

AR No. 5

Recycle Plastic Waste

Recommended Action

Separate scrap plastic bag waste from solid waste stream and recycle. This can be accomplished by either arranging for no-cost pick-up of loose waste or by selling baled waste material.

Assessment Recommendation Summary				
Recommended Alternative	Waste Pounds	Cost Savings	Implementation Cost	Payback (years)
Recycle loose waste	30,000	\$915	\$540	0.6
Or Sell baled waste	30,000	\$1,515	\$1,500	1.0

Background

The company generates approximately 100-125 pounds of low-density polyethylene bag-waste daily. This accounts for 25% of the company's solid waste output. At current disposal rates, the company now pays an average of \$915 per year for the disposal of bag waste. While current disposal costs are not extremely high, significant savings can be realized through source separation and recycling of the plastic waste.

Plastic recycling is an area that has seen considerable growth in the past decade. Technological advancements and consumer demand for alternative products has bolstered the demand for clean, homogeneous supplies of plastic waste. The waste material generated is generally free of contamination (from foreign material and other grades of plastic) and as such has value to many manufactures. Common products made from LDPE waste include wood/plastic composite building material and synthetic fabrics and fibers.

Anticipated Savings

The primary savings resulting from the separation of plastic waste is by avoiding the cost associated with waste disposal. By separating the plastic waste, the company can divert approximately 15 tons of landfill waste per year. This will generate a savings of \$915 per year. Additionally, the sale of the waste material can generate income at the rate of \$0.02 per pound, \$600 annually. Total potential savings (PS) for this recommendation would be \$1,515 per year and is the sum of avoided solid waste costs (SWS) and income from sale of recycled material (RI).

$$\begin{aligned} \text{SWS} &= 15 \text{ tons} * \$61/\text{ton of landfill waste} = \$915 \\ \text{RI} &= 15 \text{ tons} * 2000 \text{ pounds/ton} * \$0.02/\text{pound of plastic} = \$600 \\ \text{PS} &= \$915 + \$600 = \$1,515 \end{aligned}$$

Savings Summary			
Source	Quantity Units	Waste Pounds	Savings \$
Solid Waste (non-haz) Recycling	30,000 Pounds	30,000	\$915
Or			
Solid Waste (non-haz) Sell	30,000 Pounds	30,000	\$1,515

Implementation Costs

There are three options for the implementation of this recommendation. The first option would be to separate and store loose material for periodic collection by a local recycling company with no fee for transport or payment for material. The remaining options would require the purchase of a small baler to compress the waste material. Once baled, the waste can be sold to a local recycling company.

Basic waste separation will be the easiest option to implement and will result in a very fast payback. Implementation would require the purchase of up to two storage boxes with a capacity of 1 cubic yard at a price of \$270 each. Arrangements can be made to have the material collected twice a week at no cost. The payback would be 0.6 years and will result entirely from eliminating the cost associated with the current disposal of the plastic waste.

The second option will be to purchase a small, used vertical 48" baler and sell the waste to a local recycling company. Used, rebuilt balers can be purchased and installed for as little as \$1,500 and will produce a baled product that can be sold. The payback for this alternative would be as short as one year.

The final alternative will be to purchase a new baler and sell the waste plastic. The current market price for a new 48" vertical baler would be approximately \$7,500 and would result in a 5-year payback. This alternative is not preferred due to the long payback time.

While the basic separation option has the fastest payback, the option to purchase a used baler and sell the plastic would result in a more profitable waste management alternative. Material separation will only avoid the cost associated with the disposal of the plastic waste. However, baling and selling the plastic will allow the material to become a source of income. Both options would likely require similar operating costs as the result of material handling and equipment maintenance. Both alternatives could likely be implemented in a very short period of time, approximately 1-3 months.