

Stick it to the Can Project Proposal

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Project Summary

Stick it to the Can is a project designed by a group of four Illinois Institute of Technology students. We discovered that yard waste is causing an environmental problem because people are not properly disposing their yard waste. Yard waste takes up valuable landfill space because they are highly reusable and compostable. This space in the landfill can be used up by items that are not reusable. Yard waste also creates dangerous methane emission and acidity when it is broken down. Chicago has a history of not properly disposing yard waste. The residents of Chicago are not aware of the yard waste disposing system. Yard wastes are thrown into regular trash bins and are then dumped into the landfills. There are some residents who are aware of the yard waste system; however, when they request 311 to pick up the yard waste, the garbage crew takes the yard waste and still dump it into the landfill. There is no way for the garbage crew to differentiate the garbage and yard waste. This will only cause the the yard waste to take up valuable space in Chicago's landfill and produce more methane in anaerobic conditions.

Stick it to the Can is specifically designed to target the problem with Chicago's yard waste system. We have designed a new procedure that will persuade and remind the residents to properly dispose yard waste. It will also prevent the garbage crews from mistaking the yard waste as garbage. We have created a sticker band that will require the Chicago residents to place yard waste in a separate bag and seal it with the sticker band. This sticker has a reminder for the residents to call 311 to request for yard waste pick up. Not only that, but the sticker will help the garbage crew know that the bag is yard waste and not garbage.

Project Description (Technical Proposal)

Proper disposal of yard wastes (branches, leaves, grass clippings, tree limbs, and brush) is very important because they are broken down organically in a bio-chemical reaction called composting. Yard waste is reusable and compostable. If yard waste is added to landfill, it will take up space that can be used for items that are non-recyclable. Not only that, but methane emissions and acidity are created when yard waste decomposes in anaerobic conditions (an environment that lacks oxygen). When the acidity is leaked in the landfill, it can cause other chemicals to pollute the ground and water. Also, according to the United States Environmental Protection Agency, 18% of the Methane emission is caused by landfill in 2015. This amount can reduced heavily if yard waste is prevented from ending up in the landfill.

Methane gas is a dangerous gas on Earth because it is undetectable, explosive, and flammable. Methane gas can seep into nearby buildings and into the ground. If the gas is seeped into the building and ground, there is a possibility of an explosion. Not only that, but according to the Scientific American, Methane will warm up Earth on steroids for two decades before decaying. This gas is more effective in trapping heat than carbon dioxide. Methane is 25 times more potent than carbon dioxide and it will increase global warming (National Public Radio). This will have a huge impact on the Earth we live in because there will be an increase in smog. This smog will cause human problems like asthma. The increase in global warming caused by methane will also cause more infectious disease outbreaks because the warm temperature will increase the growth and spread of conditions that the pathogens and mosquitoes like (Natural Resources Defense Council).

As mentioned earlier, yard waste is recyclable in which it can be recycled into healthy soil. Due to the increase in population over time, the soil that we use to grow crops is depleting. This soil erosion is causing the soil to become unsuitable for use since the land is overused. Soil erosion can be slowed down by using yard waste. Yard waste can be recycled through composting in which the yard waste is turned into a natural fertilizer. This natural fertilizer will give the soil more nutrients and help the crops grow healthier (1 Stop Landscape).

Chicago is a victim of not properly disposing yard waste because their yard waste is dumped into the landfill. Chicago is a heavily populated city with an estimated of 2,695,598 residents living in Chicago. With this amount of people living in Chicago, land is very valuable and landfills are reaching the peak capacity. It is hard to find more land in Chicago to use as a landfill (Chicago Cooperator).

Chicago does have a system for properly removing yard waste; however, it is not effective. Residents who live in Chicago are supposed to put yard waste into a bag and place it next to their alley garbage bins. Once the bags are placed next to the garbage bin, the residents are required to call 311 for the bags to be picked up by the city. Throughout the year, pickup trucks instead of garbage trucks go around to pick up waste because there are small amounts of requests. During the months in October and November, the city expects many 311 requests and will deploy regular garbage trucks for only yard waste (WBEZ).

The problem with this is that less than 1% of the Chicago households use this system. Also, another problem is that in the recent years, the amount of garbage collected has declined while the number of 311 requests has increased. In 2008, the city sent out

trucks to pick up yard waste; however, from 2012 to 2013, the amount of yard waste collected dropped completely even though there were more than 1,500 requests. By 2014, Chicago switched to the system where yard waste was only picked up by request. According to Chris Sauve (deputy commissioner of the Streets and Sanitation Department), the system was changed to due to lack of resources and low participation. He also noted that for most of the years, yard waste was collected as regular garbage. The garbage crews would take yard waste and throw it in the garbage trucks if there were no 311 request. Some garbage crews also mistaken yard waste as garbage because there is no way to differentiate yard waste with garbage in a bag. Another problem is that the the representatives who answers the phone does not have knowledge of the yard waste system that Chicago has. When they are asked what to do with yard waste, none of the representatives mentioned that the residents must call 311 to request for yard waste pick up. Some of the representatives even told residents that it was okay for them to leave the yard waste in the black bins (WBEZ).



Figure 1. A line graph displaying the amount of yard waste collected over the years

The data above was collected from City of Chicago Department of Sanitation and Streets. Based on the graph, it shows that for the past 10 years the amount of yard

waste collected has dramatically decreased. This has a huge impact on the environment because yard waste is not properly disposed.

According to David DeRousse (director of business development at RSI Recycling Services in Chicago), he mentioned that the Chicago citizens who gets their trash picked up has to pay a fee through their taxes. People may think that the service is free; however, it is not because the municipal program gets paid through taxes (Chicago Cooperator). This means that tax will continue to increase at a faster rate because yard waste is wasting valuable space in the landfill. As mentioned earlier, there is not much land left in Chicago for a new landfill since Chicago is an overpopulated city. In 2017, Chicago started to charge citizens 7 cents for every plastic bag used because Chicago wanted to reduce the amount of plastic bags in the landfill (Chicago Tribune). This shows that the City of Chicago has a limited amount of space for garbage in which if yard waste is reduced, there will be more space in the landfill. This will lower the rate of the tax increase for landfill since there will be more space.

With Chicago's yard waste problem, Stick it to the Can has created the following list of goals to tackle this problem:

- To inform the dangers of not properly disposing yard waste
- To design a cost effective system that people can understand and use
- To reduce the amount of methane produced by improper disposal of yard waste
- To reduce the amount of yard waste ending up in the landfill

Our group has came up with a solution to approach this problem. We have created a colorful sticker band that can be tied around the handle of the garbage bag. This sticker band will have a QR code that links to our website. Our website will have instructions, other ways to dispose of yard waste, and a link to 311 request website. We will send out a pack of sticker bands along with a brochure to 600,000 households. The image of the sticker band is shown on figure 2.

The new procedure is to have the residents stick the sticker on the handle of the yard waste bag and then place the bag next to the black garbage bin. This sticker will remind the residents to request 311 to pick up yard waste. Once the resident makes a request, the yard waste crew will go to the area with the highest request to pick up yard waste every week. The yard waste picked up by the crew will take the waste to their composting facility. The residents will have to request for more stickers once they are used up. These stickers can also be picked up at the Chicago Public Library and Chicago Park District. We will offer presentations at every community to educate them

on the dangers of not properly disposing yard waste. We will also teach them different ways to dispose yard waste and the new procedure in disposing yard waste in Chicago.

This solution allows residents to know that there is a difference between garbage and yard waste. The fact that people have to place a sticker around the handle the yard waste bag informs them that yard waste must not be treated like garbage. The sticker also gives people a reminder that they must make a request for the yard waste to be picked up. This sticker will help the garbage crew to differentiate garbage waste and yard waste. This way, yard waste will not end up in the landfill and take up space. The QR code on the sticker will be linked to our website and our website will be the one-stop website to inform residents of Chicago. It will consist of instructions on how to properly dispose yard waste and other effective ways to compost the waste. It will also have 311 request page so the residents will know how and where to request 311 to pick up the yard waste.

Plan of the Work

Scope and Method

We will first begin the project by conducting surveys with family and friends to see if the idea of this project is possible. We will create a Google survey to get a general idea of how effective this idea is and to see whether people will use the stickers to dispose yard waste.

We will continue to gather surveys from Chicago residents in the future. We have already designed the sticker band (image shown below) and brochure. We will contact the sticker company to print out 3,030,000 stickers to begin with. The company will ship it to the Department of Streets and Sanitation (DSS). DSS will be responsible for printing out 630,000 brochures and distributing out the brochures and stickers to every household and Chicago public facility. We are not responsible for contacting each and every facilities like Chicago Park District and Chicago Public Library to inform them that stickers will be placed at their location for residents to take. DSS will be responsible for contacting all Chicago public facilities. We will work with DSS to host community meetings at every neighborhood to do a presentation. This presentation will include the dangers of not properly disposing yard waste, the purpose in the new method in disposing yard waste, instructions, and other ways to dispose yard waste at home. We are not responsible for picking up yard waste and we are not responsible for scheduling the yard waste pick up. DSS will have to create their own schedule, number crew members, and their salaries.



Figure 2. Image of Sticker Band

Task Breakdown

This project will take approximately 10 months to 1 year. There will be a possibility of shipping delay or printing delay. Please take a look at Figure 4 below to see the schedule breakdown.

Schedule	Task
Week 1	Research the dangers of yard waste and different ways to properly dispose of yard waste
Week 2	Design sticker band, brochure and website
Week 3	Contact sticker company to print out stickers
Week 4	City of Chicago prints out brochures
Week 16	Organize brochure and sticker
Week 20	Mail brochure and stickers to residents
Week 21	Contact and distribute stickers to Chicago facilities
Week 22-40	Host meetings to do presentation

Figure 3. Work Schedule

Problem Analysis

A couple of problems can occur in this project. One of the problem is that the company's that we chose might not be able to print all of the stickers and brochure on time and this will cause a delay. Another problem is that there might not be enough people to put the together the brochure and sticker together. Other problems include not having enough brochures and stickers when we do presentations at every community. These problems are solvable by finding different companies that can fold and print both stickers and brochures.

Facilities and Equipment

We will work with Department of Sanitation and Streets to deliver the project. The facilities we will use for this project are the following: Chicago Public Libraries, Chicago Park District Facilities, Ticket Printing, Vista Print, and United States Postal Service (USPS).

Chicago Public Libraries and Chicago Park District facilities will be responsible for distributing additional sticker bands and brochures. We will work with Ticket Printing to

print out sticker bands. If DSS is not able to print out brochures, we will work with Vista Print to print out brochures. USPS will be responsible for delivering the brochures and stickers to the 600,000 households and to the Chicago public facilities.

Personnel (Management Proposal)

We are a group of 4 students from Illinois Institute of Technology. Within this group, there is a manager, researcher, designer, and communicator. Judy will be the manager of this project because her major is Engineering Management in which she has to knowledge on managing the project and determining the budget cost of this project. Nickalaus will be researcher in this group because his major is Applied Analytics and he is has the skills to analyze large quantities of data and provide helpful recommendations. Giovanni will be the designer in this team because his major is digital humanities and has the ability to create and design artwork. Paul will be the communicator in this team because his major is computer science and has the skills to effectively communicate with other companies. The management structure of this team can be seen below:

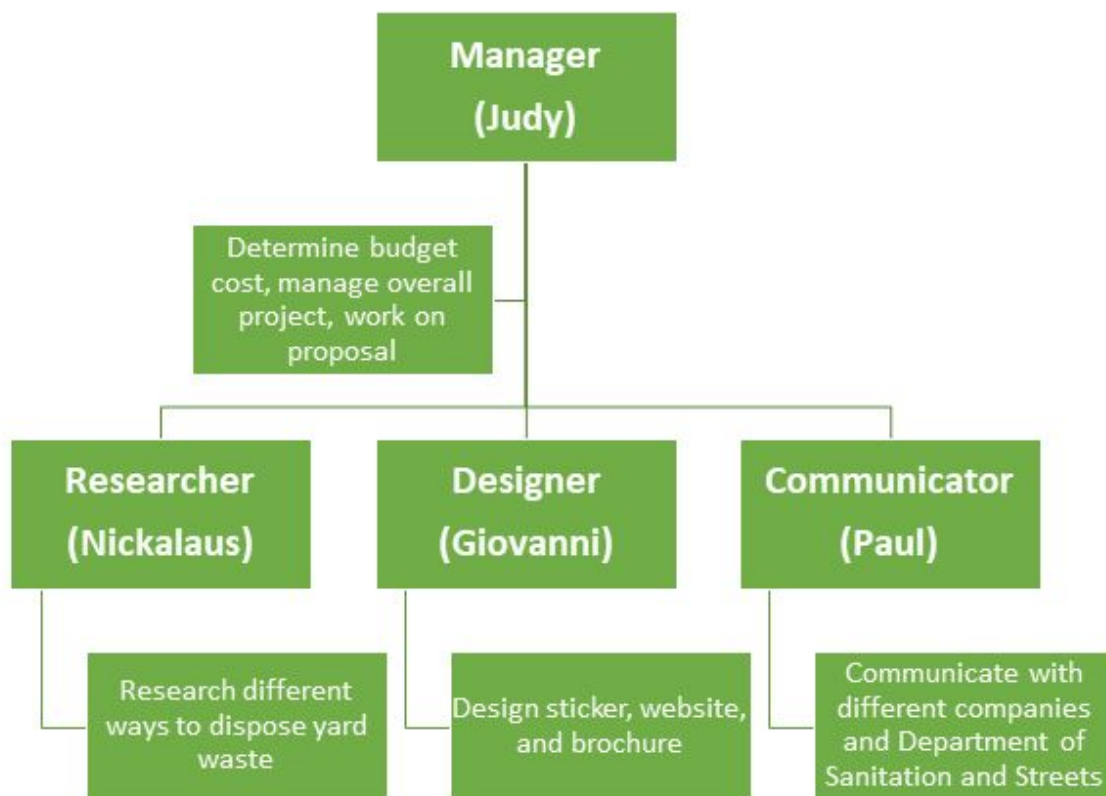


Figure 4. Management Strategy

Budget (Cost Proposal)

The main cost of this project will come from the stickers and mailing that will be sent out to 600,000 households and to Chicago Public Facilities. There are currently 80 Chicago Public Libraries and 220 Chicago Park District facilities. We have decided to start out by sending 100 stickers to every library and park district facilities. Every household will receive 1 brochure and 5 sticker bands.

We decided to work with the company TicketPrinting to print out customized sticker bands. Based on their website, it costs \$750 for 10,000 stickers. It will cost \$227,250 to print 3,030,000 stickers.

As for printing and folding the brochures, the Department of Sanitation and Streets will have to work with the city to print them. It is estimated to cost \$66,150 to print and fold 630,000 brochures for every household, libraries, and park facilities (100 brochures will also be distributed every library and park facility). This price is based on VistaPrint and is subject to change because more brochures will be printed as needed for presentations.

We will work with United States Postal Service (USPS) to deliver brochures along with the stickers to every household, libraries, and park facilities. USPS has a service Every Door Direct Mail (EDDM) and it will help us deliver all brochures and stickers to the designated place. It is estimated to cost \$0.17 per mail. It will approximately cost \$102,000 to deliver the mail to 600,000 households. Since EDDM does deliver packages, the 100 brochures will have to be shipped with Priority Mail (another USPS shipping system). It will cost approximately \$8.50 to ship 100 brochures to 1 location. It will cost \$2,550 to ship a box of 100 brochures to 300 Chicago libraries and park facilities.

We have already designed a website, sticker, and brochure. This will be given to the Department of Sanitation and Streets for free and it will not affect the cost of the project. Also, we will help give out presentations at every Chicago community for free of charge.

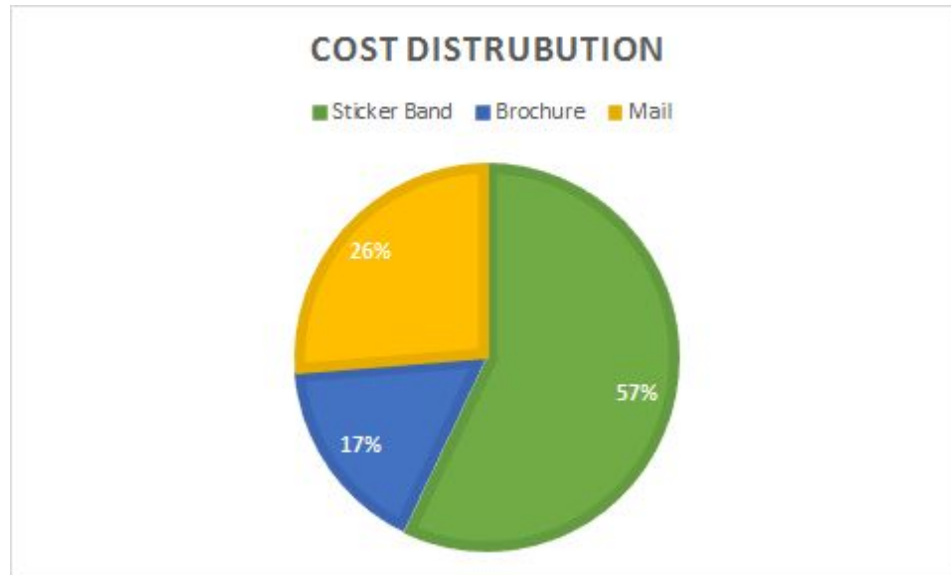


Figure 5. Distribution of Estimated Cost

The sticker band is a better method than giving everyone another garbage bin because a garbage bin cost about \$80. If the City of Chicago provide the 600,000 household a garbage bin, it will cost \$48,000,000. The total cost of this project is projected to be a total of \$397,950. This does not include the salary of the yard waste crew and the weekly yard waste pick up. The sticker method cost a lot more less than distributing a garbage bin to every household. This will help the city save \$47,602,050.

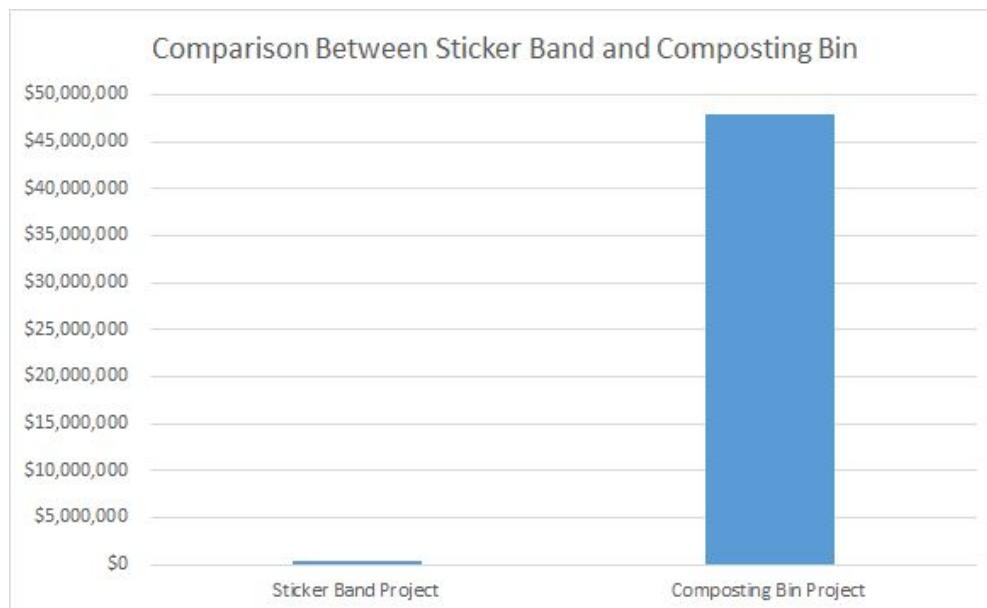


Figure 6. A Graph that Compares the Cost of Using Sticker Band Versus Composting Bin

Conclusion

We are dedicated to provide a cost effective solution to help solve Chicago's yard waste problem. We do not want Chicago to continue to dump yard waste into the landfill because it will increase the amount of methane produced and waste valuable space. Stick it to the Can designed the sticker to help people differentiate garbage with yard waste. This sticker will remind people that 311 must be called for the yard waste to be picked up. We are dedicated to perform a presentation at every community to teach them the new procedure of disposing yard waste. We want to inform the Chicago residents the dangers of not properly disposing yard waste and teach them different options to dispose yard waste.

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