

## **FREQUENTLY ASKED QUESTIONS ABOUT SINGLE STREAM RECYCLING IN WISCONSIN**

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### **1. What is single stream recycling?**

Single stream (also known as “fully commingled”) recycling refers to a system in which all paper fibers and containers are mixed together in a collection truck, instead of being sorted into separate commodities (newspaper, cardboard, plastic, glass, etc.) by the resident and handled separately throughout the collection process. In single stream, both the collection and processing systems must be designed to handle this fully commingled mixture of recyclables.

### **2. What are the potential advantages to single stream?**

Proponents of single stream note several advantages:

- reduced sorting effort by residents may mean more recyclables are placed at the curb and more residents may participate in recycling;
- reduced collection costs because single-compartment trucks are cheaper to purchase and operate, collection can be automated, and collection routes can be serviced more efficiently;
- greater fleet flexibility which allows single compartment vehicles to be used for refuse or recycling, providing greater fleet flexibility and reducing the number of reserve vehicles needed. (To avoid confusing customers, use a large sign/banner to distinguish when a refuse truck is being used for recycling);
- participation and volume per household may increase and worker injuries may decrease because the switch to single stream is often accompanied by a switch from bins to cart-based collection;
- changing to single stream may provide an opportunity to update the collection and processing system and to add new materials to the list of recyclables accepted; and
- more paper grades may be collected, including junk mail, telephone books and mixed residential paper.

### **3. What are the potential disadvantages to single stream?**

Potential disadvantages of single stream recycling may include:

- Initial capital cost for:
  - new carts,
  - different collection vehicles,
  - upgrading of processing facility, and
  - education of residents;
- processing costs may increase compared to multiple stream systems
- possible reduced commodity prices due to contamination of paper;
- increased “downcycling” of paper, i.e., use of high quality fibers for low-end uses like boxboard due to presence of contaminants;
- possible increase in residual rates after processing (due chiefly to increased breakage of glass); and
- potential for diminished public confidence if more recyclables are destined for landfill disposal due to contamination or unmarketability.

\* “Residuals” are defined as recyclable materials collected for recycling that are damaged or contaminated during collection or processing to the point that they are no longer marketable. Single stream may produce a higher rate of residuals because the compaction of the commingled recyclables during collection or transport can break glass and mix different colors of glass fragments together. Mixed broken glass is generally not marketable for applications involving melting to produce new glass products, although a few new markets are emerging for this relatively low-value material.

#### 4. What should Responsible Units (RUs) be aware of when considering switching to single stream, and how can these be avoided?

At the simplest level, single stream recycling trades partial sorting by residents for more intensive sorting at a processing center. The benefits (compared to source separation) are largely in the collection process, while the incremental costs are largely connected to processing. This can create pressure to maximize cost savings at the collection end and minimize the additional sorting costs at the Materials Recovery Facility (MRF). If this pressure is met by capital expenditures such as automated pickup and investment in modern sorting equipment, single stream may increase the overall effectiveness of the recycling program. However, if corners are cut – e.g., by excessive compaction in baling of mixed recyclables for transport, or by poor processing - single stream may harm recycling.

Single stream may be very suitable for some RUs and not at all suitable for others. Factors to consider include hauler and MRF arrangements, markets for processed commodities, current participation rates and volumes, RU characteristics (permanent vs. seasonal residents, possibility for automated collection, etc.) and a host of other RU-specific considerations.

The capital costs of the latest sorting machinery, needed to do the job right, requires relatively high throughputs at the MRF – higher than most communities can generate on their own. This may mean that the RU’s recyclables may have to travel much greater distances to be processed by a larger MRF in order for market quality specifications to be maintained.

RUs should carefully consider startup costs and whether these would be directly borne by the RU or shared among several RUs within a vendor service contract. RUs should also consider who will benefit from potential collection cost savings, the municipality or the hauler.

Key factors in successfully making the switch to single stream include:

- **Timing:** choose the right time to make the switch based on equipment life cycles (e.g., when trucks need to be replaced) or contract cycles.
- **Planning:** be realistic about startup costs, included educational efforts needed to inform residents. A pilot program may be advisable to determine if single stream works for your RU.

- **Management:** thoroughly inspect the single stream processing facility to make sure that processing is being done correctly and that residuals are under control. High residual rates are a good indication of a poor operation, and could lead to public perception problems. Independent third-party verification to ensure a “not-to-exceed” residual rate can be included as a contract specification.
- **Communication:** responsibilities for proper outreach and public education should be clearly articulated (and budgeted); stickers or some other feedback system should be used to ensure quality standards are met during collection.

Recycling trade journals have run several worthwhile articles on this topic recently, including “Community Recycling Programs: A Time of Change” in the October 2003 issue of Resource Recycling, and “Single-Stream Versus Multistream Recycling” in the September/October 2003 issue of MSW Management. One of the most thorough studies of recycling collection costs in recent years is the Eureka Recycling (St. Paul, MN) study “A Comparative Analysis of Applied Recycling Collection Methods in St. Paul,” available at [http://www.eurekarecycling.org/inf\\_studies.cfm](http://www.eurekarecycling.org/inf_studies.cfm).

#### 5. **Are any RUs in Wisconsin already using single stream methods?**

Yes, as of November 15, 2003, several RUs utilize single stream collection and/or processing, with additional applications pending. These include:

- City of Whitewater
- City of Lake Mills
- Village of Mukwonago
- Town of Mukwonago
- Town of Genessee
- Village of North Prairie
- Village of Jefferson
- Town of Geneva
- City of Lake Geneva
- City of Adams
- Monroe County

In addition, a number of haulers are collecting business recyclables using single stream systems.

Wisconsin has two MRFs within the state that perform single stream processing of recyclables (John’s Disposal Service in Whitewater, and Adams County MRF in Adams-Friendship), and there are several in nearby areas of Michigan, Minnesota and Illinois.

#### 6. **If a RU wants to switch to single stream, what regulations apply?**

Wisconsin code, s. NR 544.05(1)(a), states that the RU system for collecting recyclable materials from single family and 2-4 unit residents must meet the following requirements:

1. Separate the materials from other solid waste prior to collection and maintain that separation during the collection process.

2. Prohibit the compaction of glass containers with newspaper or with municipal solid waste during collection.
3. Maintain the materials collected in marketable condition.
4. Beginning in 1997, meet the collection standards in Table 1, except that a multiple-municipality responsible unit with a membership of rural and other municipalities may meet a prorated standard for each material by the entire responsible unit.

If an RU is considering adoption of a collection system that does not meet the first two requirements listed above, they must apply to the Department for approval of an alternative collection system under s. NR 544.05(3)(a), Wis. Adm. Code. In addition, an RU must continue to meet all the current requirements for an effective recycling program in s. NR 544.04, Wis. Adm. Code.

Most single stream systems incorporate and compact containers and paper fiber together during collection. However, if newspapers and glass containers are not compacted during collection or transport, the RU need not apply for WNDR approval of an alternative collection system.

Note that the approval from WNDR may contain conditions, most often intended to ensure the marketability of materials collected and processed under the alternative program.

#### **7. Are costs related to the switch to single stream eligible for WNDR recycling grants?**

Many expenses that an RU may incur in switching to single stream (e.g., educational materials, planning and engineering costs, administrative expenses, costs for new bins or depreciated costs of collection vehicles, etc.) are eligible for cost sharing under the state's basic recycling grant program. However, because state statutes base the formula for allocating grant payments to RUs on 1999 expenses, it is unlikely that additional eligible costs for switching to single stream would result in a higher basic grant payment.

An RU might receive additional grant funds to offset some of the expenses associated with a transition to single stream if the transition were part of a consolidation or cooperative agreement with another RU. This approach would make the RU eligible for a Recycling Efficiency Incentive grant award.

More information regarding WNDR's recycling grants is available at <http://www.dnr.state.wi.us/org/aw/wm/grants/>.

#### **8. What information does an RU need to provide in an application for alternative collection or processing system approval?**

Application requirements for alternative collection or processing systems are given in s. NR 544.08(3), Wis. Adm. Code. Information needed includes:

- a description of the proposed program, including cost estimates;

- a comparison of the advantages and disadvantages;
- a demonstration that the RU will still meet the collection standards in Table 1 of NR 544;
- the operating procedures that will be used to minimize contamination and loss of recyclable materials during collection and processing;
- a demonstration that the alternative system will produce marketable materials; and
- an estimate of the amount of residuals that the system will produce.

Some of this information may need to be supplied by the hauler or MRF operator.

**9. May a hauler apply for alternative collection system approval on behalf of an RU?**

A hauler may submit materials in support of an RU's application, but the WNDR must receive a letter from the authorized representative of the RU with a request for the alternative collection system approval. [s. NR 544.08(3)]

**10. What state regulations apply to contractors collecting and processing recyclables for RUs?**

Collection vendors must have a recyclables transport license from the WNDR and comply with the terms of that license [s. NR 502.06]. They may not mix recyclables that have been separated for recycling with trash, and must maintain collected materials in marketable condition [s. NR 544.05(1)(a)]. As noted above, they may not compact glass containers with newspaper or with municipal solid waste during collection. They may not dispose of recyclables separated for recycling in landfills or incinerators in Wisconsin [s. NR 502.06(4)(e)].

Processors must produce materials or products of marketable quality. In order to be used as part of an RU's effective recycling program, a processor that is a MRF must be self-certified under s. NR 544.16, Wis. Adm. Code, and must operate its facility in accordance with the self-certification requirements, as verified by periodic Department inspections.

Depending on the array of materials handled, processors may need to be knowledgeable about and comply with other relevant environmental rules, including those related to waste oil handling, waste tires, refrigerants, mercury and PCBs, and Wisconsin Universal Wastes.

**11. May an RU utilize an out-of-state MRF to fulfill the processing system requirement for an effective recycling program?**

Yes, as long as the MRF is self-certified with the WNDR and adheres to the requirements of s. NR 544.16, Wis. Adm. Code.

**12. Can the WNDR inspect out-of-state MRFs?**

Yes, if the MRF has self-certified with the Wisconsin WNDR. Part of the self-certification process is an agreement by the MRF to allow an inspection by WNDR staff to ensure that the MRF is operating in accordance with the representations made on the self-certification. The WNDR does not have authority to regulate the operation of the MRF directly, but can disqualify the MRF from serving as a component of an RU's effective recycling program if the MRF is not operating in accordance with the standards for self-certification in s. NR 544.16, Wis. Adm. Code.

**13. What happens if the MRF our RU is using is disqualified by the WNDR from being a component of an RU's effective recycling program?**

Your RU would need to find a qualified self-certified MRF to handle its recyclables. Because these services are governed by contracts, you should ensure that your contract allows you to switch to another MRF if your MRF is disqualified.

**14. If the recyclables are processed by more than one MRF, do all the MRFs need to be self-certified?**

Yes. Section NR 544.05(2), Wis Adm Code, requires that "Processing systems utilized as part of an effective recycling program shall produce materials or products of marketable quality." Compliance with this provision should be demonstrated for each of the recyclable items covered by the landfill bans in s. 287.07(3) and (4), Stats. Therefore, if an RU sends its mixed recyclables to one MRF for recovery of paper materials, and the remaining recyclables are forwarded to a secondary MRF for sorting of containers, both MRFs must be self-certified in order for the RU to be able to demonstrate it has a processing system that meets the code requirement.

Note that facilities that recover only a single landfill-banned material (e.g., major appliances; waste tires) do not need to be self-certified in order to serve as part of an effective recycling program.

**15. Do businesses need WNDR approval to contract for single stream collection and processing?**

No. The relevant regulations apply only to residential recycling for single-family and 2- to 4-unit dwellings. Commercial, institutional, and residential facilities with more than 4 units may enter into single stream agreements without WNDR approval.

**16. Can a MRF send mixed broken glass to a landfill as waste? Daily cover? Landfill roads? Other landfill structures?**

Wisconsin statutes prohibit the disposal of container glass in landfills within the state once it has been separated for recycling in an effective local recycling program.

A MRF (either in Wisconsin or out-of-state) that disposed of significant amounts of glass as waste in a landfill would likely be disqualified from serving as a component of a Wisconsin effective recycling program because it could not accurately certify that

it is producing recovered recyclable materials in accordance with market quality specifications, as specified in s. NR 544.16(1)(h), Wis. Adm. Code.

Wisconsin landfills must receive specific approval from the WDNR in order to utilize mixed broken glass as daily cover or in roads or other structures within the waste footprint. Out-of-state landfills do not need approval from the WDNR to accept broken glass as daily cover or for other useful purposes, although they may need approval from their own state regulatory agency.

Note that the above restrictions apply to uses within landfills. Wisconsin regulations (see s. NR 500.08(2)(f), Wis. Adm. Code for details) allow mixed broken glass to be used for road base and pavement in non-landfill applications.

**17. Are changes in WDNR rules planned for handling single stream recycling in the future?**

Solid waste and recycling technologies undergo continuous improvements. The WDNR may change its process in the future to streamline the approval process and to encourage beneficial innovations to be developed in Wisconsin.

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