

**Solid Waste Transportation Systems:
A Case Study of Fridley, Minnesota**

A MURP Professional Paper

In Partial Fulfillment of the Master of Urban and Regional Planning Degree Requirements
The Hubert H. Humphrey Institute of Public Affairs
The University of Minnesota

Katie Meyer
May 20, 2009

Table of Contents

1.0 Introduction	4
2.0 Background	4
2.1 MN Statute	4
2.2 Scenario Options	5
2.2.1 Subscription – Free Resident Choice.....	6
2.2.2 Organized Collection by city.....	6
2.2.3 Zone Collection	7
3.0 Current Conditions	8
3.1 First-Ring Cities.....	10
3.1.1 Subscription – Free Choice Transportation System.....	10
3.1.2 Organized Transportation System	11
3.1.3 Zone Collection Transportation System	12
3.2 Second-Ring Cities	13
4.0 Impacts of Hauling Systems & Reasons for Change	14
4.1 Wear and Tear on Streets.....	14
4.2 Pollution	15
4.2.1 Noise Pollution	15
4.2.2 Air Pollution	16
4.3 Safety	17
4.4 Scenario – Cost/Benefit Analysis	18
4.4.1 Scenario 1: Subscription – Zone Collection	18
4.4.2 Scenario 2: Organized – Zone Collection	19
4.4.3 Scenario 3: Organized by Contract	19
5.0 Recommendations	20
5.1 Fuel Options for Refuse Companies	20
5.2 Selected Solid Waste Transportation System.....	21
6.0 References	23
Appendix 1. Minnesota Statute 115.94	24
Appendix 2. Solid Waste Transportation Survey Form	27

Index of Tables

Table 1. Fridley’s surrounding communities solid waste transportation systems.....8
Table 2. Fridley’s surrounding communities – 2007 population estimate..... 9
Table 3. Private refuse contractor information.....16
Table 4. Generated pounds of carbon dioxide (CO2) by City of Fridley hauler..... 17
Table 5. Cost-benefit analysis of refuse truck impacts..... 18

Index of Figures

Figure 1. Fridley’s Surrounding Communities Solid Waste Transportation Systems..... 9
Figure 2. Fridley’s Surrounding Communities..... 10

Preface

In the summer of 2008, I completed an internship with the City of Fridley Community Development Department. I was hired primarily as a Code Enforcement Intern, where I spent the summer surveying all residential properties within the city. My main task was to determine whether Fridley residences were in compliance with the City Code. My internship focused on two major categories of code violations: housing maintenance and general code. Housing maintenance violations ranged from roofing repairs, sagging gutters, and fascia/siding in need of paint. General code violations included outdoor storage of items on a property, long grass, and yard waste. One general code violation regarded placement of solid waste containers. Through working with citizens on the placement of containers, I realized Fridley had a privatized solid waste transportation system.

As a part of my internship, I was asked to complete a study regarding solid waste transportation systems for the City of Fridley. Fridley residents have the choice to select from the City's list of four licensed garbage haulers. Current City Code does not specify that neighbors must select the same private contractor and this issue has raised numerous concerns from city staff and residents. City staff, in particular the Public Works Manager and Environmental Planner, discussed issues of "wear and tear" on city streets due to the frequency of refuse vehicles utilizing local streets. There were also concerns relating to vehicle emissions, noise pollution, and safety issues for pedestrians traveling on local roads where sidewalks do not exist.

The objective of this report is to provide background information on solid waste transportation systems in Fridley and surrounding communities, a cost-benefit analysis of such systems, and a recommendation for which system Fridley should utilize in the future. This report will allow the City of Fridley to examine three types of solid waste transportation systems that could benefit the community as a whole.

1.0 Introduction

The City of Fridley has interest in the transportation of solid waste and requested a study to identify solid waste transportation system options that are presently used in surrounding communities. This paper analyses three transportation systems, identifies options for the City of Fridley, and outlines the process that must be followed in order to change Fridley's current system. To gather information on solid waste transportation systems, thirteen communities were surveyed, including first and second-ring cities. Further, this study will highlight impacts of the current transportation system and reasons for why Fridley may look to change their transportation system including street decay, noise and air pollution, and safety concerns. Lastly, a cost-benefit analysis of each transportation system was developed and used as the basis for recommendations to the City of Fridley.

2.0 Background

Currently the City of Fridley utilizes the subscription – free resident choice solid waste transportation system. This system allows Fridley to license solid waste contractors and gives the residents of Fridley the choice to select a solid waste contractor based upon personal criteria. The four licensed solid waste contractors that service residential areas in Fridley include Ace Solid Waste Inc., Allied Waste Services, Walters Recycling and Refuse, and Waste Management of Minnesota, Inc.

2.1 MN Statute

Discussions occurred in 2007 to change the City's current system to a different solid waste transportation system. If the city were to change the solid waste transportation, it would need to follow the process outlined in Minnesota Statute 115A.94 in Organized Collection: "a local government unit shall invite and employ interested persons in developing plans and proposals for organized collection and may organize collection as a municipal service or by ordinance, franchise, license, negotiated or bidded contract, using one or more collectors or an

organization of collectors.” This statute would require the City of Fridley to have an open bidding process so that interested solid waste haulers may bid for solid waste service provision. A full version of the Minnesota Statute 115A.94 is located in Appendix 1 for more information.

Another condition in the statute is that a city must provide a minimum of 180 days before implementing organized collection of solid waste and publicly announce its intention to organize collection and include persons of interest in planning and establishing such a system (including licensed solid waste contractors). This process is called “resolution of intent” and must be adopted after a public hearing - held a minimum of two weeks after public notice and inform solid waste contractors through mail. Following this period, the city has ninety days to develop plans and proposals and an additional ninety days to discuss potential organized collection arrangements. In the event that an arrangement is not made by the end of the final ninety-day period, the city has the option to propose an alternate method of organizing collection. A city must provide verification of the above process and evaluate proposed organized collection methods with respect to the goals of the city, minimized displacement of solid waste contractors, public participation, and attempt to guarantee an efficient solid waste collection system (Minnesota Statutes 2007).

2.2 Scenario Options

If the City of Fridley were to change from their current solid waste transportation system from subscription – free resident choice to either organized collection by the city, contracting with a single solid waste hauling company, or zone collection, they would need to follow regulations stipulated in Minnesota Statute 115A.94. The following three sections provide a discussion of three solid waste transportation systems, subscription – free resident choice, organized collection by city, and zone collection, which are currently in place in various communities throughout the metropolitan area.

2.2.1 Subscription – Free Resident Choice

The subscription option allows licensed solid waste haulers to make contracts with residents for individual services. Haulers are supposed to ensure standardized prices for services to residents and provide the city with information regarding set prices. In spite of numerous attempts, Fridley has yet to receive price information.

There are benefits and costs to the subscription – free resident choice transportation system. For instance, numerous community survey respondents cite that the subscription allows for competition of refuse haulers – which should keep fees low. Further, residents have the ability to choose specific services from their hauler, such as type and size of refuse containers, and have options regarding yard and tree waste hauling. Arguments against subscription state that it may not keep prices lower, but rather elevate fees, as the city does not have knowledge or control over pricing. In addition, the public faces unintended consequences as haulers pick up refuse on different days of the week, causing air and noise pollution, and adverse effects of large trucks damaging city roads - which citizens pay for through street rehabilitation.

2.2.2 Organized Collection by city

A second option available to cities is organized collection by a city or a single contract agreement with a licensed solid waste contractor to haul solid waste. The city may decide to treat solid waste transportation as a public good and provide the service to residents of the community. Another option is to create a contract with a licensed solid waste hauler through a bidding process as a way to manage solid waste transportation. These contracts tend to last approximately two to five years.

Arguments in favor of organized collection purport standardization of fees and less solid waste vehicles on the street, which in turn causes decreases in air and noise pollution.

Arguments against organized collection state that customers lose freedom of choice and solid waste contractors lose business to the city. A few communities surveyed mentioned that strong

opposition from the public and solid waste contractors occurs upon suggestion of change, as people prefer to make personal decisions regarding solid waste contractors and contractors worry about losing customers. A final issue relates to increases in budget costs to maintain the program through the need to hire additional staff to monitor the program.

2.2.3 Zone Collection

The final option available to residents is zone collection. Zone collection is a hybrid of free-subscription and organized solid waste transportation. This option allows multiple solid waste contractors to haul throughout the city in two different manners. Two types of zone collection are available for implementation: city-organized zone collection or subscription zone collection. City-organized zone collection allows the city to create quadrants within the city and contract out one zone per licensed solid waste hauler, in order to allow all contractors to provide services. This particular type of zone collection would force a city to follow the process found within Minnesota Statute 115A.94. Subscription zone collection would allow the city to create quadrants within the city; however, each zone relates to a particular day and residents still have the opportunity to make private contracts with licensed solid waste haulers. This type of zone collection however, does not require the city to notify the public or follow the Minnesota Statute 115A.94, as private contracts are allowed.

Organized zone collection has potential to alleviate wear and tear on streets, minimize noise and air pollution, and decrease safety hazards to those walking on sidewalks and streets as fewer solid waste vehicles are on streets. The main argument against this option is that residents lose the ability to choose a licensed contractor. In addition, the possibility exists that some solid waste haulers may be unable to handle the load within an entire area – potentially causing a loss in business. Subscription zone collection does not truly alleviate the degree of wear and tear on streets or noise and air pollution. Rather, this process prevents solid waste vehicles from running each day of the week throughout the entire city. In this instance, safety

concerns are met only on a day-to-day basis as trucks would only be on streets in one zone a day. The remaining four days of the week would be refuse vehicle free, aside from trucks moving through a neighborhood to access the proper zone.

3.0 Current Conditions

A qualitative survey was completed to identify the current solid waste transportation system of Fridley's surrounding communities. Each community was asked a specific list of questions to provide general information regarding the solid waste transportation system used previously and the system currently in use (See Table 1 below). Figure 1 on the following page illustrates the distribution of Fridley's surrounding communities' solid waste systems. Appendix 2 contains the survey questionnaire. The surrounding cities are divided into two groups, first-ring cities and second-ring cities shown in Table 2 on the next page and illustrated spatially in Figure 2.

Table 1. Fridley's surrounding communities solid waste transportation systems.

SUBSCRIPTION – FREE CHOICE	ORGANIZED BY CITY	ZONE COLLECTION
Brooklyn Park Brooklyn Center New Brighton Spring Lake Park Arden Hills Roseville Crystal Maple Grove Anoka Golden Valley Shoreview Saint Anthony	Columbia Heights Minneapolis Blaine	Coon Rapids Mounds view

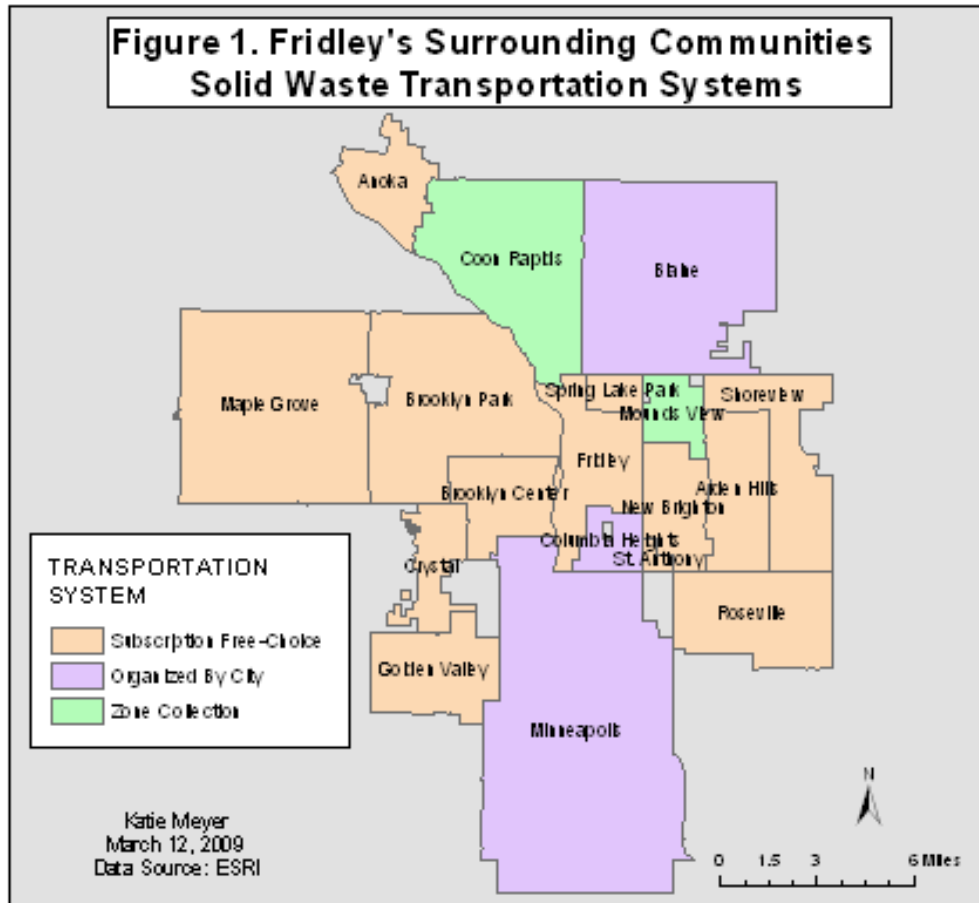
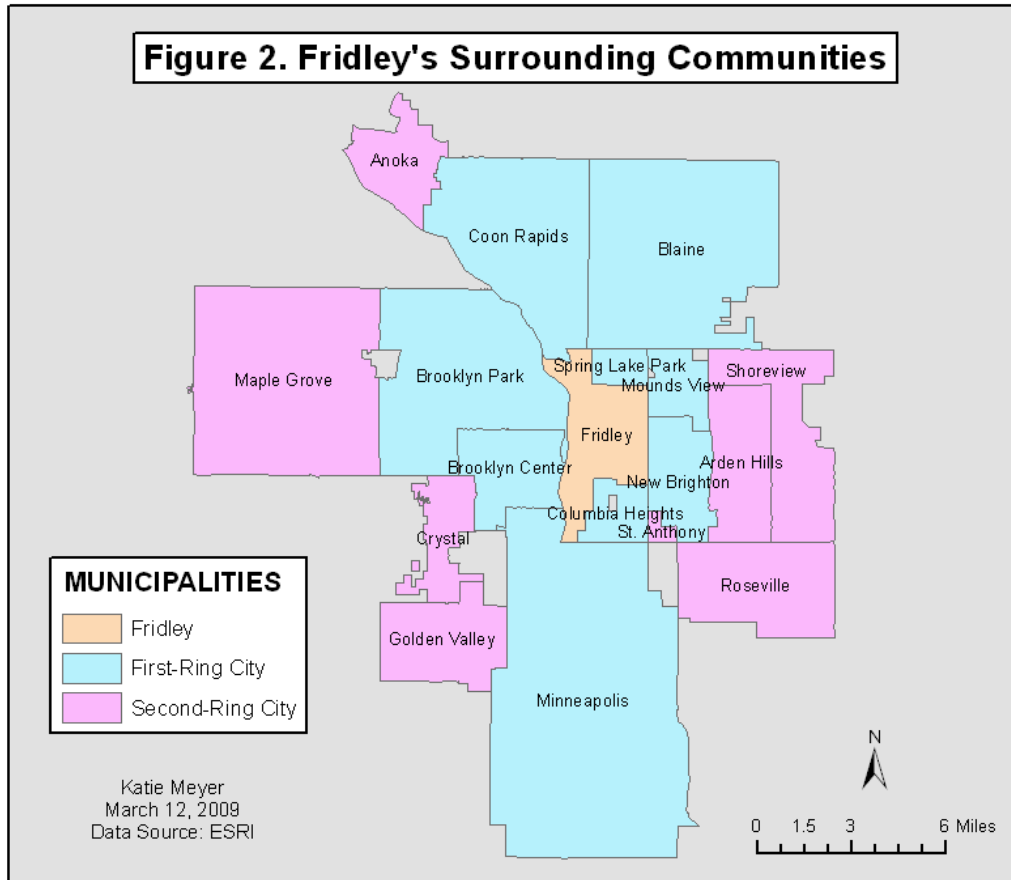


Table 2. Fridley's surrounding communities – 2007 population estimate.

FIRST-RING CITIES	2005 POPULATION	SECOND-RING CITIES	2005 POPULATION
Brooklyn Park	71,394	Arden Hills	9,890
Brooklyn Center	27,488	Roseville	32,474
New Brighton	21,038	Crystal	21,632
Spring Lake Park	6,656	Maple Grove	61,868
Columbia Heights	17,963	Anoka	17,261
Minneapolis	377,392	Golden Valley	20,010
Blaine	55,415	Shoreview	27,045
Mounds View	12,153	Saint Anthony	7,817
Coon Rapids	61,771		

Source: American Fact Finder, US Census Bureau, 2007 Estimate



3.1 First-Ring Cities

Nine communities surround the City of Fridley and for the purposes of this report are considered first-ring cities, as shown in Figure 2 above. The following three subsections provide summaries of solid waste transportation systems in use today by Fridley's first-ring cities.

3.1.1 Subscription – Free Choice Transportation System

The most common system in first-ring cities utilized by cities is subscription-free resident choice. Brooklyn Park, located west of Fridley, has always utilized this system and does not plan to make changes in the future. In Brooklyn Park, the staff tried to implement an organized transportation system in 1989, 1991, and 1998, however the attempts failed when the process reached the public notification stage. Brooklyn Park staff indicated that their city will not shift to

another system. Brooklyn Center has also only utilized the subscription-free transportation system and has no plans for changing in the future.

Other first-ring cities surrounding Fridley that have subscription – free choice solid waste transportation systems include New Brighton and Spring Lake Park. In New Brighton, a memo circulated throughout the City on whether to change the system or not, prompting a small research study for the City Council and City Commission. The research indicated that shifting systems might create general benefits - citing longer time for street repair, lower rates for service, and fewer environmental impacts. However, in New Brighton this was considered a contentious public issue and the community decided to remain with their current system. Spring Lake Park considered switching to a different system a few years ago and received a great amount of controversy; and the City also decided to remain with the current transportation system.

3.1.2 Organized Transportation System

Three first-ring cities, Columbia Heights, Minneapolis, and Blaine, have organized transportation systems. The community of Columbia Heights is located south of the City of Fridley and runs an organized transportation system with Allied Waste as the contracted solid waste hauler. The most recent contract was signed in 2005 and the City has always had organized solid waste hauling. Columbia Heights commented that the current system is frustrating for some residents that feel they should have the option to choose their own haulers and believe that open competition would make rates lower. In general, the Columbia Heights maintains that a major benefit organized hauling is that they have more control over refuse hauling and have no plans to change from their current system.

Another organized transportation system occurs in the City of Minneapolis. Minneapolis contracts half of all dwelling units to private haulers as a method to share the hauling business and has operated this system for over 30 years. The City of Minneapolis decided to take over

the other half of dwelling units as a way to create jobs for Minneapolis residents. Minneapolis determines which households will receive private hauler service or the City of Minneapolis refuse service. Minneapolis also determines the solid waste hauling days and designates pick-up sites. The City standardizes solid waste service costs, with the most recent rate at \$10.18 per dwelling unit per month.

The City of Blaine also has an organized solid waste transportation system. This system has been in place since the City's inception and there are no plans for change in the future. Blaine contracts out solid waste hauling every five years and selects one licensed hauler for all single-family residences. In contrast, all multiple-family dwellings and manufactured homes are open to selecting an independent licensed solid waste hauler. Blaine is divided into five zones and only one zone is hauled on a single day. The billing for the service is included in the utility billing along with water and sewer charges. Blaine believes that the organized system has fewer impacts in terms of noxiousness (air and noise pollution), and is less detrimental to municipal streets.

3.1.3 Zone Collection Transportation System

Two cities within the first-ring use the zone collection solid waste transportation system: Mounds View, population 12,106, and Coon Rapids, population 62,417 (U.S. Census Bureau, 2005). Mounds View is located northeast of Fridley and has the second type of zone collection system: subscription – zone collection. The City is divided into five zones and residents select from a list of licensed solid waste haulers. Haulers pick up solid waste in a specific zone on a specific day. This allows residents choices and competition between solid waste haulers. Mounds View originally intended to shift to a more organized hauling system but met opposition and selected this system instead.

Lastly, the final first-ring city is Coon Rapids, which recently underwent a solid waste transportation system change within the past year, shifting from subscription – open hauling to

subscription zone collection. Coon Rapids, like Mounds View, is divided into five zones where residents choose any licensed hauler with the City, the haulers transport solid waste in a given area on a specific day. Originally, Coon Rapids wanted to shift to contracted zone collection where each day one solid waste hauler transported waste on a given day in a given zone; allowing for five hauling days to match with the recycling zones. In the case of Coon Rapids, according to Coon Rapids staff, the solid waste haulers came out with a negative campaign against organizing hauling and provided false information to city residents, prior to the staff campaign. Coon Rapids was unable to give planned presentations and rather had to accommodate the influx of phone calls and emails against the issue. The goal was to provide a better service and lower rates for the citizens and present unbiased information to the public, through orderly meetings and presentations. This was unable to occur. Rather, the Coon Rapids staff had the licensed haulers meet and create a plan that the haulers would be satisfied with and present it to the Coon Rapids City Council. The solid waste haulers met and created a five-day subscription-zone plan and the City Council accepted the plan.

3.2 Second-Ring Cities

The second-ring cities include eight communities surrounding Fridley as shown in Figure 2 (pg. 11). Each of these communities utilize subscription – free resident choice as the solid waste transportation system for their communities. Five communities in particular, Arden Hills, Crystal, Anoka, Golden Valley, and Shoreview, have had a subscription system and have no intention to change to a different system.

The remaining three second-ring cities, Roseville, Maple Grove, and Saint Anthony Park, have attempted to change to another system or have spent time identifying impacts of modifying their present system. Roseville has City Council members that would prefer a system change, however as in other cases, the public is not supportive. In the case of Maple Grove, the City Council is against shifting to a different solid waste system, as they believe organizing solid

waste service would cause a decrease in competition. The Council also feels that prices would increase and act as a detriment to the public. Lastly, Saint Anthony completed a pilot program that lasted a year in order to let the citizens determine if the City should switch from its current system to another. This pilot program was developed to help determine whether Saint Anthony should switch from dual-sort to single-sort recycling; and the issue gained momentum when residents were informed the need to fix streets sooner than scheduled due to the high refuse truck traffic. It has not been determined whether Saint Anthony Village will shift to another system.

4.0 Impacts of Hauling Systems & Reasons for Change

Common reasons for a community to change solid waste transportation systems include a reduction in “wear and tear” of city streets, decreases in noise and air pollution, and an increase in pedestrian safety. The following subsections include a discussion of the above proponents for change. Analysis of the proponents for change will occur in the form of a cost-benefit analysis of three separate solid waste transportation systems.

4.1 Wear and Tear on Streets

Municipal government resurface street resurfacing is a task undertaken by all municipal governments. On average, municipalities resurface streets every 20 to 30 years depending on vehicle usage (Harris 2009). In most cases, property owners assume the cost for street resurfacing projects according to the amount of street frontage per lot. For example, in the City of Fridley, the average lot has 75 feet of street frontage and residents were assessed a fee of approximately \$40 dollars per square foot, a total fee of \$3,000 dollars (Kosluchar 2009). Due to the costs of street-related projects in the last 10 years, Fridley residents associate street improvements with personal financial costs and developed an awareness to maintain city streets.

The majority of residential streets within Fridley are 4-ton roads, which are meant to serve personal vehicle as the dominant user. Refuse vehicles, along with other heavy trucks including delivery service and utility vehicles, weigh considerably more than 4 tons and place more pressure on residential streets than a personal vehicle (Kosluchar 2009). Thus, streets are inclined to degrade at a faster pace with a higher frequency of heavy vehicle usage.

4.2 Pollution

In general, over the past 30 years, municipal solid waste generation per capita has increased two-fold in the United States from 2.3 to 4.7 pounds per day (Inform 2003). As more refuse is created the fleet necessary to haul the garbage has increased considerably thus causing numerous impacts. Pollution is one of the most commonly discussed harms of refuse trucks that affect the general population, in particular the elderly, children with asthma, unborn children, those who suffer from respiratory diseases, and refuse sanitation workers. It is suspected that pollution levels will decrease if fewer numbers of refuse vehicles are utilized on a day-to-day basis.

4.2.1 Noise Pollution

Refuse trucks are noted for causing noise issues in neighborhoods. An operating garbage truck generates noise up to the 100-decibel level, which is associated with “serious hearing damage” and is much higher than the “highly annoying” noise level of 75 decibels (Inform 2003). Currently, the City of Fridley allows refuse hauling between 8:30AM and 6:30PM from Monday to Saturday. The Noise Chapter 124 of the City of Fridley’s City Code, does not allow noise higher than 65 decibels in residential areas. Granted refuse trucks generate a higher decibel value; however, refuse vehicles do not cause continual noise; rather they generate concentrated noise for a short period.

According to Miedema 2007, noise exposure does not need to last long or have a high decibel level in order for a person to feel the effects of environmental noise. Noise annoyance

can greatly affect a person’s quality of life. Exposure to loud sounds is responsible for hearing impairment in 10 million of the nearly 30 million people with hearing loss in the United States, not including an additional 30 million people who are exposed to dangerous noise levels on a daily basis – which includes refuse vehicles (Bearden 2002).

4.2.2 Air Pollution

In 2007, the Twin Cities region had six Air Quality Alerts and Advisories, compared to 2006 where only three alerts occurred (MPCA 2006, 2007). The increases in air quality reports are not specifically related to the use of refuse vehicles; however, it shows that air quality has worsened in the past two years and steps should be taken to remedy this problem. According to the U.S. Environmental Protection Agency on the sources of greenhouse gases (GHG), the solid waste industry contributes approximately 3% of GHG as a source (Skumatz 2009). Table 3 below identifies the current private refuse contractors that haul within the City of Fridley for residential properties. The information identifies basic information regarding refuse vehicles, route length and time, and other pertinent information necessary to determine the pounds of carbon produced by a refuse vehicle traveling in the City of Fridley.

Table 3. City of Fridley: Private refuse contractor information.

HAULER NAME	FUEL TYPE	MILES PER GALLON	APPRX. ROUTE LENGTH	APPRX. ROUTE TIME	REFUSE TRUCKS SERVICING FRIDLEY
Ace Solid Waste	Diesel	3.43 mpg	80 miles	8 hours	1 truck: 5 days/week
Walters Recycling & Refuse	Diesel	4.5 mpg	75 miles	8 hours	1 truck: 4 days/week
Waste Management Minnesota, Inc	Diesel	4 mpg	60 miles	8 hours	2 trucks: 1 day/week

Data gathered from Hauler companies, data unavailable for Allied Waste Services.

According to the surveyed haulers, all refuse vehicles in Fridley run on diesel fuel and achieve between 3-5 miles per gallon, pending vehicle weight. The difference in mileage between Fridley haulers is dependent on the number of residents served. The data found in Table 3 above provides the basic information necessary to compute the number of oxidized

carbon dioxide pounds generated by refuse vehicles in the City of Fridley. Table 4 below expresses the number of gallons used per day, as well as the amount of CO2 pounds generated on a daily, weekly, and annual basis.

Table 4. Generated pounds of carbon dioxide (CO2) by City of Fridley hauler.

HAULER NAME	GALLONS PER DAY (Diesel)	POUNDS OF CO2 (DAY)	POUNDS OF CO2 (WEEK)	POUNDS OF CO2 (YEAR)
Ace Solid Waste Walters Recycling & Refuse	23.32	524.8	2,624	2,624
Waste Management of Minnesota, Inc	16.67	375	1,500	1,500
	15.00	337.5	675	675

To determine the total pounds of Carbon Dioxide (CO2) generated by Fridley’s licensed garbage haulers, the total miles traveled by an individual company was divided by their corresponding miles per gallon. This number is shown in the diesel gallons per day column used by garbage trucks. According to the EPA 2009, there are 2,778 grams of carbon in a gallon of diesel, which converts to 22.5 pounds of CO2 per gallon of diesel gasoline.¹ To find the generated number of CO2 pounds per day, diesel gallons per day is multiplied by 22.5.

Based upon the information in Table 5 above, Ace Solid Waste company creates the highest amount of CO2 pounds in the City of Fridley (2,462). This company has one truck every day in the city, compared to Walters Recycling & Refuse with one truck four days a week (1,500 pounds), and Waste Management of Minnesota, Inc with two trucks one day a week (675 pounds).

4.3 Safety

In the state of Minnesota, the number of vehicle miles traveled has greatly increased over the past 17 years. The greatest boost in vehicle miles traveled occurred from 1992 to

¹ There are 2,778 grams of carbon in a gallon of diesel. Since .99 of carbon is oxidized, the grams are multiplied by .99. To find the amount of carbon dioxide that is produced, multiply by the ratio of the molecular weight of oxygen (44) over the molecular weight of carbon (12). 10,084 grams of carbon dioxide which converts to 22.5 pounds of carbon dioxide per gallon of diesel.

2007, with an increase of 37.3% (MN DOT 2008). Considering the vast amount of vehicles on the road, pedestrian safety has received more attention.

According to the Streets Supervisor Jeff Jenson, the safety of residents on municipal streets is of utmost concern. The City of Fridley’s current zoning code does not mandate sidewalks on both sides of a street, which has caused development in Fridley to have a limited number of sidewalks through the city. With limited off-street access to parks, schools, and other establishments, many residents both young and old utilize local streets for pedestrian travel. It is expected that fewer refuse vehicles traveling on municipal roads is likely to increase overall pedestrian safety.

4.4 Scenario – Cost/Benefit Analysis

This section aggregates the potential costs and benefits of three solid waste transportation systems. The selected systems include subscription zone collection, organized zone collection, and organized by contract. It is difficult to accurately quantify the exact increase or decrease, due to unknown routing patterns of refuse haulers and differences in vehicle miles traveled per week and vehicle mileage. Thus, Table 5 below describes whether a shift to the system in question would cause a general increase, decrease, or no change concerning wear and tear of city streets, air and noise pollution, and public safety.

Table 5. Cost-benefit analysis of refuse truck impacts.

SCENARIOS	WEAR & TEAR ON STREETS	POLLUTION (NOISE/AIR)	SAFETY
Scenario 1: Subscription – Zone Collection	No Change	No Change	No Change
Scenario 2: Organized – Zone Collection	Small Decrease	No Change	Increase
Scenario 3: Organized by Contract	High Decrease	Decrease	Increase

Source: Information provided by City of Fridley Director of Public Works, March 2009

4.4.1 Scenario 1: Subscription – Zone Collection

Subscription zone collection allows a city to create quadrants within municipal boundaries; however each zone relates to a particular day and residents still have the

opportunity to make private contracts with licensed solid waste haulers. This collection system would not have a significant impact on the costs described in Table 5, as the number of trucks would not decrease or be limited to a specific area – causing no change on the wear and tear of municipal streets, pollution, or safety.

4.4.2 Scenario 2: Organized – Zone Collection

City-organized zone collection would allow Fridley to divide the city into quadrants and contract out one zone per licensed solid waste hauler. This would allow all current solid waste contractors to continue to provide services to Fridley residents. This particular system could follow the same zone specification that the City of Fridley currently utilizes for recycling and would require the city to follow the process Minnesota Statute 115A.9. The cost of wear and tear of streets would remain the same, as refuse vehicles would access all streets to service residents. Further, this scenario would continue to have refuse trucks traveling throughout the city to access the zone in question. Pollution impacts of refuse vehicles again would not specifically change in terms of resident exposure time, however rather than daily exposure for a short period; residents would have a single day of concentrated exposure. A definite benefit to this system would be public safety. The City of Fridley does not have an extensive sidewalk system and organized zone collection would increase pedestrian walkability, whether by walking on sidewalks or streets, six of seven days a week.

4.4.3 Scenario 3: Organized by Contract

The City of Fridley may decide to treat solid waste transportation as a public good and provide the service to residents of the community or create a contract with a licensed solid waste hauler through a bidding process as a way to manage solid waste transportation. If either option were exercised, a reduction in noise and air pollution would occur, along with a decrease the wear and tear of city streets, and see an increase in overall pedestrian safety as illustrated in Table 5. The amount of wear and tear on city streets would decrease significantly as only a

specified number of refuse vehicles would service residents and only use the streets to gather refuse, as compared with other scenarios where solid waste vehicles use municipal streets as thoroughfares to access subscribed residences. In terms of noise and air pollution, residents would only have limited exposure on a single day and not be affected by refuse trucks traveling through neighborhoods to access particular residences. This thereby would decrease pollution on a citywide basis. Public safety should increase for the same reasons – an overall decrease in the number of refuse vehicles utilizing city streets and limiting trucks to a particular location on a specified day of the week.

5.0 Recommendations

This section identifies recommendations to the City of Fridley regarding solid waste transportation systems. One recommendation focuses on solid waste companies who currently service city residents and two systems are selected based upon the cost-benefit analysis completed above.

5.1 Fuel Options for Refuse Companies

The City of Fridley should consider identifying grant opportunities to subsidize the costs of re-powering refuse vehicles as a method to decrease the environmental impacts of refuse vehicles. Regardless of the solid waste transportation system selected by the City of Fridley, this section describes different fuel options for solid waste companies that could greatly decrease environmental impacts of refuse vehicles including noise, air, and water pollution and increase the fuel efficiency of trucks. As diesel gasoline has dire impacts on the environment, the two leading fuel alternatives in the refuse vehicle sector are compressed natural gas and liquefied natural gas powered trucks (Inform 2003). These alternatively fueled vehicles are quieter, cleaner, and are expected to replace many of the diesel-fueled refuse trucks in the near future (American Recycler 2003). According to Inform 2003, a shift from diesel-powered refuse trucks to natural gas operated vehicles causes a greater than 67% percent reduction in

particulate matter and non-methane hydrocarbons. Further, a decrease in noise decibels occurs when one is located behind the truck by 50%, inside the truck by 90% and a 98% percentage reduction when located beside an idling garbage truck (Inform 2003).

Granted the benefits of a change in fuel types are numerous, there are considerable costs associated with a shift for private solid waste operators. According to Inform 2003, in the 19 U.S. fleets studied, the cost of a natural gas garbage truck ranged from \$210,000 to \$250,000, which is more than the cost of a diesel-powered truck by 15-20%. It is suggested that re-powering a vehicle from diesel to natural gas could cost upwards from \$30,000 to \$100,000 depending on the type and age of the refuse truck (Inform 2003).

5.2 Selected Solid Waste Transportation System

Based upon the completed cost-benefit analysis, the City of Fridley should consider switching from the current solid waste transportation system (subscription-free) to Organized by Contract. The benefits include decreased wear and tear on municipal streets, decreased air and noise pollution exposure on city residents, and an overall increase in pedestrian public safety. Granted a shift from the current system would be arduous, considering the difficulties encountered by surrounding municipalities. The 2007 Fridley Citizen Survey states that 19% strongly oppose a shift to organized contract service while 32% oppose, compared to 32% of residents that would support the change and 7% of residents strongly support. Other issues that may arise from system switch are refuse hauler opposition. Based on experiences identified in surrounding communities, refuse haulers have caused great controversy in cities that contemplate a system change. Common arguments against switching solid waste collection systems are issues of free-market enterprise and consumer choice. Further, in the case of the Organized by Contract Scenario 3, only one of the existing four companies could operate in Fridley, while the remaining companies would lose all single-family residential business opportunities.

A second alternative for Fridley that may appear more well received would be a shift from the current system to Organized-Zone collection. This system could mimic the recycle zones currently in place and allow all companies to participate in contracting for residential services. This option does not encompass as many benefits as the previous option in terms of wear and tear on municipal streets or noise and air pollution – as no change would take place. Pedestrian public safety should increase for those walking to schools, exercising, or running errands on bicycles or foot, due to fewer refuse vehicles on municipal streets. Considering the degree of political support for a solid waste transportation switch, this scenario has potential to gain across the board support from City of Fridley staff, the City Council, and citizens.

6.0 References

- American Recycler (2003) Equipment spotlight: Refuse trucks. Accessed on February 26, 2009 from <http://www.americanrecycler.com/apr03/04spotlight03.html>.
- Bearden, D. (2002). Noise abatement and control: An overview of federal standards and regulations. *CRS Report for Congress*. 1-6.
- Inform. (2003) Greening garbage trucks: New technologies for cleaner air. Accessed on November 17, 2008 from http://www.informinc.org/GGT1_find_and_rec.pdf.
- Meidema, H. (2007). Annoyance caused by environmental noise: Elements for evidence-based noise policies. *Journal of Social Issues*, 63, 1, 41-57.
- Minnesota Office of the Revisor of Statutes. (2008) Chapter 115A: Waste management. Accessed on August 13, 2008 from <https://www.revisor.leg.state.mn.us/statutes/?id=115A&view=chapter>.
- Minnesota Pollution Control Agency (MPCA). (2006) Minnesota air quality index (AQI) 2006 summary. Accessed on February 14, 2009 from http://www.pca.state.mn.us/publications/reports/aqi2006yearend_total.pdf.
- Minnesota Pollution Control Agency (MPCA). (2007) Minnesota air quality index (AQI) 2007 summary. Accessed on February 14, 2009. from http://www.pca.state.mn.us/publications/reports/aqi2007yearend_total.pdf.
- Skumatz, L. (2009). Recycling and climate change. *Resource Recycling*, 10, 14-18.

Appendix 1. Minnesota Statute 115.94

115A.94 ORGANIZED COLLECTION.

Subdivision 1. **Definition.** "Organized collection" means a system for collecting solid waste in which a specified collector, or a member of an organization of collectors, is authorized to collect from a defined geographic service area or areas some or all of the solid waste that is released by generators for collection.

Subd. 2. **Local authority.** A city or town may organize collection, after public notification as required in subdivision 4. A county may organize collection as provided in subdivision 5.

Subd. 3. **General provisions.** (a) The local government unit may organize collection as a municipal service or by ordinance, franchise, license, negotiated or bidded contract, or other means, using one or more collectors or an organization of collectors. (b) The local government unit may not establish or administer organized collection in a manner that impairs the preservation and development of recycling and markets for recyclable materials. The local government unit shall exempt recyclable materials from organized collection upon a showing by the generator or collector that the materials are or will be separated from mixed municipal solid waste by the generator, separately collected, and delivered for reuse in their original form or for use in a manufacturing process. (c) The local government unit shall invite and employ the assistance of interested persons, including persons licensed to operate solid waste collection services in the local government unit, in developing plans and proposals for organized collection and in establishing the organized collection system. (d) Organized collection accomplished by contract or as a municipal service may include a requirement that all or any portion of the solid waste, except (1) recyclable materials and (2) materials that are processed at a resource recovery facility at the capacity in operation at the time that the requirement is imposed, be delivered to a waste facility identified by the local government unit. In a district or county where a resource recovery facility has been designated by ordinance under section [115A.86](#), organized collection must conform to the requirements of the designation ordinance.

Subd. 4. **Cities and towns; notice; planning.** (a) At least 180 days before implementing an ordinance, franchise, license, contract or other means of organizing collection, a city or town, by resolution of the governing body, shall announce its intent to organize collection and invite the participation of interested persons, including persons licensed to operate solid waste collection services, in planning and establishing the organized collection system. (b) The resolution of intent must be adopted after a public hearing. The hearing must be held at least two weeks after public notice and mailed notice to persons known by the city or town to be operating solid waste collection services in the city or town. The failure to give mailed notice to persons or defect in the notice does not invalidate the proceedings, provided a bona fide effort to comply with notice requirements has been made.

(c) During a 90-day period following the resolution of intent, the city or town shall develop or supervise the development of plans or proposals for organized collection. During this 90-day planning period, the city or town shall invite and employ the assistance of persons licensed as of the date of the resolution of intent to operate solid waste collection services in the city or town. Failure of a licensed collector to participate in the 90-day planning period, when the city or town has made a bona fide effort to provide the person the opportunity to participate, does not invalidate the planning process. (d) For 90 days after the date ending the planning period required under paragraph (c), the city or town shall discuss possible organized collection arrangements with all licensed collectors operating in the city or town who have expressed interest. If the city or town is unable to agree on an organized collection arrangement with a majority of the licensed collectors who have expressed interest, or upon expiration of the 90 days, the city or town may propose implementation of an alternate method of organizing collection as authorized in subdivision 3. (e) The city or town shall make specific findings that: (1) describe in detail the procedures it used to plan and to attempt implementation of organized collection through an arrangement with collectors who expressed interest; and (2) evaluate the proposed organized collection method in light of at least the following standards: achieving the stated organized collection goals of the city or town; minimizing displacement of collectors; ensuring participation of all interested parties in the decision-making process; and maximizing efficiency in solid waste collection. (f) Upon request, the city or town shall provide mailed notice of all proceedings on the organization of collection in the city or town. (g) If the city or town and all the persons licensed to operate mixed municipal solid waste collection services and doing business in the city or town agree on the plan, the city or town may implement the plan without regard to the 180-day period specified in paragraph (a).

Subd. 5. County organized collection. (a) A county may by ordinance require cities and towns within the county to organize collection. Organized collection ordinances of counties may: (1) require cities and towns to require the separation and separate collection of recyclable materials; (2) specify the material to be separated; and (3) require cities and towns to meet any performance standards for source separation that are contained in the county solid waste plan. (b) A county may itself organize collection under subdivision 4 in any city or town that does not comply with a county organized collection ordinance adopted under this subdivision, and the county may implement, as part of its organized collection, the source separation program and performance standards required by its organized collection ordinance.

Subd. 6. Organized collection not required or prevented. (a) The authority granted in this section to organize solid waste collection is optional and is in addition to authority to govern solid waste collection granted by other law. (b) Except as provided in subdivision 5, a city, town, or county is not: (1) required to organize collection; or (2) prevented from organizing collection of solid waste or recyclable material. (c) Except as provided in

subdivision 5, a city, town, or county may exercise any authority granted by any other law, including a home rule charter, to govern collection of solid waste.

Subd. 7. Anticompetitive conduct. (a) A political subdivision that organizes collection under this section is authorized to engage in anticompetitive conduct to the extent necessary to plan and implement its chosen organized collection system and is immune from liability under state laws relating to antitrust, restraint of trade, unfair trade practices, and other regulation of trade or commerce. (b) An organization of solid waste collectors, an individual collector, and their officers, members, employees, and agents who cooperate with a political subdivision that organizes collection under this section are authorized to engage in anticompetitive conduct to the extent necessary to plan and implement the organized collection system, provided that the political subdivision actively supervises the participation of each entity. An organization, entity, or person covered by this paragraph is immune from liability under state law relating to antitrust, restraint of trade, unfair trade practices, and other regulation of trade or commerce.

Appendix 2. Solid Waste Transportation Survey Form

- 1) What is your City's population?
- 2) What solid waste system is in place today in your Community?
 - i) Subscription – Free resident choice
 - ii) Organized – By City in question
 - iii) Zone Collection – Hybrid of Subscription and Organized
 - iv) Other
- 3) What is the length of time this has been in place?
- 4) If your Community had a different system previously – what type was it?
 - i) Why did your Community change?
- 5) Did problems occur when changing from one system to another?
 - i) Was it a positive or negative experience?
 - ii) If problems occurred – why where they an issue?
- 6) What avenues/choices were taken to make the change in your Community's solid waste system?
- 7) Regarding costs and savings – which occurred in your City?
 - i) Why did they occur?