

Part III: WEEE Recycling

Following WEEE after Collection

When a consumer determines that his electronics have reached the end of their useful life and decides to have the products recycled rather than sent to a landfill, the consumer brings them to a collector. Most collection sites in Canada operate as private businesses or at municipal landfill sites. At these sites, the materials are generally sorted as boxes or pallets of similar materials; for example, the consumer puts a computer monitor onto a pallet with other computer monitors.

The materials are then transported to a primary processor or converter where they are de-manufactured or otherwise separated into constituent parts. Generally the first stage is a pre-sort, which not only removes items that should not go through the process (e.g., toner cartridges, mercury switches, and batteries) but acts as a “triage” to determine if an item has a potential for reuse. If an item can be refurbished and resold or donated to a charitable computers-for-students type of organization, then it is set aside.

After the pre-sort, the first stage for materials bound for recycling is usually shredding, which allows for the separation and recovery of plastics, metals, and glass. Many metals such as steel, aluminum, and copper, along with circuit boards that likely contain gold and silver, are manually removed during or after shredding. These valuable metals are recovered at secondary processors or converters and reused.

Other materials will contain mixed metals; these are sent to a separate secondary processor or converter to be mechanically separated, often using a pyrometallurgical procedure such as burning in a furnace.

Plastic will be separated and sent to a secondary processor or converter. The majority of plastic materials will end up being exported, often to China, for this stage. This mix of plastics will contain multiple resin types and colours and range in size. Some of the resins in the plastic will contain toxic elements such as lead or polybrominated diphenyl ethers (PDBEs). The secondary processor or converter may sort the plastics by resin and send them to a third processor/converter to be turned into clean flake for remanufacturing. Some secondary processors may, rather than sort the various resins, use them as feedstock for furnaces.

Glass that is recovered is crushed and sent for further processing. Much of the glass from EOL electronics is leaded cathode ray tube (CRT) glass that needs to be burned in a furnace to separate the lead as a fume. One of the greatest challenges facing WEEE programs today is what to do with the glut of CRT glass that has entered the stream and will continue to do so for the foreseeable future. At present, CRT glass has little to no value, so it is not being sold but is warehoused by most recyclers hoping it will increase in value and become a saleable commodity.

Table 3: Reuse and recycling in Canada: Recyclers and the processes and materials they accept

Canadian WEEE Processors	Province	City
eCycle Solutions	AB	Airdrie
eCycle Solutions	AB	Edmonton
GEEP	AB	Edmonton
GEEP	AB	Calgary
Recycle-Logic	AB	Red Deer
Shanked Computer Recycling	AB	Acheson
Technotrash Alberta	AB	Calgary
eCycle Solutions	BC	Chilliwack
FCM Recycling Inc.	BC	Delta BC
Sims Recycling Solutions	BC	Langley
Teck Metals Ltd	BC	Trail
Exner E-Waste Processing Inc.	MN	Morden
FCM Recycling Inc.	NS	Elmsdale
ADL Process Inc.	ON	Toronto
Artex Environmental	ON	Toronto
eCycle Solutions	ON	Mississauga
Electro-Shred Ltd.	ON	Brantford
FCM Recycling Inc.	ON	Cornwall
FCM Recycling Inc.	ON	Toronto
GEEP	ON	Barrie
Greentec	ON	Cambridge
SHIFT Recycling Inc.	ON	Brampton
Sims Recycling Solutions	ON	Mississauga
Target Recycling Services Inc.	ON	Ajax
Toronto Recycling Inc.	ON	Toronto
AFFI Informatique	QC	St. Hubert
Carrefour Environnement Saguenay	QC	Chicoutimi
Reseau Quebecois des CFER	QC	9 locations
Kadisaal Canada	QC	Montreal
Evolu-TIC Outaouais	QC	Gatineaux
eCycle Solutions	QC	Salaberry
FCM Recycling Inc.	QC	Lavaltrie
GEEP	QC	Laval
Insertech-Angus	QC	Montreal
L'Entreprise - École RECYPRO d'Argenteuil	QC	Lachute
Ordinateurs Pour les Écoles du Quebec	QC	Verdun
Cartonek	QC	St. Marie
Valoritex (La Relance)	QC	Gatineaux
Sims Recycling Solutions	QC	Laval
SARCAN	SK	Saskatoon
Estevan Diversified Services	SK	Estevan
KIN Enterprises Inc.	SK	Prince Albert