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MUNICIPALITY OF ANCHORAGE: OPTIONS AND RECOMMENDATIONS FOR RECYCLING, DIVERSION, AND SOLID WASTE MANAGEMENT

DRAFT REPORT

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1.0 INTRODUCTION AND EXECUTIVE SUMMARY

1.1 Anchorage Situation and Project Need

Solid waste services in the Municipality of Anchorage (MOA) are provided partly through public services and partly private. Refuse collection service is available in most of the City, with the MOA providing service to the approximately 20% of Anchorage included in the original downtown area (by City Charter) and service in the less densely populated hillside areas served by a primary hauler, Alaska Waste.¹ Disposal is publicly owned via a state-of-the-art landfill with considerable remaining lifetime. However, although curbside service is available for limited materials in limited areas of the community (for a fee),² recycling is largely drop-off in nature. This service, provided via 17 drop-off sites, is largely managed by the private sector,³ including sites at Smurfit, many grocery stores, high schools, and other locations.⁴ Specialty drop-offs are available for electronics, and the MOA accepts electronics, oil, tires, batteries, and maintains a household hazardous waste drop-off site. Although small commercial businesses may use the drop-off service, some commercial recycling collection service is likely provided to the large businesses in town (possibly grocery stores, Providence Hospital, hotels, etc.), or they may self-haul. Processing is privately owned (Smurfit-Stone),⁵ and they accept major paper, glass, metals, and plastic categories of materials -- separated.

Transportation of recyclables from drop-off centers to the recycling facility is conducted under contract between the recycler and the primary waste hauler in Anchorage. Baling and shipping of recycled materials to west coast markets and overseas is managed by ALPAR, an innovative and cutting-edge private/non-profit agency managing back-haul space, with primary supporters including MOA grants, Sea Land (now Horizon Lines), Tote, BP, Weaver Brothers Trucking, Northern Air Cargo (for remote), Anchorage Daily News, Alaska Railroad, and local distributors for Safeway, Pepsi, Coca Cola, Budweiser, among others. ALPAR has served as a model for cost-effective shipping arrangements in other remote or rural areas around the US and Canada.⁶ Markets are mostly out of state; and cardboard and some other materials have strong markets and revenues (e.g., newsprint remains local). However, the Municipality has also been a market innovator, through its relationship with the railroad, which historically purchased considerable crushed glass (a traditionally difficult commodity to transport cost-effectively and market) to use as sanding material. The MOA has been working with new markets as well, including a glass tile facility.

ALPAR is a unique and essential part of the success that MOA has had in recycling. This innovative – actually unique – arrangement provides feasible transportation of recyclables to a market for which transportation costs would otherwise be prohibitive. ALPAR, along with Green Star, has served as a recycling “energizer” in the community.

The Municipality has periodically considered modifications to the system. It has studied the feasibility of Pay As You Throw (PAYT) rate incentives in the past, and for a while had a pilot recycling program with Alaska Pacific Environmental Services (dba Alaska Waste).⁷ Two haulers have attempted PAYT rates to encourage recycling, but the MOA reports that the fee structures, marketing efforts, and other factors were

¹ Service in Anchorage is challenging, requiring four-wheel drive vehicles in some areas, and considerable back-up ratios as vehicles become stuck.

Regulatory oversight of the private haulers is via Regulatory Commission of Alaska (RCA), and MOA collections are overseen by the Municipal Assembly.
² For example, we believe there is a voluntary mixed paper recycling route for the city only; several haulers offer fee-based voluntary recycling collection of residential and commercial materials (limited).

³ Including ALPAR, Anchorage Recycling/Smurfit, Green Star, Carrs (Safeway), etc.,

⁴ As well as a municipally owned drop-off at the landfill.

⁵ And is fairly low-tech, mostly collecting / baling / shipping, with no sorting or long-term storage capabilities.

⁶ As we understand it, ALPAR is not currently capacity-constrained, an analysis that will be an important component to this project.

⁷ Waste Management sold out to Alaska Waste, Alaska Waste dropped the program, and it is now restarting as a pilot program.

not conducive to increasing significant recycling.⁸ It has conducted recycling plans (2001), waste flow analyses, recycling surveys, and requests for interest in providing services and programs.

When compared with other communities its size, Anchorage has lower diversion than most large cities (from the RFP). This is largely because:

- Programs: Anchorage does not have curbside recycling (or composting), which can boost diversion;
- Markets: Anchorage has limited local markets, transportation costs to markets are high, and the local landfill has relatively low fees (and high capacity, compared to other communities), significantly hindering the economic incentive to divert recyclables – and this also hampers economics of commercial collection;
- Climate & terrain: The northern climate, low density, logistical issues (lack of curbs in many areas), and other issues⁹ also make the establishment of significant initiatives challenging.

Using in-house consultant databases, we compared Anchorage to the 100 largest US and Canadian communities.¹⁰ We found:

- ***The MOA is the largest city in the US without a curbside recycling program.***¹¹
- Among all 100 largest communities with curbside programs (many have recycling and composting), we find diversion averages about 28%, and those with PAYT average 32% diversion (27% in non-PAYT communities).
- Overall, 77% of the cities collect refuse municipally (less frequently for PAYT programs) and almost 60% provide curbside recycling using municipal staff (others provide via contract, franchise, and other arrangements).
- Average disposal fees per ton in these large communities are about \$32/ton, ranging from \$1.50 to \$98/ton.¹²
- Fewer than 20% have control over commercial rates, one-third have city commercial recycling program initiatives, and about one-third have an incentive for commercial recycling.

Clearly, MOA is in a different situation than many of these communities (climate, markets, terrain, density, etc.). However, there are useful lessons from many, as well as from an analysis and benchmarking against rural and northern communities.¹³ Currently the MOA may recycle approximately 15-17% of generated materials. This is a significant amount considering the voluntary and drop-off nature of current diversion opportunities.

1.2 Project Objectives

Recently, several changes have taken place in the MOA. The MOA has established a funding source through the landfill tipping fees and established a grant program, soliciting practical options for recycling and diversion in the Municipality – and a number of programs and pilots have been funded. The MOA established a recycling lead housed in the Mayor's office, and there may be increasing focus on diversion, environmental initiatives, and sustainability, including the 2008 addition of a recycling coordinator position

⁸ Detailed quantitative work (Skumatz, numerous publications demonstrates that to be effective, the differential between PAYT rate levels should approach 80%. In addition, outreach, and convenient recycling options are keys to success of these programs. On the other hand, several communities have had success implementing PAYT prior to curbside recycling collection – but it is rare. Seattle Washington is a noteworthy example.

⁹ For example, in at least one previous survey, households were fairly unwilling to pay for additional services, and didn't want "monitoring" of their trash service. However, this "independent spirit" may balance some against the green appreciation for the outdoors demonstrated by many residents.

¹⁰ SERA maintains a database of solid waste services, programs, costs, and demographics for communities across the nation, including the 100 largest communities in the US (Anchorage, of course, is one). We conducted a quick comparison of the services for Anchorage compared to other communities its size. The databases also include communities with rural and northern characteristics, which provide special challenges to solid waste service.

¹¹ The only other cities in the top 100 cities that are without programs are St. Petersburg, FL (250,000 population) and Lubbock, TX (population 200,000). Both cities have drop-off options, as does MOA.

¹² We also have information on average cost to provide refuse and recycling services.

¹³ If selected for this assignment, we will provide comparisons to other rural and northern communities as well.

within SWS for program implementation. In addition, the MOA received an unsolicited proposal offering to provide recycling services. For these reasons (and potentially others), the MOA was interested in contracting with a consultant to conduct an analysis of the feasibility of establishing a sustainable recycling system. The goals were:

- The consultant team would work under the guidance of the MOA's project review team to accomplish the work.
- As part of the system, the consultants should examine the practicality of PAYT as a method for encouraging diversion.
- The consultant is tasked with determining if such a system is feasible, and which design, implementation, incentive, and policy factors might be employed to improve the feasibility, cost-effectiveness, diversion, and participation for the system.
- The MOA was interested in initiating the potential curbside program as soon as possible.
- The MOA later expanded the scope to engage an analysis of options for the diversion and solid waste management beyond residential recycling and composting.

The City put out an RFP to analyze the City's options, and selected Skumatz Economic Research Associates (SERA) to conduct this work. SERA was assisted in this work by two engineering firms, MACTEC, and Resource Recycling Systems.

1.3 Analysis Steps

To conduct the work, the SERA team undertook the following steps:

- Interviewed SWS and recycling stakeholders; gathered data on aspects of recycling in MOA
- Worked with MOA to establish an advisory committee
- During 5 visits to MOA, met with advisory committee, SWS, and other stakeholders
- Gathered extensive data on current disposal and diversion in MOA,
- Conducted a widely distributed web survey gathering feedback from residents and businesses on current recycling, preferences about new programs, willingness to pay for new program, and other topics.
- Reviewed unsolicited proposal
- Analyzed gaps in MOA diversion opportunities to identify candidate programs and services
- Reviewed program concepts with MOA staff and advisory committee
- Gathered data on costs and tonnages to model broad set of program / incentive / strategy options
- Developed model to assess diversion and costs (for municipality and users / generators) to select leading programs and develop phases of programs for recommendation
- Examined funding options, analyzing the cost for 1) ratepayers, 2) tip fee, or other sources to fund the programs
- Held public meetings in Anchorage to gauge public reaction to the concepts / results / recommendations
- Estimated shifts in customer behaviors associated with the opportunities provided by new program offerings, preparing estimated Pay As You Throw (PAYT) rates associated with the programs.
- Worked with MOA staff to refine SERA's initial program concepts, and revised options with MOA staff
- Remodeled the program costs and tonnages, providing revised estimates of tonnages and costs associated with Phase I program options / recommendations.

A summary table of the key results – diversion, net City costs, and associated impacts on the tipping fee – for each recommended program concepts and the four Phases of programs (A, B, C, and D) is provided as Table 1 below. The programs cover an array of different waste streams and customer groups. Phase A programs deliver almost 30,000 new tons at full program roll-out, at a cost of about \$39/ton. To cover the City's \$461K in annual net costs to deliver the programs will require approximately

\$3.50 added to the tipping fee (assuming capital costs are spread over time). Similar summary cost and diversion results associated with Phases B, C, and D are also shown in the table.

1.4 Executive Summary of Findings

The results of the analysis are summarized in this section. Table 1.1 provides a summary of the four phases of programs that are recommended for Anchorage. Phases A, B, C, and D are identified along the left side of the table. Phase A programs are suggested for immediate implementation; Phase B consists of important programs that improve equity and support the programs in Phase A, but recognizes that SWS and MOA staff may be hard-pressed to simultaneously implement 14 programs well.

The results summarize the annualized costs to the MOA (assuming capital costs are spread over time), as well as the costs that are expected to be picked up by generators or users of the service.¹⁴ The resulting “net” cost to the MOA is shown, as well as the impact that the “net” cost will have on the landfill and transfer station trash tipping fee. The results for each Phase (A, B, C, and D) are summarized at the bottom of the table. The four phases of programs double the MOA’s current 15-17% diversion rate to about 32% or more.

Table 1.1: Estimated Tonnage, Diversion, Annual Costs, Net City Costs, and Impacts on Tipping Fee for Recommended Programs, Program Concepts, and Aggregated Program Phases (A, B, C, and D)

Phase ID	Name	New tons diverted at full operations		Gross cost for program/yr	Cost covered by generator	Net cost to City (after generator contributions)	Net cost to City (enhanced version)	Tip fee increase per ton to cover net city cost	Tip fee increase per ton (enhanced)	Diversion % at full rampup (low)	Enhanced diversion rate
		Total tons diverted									
A 1	Curbside Recycling*	23,100	11,000	\$4,320,000	\$4,320,000	\$0	\$0	\$0.36	\$0.50	3.3%	3.9%
A 2	Pay as you throw (PAYT)	6,300	6,300	\$30,000	\$30,000	\$0	\$0	\$0.20	\$0.29	1.9%	2.3%
A 3	Compost & Dropoff*	22,400	4,400	\$572,430	\$572,430	\$0	\$0	\$0.87	\$1.21	1.3%	1.6%
A 4	Recycling Dropoff	1,500	1,500	\$146,725	\$0	\$146,725	\$205,414	\$0.73	\$1.03	0.4%	0.5%
A 5	Schools	2,738	2,738	\$313,914	\$0	\$313,914	\$439,480	\$1.21	\$1.69	0.8%	1.0%
A 6	Public Outreach	3,341	3,341	\$247,000	\$247,000	\$0	\$0	\$0.65	\$0.92	1.0%	1.2%
B 1	Space for Recycling	2,500	2,500	\$0	\$0	\$0	\$0	\$0.05	\$0.07	0.7%	0.9%
B 2	Procurement	1	1	\$20,000	\$0	\$20,000	\$28,000	\$0.06	\$0.08	0.0%	0.0%
B 3	Public Space Recy	200	200	\$61,284	\$0	\$61,284	\$85,798	\$0.22	\$0.31	0.1%	0.1%
B 4	Increase Transfer Tip Fee	1	1	\$0	\$0	\$0	\$0	\$0.00	\$0.00	0.0%	0.0%
B 5	Tip fee enforcement	1	1	\$20,000	\$0	\$20,000	\$28,000	\$0.06	\$0.08	0.0%	0.0%
B 6	Expand Landfill/Transfer Station Recycling	1,815	1,815	\$69,222	\$0	\$69,222	\$96,911	\$0.56	\$0.79	0.5%	0.7%
B 7	Reuse Area	100	100	\$18,890	\$0	\$18,890	\$26,446	\$0.08	\$0.11	0.0%	0.0%
B 8	E-Waste Ban	35	12	\$17,250	\$17,250	\$0	\$0	\$0.00	\$0.00	0.0%	0.0%
C 1	Tire fee**	3,800	3,800	\$114,000	\$114,000	\$0	\$0	\$0.75	\$1.04	1.1%	1.4%
C 2	Construction & Demolition**	10,000	10,000	\$487,257	\$455,000	\$32,257	\$45,160	\$2.10	\$2.94	3.0%	3.6%
C 3	Business Technical Assistance	2,000	2,000	\$140,000	\$0	\$140,000	\$196,000	\$0.81	\$1.14	0.6%	0.7%
C 4	Business Development	200	200	\$35,000	\$0	\$35,000	\$49,000	\$0.11	\$0.15	0.1%	0.1%
C 5	Military Drop-Offs	450	450	\$73,362	\$73,362	\$0	\$0	\$0.09	\$0.12	0.1%	0.2%
D 1	Military Curbside	2,695	2,695	\$720,000	\$720,000	\$0	\$0	\$0.53	\$0.74	0.8%	1.0%
D 2	Military Trash Fee**	2,500	2,500	\$0	\$0	\$0	\$0	\$0.49	\$0.68	0.7%	0.9%
D 3	Business 3 month Free	40	40	\$7,500	\$22,500	\$7,500	\$10,500	\$0.03	\$0.04	0.0%	0.0%
D 4	Comm'l bounty	9,700	9,700	\$189,150	\$151,563	\$37,588	\$52,623	\$0.68	\$0.96	2.9%	3.5%
D 5	Compact Fluorescent (CFL) diversion	1	1	\$200,000	\$100,000	\$100,000	\$140,000	\$0.30	\$0.42	0.0%	0.0%
	PHASE A	59,379	29,279	\$5,630,069	\$5,169,430	\$460,639	\$644,894	\$4.16	\$5.83	8.7%	10.5%
	PHASE B	4,653	4,630	\$206,647	\$17,250	\$189,397	\$265,155	\$1.03	\$1.45	1.4%	1.7%
	PHASE C	16,450	16,450	\$849,620	\$642,362	\$207,257	\$290,160	\$3.97	\$5.56	4.9%	5.9%
	PHASE D	14,936	14,936	\$1,116,650	\$994,063	\$145,088	\$203,123	\$2.06	\$2.89	4.5%	5.4%
	TOTAL	95,417	65,294	\$7,802,985	\$6,823,105	\$1,002,380	\$1,403,332	\$12.29	\$17.20	19.5%	23.4%

¹⁴ Note that tables in Chapter 4 show the amount that generators are expected to pay per average household or business.

The results show that the six key programs in Phase A are expected to add 13,500 new tons (3.4%) to diversion during ramp up (the curbside program only covers the SWS area initially), at a net annual cost to the MOA of less than \$0.5 million dollars (again, with capital costs spread over time).¹⁵ The average cost per ton to deliver these programs is estimated to be about \$34/ton. The funds to cover these net costs are expected to require an increase in the trash tipping fee of about \$3.46 per ton. Phase B programs add another 2,400 tons to diversion at a cost of less than \$1 on the tipping fee. Each of these programs is described in the report.

One important component of Phase A is the Pay As You Throw (PAYT) program. The following table provides an estimate of indicative PAYT rates under the new program. Given that the SWS-estimated costs for current collection are \$20 without the curbside recycling program, it is important to note that, even with the new recycling program, more than half of households are expected to select a container option that will save them money over current costs.

The results of this work are summarized briefly in the following chapters. Detailed appendices have also been provided below, along with spreadsheets and other supporting information under separate cover.

Table 1.2: Estimated Pay As You Throw (PAYT) Rates with Curbside Costs Embedded

	New Indicative Rates under Pay As You Throw (PAYT) with recycling	Expected Percent of households Selecting that container size.
Base rate / No Service	\$13.05	8%
One can	\$17.40	51%
Two cans	\$31.30	29%
Three cans	\$45.25	10%
Four cans	\$59.15	2%
Five cans	\$73.05	0%
Six Cans	\$86.95	0%
		Average Number of Cans= 1.53
		Average gallons of service used = 49.0

¹⁵ Note that in several cases, we have assumed zero net costs for a program that might possibly be able to deliver excess revenues to the MOA. These programs include: A3, compost site; C1, tire ban and fee; C2, construction and demolition program; and D2, military paying a trash fee. However, if customer reaction is not as favorable to the programs as projected, they could possibly pose a source of revenue risk.

2.0 SUMMARY OF RESULTS OF THE MOA SURVEYS

2.1 Introduction

The project conducted three survey efforts:

- Widely distributed web survey, advertised in the newspaper and on MOA's website. This survey could be answered by either households or businesses
- Statistical survey of businesses (randomly-selected businesses), conducted via telephone
- Statistical survey of households (randomly selected), using postcards that directed households to a web-based survey.

2.1.1 Municipality of Anchorage Web Site Survey

The MOA placed a link to a web based survey on their website and followed it up with aggressive promotion and outreach to attain the input of municipality residents. Over 4,000 residents/businesses responded. A highlight of the results is below:

Residential Web Survey:

- 3,944 residents responded to the web survey
- Over 90% do *not* have curbside recycling service
- The most common barrier to recycling more was *it is inconvenient to bring to the drop off* (57%)
- The most common recycled material is *newspaper* (87% reported recycling it) followed by *aluminum cans* (75%)
- Over 90% of residents responding would support a curbside program
- Nearly 90% would support a PAYT rate structure
- If monthly costs went up by \$2.00, 85% reported they would be very likely to use the program
- If monthly costs went up \$4.00, 70% reported that they would be very likely to use the program

Commercial Web Survey:

- 125 survey respondents were businesses
- Two-thirds of the businesses reporting have a recycling program in place
- Only 22% reported a hauler collected recyclables, the majority of businesses reported that they self-haul their recyclables
- The most common barrier to recycling reported by commercial respondents was *my hauler does not offer the service*
- The material that is most often recycled is *paper/document shredding* (84%) followed by *cardboard* (65%)
- The vast majority, 84%, would like a program related to cardboard and paper recycling
- Over 90% of respondents would support more drop-off centers
- Nearly the same amount, 87%, would support a curbside recycling program
- If monthly costs went up by \$10.00, 72% of businesses reported they would be very likely to use the program

- If monthly costs went up by \$20.00, 53% of businesses reported they would be very likely to use the program

2.1.2 Statistical Household Postcard Survey

To make the collected surveys statistically valid 3,000 postcards were mailed to randomly selected households within the MOA. The following are the results of those surveys:

- There were 84 responses to the 'postcard' survey
- Over 90% do *not* have curbside recycling service
- The most common barrier to recycling more was *it is inconvenient to bring to the drop off* (54%)
- The items that responding households most often recycle are newspaper (90%) and aluminum cans (72%)
- Nearly 90% of respondents would support a curbside recycling program
- Over 70% of respondents reported that they would support a PAYT rate structure
- If monthly costs went up by \$2.00, two-thirds of households reported that they would be very likely to use the program
- If monthly costs went up \$4.00, 49% reported that they would be very likely to use the program

2.1.4 Phone Commercial Survey

SERA researchers, with the help of MACTEC, completed 71 surveys via telephone of randomly selected businesses in MOA. The results of the phone surveys are:

- Over 70% of businesses *do* have a recycling program
- Only 35% of business contract with a hauler for recycling service
- A variety of recycling program models exist for the businesses ranging from an employee who brings the recycling home for her husband to drop off at the recycling center to backhauling all materials in the company's empty cargo ships down to the lower 48 for processing
- Paper/document shredding is the most common recycled material (75%) and cardboard is the second most often recycled material (59%)
- Over 90% of business reported that they would support a curbside recycling program
- The vast majority, 84%, would support a program for enhanced education and outreach for businesses
- If monthly costs went up by \$10.00, 71% of businesses reported they would be very likely to use the program
- If monthly costs went up by \$20.00, 44% of businesses reported they would be very likely to use the program

3.0 RECOMMENDATIONS FOR SOLID WASTE SERVICES CHANGES

3.1 Introduction

Operations and procedures at the landfill and transfer station could be improved to enhance opportunities and convenience for citizens wishing to recycle, and to improve safety and flow at SWS facilities. In cooperation with SWS, we¹⁶ conducted a number of focus groups and interviews with SWS staff to identify system, service, and layout options that might improve operations as well as improve the opportunities for recycling and diversion by MOA residents and businesses. A summary of key recommendations follows. In addition, drawings / schematics of changes to the layout of the transfer station and landfill were provided under separate cover.

3.1.1 Anchorage Regional Landfill Improvement Concepts

Primary Improvement Consideration

1. Improve traffic flow, especially separation of private and commercial/transfer haulers
2. Keep small haulers out of landfill
3. Provide drop-off areas for green waste, reusables, lumber, heavies and oversizes
4. Improve drop-off area for recyclables; continue ability to drop and exit without going through refuse drop area

Concept No. 1:

1. Improve traffic flow
 - Separate private and commercial/transfer haulers at entrance gate. Private haulers have their own incoming lane and cash booth, bypass incoming scale
 - Commercial and transfer haulers maintain existing traffic patterns
 - Private and heavy haulers intersect at exit of small hauler drop-off area- not ideal
 - Private haulers bypass exit scale
2. Keep small haulers out of landfill
 - Policy change
3. Provide drop-off areas for green waste, reusables, lumber, heavies, oversize
 - On left side after passing cash booth
4. Improve drop-off area for recyclables; continue ability to drop and exit without going through refuse drop area
 - New recyclables drop-off area on immediate right after entering facility

Concept No. 2

1. Improve traffic flow
 - Separate private and commercial/transfer haulers at the entrance gate.
 - Commercial and transfer haulers take the far right lane. Existing scale facility is replaced with cash booth for private haulers. Inbound and outbound scales are moved.
 - Commercial and transfer haulers have new traffic patterns

¹⁶ SERA and MACTEC staff conducted these focus groups.

- Private and heavy haulers intersect at exit of facility-better than intersecting on site
2. Keep small haulers out of landfill
 - Policy change
 3. Provide drop-off areas for green waste, reusables, lumber, heavies, oversize
 - On left side after passing cash booth
 4. Improve drop-off area for recyclables; continue ability to drop and exit without going through refuse drop area
 - New recyclables drop-off area on immediate right after entering facility

3.1.2 Transfer Station Improvements

Primary Improvement Considerations:

1. Improve turn radii throughout site
2. Separate HHW drop-off from private and transfer haulers
3. Improve traffic flow- especially separation of private and transfer haulers
4. Provide drop-off areas for green waste, reusables, lumber, aluminum, copper and steel
5. Enforce ban of commercial CD & oversize materials (esp. roofing products)
6. Provide private drop-off area for recyclables; allow users to drop and exit without going through refuse/HHW drop-off area
7. Provide reuse area -- furniture, bicycles, yard & snow equipment. Maybe have contracted repair operation.
8. Provide separate scales for residential waste haulers -- could be unmanned
9. Provide screening of commercial loads for hazardous, oversize, over length, etc.
10. Improve maintenance of facility
11. Improve security, esp. night time
12. Close off push pits when facility is closed

Concept No 1.

1. Improve turn radii throughout site
 - No changes on existing site except for transfer truck exit
2. Separate HHW drop-off from private and transfer haulers
 - Locate new HHW area at facility entrance, provide separate entrance for HHW and recycle users
3. Improve traffic flow -- especially separation of private and transfer haulers
 - Relocate cash booth to new area west of existing cash booth. Locate new cash booth on flat ground.
 - Cash booth in new location could be equipped with scales
 - Exit of private haulers still requires merge with transfer trucks, although steepness of transfer exit ramp could be reduced
4. Provide drop-off areas for green waste, reusables, lumber, aluminum, copper and steel
 - Drop-off areas are near entrance observable by booth personnel
 - Glass, green waste, and wood can be dropped without going through the cash booth
 - Steel and tires can be dropped without going to the refuse drop area
5. Enforce ban of commercial CD & oversize materials (esp. roofing products)
 - Policy change
6. Provide private drop-off area for recyclables; allow users to drop and exit without going through refuse/HHW drop-off area
 - Concept only shows reuse, green waste, glass, steel, etc. recycling, does not provide for paper, cardboard, etc.

7. Provide reuse area -- furniture, bicycles, yard & snow equipment. Maybe have contracted repair operation.
 - Area is indicated on southwest portion of site
8. Provide separate scales for residential waste haulers -- could be unmanned
 - Not shown but could be located off site
9. Provide screening of commercial loads for hazardous, oversize, over length, etc.
 - Policy changes
10. Improve maintenance of facility
 - Heated and unheated new storage areas are shown
 - No shop modifications are shown
11. Improve security, esp. night time
 - Not shown
12. Close off push pits when facility is closed
 - Not shown, provide removable covers that can be picked and set by cherry pickers

Concept No. 2:

1. Improve turn radii throughout site
 - Transfer truck radii not changed except at existing exit
 - Private and commercial improved
2. Separate HHW drop-off from private and transfer haulers
 - HHW in new area separate from private refuse drop off areas
3. Improve traffic flow- especially separation of private and transfer haulers
 - All users are separated from each other
4. Provide drop-off areas for green waste, reusables, lumber, aluminum, copper and steel
 - Recycling and reuse areas are in new area separate from other areas
5. Enforce ban of commercial CD & oversize materials (esp. roofing products)
 - Policy change
6. Provide private drop-off area for recyclables; allow users to drop and exit without going through refuse/HHW drop-off area
 - Recycling and reuse areas are in new area separate from other areas
 - Area could include true recycling facilities
7. Provide reuse area- furniture, bicycles, yard & snow equipment. Maybe have contracted repair operation.
 - Reuse areas are in new area separate from other areas
8. Provide separate scales for residential waste haulers -- could be unmanned
 - Not shown, could be off site
9. Provide screening of commercial loads for hazardous, oversize, over length, etc.
 - Policy change
10. Improve maintenance of facility
 - New storage areas shown
 - No shop modifications are shown
11. Improve security, esp. night time
 - Not shown
12. Close off push pits when facility is closed
 - Not shown, provide removable covers that can be picked and set by cherry pickers

4.0 DIVERSION OPTIONS ANALYSIS

4.1 Introduction and Process

SERA analyzed more than two dozen program options for the MOA, designed to provide opportunities that could fill gaps in availability for MOA residents, businesses, and others (schools, etc.). The list of the options examined follows. We conducted a detailed analysis of the following issues:

- Developed program concepts based on programs in other locales, adapted to MOA situation
- Gathered data on tonnages and costs from other communities and from SERA records
- Applied / adapted the data to MOA's circumstances and modeled the program concepts
- Reviewed the results and developed three Packages of programs – base, enhanced, and high options – which have reformulated into four “phases” of program initiatives, presented in this report.

After we developed the options, we reviewed them with the Mayor and MOA staff, which led to suggestions to move the schools program to the first tier.

We then went to a public meeting, and citizens expressed their feedback on the program options. This feedback is summarized in the appendix. The main feedback was that citizens were interested in **more** recycling than the base proposal, and they were **willing to pay** for the additional service.

A summary of the program phases and the “high level” results associated with these programs is provided below. The appendix contains more detail about the packages, and detailed matrices have been provided in memos to MOA. This chapter provides a summary of the costs and tonnage diversion associated with individual programs and the four “Phases” of recommendations.

4.1.1 Current Opportunities In MOA

MOA residents and businesses have achieved very substantial recycling through its existing, largely drop-off, system. The current diversion opportunities, by topic area, are outlined below.

Residential Recycling:

- Drop-off recycling at Carrs grocery stores, taking newspaper and cans
- Drop-off recycling at the landfill (limited materials)
- Drop-off recycling at Smurfit's facility, including a broad array of materials including cardboard, glass, newspaper, bottles and cans, and other materials
- Drop-off opportunities in Girdwood
- Most important is that all sites include separate containers for each material – no materials are “commingled”

Commercial Recycling:

- Businesses may drop off recycling at the same locations as residential households
- Businesses also have opportunities to get cardboard recycled through their haulers or their own direct efforts

Composting:

- Until recently, households and businesses have been able to bring materials, in a limited way, to a privately operated site near the airport. The disposal fee was lower than the fee charged for trash at the landfill or transfer station. A percentage of the materials delivered were processed, and the operator had a license to produce a soil stabilizer product called Filtrexx, a product for silt

fences and stream bank restoration. The lease on this facility was recently terminated by the MOA, and clean-up of the materials on-site is planned.

- There are no other opportunities for drop-offs, or for grinding or processing of compost materials, and the materials are not separated, but are deposited at the landfill with ordinary garbage.

Recycling Facilities:

Smurfit operates a materials recovery facility locally that hauls materials and then bales and ships to Smurfit's operations in the Seattle / Portland area for marketing, using the ALPAR shipping discount / containers. Materials that stay local include the following:

- glass has been used for railroad traction applications and sandblasting uses, but these uses may be phasing out. Newer markets include decorative tiles
- newspaper goes to Thermo-Kool of Alaska (for making insulation), and
- steel goes to AMR (and sold to market).

Smurfit notes that they take care to make sure local needs are met to the degree possible, even if that means a little less revenue.

Other important recycling facilities include:

- Alaska Metal Recycling, a long-time metal recycler;
- Total Reclaim for recycling electronic waste, and
- Battery Specialists of Alaska, addressing batteries.

ALPAR and other Non-profits:

ALPAR, a non-profit with a board made up of the shippers and many of the major industries and businesses that ship quantities of goods into Anchorage, has a unique arrangement that allows it to offer dramatically discounted vans for shipping recyclables to the Seattle or other markets. These empty backhauls are donated by the shippers, and ALPAR organizes the shipping for efficiency and to minimize wait times, assure full vans, etc. Without this critical discounted shipping it is doubtful there would be significant recycling of materials beyond metals or other high value, dense materials in Anchorage. ALPAR charges varying rates based on the value of the material (generally all centralized through Smurfit's facility), and operates educational and other programs through this (presumably fairly small) "margin." ALPAR has a maximum number of vans it can offer; Anchorage recycling is fairly strong, and it is getting demand from the Valley (and possibly Fairbanks). At the end of the year, when it runs out of vans (which has happened in the last year or two), ALPAR charges full freight for recyclables, potentially causing some havoc with end of year recycling.

Other Players – Haulers, facilities, and the Military:

The main hauler is Alaska Waste, which provides garbage collection to households in the 80% of the MOA that is not served by SWS. AW also provides service to commercial customers. It is a large hauler that has interest in expanding its services (potentially taking over services and facilities currently operated by MOA) and has made proposals to that effect to the MOA. It owns property associated with and adjacent to the Smurfit MRF.

There are several smaller haulers (McDonald Waste, Ramsey and Sons, Freedom Refuse, and others) providing both broad and specialized services, as well as operators of a small specialized C&D facility outside of town. Several have shown strong interest in providing recycling opportunities, expanding their services, and working with the MOA assuming a level playing field will be established.

The military bases do not offer recycling. Fort Richardson gets free disposal of solid waste, so there is literally no incentive to reduce disposal. However, the base has undertaken efforts to divert materials of value, getting special permission to sell (and thus divert) spent military brass

from firing ranges. Elmendorf Air Force Base used to have a recycling program, but it was suspended due to budget cuts. Both bases show interest in working with the MOA to get greater access to recycling, (especially if taxes or other funding methods mean they would be contributing to the programs but not benefiting). However, there is also genuine interest in recycling by base households and by military personnel and the staff assigned to the project's advisory committee, and if the business case can be made, it will likely happen.

Incentives:

- There are limited-to-no rate incentives to encourage recycling (PAYT may be offered by the hauler Alaska Waste, but it is not widely advertised, its rate structure doesn't encourage participation and is almost certainly rarely subscribed because the rate incentive is relatively small).
- Commercial businesses save money if they subscribe to smaller, less frequent collections, so they are provided with a fiscal incentive to divert materials.

Limitations:

- **At the Smurfit Recycling Center (Materials Recovery Facility / MRF):** Space, land, and processing (equipment and staffing) limitations exist at the existing Smurfit Recycling Center. There is currently no sorting capability at the site. Anything that might be collected through any commingled curbside programs would be baled from a separate pile (stored somewhere, but not much space on-site) and sent down to Seattle / Portland to be resorted and baled. Glass would need to be excluded. They currently use almost all their space for the 2000 tons per month (TPM) they are processing now; there may be potential to expand across the street or elsewhere.
- **At ALPAR (Alaskans for Litter Prevention and Recycling):** This is a critical link to keeping materials marketable, but it has reached its current capacity. There is no current mechanism to expand, and there are beginning to be other players and cities that would like to claim some of the capacity. ALPAR runs out of its allotment of discounted / free vans before the end of the year sometimes, and charges full freight for any vans that come in after that date. Expanding the number of allowed vans may cause the shipping companies to begin to believe that this is a missed business opportunity, with fears that it may jeopardize the entire subsidy arrangement.
- **At Landfill:** The landfill is not currently very household or business-friendly. The drop-off recycling containers often overflow and are not monitored well and have not been a priority for SWS staff to address (or monitor enough to make a call to have them serviced). Positive and proactive cooperation with the recycling agencies seems lacking.
- **At Transfer Station:** There are not currently opportunities for dropping off separated recyclables at the transfer station, which would provide a convenient opportunity for recycling for a broader list of materials for households and businesses located near the facility.
- **At Cans and other Drop-offs:** Space is an issue, and only a limited number of materials are collected.
- **At Composting site:** The existing site lost its lease; to continue to offer composting options a new operation, location, and management would be required. MOA is looking to operate a composting operation at the existing facility this summer. Future plans are undetermined, but may include contractor operations and another location.
- **Commercial recycling:** Space and cost are the issues, and (except for the largest firms) the programs that currently exist rely on dedicated staff donating their time and effort to bring materials to the existing drop-off sites.
- **SWS Coverage:** SWS has traditionally emphasized excellent service in garbage, but has not paid strong attention to diversion opportunities.
- **Regulatory structure:** The regulatory structure does not give the MOA much control except over the SWS area. Recycling is not specifically encouraged by the regulatory structure. The MOA may have to undertake special efforts to gain greater authority if it desires.

Opportunities:

- Anchorage has reached amazingly high recycling levels given the volunteer, no incentive, no curbside / drop-off only nature of the recycling opportunities in town.
- The Mayor and administration has dedicated resources, staff, and actions toward recycling, sustainability, and change.
- The MOA sustainability staff have dedicated time and effort to making recycling happen in municipal buildings.
- SWS has been reorganized to streamline and better facilitate changes in traditional services, including moving to a greater emphasis on recycling and diversion.
- The local players are very interested in keeping recycling going.
- Smurfit is a good actor / player, interested in keeping recycling going
- ALPAR and Green Star and other recycling groups are motivated and undertake diversified and effective recycling activities supporting both the residential and commercial sectors
- The haulers have shown some initiative in recycling but need a more encouraging (but level) playing field, including facilities. The largest hauler has made proposals toward recycling, provided it makes strong business sense.
- The lease for the existing composting facility expired, opening up expanded opportunities
- The glass plant sold, with ideas toward expanded markets
- The MOA has a recycling surcharge on the tip fee that helps fund grants and other recycling-related activities.
- Employees are dedicated enough to donate their time to bring business recyclables to the drop-off facilities. Greater convenience may increase this effort.
- Tremendous number of households and businesses filled out surveys identifying interest in and willingness to pay for recycling / green options and services.
- MOA is the largest city in the US without a curbside recycling program.

Review of Unsolicited Proposal:

One additional activity associated with the project was to review a proposal submitted to the MOA from Alaska Waste. The letter and associated overheads, suggested that Alaska Waste was interested in taking responsibility for new and enhanced services in solid waste management in Anchorage. Specific services included:

1. Operating a construction and demolition (C&D) facility. Alaska waste asks for a ban precluding C&D waste from being accepted at the Transfer Station, assuring the C&D tonnage would be directed to the site.
2. Developing a state of the art compost facility. This facility would accept food and yard waste, with Alaska waste receiving a payment of \$3 per ton of landfilled waste (on the order of \$1.2 million/year). Alaska Waste would also be willing to provide seasonal curbside collection of yard waste at no cost (presumably as part of 3 and 5 below). The proposal was not clear on whether it expected to receive a donation or lease on land owned by the MOA.
3. Offering curbside recycling throughout MOA in the 2/3 of areas with appropriate housing densities. The proposal did not suggest that the costs of the program would be embedded in the trash rates.
4. Acquiring and operating a glass plant, after negotiation of a new agreement with the railroad, one of the largest users of the material. Clean-up of the site would be negotiated between Alaska Waste and the MOA.
5. Providing refuse service in the SWS area, taking over from SWS with an evergreen contract arrangement – a contract that in principle must be agreed regularly, but is always continued automatically.

The conceptual services proposed in elements 1-4 represent some of the major service options that would be considered under any examination of program and integrated plan for solid waste. Several objectives of the community could be met from some of these options under this scenario. However, some issues arose in considering the proposal. It is clear that Alaska Waste represents a major and

important provider of service in the MOA area. It has been a responsible and high quality provider of services. However, it is important for the MOA to consider whether similar options can be provided in ways that retain clear roles for the MOA in solid waste management, respect the existing competitive environment, and allow MOA to procure services under competitive bidding situations. In addition, SWS was generally unwilling to relinquish its role in providing solid waste service in the SWS area.

4.2 Gap and Opportunities Analysis

The information from the stakeholder interviews, SWS services review and data provided to the consultants allowed us to conduct a gap and opportunities analysis. The results are summarized in the following Table. This analysis was used in the program and policy development work.

Table 4.1 Gap Analysis Matrix for MOA

	Facility/ Program	Pre- sence	Owner -ship	Oper- ation	Description	Barriers and Incentives	Opportunities
Anchorage Regional Landfill	Facility	Yes	MOA	Private	State of the art sanitary landfill with long estimated lifespan (2043)	With a long lifespan and ample room for growth in the State there is little incentive to reduce waste.	Improved traffic flow and expanded recyclable and green waste drop-offs
Central Transfer Station	Facility	Yes	MOA	MOA		Limited space, materials and hours. Traffic on weekends, contamination and mess issues in drop-offs areas	Expanded materials. The city has purchased more space and could design for more traffic flow.
Recycling drop-offs	Facility	Yes	MOA and private	MOA and private	17 drop-offs located throughout MOA mostly private run and operated	Inconvenient, often full and can not accept materials. Limited materials accepted and limited knowledge of the programs	Large opportunity to increase materials accepted and expand sites
Household Hazardous waste (HHW) collection facility	Facility	Yes	MOA	MOA	Collected at Landfill (LF) and Transfer Station (T/S)	Traffic and transport	There is an opportunity to increase HHW collection for outlying areas. Possible special waste days
Organics material composting facility	Facility	No	No	No	There was a private site that has since been closed and now owned by the city. MOA plans on reopening the site	Cost, lack of available programs, geographic isolation	Large opportunity to compost
Education/outreach	Program	Yes	MOA	MOA	A large component of the MOA solid waste plan	Cost of materials	There is an opportunity to increase education and outreach. Especially among commercial, multifamily and English as second language households

	Facility/ Program	Pre- sence	Owner -ship	Oper- ation	Description	Barriers and Incentives	Opportunities
Recycling Center / Material Recovery Facility (MRF)	Facility	Yes	Private	Private	A sorting and baling facility only. Materials are shipped to the lower 48.	Geographic isolation, lack of end users with the exception of glass. The cost of transportation. Capital investment costs and siting	There are opportunities to enhance the limited MRF operations
Waste hauling	Program	Yes	MOA and private	MOA and private	MOA collects from ~20% of community the rest are handled by private haulers	Climate and geography are physical barriers to collection.	PAYT to increase waste reduction. Possibilities to increase collection efficiencies.
Electronic waste (E-waste)	Program/ Facility	Yes	Private and MOA	MOA	Drop offs at landfill and transfer station (T/S)	Small but successful program- transportation is a barrier	There is a possibility of increased County participation. Examine county/private partnerships, special events
Single Family Curbside recycling	Program	Limited	MOA and private	MOA and private	Multiple haulers provide some limited options for service for an added fee	Little to no economic incentive exists for residential recycling. Voluntary program only	Very large opportunity. Strong residential support for Curbside (C/S) programs and there is a willingness to pay. PAYT, embedded recycling rates are important.
Multi Family Curbside recycling	Program	No			Drop-offs only	A traditionally difficult sector to address due to lack of individual incentives for residents and anonymity issues.	There is an opportunity for increased education/outreach. Also ordinances requiring space to recycle. Added Multifamily drop-offs
Commercial Recycling	Program	Limited	Private	Private	Some hauler programs exist. Many companies are either self hauling to drop-offs and some larger companies are back-hauling to the lower 48	Cost, lack of available programs, geographic isolation	There is significant room to grow the participants. There is a willingness to pay among business customers.
Backhauling Materials	Program	Yes	Private Non-profit	Private Non-profit	Using empty ships dropping of new materials to MOA to bring recyclables to the lower 48	Cost, planning and organization. However ALPAR has worked hard to overcome these barriers and has developed an innovative, successful program	Continue and improve existing program where possible
Construction and Demolition (C&D) (grinding/separation)	Program	No				Lack of economic incentives for C&D programs. The tip fees and high costs for separating/transporting materials are a barrier.	Yes, possibly large. The muni is growing and there is a large amount of C&D materials being generated and landfilled.

	Facility/ Program	Pre- sence	Owner -ship	Oper- ation	Description	Barriers and Incentives	Opportunities
Construction and Demolition	Facility					Lack of economic incentives for C&D programs. The current tip fees and high costs for separating materials are a barrier.	Yes, possibly large. The muni is growing and there is a large amount of C&D materials being generated and landfilled.
Landfill gas extraction	Program/ Facility	No					Research into the feasibility of this program is not available
PAYT	Program/ Facility	No			Volume based rate charging for weekly waste collection to incentivize recycling and waste diversion		Large opportunity- research shows diversion increases of ~17% from PAYT
Single Stream	Program/ Facility	No			Collection of all recyclable materials in one container	Extra sorting, costs of carts and collection. Glass may be an issue and it might be wise to collect glass separately for local, reasonable markets	In general, more material can be collected via single stream and it increases resident satisfaction and participation. Materials must send to Portland/Seattle which are set up to handle commingled streams.
Food waste collection	Program/ Facility	No			Compost facility is near airport and birds would be an issue if food waste was collected. If food waste is added the compost facility might have to move.		Food waste is often one of the largest components in the residential waste stream
Yard Waste Collection	Program	No			Private haulers collect residential yard waste	Cost to collect, processing, participation and short growing season	Possibility to divert a large portion of the waste stream
Bans	Program/ Facility	No			Banning certain materials from disposal at the curb and/or landfill	Politics and a community aversion toward bans	
Mandatory collection (in areas outside SWS)	Program	No			Require residents living outside of SWS to contract for weekly collection of waste/rubbish	Politics and local ethos	Opportunity for haulers to increase customer base. If PAYT and recycling are also mandated there is a large opportunity to increase diversion.

The successes of the Municipality of Anchorage's solid waste management can be observed by examining the gap analysis. The landfill, transfer station and drop-off areas, household hazardous waste facility, and education programs have all been implemented and operated to significant levels of success. There are however, a number of opportunities uncovered during the analysis. The summary of the strengths and weaknesses (gaps) of the MOA solid waste management system are displayed in the table below.

Table 4.2: Strengths and Opportunities Summary for MOA Waste Management System

Strengths	Opportunities
<ul style="list-style-type: none"> • State-of-the-art landfill operations • Household Hazardous Waste (HHW) drop-off and collection sites • Education on-site at the landfill, online, and for residential/schools • Strong and successful public/private partnerships for backhauling materials- ALPAR has developed an innovative and successful program to help make recycling possible in a geographically isolated area • High level of cooperation and solid relationship between County and actively involved haulers 	<ul style="list-style-type: none"> • Consider Pay As You Throw (PAYT) programs to create/increase diversion and reduction incentives for SF residents • Consider requiring haulers to provide curbside recycling and embed rates in PAYT trash rates- there is a large desire for curbside recycling among residents and a willingness to pay for the program • Consider enhanced public/private partnerships in Electronics (E-waste) and special events • Consider limited commercial recycling programs- there is a noted willingness-to-pay among commercial customers. • Consider increased education to raise diversion/source reduction and continued • Consider construction and demolition programs or and/or facilities- there is a large amount of Construction and Demolition (C&D) generation that is being landfilled • Consider development and access to compost area • Consider expanded/more drop-off areas for recycling-especially in rural areas with special attention to limiting contamination and illegal dumping

4.3 Program Concepts Modeled

The project was responsible for developing and modeling program concepts. The consultants discussed several dozen strategies with the advisory committee, soliciting feedback on the suitability of various strategies for Anchorage. After further analysis, the consultants identified two dozen strategies with proven track records¹⁷ that had the potential to fill service gaps, increase diversion, or achieve other solid waste management or Municipality goals.

The program name and description for programs, sorted into four Phases are provided below. The high priority Phase A options are developed most fully (and implementation steps are summarized in the Appendix), and are targeted for early implementation in the MOA. For the other program concepts, cost and tonnage estimates are developed and are included as future options for the Municipality. The Phase A recommendations are big bang, highly visible, energizing program elements of the MOA’s new recycling initiative. The recommendation is to undertake the options in Phase A and Phase B as soon as possible. The other phases are important, but perhaps less critical and, in some cases, less easy to implement than many of the options in Phases A and B. Given limited staff time for program development, and the negotiations required for some of the Phase C and D programs, they might best be examined and developed after the first two phases are “up and running.”

4.3.1 Phase “A” Program Concepts and Descriptions

A1. Curbside Recycling:

Curbside recycling was strongly desired by residents, as represented by the citizen responses in the project’s survey work; in addition, it represents a goal for service improvement for MOA. As noted elsewhere in this report, Anchorage is the largest city in the US without a curbside program.

¹⁷ For instance, despite the fairly significant number of multi-family households in MOA, there are few really successful multifamily recycling program models. Skumatz Economic Research Associates, Inc. MOA Solid Waste Integrated Plan - Draft 18
 762 Eldorado Drive, Superior, CO 80027
 Phone: 303/494-1178 email: Skumatz@serainc.com

- The recommended curbside recycling program is envisioned as follows. In this option, curbside recycling is provided for single family, duplex through 6-plex homes. Materials to be collected include newspaper, cardboard, mixed paper, aluminum cans, bi-metal / tin cans, #1 and #2 plastic. Collection is provided as every other week, single stream, starting in the SWS area, with glass excluded from curbside (continued collection of glass at drop-offs to supply local market needs). During Phase I, SWS will phase in service starting in summer or fall 2008, with new rates as provided elsewhere in this report. While Phase A covers the SWS area, expansion of the recycling program beyond the SWS area in the next phase is more complicated, as service is not currently provided by MOA / SWS. The City has two preferred options to achieve this objective: 1) As a unified home rule city, Anchorage may establish “service districts” in which service that is significantly different from that currently available would be arranged. The MOA would issue RFPs for service provision within geographic sub-areas of the non-SWS area of the City. Haulers could bid on providing combined PAYT trash service with recycling, with contracts overseen by the MOA – and the arrangement under a City managed system would usually establish city-wide uniform / “postage stamp” rates for the new combined service. Option 2 would involve negotiating with the primary hauler and potentially with the minority haulers providing service in the area to expand service to include curbside recycling, with fees embedded in the (PAYT, see below) trash rates. SWS / MOA will be able to garner a share of revenues to oversee the contracts and recover other costs.
- The existing Smurfit MRF will be used, with the commingled materials containerized and sent to Portland or Seattle for sorting, processing and marketing, using Smurfit’s recently expanded agreement with ALPAR for shipping. Newspaper quantities sufficient to support the local Thermo-Kool needs are assumed to be available from the combination of drop-off sites and other sources. Significant changes to the MRF (capital or upgrades) will not be implemented until the tons merit the change. Some additional storage area or sorting space (possibly paved and/or covered areas) may be needed, but, to the extent possible, will be accommodated at the existing site. The City and Smurfit will monitor tons, and if significant changes are needed, the parties will discuss options.¹⁸

A2. PAYT:

Pay as you Throw (PAYT) residential rate incentives represent a trash rate system in which residents pay more for higher volumes of garbage service. PAYT is in place in more than 7,000¹⁹ communities nationwide, and statistical research shows the programs lead to diversion of, on average, 17% (by weight)²⁰ of the residential tonnage that would otherwise have been landfilled.

- The PAYT program and the recommended recycling program discussed above both assume that the costs of recycling service are embedded in the trash fees (phased in for SWS area 1st; then MOA-wide). PAYT will be rolled out along with the new curbside recycling program, and they are very complementary. The curbside recycling program provides a productive place for materials to be diverted from the landfill, and the PAYT rates provide an incentive for the households to use, and continue to use the recycling program (households are reminded to recycle every time they receive a bill). The PAYT system is based on automated wheelie can-based rates, with service available in 32 gallon, 64 gallon, and 96-gallon container sizes, and weekly collection. The rate design recommended in this report represents a balance between strong incentives for diversion (leading to greater price differentials between can service levels) and recognition that the largest cost of providing trash service is getting the truck to the door (arguing for lower price

¹⁸ For example, the City may work in partnership with Smurfit, assisting in site expansions or other co-development. Alternatively, the city may wish to develop a MRF and competitively bid out for MRF operations. Some of these options are discussed later in this report.

¹⁹ Skumatz, Lisa A., Ph.D. and David J. Freeman, “2006 PAYT Update”, Skumatz Economic Research Associates, Inc. Superior, CO, December 2006.

²⁰ Skumatz, Lisa A., Ph.D. and David J. Freeman, “2006 PAYT Update”, Skumatz Economic Research Associates, Inc. Superior, CO, December 2006.

differentials). Statistical research suggests that differentials of about 80%²¹ for double the volume of trash service “flattens” rates somewhat, but provides a similar recycling diversion level as rates that are “double” for double the service.

- Rollout in the SWS area is straightforward (requiring multiple sizes of containers and new rate computations – included in this report. Implementation steps are included in the Appendix). Implementation beyond SWS is more complex. The MOA cannot directly assert rates authority in non-SWS area. The City should undertake two actions: 1) work with / appeal to the major hauler to request new PAYT rates, recognizing that this will incur rate preparation and filing costs on the hauler’s part, and 2) work with the RCA to reconfirm the RCA’s commitment to developing / approving rates and policies that encourage recycling.

A3. Composting Site and Incentive Tip Fees at Drop-sites for Compostables:

Yard waste / green waste compostables represent a significant fraction of the waste stream, especially during MOA’s growing season from about May to October. Yard waste is generated separately from standard trash, making it easy to divert in a separate, clean stream. After curbside recycling and PAYT, a compost diversion option highly requested by residents, and residents have come to expect options for dealing with compost since a facility was in operation in MOA for about 15 years by two successive operators. The latest 10 year lease period expired October 2007.

- The program concept modeled included 1) compost facility at the site of the former facility, 2) drop boxes at the transfer station and the landfill for clean yard waste and clean wood waste, with a tip fee that is 30-50% discounted from the tip fee for trash. The program was modeled assuming a 40% discount, a figure that is about the average discount offered in other communities,²² and represents a discount significant enough to encourage separation and diversion of yard waste.²³ For efficiency’s sake at the transfer station and landfill, we recommend establishing a rate for a residential “car load” and a “pickup load” that will not require weighing these vehicles (preferably, if they do not have a business logo on the vehicle). The option is modeled assuming that the SWS would own the facility and contract for services for its operation, using an RFP process.²⁴

A4. Expanding Recycling Drop-offs:

There were several “gaps” identified in MOA recycling opportunities. To provide recycling services beyond the core downtown area and distribute the benefits of the new recycling push, the consultants recommended developing 2-3 new / enhanced drop-off areas. MOA staff identified the early priority sites as East Side and Huffman in South Anchorage. In the future, additional facilities – potentially enhanced or new facilities at Girdwood / Eagle River / Chugiak and possibly a horse manure collection site – will be considered. The facilities are designed to provide drop-off collection access to residents (and small businesses) for a range of materials including: cardboard, newspaper, mixed paper, glass, #1 plastic, #2 plastic, aluminum cans, and bi-metal / tin cans. Glass is not included for these outlying sites; glass drop-offs are available elsewhere with shorter hauling distances. Hauling will be provided by Smurfit as part of an extension of the ALPAR agreement.

²¹ Skumatz, Lisa A., Ph.D. and David J. Freeman, “2006 PAYT Update”, Skumatz Economic Research Associates, Inc. Superior, CO, December 2006.

²² The project consultants reviewed SERA’s in-house database of data from more than 700 US communities. It found that a significant number of communities offer drop-off of yard waste for free. However, for those communities charging for both landfilling and for composting, the majority of communities provided a 30-50% discount, with the average and median both around 40%.

²³ SERA estimates that the per-ton operating costs (including annualized capital expenses) for the compost site should support a discount of a similar amount compared to the landfill and transfer station trash tipping fees. These issues would be further discussed when compost operator proposals are received and negotiated. Differences in price between the landfill / transfer station vs. the compost site may be tolerable (as long as both provide a significant incentive) because of differences in hauling costs and other differences.

²⁴ Again, depending on incentives and pricing, SWS may be able to recover some revenues from operation of the site.

A5. School Recycling Program:

Schools face very tight budgets. Establishing a recycling program at the elementary, middle, high charter, and alternative schools in Anchorage can help the schools reduce trash bills, and can provide hands-on, consciousness-raising education to students – the next generation of recyclers in Anchorage.

- Based on research on successful school models elsewhere, the program is designed to involve both student and custodian labor. Under this program, each classroom in Anchorage School District will be provided with one blue recycling wastebasket suitable for single stream materials from the classroom, up to five larger common-area collection containers, one to two rolling collection carts to aggregate materials, and the use of a recycling dumpster for each school.²⁵ Students are responsible for depositing the materials from the blue classroom wastebasket into a wheelie bin. Custodian staff then take the wheelie bins and deposit them into the (relatively tall) dumpster. The dumpsters are then provided as part of the recycling (and trash) service from Alaska Waste. The program's design leverages the "sweat equity" of student labor to help minimize the impact on paid custodial staff.
- MOA is assumed to provide the various recycling containers except the dumpsters unless the school is in the SWS collection area, and MOA works with school district to help maintain affordable service, identifying specialized vendors, or securing service for all schools or similar.
- The program assumes some associated outreach to students through brochures and program training; a curriculum module is also provided at some schools, but has not been included in the budget in these recommendations.²⁶

A6. Public Outreach on Recycling:

Public education has been shown to be a key element of diversion programs.²⁷ Beautiful drop-off sites can be a failure if the public education campaign doesn't advertise its location and use. There are two reasons to include MOA-wide public education as a key element in the Phase A recommendations: 1) the new programs and services (including selection of PAYT containers) will require explanation to ensure appropriate use and achieve the diversion intended, and 2) research indicates that education expands recycling diversion, even under an existing level of service option. Separate outreach and/or mailing pieces will be needed for SWS area vs. non-SWS Areas. The SWS materials will address the wide range of programs plus PAYT and curbside recycling; the broader materials will need to omit PAYT and curbside recycling, but also include drop-offs, and other initiatives.

- The MOA, potentially with the assistance of ALPAR, Green Star, potentially Alaska Waste or others implements a MOA-wide education push, focusing on the residential sector. The message should focus on educating on the recycling and composting opportunities, the PAYT program, and how the programs and rates will work with and for the residents. Implement public education program, using a multi-pronged approach, including brochures, newspaper articles, web site text, hotline phone system, laminated "answer" sheets for council and customer service staff, handouts at city events, and similar outreach. Education addresses rates, enforcement, extra fees, one free switch within the first year and \$15 thereafter, and other key information. A package for new move-in household should also be prepared. Targeted mailer outreach will also be needed to get households to select a container size; to minimize work for SWS, households should only be asked to

²⁵ It is assumed that Alaska Waste will provide the dumpsters at the school, so no additional programmatic capital costs are assumed.

²⁶ There is a large number of school curricula available for use in different grades. A web search finds many that may be used and adapted for Anchorage. MOA may wish to consider working with the School District to incorporate a module in various grades.

²⁷ Skumatz, Lisa A., and John Green, "Measuring Recycling Education Impacts...", prepared for Iowa DNR by Skumatz Economic Research Associates, Inc., Superior, CO., 2001.

respond if they do NOT want the most common can size expected under the new subscriptions (see PAYT rates section below).²⁸

4.3.2 Phase “B” Program Concepts / Descriptions

Phase B recommendations are also highly visible, relatively easy-to-implement programs and should be undertaken as quickly as SWS and MOA staff can do so. Several are simple to implement and very important (space for recycling ordinance); others are important because they represent operational improvements or operational corollaries to the programs in introduced in Phase A.

B1. Space for Recycling Ordinance:

Businesses generate 40-60% of the solid waste in most communities. The most common excuse for why businesses aren’t recycling is that they lack space for recycling containers. If the MOA passes an ordinance requiring equal space for recycling as MSW in all new commercial (and potentially multifamily) construction and significant remodels, this limitation can be avoided in the future.²⁹ The ordinance can be enforced at the plan submittal and inspection phases, and no occupancy permit should be issued unless space is provided. The implementation of this program is straightforward: the MOA Assembly passes an ordinance, and the requirements are integrated into plan review process. The modeling work assumed no significant increase in staff time associated with this program recommendation.

B2. Procurement Policies:

Procurement guidelines in most cities include unintentional and unnecessary barriers to the purchasing of recycled-content or recyclable products. For example, some procurement guidelines require copy paper that is whiter or brighter than most common recycled content brands, and the brightness has little or no effect on the functionality of the paper. Procurement of construction contracts may not give credit for use of recycled content materials, or re-use of materials on-site, or may not consider life-cycle costing of the materials used.

- This strategy updates the MOA procurement program, encouraging use of recycled content (and recyclable) products in MOA contracts and supplies for all departments (including transportation and public works). To implement the program, SWS staff (or RFP / consultant) reviews procurement guidelines in detail – and works closely with procurement department hands-on- to remove barriers to recycled products AND to add recycled suppliers to bidders lists for all feasible products. Also works to put preferences for recycled content or extra points for recycled / green practices in City supply and service and construction project contracts. Examples of successful procurement guidelines can be obtained from Seattle Public Utilities, Alameda County StopWaste, Portland Metro, and other industry leaders. These initiatives would be incorporated into the City budget.³⁰

B3. Municipal/Public Space Recycling:

Adding visible, high-quality recycling opportunities in public spaces will better reflect Anchorage’s increasing focus on recycling and allows the Municipality to “walk its walk.” This program introduces

²⁸ The costs and tonnage recovered from outreach are based on research in Skumatz, Lisa A., and John Green, “Measuring Recycling Outreach...”, Skumatz Economic Research Associates, Inc. Superior, CO, 2001.

²⁹ Some cities have ordinances specifying how much trash space there must be based on the number of projected occupants. In this case, the ordinance may be specified as “equal space” for recycling above and beyond these requirements. In communities with less specificity in their trash requirements, many communities assign volume per employee or other formulae in setting up requirements. In this case, the ordinance would need to specify trash space and then equal recycling space or other proportions.

³⁰ The City budget costs are added assuming it will take staff time to review and change the procurement guidelines and specifications and bidders lists. It is not assumed that recycled content products will necessarily be more expensive, and so on-going costs may not be necessary. However, note that some communities modify the purchasing procedures so that even if recycled content products are 10% more expensive, they are assumed the “low bid”. MOA may want to consider such a policy, but there will be some longer term budget costs associated in that case.

expanded municipal building and public space recycling, expanding separation opportunities at all municipal buildings, in public parks, and at the airport. The program will involve introducing deskside containers in municipal offices, multiple commodity recycling containers in common areas of municipal buildings and at the airport, and outdoor recycling containers in parks and event venues. To implement the program, City staff will work with the Port Authority (for the airport), parks, others and issues RFB/RFP for recycling containers and RFP for collection contract. The on-going servicing of containers is assumed to be funded through individual budgets.

B4. Higher Tip Fees at Transfer Station:

Congestion at the transfer station is an issue. Higher pricing at transfer station than landfill will help direct traffic and tons toward the landfill, reducing congestion and traffic at the transfer station. This helps address safety issues, and may allow better traffic flow and better use of the recycling facilities to be provided both at the landfill and transfer station. No additional recycling tons are estimated, and the costs are part of the computation of per-ton tipping fees from all tons delivered for disposal. No additional recycling tons are modeled or assigned to this strategy.

B5. Enforcement of Incentives and Tip Fees:

Enforcement of incentive-based fees and bans at the landfill and transfer station helps assure smooth operation and equitable treatment of those disposing of materials at SWS facilities. It is assumed that a portion of a staff person's time is assigned each day at each facility to conduct spot checks of loads, with a frequency of a cursory inspection of at least every 40th load deposited at the facility. These costs are added into the budget for SWS operations, and embedded in the computations of tip fee increases in this report. No additional recycling tons are modeled or assigned to this strategy.

B6. Enhanced Landfill / Transfer Station Recycling:

The recycling containers at the transfer station and landfill are much-used, and frequently overflowing. To better encourage use of these facilities, the recommendation is that, since SWS staff are constantly present at the facilities, SWS staff should take on responsibility for monitoring and servicing these containers. In addition, we recommend improving the diversion at the facilities by adding drop-off bins for cardboard at both facilities. Implementing this recommendation will take staff time for monitoring and tidying, and staff and truck time to empty the containers. SWS staff can haul the materials to the MRF, or a contract can be issued. This recommended program is similar to the additional duties from the new drop-off yard waste containers at both sites. Tonnage should be reported regularly. Costs are estimated assuming part time staff at both facilities, and hourly costs for truck and manpower to empty the containers. The costs are built into the revised tip fee estimated in this report.

B7. Reuse Area:

Many completely useable goods are disposed every day into the landfill, simply because of convenience. The highest rung on the waste management hierarchy – above recycling – is reuse. This recommendation establishes a simple “reuse area” at the landfill with walled off area and a web cam that residents can log into to see what materials may be available in “real time.” Households and businesses may drop useable materials in the area, and “shop” for materials left by others. SWS staff will need to monitor the site to clean out the materials on a regular schedule, perhaps cleaning the area out on a weekly basis or when space limitations requires. This simple version of a reuse area is the least expensive, least complex option – avoiding the overhead associated with a more formal staffed materials exchange, or the overhead associated with an information / electronic list for materials exchange on the MOA web site (although both these options are common in other communities, and could be implemented in MOA). To set up the site, SWS establishes area at landfill and possibly transfer station for setting aside items for limited time. SWS staff stop by periodically to maintain / clean area. No significant costs (or significant tons) are assumed for this option.

B8. E-waste Ban and Associated Collection Events:

Electronics add toxics to the landfill, and are generated separately from other waste, making it easy to keep this stream separated and “clean.” Considerable attention is focusing on this issue at the household and business level.³¹ An e-waste ban, banning disposal of electronics as part of MSW is recommended. The program assumes the MOA (potentially with partners) will hold periodic collection events with small fees for appropriate disposal of components. The recommendation requires drafting and passage of an ordinance in the Assembly to ban E-waste from disposal or placing it out for collection. While mostly self-supporting (through fees), some grants or subsidy from the tipping fee may be needed to kick off this program. No significant recycling tons are modeled or assigned to this strategy.

4.3.3 Phase “C” Program Concepts / Descriptions

Phase C programs represent initiatives that can be implemented at a later time, after Phase A and B programs are “up and running.”

C1. Tire Ban/Fee:

A ban on disposal or collection of tires as part of MSW is recommended. The recommendation assumes that tires may be brought to landfill or special site for a per-tire fee, and tires are shredded at the landfill; potentially used as landfill construction material and alternative daily cover. The requirements to implement this program are to pass an ordinance banning tires and establishing fines. To enforce the ordinance, SWS staff must conduct periodic load checks (which is covered in a previous recommendation) to inspect for significant violations, and assess fines. The funding for this initiative is through the per-tire fee assessed at the landfill and transfer station (and any associated fines revenues) or even better, at the point of purchase to reduce incentives for illegal dumping.³²

C2. C&D Tip Fee Discounts:

Construction and demolition debris (C&D) is a very sizeable portion of the materials disposed at landfills, and it often contains valuable and recoverable material (metals, etc.). In addition, it is bulky waste that takes up proportionately more volume than traditional trash. A small rate discount at the landfill (and possibly the transfer station) to encourage generators to keep these materials separate may provide an opportunity for basic sorting of valued streams, grinding of appropriate materials, and densification of materials to extend landfill lifetime. This may involve establishing a separate C&D drop area at the landfill (or identification of another site). A second phase of the program may involve an education campaign to encourage builders to use two dumpsters at building sites – one for non-recyclable trash, and one for clean wood and metals streams that can be recycled. These kinds of practices are a part of LEED standards, and more buildings are being constructed using these standards. Introducing these two elements of the program with leading builders can be key in getting new practices adopted within the building community. Implementing this program will require providing education materials on the website and possibly outreach to builders to encourage leading builders to demonstrate separation can work. SWS will need to introduce the differential rate / discount for clean C&D streams at the landfill (and possibly transfer station). If visually inspected loads are contaminated more than 10%, they should not receive the discount. SWS staff will need to conduct visual inspection of most loads or periodic loads of these streams to enforce the program. To facilitate recovery of materials, SWS will need to establish a separate dumping area and use claws and existing equipment to pull valuable materials. Clean wood can be delivered to the compost operation, or chipped onsite for volume reduction / mulch / cover as needed (or possibly sold). This program represents significant potential for diversion and high cost for the subsidy on other disposers if the discount not set properly. Because of this concern, we have set a conservative discount that can be ramped up over time as behaviors, tonnages, and costs are better understood, and if the diversion potential is not realized. It is assumed that the subsidy associated with

³¹ Total Reclaim has brought awareness and environmentally responsible services to e-waste in the MOA area.

³² Given that MOA already has a shredder, and the costs of shredding compared to the potential per-tire fees, this may generate revenues for SWS.

this program is covered by other disposal tons, and that some of the costs are recovered through materials revenues and through savings from the extension of landfill lifetime through densification and diversion.³³

C3. Business Technical Assistance:

Businesses generate 40-60% of the waste in most cities, but municipalities have little control over the waste stream as they do not provide collection, or generally have much authority in this sector. For this reason, direct-to-business programs, or broad regulations are the most common methods of bringing recycling to the business sector. This recommended strategy has the MOA introducing or helping expand existing programs to provide business technical assistance (TA) in recycling, leveraging with Green Star or other private entities active in this area. The MOA places business recycling education materials and checklists on the MOA website for voluntary use by businesses, encouraging introduction of programs, adoption of waste reduction behaviors, and other improved waste management practices. To implement the program, the MOA issues an RFP and/ or MOA staff work with existing experts in business recycling to prepare outreach and technical materials targeted for key business sectors in the MOA, and offer “hands-on” technical assistance for businesses. Participating businesses may be asked to pay for some of the cost of the waste audit to help defray costs and help improve the likelihood the recommendations from the technical assistance will be implemented. The program is assumed to be funded in part from the participating businesses, in part through grants, and the remainder through tip fee funding.³⁴

C4. MOA Recycling Business Development:

MOA has some thriving businesses in town that actively use – and in fact depend on – recycled materials as a key feedstock. This includes Thermo-Kool, as well as the glass tile business, among others. These are ideal situations, allowing local recycled materials to have a local market, “closing the loop,” and avoiding long distance shipping of sometimes marginally-valued products. To try to attract more of these recycling feedstock businesses, the MOA can assign staff time to work on recycling business development / business retention assistance program to encourage local markets and closing the loop. This can be a long-term investment, as it sometimes takes years to incubate these opportunities. However, the payoff can be large. The program modeling assumes dedication of MOA staff (hired or existing) to spend time nurturing recycling businesses within the MOA area. The program is funded through the city budget, and is ultimately funded by increases in the landfill tip fee. Because of the uncertainties involved, no additional or significant recycling tons are modeled or assigned to this strategy.

C5. Military Recycling Drop-off:

The military base(s) include significant numbers of households that no longer have access to convenient recycling on or near the base. In this option, the MOA works with the military to provide access to residential drop-off recycling on-base at Elmendorf (Fort Richardson is already close to the landfill drop-offs). To implement the option will require negotiations with military on service provision and location. Throughout this project, the military has made it clear they are interested in participating with City in program options. It is assumed that the military would pay for most or all of the cost of the program, which they may elect to recoup internally.

³³ In some jurisdictions, this arrangement makes money for the operations. The net depends on the relative cost of processing, value of the materials pulled, the tip pricing, and the participation by builders.

³⁴ Note that two business sector programs that were not modeled may also be useful if MOA elects to become more involved in commercial recycling. One requires all leases in town to include a clause committing the businesses to recycle, which can help get property owners (and also tenants) to develop and sign up for recycling services. Another approach, used in Portland and elsewhere, is to require all businesses or commercial building owners to develop “recycling plans”, which can be filed with the City, the hauler, or be required to be maintained on site. Even the act of filling out a “checklist” plan can be enough to get some businesses to introduce programs. These programs were not modeled.

4.3.4 Phase “D” Program Concepts / Descriptions

D1. Military Curbside Recycling:

Elmendorf and Ft. Richardson have significant housing on-base with limited access to recycling drop-offs. As curbside recycling expands to the rest of the MOA, it is appropriate to work to expand the program to the military bases, especially because the military can “mandate” programs, participation, and fees. In this option, the MOA works with Elmendorf and/or Ft. Richardson to develop residential curbside recycling program; add-on to existing contracts or to expanded SWS service, establishing a service district that is contracted by MOA, or another arrangement acceptable to the military. Implementing this option requires negotiation with the military, which has expressed interest in participating with the City in program options. The costs are assumed covered by payments by users (the military or households).

D2. Introducing Military Trash Fees:

Under the old landfill agreement, one of the military bases (Fort Richardson) paid no trash fees in exchange for the lease of land for the landfill. This arrangement provides no incentive for recycling and diversion, and provides perverse incentives in waste management. More sensible waste management practices would be encouraged if the military were required to pay a per-ton fee for trash disposal, even if it is subsidized. To implement this option would require negotiations to establish arrangement / revised contract. The costs of “free” dumping are already embedded in the trash tipping fee; imposing a fee would reduce the cost of this subsidy – both because of new revenues, and because less tonnage would be delivered for disposal.³⁵

D3. Business Trial Free Recycling:

The recommendation provides an inexpensive, but “big splash” program for the commercial sector. In this program, the MOA offers program rebating 3 months free recycling for businesses signing up for new recycling service for a year. The program should be advertised widely (newspaper, chamber of commerce, website, etc.) to build enthusiasm and bring attention to commercial recycling. The MOA may establish any budget as it can limit the number of participants to first-come, first-serve and stop taking new participants when the budget is expended. To implement the program, the MOA advertises the program, puts together a standard contract to pay for 3 months of 1 year of service for qualifying (and first-come first served) businesses. The program will require some staff time and the subsidies represent the budget. The MOA should establish a maximum payment and limit program to small or small/medium businesses up to program maximum. The program is assumed to be funded through a business sector surcharge or environmental fee (if possible) or through an addition to the tip fee.

D4. Commercial Recycling Bounty for Haulers:

Another strategy for achieving higher diversion in the commercial sector – should the MOA become quite serious about diversion by businesses – is for the MOA to provide a financial bounty to haulers for additional recycling (above a threshold goal) from commercial businesses. The bounty can be provided either in dollars, dollars per ton, or discounts on various fees or similar.³⁶ This option is used in a few areas in the country, and can provide several advantages. The haulers are the direct actors and know the customers. They know what businesses have recycling potential and can efficiently and effectively reach out to these businesses and make it work – if the incentive level is set in a way that does not give credit for existing recycling, and provides an incentive for recruitment of new recycling. To implement the program will take careful negotiations with haulers to assure goals / achievements are monitored and definitions are clear. The incentives would be funded through an increase in the trash tip fee.

³⁵ This option, if such an agreement could be negotiated, would generally lead to higher revenues for SWS – depending on the balance between the share of tip fees that would be paid relative to the decrease in tons delivered.

³⁶ The structure of the bounty can be straightforward dollars per ton (we assumed this model), or can be constructed as dollars for achieving a specific goal diversion rate (potentially above a baseline of what is already diverted), or the dollars may be represented as a rebate or reduction on potential franchise or other fees / taxes / surcharges (a preferable model). The budget can be determined and tons reimbursed up to that budget level, with all haulers eligible.

D5. Fluorescent Lamp Diversion Program:

The dramatically increasing popularity of energy efficient compact fluorescent lamps (CFLs) for households, and fluorescent tubes for business lighting is raising the level of concern about appropriate disposal of these items. The lamps contain mercury, which is not a desirable contaminant in landfills.³⁷ This program recommendation develops a special drop-off area for disposal of compact fluorescent lamps and tubes, and that the diverted lamps are recycled or disposed properly. The cost of handling these lamps can be expensive, but the demand for these programs from residents is high. The site may be developed at the landfill, the transfer station, or perhaps most appropriately, at a hazardous waste facility. The costs of this program might be partially defrayed by a per-lamp charge to residents (although to preserve an incentive to use CFLs, the contribution would likely have to be significantly less than the often more than \$1 per lamp it costs to dispose properly). Alternatively, the MOA may advertise for qualified certified disposer(s), possibly through an RFP process. We do not model any significant tons associated with this program.

4.4 Cost and Diversion Results for the Recommended Program Phases

The consultants used information from Anchorage and programs in other states and communities to derive estimates of the diversion, capital, and operating costs associated with the 6 Phase A programs, and the other 18 program concepts. One key to these derivations was the current state of generation and diversion in Anchorage (data from 2006). Table 4.3 summarizes current tonnage figures for the Municipality of Anchorage. Many of these values were used to derive the changes in tonnages and behavior induced by the new programs.

Table 4.3: Estimated Anchorage Disposal and Diverted Tonnage, by Sector (2006 data)³⁸

Sector and tons	Disposal (tons)	Recycling (tons)	Yard Waste (tons)	Total tons Generation	Total tons Diversion	Percent Recycling	Percent Diversion	Households (HHs)	Population	#Businesses, Students, Employees
Single Family Urban	105,436	12,100	5,679	123,215	17,779	9.8%	14.4%	69,000	125,000	
Multifamily Urban	61,657	2,200	3,321	67,178	5,521	3.3%	8.2%	40,000	96,000	
Girdwood	864			864	0	0.0%	0.0%	1,490	2,000	
Chugiak	4,952			4,952	0	0.0%	0.0%	8,539	8,000	
Eagle River	12,742			12,742	0	0.0%	0.0%	21,971	22,000	
Military	15,013			15,013	0	0.0%	0.0%	12,000	25,000	
Self Haul	32,326	1,100		33,426	1,100	3.3%	3.3%			
Construction & Demolition (C&D)	32,326	0		32,326	0	0.0%	0.0%			
Comm'l	129,303	4,400	9,000	142,703	13,400	3.1%	9.4%			32,000
Subtotal	394,619	19,800	18,000	432,419	37,800	4.2%	8.0%	153,000	278,000	32,000
Special groups (included above)										
Schools	13,688	0		13,688	0	0.0%	0.0%			50,000
Government*										5,708
All res excl military (repeats)	185,651	14,300	9,000	208,951	23,300	6.8%	11.2%		278,000	

Table 4.4 presents the diversion, capital, and operations/ maintenance costs associated with the programs and concepts. Table 4.5 summarizes the results for total annual costs for each program or concept, and for the four Phases (A, B, C, and D). In addition, the table summarizes the total cost, city net cost, cost per ton, and other indicators for the programs and concepts. The far right column identifies the net increase in the cost per ton for tipping fees that is needed to support the program, in addition to any contributions from the generators.

³⁷ Must be charged or the shipping and disposal costs bankrupt diversion programs; however, fees and special disposal are a barrier and discourage use of this very efficient technology. Note that, alternatively, national and governmental web sites suggest putting bulbs in sealed plastic bags into trash. The industry is divided on these issues. A CFL contains less than 1/10 of the mercury that is emitted in generating the extra power that an incandescent bulb would use, and the power plant generates it airborne, a more dangerous form of mercury.

³⁸ Note that the "all residential except military" row does not represent new tonnage – it is an aggregation of tons from other categories.

Table 4.4: Diversion and Costs for Recommended Program Phases

Phase ID	Name	New tons diverted at		Higher range		Capital Cost (low costs)	O&M Cost/yr (low)	One-time costs	Annual debt pymt for Phase in capital Years	Total annual cost at full rollout (low)	Total annual cost at full roll-out (enhanced)	
		Total tons diverted	full operations	New tons diverted Year 1	tons, Year 1							
A 1	Curbside Recycling*	23,100	11,000	1,833	2,200				\$0	1	\$4,320,000	\$6,048,000
A 2	Pay as you throw (PAYT)	6,300	6,300	1,050	1,260	\$0	\$30,000		\$0	1	\$30,000	\$42,000
A 3	Compost & Dropoff*	22,400	4,400	4,400	5,280	\$1,875,000	\$293,000	\$0	\$279,430	1	\$572,430	\$801,402
A 4	Recycling Dropoff	1,500	1,500	1,500	1,800	\$309,500	\$100,600		\$46,125	1	\$146,725	\$205,414
A 5	Schools	2,738	2,738	1,369	1,643	\$78,000	\$302,290		\$11,624	1	\$313,914	\$439,480
A 6	Public Outreach	3,341	3,341	3,341	4,009			\$247,000	\$0	1	\$247,000	\$345,800
B 1	Space for Recycling	2,500	2,500	250	300			\$0	\$0	1	\$0	\$0
B 2	Procurement	1	1	1	1		\$20,000		\$0	1	\$20,000	\$28,000
B 3	Public Space Recy	200	200	200	240	\$47,400	\$40,000	\$14,220	\$7,064	1	\$61,284	\$85,798
B 4	Increase Transfer Tip Fee	1	1	1	1		\$0		\$0	1	\$0	\$0
B 5	Tip fee enforcement	1	1	1	1		\$20,000		\$0	1	\$20,000	\$28,000
B 6	Expand Landfill/Transfer Station Recycling	1,815	1,815	1,815	2,178	\$40,000	\$63,261		\$5,961	1	\$69,222	\$96,911
B 7	Reuse Area	100	100	100	120	\$10,000	\$17,400		\$1,490	1	\$18,890	\$26,446
B 8	E-Waste Ban	35	12	12	14	\$0	\$17,250		\$0	1	\$17,250	\$24,150
C 1	Tire fee**	3,800	3,800	3,800	4,560				\$0	1	\$0	\$0
C 2	Construction & Demolition**	10,000	10,000	10,000	12,000	\$250,000	\$450,000		\$37,257	1	\$487,257	\$682,160
C 3	Business Technical Assistance	2,000	2,000	2,000	2,400	\$0	\$140,000		\$0	1	\$140,000	\$196,000
C 4	Business Development	200	200	20	24		\$35,000		\$0	1	\$35,000	\$49,000
C 5	Military Drop-Offs	450	450	450	540	\$154,750	\$50,300		\$23,062	1	\$73,362	\$102,707
D 1	Military Curbside	2,695	2,695	2,695	3,234		\$720,000		\$0	1	\$720,000	\$1,008,000
D 2	Military Trash Fee**	2,500	2,500	2,500	3,000		\$0		\$0	1	\$0	\$0
D 3	Business 3 month Free	40	40	40	48		\$30,000		\$0	1	\$30,000	\$42,000
D 4	Comm'l bounty	9,700	9,700	2,910	3,492		\$189,150		\$0	1	\$189,150	\$264,810
D 5	Compact Fluorescent (CFL) diversion	1	1	1	1		\$200,000		\$0	1	\$200,000	\$280,000
	PHASE A	59,379	29,279	13,493	16,192	\$2,262,500	\$725,890	\$247,000	\$337,179		\$5,630,069	\$7,882,097
	PHASE B	4,653	4,630	2,380	2,855	\$97,400	\$177,911	\$14,220	\$14,515		\$206,647	\$289,305
	PHASE C	16,450	16,450	16,270	19,524	\$404,750	\$675,300	\$0	\$60,320		\$735,620	\$1,029,868
	PHASE D	14,936	14,936	8,146	9,775	\$0	\$1,139,150	\$0	\$0		\$1,139,150	\$1,594,810
	TOTAL	95,417	65,294	40,289	48,346	\$2,764,650	\$2,718,251	\$261,220	\$412,014		\$7,711,485	\$10,796,080

Table Notes: (*) Increase in dropoff recycling tonnages caused by PAYT is considered in the "net" new tons for curbside

Table Notes: (**) There is the possibility of net positive income to the City from these programs, depending on pricing.

Table Notes: In some cases, tonnages from the program are small; a "1" is put in as a placeholder – the program achieves non-diversion goals.

Table 4.5: Costs to City and Generators, Cost per Ton, and Incremental Costs to Tipping Fee for Recommended Programs

Phase	ID	Name	New tons diverted at		Higher range tons, Year		Gross cost for program/yr	Cost covered by generator	Net cost to City (after generator contributions)	Net cost to City (enhanced version)	Tip fee increase per ton to cover net city cost	Tip fee increase per ton (enhanced)	% at full rampup (low)	Enhanced diversion rate
			Total tons diverted	full operations	New tons diverted Year 1	1								
A	1	Curbside Recycling*	23,100	11,000	1,833	2,200	\$4,320,000	\$4,320,000	\$0	\$0	\$0.36	\$0.50	3.3%	3.9%
A	2	Pay as you throw (PAYT)	6,300	6,300	1,050	1,260	\$30,000	\$30,000	\$0	\$0	\$0.20	\$0.29	1.9%	2.3%
A	3	Compost & Dropoff*	22,400	4,400	4,400	5,280	\$572,430	\$572,430	\$0	\$0	\$0.87	\$1.21	1.3%	1.6%
A	4	Recycling Dropoff	1,500	1,500	1,500	1,800	\$146,725	\$0	\$146,725	\$205,414	\$0.73	\$1.03	0.4%	0.5%
A	5	Schools	2,738	2,738	1,369	1,643	\$313,914	\$0	\$313,914	\$439,480	\$1.21	\$1.69	0.8%	1.0%
A	6	Public Outreach	3,341	3,341	3,341	4,009	\$247,000	\$247,000	\$0	\$0	\$0.65	\$0.92	1.0%	1.2%
B	1	Space for Recycling	2,500	2,500	250	300	\$0	\$0	\$0	\$0	\$0.05	\$0.07	0.7%	0.9%
B	2	Procurement	1	1	1	1	\$20,000	\$0	\$20,000	\$28,000	\$0.06	\$0.08	0.0%	0.0%
B	3	Public Space Recy	200	200	200	240	\$61,284	\$0	\$61,284	\$85,798	\$0.22	\$0.31	0.1%	0.1%
B	4	Increase Transfer Tip Fee	1	1	1	1	\$0	\$0	\$0	\$0	\$0.00	\$0.00	0.0%	0.0%
B	5	Tip fee enforcement	1	1	1	1	\$20,000	\$0	\$20,000	\$28,000	\$0.06	\$0.08	0.0%	0.0%
B	6	Expand Landfill/Transfer Station Recycling	1,815	1,815	1,815	2,178	\$69,222	\$0	\$69,222	\$96,911	\$0.56	\$0.79	0.5%	0.7%
B	7	Reuse Area	100	100	100	120	\$18,890	\$0	\$18,890	\$26,446	\$0.08	\$0.11	0.0%	0.0%
B	8	E-Waste Ban	35	12	12	14	\$17,250	\$17,250	\$0	\$0	\$0.00	\$0.00	0.0%	0.0%
C	1	Tire fee**	3,800	3,800	3,800	4,560	\$114,000	\$114,000	\$0	\$0	\$0.75	\$1.04	1.1%	1.4%
C	2	Construction & Demolition**	10,000	10,000	10,000	12,000	\$487,257	\$455,000	\$32,257	\$45,160	\$2.10	\$2.94	3.0%	3.6%
C	3	Business Technical Assistance	2,000	2,000	2,000	2,400	\$140,000	\$0	\$140,000	\$196,000	\$0.81	\$1.14	0.6%	0.7%
C	4	Business Develoment	200	200	20	24	\$35,000	\$0	\$35,000	\$49,000	\$0.11	\$0.15	0.1%	0.1%
C	5	Military Drop-Offs	450	450	450	540	\$73,362	\$73,362	\$0	\$0	\$0.09	\$0.12	0.1%	0.2%
D	1	Military Curbside	2,695	2,695	2,695	3,234	\$720,000	\$720,000	\$0	\$0	\$0.53	\$0.74	0.8%	1.0%
D	2	Military Trash Fee**	2,500	2,500	2,500	3,000	\$0	\$0	\$0	\$0	\$0.49	\$0.68	0.7%	0.9%
D	3	Business 3 month Free	40	40	40	48	\$7,500	\$22,500	\$7,500	\$10,500	\$0.03	\$0.04	0.0%	0.0%
D	4	Comm'l bounty	9,700	9,700	2,910	3,492	\$189,150	\$151,563	\$37,588	\$52,623	\$0.68	\$0.96	2.9%	3.5%
D	5	Compact Fluoresent (CFL) diversion	1	1	1	1	\$200,000	\$100,000	\$100,000	\$140,000	\$0.30	\$0.42	0.0%	0.0%
PHASE A			59,379	29,279	13,493	16,192	\$5,630,069	\$5,169,430	\$460,639	\$644,894	\$4.16	\$5.83	8.7%	10.5%
PHASE B			4,653	4,630	2,380	2,855	\$206,647	\$17,250	\$189,397	\$265,155	\$1.03	\$1.45	1.4%	1.7%
PHASE C			16,450	16,450	16,270	19,524	\$849,620	\$642,362	\$207,257	\$290,160	\$3.97	\$5.56	4.9%	5.9%
PHASE D			14,936	14,936	8,146	9,775	\$1,116,650	\$994,063	\$145,088	\$203,123	\$2.06	\$2.89	4.5%	5.4%
TOTAL			95,417	65,294	40,289	48,346	\$7,802,985	\$6,823,105	\$1,002,380	\$1,403,332	\$12.29	\$17.20	19.5%	23.4%

Table Notes: (*) Increase in dropoff recycling tonnages caused by PAYT is considered in the “net” new tons for curbside

Table Notes: (**) There is the possibility of net positive income to the City from these programs, depending on pricing.

Table Notes: In some cases, tonnages from the program are small; a “1” is put in as a placeholder – the program achieves non-diversion goals.

Table 4.6: Summary of Diversion and Costs by Phase

Phase ID	Name	New tons diverted at full operations		Gross cost for program/yr	Cost covered by generator	Net cost to City (after generator contributions)	Net cost to City (enhanced version)	Tip fee increase per ton to cover net city cost	Tip fee increase per ton (enhanced)	Diversion % at full rampup (low)	Enhanced diversion rate
		Total tons diverted									
	PHASE A	59,379	29,279	\$5,630,069	\$5,169,430	\$460,639	\$644,894	\$4.16	\$5.83	8.7%	10.5%
	PHASE B	4,653	4,630	\$206,647	\$17,250	\$189,397	\$265,155	\$1.03	\$1.45	1.4%	1.7%
	PHASE C	16,450	16,450	\$849,620	\$642,362	\$207,257	\$290,160	\$3.97	\$5.56	4.9%	5.9%
	PHASE D	14,936	14,936	\$1,116,650	\$994,063	\$145,088	\$203,123	\$2.06	\$2.89	4.5%	5.4%
	TOTAL	95,417	65,294	\$7,802,985	\$6,823,105	\$1,002,380	\$1,403,332	\$12.29	\$17.20	19.5%	23.4%

The assumptions underlying the tonnage and cost computations are provided in spreadsheets delivered separately. The computation of the increment to the tipping fee needed to support the City’s net annual investment in the program is computed by adding the City’s net investment to the revenue requirements that must be covered by the tipping fee, and then dividing by the original total disposed tons less the number of tons diverted from the program, or the set of programs. That is, the computation is the new revenue requirements (including the recycling programs) by the new, lower disposal tons.

The results indicate that Phase A adds about 13,000 new tons to diversion, at a net cost to the City of \$460K³⁹ (assuming capital costs are spread across 10 years so the annual costs are debt payments plus O&M). To cover these costs will add about \$3.50 to the tip fee.

The programs in Phase B add another 2,400 new tons, and add less than \$1 per ton to the disposal tip fee. To get to the total of 16.3% increase in diverted tonnage (95,000 tons) will take a total of 24 programs and initiatives, and an addition to the tipping fee of about \$10. This will extend the landfill’s lifetime by approximately 10.5 years.

4.5 Reaction from the Public Meetings

On November 6, 2007, a public meeting was held. The meeting was well attended and had nearly 200 attendees. Two rounds of the presentation of draft options and discussions were given, and three “packages” of programs were presented – base diversion / lowest cost; enhanced package and high package, with increasing diversion and cost.⁴⁰ Attendees were asked to fill out a comment form; in addition, the presentation materials and the comment form were also posted on the Municipality’s web site, and comments could be filed electronically. A total of 194 responses were received and analyzed. Both the SWS and non-SWS-served areas were represented in the responses; no responses were received from household living on the military bases. The following paragraphs summarize the highlights; detailed responses are included in Appendix 5.

- **Current recycling inadequate:** The respondents overwhelmingly (90%) agree that the current recycling program is not sufficient. Several stated outright that they want more. The programs that are currently available are not considered well-advertised or well-maintained. One person suggested a web cam on high density housing area drop-off bins so the recycling efforts can be monitored and attended to in a timely fashion. When asked to indicate the importance of seven aspects of community waste management (Curbside recycling in the Municipality, Residential yard waste/composting options, Business recycling options and opportunities, Pay as you throw- trash rebates to encourage recycling, Military household recycling opportunities (curbside), City offices do

³⁹ Note that in several cases, we have assumed zero net costs for a program that might possibly be able to deliver excess revenues to the MOA. These programs include: A3, compost site; C1, tire ban and fee; C2, construction and demolition program; and D2, military paying a trash fee. However, if customer reaction is not as favorable to the programs as projected, they could possibly pose a source of revenue risk.

⁴⁰ These were later recrafted into the four phases presented in this report. The same programs – just reordered a bit – are included.

more recycling, and how important is recycling and diversion to you) every item was ranked as Very Important.

- **Want much more recycling:** Three plans were discussed at the community meeting: a Basic Diversion Package, an Enhanced Diversion Package and a High Diversion Package. The majority (61%) preferred Option 3, the one with highest diversion. Among the minority not addressing Option 3, those with no stated preference among the programs indicated there was a need to “do more”, those commenting on the base package said, “...at least it’s a start, afraid of costs of other packages, better than what we have right now”, and those commenting on the middle package indicated that it was a good middle road and its biggest attraction was that it included a program for schools. For the majority preferring the high diversion package, they stated that it was the best plan for the landfills, includes fluorescent bulbs, its military and business sector programs, and “I think it is important that we recycle as much as possible. If it can be recycled and reused why wouldn’t we recycle?” “Duh” was another response in favor of the high diversion package. The biggest concern was the end user costs for the High Diversion Package.
- **Willing to pay more to get more recycling:** Virtually all attendees were willing to pay more to get more programs. Based on more than 150 responses to the question, the average households would be willing to pay \$10.30/month, with half saying they’d be willing to pay less than \$9 and half willing to pay more than \$9. The minimum they’d be willing to pay is \$0, and the maximum reported is \$50/month.
- **PAYT and Program Preferences:** Of the programs included in the packages, most people would support Pay As You Throw (PAYT). Curbside recycling is desired with more plastics and glass recycling. For areas where curbside is not possible, include neighborhood drop-off sites or increase capacity at existing drop-off locations and transfer stations. There is concern about the commercial, school, and military diversion rates, the community would like these large industries to implement required recycling programs as a way to lead the rest of the community. All of the following were overwhelmingly important to those surveyed.
 - Curbside recycling in the Municipality
 - Residential yard waste/composting options
 - Business recycling options and opportunities
 - Pay as you throw- trash rebates to encourage recycling
 - Military household recycling opportunities (curbside)
 - City offices do more recycling
- **Suggestions for Other Programs:** Many people mentioned they’d like to see more plastics and glass recycling. Education at the school level would be desirable, as would inclusion of fluorescent bulb recycling in the Base package. Several people would not mind a plastic bag tax or ban. One person suggested a web cam on high density housing area drop-off bins so the recycling efforts can be monitored and attended to in a timely fashion. As for recycling drop-off sites, one person suggested adding sites to the mall or schools. One suggestion for improved business recycling was for a commercial incentive award or certification that could be used in marketing. “It would need to have pro-Anchorage, pro-business moniker, as we live in a state where “green” is mostly negative.” The public is unsure how involved the military is in recycling, both on the business level and the residential level.
- **Want more recycling education:** Publicity of current programs is considered low and inadequate. More education of general public would help. If changes are made, the education needs to saturate the community through all media sources. Education should also include information on where the

material goes to be recycled (the transportation costs to the location where the material is actually broken down, where the material goes from there, what products are in the area that are made with recycled materials, etc.)

- **Concerns:** There was concern about higher tipping fees causing more rubbish dumping along the roadside. As mentioned above, there was some concern about the end user costs for the High Diversion Package.

In summary, the feedback indicated strong support for significantly enhanced programs – with more recycling generally better – and a reported willingness to pay for those recycling opportunities. The public meeting implies support for as many as possible of the programs proposed in the phases described in this report, with an urging not to be too conservative. The full results are presented in Appendix 5.

4.6 Costs and Financing of the Programs and PAYT Rate Impacts

4.6.1 Financing Over Time

The capital costs associated with the programs can prove problematic, especially for investment by the City. While capital is needed up front, the money is usually not available, and the assets (equipment containers, etc.) can last a long time. Spreading out the payments allows payback – and rate impacts – that are more metered. The options for addressing this – and spreading out the budget requirements over time – follow:

- Borrow from other City funds and pay back from rates (tip fee and household, depending on the equipment financed), with appropriate interest
- Borrow from GE Capital or other similar equity sources, and these companies have special municipal divisions (the equipment is the collateral), and
- Borrow from bonds. The main issue with bonds is that they require a vote of the people and pledge of revenues from the rates or fees. For most equipment, the other two financing options are probably most practical. Should the City undertake to construct large capital facilities (e.g. MRF), bonds may be the appropriate source.

All the capital programs below assume that the payments have been spread over time using one of these options.

4.5.2 PAYT Rate Estimates

Phase A includes the recommendation to introduce PAYT into the SWS service area, along with curbside recycling. As mentioned earlier, Pay as you throw (PAYT) is the single most effective incentive that can be provided to increase recycling. PAYT, which charges higher fees for households that put out more trash for collection, is extremely popular because:

- It is fair – people who put out small amounts for collection don't pay the same as those who "overstuff 5 cans." In towns that have implemented PAYT, more than 90% of the households prefer it to the old "unlimited trash" system.
- People who set out less trash can save money – their bills can decrease in many cases, providing great options for those on fixed incomes, etc.
- It treats trash like every other utility – user fees make sense and stop overuse and overburdening of systems and programs.

- It changes behavior and retains that behavior change – people are reminded to put out less trash every time they pay a bill.
- No other program increases recycling and diversion as much. Cities with PAYT find their landfilled tonnage decreases by 17% (by weight) from residential households. About 1/3 of that decrease comes from drop-off and curbside recycling, 1/3 from yard waste and composting, and 1/3 from source reduction and less wasteful behaviors.

PAYT is a cornerstone to making the new MOA system work well. It provides the incentive for use of the recycling program, and encourages people to think about their waste management options.

SERA used information from a number of sources in preparing these draft estimates:

- SWS data on the set outs households are currently using – how many are using small vs. larger trash containers, or filling them up to different levels.
- SERA data on the reduction incentives provided through a new curbside recycling program and other diversion options (e.g. compost)
- SERA estimates of compaction that may occur due to PAYT incentives (since the fees are based on volume, not weight)

We provide estimates of the resulting rates below. Several assumptions are made in computing these indicative rate levels. SWS indicates that providing curbside trash service alone will cost an average of \$20/household per month. In addition, SWS estimates that the cost of providing curbside recycling service in the SWS area (with no changes in MRF operations) is about \$5/household per month. In addition, all the rate computations assume that the PAYT structure will involve MOA charging 80% more⁴¹ for double the service volume – providing a strong and noticeable incentive for households to sign up for an appropriate level of service.

The results show that:

- Costs can be covered with fairly reasonable rates, and
- Citizens willing to modify their behavior and adopt smaller trash cans can save money on their bills – both compared to other households that use more, and compared to their current bills.

An important piece of data that was needed to compute approximate new indicative rate levels was the amount of service households are using now, under a non-PAYT scenario. SWS had gathered data a year or two ago on the percent of customers using partial cans. SWS notes that these data were collected in the summer, when customers may use relatively higher amounts of service than they use in winter. This is shown in Table 4.7 in the column labeled “summer.” To provide improved information, SWS staff gathered similar information in February / March 2008, also shown in the Table. These results – showing significantly lower service level usage – are shown in the column labeled “winter”. However, one problem arose. The winter usage showed a substantial number of customers on “zero” service. These figures represent dramatically different starting positions (91 vs. 50 gallons of service used!), and this has a significant effect on the process of computing rates. The computations rely on estimating shifts from the initial position, and clearly there is a great deal of variation in estimates of the starting position. This issue will be addressed in more detail below. To generate a starting usage distribution that might be slightly conservative, SERA used approximately 2/3 of the winter usage, and 1/3 of the summer subscription.

⁴¹ Other assumptions can be made, but publications (Skumatz and Freeman, “2006 PAYT Update...”, SERA, December 2006) indicate that this incentive level balances two key factors – providing a strong incentive for households to recycle more, vs. revenue concerns that arise if rates are too “steep” and people use lower levels of service than forecast, which can increase the risk of not recovering costs needed to fund fixed costs of the collection system.

Table 4.7: Estimated Summer and Winter Trash Container Usage in SWS area

Subscription level	Summer	Winter	Subscription used for “starting” rate computation (2/3 winter + 1/3 summer)
0 cans	0%	12%	8%
1 can	23%	37%	32%
2 cans	24%	35%	31%
3 cans	20%	15%	17%
4 cans	21%	1%	8%
5 cans	3%	0%	1%
6 cans	9%	0%	3%
Average cans, average gallons	2.84 (91 gallons)	1.56 (50 gallons)	1.98 (63 gallons)

Table 4.8 shows the likely PAYT rate results under a “no new recycling program” scenario. The first column (A1 and A2) shows the rates assuming no one shifts can sizes (because there is no convenient program). Columns B1 and B2 show the results if there is a moderate amount of shifting to smaller cans that occurs because the households are provided a financial incentive to shift down their subscriptions, and because there are composting and enhanced drop-off sites available. New rates are in Grey.

Table 4.8: Indicative PAYT Rate Computations assuming NO recycling and \$20 per household average cost for trash collection in SWS area

POST-SCENARIOS -- RATE DIFFERENTIAL STRUCTURE OPTION - ALL FEES EMBEDDED		A1	A2	B1	B2
	Goal Rate Diff' for double service=>	80%		80%	
	mini percent of 1 can rate=>	75%	Current	75%	Reduce
	AVERAGE BILL level (rev reqmt)=>	\$20.00	Distribution	\$20.00	15%
16	0.5 (minimum / no coll'n rate)	\$8.20	8%	\$9.20	8%
32	1 can	\$10.90	31%	\$12.25	41%
64	2 cans	\$19.65	32%	\$22.00	31%
96	3 cans	\$28.35	18%	\$31.80	14%
128	4 cans	\$37.10	7%	\$41.56	4%
160	5 cans	\$45.80	1%	\$51.35	3%
192	6 cans	\$54.50	3%	\$61.10	0%
	Avg 30-g Can Equiv subscript		2.03		1.78
	Gallons per hh (calc)		64.9		57.0

The next Table shows the results if we assume that the new recycling program will cost \$5 per household for recycling plus current \$20, compared to current \$20 average service costs. The first set of columns (A1 and A2) shows what PAYT rates would be with no recycling program using the subscriptions from columns B1 and B2 above – assuming (to be conservative) a 15% decrease in can size subscriptions induced by the rate incentive, even without the curbside recycling program making it easy to divert materials (\$20 paid per average household). The middle columns show rates with \$5 recycling charge, and a moderate reduction in can sizes by households (B1 and B2). The third set of columns (C1 and C2) shows the rates that would result should households embrace the new recycling and programmatic options and move more aggressively toward smaller cans.⁴² New rates are in Grey.

⁴² If it is determined that there are operational issues with small containers (e.g. 32 gallon containers that occasionally have difficulties with gripper arms or tipiness; other municipalities have not reported this issue), the MOA may wish to provide smaller levels of service through every other week collection of a larger container (e.g. alternate week collection of a 64- gallon or 45-gallon container (adding a decal or different colored-lid) to provide small service options for households. (see Skumatz and Freeman, *Resource Recycling*, August 2007).

Table 4.9: Recycling at \$5 added to Base Fee of \$20

POST-SCENARIOS -- RATE DIFFERENTIAL STRUCTURE OPTION - ALL FEES EMBEDDED		A1	A2	B1	B2	C1	C2
Goal Rate Diff for double service=>		80%		80%		80%	Reduce subs
Goal for mini percent of 1 can=>		75%	Current	75%	Reduce	75%	12%+compact
AVERAGE BILL level=>		\$20.00	Distribution	\$25.00	15%	\$25.00	30%
16	0.5 (minimum / no coll'n rate)	\$9.20	8%	\$11.45	8%	\$13.05	8%
32	1 can	\$12.25	41%	\$15.30	41%	\$17.40	51%
64	2 cans	\$22.00	31%	\$27.50	31%	\$31.30	29%
96	3 cans	\$31.80	14%	\$39.75	14%	\$45.25	10%
128	4 cans	\$41.56	4%	\$51.95	4%	\$59.15	2%
160	5 can	\$51.35	3%	\$64.20	3%	\$73.05	0%
192	6 cans	\$61.10	0%	\$76.40	0%	\$86.95	0%
Avg 30-g Can Equiv subscript			1.78		1.78		1.53
Gallons per hh (calc)			57.0		57.0		49.0

The results show:

- The average rate prior to the recycling program and the PAYT is \$20 per can. The rates in columns B and C of Table 4.7 show that customers selecting 1 32-gallon can service (or less) weekly can save money compared to the current average rate.
- Given that the conservative rates are those in column C, we find almost 60% of households will save money on their bills over current rates, even with the addition of recycling service!

Two important issues arise in discussing these results.

- **Zero Cans:** The winter subscriptions collected by SWS showed that 12% of customers were putting on zero cans. Presumably a significant share of these households are snowbirds, and spend weeks not putting out trash. The MOA will need to establish a policy that even those putting out zero cans under a PAYT system will need to pay a “baseline” rate (to pay for the availability of service). In column C, that baseline rate is computed to be \$13. If these households do not pay a base amount, the other rates will need to increase to cover the potential zero revenues from these households. This is likely not a change in policy if SWS does not currently allow customers to “opt out” of paying for service, but the issue may arise because of the perception that under PAYT customers only need to pay for what they use. In many communities, households may only opt for zero can collection for a minimum of one month, and may not turn the service on-and-off on a weekly basis. For these months, the households will still be assessed the “base fee” computed as part of the new PAYT rates.
- **Revenue Risk:** It is also important to discuss the very important role that the ending subscription assumptions (column C2) play in the computation of rates. If the estimate of the number of “paying cans” is less than the projection (in Column C2 this value is 1.53 cans), then the MOA will not recover sufficient funds to cover the costs of providing trash and recycling service. The amount of the revenue risk is demonstrated in Table 4.10 below, and the results show the revenue risk based on ending subscriptions that result in 2.03 cans, 1.78 cans, and 1.53 cans. The most relevant columns for comparison purposes are the columns under 1.53 average cans.

Table 4.10: Revenue Risk from Mis-estimation of Container Subscription Levels Selected by Customers

REVENUE RISK ESTIMATES FROM ERRORS IN PAYT SUBSCRIPTION ASSUMPTIONS							
IF rates estimated based on average cans subscribed=>		2.03	2.03	1.78	1.78	1.53	1.53
		Est.\$ at risk/hh	% at risk	Est.\$ at risk/hh	% at risk	Est.\$ at risk/hh	% at risk
BUT Real cans	1.0	-\$12.68	-51%	-\$10.96	-44%	-\$8.68	-35%
Subscribed=>	1.1	-\$11.45	-46%	-\$9.55	-38%	-\$7.05	-28%
(read down left margin)	1.2	-\$10.22	-41%	-\$8.15	-33%	-\$5.42	-22%
	1.3	-\$8.98	-36%	-\$6.75	-27%	-\$3.78	-15%
	1.4	-\$7.75	-31%	-\$5.34	-21%	-\$2.15	-9%
Compare average	1.5	-\$6.52	-26%	-\$3.94	-16%	-\$0.52	-2%
cans used to	1.6	-\$5.29	-21%	-\$2.53	-10%	\$1.11	4%
compute rates(Yellow)	1.7	-\$4.06	-16%	-\$1.13	-5%	\$2.74	11%
to possible average	1.8	-\$2.82	-11%	\$0.27	1%	\$4.37	17%
can subscriptions.	1.9	-\$1.59	-6%	\$1.68	7%	\$6.01	24%
down the left edge	2.0	-\$0.36	-1%	\$3.08	12%	\$7.64	31%
and revenue lost	2.1	\$0.87	3%	\$4.49	18%	\$9.27	37%
per month per hh	2.2	\$2.10	8%	\$5.89	24%	\$10.90	44%
is shown in the cell.	2.3	\$3.34	13%	\$7.30	29%	\$12.53	50%
	2.4	\$4.57	18%	\$8.70	35%	\$14.17	57%
	2.5	\$5.80	23%	\$10.10	40%	\$15.80	63%
	2.6	\$7.03	28%	\$11.51	46%	\$17.43	70%
	2.7	\$8.26	33%	\$12.91	52%	\$19.06	76%
	2.8	\$9.50	38%	\$14.32	57%	\$20.69	83%
	2.9	\$10.73	43%	\$15.72	63%	\$22.33	89%
	3.0	\$11.96	48%	\$17.12	68%	\$23.96	96%

Clearly, the underlying estimate of (starting and ending) subscription selections by households is crucial to the computation of the PAYT rates. A misestimate of just 0.2 cans (last column moving from 1.5 cans for the estimate vs. 1.3 along the left column) can lead to 15% shortfall in revenues recovered compared to the revenue requirements. Thus, there are three suggestions to reduce revenue risk:

- Be conservative about the “ending” subscription levels used to estimate rates: assuming households move aggressively downward to small containers will help assure your revenues are covered. The negative effect is that rates will be higher than necessary if customers switch downward less aggressively than feared.
- Pilot test the program or Phase in implementation. Using information on customer subscriptions in the early neighborhoods can help in two ways. It can provide information about the can sizes to order, and it can be used to adjust rates, or at least know how big a problem might occur.
- Conduct a statistically valid set out survey, estimating the percent of cans volume used from about 300 containers located around the MOA. A significant improvement can be achieved if the cans are weighed; an even more accurate estimate of subscription shifts can be developed based on the weights because data on average weights per volume for different can sizes can be used to estimate ending subscriptions.

4.7 Implementation Considerations

4.7.1 Options for Materials Recovery Facility (MRF) and Facilities

Should recycling increase dramatically, the current Smurfit Recycling Center (MRF)'s space and capabilities will be exceeded. There are several options that can address this:

- The MRF can leave materials commingled or conduct cursory sorting of the materials, and bale them to be shipped to sorting facilities in Washington or Oregon. This is close to the status quo.
- The City may build a MRF or purchase an existing building that has the characteristics needed for a MRF and can contract for operation of the facility. The operation would be selected by bid. The city could purchase equipment, or require that as part of the bid.⁴³
- The City may build a MRF and operate it with its own staff.

The option that was assumed in this report was the first. Upgrading of facilities will be done “as the tonnage demands it” rather than saddling public or private entities with large capital costs.

Facilities: The implementation of the recommended program Phases require facilities expansions, modifications, or development, including the following:

- **MRF - Recycling materials recovery facility:** Additional storage and possibly sorting areas will be needed to address the new commingled single stream materials to be delivered under the curbside and PAYT rollout, prior to shipment to Seattle / Portland facilities. As tonnage increases, some level of sorting capabilities may be needed locally. In the interim, the most feasible option, considering the facility will be baling commingled materials for distant sorting, is to exclude glass from the curbside mix.
- **Compost facility:** Although somewhat non-committal, during discussions carried out as part of this project, SWS implied there could be space for a modest but sufficient site on the current landfill property. A site previously proposed had prohibitive site development costs. Ultimately, however, SWS argued there was no space at the landfill, and suggested cleaning up and establishing operations at the old compost site near the airport.⁴⁴
- **Landfill:** Alternatives for redesigned space for traffic and recycling / reuse options at the landfill were developed, with more centralized “special areas” to avoid having household or business traffic on or near the face.
- **Transfer station:** Alternatives for redesigned space for traffic and recycling options at the transfer station were provided as part of the project, with more centralized special dumpsters etc. for recycling and sorting specific clean streams
- **Drop-offs:** Space for drop-off opportunities at outlying areas will be needed.

Negotiation / Discussion items:

- **ALPAR:** The City and ALPAR will need to discuss options that may exist for possibly expanding the upper limit on the number of free / discounted vans available, or modify the price to allow partial subsidy on more vans (taking care to assure that there is sufficient “margin” to still fund high priority ALPAR activities). Discussions with ALPAR should also be undertaken to revise its pricing policy from one in which the first 900+ vans are provided at deep discounts, and after the threshold is met, the costs for additional vans reflect market prices. Although it may be difficult to forecast in year 1, by year 2 ALPAR should be able to develop an approximate forecast of the number of vans of material expected in the next year, and divide the total annual costs for this number of vans by the forecast number of vans assure even pricing throughout the year (rather

⁴³ The City could require 6 months notice or have first right of purchase if equipment is provided by the bidder.

⁴⁴ This is the near-term site; however due to some restrictions on site (inability to process food wastes at this location), the site is limiting and other sites will be investigated.

than “spikes” to full price in December). If the forecast errs on the “high” side, the extra can be rolled into the next year’s forecast, or proportional rebates can be provided. If there are shortfalls, they could be addressed through revised pricing for December vans. In addition, it will be necessary to work with ALPAR to identify who has “rights” to the vans – especially with additional activity in the Valley and Fairbanks.

- Smurfit: As recycled tonnage increases under the combined effects of the rollout of SWS recycling and PAYT, expanded drop-offs in outlying areas, and PAYT / Recycling in areas beyond SWS, the tonnages at Smurfit will need to be monitored. Discussions with Smurfit will be needed on the relative merits, costs, and sustainability of a model that processes locally vs. ships to Portland /Seattle for processing / sorting. Other factors to be discussed include the “trigger tonnage” needed to develop more enhanced local facilities, sort (and possibly market) from local facilities, and the options / opportunities for aggregating tonnage from other Alaska locations. If there are barriers to expansion beyond the capacity that Smurfit can handle at the current facility or through its own expansion or development capabilities, the City may need to explore public private partnerships, most likely through City ownership of a facility and an RFP process for operation of the facility, as discussed elsewhere in this report.
- Discuss options with service providers and other facility owners (C&D site, etc.).
- Discuss options for program development, delivery, and funding with the military.

4.7.2 Options for Recycling Service beyond SWS

While recycling and PAYT within the SWS service area is fairly straightforward, expanding beyond SWS area remains more complex. The following issues received a cursory investigation by an attorney; however, implementation will require a detailed review by City attorneys and discussion with RCA.

Service in non-SWS areas:

Certainly, one option is to negotiate with the entities providing services outside the SWS to get changes to service.

If this is unsuccessful or suboptimal for any other reason, the MOA could establish improvement districts and allow voting for recycling service. Potentially more interesting is the following option.

Anchorage is a unified home rule city, and as such, it is allowed any powers not strictly forbidden by regulation. The constitution allows the state assembly to create “service areas” and the implementing legislation allows implementation by the state legislature or a unified municipality. This can be done via ordinance. The key is to discuss “service areas”, and the service areas must be established to provide a service that is not provided (area wide, different degree of service, etc.) – and that can entail a higher degree of service than is currently provided. This comes from section 29.35.450. The key element is providing a higher or different level or service.

4.7.2.1 Other issues

Service delivery options:

- **Facilities:** Note that selected option may vary based on facility (MRF vs. composting vs. changes to existing transfer etc.)
 - 1) MOA own and contract out for operation (maintains flexibility and assures some competition remains; but up-front costs to MOA);
 - 2) MOA own and operate (may or may not be efficient, MOA retains control and direction, but up-front costs to MOA);
 - 3) private own and operate (reduces competition, lose control, minimizes up-front cost to MOA);

4) other public / private partnership (city helps with land or other assistance, with benefits depending on contractual arrangement).

- **Services / collection:** Depending on service (recycling, solid waste, etc.) can include:
 - 1) MOA provides service (requires expanding staff, equipment, etc. and if expanding into hauler territories may require years of advance notice)
 - 2) Hauler-provided service without MOA direction or interference
 - 3) Hauler-provided service with MOA mandating types of service to be offered (ordinance or working with regulators)
 - 4) Hauler-provided service with districting (and bids), franchising, contracting, or other structure.
- **Drop-off and hauling:** May continue to be offered as currently provided, but there may be a role for greater involvement and enthusiasm from SWS – including broader ranges of materials at some existing sites, better monitoring and cooperation, and the establishment of new sites in outlying areas. New drop-off areas for yard waste and other separated materials needed at landfill and transfer station, likely to be operated by SWS. Hauling may be an SWS service. The yard waste drop-off area will need to be located at a facility with scales so that the (discounted) tipping fee can be assessed.

Legal issues arising from options:

- MOA will need to bring City legal expertise to the implementation of the options, as there are important issues that are not clarified in the current regulations and statutes, and basic definitions of materials and other issues are not well addressed or are omitted in current regulations.
- Basically, RCA maintains authority over rate-setting; it does not have clearly identified authority over services. Initial indications on MOA authorities on several key issues are summarized below, but these are not in any way to be construed as legal opinions.

“Authority” Question	Initial Read
Can MOA require mandatory garbage service / require residences and businesses to subscribe to SW collection service (especially outside SWS Area)?	Probably, but it is not clearly established. Definitions also needed; there does not appear to be any definition of solid waste, garbage, or disposal in the regulations.
Can MOA require private haulers to offer recycling?	Probably, especially by contract or by establishing “service area” boundaries, defining areas in which significant service expansions / differences are developed, with RFPs for service delivery are issued under MOA administration. RCA only covers rates and not services, providing potential flexibility for this option, since it is a non-regulated activity. MOA may also have authority to require provision via ordinance.
Can MOA charge tip fee surcharge to fund recycling?	Likely, by amendment; RCA does not retain authority related to landfill.
Can MOA establish a generator fee or recover fees for programs via taxes?	Possibly under state revenue or City code taxing provisions.
Can MOA require businesses to pay for recycling?	MOA can for MOA customers, and a recent change eliminated RCA authority over commercial rates, potentially providing flexibility (deregulated; notification only required).
Can MOA implement Pay As You Throw (PAYT)?	Clearly yes in MOA area; possibly outside MOA area can set rate structures but not levels. May also be able to address by treating as disposal and environmental fees with haulers as the collection agent, through methods related to hauler compensation rather than recycling fees. Negotiation / discussion with the haulers and the RCA are probably the best means of achieving this goal.
Can MOA implement disposal bans (for recyclables, etc.)?	Yes, because City code doesn’t prohibit, especially since MOA has control of landfill.
Other comments	RCA / new Alaska statutes appear to promote recycling, and there should be a way to recover associated recycling costs. However, it will not be possible to implement options that call for mingling of regulated and non-regulated costs in ratesetting.

Note that even if PAYT can be required, it must be recognized this would incur an additional expense for the haulers operating in the area because they must run all residential can service rates by the RCA / regulatory body and that is expensive and time-consuming.⁴⁵

Budget, financing, and rate implications: Estimates of budget and rate (PAYT and tipping fee) implications of these program phases are provided in the report. We provide two scenarios; the MOA may elect to use a phased-in or shared approach as well, with estimates falling between the two scenarios presented.

- **User pays principle⁴⁶:** The table identifies an appropriate beneficiary (USER), and increased costs are assigned to that entity. The average cost per the relevant entity (business, household, “tons”, etc.) is presented.⁴⁷
- **Assigning all costs to MSW tonnage fees:** In this case, we present the increase in per-ton fees at the landfill that would be needed to fund the program.

⁴⁵ Alaska Waste has, in the past, applied for PAYT rates so the process is known. They may still have operative PAYT rate structures that are not much-used because the extra bill for unlimited or large-can service does not entail a large premium. Broadening adoption of the PAYT rates would require eliminating the large-service fixed bill option.

⁴⁶ Some legal issues may still arise on these.

⁴⁷ Note the difference between All households and Urban households. All households go beyond the urban area and include Girdwood, Chugiak, etc. They are assumed to receive costs for outreach and area-wide programs; only urban households are assessed curbside programs.

5.0 APPENDIX: PUBLIC MEETING RESULTS

The following summarizes the responses to the questions asked as part of the Public Meeting. Respondents could fill out this survey either at the meeting, or could fill out the form on the web after the public meeting. We received almost 200 responses – a very high response rate for communities. (Note Questions 1 and 2 were contact information).

The initial program “Packages” that were presented at the Public Meeting are provided below and the feedback form results follow.

5.1. Initial Packages Presented at Public Meeting

**Summary Handout For Municipality Of Anchorage
Recycling Project Public Meeting
6:30-9PM, November 6, 2007**

AGENDA – 10 minute presentations at 6:45, 7:30, 8:15 followed by questions

CONTINUOUS – Stations available for discussion, questions

BEFORE YOU LEAVE – Please fill out a comment form (or check on the web [www. Muni.org](http://www.Muni.org)
Thursday if you'd rather provide comments later)

PROJECT OBJECTIVE

- ✓ Review potential for recycling and diversion in Anchorage considering sustainability and economics of programs, public / private partnerships, and service to residents and businesses.

BACKGROUND:

- ✓ Municipality of Anchorage is the only city of the largest 100 without curbside recycling
- ✓ MOA has strong drop-off recycling programs and ethic; green perception from rest of country
- ✓ Community and mayoral support for recycling and diversion
- ✓ Economics complicated by distance from markets for recycled materials, and limited in-area businesses using recyclables

CONSIDERATIONS

- ✓ Explored options to maintain and enhance diversion opportunities in area
- ✓ Expansion of recycling and diversion will require enhanced infrastructure to sort recycling, process compost – explore varied options including public / private partnerships

PROCESS

- ✓ Multi-month project with advisory committee – representing recycling community, haulers, facility, city staff, others. Thanks for their dedication of many hours on this project.
- ✓ Modeled options; check-ins with advisory committee, stakeholders / relevant actors, and city officials.

CITIZEN AND BUSINESS FEEDBACK PROCESS

- ✓ Conducted three surveys with more than 4,000 responses to assess current behaviors, service needs, program options, and willingness to pay for more recycling and diversion.

PROJECT RESULTS

- ✓ Three packages for consideration on in Tables 1 and 2 of this handout – Basic, Enhanced, and High diversion.
- ✓ Significant increase in recycling and diversion possible in Anchorage – costs and tonnages listed in tables.

THIS MEETING

- ✓ Requesting citizen / business feedback on results on 3 packages, with preferences / comments.

Summary Handout For Municipality Of Anchorage Recycling Project Public Meeting

Table 5.1: Summary Program Elements in Basic, Enhanced, and High Program Packages

ID	Program Name	Assumed Tons (mid)	Assumed user	Costs recovered through	Included in package?		
					BASE Package	ENHANCED Package	HIGH Package
1	Curbside recycling	21,000	Res	Rates	✓	✓	✓
2	Composting site & incentive compost tip fees	20,400	Res, Com'l	Per ton	✓	✓	✓
3	PAYT	6,750	Res	Rates	✓	✓	✓
4	Expanding Drop-offs to Outlying areas	1,500	Res	Tons disposed	✓	✓	✓
5	Education push	3,600	Res	Tons disposed	✓	✓	✓
6	Procurement – MOA	Minimal	City	City	✓	✓	✓
7	Muni/ Public Space Recycling	200	City	City	✓	✓	✓
8	Higher tip fees at transfer station	-	All	Tons disposed	✓	✓	✓
9	Enforcement of Incentives and tip fees	-	All	Tons disposed	✓	✓	✓
10	Enhanced landfill / transfer station recycling	5,500	All	Tons disposed	✓	✓	✓
11	E-Waste ban	10	Res, All	Tons disposed	✓	✓	✓
12	Re-use area	100	Res, All	Tons disposed	✓	✓	✓
13	Tire Ban/ fee	3,800	All	Tons disposed		✓	✓
14	C&D tip fee discounts	28,000	All	Tons disposed		✓	✓
15	Business Tech Assistance	2,000	Com'l	Businesses		✓	✓
16	Space for Recycling Ordinance	2,500	All	Tons disposed		✓	✓
17	MOA Recycling Business development	275	All	Tons disposed		✓	✓
18	Military Drop-off Recycling	2,000	Military	Milit fees		✓	✓
19	School recycling program	8,600	School	Milit fees		✓	✓
20	Military curbside recycling	2,200	Military	Milit fees		✓	✓
22	Military pay garbage fees	2,600	Military	Milit fees		✓	✓
23	Business 3-month free trial recycling	1,200	Com'l	Business			✓
23	Commercial recycling bounty for haulers	14,500	Com'l	Business			✓
24	Fluorescent bulb recycling program	minimal	Res, All	Rates			✓

Table 5.2: Estimated Tonnages and Costs for 3 Packages (per month)

	Approximate Costs (Capital and O&M)		
	Base	Enhanced	High
Number of Programs	12	19	24
Tons diverted	59,093	106,308	126,984
Cost for All Households (HHs) / mo	\$0.30/mo	\$0.30/mo	\$0.45/mo
Cost for Urban HH getting curbside programs	\$4.50-6/mo	\$4.50-6/mo	\$4.50-6/mo
Cost per business / mo for business pgms	\$0.00	\$0.35/mo	\$2/mo
Cost for military households / yr for military pgms	\$0.00	\$1-2/mo	\$3-4/mo
Cost for City/mo(city programs) in thousands of \$	\$6,000/mo	\$6,000/mo	\$6,000/mo
Cost / ton for area-wide programs	\$7/ton	\$17-20/ton	\$17-20/mo
Years added to landfill	5.8	10.5	12.5

5.2 Feedback from Public Meeting Attendees

The following responses are provided as the person entered the data (typos and all). Note that the program numbers they refer to in their “verbatim” comments are those shown in the tables in 5.2, the handouts from the public meetings. The numbering is slightly different from that used in the body of the report, when program priorities were modified somewhat.

3. In your opinion, how important are the following types of programs?

Answer Options	Very Important	Somewhat Important	Not Important	Response Count
Curbside recycling in the Municipality	92%	7%	1%	190
Residential yard waste/composting options	70%	26%	4%	188
Business recycling options and opportunities	91%	8%	1%	187
Pay as you throw- trash rebates to encourage recycling	82%	15%	3%	190
Military household recycling opportunities (curbside)	71%	23%	6%	181
City offices do more recycling	89%	10%	1%	183
AND How important is recycling and diversion to you?	95%	5%	1%	187
<i>answered question</i>				193
<i>skipped question</i>				1

4. Do you have any comments on the above programs?

- Not sure what you are planning to recycle from what I read. I currently do paper at home (in the pilot paper program), and take glass and plastic over to the Center.
- I am very glad that Anchorage is finally considering adding this program. Until now, I have had to find programs in town to recycle items that are not taken by the CARRs stores and the anchorage landfill, such as steel cans and plastic. I found this at time to be counteractive and time consuming and I ended up throwing things away that I would have recycled if there was an easy way to do it.
- I currently bring at least six households recycling to the center at least once a month...I try to get my neighbors on board on household at a time. It's time everyone recycled....cardboard especially...all

those Costco & Sam's reused boxes outside on trash day...too bad. And at Christmas time...all those boxes and mixed paper on the curb. It is so unfortunate; that tonnage alone would get us at least two extra years at the dump!

- "Why not introduce large containers for various recyclable items (paper, glass, plastic, cans) at street corners as in Europe? It is less labor intensive and doesn't require people to remember recycling days.
- Also, how will the curbside recycling work for apartment buildings?"
- Compost is good in landfill
- "Must recycle"
- Composting facility far away & need pick-up. Make them pay if they don't recycle. Decrease fees if recycle to reward & motivate recyclers. We pay for the electronics we use, why not trash? Have to model good behavior"
- Schools should have program & recycling stations for shared use by residents nearby.
- PAYT have socioeconomic bias?
- Some people will not recycle because it is not convenient / curbside more??(need to have other parts of towns)
- PAYT most important. Military HH recycle already happening?!
- PAYT essential!!! Curbside recycle is dual stream.
- PAYT very imp. Recycle very imp to him. Current recycle offered sufficient but could be better.
- "PAYT very imp, most useful financial incentive.
- Dual stream is fine w/ one waste line divided like Olympia? was."
- Neighborhood Collection point for curbside?
- Business recycle opportunities already exist
- I believe curbside recycling will be difficult to implement at best - if drop-off facilities were more convenient and easier to use, recycling would increase voluntarily instead of through mandatory requirements.
- I recycle and it seems to accumulate in house because the only times I can make it to the recycling center is on the weekends and it is packed with people and recyclables (makes it hard to even dispose of goods) and I would gladly pay to have curbside pickup, also I think it was in the proposal but they could have a reduction through waste management for a cost offset.
- The easier you make it for everyone to recycle, and having penalties to not recycle or rebates to encourage recycling the more apt people are in anchorage to get on track
- To my knowledge, I am the only person on my road (Hancock Drive) that recycles, making weekly trips to the recycling drop off center. Neighbors on my road put out 2-4 times the amount of trash that I put out for trash pickup. Pay as you throw and curbside recycling may be strong incentives for folks to change their discard vs. recycle-reuse habits.
- "I paid a private firm, I live in the Rabbit Creek area, \$17.00 per month to come and pick up my recyclables. Had to quit when the cost went to \$35.00 per month.
- So, any reasonable cost would be appreciated."
- Build the cost of curbside recycling into everyone's waste disposal charges rather than charging individuals who voluntarily subscribe to recycling. IE, everyone pays for curbside recycling even if they don't choose to recycle.
- Incentives are good until habits are formed.
- Recycling should be mandatory! There are other programs that make it mandatory. Trash will not be picked up if visible recyclable items are present.
- I recycle everything I am able. I am thankful for that opportunity. I go to where I am able to recycle. Many people do not-that is why emphasizing curbside recycling and making it easy is important!
- The Anchorage School District also should be heavily involved in recycling/reducing.

- I have been recycling ever since I moved to Anchorage. Now I use Girmscheid Recycling, which picks up all my recycling, except glass from my home once a month. I bring the recycling home from the office and recycle it with my home recycling. Girmscheid does a great job.
- What does diversion mean? That title is a little confusing.
- As a household, the two most important aspects are curbside recycling and residential waste and composting option. Living in an urban environment there is little room to compost yard waste and this program would be greatly beneficial.
- In order to reduce the amount of recyclables going into the landfill, all users should pay for what they drop off at the Central Transfer Station and the Landfill. The more people end up paying for their trash, once they realize they could have saved \$5 per trip if they recycled, they will be more inclined to recycle. Consumers should not be allowed to pay a flat fee by the load or bag, they should all have to be weighed in and out and pay for what they drop off, just like the Mat-Su area does.
- "I believe we need to as a muni org support this program and encourage other businesses to follow through. Educating the public on Greenhouse emissions and carbon footprinting could be beneficial to thrusting this in the city. It's a shame that we brag about how pristine AK is and yet we throw more into our landfill to pollute it instead of protecting what we already have.
- I believe there should also be incentives in the city for using public transportation esp. since the price of gas is way up."
- I think that it is very important that we try to implement these programs. The costs are truly minimal on a per month basis. I think using the community cancels and looking for volunteers within their respective areas is critical. You have to break this down into small areas and make it easy for people to comply.
- "Include construction materials
- Public should not pay for military recycling"
- "Curbside recycling in Municipality is somewhat and very important
- Military HH recycling is somewhat and very important"
- "Add school recycling as very important
- Curbside recycling in Municipality is most important"
- "Residential Yard waste/composting, I do my own at home
- PAYT - our can is 1/2 can mostly"
- City offices - Kincaid didn't have pop can collection
- Don't let people have compost piles in their residential yards. That should be a commercial thing.
- I'M BEGGING...PLEASE INCREASE THE SIZE OF THE RECYCLING CENTER ON ROSEWOOD OR ADD MORE LOCATIONS. IT'S RIDICULOUS TRYING TO RECYCLE ON THE WEEKEND, THERE ARE SO MANY PEOPLE & THE CONTAINERS ARE OVERFLOWING.
- Industry and commercial operations are largest waste producers and should be focus of improving recycling efforts.
- We should find ways to re-use recycled products (Like glass and cardboard) and make them available for sale!
- I truly support higher fees for households/businesses that create more trash vs. those who recycle. This is a common practice in Europe. Furthermore, for all state/city offices I think recycling should be mandatory.
- Once we recycle where is the market to sell our recycled goods in state?
- I think bins should be offered to residents at a discount or free
- no
- I think the city could partner with a lot of private organizations to increase the effectiveness and service of the programs.
- Right now I can only recycle mixed paper--We should be able to recycle more--glass, plastic, aluminum...

- I wish that the program was already in affect. I always thought it was strange we did not have a stronger recycling program. With curbside, it makes it so much easier for people to recycle. They don't have to pack it up in their car and drive it to the recycling location.
- City office recycling would be huge! I work for the state, downtown, and NOTHING get recycled besides white paper. It's too bad. You would not believe what makes it into the garbage around here.
- It has to be made mandatory, otherwise those who choose not to recycle end up supporting those who do through increased rates to help support recycling (both through curb side pickup and disposal rates)
- I think they all sound good - always wonder when we put our one can out every other week and the neighbors do three a week!
- I think it is great that the Municipality is moving in this direction. Thank you!!
- Don't charge for tire throw away. Would cause more illegal dumping in odd places. Tax containers i.e. pop cans, garbage bags, return a portion. Tax a nickel return 3 cents. This would cause people to collect unsightly, also consider a plastic garbage bag ban, city looks bad after a wind storm.
- I hop this is implemented soon. Recycling is extremely good for the environment if only everyone would do it
- It's time for us to figure out a way to do this. We have great drop off services but it is discouraging others who won't make the effort to haul their bins. Curbside would increase the number of folks who would recycle.
- Businesses should also be made to recycle, especially the big ones like the military and county and city offices.
- Let's get this started! I recycle now and I know others would do it if it were easier!
- Residential recycling is easy. We have vastly reduced the amount of weekly waste our family of 3 produces. However, recycling from the office faces several barriers.
- If the Muni won't offer area-wide curbside recycling, please consider a Muldoon or Downtown substation. Recycling options for East Anchorage are limited and I'm not aware of any white/mixed paper drop-offs outside of the Dowling/Rosewood recycling center, making recycling drop-offs harder to work into daily errands.
- Keep it simple and cheap = Success!
- Yes. When I came to Alaska in 2001 I called the Hiland landfill and asked why they do not take plastic and they said the recycling was new to them so they needed time to expand. I've been here 6 years. The bins are always full and I don't understand why they need more time to figure out that people will recycle everything if they have a place to take it that is close in their community! I'm very bothered by the fact that we are so behind the times here when it comes to taking care of this beautiful piece of earth we live on!
- I'd love to see more curbside recycling. I'm not sure how you could implement that for apartment dwellers (larger community bins?).

5. How would you rank the recycling opportunities you currently have?

Answer Options	Response Percent	Response Count
Very good	0.0%	0
Adequate	12.5%	24
Not sufficient-want more	87.0%	167
Recycling is not important to me-don't need more	0.5%	1

No opinion	0.0%	0
<i>answered question</i>		192
<i>skipped question</i>		2

6. Where do you live?		
Answer Options	Response Percent	Response Count
Municipality-served by the City	50.5%	94
Municipality-served by Alaska Waste	43.0%	80
Girdwood, Eagle River, or Chugiak	6.5%	12
Military Base	0.0%	0
Other (please specify)		7
<i>answered question</i>		186
<i>skipped question</i>		8

Other locations:

- Muni-private
- was GAS, but not sure who now
- I am transporting to waste station
- Municipality-do not opt for trash pickup
- work in Anchorage - live in Willow
- Wasilla - Mat-Su Valley
- Chugiak is considered the municipality so why are we separate???

7. Are there any programs in any of the package(s) that you think should not be included or given further consideration? (refer by program ID number if you prefer)

- 4 - conveniently located drop off stations, like malls, schools, would do and be less expensive
- I can't say, I came late from work.
- 16
- No
- Could price be impacted by collecting recycling biweekly instead of weekly?
- No, you need to do a lot more and to think outside a narrow box. Find the best program in the country and make that your minimal goal.
- #24, #19
- "#12 Reuse area would be very challenging in our climate. Paints, etc need heated building.
- #6 Part of City Hall Greenstar Prog, not a new project"
- #19 should be in the first tier.

- #2 Compost facility should be retained, not shut down
- No
- No
- No
- No, do as much as is politically feasible
- What about those unemployed and under employed
- No
- No
- "#19 School recycle should be included in Base Package
- #24 Fluorescent bulb recycle should be in Base Package"
- No
- #8
- Where are the packages for review?
- "Higher tip fees at transfer station relative to landfill rates may cause more trash dumping and more loose trash off the Glenn between Anc and the dump.
- I don't know what ""C&D tip fee discounts"" are so I can't say if it's good or bad.
- #23 Business 3-month free trial
- I do not know about the packages.
- NO
- Increased of tipping fees is a must. Especially if you want to offset some of the costs for recycling to get the program started and hire the employees needed to maintain it.
- None
- #2 is too high, less important than # 3, #4, #5, #6, or #7
- No
- #13, #16, #19
- #24 bulbs in package #2
- "#24 pay up front if necessary
- #18 let committed recycle earlier"
- Don't know
- N/A
- A place to take hazardous waste, like oil containers, to be taken care of for free.
- School Recycling
- More information is needed
- #24 - Fluorescent lamp recycling will become more important as more people switch to compact fluorescents. Need to educate public about dangers of simply throwing out fluorescent bulbs.
- No
- None. They all sound good.

8. Are there programs that were not included in the package(s) that you would like to see considered – either programs from the list (give ID#) or your own program ideas?

- I think there should be some education for homeowners on composting their own yard waste - the value of compost and the ease with which it can be done. And also the benefits of using the compost themselves or even the benefits of leaving grass clippings and leaves on your lawn - there seems to be this sense for many people that it is best for the lawn to remove them (which is not the case).
- "Items 11, 19 and 23 are in my opinion important.
- Also street corner containers, as stated in point 4 of this survey."

- "Also concerned about all the plastic that goes into water containers. Think that need to be reversed at the sales.
- In a city like Anchorage w/ so many multi-family dwellings, discounting them entirely seems short-sighted."
- Schools should be first priority
- ASD to basic, expand to more than SWS
- Styrofoam packaging
- #14 C&D- high volume to be diverted. Would have most impact on landfill space.
- Basic- glass should be included. I also feel strongly that school recycling should be in the Basic package.
- Tax waste, ban plastic bags, mix sticks and carrots, pay for a smart public education campaign to get largest waste producers to reduce fixed amount by a targeted date.
- All plastics! Include all #1 & #2, not just bottles, household batteries, ASD in base, compost year round!
- Add more public education at grade school, middle school & high school & locate recycling pick-up stations at schools.
- What about new low E bulbs & mercury recovery
- #24 should be moved into enhanced package, though I don't know about recycling opportunities(?)
- Need glass recyclables drop off too
- Recycling outreach to businesses that don't recycle already
- "#19 should be in the first tier.
- Condo Recycling"
- "Really want composting- do it now but my space small, my garden & fresh food use large. Education on reuse, and more important ""don't use"", get rid of the changing fashion police and mindsets.
- PAYT is important!"
- Competitive bids (actual) and forcing multiple ownerships of different competence
- Machines that pay for items- like cans, plastic, etc. Use these kinds of machines at high density apt. housing to encourage recycle. Use web cams to monitor recycle bins @ high-rise apt. bldgs.
- School recycle should be included in any package
- No
- I realize this is city prog, but I work for the State. What is being done to encourage State agencies to recycle?
- "#24 Hazardous waste consideration should be a higher focus.
- #11 E waste ban very important."
- Have you communicated with the Re-Store for BLOG material?
- No
- "Would love to be able to recycle more plastic #s (not just #1 and #2)
- Very supportive of including the school district recycling in the base package."
- Business recycling of shredded documents
- Multi-family recycling, there are a lot of people that produce a lot of garbage in the apt complex. ??
- Even if not offered curbside, please consider increasing the types & plastics the city currently recycles
- Tire fee
- "School recycling should be part of the base package-it's the no brainer way to begin educating about recycling.
- Should consider seasonal yard debris curbside pick-up monthly yard debris pick-up June - Oct would save a lot of grass clippings and leaves from being bagged and tossed in landfill
- #14 I believe C & D diversion is a major factor in space saved at the landfill.

- same as above
- I'd like to be able to recycle more plastic. Right now it's limited to #1 and #2 and there must be a neck to the bottle. Why?
- Many communities allow unsorted curbside recycling where the sorting is done at central facilities. This encourages recycling by reducing the organization and storage difficulties that many people see as a discouragement to recycling.
- Make it illegal not to recycle certain products (i.e. Paper, plastic, Aluminum)
- NO
- Have someone else besides ALPAR take over the recycling areas. The areas that are available now are not maintained very well, the areas are dirty and have trash all over the place. By turning it over to someone else, who takes pride in using the recycling area, they will be less inclined to leave garbage there. That is a really bad problem in the Eagle River area, where the bins look so nasty; consumers are dropping off trash because it blends in. Take a drive any day of the week to the Landfill and see the recycling area during the daylight and you will see what the consumers are dealing with.
- Full curbside composting, including composting organic food waste with bear proof canisters or at least able to drop off food waste
- #19, school recycling into #1
- "#19 School recycling is very important- should be in base package
- #24 CFLs should be higher, mercury is scary"
- Military & school district should both be under basic
- If base was chosen: C&D #14, fluorescent bulbs # 24, tire ban #13
- School recycling
- Education has to be a priority especially in schools where you have a captive audience
- Electronics ban
- "Schools should be moved down
- Increase plastic acceptance (types & #s)"
- Glass
- recycling glass
- "Cardboard (moving) box recycle local
- Freecycle - type program at transfer stations"
- "1. C&D recycling/sorting facility. This gets the most tonnage.
- 2. Disincentive for greenwaste to landfill
- 3. Figure out PAYT for AK waste area"
- "Multi-family housing recycling programs
- Bottle deposits and other recycling subsidies"
- Commingled paper and plastic with wider range of plastics taken.
- I think businesses of a certain size should be required to recycle. For example, those with 5 or more employees. Again, I also think that it should be MORE expensive to toss your garbage than it is to recycle. Finally, requiring military to pay for trash & have recycling should be included in the BASIC package.
- Don't know
- I would like to see more items recycled. :like #4's and #5's. Whatever can be recycled should be.
- Do these programs include building a recycling facility here in Alaska or is the plan to ship the recycled material out (and if it is, as there been an impact study of the use of fossil fuels & shipping feeds)?
- Plastic bag ban, or a plastic bag 'tax' to encourage the use of reusable bags (similar to PlasTax which Ireland instituted). Charge \$0.10 to \$0.15 cents per plastic bag used at check-out and use the \$ to fund the recycling program.

- business development
- batteries
- Make customers pay based on garbage generated... i.e.: pay for garbage bags. My last town did this. Everyone got 50 free green bags a year and had to pay \$0.50 for each additional bag.
- I need more information.
- Add a substation in Muldoon or Downtown to better serve East side of town. Dowling Road is inconvenient for those living & working East of Tudor.
- Not that I'm aware of.
- Even if the High package doesn't get implemented, I'd like to see #24, fluorescent diversion.

9. About how much are you willing to pay PER MONTH for additional recycling / composting and diversion opportunities in (your) town?

(Note there are 150 responses to this question itemized below. The average computed by SERA is \$10.30/month, with half saying they'd be willing to pay less than \$9 and half willing to pay more than \$9. The minimum they'd be willing to pay is \$0, and the maximum reported is \$50/month)

- I'd pay an extra \$10/month to have curbside recycling available to me.
- 10
- I can not afford to pay very much, but would not mind seeing an increase of about \$5.00 a month on my bill to know that we are not contaminating our planet with our waste.
- 10
- I currently do not have trash pickup at my residency. My trash is so minimal that I take my neighbor's recycling and leave my trash for pickup with them. Still doesn't generate even two trash cans per household each week due to our extensive recycling and shopping with it in mind.
- \$5-10 per month for recycling.
- \$5 -\$10, although ideally people who have very limited trash going to the landfill should have about the same cost as now (e.g. our family had 2 bag trash per month, paid for same service as families with 6 bags per week).
- \$20 curbside recycling
- up to \$20
- \$10/month
- Whatever it takes to start up & possibly lowering fees as yearly as projects are better financed or paid down.
- 6
- For curbside and enhanced services \$4-\$8 a month
- 5
- \$5-\$10
- 5
- up to \$10
- 10
- Hell yes, and more than what I actually should pay based on my waste-lite life style.
- \$5-\$10
- \$2 - \$4
- PAYT should keep cost of recycling/composting low
- \$1 - \$2
- Frequently I do not have trash pick-up, thus do not pay for this. I take my non-recyclables to the landfill & pay \$5/month. Some people want to continue this way.

- 40
- \$6 I already pay this much for curbside. I want to save at least \$6 from my trash bill.
- \$6 - \$10
- no limit but would pay as much as \$25
- \$7-\$9 Maybe more if there is PAYT. I have usually 1 can per week if that and pay what my neighbors 2 2 overflowing pay
- 5
- DNK
- \$5-\$10
- \$3-\$6
- \$4-\$6 for curbside is not out of line
- 10
- 5
- \$5-\$10
- \$20/person
- \$5-\$10
- \$10, I already compost
- Sliding scale and amount
- \$10-\$20
- 10
- \$25-\$35 or more
- \$10-\$20
- \$2-\$7
- \$10-\$15 Gladly pay this, appreciate the PAYT incentives as we tend to only put out a bag every other week or so. Think it would work well as a financial incentive for others.
- \$10-\$15 Gladly pay this. Appreciate PAYT incentives as we tend to only put out one bag every other week or so. Think it would work well as a financial incentive for others.
- 5
- 0
- I'd pay up to \$5 additional - keep in mind though that everything is going up so people feel overwhelmed with everything increasing at same time. For those who don't see recycling as necessary, they will protest increased fees.
- I would pay up to \$20 if they (waste management) would offer a reduction in lieu of also using recycling/composting, if not I would pay up to \$10 for recycling/composting.
- \$20 month
- up to \$5 depending on the cost of waste removal, if that goes up then I am not willing to give more than \$5/mo
- none
- \$10, maybe more
- 20
- 15
- 10
- \$2-\$8 max per month - although if I recycle, and therefore have less garbage to toss out, I think that should be reflected in monthly waste bills. If I recycle and have to pay for it, then I should be able to pay less for garbage. As it is now, I usually have only one container of garbage a week (since I recycle) yet I pay for three. Doesn't seem fair to me.
- 2.5
- \$1-10

- I AM willing to pay...not sure how much, whatever it costs, I guess.
- 15
- \$10/month
- not sure
- \$20 to \$30
- Whatever it takes for a healthier earth.
- I shouldn't have to pay any additional as it would reduce our current trash volume. Currently we are throwing out one small bag of trash a week (the rest is recycled) while our neighbors with the same rates have three full cans.
- 20
- \$15 per month
- What ever it takes
- I do not know. I consider that this is an opportunity to have a future of greater survival, and anything spent by the city now will probably mean less spending in the future when fewer choices are available.
- Up to \$8/month.
- 10
- 5-10 dollars/month
- 6
- I am already doing this. It would be good if at least there was less cost for garbage, or that you paid for how much garbage you have.
- Right now I pay \$15/month for Alaska Waste to pick up one, partially-filled garbage can (and that's serving 2 households that recycle). So, I would gladly give an equal amount - \$15/month - for curbside recycling and more if my single can was discounted!
- \$25-\$50 depending on what options are made available.
- \$5/month
- 6-8 dollars a month.
- Curbside recycling by the Muni and AK Waste should be reasonable and the same price straight across the board. \$4-\$8 a month depending on how much the person recycles. Less if they recycle more, it would encourage recyclers to get started. Once we get Alaskans "trained" like other states, recycling will become second nature.
- From looking over the pamphlet, it looks like it would be \$4.50-\$6/month. This is ridiculously cheap and I would be completely willing to pay for this kind of fee for curbside recycling! Bring it on!!!
- Zero - It should be free and part of our trash service, or have credits that recycling offsets the cost of trash. By recycling we're saving landfill space and it's the right thing to do.
- A reasonable amount based upon household. I do not feel a single dweller as myself should pay that same as a family.
- Not sure, time and gas to and from the recycling drop off is all money so that's a good question, \$10-15/month? I think that the amount one recycles should be offset on the garbage pickup or that garbage is based on weight.
- I would say less than \$10/mo. But I would not want to pay for the trash service if I am not using it as much. I would rather spend money on recycling than trash.
- 10
- \$5 - \$10
- \$10 to help subsidize those who can't afford it
- \$0 It should be incorporated into the cost of "refuse collection" and not singled out - as far as adding cost to the trash bill anything under \$10
- 10
- 25

- 5
- 4
- up to \$10
- 10
- 10
- \$10 if it includes EVERYTHING and EVERYONE
- \$5 ideal, up to \$10
- 10
- \$10 If it would ensure larger numbers of people would recycle, I would consider \$10/ month at the high end but would also be open to discussion
- \$5 with cost per can
- 10
- 5
- 6
- \$100 if everyone else pays, then several hundred dollars a year
- Nothing
- Depending if they provide the recycling bin.
- NONE BECAUSE I TAKE MY STUFF TO THE RECYCLING CENTER
- 10
- I would be willing to pay more ONLY IF people who choose not to recycle were charged for not doing it.
- \$10-15. Perhaps more depending on the services offered.
- Zero if there is no locate market for the recycled goods.
- 5
- 5
- 25
- 10
- 3
- whatever it takes! up to \$20.00
- If pay as you throw is instituted, I am willing to pay as much for one can of recycling along with what I pay for one can of garbage.
- I think the projected costs are very reasonable. Even \$10/mo should be well within the reach of most residents.
- 5 to 10 dollars
- question too vague - we're used to taking things to the recycling center on hiland but have horses so a composting station would be a help for the times I get to busy to do it myself.
- 20
- Currently paying 6 a mo , but I think the state should consider getting one or more companies here to do the recycling so it wouldn't have to be shipped out (if that is possible)
- Up to \$10/month for curbside recycling of most recyclable items.
- \$5.00 (We're a family of three who currently pre-cycles and recycles as much as possible.)
- not much more than my garbage bill prefer the same every quarter about \$55
- Up to \$20/month.
- \$5 - \$10 month
- 10
- 3-5 dollars
- 6

- I would be willing to pay roughly the same amount that I currently pay for regular trash service, if the recycling opportunities were diverse and good enough
- I think those that recycle should pay the same they are paying and those who do not recycle or do not recycle a specific amount <10% or more> should have to pay a higher rate for trash collection.
- I would pay up to \$15.00 a month.
- I would pay an extra \$5 a month to have curbside recycling.
- 10.00/month
- 7.5
- 15
- \$5-10
- No additional cost!
- 15
- I will take it to a designated place if there is one. We do not pay for pick up; we take our garbage to the dump anyway.
- 50
- 10
- \$5-20, but it's more important that the programs accomplish what they set out to do.

10. Do you have any other comments?

- We would really like to see curbside recycling throughout Anchorage and not just on the southside of town. Since we began recycling our overall trash has gone down considerably.
- Just as important as gathering recycling materials is finding some local way of using them so they don't just float back south at great energy and \$ expense. There should be a yearly internship based on a contest for college level students to come up with the best local use ideas, and then to spend a summer (or more) getting paid to figure out if/how to implement it.
- "I believe emphasis on educating our youth & lowering consumption of plastics especially as a ?? Must be established.
- Thank you for your positive efforts & pushing forth a necessity in this part of the world."
- Can't give contact info. I vote every election. I care about the fate of future generations. Keep up the good work.
- Thank you!
- What's ALPAR?
- Need more public service announcements
- "I fully support and & all recycling opportunities. I would love to be able to recycle as much as possible as soon as possible (curbside!).
- Also very supportive of including the school district recycling in the base package."
- Our apt complex doesn't recycle.
- I appreciate the city's efforts towards increasing recycling options. Please consider an education campaign regarding fluorescent light recycling options (i.e. total reclaim)
- School recycling should be a priority- lots of paper & training future recyclers
- "I believe it is irresponsible the way this survey is being conducted.
- Why have you not told the public this will be MANDATORY in the MOA pickup areas of town?"
- I hope this goes through, and when it does advertise it because I didn't even know about the composting center until this summer, and a lot of people don't even know about the recycling center
- We have needed this program for years. Finally, we are getting somewhere. Let's get this going - NOW!

- I think increasing the types of materials collected in grocery store parking lots would be a help. I live in Eagle River and don't have much storage space, but I can't justify driving to the recycling center to drop off only a paper bag of mixed paper.
- Currently, recycling centers do not accept a broad variety of plastics. I would like to see the recycling program expanded to accept common forms of plastics used for packaging; e.g., all forms of types 1, 2, and 5 plastics. Also, have you considered recycling cork? Between the various restaurants and homes that use wine, there has to be a significant amount of wine corks that are currently discarded. These could be recycled locally and used for miscellaneous building materials or other innovative uses.
- Our recycling program in Alaska (Anchorage) is such a minimal operation right now. Only the people who truly CARE are recycling. If Alaska wants to catch up with the rest of the nation in recycling standards, we need to encourage ALL citizens to recycle. A curbside recycling program will accomplish this.
- Please make it happen
- Most people need for this to be as painless as possible to get them "on board" and used to the process. People used to smoke in stores - can you believe that? Health care used to be free from our employer. Wow! Eventually, people won't remember a time when they didn't recycle.
- time to get into the 20th century (at least)
- It would be so great if we had curbside recycle in anchorage!!! Thank you for working on the project!!!!
- Something needs to be about the Anchorage School District's lack of a recycling program sponsored by the ASD. If schools have a recycling program it is because of the school staff.
- NO
- "The more that can happen with regard to recycling
- the better"
- I really hope this gets off the ground. It would be wonderful! I'm shocked at how much garbage my neighbors make...I know so much of it could be used again if treated the right way. Thanks for your work on this.
- It is absolutely essential that a city the size of Anchorage have curbside recycling. We should strongly consider fining citizens that don't recycle trash.
- I like Valley Center for Recycling Solutions. I do not expect to be paid to recycle; just helping to save our earth.
- Curbside recycling should include plastics, aluminum, tin, glass, paper, cardboard, etc. This should not be limited to just office paper.
- This program is long past due. In the end recycling will save the city money.
- Why are you not renewing the lease on the land out at pt wornzoff
- What about compost facility? Should be a convenient location
- "People without cars can't participate in current recycling opportunities
- I WOULDN'T want to see any one person or company to gain a monopoly & get rich off the partnership, etc"
- More plastic types/grades should be added
- "A. Need to understand better the TOTAL recycling system - where does it end up? How is it used?
- B. Explain (public education programs) why #1 or #2 plastics work with bottles & jugs, but not other containers
- C. Stress (for residences) the ease & healthy lifestyle of ON-SITE composting for single family residences
- D. Encourage Point Woronzof-type recycling site for construction recycling. Davis Constructors and Neesor are on board."

- Current recycling opportunities are not sufficient to adequate. Transfer station tends to fill quickly - at the least, the capacity should be increased at transfer stations. However, I think that the programs offered here will encourage larger numbers of people to recycling & that is most desperately needed!
- Convert as many recycling costs to upfront costs. I was late for presentation. If presentation times had been in APN notice, AND STUCK TO, it would have simplified things for me. I feel that his form was not specifically for Anchorage.
- "A commercial incentive should be an award of a label, i.e. award they can use for marketing.
- I would need to have pro-Anchorage, pro-business moniker, as we live in a state where ""green"" is mostly negative.
- The recycling center needs at least one staff member to assist and educate. Of course, if curbside can't happen, more drop-off locations are needed."
- Implement MANDATORY TESTING for lead based paint& other contaminants so that C&D materials can be considered INERT & landfilled more economically.
- Another idea for the "reuse area" is to have a designated day, once a year or so, when you can put out at the curb useable items that you want to give away. People drive down the street and pick up what you want. I got this idea from the "Tightwad Gazette" as it was done on the East Coast.
- I am appalled by how eco-unfriendly Anchorage, and particularly the mid-town area, is for people who do not want to drive a monster truck. Walking & bicycling should not be a high risk endeavor. Walk across a few humongous one-way streets- try walking from the Alaska Club to Carr's- you have to wait to cross Northern Lights, then cross Minnesota, then cross Northern Lights again - you'll wonder if people outside of automobiles are considered second-class citizens in this town. I have to conclude that they are. Please hire an urban planner!
- What workshop was on Nov 6th ???
- Depending on the recycling opportunities that are added.
- There was a study done in the 90's that stated it was not feasible to recycle in Alaska because there was not market locally for the recycled goods. What has changed and where is the market today?
- Thank you for taking my comments.
- Curbside recycling would be wonderful, but even getting more recycling drop-offs around town would help tremendously.
- I believe in recycling and all of the good it accomplishes. I just don't think that the cost should be subsidized by non-participants. If the cost is too much, we should stick with the volunteer recycling we now have. Do the Pay As You throw rate, which will encourage recycling.
- Leave options available for expanding items that can be recycled.
- Please, at a minimum, provide curbside recycling. I really think this will encourage more participants.
- In the lower 48 we had curb side and didn't have to pay extra. The companies made \$ from the recycling. We raked our leaves into the street to be picked up on 2 dates then the city compost was open to all residents. I'm just glad that the city is trying to get things going
- Anchorage is far behind the curve as it relates to recycling. It's high time to implement far reaching programs to do what's right. By ignoring this situation, we only harm the future of our community.
- I just learned today that I HAVE to pay the \$49.05 every 3 months even though' I put out less than one bag of garbage a MONTH. It is unfair for those of us not generating garbage.
- I believe that there should be an incentive for those who are willing to recycle more. That could be in cheaper curbside service or free curbside containers
- Keep the recycling portions of the landfills open 24/7.
- Start with easy stuff like newspapers and plastic like water bottles and soda liters.
- Current yard waste composting hours at airport-area facility are inconvenient -- those of us with day jobs would appreciate at least 1 weekend drop-off day per month or alternate (unmanned) collection sites. If there's another option currently available, please publicize.
- I would really like to see this happen soon. I'm proud that the city is considering it now!

- The solid waste disposal fee should be reduced if you recycle. Currently I pay for weekly pickup, but because I recycle, bimonthly pickup would be more than sufficient. There should be higher fees for more trash thrown out to encourage recycling.
- I think that Anchorage would get on board with recycling if it were convenient enough. The costs of recycling would be somewhat offset by lower garbage costs, so it really wouldn't be that expensive.

6.0 APPENDIX: IMPLEMENTATION ISSUES / STEPS FOR CORE PHASE “A” PROGRAM RECOMMENDATIONS

6.1 Implementation Steps and Issues for Core Phase A Programs

The initial program concepts and design are provided below. Implementation issues associated with the core Phase A programs are discussed first,⁴⁸ followed by more general implementation descriptions for the program concepts after Phase A.

6.1.1 Implementation Steps for Automated Garbage Collection (not part of new plan) / Curbside Recycling and PAYT

SWS Collections has already started implementation of automated garbage collection. PAYT rates and curbside recycling can be rolled out simultaneously. New containers for trash will already be needed for the automation project, so the modifications needed to support PAYT are minimal beyond SWS's existing automation steps.

- SWS has a bid in hand for purchase of three automated garbage trucks. Purchase was approved by the Assembly in February and these trucks will become available in October 2008.
- Rerouting of garbage pickup to account for upgrade in efficiencies from automated collection,
- Route for recycling collection, assigning back up trucks, leased equipment, and temporary and other staff.
- Use PAYT subscription forecasts to order containers by size instead of one size trash containers for all households. For recycling, procure 96 gallon containers, with perhaps 5-10% 64-gallon container for households with limited space.
- Develop procurement package to obtain trash and recycling containers; Containers can be a delay for large orders (30-90 days); small pilot orders speedy, so place order for pilot area recycling containers asap. Consider ordering decals clearly stating the materials that are, and are not recyclable to past to the undersides of recycling container lids.
- Determine location for housing can receiving and maintenance; estimate staffing
- Estimate manpower requirements for can delivery and maintenance
- Develop postcards or other outreach showing the new can options and associated rates and ask households that do NOT want the most common anticipated can size (see distributions assumed in PAYT rate computation section of this report) to contact SWS to request their desired size. This helps minimize household call and mail volumes to SWS.
- Refine PAYT rates provided in this report, based on actual costs and bids for equipment and labor associated with the programs.

⁴⁸ These implementation plans were discussed with SWS and MOA staff and benefit greatly from discussions with and materials provided by Mark Madden, Kevin Harun, Jeannie Carlson, and Donna Mears. A February 5, 2008 memo from Mark Madden, SWS to Kevin Harun (CEDC), Jeanne Carlson (SWS), Donna Mears (SWS), Brian Vanderwood (SWS) was very helpful.

- Hire and train additional temporary customer service staff for 3 months starting 1-2 months prior to implementation of curbside and PAYT programs.
- Implement public education program, using brochures, newspaper articles, web site text, hotline phone system, laminated “answer” sheets for council and customer service staff, handouts at city events, and similar outreach. Education addresses rates, enforcement, extra fees, one free switch within the first year and \$15 thereafter,⁴⁹ and other key information. Again, information will be needed for SWS (including PAYT and curbside recycling) and areas outside SWS (not including PAYT and curbside).
- Prepare customer reminder tags for enforcement (“Oops” tags for garbage in recycling, inappropriate materials, overstuffed containers, bags alongside, etc.)
- Provide tape recorders, clip board route sheets (ordinary or bar-coded), or other mechanism for tracking, collecting and charging for excess garbage.

As the program expands beyond SWS area (expansion Phase), a number of additional implementation steps will be needed:

- Establish Recycling districts. Criteria will need to be zoning type, housing density, political districts, income levels and other. NOTE that there may be benefits to establishing several districts, potentially with some small enough to be suitable for active, smaller trash and recycling companies currently operating in the MOA. If the MOA is divided into only a few districts, the MOA should allow subcontractors to work together to bid for an area; in addition, providing incentives for competitors to “sharpen their pencils” can be very beneficial. That is, in areas with just two main haulers, divide the city into uneven shares, with the lower bidder getting the larger area, or dividing the city into three areas, and awarding two districts to the lowest hauler. Adhering to these types of principles should help assure lower bids for service.
- Bid out districts to contractors to perform recycling pickups to individual contractors. SWS Collections eligible to bid on service areas.
- Contract will set minimum standards for pickup service.
- Develop procedures for billing; most preferred is municipal billing with the City paying the contractors in each district. That allows lower bad debt, especially if the municipality can assign partial payments to water or other service bills. It also allows the Municipality to be responsible for rate design for the PAYT program, and allows the Municipality to assign uniform “postage stamp” rates for the services throughout the Municipality.
- Assess the potential for franchise fees to Muni for management and enforcement; usually, if contracts are used, the Municipality can assign user fees that cover its costs (contract and administration).
- Determine a process for developing RFPs, evaluation of the proposals, and assign the appropriate decision-making authority for Districts (likely the Assembly).
- Develop Ordinance that establishes Recycling Districts, and mechanism for bidding.

6.1.2 Implementation Steps and Issues for Compost Facility and Drop-offs

The project team worked hard to identify alternative sites for a compost facility, and requested SWS explore several options for compost sites on the grounds of the Landfill. However, SWS has been unable to agree on a location for a short, medium, or longer term compost facility at that location. SWS prefers to establish a facility at the site of the former Anchorage Compost

⁴⁹ The MOA may elect a different pricing structure or policy for switches; this is the most common policy found around the country.

Facility. The plan is to establish an operational compost facility to handle green waste generated during the summer of 2008. Implementation steps include:

- It is assumed that the facility would be operated at the current compost site at Anchorage International Airport. Legal issues will be resolved in time for development of the facility in early summer.
- Develop a clean-up plan and implement clean-up, identifying materials that may be able to be recycled or composted, and estimating costs for processing what can be, and for hauling and disposal of materials that cannot.
- Issue an RFP for operation of the site. To address the needs of summer of 2008, SWS will operate the facility with consultant services on operations. A multi-year contract for operation would then be developed using an RFP process. The best arrangement for the City is to hire experienced composters (perhaps with advice from Seattle's well-respected compost firm), with the contract assigning responsibility for identifying the best feedstock mix, processing, and marketing responsibilities to the compost contractor. The MOA can work with the contractor to help establish programs and/or incentives that may improve the feedstock (e.g. establishing a horse manure drop-off area, etc.).
- Identify a location within the site for windrows. The cost estimates developed for this project assumed one of two options:
- Assume operating at former site; cleanup costs excluded. 2 options for site and equipment follow, and, when scaled to 14,000 TPY, both options result in quite similar capital and operating costs overall.
 - Option 1) (scaled for 14,000 TPY) 15 acres of engineered aggregate pad (30 year life, \$485K), building at 4000 sq feet optional for equipment storage and office (20 year life, \$520K), engineering 15%, contingency at 10% for site total of \$1.26 million; Equipment dump truck (\$200K), grinder (\$300K), labor operator, supervisor, seasonal labor, benefits and overtime totaling \$195K.
 - Option 2: (scaled to 7500 TPY). Simpler option: 4 acres compacted earth/clay, berm, and fire hydrant (\$125K; handles 7500TPY), no building. Equipment: Grinder (\$300K). Wheeled loader / cat or dump truck (if included, \$200K). Other sites adapted a water truck for about \$20K. Operations: If manure available, can grind large; no manure requires grinding fine. Staffing is 1 FTE to grind 20 hours / week; plus time for turning, etc.
- 10-yard to 20 yard rolloffs (or bunker areas) will be needed at the transfer station and at the landfill, and they will need to be after the scales. To decrease congestion at the scales, rates can be established for a "car load" or a "pick-up truck" load of clean yard waste and these vehicles can be cashed out, but not run across the scales. This is in addition to the tip fee established for standard and commercial trucks. SWS staff will need to monitor the containers and haul them when they reach capacity (weight or volume). Alternatively (but less desirably), hauling can be made part of the compost operations contract.

6.1.3 Satellite Drop-Off Stations

In Phase A, satellite drop-off stations will be established in areas outside the SWS collections service area (specifically East Side and Huffman in South Anchorage) to enhance self-haul recycling and reduce congestion at Rosewood facility. Issues include:

- Identify specific sites, get neighborhood buy-in, and acquire rights to land (purchase, lease, HLB land, other), and establish costs associated
- Establish patrolling / oversight to control illegal trash dumping

- Confirm or enter into specific agreement with Smurfit regarding hauling from the facilities; identify staff (SWS, ALPAR, Smurfit, temporary staff, other) to be responsible for monitoring sites, ensuring sites are clean, and collection bins are emptied regularly
- Acquire bins for all sites. Program design for each site assumes the following number of rollofs: 2 for cardboard, 1 for newspaper, 2 for mixed paper, 2 for plastic, 1 for aluminum, and 1 for bimetal containers / tin for a total of 9 dumpsters per site (glass excluded).⁵⁰
- Prepare / develop sites, including: site preparation, ¼ acre of asphalt per site, lights and fencing, and steps approaching the rollofs where needed.
- Develop signage for sites and advertise the sites.
- Need to develop budget for planning, startup and operation of sites in 2008 and 2009, and plan for future developments at possible “next phase” new or enhanced sites in Chugiak, Eagle River, Girdwood, or other underserved areas.

6.1.4 Schools Recycling Program

Schools generate large quantities of recyclable materials at a centralized location. Recycling in schools will be a community-wide program. They also have large quantities of relatively cheap, motivated labor in students and school sponsored recycle programs. Issues include:

- Work with ASD to identify needs, possible plans, and opportunities they see, including the best form for assistance (financial help, program coordination help, container provision, pickup, in-school collection bins, educational support, other)
- Determine whether the ultimate program is to be ASD directed or Muni/SWS directed?
- Identify cost sharing arrangements or long-term transfer of program to ASD funding, if desired.
- SWS works with ASD to develop a phased implementation plan (assumed 1-2 years in this report). SWS works to procure containers identified in the program design, and SWS coordinates with ASD in delivering containers. ASD, with SWS assistance, trains custodial staff in the new procedures, and SWS/ASD develops in-classroom materials for students and teachers on their responsibilities for recycling.
- SWS works with the schools to help refine their trash subscription systems, identify space for new containers, and working with Alaska Waste on new trash and recycling subscription / service levels.
- Measurement and monitoring of tonnages and diversion.

Basic implementation issues associated with the program concepts beyond Phase A are provided in the body of the report.

⁵⁰ Given that the materials are not pulled all at once, there may need to be one “extra” container that can be switched out when the materials are brought to the processing facility.

7.0 Elements of Zero Waste Plan for MOA

There are two key parts of a zero waste plan for the MOA – internal/governmental operations, and a plan for the generators within the MOA. A list of elements – most of which would be required in order to get “darn close” to zero waste – is provided below for consideration for MOA planning into the future. It may be that some of these strategies are in place; most will require a significant shift in infrastructure and will require funding or mandates beyond current initiatives.

7.1 Potential Internal / Municipal Operations toward Zero Waste

- Prohibit non-recyclable office paper and envelopes.
- Develop / distribute / encourage electronic letterhead to encourage use of recycled content paper and avoidance of printing documents.
- Require purchase of recycled content paper - preferably at least 50% post consumer content.
- Review all internal procurement documents to remove non-functional barriers to use of recycled content products (e.g. brightness requirements on paper) and incorporate encouragement of recycled content where possible (e.g. in construction, roads, and office applications among others)
- Review existing procurement policies and add to list of preferred bidders those that carry recycled content materials and products
- Internal reallocation program for surplus supplies, equipment, and furniture.
- Promote / purchase / set as default printers and copies with duplex capabilities.
- Conduct internal paper audits.
- Change procurement instructions to vendors to require bids / proposals to not waste paper, require recycled content paper, and avoid using excess paper, bindings or packaging.
- Use take-back language in equipment bids to require equipment suppliers to take back old equipment for reuse or recycling.
- Encourage utilization of reusable packaging.
- Make waste reduction and diversion a priority through policies, improving in-house equipment and collection services, and urging employees to conserve energy and save money.
- Require electronic waste to be recycled.
- Review use of hazardous materials and cleaning products and other uses and encourage environmentally preferred products.
- Develop a pilot composting program for city offices and buildings, which reduces landfill use and methane development.
- Develop a jail composting program.
- Pilot zero waste building program in a MOA facility.
- Develop an in-house green waste diversion program, chipping and composting all materials; require mulching, chipping, delivery of materials to compost facilities for all MOA-contracted landscaping service providers.
- Require LEED gold or better for all new MOA buildings or remodels, requiring all reuse / diversion / recycling points.
- Explore / pilot construction and demolition infrastructure options to expand C&D diversion
- Make all community events, fairs, meetings into zero waste events, using compostable dinner ware, and requiring these practices of all vendors.

- Develop internal education programs for all employees (including custodial staff) on zero waste, recycling, and diversion, and conduct repeated education including newsletters, videos, and other means. Potentially develop inter-departmental "challenges."

Measure before and after to monitor progress. Conduct audits to review success of strategies.

7.2 Potential Municipality-Wide Strategies

Overall, a successful strategy will require several overarching approaches:

- develop strategies using effective partnerships with profit and non-profit entities;
- support convenient services (parallel with trash service);
- employ economic / financial incentives;
- develop and enforce supporting policies; and
- help build / support infrastructure needed for programs.

The list of strategies is provided below. There are several more aggressive strategies listed near the end of the chapter.

Municipality-wide strategies

- Ordinance requiring trash service and embedded recycling / diversion for all households in MOA
- Universal curbside collection using single stream - service provided at least every other week using large containers
- Every other week curbside yard waste service provided; either base service embedded in trash rate and fee for extras, or fee for all levels of service
- Multi-family residential waste diversion, including at least space for recycling, education, and service requirements for haulers
- Enhance yard waste drop-offs and expand to viable areas in the MOA
- Enhance recycling drop-offs
- Implement fall leaf drop-off to divert / compost the materials
- Develop / help foster university "green teams" with student-to-student training (see Alliance to Save Energy's "Green Campus" model); and encourage local universities to join "RecycleMania" with National Recycling Coalition's College and University Council (CURC)
- Develop neighborhood community garden compost projects where appropriate
- Develop enhanced schools education program
- Develop business recycling program including technical assistance program first focusing on offices, paper, traditional recyclables, and composting; then expanding to other business types and materials
- Introduce a requirement for container (cans and bottles) recycling for all bars and restaurants; enforce at liquor license renewal time (per Mecklenburg County, NC program)
- Pilot and then introduce commercial food waste program targeted at food-rich businesses (grocery, restaurants, hotels, hospital / care facilities) after compost facility identified
- Introduce strong construction and demolition (C&D) program, including program requiring a financial deposit in order to obtain a building permit that is rebated only if a threshold percent of the material generated during construction / demolition is recycled and reused (25%, 50%), demonstrated through weight slips or other verification procedures (per San Jose, CA's program)
- Encourage on-site re-use and salvage of C&D
- Require recycling be mandated in all commercial leases (per Seattle, WA)

- Require recycling plans be filed by all commercial businesses / buildings (per Portland, OR)
- MOA assist in facilitating cooperative recycling service for businesses that are space-constrained (per Massachusetts model for Cardboard);
- Make PAYT incentives very aggressive
- Ban electronics waste
- Require recycling bins in all public places
- Expand education on reuse opportunities for textiles including charitables
- Encourage xeriscaping in residential and commercial landscaping
- Conduct master composting classes / seminars, discounted composter sales, discounts on mulching mowers / blades, conduct extensive education programs on yard waste diversion / avoidance

More aggressive strategies

- Require use of local compost mix as a soil amendment for all new housing projects and all MOA transportation projects
- Develop an enhanced waste exchange, potentially electronic
- Pass ordinance requiring in-store de-packaging if requested
- Require recycling plans during building and validate upon occupancy
- Pass a ban on plastic bags or require significant tax and separate purchase of plastic bags in stores
- Institute a fine for improper disposal of electronics waste
- Legislate a community recycling goal
- Institute a trash tax or other sustained funding source for recycling and diversion
- Develop goals / requirements for commercial diversion (rates and dates) and multifamily sector
- Provide developer incentives (lot line flexibility, extra floors, etc.) for aggressive recycling and waste reduction and green development
- Review land use code to encourage recycling / reuse / resource conservation

More aggressive strategies

- Enhanced MRF – single stream and commercial capabilities
- Yard waste ban at landfill
- Ban non-recyclable, non-compostable, single-use wares and utensils -- and take-out containers
- Consider expanding recycling collection to more plastics, paperboard, other materials
- Ban on plastic bags at grocery stores and tax on paper bags; incentive for re-use of bags with significant public outreach supporting / educating
- Mandatory commercial recycling and/or require recycling costs to be embedded in commercial trash rates
- Develop a mixed Construction and Demolition (C&D) recycling center
- Establish a facility for "hard to recycle" materials (styrofoam, etc.)
- Pass laws requiring producer "take back"
- Consider recycling market development zones, or facilitating co-location of businesses with compatible waste / input streams, and potentially help make space available for reuse organizations at the landfill.