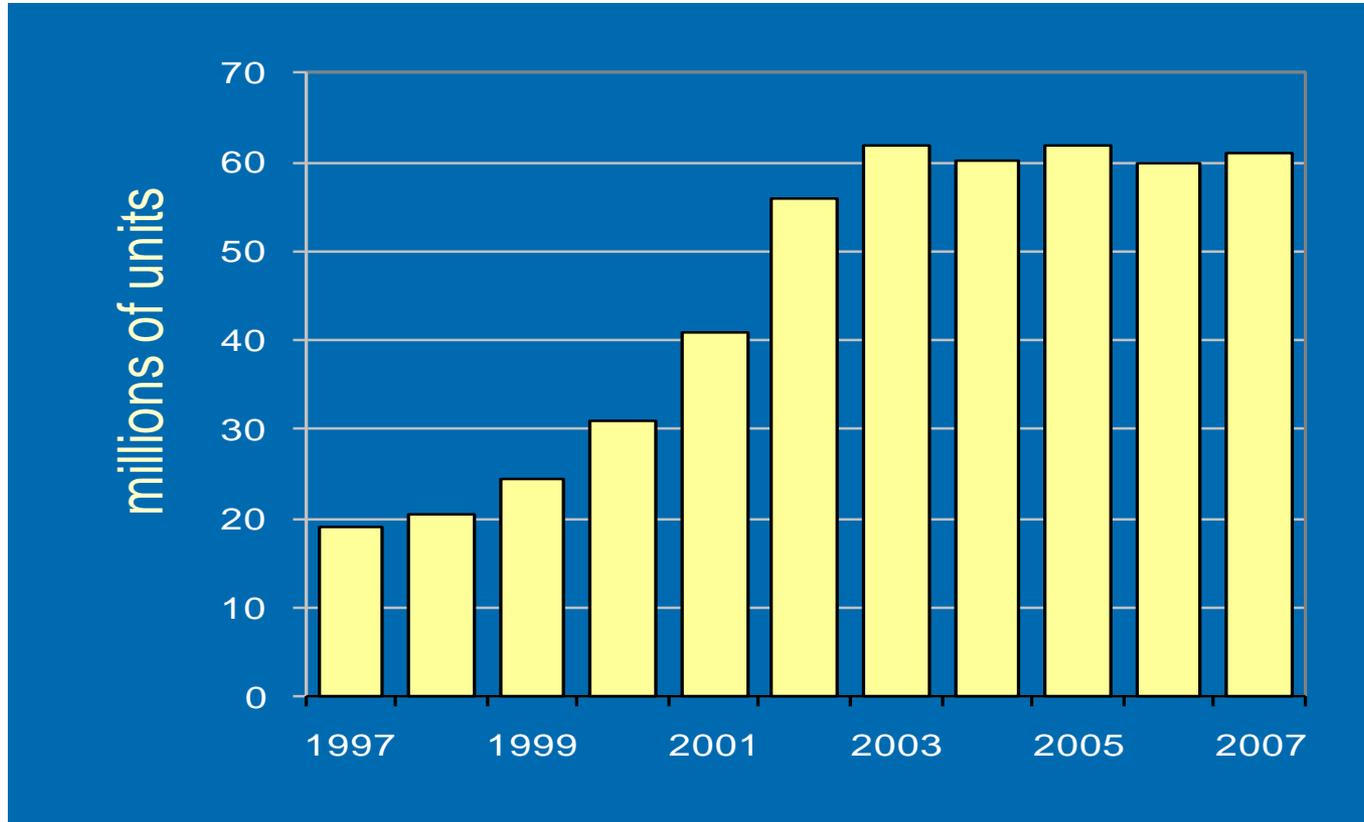


1999



The growing e-waste stream

What was forecast for PC retirement in 1999



Source: Stanford Resources, 1999

400 million electronics scrapped annually



In 2009 . . .

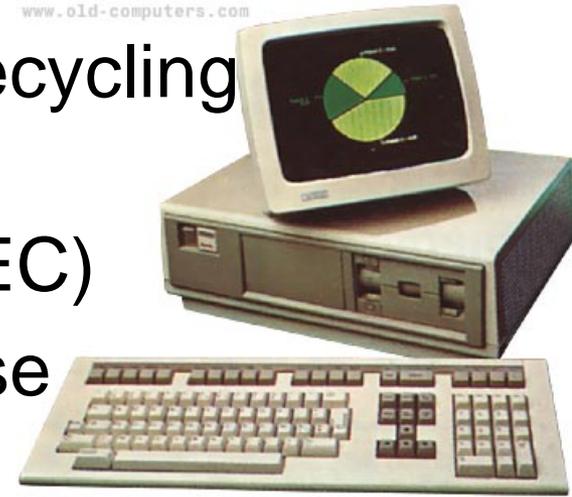
- 438 million new consumer electronics were sold;
- 5 million tons of electronics were in storage;
- 2.37 million tons of electronics were ready for end-of-life management; and
- 25% of these tons were collected for recycling

Source: US EPA, <http://www.epa.gov/epawaste/consERVE/materials/ecycling/manage.htm>

Minimal competitors in 1999

- Manufacturers had some internal recycling and reuse programs
 - IBM, Digital Equipment Corp (DEC)
 - Generate revenue from enterprise equipment
- Scrap dealers harvest steel and precious metals
- Small computer repair shops resold units

www.old-computers.com



Immature and Fragmented Market

CRT glass trends

- In 2002, there were still 3 glass furnaces in the U.S.
- “Envirocycle” was the leading CRT glass processor
- Cascade cut CRT glass *and we concluded that it was a losing venture*



Price of gold

20 Year Gold Price in USD/oz

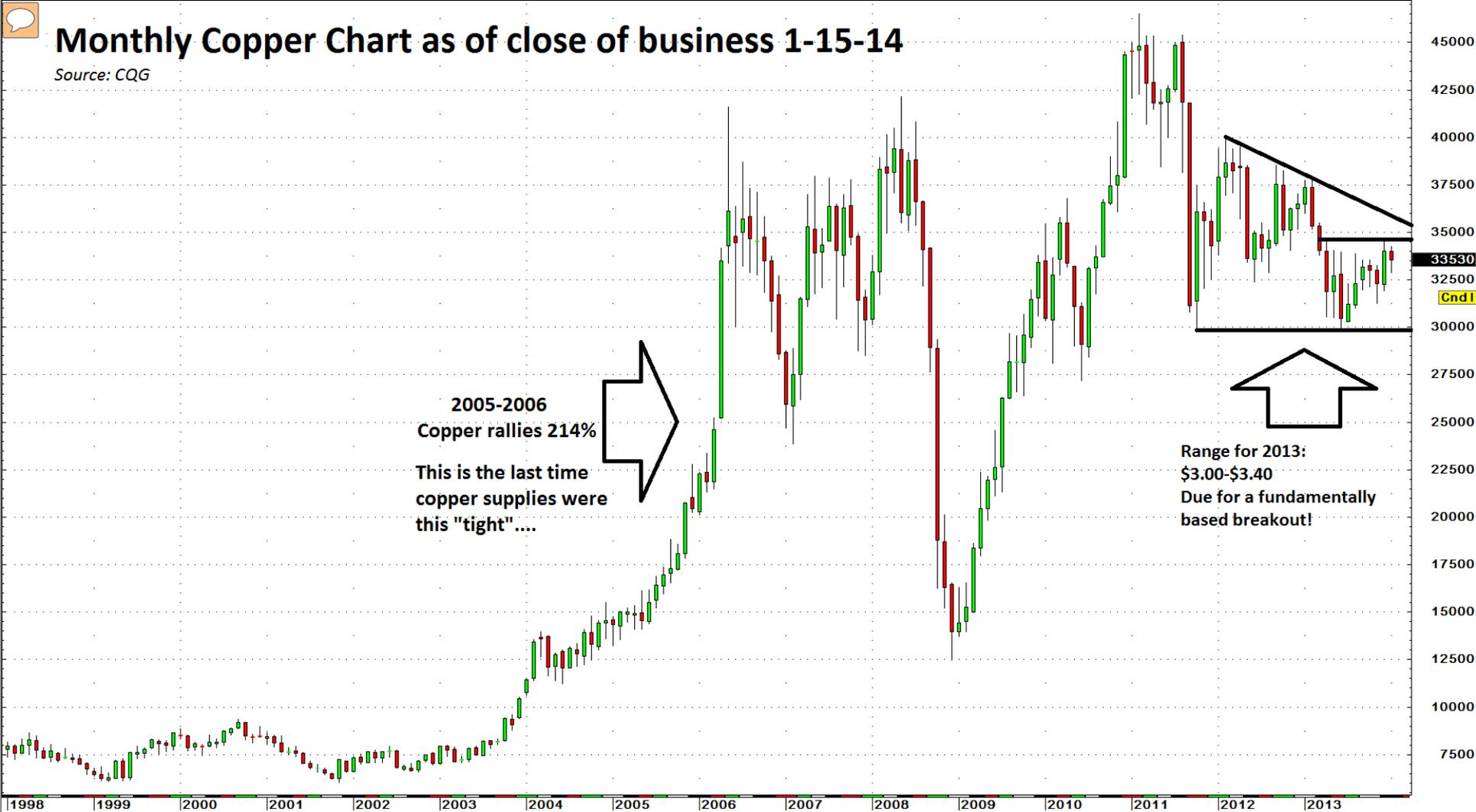
Last Close: 1309.30

High: 1889.70 Low: 252.80 ▲ 934.80 249.61%



Monthly Copper Chart as of close of business 1-15-14

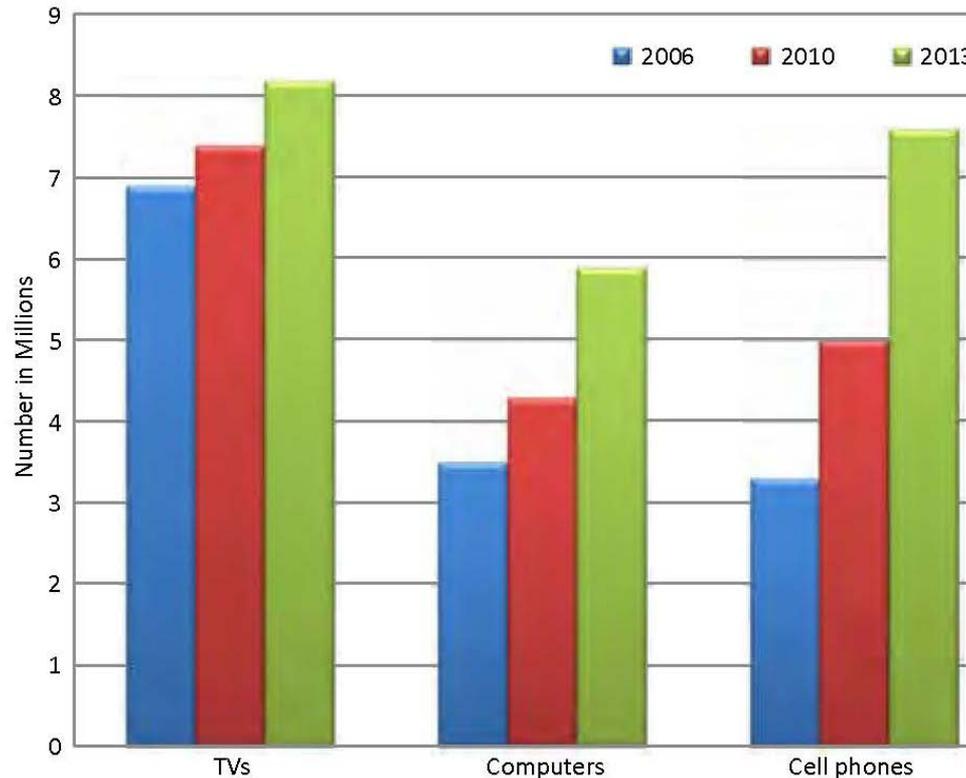
Source: CQG



Metal prices are at historical highs
– but how long will they last?

Growth in electronics for recycling

Total number of electronics in Wisconsin homes over time



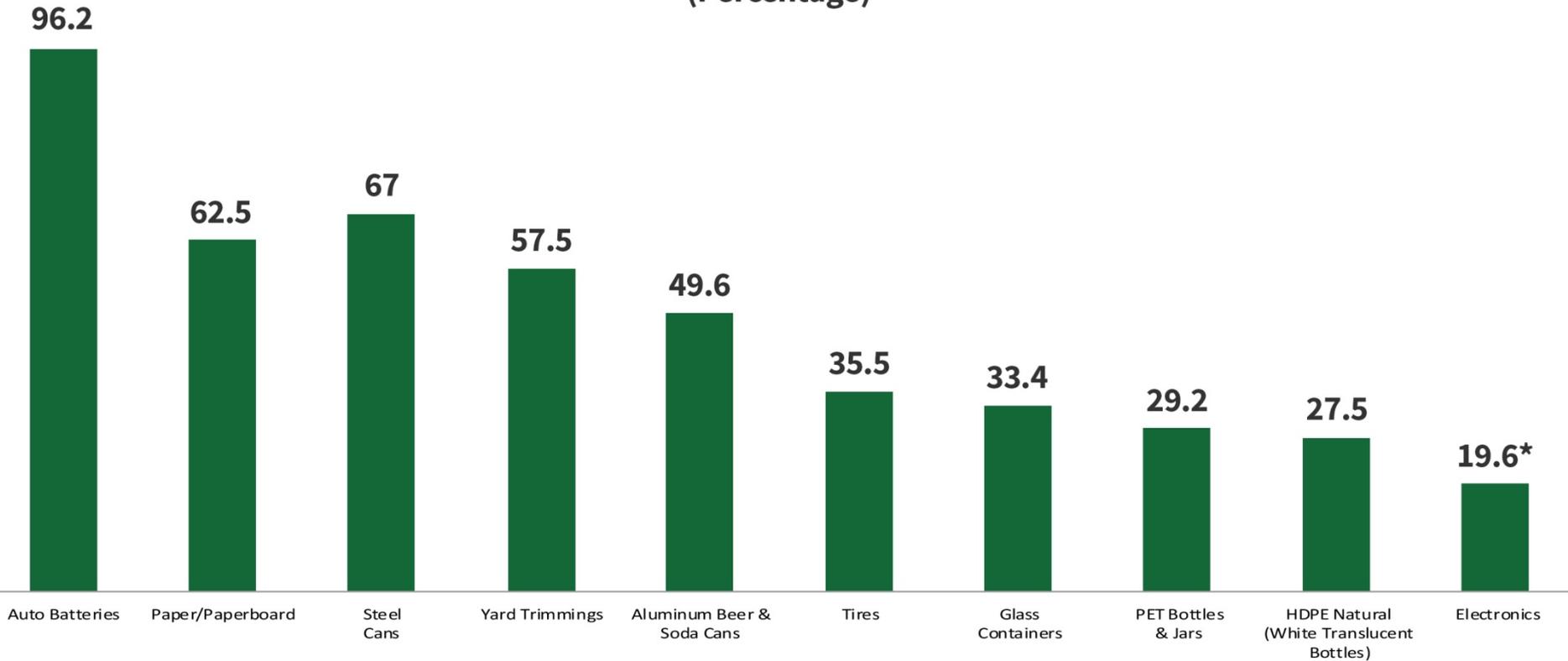
From Wisconsin DNR "E-Cycle Wisconsin 2013 report,"

<http://dnr.wi.gov/files/PDF/pubs/wa/wa1672.pdf>



Opportunity for more growth in our sector

Recycling Rates of Selected Products in the United States for 2010
(Percentage)



Data from U.S. (2010) *Municipal Solid Waste Characterization Study: Municipal Solid Waste Generation, Recycling, and Disposal in the U.S.: Facts and Figures for 2010*. EPA-530-F-11-005.

A large, dense pile of discarded mobile phones, representing e-waste. The phones are of various colors and models, mostly black and silver, and are scattered across the entire frame. A blue rectangular box is overlaid on the center of the image, containing white text.

**A new waste to turn into
a resource**

But there are still challenges



High metal values and the absence of standards and controls in developing countries encourage the export of e-waste

Discarded TV's pile up in a scrap yard awaiting recycling in Zhuzhou city in south China's Hunan province (photo taken Aug 26, 2013)



China's government has invested heavily to create a better e-waste processing industry. While they showcase clean TV disassembly operations, they are stockpiling the CRT glass at the current time.





June, 2013 – toner cartridge recovery process in Guiyu





- Water too polluted to drink in Guiyu – potable water is brought in.
- 2007 blood work from 165 children in Guiyu showed 82% had blood/lead levels of more than 100 – anything above that figure is considered unsafe. The average reading for the group was 149.

Africa – a new dumping ground



8 miles high of containers of e-waste shipped out last year



Developing countries generate e-waste, too

Between 2016-2018, more e-waste will be generated in developing regions of the world compared to developed regions.

This is where the growth in the industry will be.







Perception



“The Ethiopian experience could be a model for the entire African region as the challenges and opportunities associated with electronic waste continue to grow.” Lisa Jackson, EPA



Reality



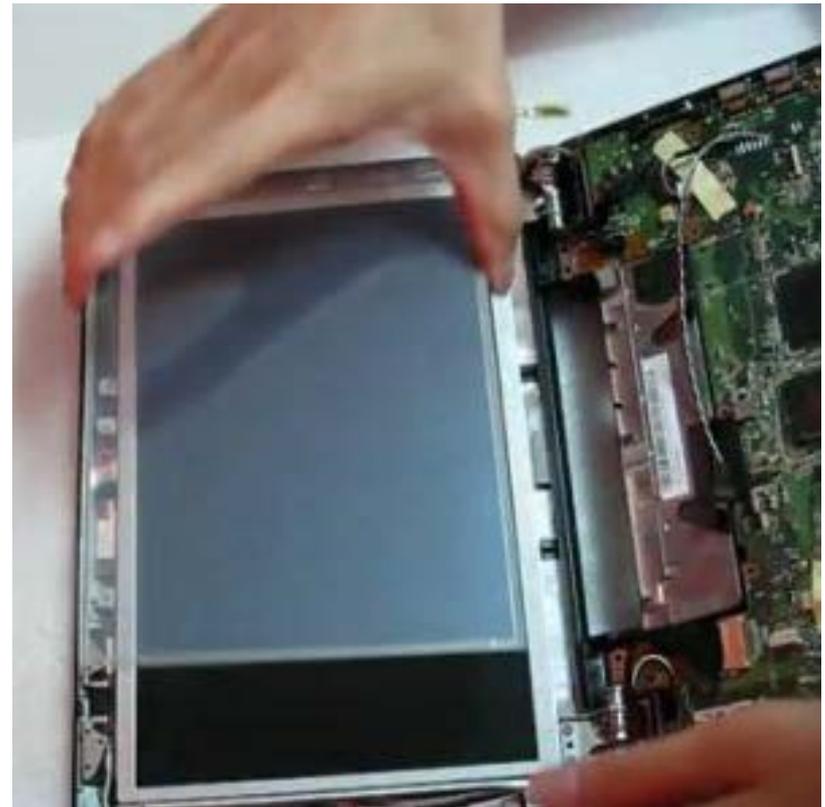
Domestic recycling is not always responsible, either



U.S. firms (AZ, CO, MD, OH, PA) abandoned more than 25,500 tons of leaded CRT glass in 2013 - 2014.

The post-CRT challenge: Mercury lamps

- More toxic
- More difficult to remove
- More difficult to keep intact
- More likely to draw the attention of regulators



The credibility gap

There are efforts to promote responsible recycling . . .

- Voluntary standards (E-Stewards and R2)
- State Legislative Programs
- National Strategy for Electronics Stewardship
- US EPA – CRT rule

But problems still persist with overseas dumping, lax enforcement, abandoned CRT piles, and sham recycling

Addressing exports through RERA

The “Responsible Electronics Recycling Act”

- Restricts export of untested, non-working e-scrap to developing countries
- Allows for export of clean commodities and working electronics exported for reuse (need to prove it!)
- Supports all responsible businesses, large and small
- Engenders trust from our customers
 - Builds legitimacy for our industry
- Puts us at a level playing field
- Is good for America
 - Security
 - Jobs
 - Increased exports



americanerecycling.org

US International Trade Commission

“However, [if RERA were enacted into law] the product mix [of export] would likely change to reflect more tested and refurbished products and fewer end-of-life products [exported]. Conversely, exports of commodity-grade material would likely increase, as more recycling activity would take place in the United States and UEP-derived commodities would be exported to manufacturing centers in non-OECD countries.” (p. 6-8)

United States International Trade Commission

Used Electronic Products:

An Examination of U.S. Exports

Investigation No. 332-528
USITC Publication 4379
February 2013



Economics of E-Cycle WI

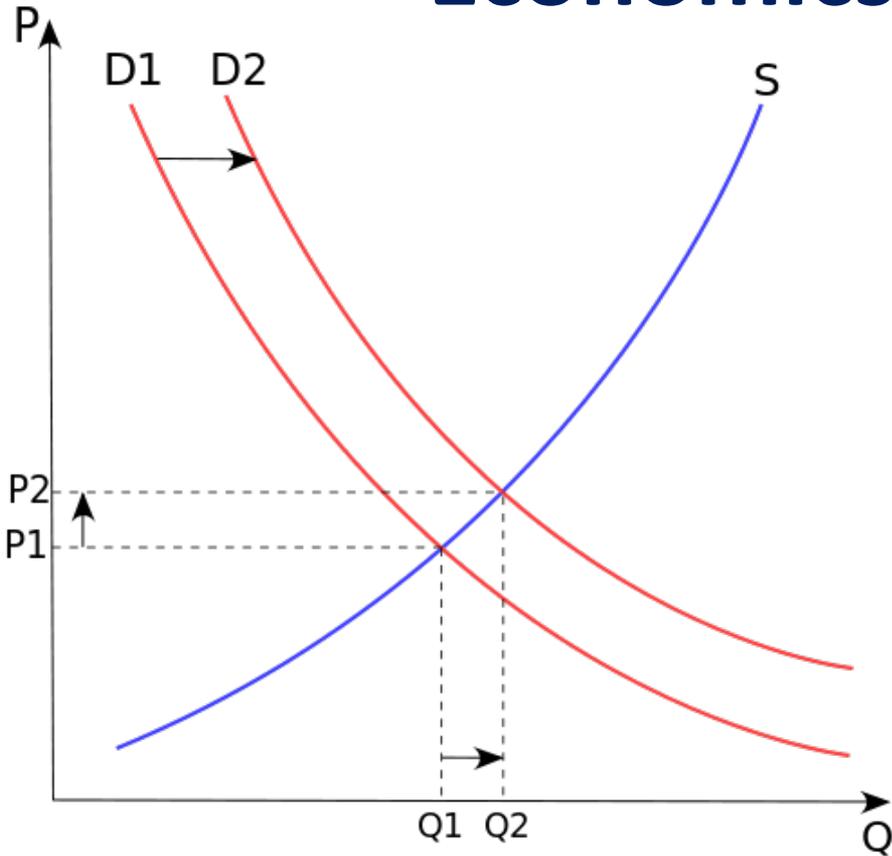
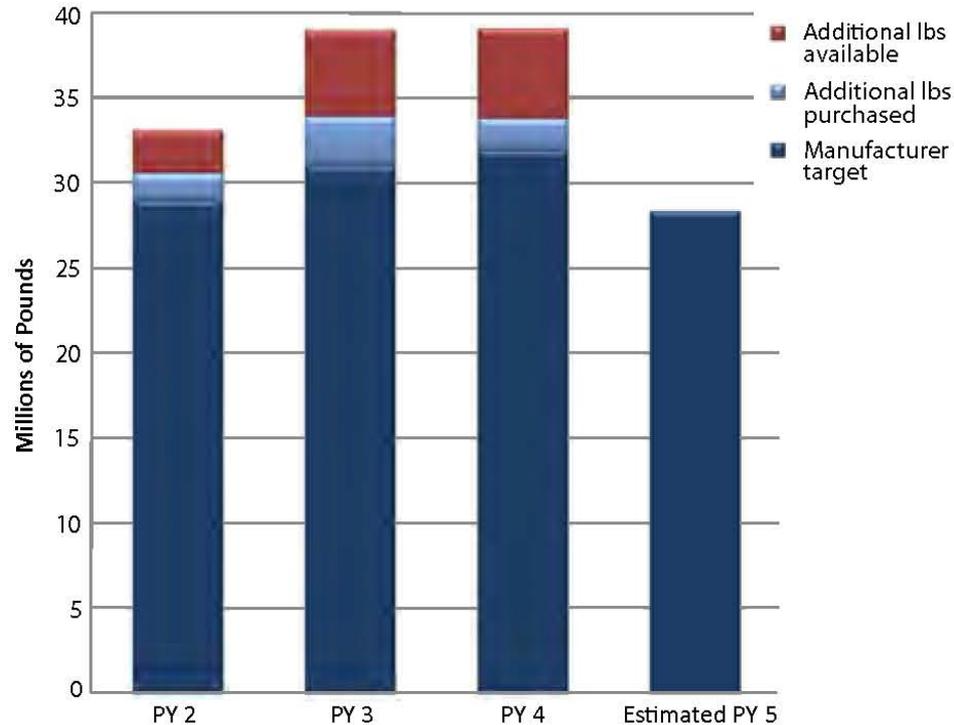


Figure 18: Comparison of weight collected and manufacturer targets, by program year



Demand = Manufacturer Target
Supply = electronics recycled

In a free market, when demand increases and supply remains unchanged, then a shortage occurs, leading to a higher price.

Threats to our industry

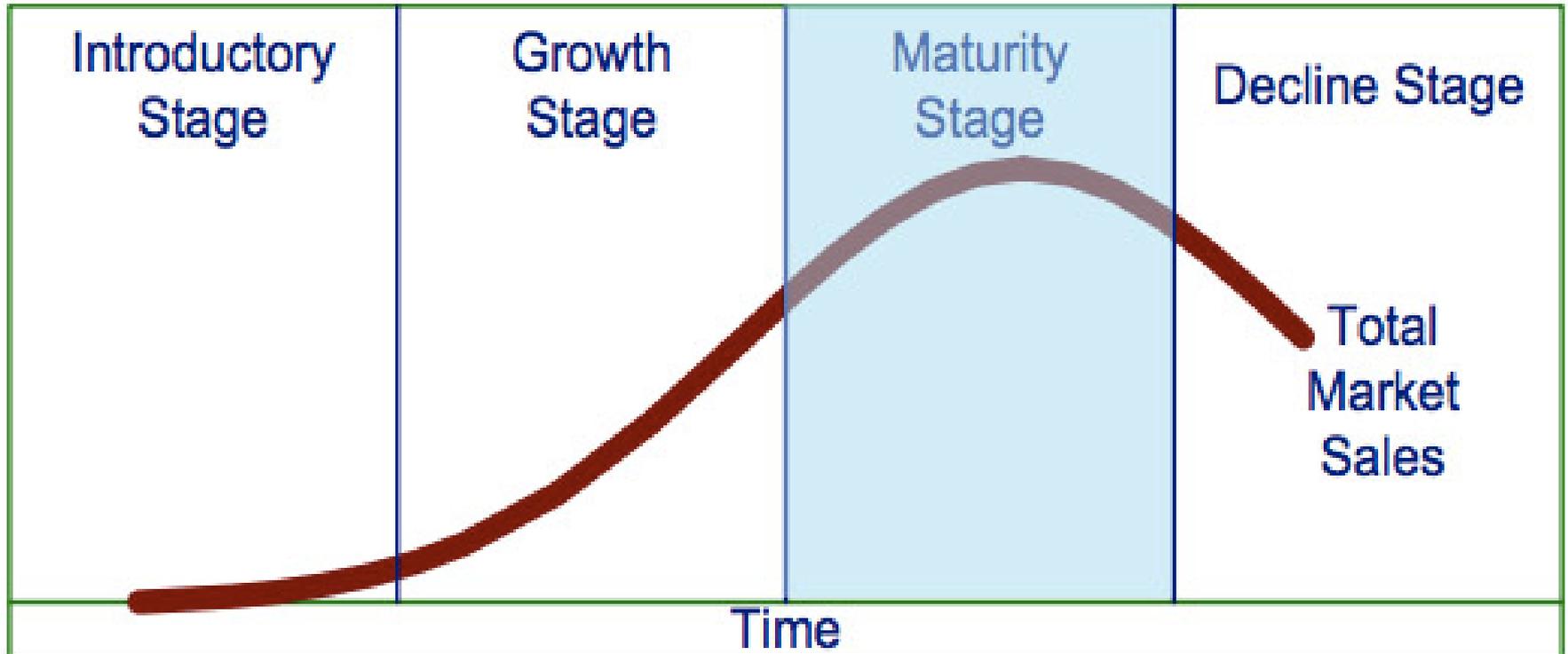
- The (lack of a) willingness to pay: consumers, manufacturers, and other stakeholders
- Crashes in the metals market (or a return to historical levels)
- Limited options for the recycling and processing of costly commodities
- Bad actors and a bad reputation
- Competition ? - *maybe*

We can survive

- Follow the model of the “forward supply chain”
- Thousands of businesses thrive in the industry, even with several large multi-nationals
- Find your niche



Where are we in the business cycle?



This graph represents both the industry and individual types of products we handle. CRT recycling may be entering a decline, but we are just kicking off growth in mobile devices.

Opportunities for us

- Be prepared: focus on what you do best, diversify revenue streams, save up for a crash, be careful - *run a successful business*
- Take advantage of growth opportunities and innovations
- Support responsible programs to mature the industry
 - Effective legislation
 - Consistent enforcement
 - Level playing field