# Need Statement

The failure to have recyclables make it into/though the recycling system causes hundreds of tonnes of waste to be added to landfills on a yearly basis, costing citizens millions of dollars a year, an effect that will grow as population increases.

# Problem Statement

A method to increase the number of recyclables making it into/though the system is required.

## Functions

**Accepts materials and sorts them into glass, paper, and plastic recyclables, and ‘other’ materials.**

## Design Goals

**Positive environmental impact**

**Accessible to many people, regardless of technical skill**

**May be adopted on a large scale**

**Reliably identifies recyclable materials**

**Securely mounted/positioned**

**Requires little maintenance**

****Legend****

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| --- |
| Constraint |
| Objective |
| I didn’t know which one yet |

****Table: Constraints and Objectives****

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| --- | --- | --- | --- |
| Constraint/Objective | Basis for Measurement | Criteria | Units |
| Inexpensive | Unit manufacturing cost | The fully assembled unit should cost less than 75 CAD | CAD ($) |
| Accessible for home construction | Availability of parts??? | The entire assembly should be able to be produced, ordered, and assembled from home if need be; open-source | Group subjective rankings of designs |
| Separates waste and organics | Number of non-recyclables falsely sorted | No non-recyclables should be sorted as recyclables (count = 0) | Count |
| Separates glass (glass can shatter and contaminate) | Number of glass recyclables falsely sorted | No glass recyclables should be sorted as paper or plastic | Count |
| Separates paper and plastic | Number of paper and plastic recyclables falsely sorted | No paper or plastic recyclables should be sorted as otherwise | Count |
| ‘Reduce’ waste in manufacturing | Proportion of design material (by volume) | The final design should require less than or equal to 50% wasteful (non-recyclable) materials in manufacturing | % (m3/m3) |
| ‘Reuse’ and ‘Recycle’ waste in manufacturing | Proportion of design material (by volume) | The final design should require greater than or equal to 15% reused and/or recycled materials for manufacturing | % (m3/m3) |
| ‘Reuse’-able | Proportion of design material (by volume) | The final design should be made of greater than or equal to 50% materials that can be reused for other purposes | % (m3/m3) |
| ‘Recycle’-able | Proportion of design material (by volume) | The final design should be made of greater than or equal to 50% materials that can be recycled | % (m3/m3) |
| Low power | Current draw | The system should draw less than 0.25 Amps at all times to identify recyclables (identification, specifically. Mechanical sorting may require more power) | A |
| Clear assembly instructions |  |  |  |
| (some way of measuring the quality of its mounting, if applicable?) |  |  |  |