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***RECYCLING INCENTIVE ALTERNATIVES:
Results of an Analysis of Performance,
Pros, and Cons of RecycleBank™, Recycling
Credits, and Pay As You Throw (PAYT)***

By

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Co-funders of this report:

*Skumatz Economic Research Associates (SERA), and
EPA Region 9 through a Grant to
The Econservation Institute*

December 29, 2010

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Acknowledgements: *The authors would like to thank all the community staff across the country that provided information critical to the analyses in this report. Of course, thank you to the project funders.*

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The Econservation Institute, established in 1998, is a non-profit dedicated to research and education on practical resource conservation strategies and policy options in solid waste management, energy efficiency, and other environmental issues. Contact info@econservationinstitute.org for more information, or www.econservationinstitute.org for publications and studies.

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Skumatz Economic Research Associates, and EPA Region 9, Grant to Econservation Institute

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By Skumatz, Freeman, D'Souza, and BeMent, SERA and Econservation Institute

1. THE ISSUE

What can communities do to move recycling and diversion forward? What options can haulers use to distinguish themselves in the market? We analyzed three strategies being used around the country – PAYT, recycling credits, and RecycleBank™ - and compared the performance, cost, strengths, and weaknesses of these alternatives. Our analytical results are based on data obtained directly from communities, haulers, or other organizations with these programs in place.

2. INTRODUCTION TO THE MAIN INCENTIVE ALTERNATIVES

- **PAYT:** Pay As You Throw (PAYT)¹ is a system in which the household pays more to dispose of more trash. This provides an incentive to recycle, because households that remove recyclables save money in trash bills. These systems, which usually use bags, tags, or cans/wheelies, are in place in more than 7,100 communities in the US (Source: Skumatz & Freeman / SERA)². PAYT programs are nearly 100 years old; however, the real growth began in the early 1990s. As of 2006, PAYT programs were available to more than 75 million people in all but 3 states in the US; programs have since spread to more states.³
- **Recycling Credits:** Recycling credit programs provide households with financial or other incentives / rebates for recycling, and have been in place since at least the mid-1980s (when we first counted PAYT systems). Many early programs were fixed credits based on recycling (commonly \$1.50 off the trash bill if your household participated in recycling); later credit systems provided periodic household rebates computed as a share of the market value of the community's recycling tons. Recycling leads to dollars off trash bills. Most of the historic credit programs have been discontinued; however, for reasons discussed below,

¹ Also called unit based pricing, pay by the bag, volume-based rates, and similar names. PAYT was coined by the staff in Austin, TX.

² Skumatz and Freeman, "Pay As You Throw (PAYT) in the US: 2006 Update and Analyses", prepared for US EPA and Skumatz Economic Research Associates, December 2006; available on EPA or SERA website (www.serainc.com). The authors are currently completing an update to this PAYT community count.

³ See upcoming paper by authors to be posted on www.paytnow.org.

some communities (and haulers) are reconsidering a new version of this strategy. Terracycle™ pays, or pays charities, for hard to recycle materials.

- RecycleBank™ and Point-Based Recycling Credits:** RecycleBank™ is one of a new generation of “recycling credit” programs that pay points for recycling. Other examples are Waste Management’s recently-introduced “Think Green Rewards”, individualized City-delivered points programs, and others. The best-known⁴ type of RecycleBank™ programs weigh a household’s single-stream recyclables weekly using a system of RFID tags on each 96-gallon recycling cart and a scale on a retrofitted fully-automated tipping arm.⁵ Households receive “points” based on the weight of the recyclables set out, and the accumulated points can be redeemed on the program’s website for coupons for dollars off purchases, or for gift cards from national and local RecycleBank™ retailer “partners”, or donate them to non-profits, schools, or other options. This program began with pilots in 2005. Households are encouraged to recycle because more points link to dollars savings on retail purchases or a few other types of rewards. Figures are hard to tally, but RecycleBank’s™ (RB in the rest of the article) website suggests there are 500 RB communities in 28 states covering about 2 million households.⁶ RecycleBank™ is also expanding in communities overseas.

Table 1: Partial List of States with RecycleBank™ communities ⁷

(Source: Skumatz Economic Research Associates and Econservation Institute, SERA & EI)

AL, AZ, CA, CO, CT, DE, FL, GA, IL, KS, MI, MA, MN, MS, NE, NJ, NM, NC, OH, PA, SC, SD, TN, TX, VA
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Table 2: Why Communities / Haulers Consider PAYT or RecycleBank™

PAYT	RecycleBank™
<ul style="list-style-type: none"> Strong diversion results – encourages households to recycle AND compost AND reduce waste Household savings / incentive for recycling 	<ul style="list-style-type: none"> Increases / jumpstarts stagnant recycling Provides incentive for households to recycle Hauler partnerships bring the program as a package; helps facilitate implementation of

⁴ There are other programs that “pay” for recycling. Waste Management’s™ recent foray into the field is called “Think Green Rewards” and is a point system. Terracycle™, for example, pays several cents per unit for recycling hard to recycle materials. Others exist, but RecycleBank™ has the greatest brand awareness of these options, so we focus on that option in this paper.

⁵ RecycleBank’s™ system adapts the types of equipment initially developed for Seattle’s 1989 “garbage by the pound” experiment (Skumatz, RR, 11/1989). This article demonstrated a system, and discussed incentives from weighing and charging for trash at the household, and rebating recyclables. The advent of single stream helped make it practical.

⁶ Quoted in *Resource Recycling*, 12/2010. Our research, without a list of RB communities available, found communities that had RB or had discontinued RB that totaled about 1.2 million households, and we identified programs in 25 states, close to the 28 mentioned. Our research was not trying to be thorough enough to develop an inventory of these programs.

⁷ We are missing 3 states, according to RecycleBank’s™ website; again, we were not trying to develop an inventory. We interviewed a number of communities with RecycleBank™, which we identified by trial and error calls, literature review, and other methods. Our interviews found that there was no familiarity at all with RecycleBank™ in some states; in others, it was well-known, and programs were in place (See Table 1).

3. TONNAGE, DIVERSION, AND PARTICIPATION IMPACTS

We analyzed the tonnage diversion impacts attributable to PAYT and RecycleBank™ programs based on data from communities that had implemented the programs. For the sake of brevity, and to provide parallel information, we have not repeated the information from RecycleBank's™ marketing materials, which have been widely distributed. Instead, to provide new information, we are focusing on the results from communities that have actually implemented the program.⁸

To analyze tonnage impacts for any program, it is important to isolate the impact of the program ALONE – separate from the implementation or enhancement of recycling programs, yard waste programs, or other changes that may have been implemented at the same time.⁹ That means measuring PAYT the incentive, above and beyond any recycling programs, collection frequency changes, containerization options, single stream conversions, or other supporting programs in place. What does PAYT add beyond what would have happened without the PAYT incentive itself?

The same goes for the RecycleBank™ program. Here it means making sure to measure the impact of RB above and beyond the fact that the core RB incentive is an add-on to single stream recycling with large containers. The key ways to measure this incremental impact are to: 1) examine pre/post impacts in communities that already had single stream in large containers; or 2) to measure the impacts using many communities and statistically pull out the impact from RB separate from large containers and single stream; or 3) look at pre/post for communities, but pull out the impacts that have been statistically associated with going to single stream and large containers, to “net out” the RB impact. We were able to do 1 and 3, but were not yet able to use second method. Data were not available from enough RB communities to support that analysis.

As a backdrop, it is critical to recognize that both single stream programs and large containers lead to large increases in recycling (simpler and more convenient for households; larger containers that don't limit recycling). Single stream recycling also decreases collection cost. Published research by the authors (Skumatz, RR 8/2004)¹⁰ showed that Single Stream – without

⁸ We located several communities that had both PAYT and RecycleBank™ in place; note that credits or RecycleBank™ and PAYT are not mutually exclusive. We are investigating these further; the first several we interviewed had very weak PAYT programs (very small differences between different can / bag sizes). Watch www.paytnow website for additional information on these programs and findings.

⁹ It remains difficult to separate out a “bump” that may occur because of the introduction of something new, with its accompanying outreach / advertising / focus. The best results come from a long-term follow-up.

¹⁰ Impacts originally from Null and Skumatz, “Single Stream Recycling – Total Cost Analysis”, prepared for AF&PA by Jaakko Poyry and Skumatz Economic Research Associates, January 2004. Of course, there is a debate about quality of materials / contamination, etc. However, the RecycleBank™ comparisons are all on the collection side. We stay on the collection side for this discussion. Note also that RecycleBank™ is all single stream; PAYT may be single stream, dual stream, drop-off, etc., with concomitant variations in material quality.

RecycleBank™ or PAYT incentives - increased recycling over dual stream programs on the order of 3.5% percentage points, or about a 30% increase in recycling tonnages.¹¹

- **PAYT:** Extensive statistical analysis by the authors¹² shows that PAYT reduces the total of residential trash disposed by about 17 percentage points. About one-third of this impact is reflected in an increase in recycling, about one-third is an increase in organics diversion, and about one-third is source reduction / waste prevention (donating to charity, buying durables, less packaging, buying carefully, etc.) These impacts represent the impacts of PAYT, separate from other changes. The recycling impact alone is an increase of 30-100% (an average of about 50% based on studies in Iowa,¹³ and in SERA studies¹⁴). The total diversion impact from PAYT is about three times the recycling impact. These represent the impacts of PAYT, separate from changes in any other programs. SERA studies show very similar increases occur from PAYT whether recycling is curbside or drop-off.
- **Recycling Credits:** There has not been sufficient quantitative data from recycling credits communities to associated estimate tonnage impacts.
- **RecycleBank™:** We used several main sources of information on performance. These include results from a number of early eastern RecycleBank™ programs captured in an EPA article in 2009, as well as results from interviews we conducted with individual communities with RecycleBank™ programs that were able to provide data. Identifying the impact of the RecycleBank™ program alone is made more complex because the data often include changes beyond a simple implementation of a RecycleBank™ rewards system in a community with an existing single stream program with large containers. More often, communities switch to single stream and larger containers at the same time they add RecycleBank™.¹⁵ Tonnage data related from RecycleBank™ communities was difficult to

¹¹ Our estimated range was as high as a 40% increase in recycling from single stream. Large containers add diversion even above these figures, but the effects are difficult to separate. We report the conservative values. Our study also found savings from single stream on the order of 15% in collection, and as high as 25%. If collection frequency changed from weekly to every other week, there were significantly higher collection cost savings.

¹² See publications including Skumatz, "Pay As You Throw in the US: Implementation, impacts, and experience", Waste Management, September 2008; Skumatz and Rogoff, "Pay As You Throw – Now...", APWA Reporter (March 2010), Skumatz, "Measuring Source Reduction: Pay As You Throw / Variable Rates as an Example", Skumatz Economic Research Associates Technical Report (5/2000), on EPA website; and articles in *Resource Recycling* 6/2001, 8/2000, August-Oct 1999, 8/97, 9/96, and others continuing back to the late 1980s. Also see Skumatz and Freeman, "Pay As You Throw in the US: 2006 Update and Analyses", for EPA and SERA, 12/2006 on EPA and serainc.com websites; and Skumatz, "Beyond Case Studies: Quantitative Effects of Program Choice on Recycling and Green Waste Programs", SERA, July 1996; Skumatz, "Frequently Asked Questions about PAYT" on www.paytnow.org, among others.

¹³ Frable, Garth W., and Berkshire, M., 1995, "Pay-as-you-Waste: State of Iowa Implementation guide for Unit Based Pricing", East Central Iowa Council of Governments and Iowa Department of Natural Resources, Cedar Rapids, Iowa.

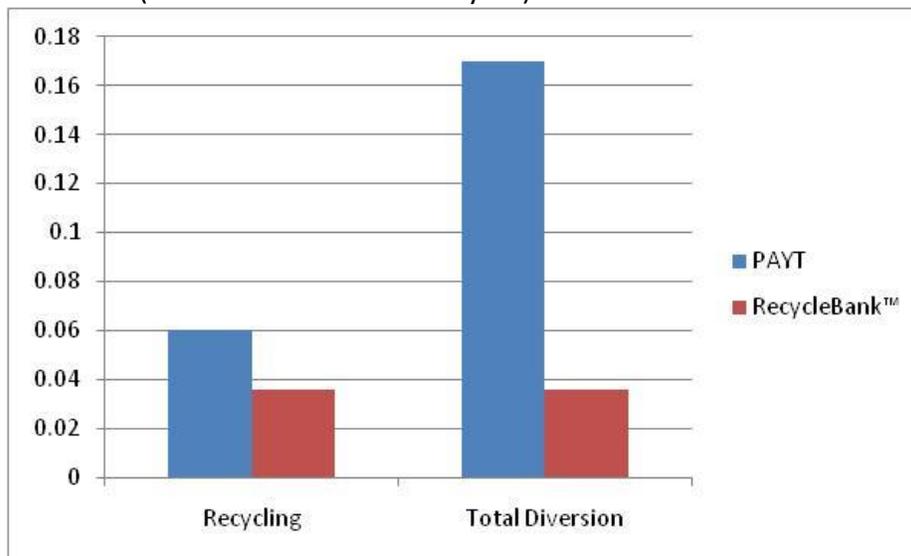
¹⁴ Skumatz, "Frequently Asked Questions about PAYT", available on www.paytnow.org,

¹⁵ Communities with small dual-stream bins have been a smart target group and strategy, because the recycling gains – representing the combination of recycling increases due to single stream, larger bins, and RecycleBank™ -

obtain. Individual community results we identified for communities with single stream already in place ranged from an 11% increase in recycling to several with results in the 30-35% range (a couple communities report zero impact but were not included in the analysis; their inclusion would lower RB's average impact estimate). Using data from about a dozen communities,¹⁶ we find RecycleBank™ increase recycling about 30%, and has between half and two-thirds of the impact on *recycling* that PAYT has,¹⁷ and of course, none of PAYT's composting or source reduction impacts (which is 2/3 of PAYT's total impact). RecycleBank™ would not be expected to have an attributable effect on composting or source reduction.

Other results reported by communities include a comparison of several communities in the North Shore of Massachusetts. These results, reported in EPA's Spring 2009 newsletter,¹⁸ indicate that a community implementing PAYT had three times the diversion impact as several similar communities that implemented RecycleBank™. Graphs showing the SERA and Massachusetts results follow.

Figure 2: Average Percentage Points of Added Diversion Rate: Recycling and Total Diversion (Source: SERA and EI analyses)



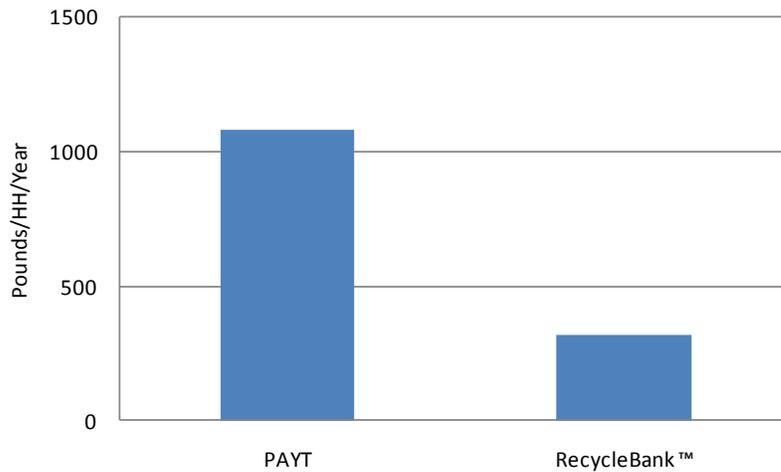
are especially large. However, it complicates disentangling that share of the effect actually due to RecycleBank's™ incentive alone, separate from the cart and single stream effects.

¹⁶ For some communities, the switch to RB included a change in recycling system to single stream and larger carts, and we extracted the portion of the impact attributable to single stream. For other communities, the data could be used directly as they maintained the same containers and recycling system and just added RB.

¹⁷ We found much higher gross increases in towns starting from dual stream, 18 gallon bin programs, but in many cases, the larger share of the impact was attributable to the move to single stream with large containers. The smaller portion of the net increase was attributable to the RecycleBank™ incentive program separately. On average (from a small sample), it was about half and half. Note that in a couple communities, the staff estimated that there was zero impact from RecycleBank™.

¹⁸ <http://www.epa.gov/osw/conserve/tools/payt/tools/bulletin/spring09.pdf>.

Figure 3: Comparison of Annual Pounds per Household Diverted in North Shore MA communities ¹⁹(Source: EPA PAYT newsletter 2009)



Although we are less concerned about participation rates than tons when talking about diversion impacts, we find recycling participation rates²⁰ also increase under these incentive programs. In PAYT communities, participation rates commonly range 80% and above.²¹ Changes in recycling participation are available for a few RecycleBank™ communities. From the limited information available, the results vary quite a bit; we found increases from a start of 86% participation to 89% after the program, another changed from 33%-56%, and another was unchanged at 89%. Additional community reporting will add to the robustness of these types of comparisons.

4. COST ANALYSIS

- **PAYT:** Surveys and detailed interviews indicate that most communities that implement PAYT see no cost increase, even in the short run (citation). Individual households, of course, do see changes in *rates* (that is what provides the incentives). The implementation steps and costs for the community or hauler depend on the old system and the new PAYT system being installed and thus, are community-specific. We use two scenarios for the PAYT cost estimates. The low cost option makes assumptions consistent with the Iowa and other estimates that PAYT has minimal cost implications for a city or hauler (automated cans from concurrently-implemented automated program or low-investment pre-paid bag/tag options; and use of an existing or no billing system) – the most common scenario. The

¹⁹ RecycleBank™ advertises higher tons per household than the figures found in these communities.

²⁰ One reason we do not focus on comparisons of participation rates is because they are measured differently in different communities. In addition, they are not a direct link to tons. However, changes in participation rates can reflect awareness of the programs and interest by new and expanding sets of household.

²¹ “Pre-“participation rates seem to vary by area of the country.

other scenario involves a set of higher-cost assumptions attributed to PAYT: the net cost of smaller sized automated containers for a share of households (assumes large automated carts already in place and some must be replaced for smaller service options) and the cost of a new billing system (assuming mailed bills). This is the most expensive set of assumptions. Few PAYT implementations will be as high as this high scenario; most will be between the options, or at the lower end. Additional detail underlying these computations is provided below.

- A bag (or tag/sticker) program requires an arrangement to purchase logo-ed bags (from one of many national / local suppliers), stocking of those bags at grocery / convenience stores, and invoicing of those stores for the purchase with either no commission or a maximum of about 10% commission. No significant change in billing, containers, or collection is needed. Bags are pre-paid by households / users, so the start-up and on-going costs are minimal.
- Next, consider the case of a wheelie-cart-based system. The most appropriate case is to consider the basic carts as part of the cost to change to (or an existing) automated trash system, NOT to attribute these costs to the PAYT system. The subset of costs that would actually be attributable to PAYT would be the possible incremental costs associated with purchasing and storing multiple sizes of carts instead of one size, the costs of switching carts,²² and any billing system enhancements. Paying for carts is \$0.50 to \$1.00 per household per month, depending on assumptions.²³ We can assume the extra increment needed for multiple container sizes rather than one size is some small portion of this figure. In some cases, trade-ins or resale may be arranged to reduce costs; in others the un-needed large carts may be used as recycling or yard waste containers, making the marginal cart cost for PAYT essentially zero. The billing system for cart-based PAYT requires the ability to charge a recurring bill amount per household. There will be about 3-5 valid recurring charge levels (30/60/90 gallon rates, etc.).²⁴ If households set out extra trash, a community may use a pre-paid bag program (requiring no household billing system capability) or may bill the household with a special fee that is billed (which requires that extra capability and information transfer). We always recommend billing jointly with an existing water bill if possible, as it minimizes costs, and more importantly, nearly eliminates potential collection issues (once policies are in place that mandate that partial payments go to trash first, water last, which then allows water shutoff for non-payment of the trash bill). If no billing has been previously in place, then the billing cost is that associated with a basic recurring system, periodic bill preparation, mailing,

²² Note that most communities charge households for switching cart sizes to cover the cost of inventory and labor.

²³ Paying off the full price of carts over their actual lifetime is, generously, about \$55, paid over 120 months (\$0.48 with 0% interest, \$0.53 at 3% interest), or in round figures, about \$0.50 per household per month. To pay off in 5 years, or for cart lease arrangements, we often see estimates in the range of \$1/hh/mo for automated containers.

²⁴ Note that PAYT does not require these special carts; some programs have operated for years using can-based program with manual / semi-automated collection and customer-supplied cans.

etc. We suggest billing at least quarterly to provide an implicit (or explicit) regular reminder that their bill could be lower if they selected a smaller can. New billing systems ultimately cost about \$1 to \$1.50 per household per occurrence; assuming quarterly billing would yield new costs of about \$0.33-\$0.50 per household per month if no billing system previously existed.

PAYT Total: As a high-cost scenario, we assign one-third the cost of a container per month, and \$0.33 per month for a completely new billing system, or about \$0.66 cents per household for PAYT.²⁵ As mentioned, the majority of PAYT systems as implemented see no increase in costs²⁶. We ignore costs associated with increased recycling and lower landfill tip fees, as these are the objectives of the program, and both PAYT and RecycleBank™ programs would see these costs and benefits (although in different amounts). PAYT would have much larger landfill savings than any of the other options (roughly three times the size or larger). There would be slightly higher costs for recycling processing (and higher market values) associated with the PAYT option as well, as it increases recycling more than the other options.²⁷

- **Credit programs:** The cost of a household credit program depends on design as well. One of the least expensive is one in which all households in the community get a periodic payback or credit on their bills that represents their household's share of the market value of the community's recycled tons. A community that ran such a system said the program cost zero. An enhancement would limit the payments to those households that contributed that tonnage, measured by participation. A hauler that tracks participation said it costs them no more than two cents per household per month to track those households that do NOT set out recyclables (more households participate than don't in their community). This cost applies to either a bar-coded route sheet or RFID tag system, once operational. Aggregating these data and sharing out the market value of rewards is very easy and inexpensive – and adds a somewhat greater link to household behavior – and provides real dollars off for the behavior. Other designs (\$1.50/hh credit for participating) can be assumed to cost basically that amount plus the pennies it costs to track whether the household did or didn't set out recycling a threshold, qualifying number of times to earn the credit. Costs for an outreach program are also included to help advertise the program.
- **RecycleBank™:** This is a complicated discussion, because our interviews show the costs of RecycleBank™ vary quite a bit based on the services you request from the program (vs.

²⁵ The community average costs are generally minimal for PAYT. This \$0.66 is a high estimate; most communities see no short term or long term cost increases. However, note that those individual households that elect not to recycle will see their individual trash bills increase, reflecting the results of the rate incentives on their behavior choice (and this outcome occurs even with no cost increase for PAYT, simply due to the interaction of behavior shifts, can-and-bag set out changes, and incentive computations).

²⁶ Frable, Garth W., and Berkshire, M., 1995, "Pay-as-you-Waste: State of Iowa Implementation guide for Unit Based Pricing", East Central Iowa Council of Governments and Iowa Department of Natural Resources, Cedar Rapids, Iowa.

²⁷ We have also computed these net value computations, but omit them here for simplicity.

what you provide yourself) and your negotiating skills. RB generally works (or “partners”) with haulers or communities, or occasionally, home owner associations (HOAs). There are many different levels of service provided by RB, from its standard data tracking and rewards program with customer service, to financing of carts and other services. Arrangements vary based on whether RB retains the value of recyclables, or shares landfill savings.²⁸ We identified a few pilot programs that were run with no payments to RB; other communities paid between \$0.30 and \$2 per household per month for the more limited package,²⁹ and others paid \$3-4 per household per month total for packages with additional services. These costs are passed through to the households in one form or another. In some locations, RecycleBank™ appears to have arranged for more complicated deals that include shared savings from reduced disposal tip fee payments, arrangements on material value, or other contract provisions. Contracts seem to range 3, 5, and even 10 years in length. Several communities have deals solely based on shared landfill savings, with the share going to RecycleBank™ decreasing over time in some cases. In one, the shared savings (50%) kick in if baseline tons of recycling are exceeded; in another, it appears to be based on a landfill baseline (which could potentially invoke with a recession). We have seen 5-7 year contracts in these cases. In another example the community may exit the contract after one year but must pay off the bins.

- **RecycleBank’s Community-Wide or Route-Wide Program:** RB is increasingly offering a less unique type of service – their “community-wide” program. They do not weigh individual households or provide credits that vary based on what a household puts out. It is a system very similar to the historical market-based “recycling credit” system we described above, that has been around for quite some time. The total tons of recyclables on the route or in the community are added up. RB tracks the number of times containers are set out, and provide points based on community-wide behavior – the same points are given to each household on the route or in the community, or adjusted by participation record. The difference from recycling credit programs are that in RecycleBank’s™ version, the rewards are “points” redeemable for dollars off from their partners, not direct dollar rebates as provided by the “recycling credit” programs. In at least some communities, RecycleBank’s™ per-household-charge for this program has been no different than the amount charged for RB’s individual-weigh program.

5. RELATIVE COST RESULTS AND COMPARISONS

²⁸ Several communities have deals solely based on shared landfill savings, with the share going to RecycleBank™ decreasing over time in some cases. In one the shared savings (50%) kick in if baseline tons of recycling are exceeded; in another, it appears to be based on a landfill baseline (which could potentially invoke with a recession). We have seen 5-7 year contracts in these cases. In another example, the community may exit the contract after one year but must pay off the bins. Arrangements vary.

²⁹ One interviewee stated they initially contracted at \$3 per household per month, but later negotiated down to \$1 per household per month.

Using data from communities nationwide, SERA compared the costs per diverted ton for various programs. The information, illustrated relative to the cost of curbside recycling programs, is presented in Figure 4. The information indicates that RecycleBank™ programs are multiple times the cost per diverted ton as PAYT; however, these figures vary based on the specifics in the community and the negotiated RB cost arrangements, etc.

The ratio of tons diverted by a PAYT program to that from a RecycleBank™ program is estimated to be about 4.8:1 (17 percentage points vs. about 3.5). The fees for the RecycleBank™ programs vary based on arrangement, services, and negotiating skill. This variation complicates the computations and comparisons. However, we can perform the computation based on various cases, as shown in Table 3.

The final comparison is to recycling credit systems. As discussed below, a number of communities had recycling credits in the past, and others are currently developing their own tailored³⁰ web / rewards programs (as are some national haulers and other organizations). To develop a ball-park estimate of the ratio for a recycling credit program (which RB's community-wide program is similar to), we make several simplifying assumptions. First, we assume a bar-coded route sheet or an RF tag system is used, similar to the 1989 Seattle experiment³¹ and to RB's system. Costs are estimated as minimal (pennies) per household per week.

The more complex computation is to bracket the tonnage impact. There was insufficient data available from past credit programs. The communities implementing these new local programs are crafting them to be similar to RecycleBank's™ community program. We don't have enough observations the community-wide version³² of RB; however, the communities are presumably expecting similar performance. To achieve this performance, we believe additional outreach beyond the standard will be necessary.³³ We use a high proxy estimate of about \$2 per household per year beyond current outreach estimates for the outreach portion of the work.³⁴ This level of expenditure may support some degree of community-based social marketing outreach, when added to current outreach expenditures (See Skumatz and Freeman, RR 4/2010 and 10/2010). To be conservative, we assume these new programs result in about three-fourths of the tonnage diverted by the RecycleBank™ program. This is not based on verified numbers. It may be that the direct dollar rebates provided by recycling credit programs will

³⁰ Waste Management's™ "Think Green Rewards", and Terracycle's™ programs are corporate examples; communities are also implementing programs. Some are hooking up with local retailers; other are broadening the ways to earn credits, considering granting credits for community service actions, and maybe expanding to composting or source reduction.

³¹ Skumatz, *Resource Recycling*, 1989 / 1990.

³² It is likely that some of the quantitative data we had from RecycleBank™ communities was based on community-wide implementations; communities weren't always sure which version they had.

³³ In addition, there will be staff time setting up the program, partnerships, etc.

³⁴ This estimate is based on results from two studies conducted by SERA. One was a study of traditional outreach programs and their costs and impacts (Skumatz and Green, for Iowa DNR, Skumatz Economic Research Associates, 2001), and one recently completed study of social marketing outreach (Skumatz and Freeman, for CDPHE, by Skumatz Economic Research Associates, and Published in 2 parts in *Resource Recycling*, in April and October, 2010). Lower costs can be assumed for more traditional outreach; the SERA Iowa report found expenditures per community ranging from about 40 cents per household per year to about \$2 annually (not adjusted for inflation).

result in more recycling tonnage; the program may result in fewer tons because traditional credit programs were not household-based. We select this figure as a conservative estimate, and these figures are used in the computations in Table 3 and Figure 4.

Results:

Table 3 shows that for communities getting RB deals at \$0.80 per household, the cost per ton for RecycleBank™ is about 6 times as high as the high cost PAYT scenario (60 times the low cost PAYT scenario), and if the RB cost is \$2 per household per month, RB costs 15 times as much per ton as the higher cost PAYT options (and 150 times the low cost PAYT scenario).³⁵ The home-grown recycling credit option costs about three times as much per diverted ton as the high-cost PAYT option. Comparisons to the low cost PAYT option are considerably more dramatic (far right column of Table 3). Figure 3 illustrates the relative cost-per-ton differences for the \$1.50 Recyclebank™ option, compared to the others.

Table 3: Relative Cost per Ton for PAYT, Recycling Credits, and RecycleBank™

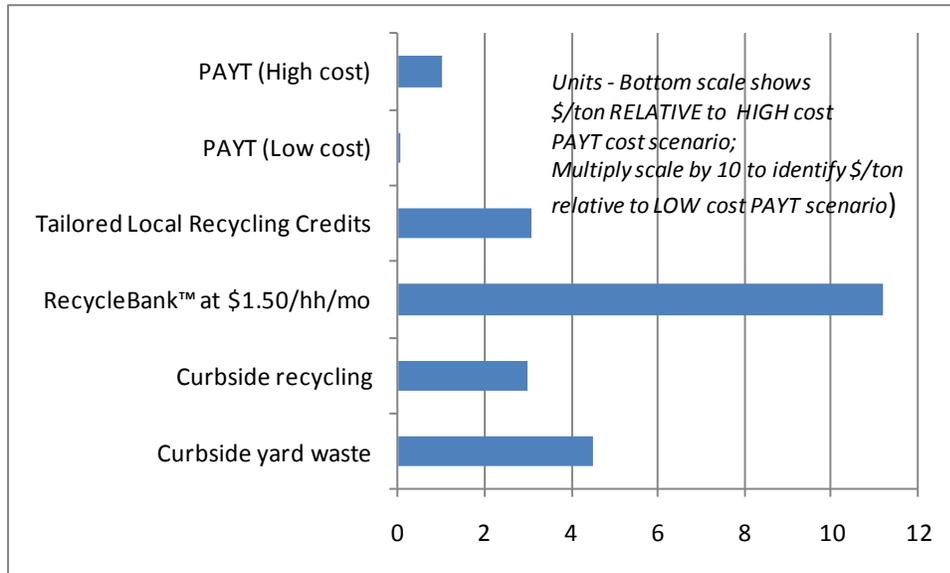
(Source: SERA and EI computations) Uses Cost per ton for PAYT options as “1”, presenting the programs as multiples of the cost for PAYT.

Relative Cost per Ton Diverted ³⁶	Relative to high cost PAYT scenario	Relative to low cost PAYT scenario
PAYT (Low cost)	0.1	1
PAYT (High cost)	1	10
RB at \$0.80/hh/mo	6	60
RB at \$1.20/hh/mo	9	90
RB at \$2.00/hh/mo	15	150
RB at \$3.00/hh/mo	22	220
RB at \$4.00/hh/mo	30	300
Tailored Local Recycling Credit System (RFID or Bar Code & Website rewards)	3 (times as costly per diverted ton as high cost PAYT scenario)	30 (times as costly per diverted ton as low cost PAYT scenario)

³⁵ And more than 100 times the cost for low cost PAYT programs. The average cost for RecycleBank™ for the communities we interviewed was \$1.50 per household per month in fee. As mentioned, these arrangements can be complicated; earlier communities included some sharing of landfill savings, and other contract terms. In some communities they were unable to estimate the costs because it was rolled into the service bid from a hauler.

³⁶ Note that this implies that RecycleBank™ can be more than 100 times more expensive per ton diverted than the low-cost PAYT options implemented in many communities.

Figure 4: Relative Cost per Ton Diverted for Program Options
 (Relative to baseline of High PAYT =1, uses \$1.50/hh/mo cost for RecycleBank™)
 (Source, SERA and EI computations)



The Household Side: In PAYT, all households that set out less trash pay lower bills and automatically receive savings; those putting out more pay more. We noted above that the costs for RB are passed through to the households; importantly, the households have the potential to recover value through coupons offered on RB’s website, theoretically offsetting some of this cost. Households register, then select coupons to save (with purchase), and wait for them to be mailed (this has been updated to home printing in at least some locations). Unfortunately, we find the real-world redemption rate is low. Well less than 50% have “registered” in the early years (lower than 20% in some), and reports show coupon redemption rates for those registered on the order of 10-20%. This means fewer than 2-10% of households redeem coupons and get savings (those redeeming any coupons likely redeem more than one). Thus, the cost to residents from PAYT are even lower; more of them receive the financial benefits than actually receive offsets from the RB program. This is discussed more in the later sections of this paper. The results show each program has pros and cons, as we will expand on in the next part of this article. The cost and impact analysis indicates PAYT is the cheapest per ton. However, political acceptability can sometimes be easier for RecycleBank than PAYT communities where PAYT may have difficulty passing. The next parts of this paper focus on key pros and cons of the three options, highlights from interviews with the communities involved, and conclusions.

6. INTERVIEWS ABOUT PAYT, CREDITS, AND RecycleBank™

PAYT: Based on hundreds of interviews with PAYT communities, there are several universal comments about the program: 1) residents like it after it is in place, but it takes political will to get it implemented; 2) communities / haulers think it is highly effective in reducing trash and encouraging diversion; and 3) the biggest pre-implementation concerns about PAYT center around illegal dumping³⁷; and 4) it is in place in more than 7100³⁸ communities, large and small, urban and rural, run by haulers or communities. We have found very few communities that have cancelled PAYT programs once they are in place.

Recycling Credits: Although they have been around for many decades, there are not very many recycling credit programs in existence, and many have been discontinued. Interviews with program managers suggest they provide a simple mechanism for rewarding recycling participation, but note that checking minimum participation is bothersome, and the programs do not provide increasing incentives for recycling more, and provide no incentives for waste reduction or behaviors beyond recycling. When we interviewed communities that had programs that provided rebates based on market values of commodities, one said they discontinued the program because it “... didn’t work very well in terms of changing behavior...”, partly because the feedback was not household-based, and partly because they were looking for much more aggressive programs to get them to zero waste. They replaced the program with an aggressive PAYT program along with curbside yard waste.³⁹ However, we are finding RecycleBank™ has led to the idea of incarnations of these types of programs being revisited, in the form of locally-tailored community-wide reward programs, as discussed later in this report.

RecycleBank™: Because information on RB is somewhat difficult to obtain, we spent a great deal of time interviewing communities with RB to examine the reasons for implementing, the performance, and their impressions of the program. We found both positive and negative comments, which are discussed below and summarized in Table 4.

On the positive side, many communities thought this was a simple way to switch to single stream and larger carts, with the carts sometimes being provided by RB or grants. They noted it is relatively easy to get politicians on board since it includes rewards for the public. Some communities found residents were resistant to the “pay” in PAYT and decided the rewards program would better appeal to their residents. Most people we spoke with noted increases in recycling, although they were not able to distinguish whether the improvement in recycling was

³⁷ This is repeatedly demonstrated to be a considerably bigger concern before implementation than the reality after the fact, but the concern remains. See “PAYT Frequently Asked Questions” on www.paytnow.org for very detailed discussion of positive and negative issues associated with PAYT.

³⁸ Skumatz and Freeman, “Pay As You Throw (PAYT) in the US: 2006 Update and Analyses”, prepared for US EPA and Skumatz Economic Research Associates, December 2006; available on EPA or SERA website (www.serainc.com).

³⁹ This very large decade-long community-wide rebate program was largely parallel to RecycleBank’s™ community program, with the exception that they provided the rebate to all households in the City rather than all those signed up for the program or all those setting out recyclables.

due to single stream, the larger carts or the rewards program. The program continues to grow to more communities.

On the negative side, communities reported that often times there were glitches in the individual weighing of the carts and residents are given the average for that route, and this is one of the largest customer complaints. Commonly, communities are plagued with under performance of cart recipients enrolling with RB – with results almost universally under 50%, and redemptions in the 10% range – and they end up continuing to spend money for outreach to try to boost these numbers. Outreach spending is also necessary for many communities due to contamination. In some cities, the RB contract is only with one hauler and residents are often upset with the lack of choice rather than with RB itself. Some communities have found that they negotiated poorly and could have realized a larger savings had they done the program in-house, while others felt the reward portion would be too difficult to run without RB. In some communities in Florida, although recycling increased after switching to the larger carts and RB, the rewards were not being redeemed due to the unpopularity of the businesses in the RB program. Another common occurrence is that while recycling rates go up, trash tonnages do not always go down. One community decided not to continue after their pilot since their overall goal was waste reduction. Although most communities we spoke with did see an increase in either recycling or participation rates, a fairly high number felt performance did not live up to expectations and chose not to renew their contract with RecycleBank™. We found that 14% of the communities with RecycleBank™ that we identified had or were discontinuing their contract, including programs in Massachusetts, Texas, and elsewhere.⁴⁰ In the larger context, a number of interviewees and some articles⁴¹ expressed concern about the “consumption” incentives they perceive are provided by RecycleBank™ - “... recycle more and you get coupons to buy more...”, which they worry is counter to the basic waste reduction goal.

⁴⁰ There are several caveats associated with this number. We identified and/or interviewed 80 RecycleBank™ communities (RB reports 500 programs), which is a limited number. Second, there tends to be a flurry of publicity with cancellations, so these may have been relatively easier to find. These indicate our number may be high. However, third, it is noted that some communities have entered into multi-year (as long as ten-year) contracts with RecycleBank™ and may not cancel early, despite concerns on the part of several communities with long-term contracts (which can be 3, 5, and up to 10 years) that they feel they negotiated badly, or that they set too low a bar for RecycleBank™ shared savings or other payments to “kick-in”. This may mean our number is low. Regardless, the cancellations are a substantial number.

⁴¹ Allen Lynch, 2010, “Single-Stream Recycling – Are Incentive Programs a Panacea?”, SWANA national conference.

Table 4: Summary of Interviewee Comments about RecycleBank™

Favorable Comments made about RB	Negative comments made about RB
<ul style="list-style-type: none"> • Great customer service staff • Dedicated staff • Households like the idea of getting “paid” for recycling⁴² • Attractive politically • The incentives / coupons can spur residents to spend more money at local stores (local jobs) • Way of distinguishing our (hauling) company • Don’t have to retrofit trucks if using community-wide / route points program • Reward / coupon too hard to do in-house; RB has established system • Helped fund larger carts and the switch to single stream • Some communities pleased with performance 	<ul style="list-style-type: none"> • Small portion of households are registering for the programs (less than 50%, with a number of communities reporting less than 20%), and only a small portion of those registered are redeeming coupons and getting rewards (communities with data from RecycleBank™ claim the RecycleBank™ figures show that 6-10% of those registered are redeeming; one community reported as high as 20%)⁴³ This computes to a total of 1.5%-10% of community households receiving any rewards. • Concerns about the business model – worries about selling household data and/or getting money from retailer partners • Program is based on consumer / “buy more” mentality – coupons off for buying more stuff⁴⁴ • ONLY encourages recycling, not waste reduction or composting • The bulk of the impact is from single stream and bigger containers • Expensive⁴⁵ • Haulers: expensive for the services provided, and haulers still had to provide all core services. • Results not up to expectations in some communities; some communities are discontinuing the program / not renewing the contract • Glitches in individual weighing upset public; hard to track household recycling rates, performance • Delays; data difficulties • Not allowed to release information on RB performance

7. PROS AND CONS OF RECYCLING INCENTIVE OPTIONS

The program options all have three benefits in common – higher recycling diversion, GHG reduction, and job creation / economic development because recycling and composting are more job-intensive than landfilling. All are well-suited to bringing incentives to single-family and small multi-family / condo situations (and none is well-suited to larger multi-family complexes). However they also have many benefits and detriments that are unique to each as Table 3 illustrates.

⁴² Many recycling coordinators expressed concern about this point – continuing the myth that recycling makes money.

⁴³ This computes to a total share of community households that are actually receiving any rewards as between about 1.5% and apparently less than 10% so far.

⁴⁴ We found very few options for “experienced-based” rewards, although RecycleBank™ does allow donations to schools and some other charitable uses for the points.

⁴⁵ Described by one interviewee as a much larger investment and lower impact...

Table 5. Pros and Cons of Recycling Incentive Options (Source: SERA & EI)

	Pros	Cons
PAYT	<ul style="list-style-type: none"> • Encourages all kinds of diversion – recycling, AND organics AND waste prevention – and associated GHG reductions. • Works with curbside or drop-off recycling • Works with existing single-stream or dual stream or other recycling programs / MRFs • Works with existing manual, semi-automated, or automated collection; doesn't necessarily require new trucks, carts, collection equipment or billing • Enhances yard waste / food waste collection or drop-off (or back yard) programs • Largest impact on diversion tons • Very flexible / tailorable; demonstrated in more than 7000 communities (SERA 2006), covering 75 million population in 48 states. Long track record (pre-1920), long-researched performance; in place in small to very large communities across spectrum. • Lowest cost by far per diverted ton diverted from landfill and per MTCE (GHG)⁴⁶ of all the incentive programs analyzed (one-third to one-two-hundredth the cost per ton of other alternatives) • Provides direct financial rewards to households for recycling, composting, and reducing trash • Direct money link; do not have to go through indirect points, registration, redemption steps • Encourages waste reduction; doesn't encourage more consumption (no coupons) • Doesn't exclude other options • Job creation / economic development because recycling (and composting) is more job-intensive than landfilling • Gives households the ability to control their trash bills, similar to other utilities 	<ul style="list-style-type: none"> • Requires political will (often requires ordinance, RFP, or contractual language to implement) • Concerns about illegal dumping • Doesn't handle multi-family well • Must reduce a whole 32 gallons (in most programs) to save money⁴⁷ • Getting households to support it initially ("change"); and in some cases, people don't like the word "pay" • Mis-perception that the program is "penalizing" households that do not recycle / reduce trash • Getting some haulers to support it
Recycling Credits –	<ul style="list-style-type: none"> • Low cost to implement • Reflects and rewards household recycling set out behavior 	<ul style="list-style-type: none"> • More costly per ton diverted from disposal or per MTCE (GHG) than

⁴⁶ Source for derivation of relative costs for Greenhouse Gas reductions from recycling / composting / PAYT and incentive programs provided in Skumatz, "Recycling and Climate Change: Finding the "Biggest Bang" Community Strategy for Reducing Greenhouse Gas Emissions", Skumatz Economic Research Associates, June 2007 (presented at Colorado Association for Recycling Summit, 5/07); Skumatz, "Recycling and climate change...", Resource Recycling 10/08, and Skumatz, "Reducing GHG: How do Energy Efficiency Programs Stack Up?", Annual Conference of Association for Energy Service Professionals, January 2009, among others.

⁴⁷ SERA staff pilot tested a refined system that weighed trash and charged by pounds. This program (which has been piloted in a number of US cities) is implemented overseas, and certified equipment is available in US, but no US community has implemented the system city-wide for residential trash billing.

	Pros	Cons
community-wide with bar code or RF tag	<ul style="list-style-type: none"> • Encourages recycling – and associated GHG reductions. • Second lowest cost per diverted ton or per MTCE (GHG) if use straightforward tracking system for participation (bar-coded route sheet or RFID) • Works with manual, semi-automated, or automated collection; works with single stream OR dual stream OR other curbside recycling options. • Provides direct financial rewards to households for recycling • Some communities are expanding City-designed / tailored programs to points for other “green” or “community” behaviors than just recycling • Job creation / economic development because recycling (and composting) is more job-intensive than landfilling • Encourages recycling “more” (often) vs. less. • With dollar-based systems, households get direct dollars off through bill reductions and lower bill payments; direct reinforcement. • Can theoretically include multifamily; has not been done 	<p>PAYT options; likely less expensive than RecycleBank™⁴⁸</p> <ul style="list-style-type: none"> • May be more difficult with hauler-based collection system (data transfers, etc.) • Encourages only recycling, not composting or waste reduction • Does not provide rewards linked to individual behaviors (except perhaps participation in some designs) • Works only with curbside recycling • With point-based system, must go through points to get dollar rewards.
Recycle-Bank™ – individual ⁴⁹	<ul style="list-style-type: none"> • Strong outreach / advertising • Link to individual behavior • Encourages / jump-starts recycling and delivers associated GHG reductions • Can be politically easier to implement in communities where PAYT is difficult or where households do not (and cannot) be charged for trash, RB may be a viable option • “Turnkey” / little implementation work needed for City; and can help provide easy financing conduit for containers • Partner with cities, haulers, home owner association • No separate billing system needed / supplied by RB • Rewards for every bit of recycling (up to the maximum threshold) • Doesn’t exclude other options • Market differentiation for a hauler from RB partnership • Attractive / appealing to households and politicians • Exciting “new” program that uses social media 	<ul style="list-style-type: none"> • Most costly per ton diverted from disposal or per MTCE (GHG) than other options (about 10-200 or more times more expensive per ton than PAYT options); relatively expensive way to finance cart purchase than bonds, loans, grants, etc. (especially for municipalities). • Does not encourage source reduction or composting • Not available in communities without single stream MRFs • Doesn’t handle multi-family • Works only with curbside recycling (not drop-off) • Generally only in place with fully-automated collection; may also be in place with semi-automated collection vehicles • Perceived as a consumption incentive (coupons of dollars off purchase)

⁴⁸ Less expensive in its early incarnations; computations imply it is less expensive than RB based on assumptions noted in this paper, although these new versions are in their infancy.

⁴⁹ Note that some specific pros and cons depend on the arrangement or deal made with RecycleBank™. These portray the pros and cons that seem to constitute many implementations.

	Pros	Cons
	<ul style="list-style-type: none"> • Job creation / economic development because recycling (and composting) is more job-intensive than landfilling; can also encourages local business partner jobs • May be expanding to incentivize other “green” behaviors beyond recycling • Program has won national / international awards⁵⁰ • This or the community version are reportedly in place in 2 million households⁵¹ in 28 states; first implemented (non-pilot) in about 2006 	<ul style="list-style-type: none"> • Must go through indirect registration, and redemption of points system to receive money off / receive incentive; not directly self-reinforcing with trash decision/action. • Small minority of households are registering and redeeming points (less than 10%) – few actually receiving incentive. • Cost depends on RB services chosen / needed, and city / hauler’s negotiating abilities. • City or hauler provides most of services (recycling collection) – RB mostly handles points / website / outreach / customer service.
Recycle-Bank™ - Community-Wide or route-based	<ul style="list-style-type: none"> • Strong outreach / advertising; rewards appeal to politicians and households • Encourages recycling, but “shared” behaviors, not individual, are rewarded. • Market differentiation for a hauler • Job creation / economic development because recycling (and composting) is more job-intensive than landfilling; also encourages local business partner jobs • May not require fully-automated trucks or retrofitted arms • Can be less expensive than the individual household version of RB • This or the community version are reportedly in place in 2 million households 	<ul style="list-style-type: none"> • Costly per ton diverted from disposal, or per MTCE (GHG), compared with similar non-RB program⁵² or compared to PAYT • Works only with curbside recycling (not drop-off) • Does not encourage source reduction or composting • Does not provide rewards based on individual behaviors (except perhaps participation in some designs) • Must go through points system to receive money off, and small minority of residents are registering and redeeming points (less than 10%) • Not available in communities without single stream MRFs • May potentially include multifamily; has not been done • Generally only in place with fully-automated collection; may also be in place with semi-automated collection vehicles

Rewards versus Penalties: Are these programs rewards or penalties? And how much does a household “net” in rewards? Frankly, both PAYT and RecycleBank™ seem quite similar in

⁵⁰ Ron Gonen was named 2009 United Nations Environment Programme Champion of the Earth for the program. They have received other awards as well (National Recycling Coalition, and many others).

⁵¹ We located current or discontinued RecycleBank™ communities that totaled 1.2 million households; we did not attempt a full inventory.

⁵² Specifically, versions of local recycling credits

leveraging both rewards and penalties. Under PAYT, every household that puts out less trash pays less on a monthly basis. The household saves money they can spend on anything they like. RecycleBank™ has households pay a monthly fee, and if they register and cash in points, they may recover some (or theoretically more than) that fee redeeming coupons for dollars off purchases at national and local/regional stores. In fact, each has elements of rewards and payments, linked, at least to some degree, to behavior choices.

The numbers seem to indicate, however, that the ratio of rewards to payments is more favorable in the PAYT option. On average, households putting out less trash save on the order of \$5-15 (and sometimes more) per month by pulling 32 gallons of recyclables⁵³ and/or organics out of the trash bin (we use an estimate of \$9 based on a recent analysis of PAYT rate differentials in more than 100 PAYT communities, conducted by SERA).

In Recyclebank™ cities, putting out 40 pounds of recycling every week nets about 2.5 points per pound,⁵⁴ so about 90 points per week in communities with that ratio. In one typical community, it takes 2500 points to get \$10 gift certificate, or 28 weeks, or 6.5 months to win back \$10 in near-cash.⁵⁵ In that time, in communities paying \$1.20 per month, their annual cost to the RecycleBank™ rewards program was \$14.40 on top of the recycling and trash service, and has thus, paid between \$14.40 to get back \$20.40 in gift cards in a year. Because this computation varies by the amount paid to RB and the amount recycled, we show several scenarios in Table 6 below.

The difficulty is that the surveys with cities indicate that, in communities where data could be obtained (most RecycleBank™ information is not public), between about 20 and 35% of households in the community registered for the RecycleBank™ program.⁵⁶ RecycleBank™ noted to one community that they expected that perhaps 50% would sign up after a year. Then, based on community experience and limited reports, about 10% of those had redeemed points, at least in about the first year.⁵⁷ That means it is quite possible that these dollar rewards have only filtered down to about 2-3% or maybe 5% of the eligible population, a considerably lower

⁵³ Our data indicates that, typically, 32 gallons of mixed recyclables is about 38-40 pounds (single stream).

⁵⁴ Some communities note they get 10 points per pound; another city claimed the deal was 1 point for every 5 pounds; presumably the prizes cost different points for those communities. In any case, these figures are relevant in some RecycleBank™ communities in the US.

⁵⁵ There are certainly other prizes for redemption. However, “cash to near-cash” seems the fairest comparison – economic theory argues it allows the purchaser free selection of preferred goods. There are many other prizes of the “save if you buy” variety. A recent search of RecycleBank’s™ website for other prizes showed 100 points for \$25 off if you spent at least \$125 at K-Mart™; \$2 off glass cleaner for 50 points; buy one get one free pizza for 150 points, and other coupons. RecycleBank’s™ staff state that “... every 10 points provides up to \$1 reward in voucher savings”.

⁵⁶ One community mentioned that RecycleBank™ was suggesting that sometime after a year of sign-up, they might hope to achieve somewhere around 50% sign-up. We did not find communities with that high a registration rate.

⁵⁷ One community estimates redemptions as high as nearly 20% of registered households, but coupons are likely redeemed multiple times by the same households; thus these numbers all probably overstate the percent of *households* redeeming the coupons and getting incentives.

payback to the community than might have been expected up-front.⁵⁸ This last computation is also included at the far right in Table 6.

Another estimate of the household savings is provided by communities in the North Shore of Massachusetts. These results, reported in EPA’s Spring 2009 newsletter,⁵⁹ estimated that households in a community implementing PAYT saved an annualized \$41.93, and the average of the RecycleBank™ communities with similar characteristics was \$12.23.⁶⁰ This is illustrated in Figure 5.

Table 6: Potential Rewards Calculation Table / Scenarios, PAYT and RecycleBank™⁶¹ (Source, SERA & EI computations; excludes additional landfill savings to community from PAYT over RB due to compost and source reduction impacts)

IF Per month payment to RB is...	Annual payment to RB	Points from 40 lbs (32 gal) weekly recycling	Near cash value (in gift card dollars) per year	Net savings per year per household	Points if 64 gallons recycled each week	Annual gift card value	Net savings per year, 64 gallons recycling	Savings per average household/yr if 50% sign up and 10% redeem RB coupons, 32 gal	Savings/hh/yr with 50% / 10% and 64 gal recycling
\$0.80	\$9.60	5200	\$20.80	\$11.20	10400	\$41.60	\$32.00	\$0.56	\$1.60
\$1.20	\$14.40	5200	\$20.80	\$6.40	10400	\$41.60	\$27.20	\$0.32	\$1.36
\$2.00	\$24.00	5200	\$20.80	(\$3.20)	10400	\$41.60	\$17.60	(\$0.16)	\$0.88
\$3.00	\$36.00	5200	\$20.80	(\$15.20)	10400	\$41.60	\$5.60	(\$0.76)	\$0.28
PAYT example, \$9 per can (or \$2.25/bag)			\$108.00	\$108.00		\$216.00	\$216.00	\$108.00	\$216.00

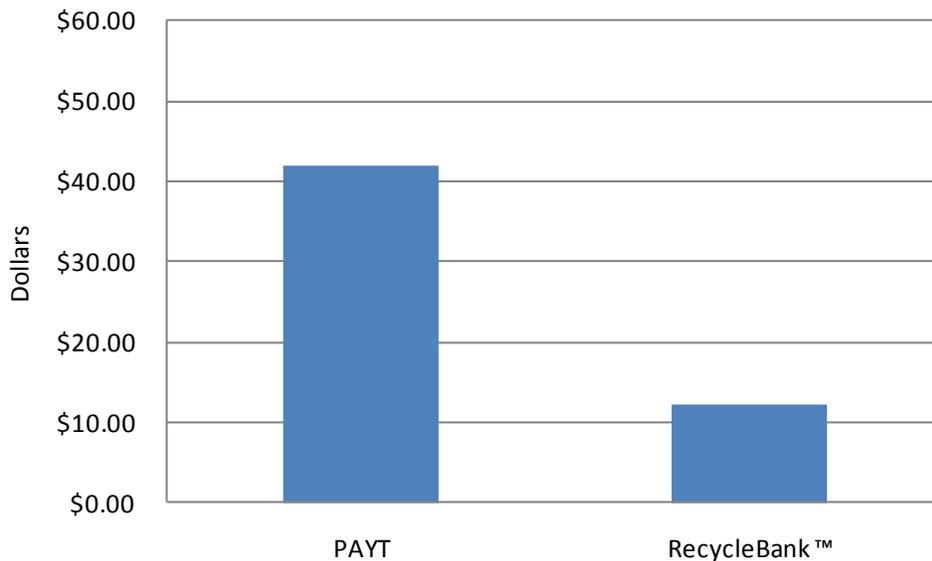
⁵⁸ In PAYT communities with convenient recycling, more than half the households commonly end up on 32 and 64-gallon containers, and therefore pay less than those disposing of 96 gallons of trash.

⁵⁹ <http://www.epa.gov/osw/conserve/tools/payt/tools/bulletin/spring09.pdf>.

⁶⁰ Savings of \$11.08 in one community, and \$13.38 in another.

⁶¹ Assuming 2.5 points per pound version. Note that we do not include value of additional recycled materials or savings at the landfill, as these would both be a “wash” for recyclables, and the landfill savings from PAYT would only be greater than those from RecycleBank™ because of PAYT’s diversion of organics and source reduction.

Figure 5: Comparison of Annual Savings per Household in North Shore MA communities ⁶²
(Source: EPA PAYT newsletter 2009)



8. THE INTANGIBLES

Both PAYT and RecycleBank™ provide versions of financial incentives that broaden appeal to many people who may not be motivated by other reasons to recycle such as climate change, saving resources, or conservation. Pocket-book incentives clearly increase recycling over non-pocket-book “do good” messages. PAYT has been shown in a multitude of studies to be the single most effective, cheapest, most flexible / adaptable and fastest program a community can adopt to increase recycling; however, it can take strong political will to implement the program as there is often resistance from haulers and a portion of the public to the program.

Despite the economic and impact data on RecycleBank™ there is still an intangible attraction to the program. Recyclers have for years strived to make recycling a “sexy” topic and have sought for ways to get non-participants excited about recycling. RecycleBank™ has achieved something that recycling program managers were unable to do for many years - make recycling exciting and appealing to residents that might not otherwise want to recycle. RecycleBank uses a Facebook™-like on-line platform and other social media that appeals to a growing share of the public. Politicians in some areas find it an easier “sell” to residents. And, for example, if households don’t pay for trash (and can’t be billed), or if behaviors won’t change, RecycleBank™ can represent a viable option.

Others note that RecycleBank™ does not encourage source reduction or composting and it helps to perpetuate the idea that recycling should be “free” to households or that haulers should

⁶² <http://www.epa.gov/osw/consERVE/tools/payt/tools/bulletin/spring09.pdf>.

actually be paying households to collect their materials⁶³. There are concerns it encourages more consumption, rather than rewarding waste prevention. Whether or not RecycleBank™ is the most effective (or most cost-effective) way to get tons out of the waste stream, it is has proven appealing,⁶⁴ and has apparently proven the basis for a strong business model.⁶⁵ The rise of the RecycleBank™ program has made recycling an exciting topic and incorporated a triple bottom line (economic, environmental, social) mentality.

PAYT's numbers are better (impacts and cost-effectiveness), and current research by the authors indicate that PAYT is continuing to grow substantially beyond the 7,100 communities the authors identified in 2006.⁶⁶ However, the "brand" may need rebranding if, indeed, the portion of the name related to "pay" hampers its acceptance. Whether that becomes "Save as you Throw", or EPA's "SMART"⁶⁷ program, cities, haulers, program managers, and elected officials continue to consider the tried and true PAYT option.

Recycling credits programs are also being revisited at the local level, thanks partly to the attention provided by RecycleBank™ and its community- or route-wide programs.

RecycleBank's™ entry into the "incentives" game adds new options for communities looking to invigorate their recycling and diversion rates.

9. CONTEXT, CONSIDERATIONS, AND REFINEMENTS

Communities considering incentive options will need to assess the following points. Each option has pros and cons; however, there are other types of programs that, in some cases, will encourage diversion and do so in a manner even more suited in some communities.

- PAYT is the cheapest, most effective, most flexible option for increasing recycling, composting, and source reduction; however, in some communities political will to implement the option is missing.

⁶³ This is a long-standing concern among recycling planners. As any hauler will report, recycling service is not free to provide, there are costs to provide the trucks, the gas, the employees, carts, etc. and while it is cheaper than MSW in many places, it is never free.

⁶⁴ In addition, behavioral economics and sociology show that a number of factors come into play in consumer / household decision-making, and the decision-making is not always symmetrical. The potential to save \$25 on a purchase of \$150 is not seen as spending \$125. For many consumers the potential "savings" of \$25 (with a purchase of five times that amount) are more exciting than saving nine *actual* dollars on a monthly trash bill.

⁶⁵ RecycleBank™ has a potential net worth of \$1B dollars that will hire 1,000 employees by 2012, according to a November 5, 2010 interview with Jonathan Hsu, RecycleBank CEO on TCTV. They have attracted a number of nationwide financial investors, nationwide retailer partners, as well as hauler and retail partners in many states.

⁶⁶ Skumatz and Freeman, "Pay As You Throw (PAYT) in the US: 2006 Update and Analyses", prepared for US EPA and Skumatz Economic Research Associates, December 2006; available on EPA or SERA website (www.serainc.com).

⁶⁷ Saving Money and Reducing Trash"

- PAYT does not require curbside recycling or single stream recycling; it works with existing drop-off or dual stream programs. RecycleBank™ is linked to access to single stream curbside recycling.
- RecycleBank's™ programs can be a politically attractive option for increasing recycling; it may be more implementable in places where other options cannot move forward.
- If households don't pay for trash (and can't be billed), or if behaviors won't change, RecycleBank™ can represent a viable catalyst for change.
- The payments to RB can be half of or nearly equal to the costs for curbside recycling programs in some communities.⁶⁸
- RecycleBank™ contract costs are negotiated and vary quite a lot⁶⁹; contracts can last as long as 3, 5, or even 10 years. Cities need to negotiate good prices, or need to establish well-designed "baselines" (in landfilled or recycling tons) to make sure they get a good deal.
- RecycleBank™ and its sophisticated outreach raise awareness of recycling in a community.
- RecycleBank™ can be a useful and politically palatable method of helping finance a transition to single stream. Note, however, that communities can achieve about the same diversion level as RecycleBank's™ impact with cost savings (rather than a payment to RecycleBank™) by simply implementing a switch to single stream recycling (assuming a single stream MRF is nearby).
- To reduce direct cost outlays to RecycleBank™, and assume greater control / flexibility, some communities are opting for "home-grown" recycling credit programs, sometimes rewarding more than just recycling.
- Communities can increase diversion cost-effectively by looking at yard waste instead of more recycling. For communities with weekly recycling, consider switching to every-other-week recycling and change the other collection to yard waste.⁷⁰ This can be introduced for very little extra cost,⁷¹ and diverts a whole new waste stream, adding 15% or more new diversion.
- It may be that adding a direct social marketing program may achieve benefits equal to or greater than some of these options; and the costs are cheaper than the RecycleBank™ program (see RR 4/2010 and 10/2010).
- A RecycleBank™-type program on the trash side (dubbed "Garbage by the Pound", RR 10/89) would achieve even greater diversion than PAYT. Early experiments with this option

⁶⁸ Restated, in some communities, it can nearly double the cost of a recycling program, depending on the deal negotiated and the type of recycling program in place.

⁶⁹ Depending partly on what services are requested, and, it appears, partly based on the community's negotiating skills.

⁷⁰ Costs can be reduced by conducting these collections seasonally, or skipping a few winter months, if that is all that is needed in your climate.

⁷¹ The cost of adding every-other-week yard waste is not much higher because the total number of collection stops per week at a household doesn't change, and the largest cost of the program is getting the truck to the house. The only difference in cost is the difference in the net cost of processing the material – recycling vs. yard waste – for the pounds collected from each household. The net costs are relatively small, especially considering the big increase in tons diverted from disposal. The longer-term best design may be weekly yard & food waste, alternating with every other week trash and every other week recycling.

indicated it diverted 15% more tons succeeding even a mature PAYT program; it would garner even higher diversion in a non-PAYT community.⁷²

- PAYT seems complicated, no one “owns” it (so it is not marketed), and is not “turnkey” in nature. Haulers or others wishing to distinguish themselves in the market or win additional market share from communities interested in PAYT may wish to develop a “turnkey” approach to PAYT. A “turnkey” approach may also increase adoption of PAYT by reducing barriers.
- Nothing prohibits both PAYT and RecycleBank™ or Recycling Credits programs. The only issue is that the marginal tons (the extra tons from the second program) become considerably more expensive, as all the costs, but only a few of the tons, can be attributed to the last program implemented.

Communities have many issues to consider in selecting their next steps.

10. SUMMARY AND CONCLUSIONS

Each of these program options has similar goals – to provide incentives for residents to recycle and divert more material. Each has pros and cons, which can be weighed based on each community’s criteria. Communities do not necessarily have to pick just one, but realize that the “marginal” or extra tons that are contributed by the additional option will be relatively lower (the same tons are targeted by each program⁷³), and thus, the cost per ton will be much higher.

Initial information – which would certainly benefit from having data available from more RecycleBank™ communities that could be analyzed by third parties – indicates that costs per ton are considerably higher for the RB program than for either PAYT or recycling credit programs (old-style or new tailored versions). PAYT is the only one of the three options that encourages reductions beyond recycling (composting and source reduction), and avoids the concerns about encouraging consumption. The computations indicate that PAYT is the cheapest method of reducing residential MSW and increasing diversion. However, PAYT seems to take the highest degree of political will to implement, compared to the other programs. It might benefit from a renaming (perhaps to “Save as you Throw”!). Regardless, communities, haulers, program staff, and policy-makers will just have to make the tradeoffs and choose what makes most sense given their local situation, goals, and what is most feasible.

⁷² Certified equipment is available

⁷³ Although the PAYT targets go beyond just recycling.

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The Econservation Institute, established in 1998, is a non-profit dedicated to research and education on practical resource conservation strategies and policy options in solid waste management, energy efficiency, and other environmental issues. Contact info@ econservationinstitute.org for more information, or www.econservationinstitute.org for publications and studies.

*Thank you to the Co-funders of the report:
Skumatz Economic Research Associates, and
EPA Region 9 under a Grant to Econservation Institute*

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