Small-Scale Community Glass Processing

Material: Recycled Glass

Issue: *Increasingly, communities are making the decision to process collected recycled glass locally in order to develop local recycled glass self-reliance. This Best Practice presents a spreadsheet that can be used to help a community to make the "ship or process" decision..*

Best Practice: The economic model below is based on the actual costs of a community glass processing system established in 1997. The system was manufactured by Andela Tool and Machine of Richfield Springs, New York. The community's recycled glass collections totaled about 1000 tons per year, which means that the 5-ton per hour processing system operates only one day per week. This processing system consists of an infeed hopper, infeed conveyor, two-stage pulverizer, outfeed conveyor, and two-stage trommel separator. The pulverizer is an impact mill with a series of hinged hammers attached to shafts. The system generates two grades: 1/8 x 3/8" and 1/8" and finer. The coarse output is being used as drainage aggregate and the finer is being used in on-site wastewater treatment systems.

Assumptions
Available tons of glass per year: 1000
The crusher average speed (high conservative): 5 tons per hour
Days of operation per year: 50

Variable Costs:
Daily rent of the Front End Loader: $22.50
Hourly wage including benefits: $15
Glass processing system maintenance cost: $3.00 per ton
Other maintenance costs: $3.00 per ton
Energy: 6 kWh/ton at $0.06 per hour
Percentage of waste to dumpster: 5% at $100.00 per ton

Incomes:
Solid waste diversion benefit: $40.00 per ton
Sales price of the crushed glass to contractors: $5.00 per ton

FIXED COSTS		
Glass Processing System	$	77,500
Contingency & Freight	$	5,000
Site Improvements	$	10,000
	$	**92,500**

VARIABLE COSTS	per year
Front End Loader Rent	$ 1,125
Wages	$ 6,000
Crusher Maintenance	$ 3,000
Other Maintenance	$ 3,000
Energy	$ 360
Dumpster Disposal	$ 5,000
	$ 18,485
Yearly variable costs	$ (18,485.00)
Yearly Payments	$ (18,485.00)
Solid waste diversion benefit	$ 40,000.00
Crushed Glass Sales	$ 4,750.00
Yearly Incomes	**$ 44,750.00**
	CASH-FLOW
YEAR 1	$ (66,235.00)
YEAR 2	$ 26,265.00
YEAR 3	$ 26,265.00
YEAR 4	$ 26,265.00
YEAR 5	$ 26,265.00
NET PRESENT VALUE	$15,474.11
Rate of Return of the Initial Investment	21%

Implementation: The economic model above can be used to help a community decide whether to invest in a glass processing system.

Benefits: With adequate attention to market development and the costs and benefits of solid waste diversion, it is possible for many geographically-challenged communities to collect recycled glass for local processing.

Application Sites: San Juan County, Washington and Bend, Oregon

Contact: For more information about this Best Practice, contact CWC, (206) 443-7746, e-mail info@cwc.org.

References:

Recycling Burden Turned into Local Resource, GL-94-3 Fact Sheet, Clean Washington Center, 1994.

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