Variable Rate Pricing: Best Practice to increase recycling

Carolina Recycling Association

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Waste Management, Inc. (NYSE:WMI), based in Houston, Texas, is the leading provider of comprehensive waste management and environmental services in North America.

- Waste Landfills: 262
- Collection Operations: 390 employees, +21 million customers
- People: +42k
- Energy: 17 waste-to-energy plants, 58 landfill-gas-to-energy projects, 137 natural gas fueling stations, 1 independent power production plants produce renewable energy
- Facilities: 1 active hazardous waste underground injection facility, 18 secondary processing facilities, 36 organic processing facilities, 36 transfer facilities, 120 traditional recycling facilities, 50 are Single Stream and 12 are C&D recycling facilities
- Money: 1.3B free cash flow, 922M returned to shareholders, 14.0B in revenue
- Summary:
  - Creates enough energy to power more than 1.1M homes every year
  - Manages over 15 million tons of recyclable commodities
  - Dedicates over 27,000 protected acres to wildlife habitats
Recycling Best Practices - national study

What do communities with successful programs have in common?

- Cart-based recycling
  - Average 40% increase (Columbia Univ.)

- Variable rate structure
  - 20-40% increase in recycling (SERA)

- Universal recycling + material bans
  - 10% increasing in recycling (SERA)

- Public education and outreach

Studies show best practices increase recycling
Convenient Cart Based Single Stream Recycling

- Greatly increases participation
- Lowers costs and emissions by reducing transportation while capturing new volume
- Local programs benefit from increased capacity while maintaining material quality
- Recycling technology (magnets, screens, optical scanners) automate sorting

An average of 40% more recyclables collected
Variable rates in the U.S.

• More than 7,100 communities in the U.S. have consumer pay systems

• In one recent study of 228 communities, those with variable rate pricing generated 49% less waste material than non-variable rate communities.

• Municipalities with variable rates dispose of an average of 467 pounds per capita, compared to 918 pounds per capita in the non-variable rate municipalities.

• Variable rates systems have been proven to double recycling rates.

• High achieving recycling programs (Seattle, Portland, San Francisco) incorporate some sort of variable rate, or pay-as-you-throw system.
Variable rates are where the rubber hits the road. It can get people to recycle, but it can also get people to compost and to start demanding less wasteful packaging in the first place.”

Daniel McKinley & Chris McClure - Environmental Economics, University of Georgia
According to a Massachusetts Department of Environmental Protection (DEP) study, the towns below reduced their monthly average household waste tonnage by an average of 42% by switching to variable rate pricing.

<table>
<thead>
<tr>
<th>Town</th>
<th>Original Tonnage</th>
<th>Reduced Tonnage</th>
<th>Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>West Boyls</td>
<td>145 lbs</td>
<td>100 lbs</td>
<td>31%</td>
</tr>
<tr>
<td>Grafton</td>
<td>190 lbs</td>
<td>102 lbs</td>
<td>46%</td>
</tr>
<tr>
<td>Shirley</td>
<td>199 lbs</td>
<td>92 lbs</td>
<td>54%</td>
</tr>
<tr>
<td>Shrewsbury</td>
<td>187 lbs</td>
<td>116 lbs</td>
<td>38%</td>
</tr>
</tbody>
</table>
SERA looked at 35 cities across the U.S. and at 3 dozen service areas in Washington State. We focused specifically on variable rates (required by state law):

- Reviewed price differential by container size
- Reviewed container size
- Reviewed basic rates
- Reviewed single stream and organics recycling rates
Variable garbage rates

- 60-65% of customers sign up for 35 gallon carts, and as high as 75-80+% will shift towards 35 gallon carts or lower in the higher rate communities.

- Variable rates should be implemented after single stream recycling is part of the community. Combined with effective education and enforcement, contamination concerns can be minimized.

City of Bremerton, WA
56% Recycling Rate

City of Redmond, WA
64% Recycling Rate

20-40% more recyclables collected (national study/SERA)
Examples of the impact of variable rates on recycling

City of East Wenatchee, WA  
Recycling rate = 14%

- Low rates impact container size/subscriptions
- Low trash rates lead to low recycling rates (14%), even with variable can rates (0.013 slope)
- Extra charge for YW combined with low garbage rates (and no regulations) result in low organics diversion (3%)

City of Duvall, WA  
Recycling rate = 61%

- High garbage rates
- Linear rate relationship is very low
- Recycling and YW provided EOW at no additional charge
- Targeted food waste diversion has been effective
- Good community programs, education, outreach provided
Findings

• Variable rate pricing increases recycling

• We can predict cart-sizes based on rate in variable rate programs

• Base pricing plays a role. Recycling rates do not increase as much when trash rates are very low, even with variable rates

• The most successful programs combine variable rate pricing with a range of other programs.

So why doesn’t everyone adopt variable rate pricing?
## Common concerns with variable rate pricing

<table>
<thead>
<tr>
<th>Concern</th>
<th>Policy concerns</th>
<th>Who is Impacted</th>
<th>Possible Resolution</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Contamination in the Recyclables</strong></td>
<td>Increased cost at MRFs, and reduced revenue from recyclables</td>
<td>MRF, end markets</td>
<td>Implement recycling first, then a year later implement PAYT. Provide recycling education and enforcement support.</td>
</tr>
<tr>
<td><strong>Uncertain revenue</strong></td>
<td>Reduced revenue/taxes from collection and disposal rates</td>
<td>Cities, garbage collectors, public and privately owned landfills</td>
<td>Revisit the rate structure and allow for a “true up”. Care in developing rate design.</td>
</tr>
<tr>
<td><strong>Illegal dumping</strong></td>
<td>Cost of enforcement</td>
<td>Cities</td>
<td>Aggressive early enforcement. Public education, convenient recycling programs in place before variable rate pricing.</td>
</tr>
<tr>
<td><strong>Extremely political</strong></td>
<td>Taxpayer complaints</td>
<td>Elected officials, politicians</td>
<td>State legislation to take pressure off of local elected officials; provide education on benefits of variable rates</td>
</tr>
</tbody>
</table>

*Courtesy Ameripen*
Where do we go from here?

Balancing rates with programs

• Trash rates that contemplate pricing incentives, programmatic costs and human behavior drive successful recycling programs
• We can use data from existing programs to estimate customer behavior/cart sizes in new programs
• Don’t forget organics – customers seem to understand that there is a cost to organics. Variable rates for organics can help offset overall program costs
• Thoughtful programs to meet community needs are as important as rates. Socio economic factors must be considered.
• Don’t scrimp on public education costs.
Questions?