

The Joint Advisory on Designing Contracts for Processing of Municipal Recyclables Attachment 2:

Methods of Determining the Value of Recyclables Handled at a Processing Facility

This document serves as an Addendum to the SWANA and National Waste & Recycling Association (NWRA) Joint Advisory on Designing Contracts for Processing of Municipal Recyclables, which is a joint effort of the two organizations to enhance contracting practices for residential recycling. The intent of this Addendum is to share information on methods for determining the value of recycled commodities based on the blend of materials delivered to the processing facility. Cooperatively addressing both changes in the residential recycling stream and price fluctuations for recyclable commodities are key aspects of designing successful recycling programs and contracts.

Sharing Recyclables Revenue

The Advisory notes that recyclable processing contracts might include **recovered materials revenue sharing** or **rebate requirements**, which share risk between the local government and contractor to varying degrees; though a discussion of this issue is beyond the scope of this Addendum, it is an important one that needs to be addressed in contracts.

Calculating the Value of Recyclables

It is possible to estimate the overall value of recyclables recovered by a recycling program by considering the individual values of each component material that falls within the scope of the program delivered to the processing facility. The total value of the material may also include any residue (i.e. associated non-recyclable contaminants and non-recoverable recyclables). These components are evaluated as a percentage of the total blend of materials. (See “Understanding Material Composition – Stream Composition Study”).

The two most commonly accepted means for establishing the value of recovered materials are Actual Sales Value and Indexed Sales Value:

A. Actual Sales Value: This is an evaluation of information derived from the ‘**Net Revenue**’, i.e. the actual sales receipts (income) minus any invoices (charges) for recyclable sales or other disposition, including residue disposal, and transportation costs, for each recyclable processed during a designated period (such as a month). The valuation of material should be simple and transparent and supported by documentation of the types, quantities, and prices of materials sold. In some cases, the value may be a cost, e.g. certain types of glass. Residue disposal may also be factored into the Net Revenue. The cost of residue may be determined by adding together the cost of transportation and disposal, or by using a pre-determined, fixed cost. By including the cost of residue in the valuation, both parties deriving revenue from the material will have an incentive to reduce the amount of non-recyclables collected, governed by performance measures – discussed later in this document.

Particularly when recycling markets are volatile and because indices are not updated as quickly as material price changes, the Actual Sales Value approach may be more accurate than the Index Sales Value Approach (see below). The Actual Sales Value approach should be supported by weight records, sales receipts and cost invoices. This will provide some assurance of accuracy.

B. Indexed Sales Value: This approach uses sales values established by reference to regional, recognized, independent, third-party indices and material grade designations for the sales period. Indices are provided on single lists of recyclable pricing. The result is that administration costs are lower than using Actual Sales Value, as contractors do not need to add together all weight records and sales receipts/invoices for each outgoing-shipment of recovered recyclables and local governments do not have to confirm/audit the Actual Sales Value.

Reflecting Material Values in Contracts

There are three main methods of reflecting material values in contracts:

1. **Floating Price:** Contracts can be written so that sales revenues (i.e. the price received for recovered materials) vary with market prices and material quality standards. This floating price approach provides the greatest incentive for both parties to monitor both the price of recyclable commodities and the quality of materials collected within the program. Contracts with floating sales values should include transparent methods for evaluating changing market or material quality conditions to allow each party to understand the risks and rewards associated with fluctuating markets and material quality.
2. **Fixed Revenues:** Contracts may be designed with fixed revenues, which are set for a period (e.g., a quarter or a year), with specified data and procedures

for revising revenues. Indexed sales values can be used as the basis for determining fixed revenues. Such fixed value contracts should be revisited for possible adjustment at the end of each set period and must have a clearly defined method for adjustment. Fixed revenues can preclude knowing the true net worth of what is being delivered, though using indexed sales values in conjunction with periodic adjustments may help create an average that gradually tracks with overall market fluctuations.

3. **Floating AND Fixed:** In any contract, it may be appropriate to negotiate fixed values for some components for which pricing does not routinely change - for example, the unit cost for residue disposal.

Calculating Blended Value

The following description and table provides information on calculating the combined value for a ton of recyclables comprising many individual materials, at varying associated prices, also known as the **Blended Value** per ton.

The value of a load of mixed recyclables may be estimated by considering the individual values of each component recyclable. The value can be either positive or negative depending on the quality and quantity of recyclables and non-program materials/contamination collected and market conditions. It may be a part of overall contract pricing considerations, e.g. contract price paid by a municipality plus (or minus) any revenues received. The calculation can be based on Actual Sales Value (Net Revenue) or an Indexed Sales Value.

The table below outlines one possible method of calculating the Blended Value of recyclables and the parameters to consider when calculating it. The parameters are as follows:

- (1) **Audited Material Composition (%):** The contract should provide for an agreed-upon method, such as a prescribed audit protocol, to determine the percent that each type of recyclable comprises of the total load by weight. Residue can be included or not, though if excluded is more likely to be disregarded as a program improvement need. In the example below, the table lists 13 types of recyclable commodities and the residue.¹ The sum of all included materials should equal 100%.

¹ **Changes in Commodities.** The contract can be written to allow the addition of new commodity categories to the blended value calculation. This addition can result in changes to revenue as well as changes to processing costs due to the need to source new equipment or to add labor to handle new separation requirements. Similarly, a contract that provides for the addition of commodities can also provide for an opening to consider the discontinuation of materials and provide a process for revisiting associated changes in revenues and costs. However, it should be recognized that there would have to be a significant reason that is specifically spelled out in the contract to get the public

- (2) **Reference Index:** If the Indexed Sales Value is used, the contract should specify the index or value that applies to each commodity.
- (3) **Unit Rate Based on Referenced Index or Actual Sales Value (\$/Ton):** May be a negative or positive value. Residue would be shown with a negative value.
- (4) **Unit Rate X Composition (\$):** Multiply each audited material composition by its corresponding value using the Actual Sales Value or Indexed Sales Value.
- (5) **Blended Value (\$/Ton):** Add up the value of each commodity/ton and divide by the total tonnage. The resulting value is the Blended Value or the “Average Commodity Revenue,” “Average Material Value” or a similar term.

Sample Table for Calculating Blended Value of Recyclables

Commodity (per the agreed upon contract categories)	(1) Audited Material Composition %	(2) Referenced Index	(3) Unit Rate based off Referenced Index \$/ton	(4) Unit Rate X Composition %
	A		B	AxB
OCC	x%	<i>Insert which index or value tool will be used to determine value for each commodity. Certain materials, such as residue and glass, may have a negative unit rate. Rates should fluctuate according to the agreed upon index or value tool.</i>	\$y	\$z
Mixed paper	x%		\$y	\$z
ONP	x%		\$y	\$z
PET	x%		\$y	\$z
Natural HDPE	x%		\$y	\$z
Pigment HDPE	x%		\$y	\$z
Mixed plastic (3-7)	x%		\$y	\$z
Mixed glass	x%		\$y	\$z
Steel	x%		\$y	\$z
Aluminum (UBC)	x%		\$y	\$z
New material A	x%		\$y	\$z
New material B	x%		\$y	\$z
New material C	x%		\$y	\$z
Residue	x%		\$y	\$z
	100.00%	(5) Blended Value of each ton of recyclables:		Σ \$z /total tonnage

sector to drop a material even if the value plummets after the program is underway as the propensity of residents to continue placing an item(s) out for recycling is very high.

Performance Measures Governing Residues

Performance measures to minimize residue are important elements of any recycling program because they provide an incentive for the processor to capture available recyclables and for the municipality to support those efforts through the education and enforcement efforts in the collection systems that fall within its purview. This is even more important when residue is part of the value calculation. This subject will be discussed in more detail in a future paper but performance measures should be considered during contract development.