

Methods for Estimating End of Life Electronics Exports from North America

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Objectives

- Describe mechanisms and motivations for used electronics exports
- Identify approaches to quantify exports



Formal Remanufacturing and Recycling
Photo Credit: Robin Ingenthron

Informal Disassembly and Recycling
Photo Credit: EMPA, Green Advocacy Ghana, EPA Ghana

Discarded
Photo Credit: AP

Used Electronic Export Flow Characterization

Quantitative Characterizations

Implicit: Data from Related Systems

Explicit: Data from Used Electronics Exports

EXAMPLES
Proxy trade data

Customs Data, Recycler Surveys, Mass Balance

Qualitative Characterizations

Mechanisms

Restrictions

Non-financial Motivations

Financial Motivations

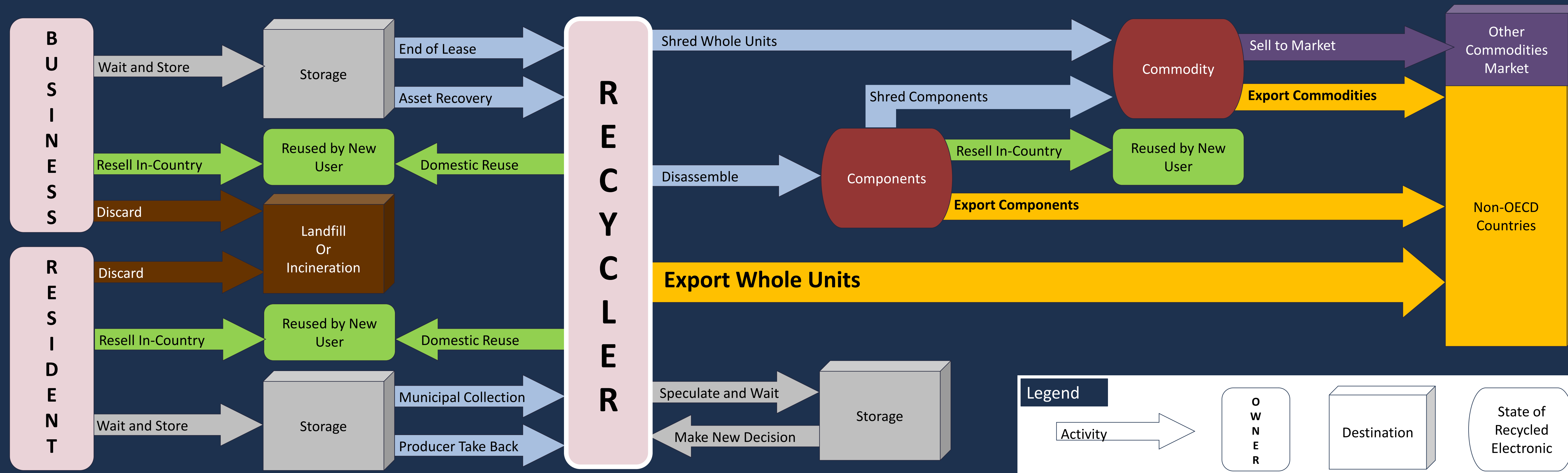
Structure of Firms and Transactions

Regulations and Fines, Contracts, Certification

Social Justice, International Connections

Relative Export Profitability

Flows of End Of Life Electronics and the Recycler Decision



Export Profitability Case Study: CRT Exports from California

Recyclers in California are paid \$0.39/lb to recycle Covered Electronic Waste (including CRTs) collected from residents, who paid an Advanced Recycling Fee. Recyclers pay Collectors \$0.16/lb, netting \$0.23/lb from CalRecycle. Some firms defraud the system by:

1. Collecting CRTs themselves in CA, saving the ownership paperwork and then exporting them.
2. Collecting heavier CRTs from other states without programs, recycling them, and claiming the heavier total weight recycled with CA CRT ownership paperwork.

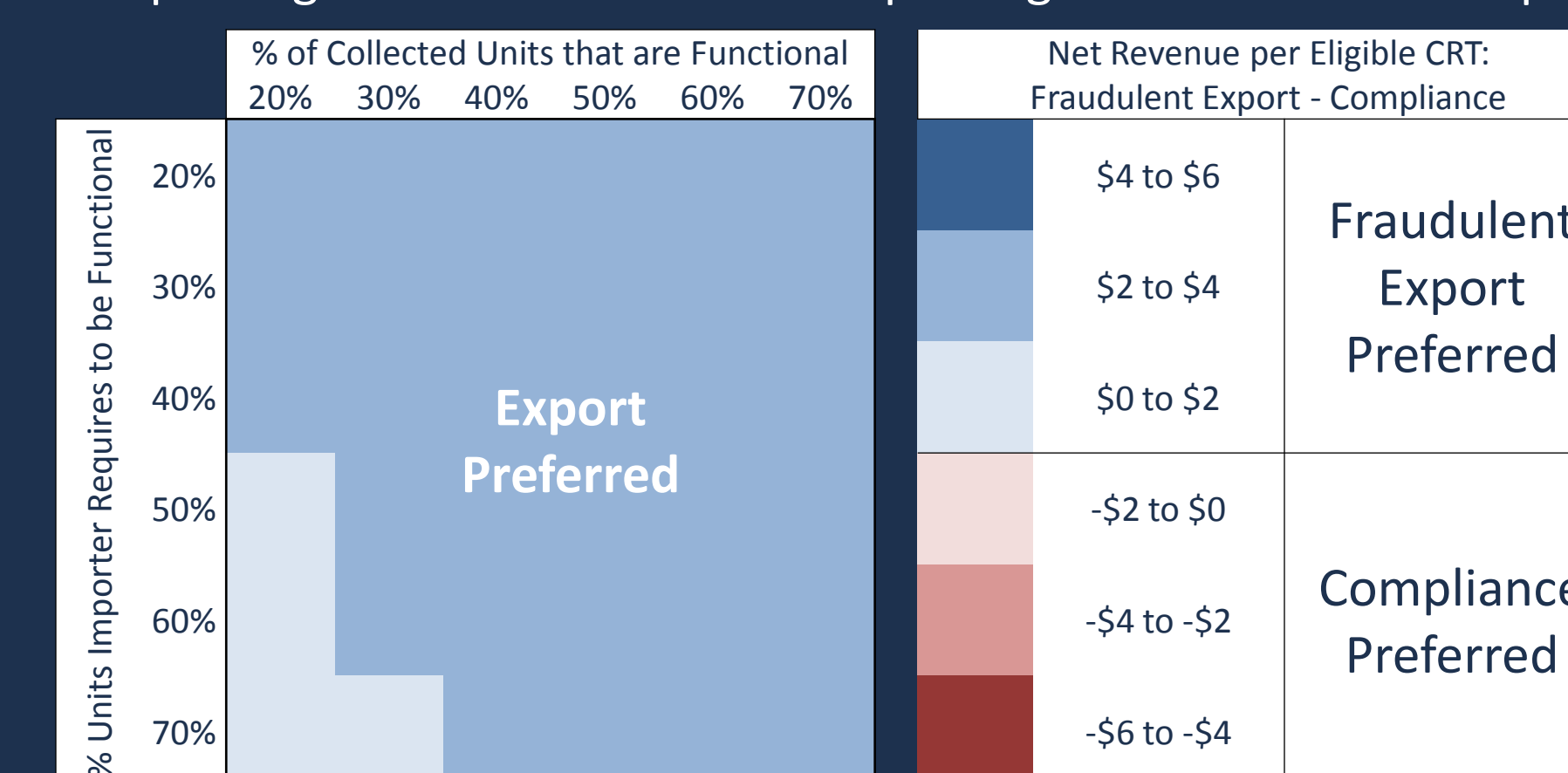


Relative Export Profitability

Factoring in Functionality:

Not all CRTs that are collected in California are functional, and thus cannot be reused. Importers may specify the percentage of CRTs that must be functional (in order for the importers to at least break even). Fraudulent recyclers may recycle excess CRTs at a cost, or "dump" them at no cost.

Comparing Net Revenue per Eligible CRT under Compliant and Fraudulent Export Scenarios:
Net Revenue per Eligible CRT = Total Revenue per Eligible CRT - Total Cost per Eligible CRT



Sensitivity to Cost Variability, Factoring in Functionality



The above charts demonstrate that fraudulent export is more profitable than compliant recycling of CRTs in California for the range of expected recycling and export costs incurred, a reasonable range of functional units collected and range of importer functionality requirements.