E-Waste Legislation...

If Not Now, WHEN?

IMS Electronics Recycling – Decatur GA
2002 NEPSI – National Electronics Product Stewardship initiative

2003 BAN.org release “Exporting Harm”

2003 California 1st state to pass ARF e-waste legislation

2003 E-Stewards pledge introduced
2004 Maine first EPR state to pass Take Back legislation

2005 EPA task force finds river of monitors from Michigan in Ghana Africa

2005 Maryland second EPR state

2006 Michigan release first RFP for e-waste responsible recycling
2008 CRT rule passed (extension of RCRA)

2008 EPA pushes Responsible Recycling (R2) certification for recyclers

By 2011 – 24 EPR states active

2009 E-stewards certification standard published
2012 – Transparent planet publishes U.S. glass management report

2013 – Stockpiling originating from legislated states makes NY Times
EPR & ARF Legislated States find Stockpiling & Fraud
Stockpiling of CRT Glass

Confluence of factors leading to CRT glass stockpiling

- Legislation attracts new/inexperienced recyclers
- Some OEMs pay rates too low to enable responsible recycling
- Lack of mass balance monitoring of recyclers by states or OEMs
- Paper transactions artificially sustaining Manufacturer Take Back programs
- Collectors culling off more valuable items leaving mainly costly CRT items for recyclers
  - Recyclers don't get mix of materials expected

Data based on report from Transparent Planet CRT Glass Management Report, Jason Linnell – National Center for Electronics Recycling
## CRT Recycling Industry Estimates on Stockpiles

<table>
<thead>
<tr>
<th>Region</th>
<th>Stockpile Estimates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northeast:</td>
<td>80 million pounds (NY, VT, NH, CT, ME, RI, NJ, DE, MD)</td>
</tr>
<tr>
<td>Southeast:</td>
<td>10 million pounds (NC, SC, VA)</td>
</tr>
<tr>
<td>Mid-West:</td>
<td>40 million pounds (CO, KS, NE, WY)</td>
</tr>
<tr>
<td>Southwest:</td>
<td>500 million pounds (OK, TX, NM, AZ, CA, NV)</td>
</tr>
<tr>
<td>Northwest:</td>
<td>20 million pounds (WA, OR)</td>
</tr>
</tbody>
</table>

**Total** 660 million pounds

Data based on report from Transparent Planet CRT Glass Management Report, Jason Linnell – National Center for Electronics Recycling
Legislation creates Green Collar Jobs
# Institute for Local Self Reliance (ILSR) Chart – Job Creation

<table>
<thead>
<tr>
<th>Type of Operation</th>
<th>Jobs per 10,000 TPY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product Reuse</td>
<td></td>
</tr>
<tr>
<td>Computer Reuse</td>
<td>296</td>
</tr>
<tr>
<td>Textile Reclamation</td>
<td>85</td>
</tr>
<tr>
<td>Misc. Durables Reuse</td>
<td>62</td>
</tr>
<tr>
<td>Wooden Pallet Repair</td>
<td>28</td>
</tr>
<tr>
<td>Recycling-based Manufacturers</td>
<td>25</td>
</tr>
<tr>
<td>Paper Mills</td>
<td>18</td>
</tr>
<tr>
<td>Glass Product Manufacturers</td>
<td>26</td>
</tr>
<tr>
<td>Plastic Product Manufacturers</td>
<td>93</td>
</tr>
<tr>
<td>Conventional Materials Recovery Facilities</td>
<td>10</td>
</tr>
<tr>
<td>Composting</td>
<td>4</td>
</tr>
<tr>
<td>Landfill and Incineration</td>
<td>1</td>
</tr>
</tbody>
</table>

## Perspective: City of Atlanta & GA

### Based on 1 in 4 HH Disposing 1 Analog TV

**Putting this in perspective. How much is that?**

<table>
<thead>
<tr>
<th>Unit of Measure</th>
<th>City of Atlanta 179,089 HH</th>
<th>State of Georgia 3,490,754 HH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Units</td>
<td>44,772.25</td>
<td>872,689</td>
</tr>
<tr>
<td>Semi Truck Loads</td>
<td>233.19</td>
<td>4,545</td>
</tr>
<tr>
<td>Number of Tons</td>
<td>1,410.33</td>
<td>27,490</td>
</tr>
<tr>
<td>Cubic Yards (Yd³)</td>
<td>10,268.86</td>
<td>200,158</td>
</tr>
<tr>
<td>Estimated Land Fill Costs</td>
<td>$56,413.04</td>
<td>$1,099,588</td>
</tr>
</tbody>
</table>

### What is Atlanta & GA’s TV Waste?

<table>
<thead>
<tr>
<th>Toxic Metals and Compounds</th>
<th>Percent by Weight</th>
<th>City (Pounds)</th>
<th>State (Pounds)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOTAL</td>
<td>99.9947%</td>
<td>2,820,503.38</td>
<td>54,976,484</td>
</tr>
</tbody>
</table>

## Georgia Job Creation

<table>
<thead>
<tr>
<th>Type of Operation</th>
<th>Jobs per</th>
<th>Atlanta TV</th>
<th>Georgia TV</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Lbs. =</td>
<td>Lbs. =</td>
</tr>
<tr>
<td>10,000 TPY</td>
<td>10,000</td>
<td>2,820,503</td>
<td>54,976,484</td>
</tr>
</tbody>
</table>

- **Computer Reuse**
  - 296
  - 42
  - 814

### GA CRT-TV Job Creation

- \( \frac{54,976,484 \text{ Lbs.}}{2,000} = 27,488.24 \text{ Tons} \)
- \( \frac{27,488.24 \text{ tons}}{10,000 \text{ (TPY)}} = 2.75 \% \)
- \( 2.75 \% \times 296 = 814 \text{ GA Jobs per Year} \)

California’s ARF System recycled 360 million Lbs. relative to 12.1 million HH. (30:1 ratio). The 4 EPR states combined recycle 14:1 ratio albeit not all started on the same timeline.

### 2005 - 2008 Jobs per state based on ILSR

<table>
<thead>
<tr>
<th>State</th>
<th>Legislation</th>
<th>Law Enacted</th>
<th># Households</th>
</tr>
</thead>
<tbody>
<tr>
<td>CA</td>
<td>ARF</td>
<td>Jan. 2005</td>
<td>12,097,894</td>
</tr>
<tr>
<td>MN</td>
<td>EPR</td>
<td>July 2007</td>
<td>2,020,144</td>
</tr>
<tr>
<td>WA</td>
<td>EPR</td>
<td>Mar. 2006</td>
<td>2,450,474</td>
</tr>
<tr>
<td>ME</td>
<td>EPR</td>
<td>Jan. 2006</td>
<td>542,158</td>
</tr>
<tr>
<td>MD</td>
<td>EPR</td>
<td>Jan. 2006</td>
<td>2,085,647</td>
</tr>
</tbody>
</table>

**Lbs. Collected/ Million**

<table>
<thead>
<tr>
<th>State</th>
<th>Lbs. Collected/ Million</th>
</tr>
</thead>
<tbody>
<tr>
<td>CA</td>
<td>360.1</td>
</tr>
<tr>
<td>MN</td>
<td>12.1</td>
</tr>
<tr>
<td>WA</td>
<td>32.3</td>
</tr>
<tr>
<td>ME</td>
<td>2.5</td>
</tr>
<tr>
<td>MD</td>
<td>2.1</td>
</tr>
</tbody>
</table>

**# Households (HH)/ Million**

<table>
<thead>
<tr>
<th>State</th>
<th># Households (HH)/ Million</th>
</tr>
</thead>
<tbody>
<tr>
<td>CA</td>
<td>12.1</td>
</tr>
<tr>
<td>MN</td>
<td>32.3</td>
</tr>
<tr>
<td>WA</td>
<td>37.5</td>
</tr>
<tr>
<td>ME</td>
<td>8</td>
</tr>
<tr>
<td>MD</td>
<td>23.5</td>
</tr>
</tbody>
</table>

*Based on 2008 data reports ([link](http://www.electronicsrecycling.org/public/ContentPage.aspx?PageId=107), [link](http://www.pca.state.mn.us/oea/stewardship/electronics/081217bujak.pdf), [link](http://www.nrcm.org/news_detail.asp?news=2345), [link](http://www.mde.state.md.us/Programs/LandPrograms/recycling/SpecialProjects/eCycling.asp))

**Estimate based on data reported Jan thru June 2009 x 2** ([link](http://www.electronicsrecycling.org/public/ContentPage.aspx?r=s&terms=WASHINGTON&PageID=115&ParentID=17))
Data based on report from Transparent Planet - CRT Glass Management Report, Jason Linnell – National Center for Electronics Recycling
Pros & Cons of the Current Legislated States
Advance Recycle Free (ARF) California

**PROS**
- No cost to OEM
- Collects enough money to support responsible CRT recycling
- State oversight
- Reporting & payment mechanism designed to minimize fraud

**CONS**
- No product stewardship incentive
- No OEM engagement
- Worst-case system for non-CRT items
- Competition favor collectors
- “Canceled and Shipped” “recycled”, resulting in stockpiles. State now allow landfilling
- High cost administration and oversight
- Only pays for recycling not reuse.

Data based on report from Transparent Planet CRT Glass Management Report, Jason Linnell – National Center for Electronics Recycling
Extended Producer Responsibly (EPR) – ME, CT, (WA, OR)

**PROS**
- Promotes product stewardship
- Price and payment structure make responsible recycling possible
- Program requirements minimize fraud
- States scrutinize primary recyclers

**CONS**
- OEMs have no control over recycler selection/pricing
- Higher costs to OEMs
- Mass balance accounting is not 3rd Party

Data based on report from Transparent Planet CRT Glass Management Report, Jason Linnell – National Center for Electronics Recycling
Extended Producer Responsibility
OEM Controlled – 18 States

PROS
• Promotes product stewardship
• States set aggressive collection goals for OEMs
• OEMs scrutinized primary recyclers

CONS
• No state oversight or mass balance monitoring
• Price competition invites bad practices
• Collection goals place quantity over quality
• Recycling documentation no verified
  • Paper Transactions
  • Air Pounds
  • Ghost Weight
  • Stockpiling

Data based on report from Transparent Planet CRT Glass Management Report, Jason Linnell – National Center for Electronics Recycling
Out of 25 patchwork-legislated states the best states to review are:

- CA
- ME
- CT
- WA
- OR
- WI
- MN

California:
- Best Job Creation
- Best Business Case for all stakeholders

ME, CT (+WA & OR):
- State controlled insures proper pricing and minimizes fraud

WI, MN:
- Best reporting because over site insures processors and recyclers numbers match

Data based on report from Transparent PInet CRT Glass Management Report, Jason Linnell – National Center for Electronics Recycling
25 State Laws Passed Through 2011

- 2003: California
- 2004: Maine
- 2005: Maryland
- 2006: Washington
- 2007: Connecticut, Minnesota, Oregon, Texas, North Carolina
- 2009: Indiana, Wisconsin
- 2010: Vermont, South Carolina, New York, Pennsylvania
- 2011: Utah
- 2012: none

Percentage of Population Covered by an E-Waste Law

- 66.1%
- 33.9%

Source: National Center for Electronics Recycling (www.electronicsrecycling.org)
Sony’s Input
Patchwork of Electronics EPR regulations in US

Variables
- Product Scope
  - Typical: TVs, desktops, laptops, monitors, and printers.
- Customer scope
  - Households +
- Targets
  - Typical: prior year sales
- Financing mechanism
  - #1 problem. EPR creates unfairness in the market
- Reports and due dates
- Fiscal years
- Penalties
  - Typical: “do not sell list”
- Product design benefits
  - Zero

Source: Sony - July 2013
The Big Picture

- A national approach is critical
  - Variation in state mandates is a long-term problem
  - Recycling should be viewed as a component of a company’s business model
  - A national operational model is what is needed
- An industry-led approach is the ideal

Source: Sony - July 2013
## Disparity of Costs

<table>
<thead>
<tr>
<th>State</th>
<th>Cost/pound</th>
<th>Consumer Cost/TV</th>
<th>Pounds e-waste per capita</th>
<th>Pounds per dollar</th>
</tr>
</thead>
<tbody>
<tr>
<td>CA</td>
<td>$0.125</td>
<td>$5.00</td>
<td>10.8</td>
<td>86.4</td>
</tr>
<tr>
<td>HI</td>
<td>$0.24</td>
<td>$9.60</td>
<td>2.55</td>
<td>10.65</td>
</tr>
<tr>
<td>IL</td>
<td>$0.09</td>
<td>$3.60</td>
<td>2.49</td>
<td>27.7</td>
</tr>
<tr>
<td>NY</td>
<td>$0.23</td>
<td>$9.20</td>
<td>5.0</td>
<td>21.7</td>
</tr>
<tr>
<td>MN</td>
<td>$0.08</td>
<td>$3.20</td>
<td>5.99</td>
<td>74.8</td>
</tr>
<tr>
<td>WA</td>
<td>$0.44</td>
<td>$17.60</td>
<td>6.27</td>
<td>14.25</td>
</tr>
<tr>
<td>WI</td>
<td>$0.16</td>
<td>$6.40</td>
<td>6.83</td>
<td>42.7</td>
</tr>
<tr>
<td>ME</td>
<td>$0.74</td>
<td>$29.60</td>
<td>5.22</td>
<td>7.05</td>
</tr>
</tbody>
</table>

*Source: Sony - July 2013*
CA: Only state with visible fee at point of purchase.
ME, CT, VT, WA, CA: State run programs
OR, NY, RI: Strict “convenience” requirements

Source: Sony - July 2013
Another Perspective
2005 - 2008 Total Pounds: ARF vs. EPR

- California: 63%
- Minnesota: 11%
- Washington: 13%
- Maine: 10%
- Maryland: 3%
- Maine: 3%

Data based on report from Transparent Planet CRT Glass Management Report, Jason Linnell – National Center for Electronics Recycling
2011/2012 - Calendar / Fiscal Yr. Total Pounds: ARF vs. EPR

Data based on report from Transparent Planet CRT Glass Management Report, Jason Linnell – National Center for Electronics Recycling
Conclusion
As long as we have no legislation

This will continue to
Landfill Ban & E-waste Legislated States

Answer: CA 1st, then all EPR landfill ban states

(GUESS WHERE ALL THE JOBS ARE???)
Georgia needs to be a Blend of ARF and EPR legislation

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Pro E-Waste Legislation

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