

ACTIVITY-BASED COSTING IN QUEBEC

Modelling curbside recycling costs

Éco Entreprises Québec (ÉEQ) and RECYC-QUÉBEC jointly developed, in collaboration with Raymond Chabot Grant Thornton, an activity-based costing (ABC) model for curbside recycling services unique to Quebec. With this tool, the net cost of each material in the curbside recycling system is calculated based on the costs of collecting, transporting, sorting and conditioning materials, taking into account any sales revenues and materials disposal costs. The resulting figures are then consolidated and attributed to each class of materials. The model was developed using verifiable data and studies, including the Residential characterization of recyclable materials.

A thorough approach, reliable information

This thorough ABC approach produces an accurate reflection of Quebec's curbside recycling system and ensures the appropriate distribution of costs among all materials and classes of materials designated by the compensation plan for municipal curbside recycling services.

Objective

Calculate and distribute the costs of Quebec's curbside recycling system in order to:

- > Determine the cost per tonne of materials, while taking into account any revenues generated
- > Determine the allocation of costs to each class of designated materials, i.e. newspapers, printed material as well as containers and packaging

Advantages of the model

- > Complete modelling of Quebec's curbside recycling system
- > Understanding of cost behaviour
- > Reliable and objective results that are easy to communicate

The model processes data according to the three steps that recyclable materials follow as they are handled in Quebec's curbside recycling system in order to determine their net cost.

The model in a nutshell



1) Generation of curbside recycling materials

Quantities of recyclable materials generated by all Quebec municipalities are determined using data from the Residential characterization study according to the following parameters:

- Type of environment (urban, rural)
- Category of dwelling (single-family home, multiplex apartment building)
- Proportion of businesses served

A complete and detailed portrait by municipality is thus created, and tonnages of materials generated are then consolidated when they arrive at each active sorting centre in the province.

2) Collection and transportation of materials

The time required for collection and transportation operations as well as related costs are calculated according to the characteristics of each municipality and sorting centre, with regard to the following activities:

- Materials collection (loading and moving)
- Transportation to and from the sorting centre
- Unloading at the sorting centre

Collection and transportation activities are influenced by the following variables:

- Quantity of materials collected (generation from Step 1)
- Frequency of collection
- Collection truck capacity
- Time required for collection
- Distance from the sorting centre

The main expenses considered in the costs are:

- Labour
- Administration
- Trucks (including maintenance)
- Fuel

Total costs are then allocated to materials according to their proportion in trucks.

3) Sorting and conditioning of materials

Sorting centres are modelled according to their characteristics:

- Size of the sorting centre
- Level of mechanization
- Equipment layout
- Type of work carried out by sorting personnel

The costs generated at each step of the sorting process (reception, pre-sorting, segregation of fibre materials, sorting of containers, baling and reject management) are calculated in consideration of:

- Labour
- Equipment (including maintenance)
- Vehicles
- Electricity and fuel
- Infrastructure

The cost of each material is based on the particular process it undergoes in the sorting centre.

Costs common to all materials are allocated according to various criteria as well as material weight and volume (e.g. reception space, conveyor belt capacity, administration, etc.). Costs specific to certain materials are directly attributed to each material (e.g. optical sorter for plastics, eddy current for aluminium, manual sorting for fibre materials, etc.).

RESIDENTIAL



TYPE OF ENVIRONMENT
(URBAN, RURAL)



CATEGORY
OF DWELLING

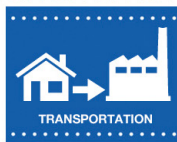
COMMERCIAL



PROPORTION OF
BUSINESSES SERVED



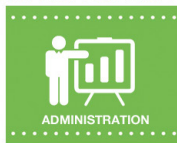
ACCORDING TO COLLECTION ACTIVITIES



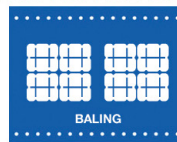
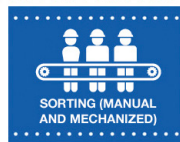
EXAMPLES OF VARIABLES



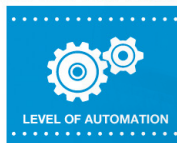
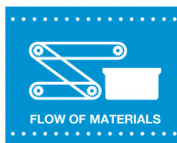
MAIN EXPENSES



ACCORDING TO SORTING ACTIVITIES



EXAMPLES OF VARIABLES



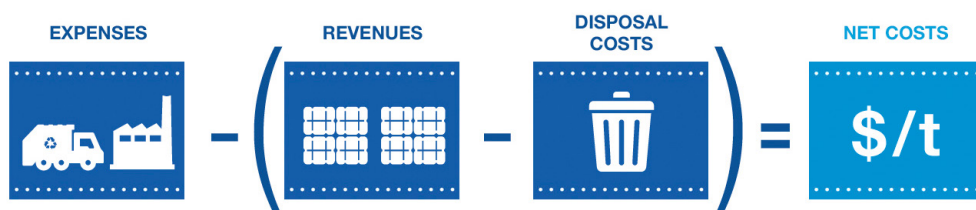
MAIN EXPENSES



4) Determination of net costs

Revenues from bales of materials sold are attributed to relevant materials according to weight. Sales revenues are based on average market prices.

Disposal costs are also considered and attributed to the materials that end up as rejects.



Partners



Éco Entreprises Québec represents over 3,000 companies that put containers, packaging and printed matter on Quebec's market and are responsible for compensating 100% of the net costs of municipal curbside recycling services in Quebec.



RECYC-QUÉBEC's mission is to promote, develop and encourage reduction at the source, reuse, recycling, recovery and reclamation of containers, packaging, materials or products within a perspective of resource conservation.

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