Executive Summary

Mission Statement

The GreenSort aims to improve the world's trash problem while increasing the efficiency of the recycling process.

Problem

Today, despite massive educational movements and recycling programs, only 34% of all recyclable materials are being recycled. Incentivizing the public to take action and sort their trash has not shown strong results. In the United States, over 114 million tons of potential recycled materials are thrown out as trash, holding a value of over 11.5 billion dollars.[1]

Objectives

The GreenSort will take the issue of sorting recyclable materials from compostable and landfill waste out of the public's hands and into small-scale automation. This solution will be affordable, scalable, and will incentivize the public to throw away their trash while reducing the amount of mislabeled trash sent to recycling centers.

Product Differentiation

The GreenSort is different from current trash sorting systems through our compact design and small-scale efficiency. Currently, trash is sorted on a city-wide level in waste management and recycling plants. The GreenSort utilizes a near infrared spectrometer to identify recyclable waste from non-recyclables and sorts between compostable/landfill waste and recyclables i.e. paper, glass, metals, and plastics. The trash will be sorted inside each individual GreenSort trash can.

Growth Potential

After establishing ourselves with a solid foundation in the City of San Jose, we plan to expand to other major cities in the United States, such as San Francisco and New York. Currently, over 11.5 billion dollars of recycling are thrown out as trash in the US, the highest of any first world country. The recycling industry in the United States of America is currently valued at $37 billion and is expected to grow to over $52 billion by 2022.[2]

Financial Forecast

We plan to place 760 trash cans on a trial basis in downtown San Jose and are planning to expand to 3 new cities in the second year. This would result in a 175% increase in profit over the first year and a 625% ROI by the end of five years upon expansion into cities across the nation.

1 The Breeze

2 Micks, Ashley

II. Problem

Opportunities that exist in the current market

1. **Lack of Public Awareness on the Specifics of Recycling**

Throughout the United States, efforts have been made to improve public awareness on the importance of recycling through public education. However, while there has been growth in the public's initiative to sort waste products and recycle, there are simply too many members of the public who are not aware or simply do not care about the issue of recycling. Over 75% of all trash in existence is recyclable, however, only 34% of all trash is currently recycled[3]. On a public scale, this has resulted in trash cans filled with recyclables and recycling bins standing empty.

2. **Public Budgets Wasted on Sorting Trash**

Public disregard for sorting trash has resulted in a significant issue for recycling and waste management plants; the surplus in unwanted materials. Waste management plants are spread out across cities on the basis of what materials can be processed at each plant; some plants only process hard plastics and some only process metals. The cost to decontaminate the recyclables mixed with trash is around $1000 per ton. As a result, many recycling and waste management plants have to package and provide transportation for waste materials, which has proven to be costly for both treatment centers and the cities that hire them[4].

3. **Extensive Overhead Costs of Recycling Plants**

Current recycling centers are expensive to maintain. In fact, it takes over $3 million per year for the operation of a single plant.[5] Of this $3 million, almost $1 million is spent on sorting,

[3] Brown, Henry
[4] Pew Research Center
[5] Micks, Ashley

packaging, and transporting waste that is falsely labeled as recycling to other waste management plants.[6]

III. Customer Segments

Target Market: GreenSort's focus is targeted towards implementation of our waste receptacles in areas with heavy foot traffic, in particular downtown areas in cities. The presence of foot traffic is typically a good indicator as to the amount of trash in the general area.

Target Customers Segment: Our initial target customer is the City of San Jose. We plan to forge a partnership there and move on to other nearby cities; the cities of Cupertino, Santa Clara, and San Francisco. We aim to put a GreenSort in every block of downtown San Jose, for a total of 760 GreenSorts in the downtown area. It is also essential to note that the City of San Jose residents are mostly affluent professionals and families who have already adopted a zero waste policy. [7]These are citizens who will naturally gravitate toward environmentally-friendly products.

Supporting Trends: From 2000 to 2014, the value of a ton of recycled materials increased from $24-125.[8] This coincides with the increasing popularity for recycling during the same time period. Over 96% of all adults living in the US believe that recycling is important, while only 30% of all adults in the US actively recycle.[9] The GreenSort will allow the 167 million adults who do not currently recycle in the US to do so effortlessly.

IV. Unique Value Proposition

[6] Micks, Ashley
[7] Zero Waste Strategic Plan 2008
[8] Lloyd, Allan
[9] Pew Research Center

The GreenSort provides the opportunity for the public to be more efficient with their trash. By taking the human element out of consideration in trash sorting, over 70% of all trash thrown out will be recycled.[10] The anticipated rate for the recycling of products is double that of the current recycling rates(70% to 34%).[11] This will not only protect the environment by reducing the usage of non-renewable resources, but will also boost the economy by establishing a foundation for a greener world.

V. Solution

Efficient Material Identification: The underlying technology behind the GreenSort is not evolutionary, rather, it is revolutionary. The use of spectroscopy to quickly identify whether the material is landfill waste or recyclable will allow us to accurately sort between trash and recyclables. Our waste receptacles will employ NIR (Near-Infrared) spectrometers (as seen to the right) to identify different materials by irradiating the unsorted, unidentified materials with near-infrared waves (600 to 2500 nanometers in wavelength). A portion of these waves will be absorbed by the material and the reflected waves will be measured and the resultant will be compared to the infrared absorption rates of known materials.

Economic Benefits: Beyond simply being affordable for cities, GreenSort reduces costs for city waste management plants. Individual recycling plants today spend over $1 million in sorting, packaging, and transporting falsely received non-recyclable materials as a result of the public's lack of recycling education.[12] GreenSort's waste receptacles will reduce and eventually eliminate these extemporary costs while prompting increased recycling rates, thus spurring the economy.

---

[10] Pew Research Center
[11] Pew Research Center
12 Lloyd

Simple Design: GreenSort's design for a public waste receptacle will work universally with all types of conventional waste. Thus, the public will not have to consider whether their trash can be recycled or not.

VI. Conclusion

Summary of Product: The GreenSort is an automatic-sorting trash receptacle that will prompt the public to reduce the amount of incorrectly-sorted trash in the current system, providing the ability to quickly dispose of trash while cutting costs in sorting, packaging, and transporting non-recyclables in recycling plants. By incubating this product in the City of San Jose, we can expose our product in the ideal environment for the GreenSort. We have the potential to reach 864,000 people by the end of our first year.

Production Costs: Our total production expenses for our standard model come from a $80 standard galvanized steel trash can, five $7 NIR (Near-Infrared) Spectrometers, one $25 AC motor, one $10 platform for partitioning the trash, and $30 in approximated manufacturing costs per unit. Our products will only cost an average of $180 per unit to manufacture. The GreenSort is affordable for all major cities, being sold for $700 per unit at a 380% rate of return.

Financial Request: We, the owners, have contributed $225,000 to fund our efforts and are currently seeking an additional $300,000 to fund GreenSort's manufacturing and future expansion plans. We are offering 30% equity in GreenSort. By our third year, we project that your 30% equity in our company will be valued at $525,000, 175% of your original investment.

VI. Bibliography

Anderson, Monica. "For Earth Day, Here's How Americans View Environmental Issues." Pew Research Center, 20 Apr 2017. Web.
Micks, Ashley. The Costs of Recycling. 12 Dec. 2012. Stanford
Brown, Henry. How Much the Average American Wastes per Month. 7 Jan 2018
Lloyd, Alan. "Recycling." CalRecycle. Web
Breeze, Rachel Petty | The. "Litter and Trash on Campus Cause Debate." *The Breeze*, 15 Oct. 2014.