



Resource Recycling Systems
Sustainable Systems for a Waste-Free Future

MINNEAPOLIS RECYCLING EVALUATION

NOVEMBER, 29, 2011

JD LINDEBERG, PE, PRESIDENT AND CFO

416 Longshore Dr. | Ann Arbor, MI 48105 | 734.996.1361 p | 734.996.5595 f | www.recycle.com

QUESTIONS (AND ANSWERS)

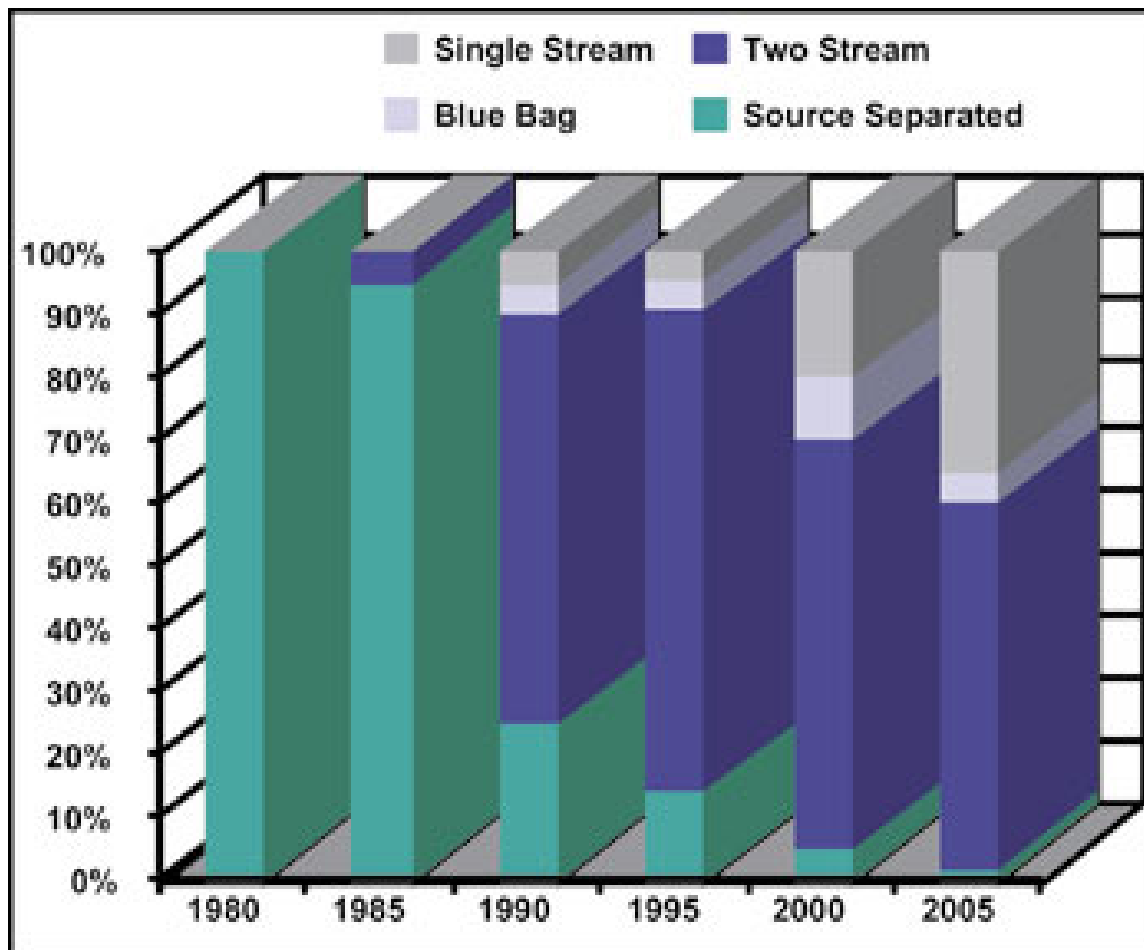
- If Minneapolis switched from the current multi-sort system to dual or single sort, what could the city expect in the areas of:
 1. Recycling Rate? - Increase
 2. Residual Rate? - Increase
 3. Net Revenue? - No significant decrease
 4. Operations? - More efficient



INFORMATION USED FOR THIS STUDY

- **Minneapolis**
 - Current program and dual/single sort pilot programs
- **St. Paul**
 - Converted from source separated to dual sort in 2001.
- **Ann Arbor**
 - Converted from multi sort to dual sort in 1995, converted to single sort in 2009
- **Portland**
 - Converted from multi sort to dual sort in 1999
- Other Cities including **Cincinnati, Kansas City, Toledo**

NATIONAL TRENDS



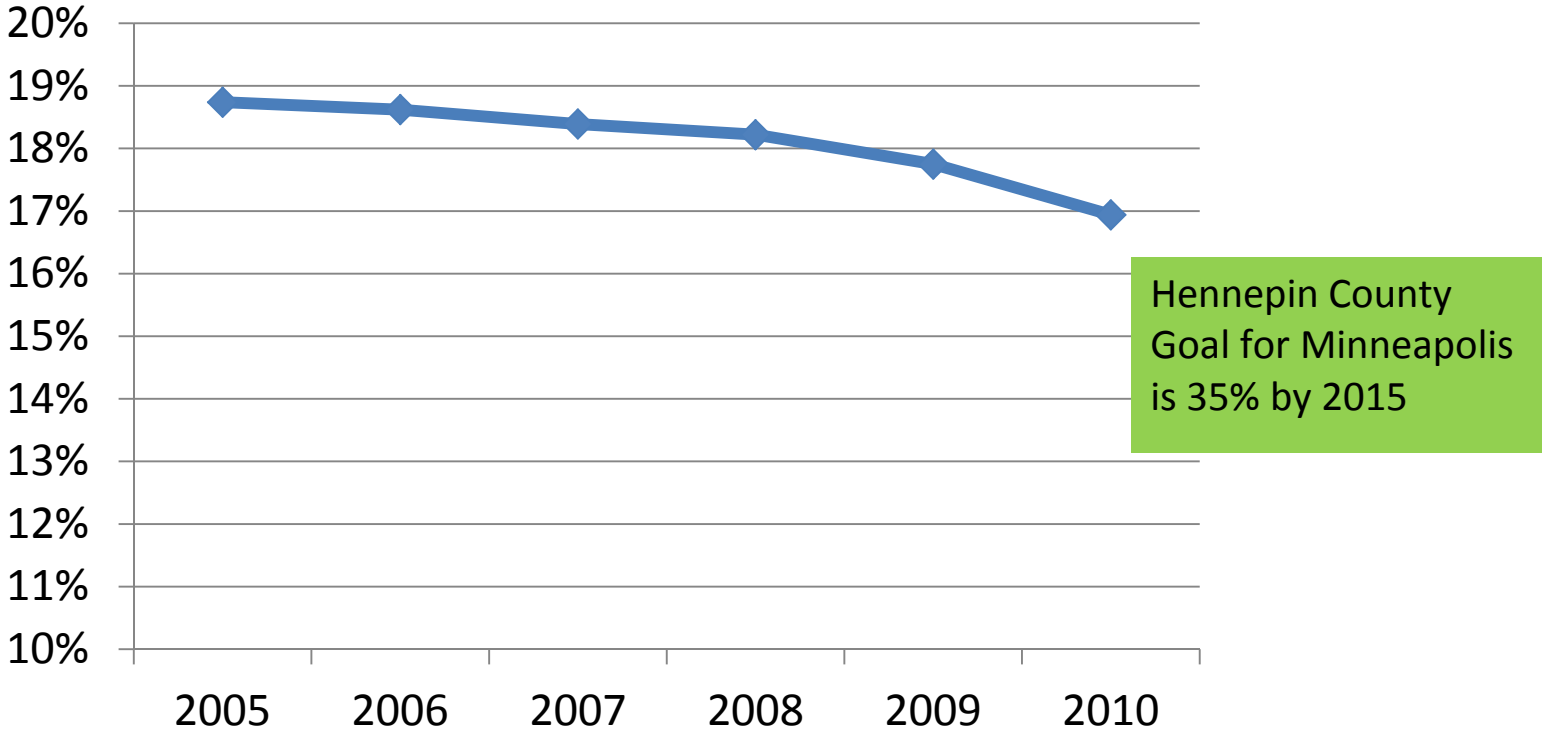
In 2010, the trend continued:

64% of American households had access to single sort recycling



RECYCLING RATE

City of Minneapolis Recycling Rate



RECYCLING RATE

	Recycling Rate*
Current MPLS	17%
St. Paul	30%
Ann Arbor	37%
Portland	34%
Kansas City[^]	20%
Cincinnati[^]	23%

* Recycling Rate calculated by dividing total recyclables by total waste (trash + recyclables), excluding yard waste

[^] Kansas City and Cincinnati do not collect yard waste separately



WHY ARE SOME HIGHER THAN OTHERS?

- Ann Arbor, Portland
 - Both have weekly cart based programs
 - Strong education
 - Limits on trash setout (Portland switched to every other week trash a couple weeks ago)
- Saint Paul
 - Weekly bin program
 - Strong education
 - Multi-hauler system for waste



WHY ARE SOME HIGHER THAN OTHERS?

- Cincinnati
 - Biweekly cart program just recently rolled out, likely to rise
 - No significant limits on trash setout
- Kansas City
 - Opt-in recycling program
 - Bin only
 - PAYT program but no strong recycling push



RESIDUAL RATE

- Residual rate is the amount of material thrown out at the recycling facility
 - Composed of:
 - Non-recyclable materials
 - Recyclable materials that weren't sorted out



SINGLE AND DUAL SORT

- Significant increase in system capabilities in past 5 years reduce recyclable material lost during process



Improved screens,
optical sorters and
front end metering



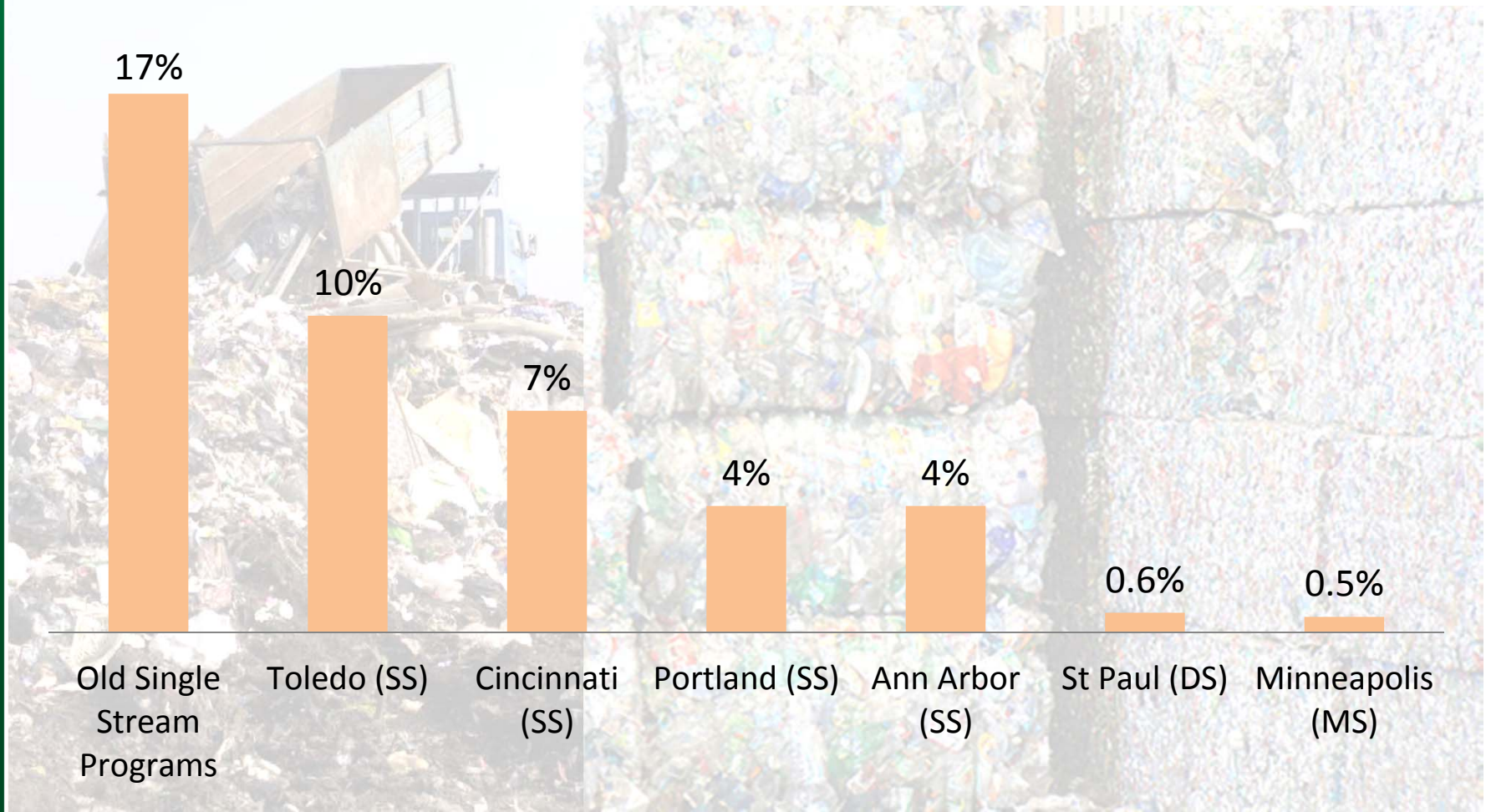
Remove glass up
front to reduce
contamination



More plastics are
recyclable



MATERIAL RECOVERY FACILITY (MRF) RESIDUAL RATE

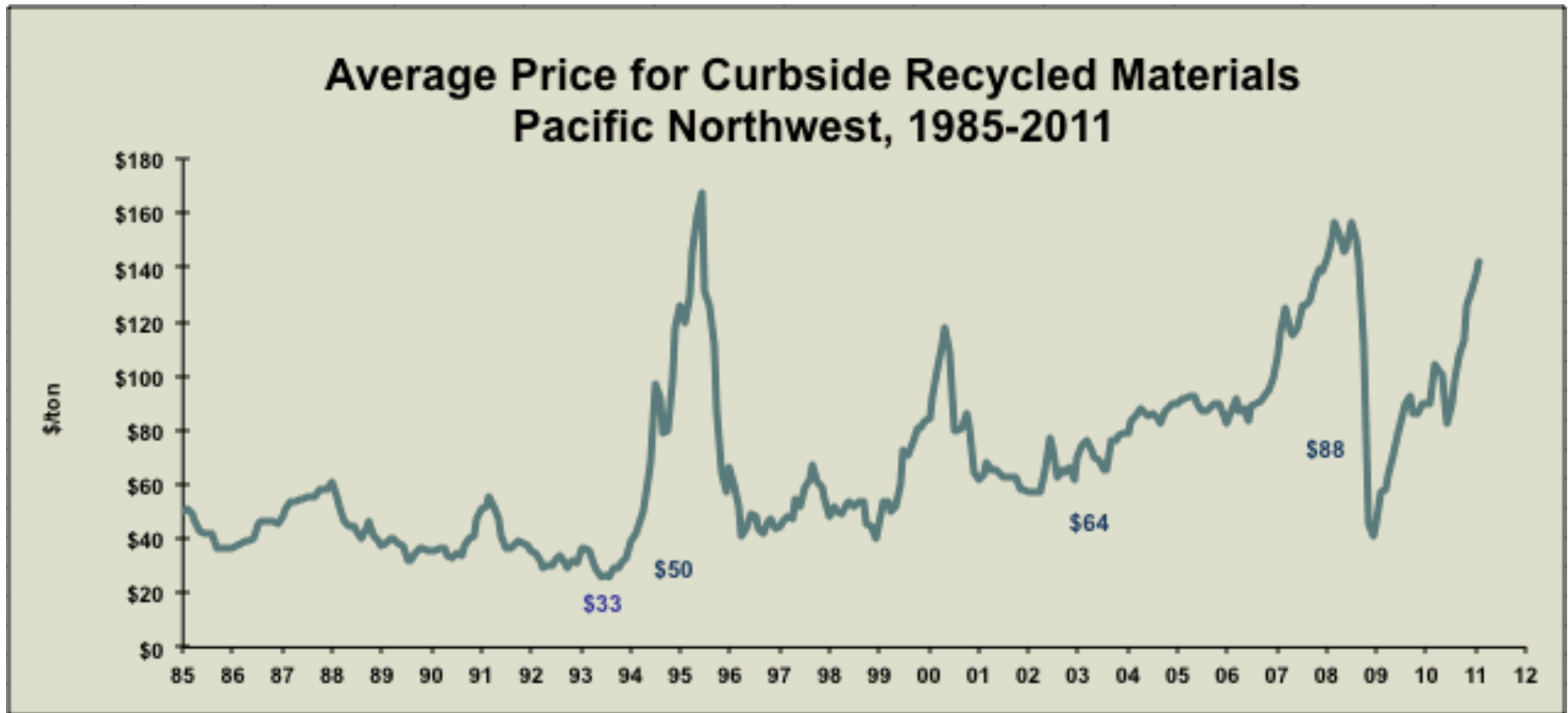


MARKET TRENDS

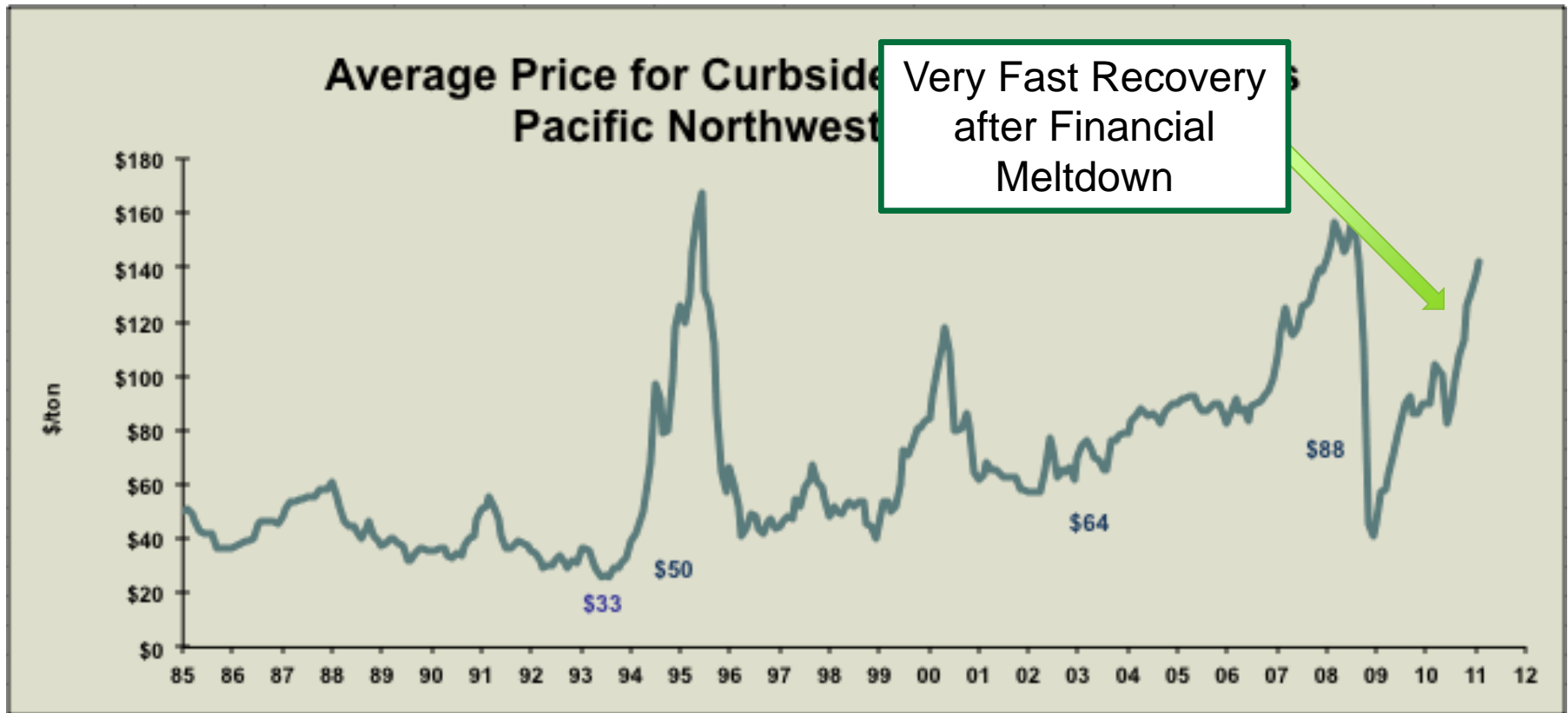
- No evidence of decreased prices paid for single or dual sort material, but processing fees differ based on program type
- No difficulty for facilities to move material to market
 - Strong demand from Asia (China/India/etc.) for all materials
- Processing fees for single and dual sort MRFs range from \$60 - \$80 per ton
 - Revenue above processing fee is split between MRF processor and City
 - More cost efficient to sort material in a central location than on the curb



MARKET TRENDS (DATA)



MARKET TRENDS (DATA)



REVENUE SHARE

	Current MPLS	Dual Sort Pilot	Single Sort Pilot	St. Paul	Cincinnati	Ann Arbor*
Average Commodity Revenue	\$150/ton	\$150/ton	\$150/ton	\$150/ton	\$150/ton	\$150/ton
Net Payment to City	\$115/ton			\$30/ton	\$41/ton	\$75/ton

*Note: Ann Arbor owns the MRF building and equipment

Kansas City and Portland receive no revenue share

Revenue above processing fee is split between MRF processor and City

NET PROGRAM COSTS

	Current MPLS	Ann Arbor	St. Paul	Kansas City	Cincinnati	Portland
Collection Cost per Ton	\$233	\$131	\$145	\$168	\$148	\$205
Revenue per Ton	\$115	\$75	\$30	\$0	\$41	\$0
Net Cost per Ton	\$118	\$56	\$115	\$168	\$107	\$205



PROGRAM CHANGES



30% - 85%
increase in
recovery



Increase in
processing
fees



Reduced
collection
costs



Increase in
capital cost
for new
carts



Waste Savings:
Avoided tip fees
& Potential route
savings

**It's possible to switch to a
commingled program without
increasing recycling costs**



POTENTIAL PROGRAM COST CHANGES

	Current Collection	Projected Costs
Collection Cost/HH/month	\$2.92	\$1.75 - \$2.10
Capital Cost/HH/Month	\$0.21	\$0.77 - \$0.90
MSW Savings (\$/HH/Month)		\$0.24 - \$0.61
MRF Revenue/HH/Month	\$1.52	\$0.67 - \$1.35
Net Cost/HH/Month	\$1.61	\$1.26 - \$2.08

It's possible to switch to a commingled program without increasing recycling costs



STUDY - CONCLUSIONS

	Current	Recovery Same as St Paul	Recovery Same as Portland
Tons Collected	18,580	25,097	34,454
Net Revenue per Ton	\$ 115	\$ 60	\$ 60
Net Payment to City	\$ 2,136,700	\$ 1,505,811	\$ 2,067,218
Avoided Tip Fees (\$45/ton)	\$ -	\$ 306,292	\$ 439,769
Net Revenue	\$ 2,136,700	\$ 1,812,104	\$ 2,506,987
Collection Savings		??	??



STUDY - CONCLUSIONS

- Peer cities programs have moved away from source separation
- Material diversion is almost double in peer communities with dual or single-sort
- Markets for materials accept residue as cost of doing business
- Single sort programs can produce high material quality with good education program



WHAT CAN MINNEAPOLIS EXPECT

Variable	New Minneapolis Recycling Program
Collections	Increase citywide recycling weight by 20% to 40%
Average Commodity Prices	Similar to current program commodity prices (Market driven).
Processing Costs	Estimate \$60 to \$80 per ton.
Residual Rates	1% to 4%
Avoided Tipping Fees	Saves the city \$45/ton
Operational Costs	More efficient. Details of operational changes need further investigation.



WHAT CAN MINNEAPOLIS EXPECT

- A new recycling program will increase the amount of waste recycled in Minneapolis.
- Depending on its features (one sort or two sort) and accomplishments, a new recycling program will either cost slightly less or somewhat more than the current program.
- The overall cost per ton recovered will be reduced.



QUESTIONS

- Thanks for your Attention!
- JD Lindeberg, PE RRS President and CFO
734-646-3303
jdl@recycle.com

