SINGLE STREAM PROGRAM DESIGN

Discussion Paper and Questions
for Best Practices Manual Conference Calls
July 7 and August 18, 2005

Discussion of Single Stream System Issues

For single stream recycling programs to be successful, each element of the recycling industry – the local government, the local community (the residents, "waste generators"), collectors, processors, the manufacturers of the collection and processing equipment, and the manufacturers who will make new products from the recovered materials – needs to be working toward the same goal.

City and County governments are being pressured to increase the local recycling rates. All too often this is taken to be a call to maximize diversion at the lowest possible costs. The focus shifts to collection of the maximum volume without regard to the cost of processing – sorting the mixed materials back out into marketable commodities. This creates a disconnect with what happens to the recovered materials.

But, should the goal be to maximize diversion? The modern community-based recycling movement started in the 1970s as a way to return resources to manufacturing – to close the loop, with the recovered materials being used to make the same types of products. Therefore, it was important to maintain the quality of the materials recovered.

The original curbside collection programs were primitive by today's standards. They required too much labor and did not recover very much material. Today, as we automate collection and processing systems, municipal recycling programs can recover more than half of the wastes from their residents. Automation has increased the productivity of the workers, and the wheeled carts have increased the recovery rate. However, the changes required to process this mixed stream of materials have not kept up. The value of the recovered materials has decreased, in some cases by more than the increase in revenue from the larger tonnage, so some programs have become less cost-effective.

Because of the rapid evolution of single stream collection systems, the recycling cycle has been disrupted. The processing equipment manufacturers sell their equipment to the processors, but the processors are not working with the mills to develop processing equipment that meets the end user needs because their contracts with the communities for which they provide service do not speak to this part of the cycle. The contamination issues that face mills today are a result of processing for throughput, not for quality of feedstock materials to the mills. To be fair, it is important to note that many dual stream programs also produce poor quality materials.

It is not uncommon for a processor to comment that they achieve sufficient quality that the mills will buy the materials from them. But in this case 'good enough' is not really good enough. The standard should recognize that the materials sold by the processors are feedstock for another process and therefore they should be the highest possible

quality. For newspaper to be made back into newspaper, the ONP should be old newspapers and other acceptable (bleached) fibers. There should not be any beverage containers or other 'prohibitives' in it.

Programs must be 'cost-effective' but this does not mean the lowest possible cost. Collectors buy trucks that will not break-down on the route. Processors should buy the right types and size of equipment to appropriately process the recovered materials. Cities should demand and pay the processor to produce the quality materials that meet the manufacturing industry specifications, and not to produce barely acceptable quality materials.

The key to a successful single stream recycling program is that all of the parties involved work together toward the desired solution.

To produce high quality products:

a. The paper industry needs paper that has been sorted by grade to remove unwanted but recyclable paper (paper other than the fiber appropriate for that grade and subsequent product) and non-recyclable paper (Poly-coated, waxed, food soiled, brite-dyes), and that has **no** 'prohibitives' (non-paper items including glass, plastics, metal, or other items, especially food and other organics).

b. The plastics industry needs clean material sorted by composition, with no glass, no paper, and no garbage in it.

c. The aluminum industry needs clean sorted material, with no glass, no paper, no plastics, and no food in it.

d. The glass industry needs clean material, beverage containers sorted by color when possible, and with no heat sensitive glass (pyrex), rocks, ceramics, mirror glass, or plate glass in it.

In addition to the negative effects of shipping the wrong materials to a manufacturing facility, there are impacts on the calculated recovery rates for some of the items that are recovered in the community but discarded at the mill.

In California, beverage containers that are shipped to a paper mill are not counted as recovered in the calculation of recovery rates and no redemption value is paid for them by the State to the collector.

Shipping cost, regional demand, products manufactured from recycled content materials, and total quantity must be addressed in determining the best market for recovered materials.

Poor quality materials create problems for manufacturers

The paper industry experiences excessive wear on machinery, increased downtime and maintenance cost, and holes in the finished paper, when glass and plastic fines are shipped in the paper. Receiving contaminated materials means that they have paid for

materials that they can not use, incurred additional manufacturing costs, and increased their disposal cost to cover the unwanted materials.

The plastics industry experiences excessive wear on machinery from glass and must remove all paper before using the recovered plastic in new products.

The aluminum industry has problems when scrap aluminum contains glass.

The glass industry must have cullet that is free of rocks, ceramics, and pyrex. Because there is regional demand by color for glass, it is more cost effective for use in making new bottles if it is color-sorted.

Constraints of manufacturing mills in the use of materials from single-stream programs

Maintaining quality of materials they produce is essential. It is dependent on receiving high quality feedstocks and further tied to their ability to remove unwanted materials.

Balancing market revenues with processing costs

The long-term health of the recycling system is dependent on collection programs and processing systems being able to deliver high-quality materials to the users of those commodities. The long-term implication of poor-quality collection and processing for municipal recycling programs is that when the marketplace has sufficient supply, the lower quality materials may no longer be purchased by, or accepted at, the recycling plants.

We cannot depend on overseas mills to take all of our low quality materials. If we ship our recovered materials to overseas markets, will there be any domestic mills left when the overseas markets no longer want our lower quality recyclables? Is this a problem?

Municipal recycling systems should focus more attention on supplying quality recyclables for use in the manufacture of new products rather than on simply collection and diversion from landfill.

Cities in the lead

The most important role of the community is to establish a contract with their collector and processor that clearly delineates the city's goals. In addition to general goals, the city should specify how the materials are to be handled, and the quality of the product shipped to market. For example, a community could specify that some percentage of the glass received would be prepared to be 'furnace ready' for a beverage container manufacturer. The cost of achieving this standard would be presented in each of the bids or proposals received by service providers, and there would not be a low cost bid that proposed to send the recovered glass off for use as base-rock or aggregate.

Additionally, although they complicate the structure of the contract and require an additional level of audit, incentives could be structured to compensate the contractor for

processing materials to a higher quality level. These could be accompanied by penalties for not achieving the base case quality.

In contracting, the community should first identify their specific objectives, and then design a contract that promotes those objectives.

Program Design Questions for the Conference Call

1. What materials should be collected? The more material types collected, the higher the processing cost.
- ✓ Should we ask residents to separate only those materials easily marketed?
- ✓ Should we ask residents to separate all of the potentially recyclable materials?
- ✓ What is the appropriate balance in between?

2. What it the most effective mechanism to get the residents to only put the appropriate recyclable materials out for collection?
- ✓ Keep the list of collected materials simple and easy to understand?
- ✓ Provide lots of promotional materials at every opportunity?
- ✓ Provide immediate feedback to residents who set out non-recyclable (or non-targeted) materials – in the form of non-collection notices and not collecting the wrong materials?
- ✓ What is the appropriate balance of these activities?

3. What is the impact of the wheeled cart on the collection program?
- ✓ Is it the cart, or putting all recyclables together, that increases the recovery rate?
- ✓ Would another alternative [i.e., split carts or two carts (for paper and other recyclables) with one collected every-other-week] better allow us to provide clean materials to mills?

4. What it the most effective mechanism to get the collector to deliver clean materials to the processor?
- ✓ The collection contract should be very specific about these requirements.
- ✓ The city should let the processor worry about dealing with whatever the collector brings them.
- ✓ The city should provide financial incentives for the collector having clean loads and penalties for loads that are not.
- ✓ What other mechanisms would help keep the materials clean?

5. What is the most effective mechanism to get the processor to deliver clean materials to the mills?
- ✓ The processing contract should be very specific about these requirements.
- ✓ The city should let the mills worry about dealing with whatever the processor brings them.

- ✓ The city should provide financial incentives for the processor shipping clean loads, and penalties for loads that are not.
- ✓ What other mechanisms would help keep the materials clean?

6. In our 'free market' system, how can we get the price paid for materials by the mills to reflect the quality of the recyclables shipped to them? Or should we care?

7. What is the impact of shipping our resources to another country for use in manufacturing products that will be shipped back to us?

8. As the overseas markets restrict the flow of poorly processed materials, will we need to depend more on local/domestic mills? Or will we have to do a better job of cleaning materials for export?

9. What specific language do you have in your collection and processing agreements that relate to the quality of the processed materials being shipped to market?

10. What specific language do you have in your collection agreement that relates to promotions and public education by the contractor?

