IDENTIFYING WHAT MAKES SENSE TO RECYCLE?

processing Costs and Adding Materials

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INTRODUCTION

Deciding whether to add materials to the MRF
- Politics
- Economics

How we evaluated the issue
- Look at current / traditional materials & conclusions
- Review results for addition of a new material

BUILDING UP THE MODEL

SERA model builds up processing costs based on:
- Equipment – choices of lifetimes, financing costs
- Labor by position – choice of labor rates
- Fixed costs / Overhead
- Materials in/out
- Map specific materials to equipment & labor

Other settings
- Revenue options – low / medium / high by material
- Disposal fee
- Waste Composition
- Efficiency / recovery rates

Annual costs, average costs, total costs, marginal costs per ton and overall
- Net revenue per ton by material and overall
- 6 plant sizes

RESULTS FOR TRADITIONAL MATERIALS

Profit per ton of commodities processed – conclusions
- Underlying assumptions (revenue, labor cost, disposal, waste comp, yrs.)
- Traditional mix includes materials with costs > revenues (Mixed paper, 3-7 plastics, aseptic, glass) – not just glass
- Why are they included?
RESULTS FOR TRADITIONAL MATERIALS – WHY INCLUDE “LOSERS”?

- Net revenue for a material does not have to be positive for plant to benefit.
  - Looking at individual materials does not tell the story
- If (marginal) revenue per ton exceeds MARGINAL cost per ton:
  - That excess revenue contributes to covering the fixed costs of operations
  - Improves profitability for plant
  - Improves profitability for other materials that use some of that shared equipment / labor
- Larger vs. smaller plants
  - With more materials running through the plant, you can process more material types
- Decision more complicated than material by material

ADDING A NEW MATERIAL

- What about adding a new material?
  ➣ Name an “unpopular” one?
- Steps to model:
  - Add new material to list, check waste comp
  - New vs. added – stations, equipment, staff, etc.
  - Some shared with other materials; some may be dedicated

ADDING A NEW MATERIAL – STYROFOAM RESULTS

- Two streams and two processing systems
  - Foam only vs. All PS
  - Manual sort PS / densifier (M1) vs. Optical sorter / baler (M2)
- Net profit for most at low wage rate except low prices.
  - Only at high prices for high labor rate. wages

STYROFOAM RESULTS – EFFECT ON OTHER MATERIALS

- Even in scenarios with negative individual net profit:
  - Reduces allocated processing costs for each other traditional material by $2 - $5 per ton
  - Increases overall plant profitability
OTHER RESULTS AND INFLUENCING FACTORS

- Translating results to other locations:
  - Waste composition (bottle bill / not, urban/rural), etc.
  - Disposal costs
  - Capture rate / recovery percentage

- Other system considerations
  - Collection largely limited by weight – not an issue for PS
  - Might be for other materials (separate collection model)

SUMMARY AND CONCLUSIONS

- Don’t let gut reaction or traditional wisdom guide decisions
- Don’t look at material-by-material profitability – look at plant-wide results
- If the revenue per ton exceeds the marginal cost you add to plant profitability
- Might make a case for materials beyond the traditional
- Look at the economics holistically, not commodity by commodity.
- Maximizing each one-product profits will be profitable, but you will be MORE Profitable if you include all materials in which you’re covering at least the “specially attributed” costs – the marginal costs.
- Model is tailor able, and we are currently modeling results for other materials.

THANK YOU!!

Comments & Questions?

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