



# **Yard Waste Management in Chicago**

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# 1. Project Summary

Over the past few years, the City of Chicago, has been having a few issues with their yard waste collection system. There has been a consistent decrease in the tonnage that the Department of Streets and Sanitation has collected over the years. The city had weekly scheduled pickups of yard waste, until they dropped pickups completely from 2012 to 2013. Yard waste removal was requested more than 1,500 times during that period. In 2014, the Streets and Sanitation Department introduced the current system (Eng, 2017). In this system, the yard waste is to be placed out in the alleys next to the garbage and recycling bins. Residents must then call 311 and request that their yard waste is picked up by the city (Department of Streets and Sanitation, 2018). The only time that scheduled weekly pickups are performed is during the months of October when the Department of Streets and Sanitation sends out regular trucks to assist with the autumn debris (Eng, 2017).

## 2. Project Description

### 2.1 Rationale and Significance

There are several issues with the current yard waste management system:

1. Not even 1% out of over 600,000 city households that are eligible for the program actually utilizes the tax sponsored program (Eng, 2017). To put things into perspective, less than 6,000 households of those eligible, in a city that stretches 237 square miles participates in the program (Facts and Statistics, 2018). Low participation from residents is an important indicator of a failed system.
2. The increase of 311 requests over the past few years does not match the drastic drop of tonnage actually collected by the yard waste collectors (Eng, 2017). Note that statistically and logically speaking, an increase in requests over the years should result in an increase in the tonnage collected, because the relationship should contain a positive correlation between both variables. The negative correlation in this relationship is another indicator stating that the program is not effective, or not achieving the specific outcomes it was designed to get.
3. A multitude of participating residents have claimed that upon calling 311 and requesting yard waste pickup, the bags they placed separately from their garbage and recycling bins will sit in the alley for up to a week. Numerous residents say that

their yard waste will disappear on the next garbage day (Heffernan, 2015). The garbage collection trucks collect the yard waste that is separated according to the guidelines set forth by the Department of Streets and Sanitation. This means that yard waste is being sent to the city's landfills and is not being decomposed properly.

The issues above bring many questions to light. However, the most important question to focus on is: "Is the poor yard waste management system a government failure?" The answer is yes. To start, there isn't enough participation in the yard waste management system. Government has a duty to review and revise the policies and programs it supports based on its effectiveness. With such a miniscule number of residents participating, the city should at least make a greater attempt to either get the word out or encourage the public on why it is important to participate.

Second, the effectiveness is again challenged by the negative correlation between the number of requests for waste removal and actual tonnage collected. If a program does not produce the proper outcomes, then the program needs to be trouble shot for any mistakes that are causing the undesirable outcome.

Finally, in 1990, the state of Illinois banned all yard waste from entering landfills in order to conserve landfill space and more importantly to reduce the amount of methane gas that is released into the atmosphere. Methane is produced when anaerobic decompositions occur or when organic material decomposes with very little to no oxygen (Brockway, 2012). Methane is extremely dangerous because it has a Global Warming Potential that is twenty-five times that of carbon dioxide (Brockway, 2012). This means that methane traps twenty-five times the amount of heat that carbon dioxide does, causing an exponential increase in the average global temperature (Brockway, 2012). The City of Chicago is blatantly failing to follow the State Environmental Protection Agency's policy with the tons of yard waste that they are allowing to make it to the landfills.

## **2.2 Introduction**

There are several courses of action that Chicago could take in order to reach our goals of collecting and composting yard waste properly according to the state of Illinois' public policy, reducing the environmental effects of the currently failing system, and

gaining a high percentage of resident participation to maximize the overall benefits of the program. Some solutions completely redesigned the system. We propose a slight modification to the current system along with a pilot program in order to fine tune and correct all of the issues that the city has.

Currently, residents are not required to use a specific type of bag or have their yard waste bags marked. As a result, garbage collection teams pick up the yard waste by accident. We will require all yard waste to be put into marked 30-gallon brown paper bags. Many cities around the state already utilize this method to clearly define which bags are marked with the words “yard waste”. This has successfully stopped garbage collection teams from taking yard waste to the landfills in Elgin and Naperville. Brown paper bags are already available at local hardware and grocery stores for convenience to Chicago residents.

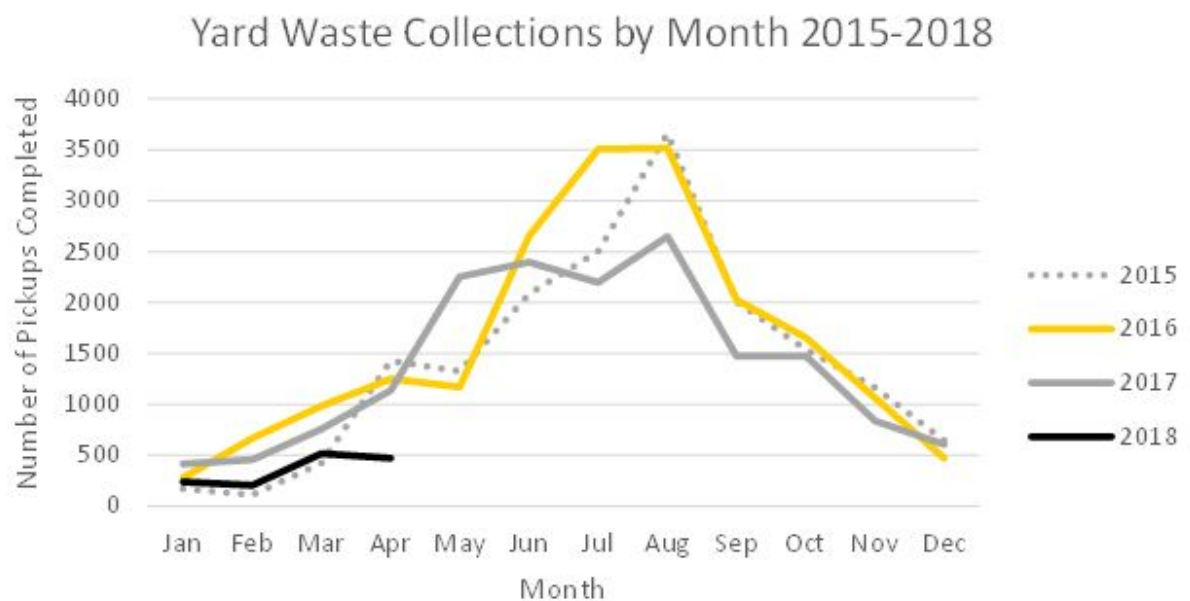
Unfortunately, some residents will not want to be required to purchase brown paper bags separately. To combat this issue, as an initial promotion for the program, we will send each eligible household a promotional package. Each package will include a 30-gallon brown paper bag, an informational and instructional brochure, and a return card that will give the residents the choice to opt into the return system that will replace the resident’s yard waste with a new bag at each pickup. The city of Chicago’s seal will be stamped on all bags in this system for convenience of the collection teams. This will make it clear as to who has opted into the bag return system. This promotion was designed to encourage eligible residents to participate by putting the necessary tools into the individual users’ hands, and at an affordable price of \$15 per year.

## **2.3 Plan of Work**

### **2.3.1 Scope**

Most residents will still be required to call 311 until a steady increase of requests are sustained enough to justify biweekly or weekly scheduled pickups of yard waste with the exception of the months of June-September when the largest amount of yard waste is expected (Graph 1). This will ultimately save tax dollars on the running and maintaining of waste collection vehicles and will assist with the reduction of harmful emissions the vehicles produce prior to the need for them. A pilot program with the proposed scheduled pickups (Table 1) will be conducted in three neighborhoods across the city; South Chicago,

Jefferson Park, and Morgan Park. Each neighborhood is from one of the three different sides of the city; north, south, and west. The three neighborhoods that were selected had the highest amount of 311 requests over the past three years on each side of the city. This pilot program will demonstrate the effectiveness and efficiency of the adjusted yard waste management program. The results from this pilot program will assist in the marketing of a successful program to non-participating residents. It will also give quantitative data on when the right time will be to update various neighborhoods from the 311 removal request to regularly scheduled biweekly pickups.



Graph 1: Shows the trend in number of pickups completed over the past four years.

Month	Frequency
Jan & Feb	By Request
March-May	Bi-Weekly
June-September	Weekly
October & November	Bi-Weekly
December	By Request

Table 1: Shows our proposed pickup schedules based on the data from Graph 1.

### **2.3.2 Methods**

Quantitative data will be kept on three separate items. Emissions from the collection trucks will be recorded by a smog test and an average of the fleet will be calculated. It will then be multiplied by the total hours all the vehicles will be used in order to get a monthly total amount. Tonnage collected and composted properly will be weighed and measured in pounds. Every collection truck will be weighed upon return in order to determine total collection amounts. In addition, the neighborhood it is collected in will also be recorded. Finally the overall cost of the program will also be recorded. This will be collected by tracking fuel, vehicle, and maintenance expenses and employee salaries. All items can be compared with each other to determine correlations. Maintaining this data will support the city's constant duty of government, which is to review and revise all programs in order to maintain that the highest quality of services is being provided. We will be able to analyze the data in order to find the following: when each neighborhood requires a regularly scheduled pickup of yard waste, how frequent the pickups need to be, and how effective and efficient the program is working. Different approaches can then be applied to find more appropriate ways to adjust the current system without having to spend large amounts of additional tax revenues to overhaul the entire system.

As supplement to the plan, we will launch our social media account to spread awareness of the changes to Chicago's yard waste management program, educate the public on the importance of global warming, how the old system was exponentially increasing the effects on the global temperature, and explain the significance of the quantitative data we collect and how it will improve system. Educating the public will dramatically increase the participation of the program, because many simply lack understanding of the dangers of incorrectly disposed yard waste.

To support the social media account, we will create an informational website. Similar to the Recycle By City website ([recyclebycity.com](http://recyclebycity.com)), there will be an inclusive website that is easily accessible and has guidelines for the yard waste management program. Included on the website will be:

1. The original proposal with the reasons for selecting this solution in order to be transparent with the residents.

2. Simple step-by-step guidelines for how to participate in the yard waste management program. These instructions will look similar to what any eligible resident would find on the Department of Streets and Sanitation webpage.
3. Easy to navigate pickup schedules for all neighborhoods for the convenience of residents.
4. A link to our social media account as stated before in order to spread awareness of the program and educate the public on why it is important for residents to participate in it.

### ***2.3.3 Task Breakdown***

In one years time from the start of the pilot program, we plan to have enough reputable data to finalize the proposed pickups schedule for the rest of the city, by pinpointing trends in the pilot. By year three, we expect to have more than 50% of eligible residents participating in the program. And by year five, we expect more than 75% to be participating. We expect 99% of eligible residents to be participating after ten years.

### ***2.3.4 Problem Analysis***

There may be some backlash through the social media account and website. To counter the possible negative replies, we will maintain a professional posture and continue to provide educational responses that are backed by scientific fact in order to sustain our good standing as a credible and reliable source.

## **2.4 Facilities and Equipment**

No new equipment or facilities will be required. The Department of Streets and Sanitation will utilize the same waste collection trucks and composting facilities. Scheduled yard waste pickups will occur on Wednesdays, when the large collection trucks are not in use. Small pickup trucks will continue to be used for the by-request pickups.

## **3. Personnel**

The plan requires that the Department of Streets and Sanitation hire two additional part-time employees per police district for yard waste collection. There are 22 police districts. This puts our total number of additional employees required at 44.

## 4. Budget

The total cost for the pilot program is \$242,900 (See Table 2 for breakdown). Since the new employees will work on incrementally scheduled pickups, their salaries are budgeted to be approximately two-thirds that of a full-time refuse collection employee. For the whole city rollout, the total cost of the program is \$2,338,000 per year. At our end goal with 99% participation we expect to get \$1,800,000 in revenues from approximately 600,000 eligible households. Households will be charged \$15 per year to participate in the yard waste program. \$12 covers the cost of the 30 bags and \$3 goes towards the cost of paying the collectors. This leaves \$538,000 that would need to be added to the existing budget in order to cover the remaining salaries of new employees. Until our ultimate goal of a 99% participation rate, the city will have to make up the difference, however the cost assuming 0% participation would be only 1.33% of the current budget. The Department of Streets and Sanitation has a current budget of more than \$150,000,000. To put that into perspective, we are working towards requesting only an increase of 0.33%.

Item	Price	Quantity	Total Cost
30 gallon Yard Waste Bags	\$0.40	27,000	\$10,900
One year's Salary of Waste Collector	\$47,000*	6	\$232,000
		Total:	\$242,900

Table 2: Shows the cost breakdown for the year long pilot program.

Item	Price	Quantity	Total Cost
30 gallon Yard Waste Bags	\$0.40	600,000	\$240,000
One Year's Salary of Waste Collector	\$47,000	44	\$2,068,000
Instructions	\$.05	600,000	\$30,000
		Total:	\$2,338,000

Table 3: Shows the cost breakdown for the entire city rollout.



## 5. Conclusion

Chicago's poor yard waste management system is a government failure and contributes immensely to global warming. Our simple and inexpensive modification requiring the use of brown paper bags will immediately reduce the harmful methane gas being produced in landfills. With a one-year pilot program launching in three well-separated neighborhoods, we plan to tune the efficiency and effectiveness of the yard waste management program to utilize tax revenues to the highest proficiency possible and reduce the exponential damage occurring to the earth.

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