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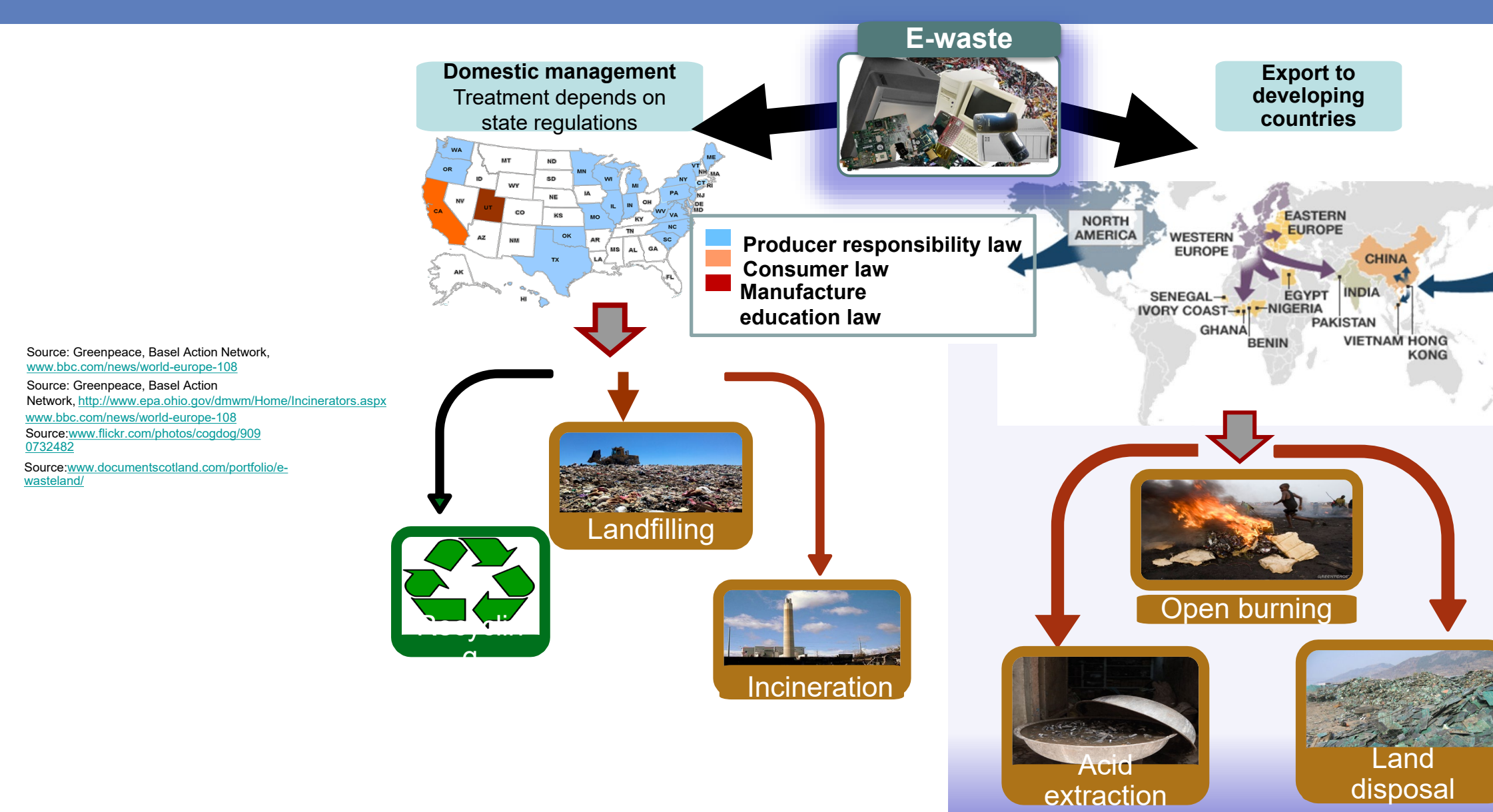
ADEPT - A Tool to Evaluate Used Electronic Flows for the United States

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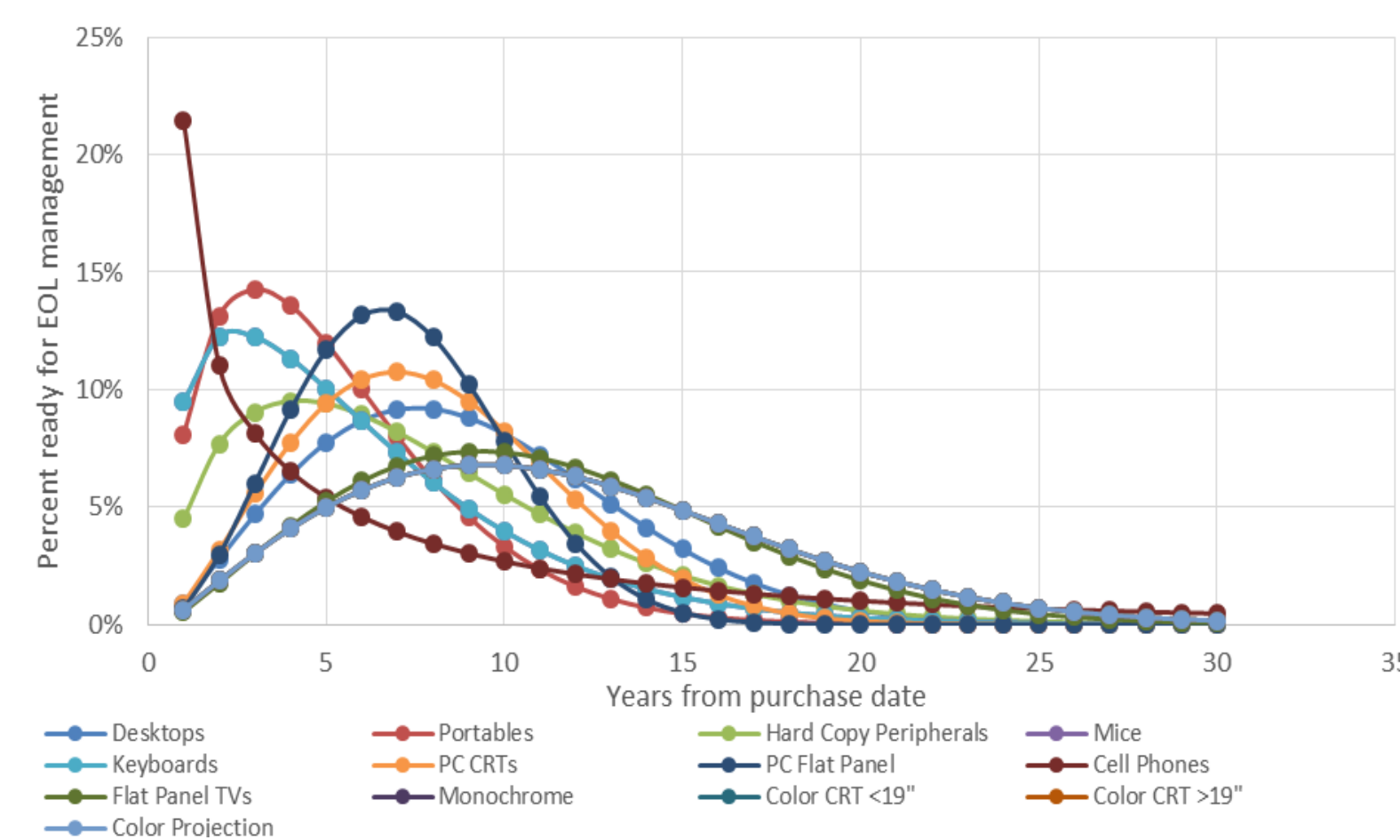
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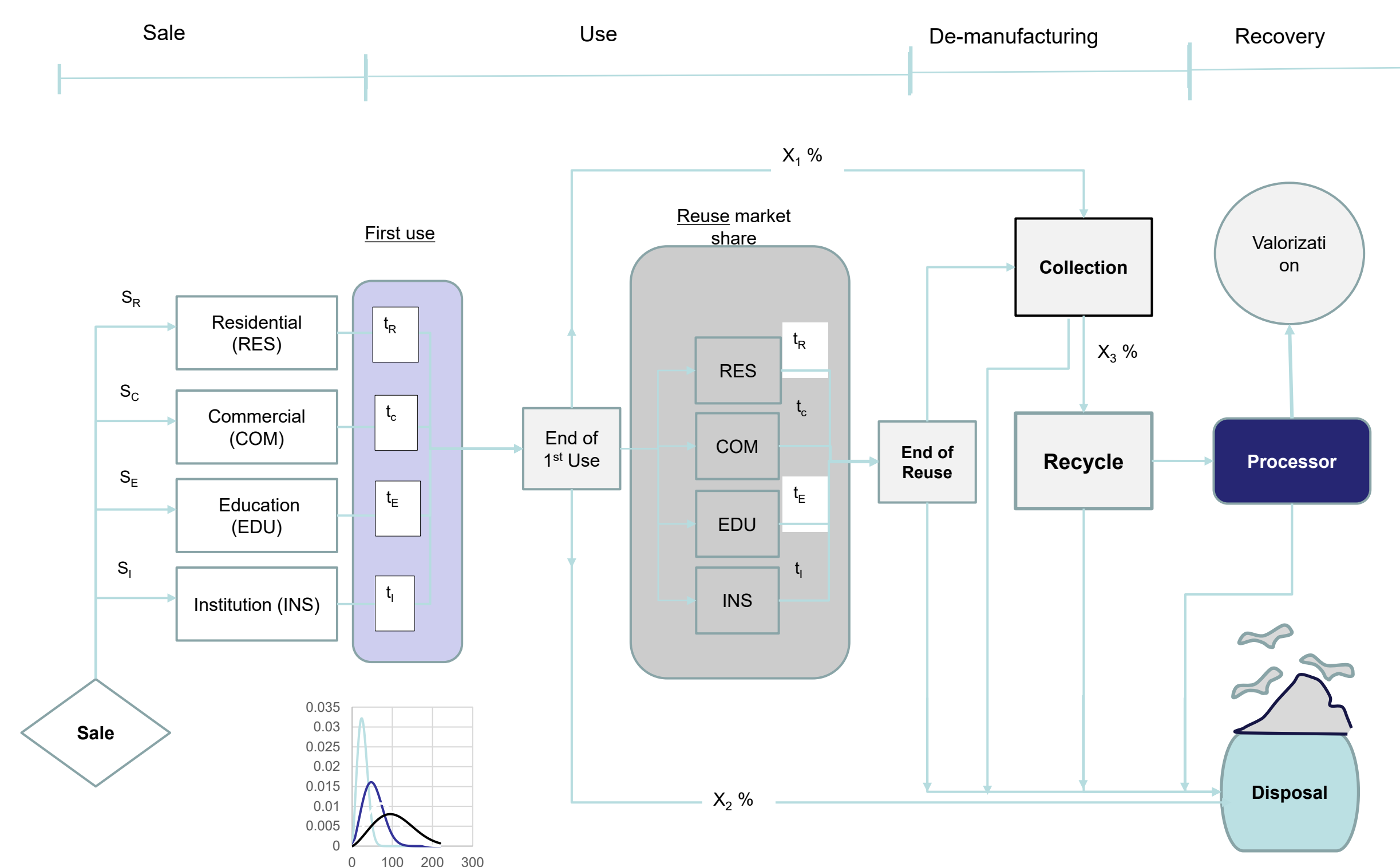
Overview



Percentage of Products Ready for End-of-life Management after Each Year of Sale



E-waste – Flow – EoL Supply Chain Model



Disclaimer

The views expressed in this poster are those of the authors and do not necessarily represent the views or policies of the U.S. Environmental Protection Agency.

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Alternative Disposition of Electronics Planning Tool (ADEPT)

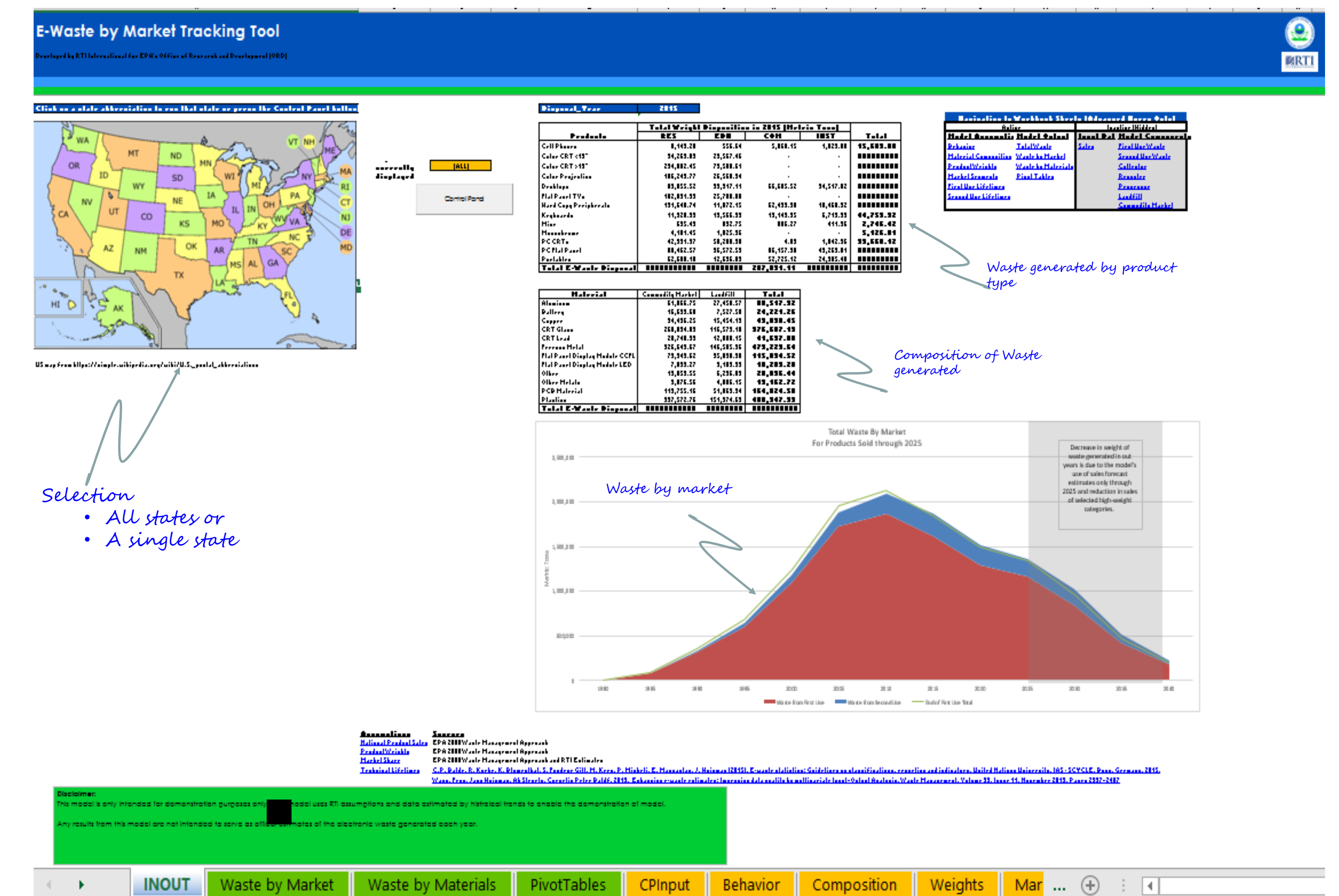
Features

- The ADEPT Tool is an Excel-based tool which evaluates the generation of used or disposed electronic items from nationally representative sales data.
- The state-level, national sales are disaggregated to a state level using state shares of national GDP.
- Does not account for specific state policies or actual state-level sales.
- Does not account for:
 - specific state policies or actual state-level sales.
 - flows of disposed materials between states are not in the accounting

Assumptions

- Waste may be sent directly to landfill during each stage in the flow or through the recycling chain.
- At each step in the recycling chain (i.e., collectors to recyclers), there is a fixed materials extraction efficiency applied to all products.
- For example, the default efficiency parameter from collectors to recyclers is 85%. This means that 85% of materials continue to recyclers and the remaining 15% goes to landfill.
- These efficiency parameters can be adjusted in the Control Panel's Behavior tab. These incremental movements of product and material weight to landfill is cumulative.
- The Total E-Waste Disposal for landfill is the cumulative waste disposed, for a given year, across each of these steps
- Material composition for each product is static across years. This assumption is based on a laboratory study by the Rochester Institute of Technology (Babbitt et al., 2017).

Adept – Interface Page



Adept - Applications & Use

Washington state - 2009

Disposal Year	2009				Total e-waste
Products	Total Weight Disposition in 2009 (Metric Tons)				Total
	RES	EDU	COM	INT	
Cell Phones	139	3	118	19	279
Color CRT <19"	3,115	779	-	-	3,893
Color CRT >19"	8,350	2,087	-	-	10,437
Color Projection	2,314	578	-	-	2,892
Desktops	1,744	2,101	2,557	1,264	7,666
Flat Panel TVs	302	76	-	-	378
Hard Copy Peripherals	2,859	230	1,780	295	5,164
Keyboards	353	423	422	211	1,409
Mice	22	26	26	13	87
Monochrome	234	59	-	-	293
PC CRTs	2,838	3,394	1,387	742	8,361
PC Flat Panel	803	975	2,308	1,112	5,198
Portables	524	105	399	187	1,215
Total E-Waste Disposal	23,596	10,836	8,997	3,843	47,272

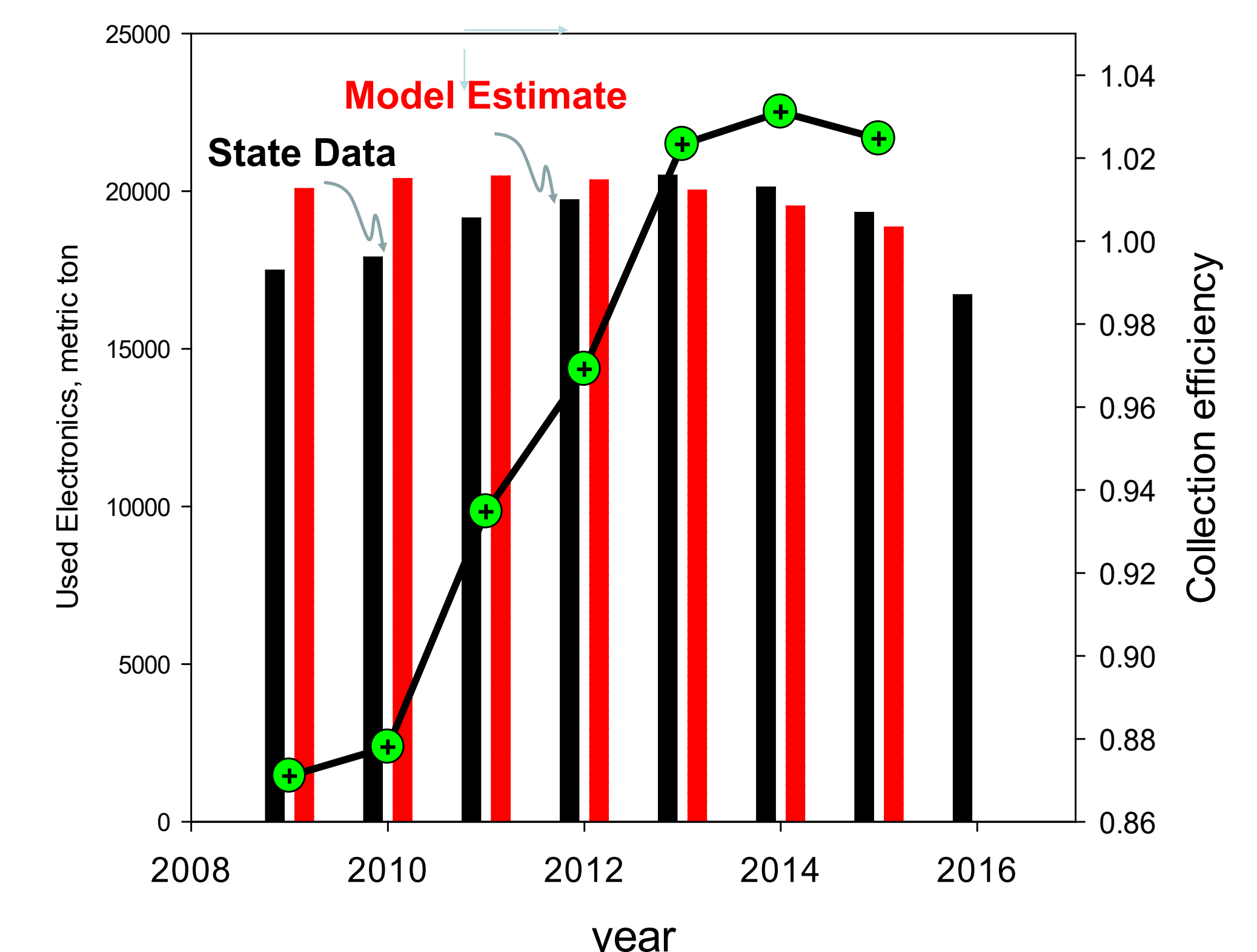
○ = not included in state programs

Residential Collection → 23,596/47,272 = 50%
Commercial collection → 8997/47,272 = 19%

Question
1. The fraction of COM seems lower than expected.
2. What is INT that is outside EDU & COM?
3. Is the RES:EDU:COM:INT differ the state? States with large number of business eg. NY, IL or CA could have more COM waste. Is this only proportional to economic activity or more?

Comparison of state collection data with model prediction for EoL electronics

Washington State



26 states have passed laws requiring statewide e-waste recycling and data collection for the volume of electronic material that is recycled.

Additional states are working to pass new laws or improving existing laws.

Aggregate data collected by the states are available from different sources; however the data are incomplete. Data collection from states without a codified e-waste program is still a challenge.