

## APPENDIX E CARBON FOOTPRINT

### A little background on lifecycle energy and carbon analyses

Lifecycle studies look at the energy used to create a product and then how it is disposed. For example the lifecycle of a plastic bottle starts as oil, it is then transported on a ship to a port where it is transferred to a truck that takes it to the bottle manufacturing facility, and the oil is changed into plastic a formed into a bottle. The bottle is then filled with water or soda or laundry detergent where it is sent on another truck to a store where it may be refrigerated. Energy is used in each step and averages can be used to come up with an average energy expended per ton of plastic bottles. This energy use can then be converted into carbon emissions.

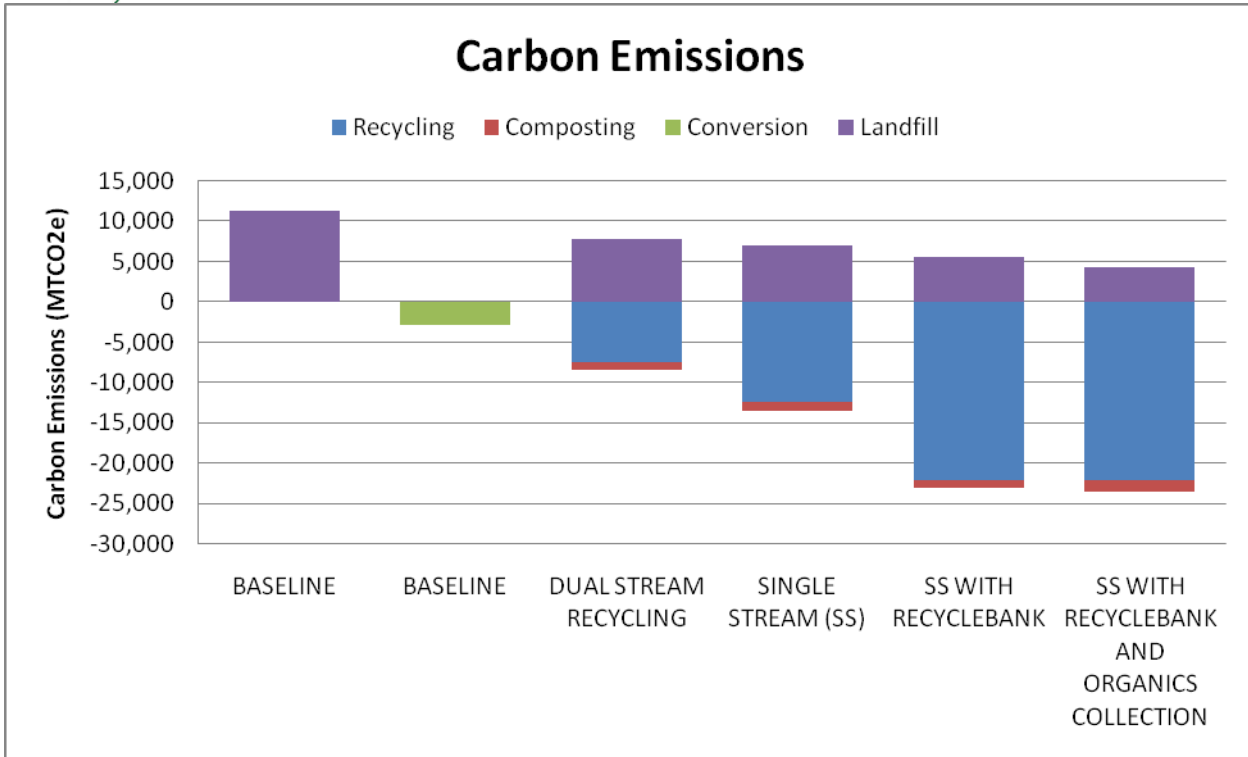
After the plastic bottle is purchased and used there are three different places for it to go. If it is disposed in a landfill, nothing happens to it for a few million years. If it is incinerated, converted to a syngas (gasification) or mechanically broken down and used in a power plant (autoclaving) some percentage of the energy in the plastic is recovered. This is the energy in the oil that created the plastic and not any of the energy that was used to convert or transport it into a plastic bottle. When the bottle is recycled the plastic is ground up and used to either make more plastic bottles or another product. If a new plastic bottle is created, the energy to create one from virgin materials is saved. This is what is referred to as lifecycle energy or carbon savings.

### Oakland CCIRF Analysis

The data for this analysis was taken from an EPA report titled, Solid Waste Management and Greenhouse Gases, A Life-Cycle Assessment of Emissions and Sinks, 3<sup>rd</sup> Edition, September 2006. This analysis starts with the products already produced, but the recycled material gets credit for creating a new product instead of using virgin materials. It is assumed that all recycled material is used to make the same new product. In reality, plastic can be converted into plastic lumber, newspaper can be used for cellulosic insulation, and white office paper can be turned into tissue paper. In all cases virgin materials are saved, but it may not be the same as what was originally created. When looking at the lifecycle savings, the extra truck to pick up the recyclable or organics material is insignificant. It is also assumed that the conversion technologies recover a similar amount of energy as a Waste-To-Energy (WTE) facility. Conversion technologies convert the waste into either a syngas or refuse derived fuel that are then burned at a higher efficiency than a WTE facility, however, significant energy must be expended to convert the waste.

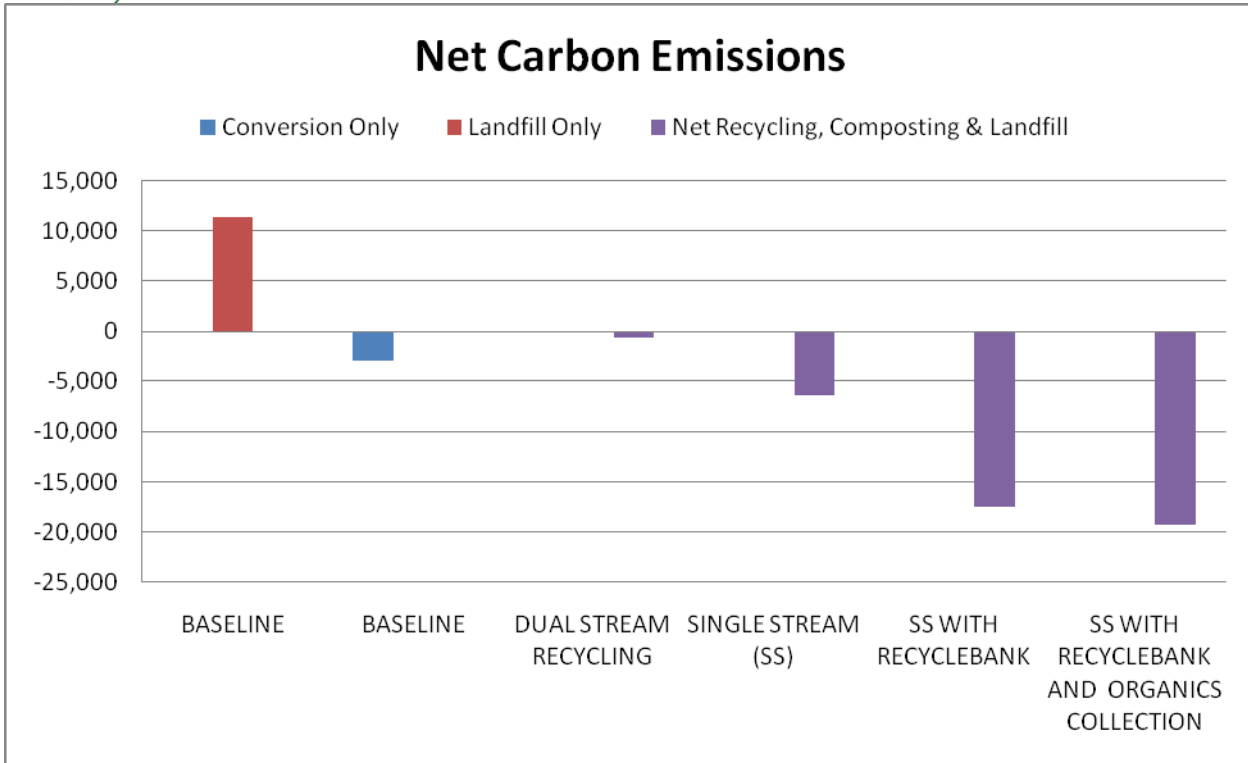
For this analysis we looked at six different disposal scenarios for the approximately 95,000 tons of waste. If there are net carbon emissions, the result is positive. If there are net carbon savings, the result is negative.

1. Baseline: Landfill Only – All waste is landfilled, national average for landfill gas recovery is included
2. Baseline: Conversion Only – All waste is converted and burned to recover energy
3. Dual Stream Recycling – Diversion of recyclables to a MRF, diversion of yard waste to a composting facility, the remainder is landfilled
4. Single Stream Recycling - Diversion of more recyclables to a MRF, diversion of yard waste to a composting facility, the remainder is landfilled
5. Single Stream Recycling with RecycleBank - Diversion of more recyclables to a MRF, diversion of yard waste to a composting facility, the remainder is landfilled
6. Single Stream Recycling with RecycleBank and Expanded Organics collection - Diversion of recyclables to a MRF, diversion of organics (yard waste, food waste and other organics) to a composting facility, the remainder is landfilled



As the waste decomposes in a landfill, methane is released. Methane is a very potent greenhouse gas, 27 times more effective at trapping heat than carbon dioxide. The conversion technologies show a small net carbon benefit from recovering energy from the organics and plastics and recycling the metals. No benefits are included for recycling glass since it is unclear if it is recyclable into new glass products or only used as road base or other material.

In general, our assessment of the EPA report is that it is lenient on landfills. They show a net carbon benefit for putting yard waste in landfills because the carbon is either 'stored' in the landfill or the methane is captured and burned. Other research has shown that landfill gas collection systems are highly inefficient over the life of the landfill (as low as 25% capture, whereas EPA normally uses over 70%).



The net carbon emissions show a significant savings of using the conversion technologies over conventional landfilling. However, a strong recycling and organics diversion program will save significantly more carbon emissions, even with the remainder of the material being landfilled. The option of a strong recycling and organics program and using a conversion technology on the remainder of the material was not explored, because it is unclear if the companies would be interested in the waste after many of the high energy materials have been removed.

**APPENDIX F**  
**PROJECT MEMO – SURVEY ANECDOTES**

## PROJECT MEMO

Date: June 8, 2009  
To: CCIRF Study on Solid Waste & Recycling Communities  
From: Anna Collinson, Resource Recycling Systems  
Subject: Online Survey Summary

The online surveys are still active and collecting feedback from residents. Here is the tally to date:

Total Responses between 6 communities = 1714  
Brandon = 285  
Groveland = 236  
Independence = 38  
Springfield = 14  
Waterford = 110  
West Bloomfield = 1031

### General Observations:

- Most of the responses from West Bloomfield residents are in direct response to the recent preferred hauler changes implemented.
- The West Bloomfield survey also posed slightly different questions due to their situation; however, some of the concerns expressed are similar such as concerns over too many trucks on the road and the desire to be able to recycle more materials.
- Many residents indicated they have to pay extra for bulky item service by the item and have to arrange for special pick-up
- In general, residents are uncertain of what services they receive and what price they pay.
- Residents would like to recycle more materials, followed by bulky item collection.
- Residents who use Smith's Disposal report being very pleased with their services
- There are a lot of misconceptions about community-wide contracting for services, including that prices exponentially increase once under contract.
- Waterford resident respondents indicated a concern for many different collection vehicles on the road on a given day. Also, Waterford residents indicated they would like to see more recycling in the Twp overall.
- Supporting local businesses and Michigan businesses is important.
- Overall, 72% of all responses indicated that residents would favor a township coordinated contract for services if some level of savings were achieved from their current costs or paid the same for increased services.

The following is a summary of all survey responses between the six communities.

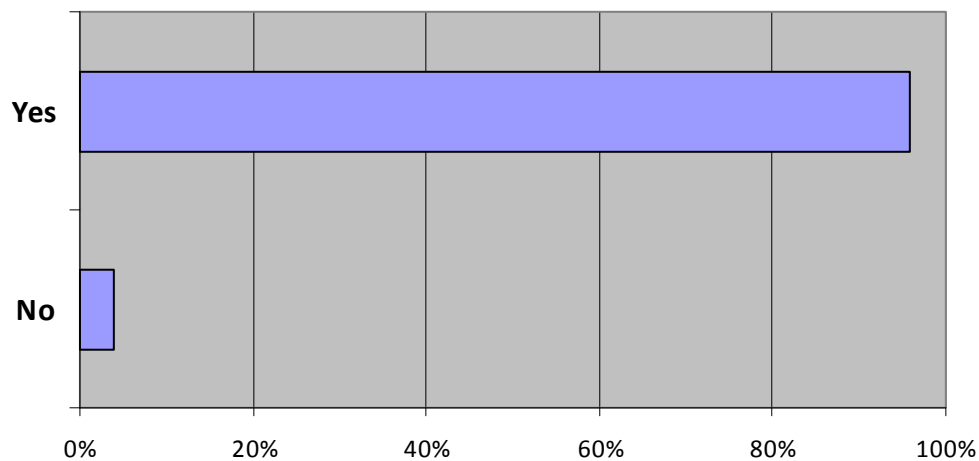
**Oakland County CCIRF Project  
Summary of Online Survey Results—Combined  
As of June 8, 2009**

1. Do you subscribe for waste collection services at your home?

**95.9% Yes**

4.03% No

**Q. 1 Do you subscribe for waste services at your home?**



*While there are situations in which residents may not currently subscribe for waste services, for example:*

- *part time resident*
- *share with neighbors, family or friends*
- *takes to work or business*

*This is a small percentage of the population, and can be addressed through a contracting process.*

2. What does your service currently include? (please check all the apply)

**86.7 % Curbside Recycling**

80.5% Curbside Yard Waste Collection

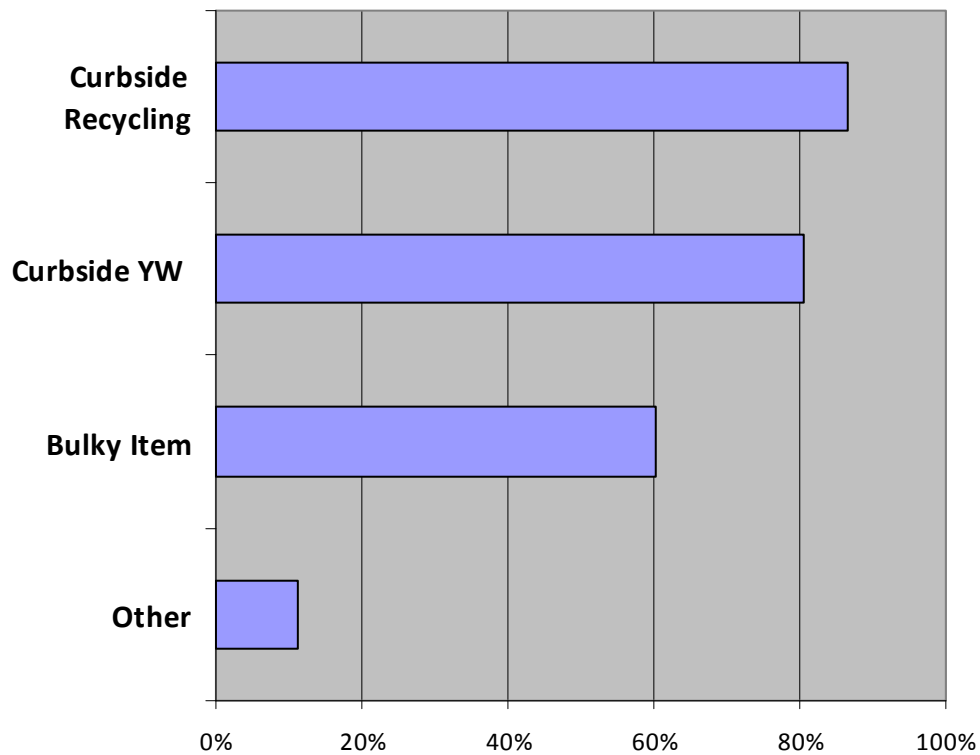
60.4% Bulky item collection (appliances, furniture)

11.1% Other (please specify):

*Answers under "Other" include restating that resident has trash service, or comments about their services.*

*Residents who indicated "bulky item" service, usually added a note that bulky item removal is available but for an additional charge.*

**Q. 2 What does you service include?**

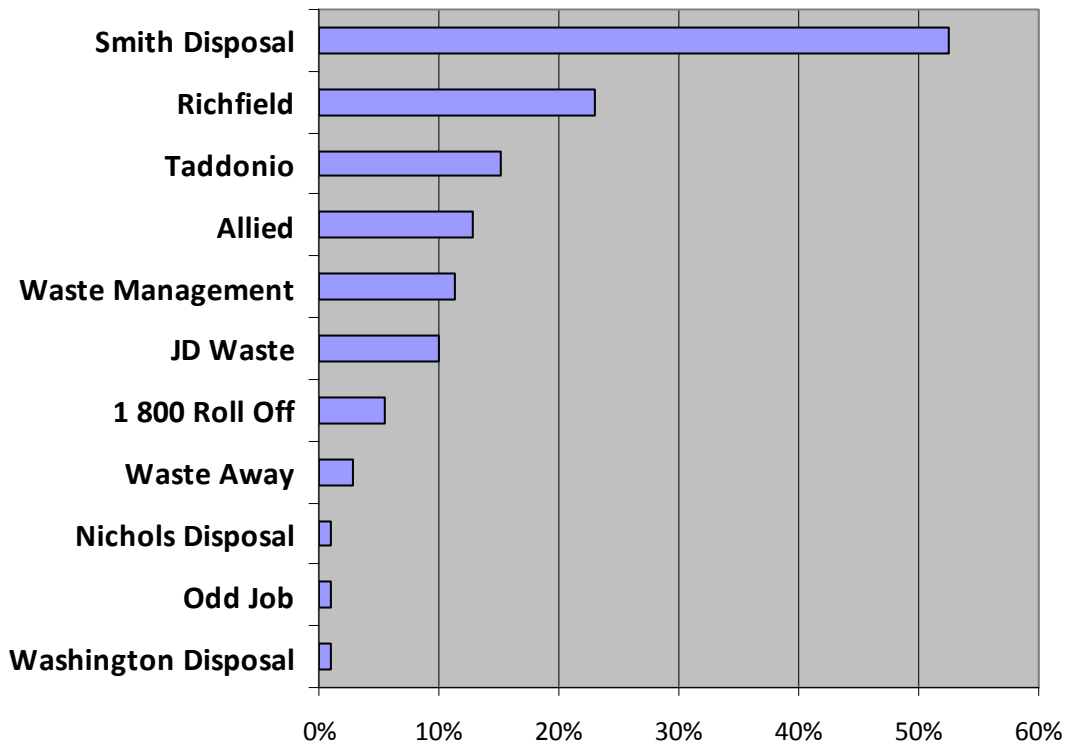


3. Who is your current service provider?

- 52.5% Smith Disposal**
- 23% Richfield
- 15.2% Taddonio
- 12.9 % Allied
- 11.3% Waste Management
- 10% JD Waste
- 5.5% 1 800 Roll Off
- 2.8 % Waste Away
- 1% Nichols Disposal
- < 1% Odd Job
- < 1% Washington Disposal

*Richfield may be high due to high number of West Bloomfield residents that responded and who use Richfield as preferred hauler. Smith Disposal may show skewed results because while they do have a lot of customers in the CCIRF communities, many residents participated in the survey due to correspondence from Smith Disposal, especially in Waterford.*

**Q. 3 Who is your current service provider?**



#### 4. How much do you pay for services?

\$\_\_\_\_\_ per  Month  Quarter  Year  Other:\_\_\_

Reviewing the pricing created more questions than answers. What is apparent is residents are not certain about what services they subscribe to and what their cost is. Pricing is also unclear making it difficult to determine from this information what services are offered with what price. Using information compiled from approximately 100 Brandon surveys, here's a sample of the type of information received from residents through the survey.

##### 1-800 Roll Off

- Services unclear—same pricing indicated for one or two of the services listed.
- Pricing examples provided
  - \$10/mth (\$120 per year)-indicated trash +yard waste +bulky items
  - \$30/qtr (\$120 per year) = trash+ recycling + yard waste + bulky items
  - \$36/qtr (\$144 per year) = trash + recycling + bulky items
  - \$60/qtr (\$360 per year) (no services indicated)
  - \$180/year = trash + recycle + yard waste

##### Richfield

- Pricing averaged about \$60 per quarter or \$20 per month.
- Specific services unclear—here are some examples:
  - \$63 per quarter for yard waste, recycling, bulky items + trash
  - \$59 per quarter for trash + bulky item

##### Smith Disposal

- Services unclear at what pricing level
- Ranges based on pricing provided
  - Monthly rate payers = \$240-\$360 per year
  - Quarterly rate payers = \$160-\$276 per year or \$352-\$400 per year

##### Taddonio

- Services unclear at what pricing level
- Ranges
  - \$13-\$17 per month (\$156-\$204 per year)
  - \$36 - \$55 per quarter (\$144 - \$220 per year)

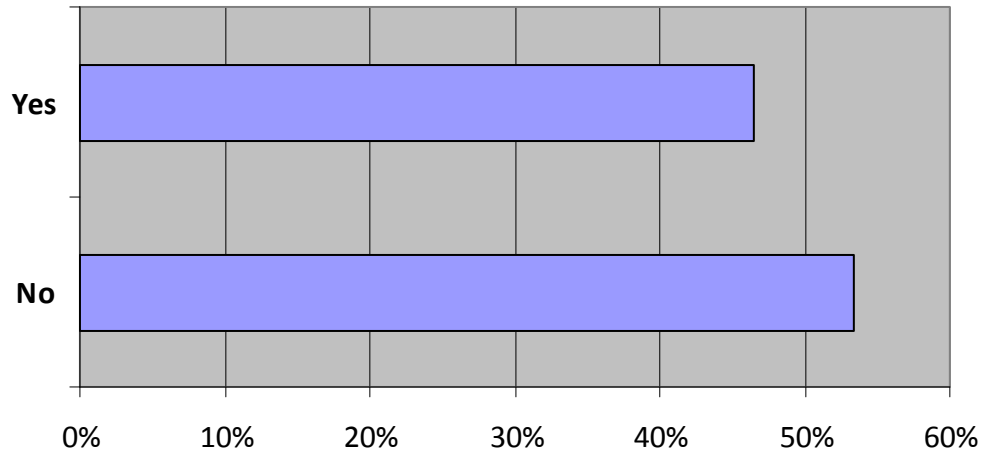
As noted earlier, residents who indicated they have “bulky item” service, also noted that the service was available for an additional fee. So it is still unclear, based on the responses, what the pricing provided includes.

5. Have you ever participated in the County's No HAZ program to safely dispose of household hazardous wastes?

46.5% Yes

**53.4% No**

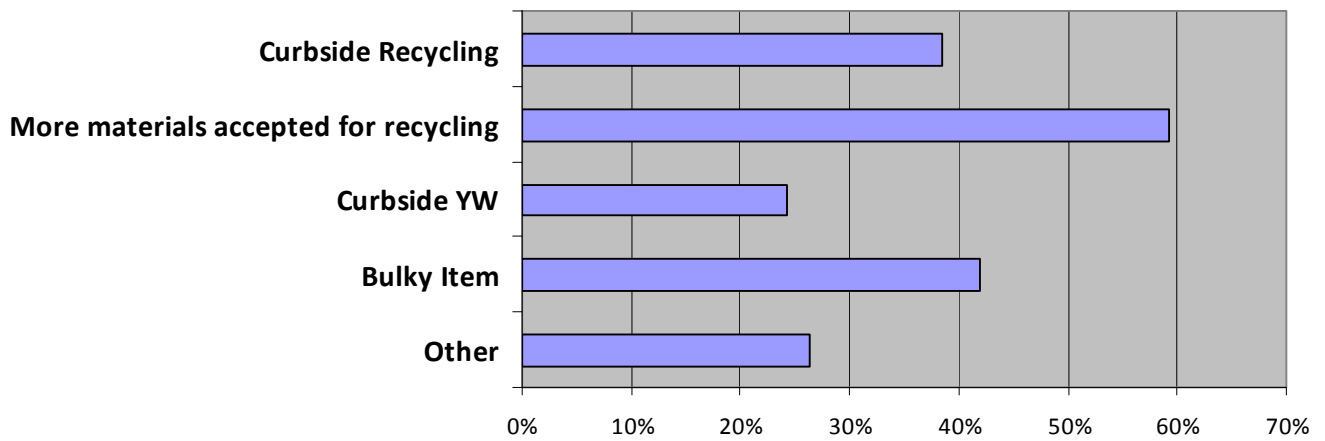
**Q. 5 HHW Program Participation**



6. What services would you like to have access to or see improved (please check all that apply):

- 38.4 % Curbside Recycling
- 59.25% More materials accepted for recycling**
- 24.23% Curbside Yard Waste Collection
- 41.9% Bulky item collection (appliances, furniture)
- 26.4% Other (please specify):

**Q. 6 Services to have access to or see improved**

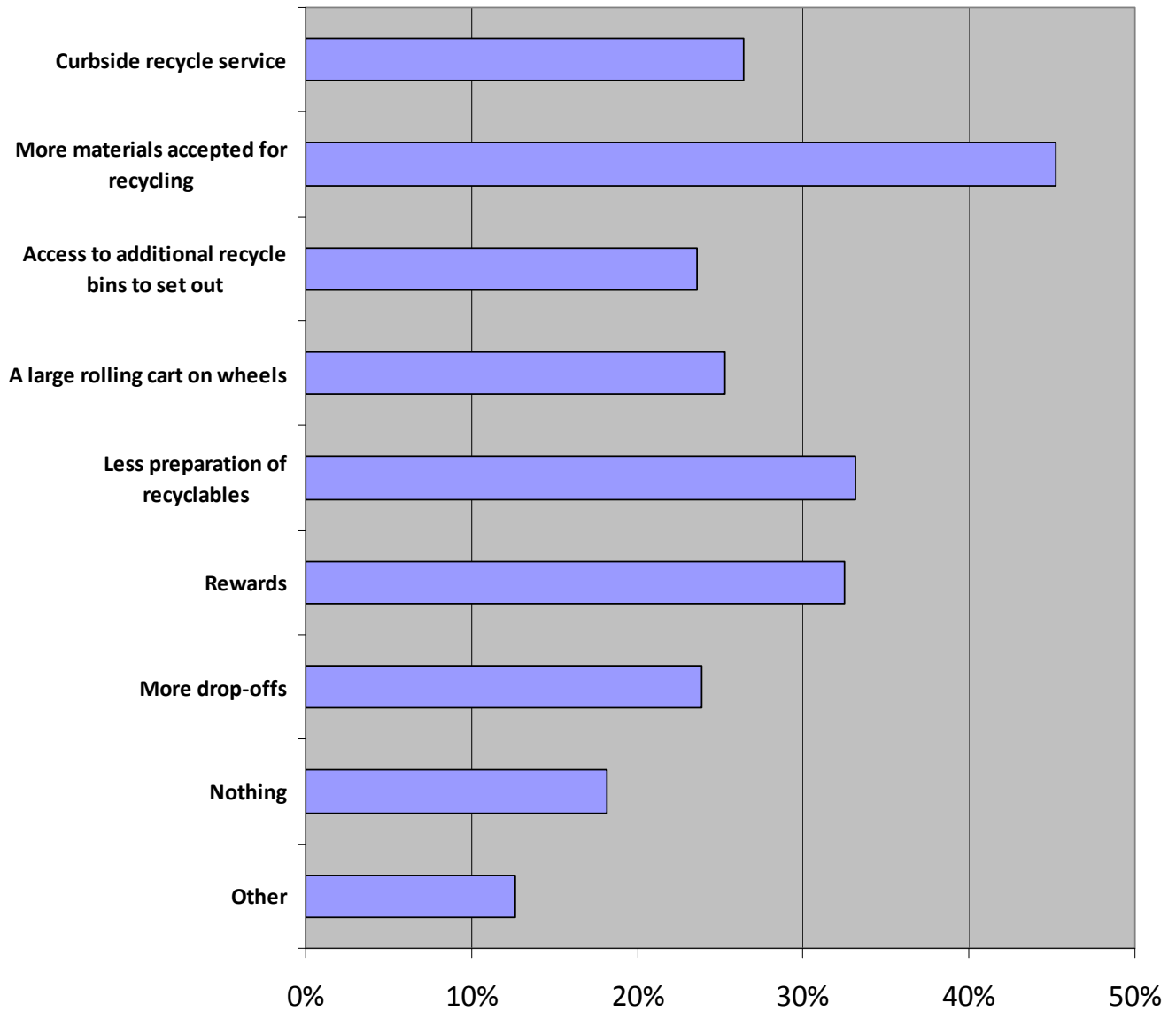


7. What would motivate or allow you to recycle more?

- 25.3% Curbside recycling service
- 45.2% More materials accepted for recycling**
- 23.6% Access to additional recycle bins to set out
- 26.38% A large rolling cart on wheels
- 33.13% Less preparation of recyclables by being able to mix all recyclables together
- 32.5% Rewards for recycling such as coupons or discounts to local stores and restaurants
- 23.86% More drop-off locations
- 18.13% Nothing
- 12.61% Other (please specify):

*Note: Waterford did not offer two of the responses—access to more bins, and more drop-offs*

### Q.7 What would motivate or allow you to recycle more?

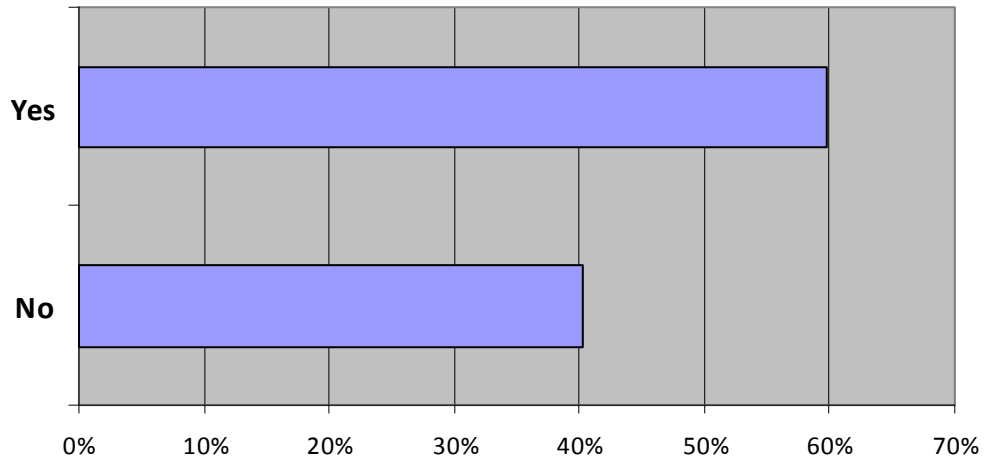


8. Would you prefer that households in your neighborhood had their trash collected on the same day?

**59.8%** Yes

40.2% No

**Q. 8 Same trash day**

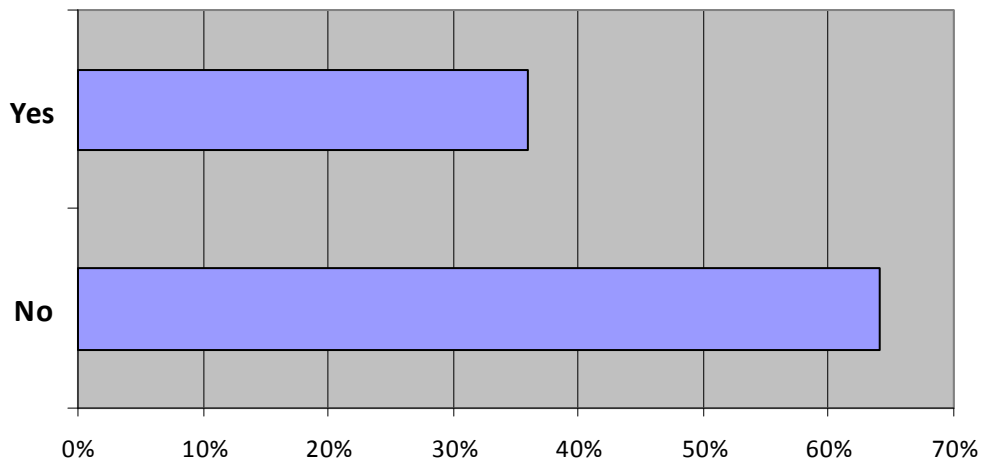


9. Would you like to see uniform containers for trash and recycling in your neighborhood?

**35.9%** Yes

64.1% No

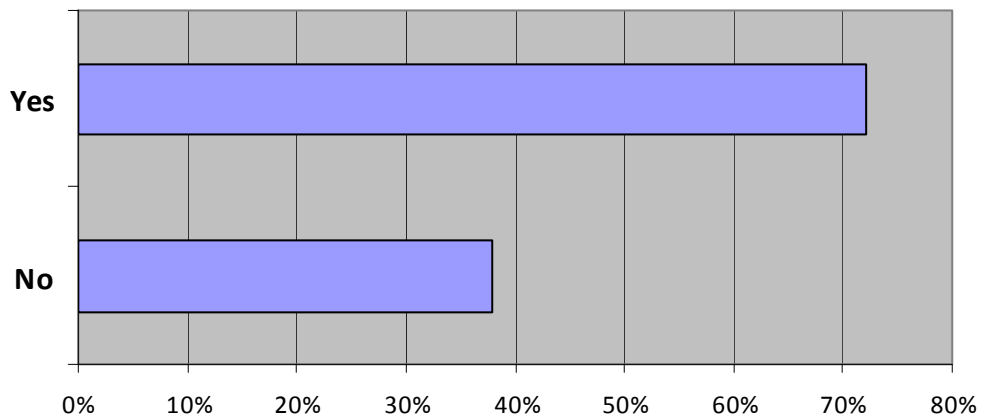
**Q. 9 Uniform containers**



10. Would you favor a township coordinated contract for these services if you could:

- 11%** Save 10% from your current costs
- 22.7%** Save 20% from your current costs
- 19.5%** Save 30% from your current costs
- 18.9%** Paid the same, but receive more services.
- 37.9%** I do not want the Township to coordinate these services, even if a cost savings to residents can be achieved.

**Q. 10 Would you favor a twp coordinated contract for these services?**



## Appendix G

### IMPLEMENTATION TASKS OUTLINE

#### **CCIRF Implementation Program** **Development of an Solid Waste Management Authority** **Procurement of a Comprehensive Solid Waste Program** **Procurement of an Alternative Solid Waste Processing Technology** **June 9, 2009**

#### **INTRODUCTION**

---

This CCIRF Implementation program is structured in a series of “go/no-go” Task Groups that should provide the necessary opportunities to jointly agree on each successive phase as the project moves forward. These Task Groups are:

- Task Group I: Success Profile and Key Milestones
  - IA: Leadership, Organization and Success Profile
  - IB: Project Briefings
  - IC: Draft and Present Project Work Plan
  
- Task Group II: Authority Creation and Service Contracting
  - IIA: Authority Documentation and Creation
  
- Task Group III Service Assessment, Specification and Procurement
  - III A: Service Assessment
  - IIIB: Service Specification
  - IIIC: Service Procurement
  
- Task Group IV: Adoption of Authority and Service Contracting, and Related Activities

#### **Task Group I: Success Profile and Key Milestones**

##### **Task I.A: Leadership, Organization and Success Profile**

Task Objective: Evaluate the leadership, organization and success capacity of the participating municipalities and identify specific organizational strategies for pursuit of the common vision for success, and determine if the participating municipalities are prepared to move forward to the next stage.

Activities include:

1. Prepare an organizational options memo/PowerPoint that summarizes:
  - i. Common goals and desired outcomes identified to date
  - ii. Leadership, staffing and funding requirements and roles to achieve those results

Deliverables: Deliverables include briefing meetings complete with agendas and facilitation

### **Task I.B: Project Briefings**

Task Objective: Understand specific needs of potential municipal partners in terms of both content and process.

Activities to be carried out include:

- 1: Individual briefing sessions with each interested municipality (both administrative and key elected officials) designed to provide an overview of potential scope and key decision points and then solicit guidance/input on both content and process.
  - A. Content discussions will focus on service needs, organizational goals and desired outcomes – identifying what “success” could be.
  - B. Process discussions will focus on the “how to” achieve that success.
- 2: The current understanding is:
  - A. that a solid waste management authority would be formed,
  - B. that specific services would be included in the scope of that authority (waste collection, recycling collection, processing, disposal, special collection events like spring cleanup days, and more to be determined)
  - C. that the primary operating approach would be collaborative public/private partnership contracts that would be immediately set up with service providers
  - D. that these service providers could include existing private for-profit and not-for-profit entities as well as existing public agencies (e.g. the county HHW collection program).

Deliverables: Deliverables include briefing meetings complete with agendas and facilitation

### **Task I.C: Draft and Present Project Work Plan**

Task Objective: Develop project work plan that addresses needs identified in Task 1A& B, including provision of key “go/no-go” milestones in the work plan process.

Activities to be carried out include:

1. Concurrent with the Task 1B briefing sessions, a proposed project plan/project scope document that is responsive to the full range of guidance and input provided during the briefing sessions will be prepared. The document will include detailed tasks, project phases, key milestones, go/no-go decision points, and detailed descriptions of the scope of solid waste and recycling services that is being considered as part of the project
2. CCIRF members will then organize and facilitate a joint briefing session for community representatives of all parties that were involved in Task 1A/B. The project plan will be presented, documents distributed and immediate guidance/input sought during the meeting

– with the project plan projected via LCD screen and live edited based on consensus for any suggested changes.

3. This briefing will provide the immediate “go ahead” for the next Task Group. If agreement is not yet possible, a draft document as it stands at that time will await revision and wait for further comments and a go/no-go decision on the next Task Group.

Deliverables: Deliverables include:

- Organizational Options Memo/PowerPoint
- Project Plan and Attachments

## **Task Group II: Authority Organization**

### **Task II.A: Authority Documentation and Organization**

Task Objective: Prepare the organizational materials required for the participating municipalities to implement a solid waste management authority

Activities include:

1. Develop draft organizational documents including all related schedules, articles of incorporation, bylaws, etc. working closely with legal counsel as made available by the participating municipalities. Drafts of the documents will be reviewed with the project administration working group identified in Task I.A
2. Organize and facilitate up to two additional review sessions as needed with the project administration work group in order to refine Task IIA1 documents as needed for presentation to full leadership group
3. With leadership representation (administrative and elected officials) of all founding municipalities the results of all Task IIA1&2 work will then be presented, documents distributed and immediate input sought during the meeting – with the PowerPoint and discussion documents projected via LCD screen and live edited based on consensus for any suggested changes.
4. This briefing will provide the immediate “go ahead” for the next Task Group. If agreement is not yet possible, a draft document as it stands at that time will await revision and wait for further comments and a go/no-go decision on the next Task Group.
5. The next stage “go-ahead” is expected to include preliminary identification of any expansion of the working group as the likely membership of the Authority Board once it is officially created.

Deliverables: RRS Deliverables include:

1. Meeting facilitation and Project Binder containing all organizational documents

## **Task Group III. Service Assessment, Specification, and Procurement**

### **Task III.A: Service Assessment Specification and Procurement**

**Task Objective:** Evaluate current service provider arrangements to determine their capacity to perform targeted services in the future, identify any service provider capacity gaps that must be addressed under the new structure and evaluate/recommend procurement strategies to address those gaps.

Activities include:

1. Identify “best practice” levels of performance in all targeted service areas in terms of scope of service and price of service.
2. Complete follow-up interviews as required to understand strengths and limitations of key service providers and their capacity to reach the “best practice” performance levels identified above.

**Task III.B: Service Specification and Procurement**

1. Develop service specifications and procurement documents (Requests for Proposals – RFPs) to be released “on behalf of the participating municipalities of.....” including all related schedules, vendor lists, draft service agreements, etc. Drafts of the documents will be reviewed with the project administration working group identified in Task I.A

**Task III.C: Service Procurement**

1. Undertake service procurements including all responsibilities for posting in compliance with procurement requirements, all management of document distribution, organizing and facilitating pre-bid meetings, addenda as required, clarifying questions, processing of received proposals, coordinating of proposal review by the administrative working group, facilitating of interviews and clarifying question processes and preparation of recommended service provider memos with draft service agreements.
2. Use the recommended vendor submittals to prepare a financial forecast for the solid waste program, forming the basis of a preliminary budget for the program and establishing rates for members
3. Conduct due diligence activities as described in Technology Report if needed for a Conversion Technology

**Deliverables:** RRS Deliverables include:

1. Procurement Binder containing all procurement documents and tabulation of results
2. Updated Financial Forecast and Preliminary Five Year Budget Pro-Forma for Program
3. Overview Memo/PowerPoint Summarizing Results, Costs and Benefits

**Task Group IV. Adoption of Authority, Service Contracting and Related Items**

**Task IV.A: Adoption of Authority Documents and Related Action Items**

**Task Objective:** Facilitate Adoption by Participating Municipalities of all Authority Documents and any Related Action Items required to Initiate Program Implementation.

Activities to be carried out by RRS include:

1. Work with the founding members to refine the work to date into items needing action by the elected bodies of the participating municipalities, likely to include authorizing resolutions, intergovernmental agreements, ordinance changes, amended budgets, fact sheets, Q&A sheets, etc.
2. Work with founding members to present the recommendations to each elected body, including any public hearings as required, to secure adoption of the Authority and contract documents and any related action items.
3. Work with participating municipalities to assure that all required paperwork is filed on behalf of the newly formed authority.
4. Convene the initial meetings of the Authority Board including preparation of agenda, sending out of announcements, preparation of all agenda items, facilitating meeting, taking of minutes, etc.

RRS Deliverables include:

1. Resolutions, PowerPoint, and related items as required for approval

### **Preliminary Timeline**

June/July-	present findings to member Boards
July/August	prepare Authority Articles and By Laws and present to Boards
July-September	prepare procurement specifications and calendar
August/September	conduct outreach and briefings to potential members
October/December	conduct procurement and evaluation
December	prepare transition plan for service implementations
September-Spring '10	conduct municipal activities to authorize membership, service contracting
October-Spring '10	conduct conversion technology due diligence/negotiations as required
Spring '10	begin community wide services
Spring '13	begin new community wide service agreement