Consolidation of Solid Waste Management Services in the State of Wisconsin

2005

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Executive Summary

A Synopsis of the Project and Its Findings

Both the size and prosperity of the United States attribute to the fact that this country produces a great volume of waste. In an effort to prevent this waste from becoming a public health hazard, or causing harm to the environment, regulations have been developed by the EPA stating how various wastes should be properly handled and disposed. This study focuses specifically on solid waste that is generated at residences, commercial establishments, and institutions. These wastes are classified as municipal waste.

The overall objective of this project was to look at the consolidation of solid waste disposal and recycling facilities across the state of Wisconsin. The Tri-County Solid Waste and Recycling agreement between Brown, Outagamie, and Winnebago Counties served as one case study for assisting other municipalities regarding the potential benefits from the consolidation of waste management services. Other solid waste consolidation agreements proposed and/or implemented throughout the state, elements of success and potential challenges associated with service consolidation were defined and considered as well. Financial information and perceptions were solicited about pre- and post-consolidation expenditures associated with operating solid waste and recycling facilities. This information is useful as a tool in targeting areas where other types of service consolidation agreements may be feasible.

A systematic approach was taken in this research. Initially background literature was collected. Much of the available information concerning this topic appears in the form of “gray literature.” The term gray literature refers to a wide range of types of informational material which is made available to the general public by public and private sector organizations whose function is not primarily publishing. Such information includes reports, brochures, guides, dissertations, product information, budgetary data, memoranda, and research findings. This “gray literature” was a challenging source of information to gather.

A snowball sampling technique was used to identify study participants. Snowball sampling is a social research technique whereby individuals are contacted regarding who the “important players” are with reference to an issue being studied. These individuals are then contacted regarding their view of the important players, etc. Through this repetitive process, individuals were identified for subsequent data collection using personal interviews. The goal was not to obtain a randomized sample but rather to
identify a set of individuals judged to be “most in the know” about solid waste and recycling programs in the state.

The process taken to interview individuals involved the design of a common set of identically worded survey questions contained in a survey booklet. These questions were developed with an objective of obtaining both qualitative and quantitative data describing: the volumes of waste that are being disposed of, the fees/costs associated with the waste disposal, the populations and population densities of these areas, as well as other factors expected to influence the desirability, or lack thereof, of consolidating solid waste management services among currently defined “responsible units”. These questions were designed for administration following standard survey principles for both question design and administration.

Qualitative and quantitative data collected through the interviewing process were then analyzed. Financial data will be obtained to provide a breakdown of costs associated with operating a solid waste landfill and recycling facilities. Collecting information on both pre- and post-consolidation situations demonstrated potential changes and can be used to identify which types of situations for responsible units are most conducive for creating benefits from consolidation of solid waste and recycling services and which situations are less likely to benefit from consolidation. Analyses were conducted using a variety of software, including SAS (statistical analysis software), StacPac (survey administration and analysis software), and Microsoft Excel (spreadsheet software).

The most common amount of waste produced among studied areas that have undergone the process of consolidating solid waste and recycling services was between 10,000-50,000 tons/year. Among areas that have consolidated services, the most common portion of municipal solid waste that is recycled was between 26% and 40%. In regards to waste disposal and recycling processing fees, the most common price for each of the categories was between $30 and $40/ton.

Land filling was the most heavily used waste disposal technique among the areas selected for this study. Other common techniques included recycling and waste reduction efforts. Less common techniques included composting, reusing materials, and reducing the toxicity of waste through the proper disposal of household hazardous waste.

Areas selected for this study that had higher recycling rates, were also areas that had strong educational components within their municipal solid waste and recycling programs. Similarly, communities that had permanent household hazardous waste drop-off sites were also areas that demonstrated greater efforts to reduce the toxicity of waste generated in their area. From this it appears that community education programs make a difference and appear to contribute to the development of more effective waste management practices for community residents.

The greatest motivations considering sharing solid waste and recycling services with surrounding areas were cost savings, increased efficiency, and promoting cooperation between neighboring communities and counties. Once consolidation had occurred, cost savings, increased efficiency and enhanced cooperation between neighboring counties proved to be the most significant motivating factors. At the other end of the spectrum, interpersonal relations (personalities) and jurisdictional relations (politics) were the greatest challenges faced when consolidation was considered by responsible units. The challenges that proved to be most significant after consolidation had occurred were transportation costs and jurisdictional relations.

Landfills, recycling marketing, and educational programs were the most commonly shared services among the areas selected for this study. The duration of consolidation agreements ranged from an annual commitment to a thirty year agreement, and occasionally included special terms which allowed for early exit. When asked about the cost savings that resulted from consolidation, results showed that these savings were seen in the form of a municipalities ability to compete with the private sector, as well as bringing in state funding to support solid waste and recycling services.
The most common effect that the consolidation of municipal solid waste and recycling services had on the surrounding geographical area was opening the minds of residents and political leaders that cooperation is the key to increasing the efficiency of public services. In some areas selected for the study there were other local government services that had been consolidated as well. These included fire departments, emergency response programs, and fiber optic communication systems.

Survey respondents suggested that as other communities consider entering into consolidation agreements they should include seeking the aid of a third party, taking on small projects to lay the road for future agreements, gain political support early in the process, and steer away from politically sensitive issues.

Overall results of this study demonstrate that consolidation can increase the efficiency of various municipal solid waste and recycling operations while also enhancing the cooperation between neighboring communities. Organizations such as AROW (Associated Recyclers of Wisconsin) and NEWCMG (Northeast Wisconsin Cooperative Recycling Marketing) should be interested in this type of information, as they try to help communities improve the quality of solid waste and recycling services they can offer to residents while also expanding the possibilities and technologies in the field. From a state government perspective, successfully implemented consolidation agreements for municipal solid waste and recycling services could pave the path to future agreements for other types of government services. Many of the important motivations and challenges that were relevant to municipal solid waste and recycling are similar considerations for other service industries considering consolidation.
Acknowledgements

We would like to thank, first and foremost, all of those professionals involved with the provision of solid waste and recycling services who participated in this study as survey respondents. Others who provided assistance at various points in the research process include Cynthia Moore and Steve Brockman of the Wisconsin Department of Natural Resources, Eileen Norby and Daniel Wehrman of the UW Solid Waste Research Program, Joseph Van Rossum of the UW Solid and Hazardous Waste Education Center, and Mark Halleen of Foth and Van Dyke, Inc. The contributions of several colleagues have been notable as well, especially Drs. Charles Rhyner and John Katers. While all of the aforementioned individuals are graciously thanked for the time and ideas they volunteered, any mistakes or omissions are solely the responsibility of the authors. These individuals have contributed to the reduction (and, hopefully, elimination) of errors and have thereby improved the product of our research efforts. Finally, we can not fail to thank the Solid Waste Research Council. Without their financial support this research would not have been possible. We are truly grateful.
Introduction

Municipal Solid Waste, Recycling, and Objectives
Both the size and prosperity of the United States are related to the fact that this country produces a great volume of waste. In 2001, the United States Environmental Protection Agency (U.S. EPA) estimated the average American produced 4.4 pounds of waste per day, which amounts to over 1,600 pounds per year. This statistic becomes reality when one considers that nearly every human activity generates wastes. As farmland is utilized for raising livestock and growing crops, animal waste and crop residues are produced. As minerals are extracted from the earth, mining waste, tailings, and dump wastes are created. Various manufacturing industries produce high volumes of waste including paper mill sludge, foundry sand, industrial wastewater, as well as fly and bottom ash. Meanwhile, residential consumption and recreation also produce a steady stream of municipal waste.

Waste is generally classified into one of the following categories: municipal waste, hazardous/toxic waste, and industrial waste. Municipal waste is defined as solid waste that is generated at residences, commercial establishments, and institutions (Rhyner, Schwartz, Wenger, and Kohrell, 1995). Hazardous/toxic waste is a solid, liquid, or mixture of waste that presents a significant threat to both human health and the environment (Rhyner et al., 1995). Industrial waste includes byproducts produced from various manufacturing processes.

In 1965 the Solid Waste Disposal Act (SWDA) became the first federal solid waste management law. The law approved research such as site inventory programs, resource recovery systems, and the construction and improvement of solid waste disposal facilities (Milestones in Garbage, 2002). Eleven years later the Resource Conservation and Recovery Act (RCRA) brought about another look into solid waste management. This law’s purpose was to emphasize recycling, resource conservation, and proper waste management (Frequently Asked Questions About Waste, 2004). According to RCRA, wastes are separated into two categories, hazardous and nonhazardous. Subtitle C was designated to regulate hazardous waste, while Subtitle D was designated to regulate nonhazardous waste. More specifically, Subtitle D assists waste management officials in developing and encouraging environmentally sound methods to dispose of nonhazardous solid waste, including the closing or upgrading of all unsound municipal landfills (O’Connell, 2002). Subtitle D rules created minimum landfill criteria including: location, operation (including daily cover requirements), design (including liner and leachate collection system installation), groundwater monitoring and corrective action, closure and post-closure care, and financial assurance.

In response to the SWDA and RCRA, Wisconsin took its own first steps by identifying and licensing all solid waste facilities throughout the state in the early 1970’s (Huebner, 2003). At this time, nearly 2000 land disposal sites existed. Sites that potentially risked the safety of the environment were closed immediately in Wisconsin. Approximately 370 of the remaining natural attenuation sites (landfills constructed without a liner) were ordered to close with the financial assistance of the U.S. EPA’s Open Dump Inventory (Huebner, 2003).

In 1984 the Wisconsin legislature teamed up with the Wisconsin Department of Natural Resources (WDNR) to pass a comprehensive groundwater law (Huebner, 2003). This law designated a list of substances which had been detected in, or had the probability of entering, the groundwater. The WDNR as well as the Department of Health then categorized and ranked the listed substances according to their risk and established both Enforcement Standards as well as Preventative Action Limits. These Enforcement Standards cannot be violated beyond a set distance from a solid waste landfill or property boundary and are generally equivalent to Federal Maximum Containment Levels. The Preventative Action Limits, which are applicable at any location where groundwater is monitored, are more stringent that then Federal Maximum Containment Levels.

A revised set of solid waste rules (NR 500-520) was established in Wisconsin in 1988. These rules now required all landfills to be designed with a 5-foot clay liner, a leachate collection system, specific design and construction documentation, operating criteria, environmental monitoring standards, and closure/post-closure care standards. Wisconsin again revised these rules in 1996 to include that all municipal solid waste landfills be designed with a composite liner and a composite final cover system. These new rules made Wisconsin the first state to receive national approval of their solid waste program by the U.S. EPA as they required all municipal landfills to follow a strict set of financial assurance standards exceeding those defined by Subtitle D.

Wisconsin’s landfill siting process continues to demonstrate the state’s progressive waste management techniques and processes. The WDNR describes the process of siting a landfill to focus on the protection of the environment as well as human health and safety. This rigorous process also concentrates on the design, operation, monitoring, and financial responsibility requirements of a potential landfill. The state of Wisconsin also requires both state and local approval for the expansion of existing landfills as well as the construction of new landfills. The Wisconsin Waste Facility Siting Board oversees the local approval process. This board then spends time considering the economic, social, and land use issues associated with landfill construction.
Economic factors associated with landfill construction include the hauling distances from the source of waste, the availability of suitable soils for liners, daily cover and final cover materials, design, and construction/operating considerations (Rhyner et al., 1995).

Social/land use factors associated with landfill construction include current land use, location of residences-schools-businesses, archeological and historical aspects of the site, aesthetic considerations, and the final use of the site. These social/land use factors focus on how the landfill will affect the human environment (Rhyner et al., 1995). A smooth siting process includes the involvement of the public through educating affected communities of both the positive and negative aspects of a landfill.

Due to the complexity and controversial nature of siting a new landfill, the process becomes long and enduring. For this reason, planning for a new landfill needs to begin nearly ten years before the need for additional landfill capacity exists. With a goal of cutting the amount of waste sent to Wisconsin landfills, Wisconsin Act 335 was passed in April of 1990. This landmark legislation was designated to discourage land filling of paper, glass, plastics and metals and encourage their recycling, ultimately reducing the need for new landfills to be built in the future (Katers, 1993). Recycling has now become a common practice in many households, as residents separate specific materials from the remainder of the waste stream. Citizens are commonly provided with curbside collection or local drop-off centers. Recyclable materials are then brought to a material recovery facility where they are separated, baled, and sold.

Despite strong efforts to reduce, reuse, and recycle waste there is still a considerable amount of the waste stream that must be disposed of in landfills. The primary environmental risks associated with landfills result from the creation of leachate and gases.

The cost of managing solid waste will vary depending upon the specific waste management technique. Each technique among the hierarchy of solid waste management has its own set of capital and operating costs. For example, when looking specifically at land filling, capital costs will include:

a. land acquisition
b. design and procurement of permits, on site machinery and equipment
c. site preparation and construction
d. leachate and gas collection, monitoring and treatment systems (Municipal Refuse Disposal)

Additional operating costs then include:

e. wages for collection crewmembers, landfill operators, and administration
f. insuring, maintaining, fueling and repairing equipment

Another large financial obligation also associated with landfills is the costs of closure and long-term care. Long after the closure date of a landfill, the site will continue to produce leachate and gases, which pose a threat to human health and the environment. Therefore, monitoring groundwater and managing leachate are required tasks that last far beyond the closure of a landfill. Funding for these costs must be set aside during the development and planning of a landfill, and must be present throughout the life of the landfill.

Many of the same capital and operating costs are also associated with recycling. In addition to the necessary land, permits, on site machinery and equipment, there are also costs necessary to run the material recovery facility. These facilities will require gas, telephone and electric utilities. Advertising and educational programs must also be funded to ensure successful participation.

Perhaps one of the most effective means for the public sector to increase efficiency is through the consolidation of municipal solid waste services with surrounding areas. Market forces have certainly driven private solid waste services to become larger entities, so why not larger publicly owned services? By entering cooperative agreements with surrounding areas to share the delivery of municipal solid waste services, communities may be able to cut costs and remain competitive with the private sector.

The overall objective of this research is to analyze the prospect for consolidating municipal solid waste disposal and recycling facilities across the state of Wisconsin. Specific objectives include the identification of:

- Municipal solid waste consolidation agreements that have been proposed and/or implemented throughout the state.
• Common characteristics of successful municipal solid waste service agreements, as well as constraints to their success, with the understanding that consolidation is not necessarily a “one size fits all” solution to budgetary problems.

• Recommendations that can be made available to municipal solid waste managers regarding the consolidation of municipal solid waste services across the state.
Survey Design, Sampling, and Data Analysis

An overview of the Research Methods
The collection of background literature was a crucial first step towards establishing an initial understanding of the consolidation of solid waste management in Wisconsin. It is important to note that much of the available information concerning this topic appears in the form of “gray literature.” The term gray literature refers to a wide range of informational material which is made available to the general public, by public and private organizations, whose function is not primarily publishing. Such information includes reports, brochures, guides, dissertations, product information, budgetary data, memoranda, and research findings. This “gray literature” proved to be a challenging source of information to obtain due to the novelty of solid waste management consolidation at this point in time. There are few professional publications dedicated to the consolidation of this particular service type.

2.1 Networking

It quickly became apparent that networking with individuals in the solid waste management field was an essential step towards gaining access to the gray literature described previously. The technique specifically used in this research project can be described as snowball sampling. Snowball sampling is a social research technique used when a researcher is interested in an interconnected network of people or organizations. The procedure is implemented by collecting data on several members of the target populations, and then asking those individuals to provide the information needed to locate other members of that population whom they happen to know (Babbie, 1973). A crucial feature of snowball sampling is that each person or unit is interconnected with another through a direct or indirect linkage (Neauman, 1997). The analogy of a snowball is used to describe the technique due to its ability to grow from just several individuals to a large list of possible contacts. One of the largest benefits of using snowball sampling in this research project was its ability to access difficult to reach or hidden populations (Atkinson and Flint, 2001). The goal of this process was to not to obtain a randomized sample, but rather to identify a set of individuals judged to be “most in the know” about a particular subject.

Due to the close proximity and substantial documentation of the cooperative solid waste and recycling agreements between Brown, Outagamie, and Winnebago Counties, this became a dependable starting point to begin networking. Through a number of small meetings held with directors, consultants, and solid waste board members, an initial list of contacts was first created. Once a clear understanding of this particular set of cooperative agreements was established, it then became an appropriate time to begin probing the initial contacts for information on similar activities currently being planned or practiced across the state.

An original sampling plan is described in Table 1. This figure illustrates that there were intentions of identifying six consolidation programs, three of which were successful and three that for some reason did not result in a successful consolidation effort.

While this plan had the potential of thoroughly representing the consolidation activities associated with municipal solid waste management in the state, a challenge arose. Successful consolidation efforts were rather easy to identify. On the other hand, it proved to be quite difficult to identify consolidation efforts that were not a success. This being true, it did not make sense to ignore quality consolidation programs while searching for unsuccessful programs that were not well known or lacked documentation.

At this point, it was helpful to take a look back at the original objectives of the research. One of the primary objectives included defining common characteristics of successful municipal solid waste service agreements as well as constraints to their success. While it may have been helpful to speak with an equal number of individuals from both successful and unsuccessful consolidation programs, an assumption was made that this was not a requirement.

Once this decision was made, a new goal was set to simply find a comprehensive list of regionalization projects that represent both a variety of population distributions and demonstrate the progressive consolidation efforts, as described on Table 2. Figure 1 highlights the fifteen counties that were selected for the study. Among the selected counties, there were two groups of counties that consolidated services across three individual counties. These groups included: Brown-Outagamie-Winnebago Counties and Marathon-Portage-Shawano Counties. There were then three groups of counties that consolidated services across two individual counties. These groups included: Waukesha-Milwaukee Counties, Dunn-EauClaire Counties, Marinette-Oconto Counties. Manitowoc, Kewaunee, and Taylor were three counties that decided to focus their consolidation efforts within their own county boundaries. Figure 2 describes the working relationships between the counties looked at in this study.
Table 1. Original Sampling Plan

<table>
<thead>
<tr>
<th>Population of Area</th>
<th>Consolidation*</th>
<th>No Consolidation</th>
</tr>
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<tr>
<td></td>
<td>Entities Involved</td>
<td>Individuals Involved</td>
</tr>
<tr>
<td>Small (predominantly rural areas)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medium (predominantly urban areas)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Large (metropolitan areas)</td>
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* Could involve consolidation, cooperative agreement, or merger. Other examples will also be looked at to explore various activities indirectly related to this topic.
Table 2. Population Distribution for Counties Selected for Study

<table>
<thead>
<tr>
<th>County Name</th>
<th>Population</th>
<th>Population Density (persons/square mile)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brown County</td>
<td>226,778</td>
<td>429.0</td>
</tr>
<tr>
<td>Outagamie County</td>
<td>160,971</td>
<td>251.0</td>
</tr>
<tr>
<td>Winnebago County</td>
<td>156,763</td>
<td>357.4</td>
</tr>
<tr>
<td></td>
<td>544,512 (total)</td>
<td>345.8 (average)</td>
</tr>
<tr>
<td>Marathon County</td>
<td>125,834</td>
<td>81.4</td>
</tr>
<tr>
<td>Portage County</td>
<td>67,182</td>
<td>83.3</td>
</tr>
<tr>
<td>Shawano County</td>
<td>40,664</td>
<td>45.6</td>
</tr>
<tr>
<td></td>
<td>230,680 (total)</td>
<td>70.1 (average)</td>
</tr>
<tr>
<td>Waukesha County</td>
<td>350,767</td>
<td>649.4</td>
</tr>
<tr>
<td>Milwaukee County</td>
<td>940,164</td>
<td>3,892.1</td>
</tr>
<tr>
<td></td>
<td>1,290,931 (total)</td>
<td>2270.8 (average)</td>
</tr>
<tr>
<td>Dunn County</td>
<td>39,858</td>
<td>46.8</td>
</tr>
<tr>
<td>EauClaire County</td>
<td>93,142</td>
<td>146.1</td>
</tr>
<tr>
<td></td>
<td>133,000 (total)</td>
<td>96.5 (average)</td>
</tr>
<tr>
<td>Marinette County</td>
<td>43,834</td>
<td>30.9</td>
</tr>
<tr>
<td>Oconto County</td>
<td>35,634</td>
<td>35.7</td>
</tr>
<tr>
<td></td>
<td>79,486 (total)</td>
<td>33.3 (average)</td>
</tr>
<tr>
<td>Manitowoc County</td>
<td>82,887</td>
<td>140.1</td>
</tr>
<tr>
<td>Kewaunee County</td>
<td>20,187</td>
<td>58.9</td>
</tr>
<tr>
<td>Taylor County</td>
<td>19,680</td>
<td>20.2</td>
</tr>
<tr>
<td></td>
<td>*2,401,363 (study's total population)</td>
<td></td>
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</tbody>
</table>

*Note that this does not represent the population served by each of the Responsible Units in the areas selected for this study.

Source: 2000 U.S. Census
Figure 1. Counties Selected for Study
Regionalization Projects

Figure 2. Working Relationships Between Counties Selected for Study
2.2 Questionnaire Development

As a means of collecting information from each of the selected counties, a questionnaire was developed. The questionnaire was to be administered in the form of personal interviews given to individuals representing each of the selected areas. Questions were developed with the object being to obtain both qualitative and quantitative data describing: the volumes of waste that are being disposed of, the fees/costs associated with the waste disposal, as well as other factors expected to influence the desirability, or lack thereof, of consolidating solid waste management services. These questions were designed for administration following survey principles for both question design and administration (Dillman, 1978, 2000). Dillman’s first edition featured the Total Design Method, which focused on mail and telephone interviews. The second edition suggests a further developed set of procedures to be used when designing surveys, the Tailored Design Method. The Tailored Design Method describes a set of principles for tailoring the design of self-administered questionnaires that will reduce survey error (Dillman 2000).

The questionnaire was divided into four separate sections. Section A consisted of a list of questions designed to overview the solid waste services provided in each of the selected areas. Integrated solid waste management is about the choices that can be made when making waste management decisions. The interview subject is asked to state to what extent each of the following methods are practiced in their area: incineration with/without energy recovery, landfilling, composting, recycling, reusing materials, reducing the quantity of waste, and reducing the toxicity of waste. The last several questions from Section A are intended to measure the interview subject’s awareness of solid waste/recycling programs that have consolidated throughout the state of Wisconsin, both outside and within their area.

At this point, the questionnaire can go in two different directions. If the region that an interview subject represents is currently participating in a consolidation arrangement, they will be asked the questions listed in Section B. On the other hand, if an interview subject represents a region that is not currently participating in a consolidation arrangement, they will be asked questions listed in Section C. Section B begins by asking questions concerning the key motivations as well as the key challenges that were present when considering the consolidation of solid waste/recycling services. There is also a list of questions regarding the specific details associated with the consolidation agreement such as special terms and conditions, as well as any costs savings that may be generated by consolidation. Section B then moves towards a set of question asking the interview subject about what they would choose to do differently if they were to do this again. On that same note, the subject is asked what advice they would offer other communities as they consider consolidating solid waste/recycling services.

Section C shares several of the same questions asked in Section B, related to the motivations and challenges faced when considering consolidation. This section then continues to explore whether or not this community would attempt to go through the process of reconsidering the idea of consolidating solid waste/recycling services, despite the fact that they were not successful in the past. Both Sections B and C ask the interview subject whether or not they are aware of shared service arrangements for any additional government services within their area.

Lastly, Section D of the questionnaire begins by focusing on the volume of solid waste and recyclable materials being generated within each region. Several questions then look at the tipping (or processing) fees associated with solid waste and recycling. Depending on whether or not there is a municipal landfill in a specific region, there are also a number of questions asking about remaining capacity and the difficulty related to creating more landfill space. The questionnaire ends by asking about the future plans for municipal solid waste/recycling in each specific region.

Throughout the questionnaire there were several different styles of questions. Some questions were designed for the interview subject to be prompted with a card, which provided a list of responses to choose from. Other questions did not include prompted responses, so that the interview subject was encouraged to provide personal feedback. Some of the unprompted questions could be answered with a short statement, while other questions were designed to have a more open-ended response. A complete copy of the questionnaire can be found in Appendix A-2, following are copies of the response cards.

The questionnaire went through many draft stages as it was reviewed by colleagues. A draft version of the questionnaire was also sent out for commentary to several members from the UW-Solid Waste Research Council and WDNR. Once an “almost” final draft of the questionnaire was complete, it was then pre-tested with the aid of several University of Wisconsin-Green Bay graduate students who were unrelated to the study. This provided the interviewer an estimate of how long it would take to conduct the interview and a chance to receive feedback on the questionnaire and the manner in which it was administered. Comments were taken into consideration and used to make final edits to the questionnaire.
2.3 Interviews, Data Compilation, and Analysis Procedures

Seventeen subjects were interviewed, representing eight different regionalization projects. The interviews were administered over a five-week period, beginning on February 5, 2004, and ending on March 11, 2004. Interview subjects were initially contacted by phone to set up a meeting time and place. Approximately one week prior to the interview, each subject was sent a pre-interview letter to remind them of their meeting time as well as give them some information regarding the study and questionnaire. The pre-interview letter (Appendix A-1) was developed with the use of Dillman’s Tailored Design Method.

Each interview was administered individually. The time taken to conduct interviews ranged from 30-90 minutes. Upon the completion of each interview, the subject was thanked for their time and asked if they would like to receive a copy of a summary report.

The results of the questionnaire were recorded using StatPac, a data management and analysis software package. The first step taken when using StatPac was to design the study by creating a list of variables, which represent each individual question. These variables were labeled and formatting according to the type of intended response. A template was then created that is used for data entry. From there, a database was created for each section of the questionnaire. Lastly, StatPac was used to perform data analysis. The software has the ability to perform a variety of analyses, ranging from simple statistics to more complex applications. A manual accompanies the software, to describe the various commands used to carry out the various procedures.

Due to the variation of questions in the administered questionnaire, responses were given in the form of both quantitative and qualitative data. Descriptive statistics were used to analyze most quantitative responses and illustrate the distribution of responses given to each set of questions.

Qualitative responses were organized into tables, making them easier to interpret for the purpose of making comparisons. Many questions asked respondents for their opinion or advice related to a particular aspect of the consolidation process. This was believed useful as other municipal solid waste managers consider the opportunity to consolidate their various services, hearing about the experiences and opinions of others, and what suggestions they would make for others considering what they had already done.
Research Findings

An Analysis of Survey Interview Data
In this section, results from the survey are organized into several sections, roughly corresponding with sections of the survey but not in the order of the survey structure. The survey instrument itself is reproduced in Appendix A at the end of this report.

3.1 Survey Area Characteristics

The results of Section D of the survey instrument will be discussed first. This is done to establish information regarding the demographics of the areas selected for this study. Due to the relatively new trend towards local service consolidation of municipal solid waste management, it was estimated that this group of 17 interview subjects represents a wide range of communities based on their varied demographics, progressiveness, and locale. Each of the questions will be paraphrased in italics, and a brief description of the results will follow.

How many people reside in each of the selected areas, and who handles the collection and disposal of their generated waste? The population of each of the municipalities, usually representing a county, ranged from 19,680 (Taylor County) to 940,164 (Milwaukee County). Note that these population figures do not represent the population served by each of the municipalities in the areas selected for this study. Municipal solid waste collection and disposal was provided to residents by both private and public waste haulers. The same was true for the collection of recyclable materials.

How much waste is generated by each of these selected areas? Figure 4.1 illustrates the difference between waste generation among the areas selected for this study. The greatest number of responses produced by the questionnaire represented areas generating between 10,000-50,000 tons per year.

![Figure 4.1. Amount of Waste Generated in Areas Selected for Study](image)

How do these waste generation rates compare to the rates of surrounding areas? The greatest number of responses (31%) was from municipalities that had rates lower than their neighboring communities or municipalities that did not know the answer to this question (31%). Figure 4.2 represents the complete breakdown of responses.

![Figure 4.2. Comparison to Waste Generated in Surrounding Areas](image)
Out of all this waste that is generated, what percentage of it gets recycled? Recycling rates are based on the amount of material being sent to a material recovery facility; therefore yard waste would not be included in these estimates. Figure 4.3 illustrates the different recycling rates among the areas selected for study. Half of the responses generated by the questionnaire stated that their recycling rates were between 26-40%.

![Figure 4.3. Portion of MSW that is Recycled in Areas Selected for Study (Excluding Yard Waste)](image)

How did these recycling rates compare to the rates of surrounding areas? The results of this question are illustrated in Figure 4.4. The greatest numbers of responses (31%) were from municipalities having recycling rates that were approximately the same as rates in surrounding areas.

![Figure 4.4. Comparison to Portion Recycled in Surrounding Areas](image)

What landfill capacity remains in the areas selected for this study? Figure 4.5 describes the various answers given in response to this question. It is important to keep in mind that these landfills are not necessarily owned and or operated by the respective areas, which may explain why the high number responses were from municipalities not knowing the answer to this question.
How difficult would it be to expand existing landfills or build new landfills in the areas selected for this study? These issues concerning the expansion and building of new landfills were not applicable to many of the interview subjects due to the fact that they do not own and operate municipal solid waste landfills. As for those who were able to answer the questions based on personal experience, responses leaned heavily towards the difficult end of the scale (1-being the easiest, 10-being the most difficult) (See Appendix A).

What are the fees charged in each of the selected areas for the disposal of MSW and for the processing of recyclable materials? All respondents stated that their waste disposal (landfill tipping) fees included a state environmental fee. Figure 4.6 illustrates how waste disposal and recycling processing fees compare for those interview subjects answering this question. The most common cost category for both waste disposal and the processing of recyclable materials was between $30-$40/ton.

How do these waste disposal and recyclable processing fees compare with those fees charged in surrounding areas? Figures 4.7 and 4.8 describe the results of these questions. The most common response for the comparison of recycling processing fees was “unknown” (37%). Whereas the most common answer among interview subjects for the comparison of MSW disposal fees stated that rates in surrounding areas area approximately the same (38%).
How do the waste management techniques in areas selected for this study compare to techniques used in surrounding areas? Some areas felt that they were fairly comparable to other communities in their surrounding area. Other municipalities stated that they had a more progressive approach to solid waste management, using the “blue bag” system and operating a refuse derived fuel plant. Future plans in the selected study areas included bringing more counties/communities into their cooperative agreements and to find more cooperative opportunities to set up with their neighboring areas.

### 3.2 Solid Waste Management and Recycling Activities of Municipalities

In Section A of the questionnaire, interview subjects were asked to answer questions regarding the different solid waste management activities practiced in their particular area. A rating scale was used for the first several questions in this section, where interview subjects were asked to rate the level of various activities on a scale 1 to 5, where 1= Never, 2= Seldom, 3= Some of the time, 4= Most of the time, 5= All of the time.

**How often is incineration used by the areas selected for this study?** There was no use of incineration as a waste management technique found in this study.

**How often are landfills used by the areas selected for this study?** All interview subjects responded that this type of MSW management was used “all of the time” (N=16).

**How often do the selected areas compost and recycle?** Figures 4.9 and 4.10 describe the use of these activities.

The most common response given for composting activity (43%) was “some of the time”, while the most common response for recycling activity (49%) was “most of the time”. It appears that areas who stated to have greater amounts of composting in their particular areas were more urban settings, while those areas with a less composting activity were more rural settings. Interview subjects from the more rural settings stated that residents had less of a need for community yard waste collection and composting centers, due to the fact that these residents managed this type of waste on their own land. A connection between educational programming and recycling rates will be discussed later in this section.

**How often do the areas selected for this study make an effort to reuse materials?** Figure 4.11 illustrates the extent to which the selected areas able to reuse materials. The greatest number of communities (43%) responded that their efforts to reuse materials were made “some of the time”. Areas with the greatest efforts to reuse materials were
commonly those who owned and operated their own landfills. Materials were reused for various purposes such as alternative daily cover, or temporary road bedding.

To what extent do the areas selected for this study make an effort to reduce the quantity and toxicity of waste? The results to these two questions appear in Figures 4.12 and 4.13. Thirty one percent of the communities stated that efforts were made to reduce the quantity of waste “most of the time”. Efforts to reduce the toxicity of waste were most commonly made (50%) “some of the time”. When looking back at individual responses to the question regarding the reduction of waste, it becomes clear that municipalities with active recycling programs also appear to have greater initiative to reduce the quantity of waste generated in their areas. This idea makes sense considering that recycling and waste reduction go hand in hand. A connection between efforts to reduce the toxicity of waste and the use of clean sweeps/ drop-off household hazardous waste centers will be discussed later in this section.

The next questions in Section A were written with the intent of learning more about each area’s municipal solid waste and recycling programs. How many of the areas have educational components to their solid waste and recycling programs? Three quarters (75%) of the responses stated that their particular municipality had an educational component (N=16). Among these responses, half stated that their educational program targeted both solid waste and recycling while the other half focused on recycling alone. Various education programs were targeted at the general public through radio and television advertisements, in addition to mailings and newsletters sent to residents. School programs included the use of educational presentations, videos, and tours held at material recovery facilities. Those municipalities with public education programs were also the areas who had the greatest participation in recycling programs.

How many of the selected areas have yard waste, household hazardous waste, and sharps collection programs? Yard waste collection programs were present in 63% of the areas interviewed (N=16). Of the remaining 37% of responses, each one stated that this type of program was in need. Sharps collection programs were present in 19% of the areas, another 56% did not have programs, and 25% had programs set up by other organizations (N=16). As for household hazardous waste (HHW) programs, 96% of the selected areas did have a program in place (N=16). Out of those who did have HHW programs in place, 33% were drop-off centers while the other 67% were clean.
Those areas that did have permanent drop-off locations also had higher rates of activity associated with reducing the toxicity of waste.

Are individuals from the selected areas aware of individuals in their area managing their waste/recyclables improperly by burning them? Of the responses, 81% stated “yes” while the remaining 19% stated “no” (N=16). Knowing the answer to this question may be helpful when drawing later conclusions related to the consolidation of municipal solid waste services.

What percentage of the interview subjects are aware of solid waste/recycling programs that have consolidated throughout the state of Wisconsin? All of the interview subjects stated they were aware of consolidation among various municipal solid waste/recycling programs. Common answers included the Brown, Outagamie, and Winnebago Agreement; the Marathon, Portage, and Shawano Agreement; and the Southeast Wisconsin Waste Reduction Coalition.

How many of the interview subjects represent an area currently participating in a consolidation agreement? This question generated responses stating that 89% were currently participating in a consolidation agreement and the remaining 11% stated that they were not (N=16). Those who were currently participating in a consolidation agreement were directed to the questions in Section B, which asked specific questions about the agreement they were under. Those who were not currently participating were direction to the questions in Section C, which asked questions their experiences when they were at one time considering the consolidation of services.

3.3 Motivations and Challenges to Successful Agreement Implementation

As stated earlier, all interview subjects who represented areas currently participating in a consolidation agreement were to be asked questions from Section B. These questions were aimed towards discovering the motivations and challenges that were present before and after the implementation of a consolidation agreement.

What were the key motivations for considering the consolidation of municipal solid waste/recycling services with surrounding areas? Figure 4.14 illustrates the answers given for this particular question. According to these results, “cost savings” and “other” were the two categories with the greatest percentage of responses. Common answers given for the category “other” included politics, keeping prices low and competitive, bringing in more revenue, and gaining more bargaining power.

* Note that when the results of this question were calculated, that the percentages will not total 100%. This is due to the fact that each interview subject could have more than one response. Therefore, the percentages were based on the number of subjects responding the question rather than the total number of responses received.
How significant did the following motivations become once consolidation occurred in each of the selected areas? [cost savings, simplifying operations, increased efficiency, environmental concerns, stability (of the market), avoiding the complications of a new landfill, and cooperation between neighboring counties]. Similar to a past set of questions from Section A, this set of questions used a rating scale to determine the level of significance, where 1=Not Significant, 2=Somewhat Significant, 3=Significant, 4=Very Significant, 5=Extremely Significant.

Descriptive statistics were used to evaluate the answers generated by this question with the results found in Table 3.1. Cost savings was the motivating factor that had the highest mean (3.93). Increased efficiency and cooperation between neighboring counties had the second highest means at 3.8. Therefore according to the questionnaire results, cost savings, increased efficiency, and cooperation between neighboring counties were the motivating factors with the greatest level of importance (after consolidation occurred).

<table>
<thead>
<tr>
<th>Motivating Factor</th>
<th>n</th>
<th>mean</th>
<th>standard deviation</th>
<th>high</th>
<th>low</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost Savings</td>
<td>15</td>
<td>3.93</td>
<td>1.62</td>
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<td>1</td>
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<tr>
<td>Simplifying Operations</td>
<td>15</td>
<td>2.73</td>
<td>1.83</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>Increased Efficiency</td>
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<td>1</td>
</tr>
<tr>
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<td>3.13</td>
<td>1.30</td>
<td>5</td>
<td>1</td>
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<tr>
<td>Stability (of the market)</td>
<td>15</td>
<td>3.07</td>
<td>1.53</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>Avoid Siting a New Landfill</td>
<td>15</td>
<td>2.00</td>
<td>1.36</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>Cooperation Between Neighboring Counties</td>
<td>15</td>
<td>3.80</td>
<td>1.08</td>
<td>5</td>
<td>2</td>
</tr>
</tbody>
</table>

What were the key challenges that were faced when considering the consolidation of municipal solid waste/recycling services with surrounding areas? Figure 4.15 displays the number of responses given for the various categories. Category “other” had the greatest number of responses. These responses stated that a consolidation agreement would bring others waste into “our” landfill, “we” would be spending too much money to enter into the agreement, and that people in the area were against the idea of regionalizing services. The next largest category was interpersonal relations.
How significant did the following challenges become once consolidation occurred in each of the selected areas? [transportation costs, interpersonal relations (personalities), jurisdictional relations (politics), and loss of jobs] Again, the interview subjects were asked to rate how significant each of the following challenges proved to be once consolidation occurred. The same rating scale used for the motivations, was also used for the challenges. Descriptive statistics of the answers to this question appear in Table 4.2. Jurisdictional relations (politics) were the challenging factor with the highest mean (2.67). The challenging factor with the next highest mean was transportation cost (2.60). These two factors therefore had the highest level of importance once consolidation had occurred.

Table 3.2. Descriptive statistics for challenging factors associated with consolidation

<table>
<thead>
<tr>
<th>Challenging Factor</th>
<th>n</th>
<th>mean</th>
<th>standard deviation</th>
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<th>low</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transportation Cost</td>
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<td>1.72</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>Interpersonal Relations</td>
<td>15</td>
<td>2.33</td>
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<td>5</td>
<td>1</td>
</tr>
<tr>
<td>Jurisdictional Relations</td>
<td>15</td>
<td>2.67</td>
<td>1.45</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>Loss of Jobs</td>
<td>15</td>
<td>1.60</td>
<td>1.12</td>
<td>4</td>
<td>1</td>
</tr>
</tbody>
</table>

3.4 Specific Characteristics of Consolidation Agreements

The next set of questions from Section B asked the interview subjects to answer a list of questions asking about specific details related to their individual consolidation agreements.

What municipal solid waste/recycling services do the areas selected for this study share with neighboring areas? Figure 4.16 displays the services most commonly shared with surrounding areas (as part of a consolidation agreement), with the most common including landfills, recycling marketing, and educational programs.

* Note that when the results of this question were calculated, that the percentages will not total 100%. This is due to the fact that each interview subject could have more than one response. Therefore, the percentages were based on the number of subjects responding the question rather than the total number of responses received.

What have been the costs savings for the areas who have implemented consolidation agreements? Estimates ranged from those who stated that this was simply cheaper than their alternative (having to use Onyx or Waste Management), to those who could estimate savings of $35,000,000 over the next 25 years.
What is the duration of the various agreements, and are there any special terms or contingencies included (such as an early exit)? The duration of various agreements ranged from “the life of the landfill” (which is jointly owned) to a 30 year agreement. When asked if there was a renewal process for subject’s respective agreements 79% answered yes, while 21% said no (N=14). Special terms and contingencies were commonly not present for many of the participants’ cooperative agreements, because the agreements were renewed annually, although there were other agreements where the conditions were rather binding.

How have consolidation agreements affected their surrounding geographic areas? And would these types of consolidation agreements be effective elsewhere in the state? In many cases solid waste and recycling agreements have enhanced the cooperation of neighboring communities and spurred other public service departments to think about ways that they could use consolidation to benefit their own programs. Based on individual experiences, 93% of the subjects stated that the type of consolidation used in their specific area would also work in other communities (N=14). On the same note, 72% of the interview subjects stated that their particular consolidation arrangement was not unique to their specific location (N=14).

In the selected areas, was there awareness of other types of shared service arrangements (such as joint fire protection)? Forty percent of the subjects answered yes, describing services such as emergency management services, fire departments, and fiber optic links.

What would each of the areas do differently if they were to go through the consolidation process again, and what recommendations would they have for others as they consider entering into a consolidation agreement? While 20% (N=15) of the subjects stated that if they were to go through the consolidation process again they would do nothing differently, the other 80% stated that they would consider issues such as attempting to form a solid waste board to help with negotiations, and working with county board members and politicians early in the process to gain support. Figure 4.17 describes what advice would be offered to other communities as they consider consolidating MSW/Recycling services. Answers that were represented by the largest category, “other”, included keeping an open mind to other’s ideas, talking to individuals who have gone through this process before, and working on a small scale to avoid projects that are politically sensitive.

* Note that when the results of this question were calculated, that the percentages will not total 100%. This is due to the fact that each interview subject could have more than one response. Therefore, the percentages were based on the number of subjects responding the question rather than the total number of responses received.

Have any of the selected areas received awards or special recognition for their consolidation efforts? Fifty seven percent (N=14) stated that their consolidation efforts had received recognition. Various types of recognition included Merit and Great Government Awards from Foth & VanDyke, Crowned Community Award (by City & County Magazine), and awards were also given by the Keep Milwaukee Beautiful Campaign.
3.5 Notes Regarding Areas Not Participating in Consolidation Agreements

Only two of the interview subjects represented areas that had considered consolidation in the past but did not successfully implement consolidation agreements. While this number was greatly outweighed by the number of interview subjects representing areas who had implement consolidation agreements, the responses of these non-adopters provide valuable information for the study. The subjects representing the areas not currently participating in a consolidation agreement were asked questions from Section C. Section C has several questions modeled after questions from Section B, which focus on the motivations and challenges that are associated with the consolidation of municipal solid waste and recycling.

*How significant did the motivations of cost savings, simplifying operations, increased efficiency, environmental concerns, stability (of the market), avoid siting a new landfill, and enhancing cooperation between neighboring counties become as they considered consolidation?* The same scale of significance used in Section B (1=Not significant, ..., 5=Extremely Significant) was also used in Section C. Cost savings was seen as being significant, and very significant. Simplifying operations were seen as being significant. Increased efficiency was seen as being not significant and extremely significant. Environmental concerns were somewhat significant, while stability of the market was extremely significant. Avoiding a new landfill was not significant, and cooperation between neighboring counties was somewhat significant and significant. A summary of these responses is presented in Table 3.3.

*How significant did the following challenges the challenges of transportation costs, interpersonal relations (personalities), jurisdictional relations (politics), and loss of jobs as they considered consolidation?* Transportation cost was not significant, interpersonal relations were significant and very significant. Jurisdictional relations were significant and very significant, while loss of jobs was not significant.

*Is there potential for others in the community to reconsider the idea of consolidating municipal solid waste/recycling services in the future?* Only one of the interview subjects answered yes, it may happen eventually. It will take people having the need for garbage collection, when they are no longer able to get away with open burning their garbage. Lastly, are interview subjects from the areas without consolidation agreements aware of shared service arrangements for other government services? One of the subjects answered yes explaining that road maintenance and snow removal are done on a county wide basis.
Table 3.3 . The Importance of Various Motivations and Challenges (responses of 2 interview subjects)

<table>
<thead>
<tr>
<th>Motivations to Consolidate</th>
<th>Level of Importance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost Savings</td>
<td>Significant</td>
</tr>
<tr>
<td></td>
<td>Very Significant</td>
</tr>
<tr>
<td>Simplifying Operations</td>
<td>Significant</td>
</tr>
<tr>
<td></td>
<td>Significant</td>
</tr>
<tr>
<td>Increased Efficiency</td>
<td>Not Significant</td>
</tr>
<tr>
<td></td>
<td>Extremely Significant</td>
</tr>
<tr>
<td>Environmental Concerns</td>
<td>Somewhat Significant</td>
</tr>
<tr>
<td></td>
<td>Somewhat Significant</td>
</tr>
<tr>
<td>Stability (of the market)</td>
<td>Extremely Significant</td>
</tr>
<tr>
<td>Avoid Siting a New Landfill</td>
<td>Not Significant</td>
</tr>
<tr>
<td></td>
<td>Not Significant</td>
</tr>
<tr>
<td>Cooperation Between Neighboring Counties</td>
<td>Significant</td>
</tr>
<tr>
<td></td>
<td>Somewhat Significant</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Challenges of Consolidation</th>
<th>Level of Importance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transportation Costs</td>
<td>Not Significant</td>
</tr>
<tr>
<td>Interpersonal Relations (personalities)</td>
<td>Significant</td>
</tr>
<tr>
<td></td>
<td>Very Significant</td>
</tr>
<tr>
<td>Jurisdictional Relations (politics)</td>
<td>Significant</td>
</tr>
<tr>
<td></td>
<td>Very Significant</td>
</tr>
<tr>
<td>Loss of Jobs</td>
<td>Not significant</td>
</tr>
<tr>
<td></td>
<td>Not significant</td>
</tr>
</tbody>
</table>
Implications for the Future

Conclusions, Implications, and Future Directions
When looking at the information gathered through this study, several key points stand out. It first becomes evident that consolidation has proven to be effective throughout Wisconsin’s municipal solid waste and recycling programs. Consolidation has helped to build trust between communities as they have worked together to overcome common goals and challenges. The process of consolidating solid waste and recycling services between neighboring counties and communities has also shown to increase the efficiency of these programs, by using facilities and resources to a fuller extent. This then leads to an additional benefit of increased cost savings. Municipalities throughout the state of Wisconsin have used the DNR’s Recycling Efficiency Incentive Grants as a means of spurring creativity and a motivation to continually look for new ways to approach the sharing of solid waste and recycling services.

It is also important to note some challenges that have caused the process of implementing consolidation agreements to be slowed or put on hold. Politics and personalities are some of the key challenges that have been prohibiting prospective consolidators from being successful. For this reason, some successful consolidators highly suggest gaining the support of politicians, or possibly just steering away from consolidation projects that may be politically sensitive (if possible). The transportation costs associated with increased hauling distance have also been another large argument against consolidation (once consolidation had been implemented).

This study analyzed the concept of local service consolidation among municipal solid waste and recycling programs, from across the state of Wisconsin. A specific emphasis was placed on defining the most significant motivations and challenges that are encountered by communities, as they attempt to implement consolidation agreements with surrounding communities. Special interest was also placed upon discovering the costs savings that may result from consolidating solid waste and recycling services.

Individuals who have had considerable involvement with the consolidation of municipal solid waste programs were identified using a snowball sampling method. Snowball sampling helps a researcher to develop an interconnected network of people. This network of individuals was narrowed down to a set of 17 individuals representing 8 separate geographic areas that have implemented consolidation agreements, or have gone through the process of considering a consolidation agreement.

A questionnaire was developed as an interview tool, which utilized both open-ended and closed-ended questions. These questions were used to: find common characteristics among the areas selected for this study, explore the types of municipal solid waste and recycling services in each of the areas, and establish an understanding of the motivations and challenges faced by each of the areas as they both considered and implemented consolidation agreements with surrounding communities.

As with nearly any study, there are limitations to the information gathered by this study. One of the original intentions of this study was to gather information from both communities that were able to implement consolidation agreements and communities that for some reason or another had tried but were not able to implement a consolidation agreement. Due to an inability to identify a considerable number of unsuccessful agreements, this original intention was not met. On the other hand, this may be good news. However, if the study had been able to include a larger number of unsuccessful consolidation agreements, greater insight as to what is prohibiting areas from being able to implement successful agreements may have been gained. As is, the evidence seems to suggest that consolidation agreements appear to work.

Another original intention of this study was to take a closer look at the financial profiles of various consolidation examples, before and after consolidation. In some cases due to the confidentiality of financial data and, in others, to lack of clear or consistent financial data across time, this was difficult (if not impossible) information to access. Therefore this area of the study leaves some questions that are yet to be answered without much additional work. As it is, respondent perspectives and limited data suggest that savings from consolidation do exist.

Several limitations arise from the use of the questionnaire as an interview tool. It is difficult for a researcher to know whether or not each of the interview subjects is interpreting an asked question in the same manner. For example, when one interview subject states that a particular event or idea is “significant”, another interview subject could have the same feelings regarding the significance of that time but would describe it as being “somewhat significant”. Due to the fact that each community has a different approach to managing municipal solid waste and recycling programs, those involved in consolidation efforts have various backgrounds and responsibilities in municipal solid waste management. For this reason, some interview subjects were asked to answer questions that were unrelated to their involvement with solid waste management and/or the process of considering and implementing a consolidation agreement. This is not unlike other survey research but with relatively small samples of “those in the know” it could make a difference.
Several suggestions for further research can be made as a result of this study. As stated in a previously, a more specific look at areas that have not had successful attempts to implement municipal solid waste and recycling consolidation agreements would be a useful extension of this study. While identifying these failed attempts to establish agreements may be a challenge, it would be very useful to understanding what factors prohibit consolidation taking place. Possibly broadening the scope to other forms of service consolidation, in general, would be helpful. Or, expanding the scope from failed attempts to consolidate to just looking at areas where no attempts have been initiated.

It would be useful for solid waste leaders in the state of Wisconsin to identify what types of municipal solid waste services are desirable but which cannot be provided to residents due to a lack of funding. These may be services that local municipal solid waste programs would want to consider sharing among several neighboring communities so that the cost could be spread out over a greater number of residents, while also increasing the efficiency of the service or operation. This is especially relevant to services having more of a “public good” nature, making them reside outside the spectrum of services capable of private sector provision.

Future studies could also place greater emphasis on specifically targeting the financial aspects of consolidating solid waste and recycling services. Creative planning will be necessary when approaching this subject, due to the confidentiality of financial issues and problems obtaining consistent time series data. In order to remain competitive with the private sector of the solid waste industry, local municipal solid waste programs often desire to prevent this type of information from becoming public because those aspects of their services which could generate revenues sufficient to enable support of less profitable services may be placed in jeopardy. Failing to protect this information could lead to higher taxes, or loss of desirable, but less profitable, “public good” type services.

Other studies may want to make estimations as to what may happen if specific local municipal solid waste programs were forced to end their operations or parts of their operations. Knowing the types of services that would no longer be offered to residents by private waste handlers, as well as what might happen to the private handler’s pricing scheme, could help solid waste leaders describe the threat that budget cuts may have on residents. Individuals opposed to consolidation efforts in their communities may reconsider the idea once they have an understanding of what may result if consolidation does not take place. Certainly there are issues here. If or when communities lose waste management services capable of generating profits when preferred by the private sector, what remains? The issue then becomes one of judging whether these remaining services are worth doing. Not all services can be provided by the private sector because some of these services have externality and public good characteristics. The public must then be informed of the issues so that they may then judge whether these services should be continued. And, if continued, what methods for financing their provision are possible and politically acceptable. It is in this direction that future research must move.

Lastly, there has clearly been a concern that the private waste management industry has become concentrated. This brings up the additional issue of what the implications of this concentrated industry are for municipalities and their citizens, especially in rural, sparsely populated areas where municipal provisions may become increasingly infeasible.
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Literature and Data Sources Utilized in this Study


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Solid Waste Board. (2002, October). Intergovernmental Solid Waste Disposal Agreement for Portage, Shawano, and Marathon Counties. (pp.1-17). Copy received from Jim Pellitteri, Marathon County Solid Waste Director.


References
Appendix A

Support Materials, Survey Instrument and Response Tabulations
Pre Interview Letter

<<First_Name>> <<Last_Name>>
<<Street>>
<<City>>, <<State>> <<Zip>>

A few days from now you will interviewed for an important research project being conducted by the University of Wisconsin-Green Bay.

It concerns experiences of those involved with municipal solid waste/recycling in the state of Wisconsin.

I am writing you in advance because we have found that many people would request to be reminded of the upcoming interview. The study is an important one. It will help those involved with solid waste management across the state, as they aim to provide high quality services at an affordable rate. Findings from this study will be applicable to other government services as well. All of your responses during the interview will be kept confidential.

We are interested in your feelings about waste management and recycling as well as some more specific information about things such as:
   a. The volume of municipal waste being generated in your county
   b. A comparison between the municipal solid waste services in your area and other surrounding areas
   c. The portion of generated waste that is recycled in your area
   d. The landfill tipping fees in your area
   e. The recycling fees in your area

We do not expect that you will necessarily have information on all of these things, but do value your participation.

Thank you for your time and consideration. It’s only with the generous help of people like you that our research can be successful.

If you have any questions concerning this study, please feel free to contact us at (920)465-2357.

Sincerely,

Dr. John Stoll
University of Wisconsin-Green Bay
Professor of Public and Environmental Affairs (Economics)

Bethany Hemstreet
University of Wisconsin-Green Bay
Environmental Science and Policy Graduate Student
<table>
<thead>
<tr>
<th>Practiced Activity</th>
<th>never</th>
<th>seldom</th>
<th>some of the time</th>
<th>most of the time</th>
<th>all of the time</th>
<th>don't know</th>
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<tr>
<td>a) Incineration without energy recovery</td>
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<td>b) Landfilling</td>
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<td>c) Incineration with energy recovery</td>
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<tr>
<td>e) Recycling</td>
<td>1</td>
<td>2</td>
<td>3</td>
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<tr>
<td>f) Reusing Materials</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
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<tr>
<td>g) Reducing the quantity of waste</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
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<tr>
<td>h) Reducing the toxicity of waste</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>NA</td>
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</tbody>
</table>

CARD 1
CARD 2: **Types of consolidation**

**Cooperative agreement**

- An agreement between 2 or more entities to jointly perform some aspect of a function.
  
  - Example: 2 or more counties sign an agreement to collectively handle, process, or dispose of solid waste.
  - Example: 2 or more entities establish a commission to finance or acquire capitol equipment for handling solid waste.

**Merger**

- An entity is formed through the merger of 2 or more prior entities.
  
  - Example: The merger of 2 or more prior Responsible Units forms one combined Responsible Unit.
<table>
<thead>
<tr>
<th>Expected Outcome</th>
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<th>Somewhat Significant</th>
<th>Significant</th>
<th>Very Significant</th>
<th>Extremely Significant</th>
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<tr>
<td>a) Cost savings</td>
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<td>2</td>
<td>3</td>
<td>4</td>
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<td>NA</td>
</tr>
<tr>
<td>b) Simplifying operations</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
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<tr>
<td>c) Increased efficiency</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>NA</td>
</tr>
<tr>
<td>d) Environmental concerns</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>NA</td>
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<tr>
<td>e) Stability</td>
<td>1</td>
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<td>4</td>
<td>5</td>
<td>NA</td>
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<tr>
<td>f) Avoid the complications of siting new landfill</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>NA</td>
</tr>
<tr>
<td>g) Cooperation between neighboring counties</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>NA</td>
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<tr>
<td>h) Other</td>
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CARD 3
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<th>Significant</th>
<th>Very Significant</th>
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<tr>
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<td>b) Interpersonal Relations (personalities)</td>
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<td>3</td>
<td>4</td>
<td>5</td>
<td>NA</td>
</tr>
<tr>
<td>c) Jurisdictional Relations (politics)</td>
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<td>4</td>
<td>5</td>
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<tr>
<td>d) Loss of Jobs</td>
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<td>4</td>
<td>5</td>
<td>NA</td>
</tr>
<tr>
<td>e) Stability</td>
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<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>NA</td>
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<tr>
<td>h) Other ____________</td>
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<td>2</td>
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<td>4</td>
<td>5</td>
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</tbody>
</table>

CARD 4
**Questionnaire**

Name: ____________________________

Position: ____________________________

Involvement with solid waste management and recycling:
(position, board, employment) _____________________________________

How long? _______________________________________

First, I would like to ask you about solid waste management and recycling in your region/area in general.

A1. Integrated solid waste management is about choices that can be made when making waste management decisions. Source: Waste Management and Resource Recovery, 1995

To what extent are each of these activities practiced in your area?  **N=16**

   a) Incineration without energy recovery
      I. No incineration found in study areas
   b) Landfilling
      I. Landfilling all of the time-16 (100%)
   c) Incineration with energy recovery
      I. No incineration found in study areas
   d) Composting
      I. Never composting- 4 (25%)
      II. Seldom Composting- 2 (13%)
      III. Composting some of the time-7 (44%)
      IV. Composting most of the time- 3 (19%)
   e) Recycling
      I. Never recycling- 2 (13%)
      II. Recycling most of the time- 8 (50%)
      III. Recycling all of the time- 6 (38%)
   f) Reusing materials
      I. Never reusing materials- 3 (19%)
      II. Seldom reusing materials- 3 (19%)
      III. Reusing materials some of the time- 7 (44%)
      IV. Reusing materials most of the time- 2 (13%)
      V. Reusing materials all of the time- 1 (6%)
   g) Reducing the quantity of waste
      I. Never reducing the quantity of waste- 3 (19%)
      II. Seldom reducing the quantity of waste- 1 (6%)
      III. Reducing the quantity of waste some of the time- 3 (19%)
      IV. Reducing the quantity of waste most of the time- 5 (31%)
      V. Reducing the quantity of waste all of the time- 4 (25%)
   h) Reducing the toxicity of waste
      I. Seldom reducing the toxicity of waste-1 (6%)
      II. Reducing the toxicity of waste some times- 8 (50%)
      III. Reducing the toxicity of waste most times- 6 (38%)
      IV. Reducing the toxicity of waste at all times- 1 (6%)
A2. Does your municipal solid waste and/or recycling program have an educational component? N=16
   1- Yes- 12 (75%)
   2- Don’t know- 0 (0%)
   3- No- 4 (25%)
      a) If so, please describe:
      b) Does this target: N=12
         1- Solid waste- 0 (0%)
         2- Recycling- 6 (50%)
         3- Both- 6 (50%)

A3. Does your municipal solid waste/recycling program include:
   Yard waste collection (eg. grass clippings, leaves)? N=16
   1- Yes- 10 (63%)
   2- Don’t know- 0 (0%)
   3- No- 6 (37%)
      a) If not, is this something you see as a need? N=6
         1- Yes- 6 (100%)
         2- No- 0 (0%)

A4. Does your municipal solid waste/recycling program include:
   Household hazardous waste collection (eg. paints, car batteries, motor oil)? N=16
   1- Yes- 15 (94%)
      a) Drop-off center- 5 (33%)
      b) Clean sweep- 10 (67%)
   2- Don’t know
   3- No- 1 (6%)
      a) If not, is this something you see as a need?
         1- Yes- 1 (100%)
         2- No- 0 (0%)

A5. Does your solid waste/recycling program include:
   Sharps collection (eg. needles, syringes)? N=16
   1- Yes- 3 (19%)
   2- Don’t know- 0 (0%)
   3- No- 9 (56%)
   4- Handled by another organization- 4 (25%)
      a) If not, is this something you see as a need? N=9
         1- Yes- 3 (33%)
         2- No- 6 (67%)

A6. Are you aware of individuals or businesses in your area managing their waste/recyclables improperly by burning them? N=16
   1- Yes- 13 (81%)
   2- Don’t know- 0 (0%)
   3- No- 3 (19%)
      a) If so, what has been done to address this issue?

A7. Are you aware of any municipal solid waste/recycling programs that have consolidated throughout the state of Wisconsin? N=16
   1- Yes- 16 (100%)
   2- No- 0 (0%)

A8. Are any of these programs outside of your area, please specify: N=16
   1- Yes- 14 (89%)
   2- No-2 (11%)
<table>
<thead>
<tr>
<th>Type</th>
<th>Where/When</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-</td>
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<td>2-</td>
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<td>3-</td>
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<tr>
<td>4-</td>
<td></td>
</tr>
</tbody>
</table>

A9. Is your region currently participating in any such arrangements?  \( N=16 \)
1- Yes- 14 (89%)
2- No- 2 (11%)
a) If so, please briefly describe (including what service have been consolidated and how this was done):

At this point, I would like to ask you some specific questions concerning the agreement you are under.

B1. What were the key motivations for considering the consolidation of municipal solid waste/recycling services with surrounding areas?  \( N=15 \)
1- Cost savings- 8 (53%)
2- Simplifying operations- 1 (6%)
3- Increased efficiency- 5 (33%)
4- Environmental concerns- 2 (13%)
5- Stability- 1 (6%)
6- Avoid the complications of siting new landfill- 2 (13%)
7- Cooperation between neighboring counties- 3 (20%)
8- Other- 8 (53%)

B2. Some common reasons given for consolidating services are listed on CARD 3. SHOW CARD 3

<table>
<thead>
<tr>
<th>Not Significant</th>
<th>Somewhat significant</th>
<th>Significant</th>
<th>Very Significant</th>
<th>Extremely Significant</th>
<th>Don’t know</th>
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<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>NA</td>
</tr>
</tbody>
</table>

After consolidation occurred, how significant did you actually find each of these to be?

Please respond with the appropriate number. 1-Not Significant: 5-Extremely Significant.

a) Cost savings  \( N=15 \)
   I. Cost savings not significant- 3 (20%)
   II. Cost savings somewhat significant- 1 (7%)
   III. Cost savings significant- 2 (13%)
   IV. Cost savings extremely important- 9 (60%)

b) Simplifying operations  \( N=15 \)
   I. Simplifying operations not significant- 6 (40%)
   II. Simplifying operations somewhat significant- 2 (13%)
   III. Simplifying operations significant- 2 (13%)
   IV. Simplifying operations very significant- 1 (7%)
   V. Simplifying operations extremely significant- 3 (20%)
   VI. Don’t know- 1 (7%)

c) Increased efficiency  \( N=15 \)
   I. Increased efficiency not significant- 1 (7%)
   II. Increased efficiency somewhat significant- 1 (7%)
   III. Increased efficiency significant- 3 (20%)
   IV. Increased efficiency very significant- 5 (33%)
   V. Increased efficiency extremely significant- 5 (33%)
   VI.
d) Environmental concerns  \( N=15 \)
   I. Environmental concerns not significant- 2 (13%)
   II. Environmental concerns somewhat significant- 3 (20%)
   III. Environmental concerns significant- 3 (20%)
   IV. Environmental concerns very significant- 5 (33%)
   V. Environmental concerns extremely significant- 2 (13%)

e) Stability (of the market)  \( N=15 \)
   I. Stability concerns not significant- 4 (27%)
   II. Stability concerns somewhat significant- 1 (7%)
   III. Stability concerns significant- 3 (20%)
   IV. Stability concerns very significant- 4 (27%)
   V. Stability concerns extremely significant- 1 (7%)

f) Avoid the complications of siting new landfill  \( N=15 \)
   I. Avoiding landfill not significant- 8 (53%)
   II. Avoiding landfill somewhat significant- 3 (20%)
   III. Avoiding landfill significant- 1 (7%)
   IV. Avoiding landfill very significant- 2 (13%)
   V. Avoiding landfill extremely significant- 3 (20%)

g) Cooperation between neighboring counties  \( N=15 \)
   I. Cooperation somewhat significant- 2 (13%)
   II. Cooperation significant- 4 (27%)
   III. Cooperation very significant- 4 (27%)
   IV. Cooperation extremely significant- 5 (33%)

h) Other  
   _________________________________ (Score) _____

B3. What were the key challenges faced when considering the consolidation of municipal solid waste/recycling services with surrounding areas?  \( N=15 \)
   1- Transportation costs- 1 (6%)
   2- Interpersonal relations (personalities)- 5 (33%)
   3- Jurisdictional relations (politics)- 4 (26%)
   4- Loss of jobs- 1 (6%)
   5- Other- 9 (60%)

B4. Some common reasons for not consolidating services are listed on CARD 4. SHOW CARD 4
   1- Not Significant
   2- Somewhat Significant
   3- Significant
   4- Very Significant
   5- Extremely Significant
   NA- Don’t know

After consolidation occurred, how significant did you actually find each of these to be?

Please respond with the appropriate number. 1-Not Significant: 5-Extremely Significant.

a) Transportation costs  \( N=15 \)
   I. Transportation cost is not significant- 7 (47%)
   II. Transportation cost is somewhat significant- 1 (7%)
   III. Transportation cost is significant- 1 (7%)
   IV. Transportation cost is very significant- 3 (20%)
   V. Transportation cost is extremely significant- 3 (20%)

b) Interpersonal relations (personalities)  \( N=15 \)
   I. Interpersonal relations are not significant- 5 (33%)
   II. Interpersonal relations are somewhat significant-5 (33%)
   III. Interpersonal relations are significant- 1 (7%)
   IV. Interpersonal relations are very significant- 3 (20%)
   V. Interpersonal relations are extremely significant- 1 (7%)
c) Jurisdictional relations (politics) N=15
I. Jurisdictional relations are not significant- 4 (27%)
II. Jurisdictional relations are somewhat significant- 4 (27%)
III. Jurisdictional relations are significant- 2 (13%)
IV. Jurisdictional relations are very significant- 3 (20%)
V. Jurisdictional relations are extremely significant- 2 (13%)
d) Loss of jobs N=15
I. Loss of jobs is not significant- 11 (73%)
II. Loss of jobs is somewhat significant- 1 (7%)
III. Loss of jobs is significant- 1 (7%)
IV. Loss of jobs is very significant- 2 (13%)
V. Loss of jobs is extremely significant- 0 (0%)
e) Other ______________________________________________________ (Score) _____

B5. What municipal solid waste/recycling services do you share with surrounding areas?
N=15
1- Landfills- 6 (40%)
2- MRF (Material Recovery Facilities)- 4 (27%)
3- Drop off Centers- 3 (20%)
4- Recycling Collection- 3 (20%)
5- Recycling Marketing- 5 (33%)
6- Household Hazardous Waste Facilities- 3 (20%)
7- Incinerator- 0 (0%)
8- Educational programs- 4 (27%)
9- Yard Waste Collection- 2 (13%)
10- Sharps Collection- 0 (0%)
11- Responsible Unit- 1 (6%)
12- Processing Recyclables- 0 (0%)
13- Waste Reduction Efforts- 2 (13%)
   a) Why were these particular services chosen to be shared?

   ____________________________________________________________
   ____________________________________________________________

B6. Can you estimate the cost savings (per year) generated by consolidation? N=14
1- Yes- 14 (100%)
a) If so, how much? __________________________________________
   ____________________________________________________________
   ____________________________________________________________
   ____________________________________________________________
2- No- 0 (0%)

B7. What is the duration of your consolidation arrangements? ________________

B8. Does your consolidation arrangement have any special terms or contingencies?
   (eg. early exit)
   ____________________________________________________________
   ____________________________________________________________
   ____________________________________________________________

B9. Is there a renewal process for this consolidation arrangement? N=14
1- Yes- 11 (79%)
2- No- 3 (21%)
a) If so, how does this renewal process work? __________________________

Appendix A

41
B10. In what ways has the consolidation of municipal solid waste/recycling affected this geographic area (e.g. other service consolidation being discussed)?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

B11. Based on your own experience, do you think consolidation of this type would work in other communities? N=14
1- Yes- 13 (93%)
2- Maybe- 0 (0%)
3- No- 1 (7%)

B12. How unique is your consolidation arrangement to this area alone? N=14
1- Very- 1 (7%)
2- Somewhat- 3 (21%)
3- Not at all- 10 (72%)

B13. Are you aware of shared service arrangements for other types of government services in your area (e.g. joint fire protection)? N=15
1- Yes- 6 (40%)
2- No- 9 (60%)
a) If so, please describe ____________________________________________________
________________________________________________________________________

B14. If you were to go through this consolidation process again, what would you choose to do differently? N=15
1- Seek the aid of a third party (consultant)- 0 (0%)
2- Change the political approach- 0 (0%)
3- Scale down the scope of the project- 0 (0%)
4- Other- 12 (80%)
5- Nothing- 3 (20%)

B15. What advice would you offer other communities as they consider consolidating municipal solid waste/recycling services? N=15
1- Assistance in identifying potential partners- 0 (0%)
2- Descriptive case studies of successfully implemented consolidation- 1 (6%)
3- Information about cooperative agreements- 0 (0%)
4- Fact Sheet- 1 (6%)
5- Step by step guide- 0 (0%)
6- Encourage early contacts with the WDNR- 0 (0%)
7- Don’t know- 1 (6%)
8- Other- 11 (73%)
9- Seek the aid of a 3rd party- 3 (20%)

B16. Have consolidation efforts in your area received awards or special recognition? N=14
1- Yes- 8 (57%)
2- Don’t know- 0
3- No- 6 (43%)
a) If so, please describe: ________________________________________________
________________________________________________________________________
B17. Are there any other comments related to the sharing of solid waste/recycling services that you would like to share with me?

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

At this point, I would like to ask you some specific questions concerning the management of solid waste services.

**C1. Has your area’s municipal solid waste/recycling department considered engaging in any of the arrangements described on CARD 2? N=2**

1- Yes- 2 (100%)
   a) If so, please briefly describe (including what service have been consolidated and how this was done):

2- No- 0 (0%)
   Why not?

**C2. Some common reasons given for consolidating services are listed on CARD 3. SHOW CARD 3**

1- Not Significant
2- Somewhat significant
3- Significant
4- Very Significant
5- Extremely Significant
NA- Don’t know

When considering consolidation, how significant did you find each of these to be? **N=2**

*Please respond with the appropriate number. 1-Not Significant: 5-Extremely Significant*

a) Cost savings
   I. Cost savings significant- 1 (50%)
   II. Cost savings very significant- 1 (50%)

b) Simplifying operations
   I. Simplifying operations significant- 2 (100%)

c) Increased efficiency
   I. Increased efficiency not significant- 1 (50%)
   II. Increased efficiency extremely significant- 1 (50%)

d) Environmental concerns
   I. Environmental concerns somewhat significant- 2 (100%)

e) Stability (of the market)
   I. Stability of the market extremely significant- 2 (100%)

f) Avoid the complications of siting new landfill
   I. Avoiding the complications of siting new landfill not significant- 1 (100%)

g) Cooperation between neighboring counties
   I. Cooperation between neighboring counties somewhat significant- 1 (50%)
   II. Cooperation between neighboring counties significant- 1 (50%)

h) Other

___________________________________________    (Score) _____
C3. Some common reasons for not consolidating services are listed on CARD 4.

SHOW CARD 4

1- Not Significant
2- Somewhat Significant
3- Significant
4- Very Significant
5- Extremely Significant
NA- Don’t know

When considering consolidation, how significant did you find each of these to be? N=2

Please respond with the appropriate number. 1-Not Significant: 5-Extremely Significant.

a) Transportation costs
   I. Transportation cost not significant- 2 (100%)

b) Interpersonal relations (personalities)
   I. Interpersonal relations significant- 1 (50%)
   II. Interpersonal relations very significant- 1 (50%)

c) Jurisdictional relations (politics)
   I. Jurisdictional relations significant- 1 (50%)
   II. Jurisdictional relations very significant- 1 (50%)

d) Loss of jobs
   I. Loss of jobs not significant- 2 (100%)

e) Other _________________________________________________________ (Score) ____

C4. Is there potential you, or others in your community, will reconsider the idea of consolidating municipal solid waste/recycling services in the future? N=2

1- Yes- 1 (50%)
   a) Why?
   2- No- 1 (50%)
   b) Why not?

C5. Are you aware of shared service arrangements for any additional government services, such as a joint fire department? N=2

1- Yes- 1 (50%)

2- No- 1 (50%)
   a) If so, please describe ____________________________________________

C6. Any other comments related the sharing of solid waste/recycling service arrangements?

____________________________________________________________________

____________________________________________________________________

Finally, I would like to ask you about some information regarding the demographics and solid waste management in your area.

D1. What is the population of your municipality? ___________________________

D2. Who provides solid waste collection? _________________________________

D3. Who provides the collection for recyclable materials? _________________
D4. What is the volume of municipal waste being generated in your county (tons/year)?

N=16

1- 0-10,000 tons - 2 (13%)
2- 10,000-50,000 tons - 6 (36%)
3- 50,000-125,000 tons - 3 (19%)
4- 125,000 + tons - 3 (19%)
5- Don’t know - 2 (13%)

D5. How does this compare to the municipal waste being generated in surrounding areas? N=16

1- Higher - 2 (13%)
2- Lower - 5 (31%)
3- Same - 4 (25%)
4- Don’t know - 5 (31%)

D6. Other than yard waste, what portion of the generated municipal waste in your county is recycled? N=16

1- 0-25% - 4 (25%)
2- 26%-40% - 8 (50%)
3- 41% -60% - 2 (13%)
4- 61% + - 0
5- Don’t know - 2 (13%)

D7. How does this compare to the volume being recycled in surrounding areas? N=16

1- Higher - 4 (25%)
2- Lower - 3 (19%)
3- Same - 5 (31%)
4- Don’t know - 4 (25%)

D8. How would you describe the landfill capacity in your county (remaining years of use)? N=16

1- 0-5 years - 2 (13%)
2- 5-10 years - 1 (6%)
3- 10-15 years - 1 (6%)
4- Greater than 15 years - 4 (25%)
5- Don’t know - 8 (50%)

D9. On a scale of 1-10, how would you describe the process of expanding your existing landfill(s)? (1- being the easiest, 10- being the hardest) N=16

1- Easiest- 0 (0%)
2- 0 (0%)
3- 1 (6%)
4- 0 (0%)
5- 0 (0%)
6- 0 (0%)
7- 1 (6%)
8- 1 (6%)
9- 1 (6%)
10- Most difficult- 4 (24%)
NA- 9 (53%)
D10. On a scale of 1-10, how would you describe the process of siting a new landfill in your area? (1- being the easiest, 10- being the hardest)  
N=16

1- Easiest- 0 (0%)
2- 0 (0%)
3- 1 (6%)
4- 0 (0%)
5- 1 (6%)
6- 0 (0%)
7- 2 (12%)
8- 0 (0%)
9- 1 (6%)
10- Most difficult- 3 (18%)
NA- 9 (53%)

D11. What are your landfill tipping fees for municipal solid waste disposal?  
N=16

1- 15-20$/ton- 2(12%)
2- 20-30$/ton- 2(12%)
3- 30-40$/ton- 7(44%)
4- +40$/ton- 2(20%)
5- Don’t know- 2(12%)

a) Do these fees include a state environmental fee?  
N=16
1- Yes-16 (100%)
2- No- 0 (0%)

b) Are there any other special charges included in these tipping fees?  
N=16
1- Yes- 2 (12%)
2- No- 14 (88%)

c) How do these fees compare to surrounding areas?  
N=16
1- Higher- 3 (19%)
2- Lower- 5 (31%)
3- Same- 6 (38%)
4- Don’t know- 2 (12%)

D12. What is the processing fee (or other charges) per ton of recyclable materials?  
N=16

1- 10-20$/ton- 1 (6%)
2- 20-30$/ton- 3 (19%)
3- 30-40$/ton- 5 (31%)
4- +40$/ton- 2 (13%)
5- There are none- 4 (25%)
6- Don’t know- 1 (6%)

a) How do these fees compare to surrounding areas?  
N=16
1- Higher- 2 (13%)
2- Lower- 4 (25%)
3- Same- 4 (25%)
4- Don’t know- 6 (37%)

D13. How do your municipal waste management techniques compare to other facilities in the surrounding areas?

__________________________________________________________________
__________________________________________________________________

Appendix A
D14. Are you aware of the future plans for municipal solid waste/recycling management in your areas?

___________________________________________________________________
___________________________________________________________________
___________________________________________________________________

D15. Is there anything else you would like to share with me about your municipal solid waste/recycling programs?

___________________________________________________________________
___________________________________________________________________
___________________________________________________________________