

Tribal Solid Waste Program Costing Tool Introduction

Shem-Mong Chou EPA Region 5 June 20, 2018



- Background
- Overview of the Tool
- Features of the Tool
- Demonstration
- Conclusions



- Most Tribes Reside in Rural Area
- Low Population Density
- High Cost of Waste Disposal
- No Local Waste Hauler Service
- Open Dumping/Burning
- Adverse Impact on Human Health and Environments

Costing Tool Development



- Joint Efforts from Several EPA Regions
- Valuable Input from Tribes

Costing Tool Components



Spreadsheet

Step 1: Determine what the tribe currently pays for waste collection These calculations only include costs that the tribal government currently pays for rather than what

		Total cost per year	% of total annual operating costs
Number of tribal households or residential units within the service area	А		
Current waste hauling/disposal cost to the tribal government per household	в	s -	#DIV/0!
Number of offices, businesses, and government facilities within the service area	с		
Current waste hauling/disposal cost to the tribal government per business	D	\$-	#DIV/0!
Total yearly cost of current system to the tribe	G \$	\$ -	#DIV/0!

Step 2: Determine what a tribally-owned collection system would cost

Number of curbside bins needed	н								
Cost per curbside bin			s		#DIV/0!				
Number of community dumpsters or roll-off bins needed	J								
Cost per community dumpster or roll-off bin	к		s	-	#DIV/0!				
Number of additional collection vehicles needed	L								
Cost per collection vehicle	м		s		#DIV/0!				
Other equipment or overhead costs	N		s		#DIV/0!				
Total Initial Cost	0\$	-	s	-	#DIV/0!				
			_						
Miles collection vehicle will travel per week	Р								
Cost of gas per mile	Q		\$	-	#DIV/0!				
Cost of maintenance, repairs and insurance per mile	R		\$		#DIV/01				
Contingency cost per year	s		s		#DIV/0!				
Administrative staff hours needed nor week	-								
Cost per hour administrative staff time	i i				#DIV/01				
Solid waste technician/hauler hours needed	J		Ť		abitito.				
per week	v								
Cost per hour solid waste technician/hauler	w		s	-	#DIV/0!				
Tipping fee per month	x		s	-	#DIV/0!				
Other costs per year	Y		s	-	#DIV/0!				
Total operating cost per year	Z \$		\$	-	#DIV/0!				
Stop 2: Include Ligar Ease									
Step 5. Inte	uue oser rees								
Monthly Fee charged to households for use (if					#DIX ((0)				
any)	a		•		#DIV/0!				
Monthlyhee charged to tribal businesses for use (if any)	ь		s		#DIV/0!				
Monthly Revenue, if any, from recyclables									
collection	c		\$	•	#DIV/0!				
program	d \$		s		#DIV/0!				
Step 4: Det	Step 4: Determine if/when the new collection system will"break even" with								
wha	at the tribe pay	s currently							
Payback period (in years) with no fee charged		#500/001	(if this	number i	s -1, then the				
and no recycling revenue:		#014/01	operati	OII WIII NOI	pay for its@ff)				
Payback period (in years) with fee charged			(if this number is -1, then the						
and/or recycling revenue:		#DIV/0!	operation will not pay for itself)						

Guide





Tribal Solid

Costing Tool

What to consider when:

Starting a tribally-operated collection service Building a tribally-operated transfer station Building a municipal solid waste landfill



Waste Disposal Program







- Tribal-Run Collection System
- Tribal-Owned Transfer Station with Contract Hauling
- Tribal-Owned Transfer Station with Tribal Hauling

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Scenarios for Collection System

- 1. Local Hauler Unwilling to Serve
- 2. Sufficient Waste Volume

Collection Program







4 Steps for Collection System

- 1. Subsidy (A): Tribe Currently Pays for Waste Collection
- 2. Initial Cost (B): Construct Collection System
- 3. Operating Cost (**C**): Operate Collection System
- 4. Revenue (**D**): User Fee & Recycling Revenue

Payback Period (T) Calculation:

$$T = B / (A + D - C)$$

Subsidy/User Fee Options



Subsidy: Tribe currently pays for Waste Collection

- Monthly Charge based on Household/Business Units
- Waste Quantity based on Tipping Fees

User Fee: Tribe collects Fee from Users

- Monthly Fee based on Household/Business Units
- Waste Quantity based on per Bag Fees



Payback Period T = B / (A + D - C)

- 1. No User Fee and No Recycling Revenue
- 2. No User Fee but with Recycling Revenue
- 3. with User Fee but No Recycling Revenue
- 4. with User Fee and with Recycling Revenue





Scenarios for Transfer Station

- 1. Long Hauling Distance to Disposal Site
- 2. Large Waste Volume
- 3. Serve Multiple Collectors

TUNITED STATES **Transfer Station Program** with Contract Hauling



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4 Steps for TS with Contract Hauling

- 1. Subsidy (A): Tribe Currently Pays for Waste Collection
- 2. Initial Cost (B): Construct Collection System
- 3. Operating Cost (**C**): Operate Collection System
- 4. Revenue (D): User Fee & Recycling Revenue

Payback Period Calculation (T)

$$T = B / (A + D - C)$$

SALVINTED STATES **Transfer Station Program** with Tribal Hauling



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5 Steps for TS with Tribal Hauling

- 1. Subsidy (A): Tribe Currently Pays for Waste Collection
- 2. Initial Cost (B): Construct Collection System
- 3. Operating Cost (C): Operate Collection System
- 4. Revenue (D): User Fee & Recycling Revenue
- 5. Distance (E): from Waste Source to Disposal Site

Payback Period Calculation (T)

$$T = B / (A + D - C)$$



Break-even Distance

Cost of Direct Hauling per Ton: Yd = (E4 * X) / E2 Cost of TS Hauling per Ton: Yt = E1 + (E4 * X) / E3 At Break-even Distance, X: Yd = Yt

X = E1*E2*E3 / [2*E4*(E3-E2)]

E1: Cost per ton of waste to build, own & operate transfer station
E2: Average payload of collection truck hauling directly to landfill
E3: Average payload of transfer truck hauling from TS to landfill
E4: Average trucking cost per mile driven





Break-even Distance Example

E1 = \$10/ton E2 = 7 tons E3 = 21 tons E4 = \$3/mile

X = 35 miles (round trip)





Demonstration of Costing Tool

Concluding Remarks



- A useful Tool to Assess Economical Feasibility of Building a Tribaloperated Collection System and/or Transfer Station
- User Inputs Critical to further Improve this Costing Tool.



Any questions, please contact:

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