

Making Co-mingled Work:  
*Agreeing to new standards to get  
the most out of our curbside mix.*

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# Overview

- What is the problem we are trying to solve?
- How are we trying to solve it?
- Where are we at today?
- Where are we going next?

# What is the problem?

- Lost Materials into other recycling streams
  - Lost materials means lost resources
- Inefficient management of the recyclables we are already collecting
- No oversight or tracking of results
- Confusion by customers about recycling

# Un-co-mingling – a tough job



# Clean Paper??



# Lost Resources



From NORPAC Paper Mill in  
Longview, WA, Feb 2008



From Blue Heron Paper in  
Portland, Oregon, Feb 2008



# Portland and King County Studies indicate a lot of lost materials!

## Metro 2004-05 MRF Contamination Study

<b>Curbside Materials</b>	<b>Tons Collected</b>	<b>Tons Lost</b>	<b>Loss Rate</b>
<b>Newspaper</b>	66,936	694	1%
<b>Cardboard</b>	15,914	4,153	26%
<b>Metal</b>	4,062	583	14%
<b>Plastic Bottles</b>	3,390	800	24%

Note: all Oregon communities collect glass on the side – not fully co-  
minded

# King County MRF Study

<b>Curbside Material</b>	<b>Sent to Proper Market</b>	<b>Cross-Contaminant or Residue</b>
<b>Newspaper, Mixed Paper</b>	98-99%	1-2%
<b>PET</b>	47%	53%
<b>HDPE</b>	72%	28%
<b>Aluminum</b>	64%	36%
<b>Tin</b>	77%	23%
<b>Glass</b>	90%	10%

# How are we doing compared to existing standards? 1 example

## ISRI #8: Special News, De-ink Quality (#8 ONP)

Consists of sorted, fresh newspapers, not sunburned, free from magazines, white blank, pressroom over issues, and paper other than news, containing not more than the normal percentage of rotogravure and colored sections. This grade must be tare free.

Prohibitive materials.....None Permitted  
 Total Outthrows may not exceed..... $\frac{1}{4}$  of 1%

Supplier	NORPAC Supply System	Sold As	% Outthrows	% Prohibitives	% Glass
2001 and Prior Average ALL Suppliers	100% Source Separated	#8	0.25 – 0.5	0.0	0.0
Sep 2006 – Dec 2006 Weighted Average ALL Suppliers	68% Co-mingled	#8, #7	15.0	3.4	0.33

# Recycling isn't about landfill space, it is about resource conservation!

## Upstream impacts

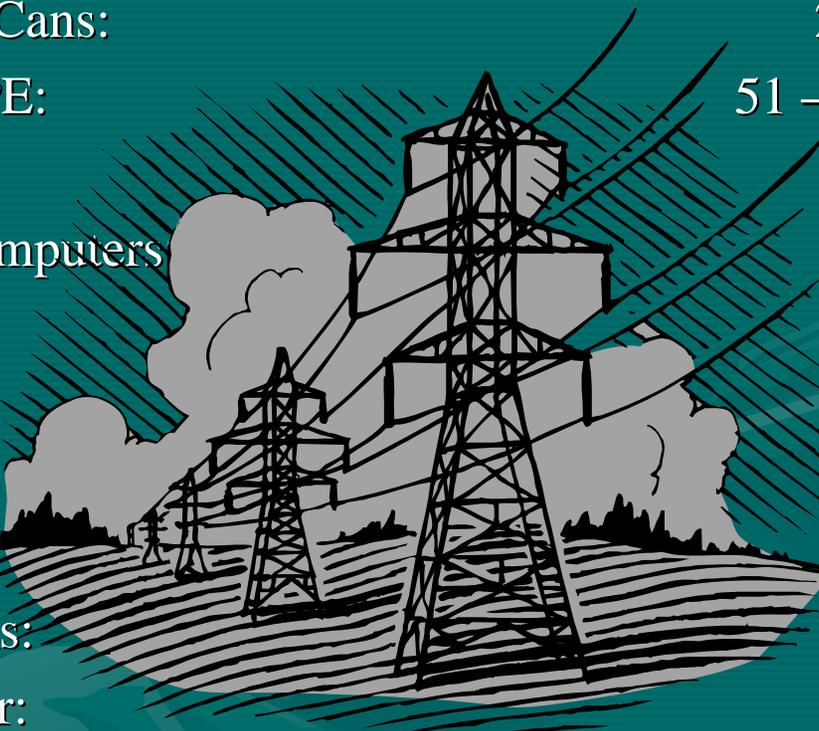
- Extraction and harvesting of raw materials
  - Energy use
  - Pollution
  - Land use
- Production of raw materials
  - Energy use
  - Consumptive water use
  - Pollution and wastes
- Transportation of raw materials, products
  - Energy use
  - Pollution

## Downstream Impacts

- Energy and pollution associated with collection and transportation of waste and recyclables
- Landfill impacts
  - Land use
  - Pollution
  - Methane generation
- Incineration
  - Air pollution
  - Land, air, and water quality impacts of burning, stockpiling, and illegal dumping of garbage (not well quantified)
- Liner failure

**Upstream impacts are 10-20x greater than EOL impacts – you get your benefits from replacing raw materials!**

# Net Energy Savings from Recycling



• Aluminum Cans:	207 MM BTU/ton
• HDPE/LDPE:	51 – 56 MM BTU/ton
• PET:	53 MM BTU/ton
• Personal computers:	44 MM BTU/ton
• Steel cans:	20 MM BTU/ton
• Newsprint:	17 MM BTU/ton
• Newsprint:	17 MM BTU/ton
• Corrugated:	16 MM BTU/ton
• Phone books:	12 MM BTU/ton
• Office paper:	10 MM BTU/ton
• Glass:	2.7 MM BTU/ton
• Aggregate:	0.6 MM BTU/ton

*Source: US EPA*

# How do the Energy Saving Occur?

## Closed loop ONP example

### Energy Used

- Curbside collection: ~0.2 MM BTU/ton
- Transportation to mill: <0.2 MM BTU/ton
- *From Salem to Oregon City*

### Energy Saved

- At the mill: ~16 MM BTU/ton
- Transporting raw materials: ~0.5 MM BTU/ton

Net savings: ~16 MM BTU/ton

*Disposal-related energy savings not included*



# Lets compare the Option for ONP

Savings:

- Recycling: ~16 MM BTU/ton
- Combustion: 2.5 – 2.8 MM BTU/ton



*Not including transportation or ash management*

- “Average” landfilling: -0.4 MM BTU/ton

*Including transportation and landfill equipment*



# Looking for Solutions

NW Co-mingled Recycling  
Efficiency Initiative

# How are we trying to solve it?

- Brought R10 stakeholders together to develop solutions (July 2007) – based on where materials flow, not geographic boundaries
- Initially, we were looking to put a standard just on MRFs.
- Moved to a whole system approach
  - What comes in effects what goes out both in terms of cost and material quality
- Agree on Guidelines, Goals and Measurement
- Using incentives, measurement and reporting to change behaviors

# Who are the stakeholders?

- Governments (Oregon and Washington)
  - Federal
  - State
  - Local
- Haulers
- Material Recycling Facilities
- End Material Processors
  - Paper, Plastic, Metals, Glass



# The Goal!

## Vision Statement

To develop a standard and guidelines for commingled recycling systems such that:

- (1) Cross-contamination of recyclable materials would be reduced;
- (2) The quality and quantity of materials recycled would be increased;
- (3) The highest percentage of materials that are intended to be recycled would be captured.

## Mission Statement

To agree to a clear and measurable standard and guidelines that:

- (1) Allows governments and other contracting entities to easily and consistently specify that their materials are collected and processed according to the standard and guidelines for haulers and MRFs;
- (2) Allows haulers and MRFs to achieve a higher market value by meeting the standard and guidelines;
- (3) Increases the overall quantity and quality of material recycled;
- (4) Reduces the quantity of recyclable material lost as either outthrow or prohibitive materials in other recycling streams;
- (5) Has a consistent measurement and evaluation system that is cost effective and transparent;
- (6) Encourages and rewards more effective and efficient collection systems.

# Subgroup Purpose Statements

## **Standards & Guidelines**

To develop a draft standard and guidelines for approval by the larger group that does the following:

- (1) Clearly defines the acceptable level of contamination for incoming material to MRFs from collection processes or specifies Best Management Practices for collectors of commingled materials.
- (2) Clearly defines levels at which materials processed at MRFs are considered not cross contaminated by other recyclable materials and are considered usable for high end products.
- (3) Reflects the larger mission of work group.

## **Evaluation**

To develop and propose an evaluation system for a standard and guidelines that includes financing, roles, and accountability.

## **Market Value - Marketing**

To develop and propose a plan to ensure that the standard and guidelines are incorporated into contracts, purchasing, policy, and permitting.

## Standards & Guidelines Subgroup Desired Outcomes

- (1) Determine and use common terminology.
- (2) The guidelines and standards should consider employee safety.
- (3) The guidelines and standards should establish a procedure for their revision in response to markets.
- (4) Draft collection guidelines to present to larger stakeholder group for review and approval. Collection guidelines should clearly define the acceptable levels of contamination for incoming materials and/or specify best management practices for collectors of recyclable materials.
- (5) Draft MRF standards to present to larger stakeholder group for review and approval. MRF standards should clearly define levels at which materials processed at MRFs are considered (1) non-contaminated by prohibitives, outthrows, and other recyclable materials and (2) usable for high quality end products.
- (6) Draft guidelines and standards that allow adherence to guideline or standard to be measured. Evaluation Subgroup will design evaluation system.
- (7) Draft guidelines and standards that can be incorporated into contracts, purchasing, policy, and permitting. Market Value Subgroup will develop and propose a plan to accomplish such incorporation.

# Where are we at today?



- Agreement on baseline
- Agreement on collection matrix
- Agreement on an example list of what should and shouldn't be collected curbside.
- Agreement on processing goals
- Agreement on measurement
- Agreement to keep working together to figure things out.

# Collection Matrix – what goes in the mix?

- **Collection Program Design.** When designing or modifying commingled collection programs, apply the following decision making flowchart:
  - **Does the material represent a health hazard for employees who collect and process recyclable materials?**
    - If yes, do not collect curbside
    - If no, next
  - **Is the MRF which processes collected materials designed (and permitted, if applicable) to sort and capture the materials being considered for recycling purposes?**
    - If no, look at alternative means of collection (glass is an example of this)
    - If yes, next
  - **Does the material considered routinely become a MRF residual, or outthrow or prohibitive in another commodity stream?**
    - If yes, set performance standards and measure performance. Policy decision.
    - If no, next
  - **Does the MRF routinely sort the material such that the level of prohibitives and outthrows meet end market standards?**
    - If no, set performance standards and measure performance. Policy decision.
    - If yes, next
  - **Does the MRF sell their sorted materials to a market that is sustainable, where indicators of sustainability include an engaged industry, a process that involves documented energy or greenhouse gas emissions savings, and a process that results in a material application that is itself easily recyclable?**
    - If no, Policy Decision
    - If yes, Put into curbside collection program.

ALL MARKET PLAYERS MUST REPORT OUTCOMES INCLUDING GOVT.

# Which Materials in Co-mingled

## Mix?

Yes	With Preparation	No	Questionable	Alternate collection scheme – not Co-mingled
<p><b>Newspaper</b>  <b>Junk mail</b>  <b>Scrap paper</b>  <b>Cardboard</b>  <b>Magazines</b>  <b>Aseptics (because growing market)</b>  <b>Gable tops</b>  <b>Plastic bottles and tubes 6 oz. or larger*</b>  <b>Rigid plastic plant pots 4 inches or larger</b>  <b>Plastic buckets of 5 gallons or less</b>  <b>Aluminum</b>  <b>Scrap metal</b>  <b>Tin</b></p>	<p>Shredded paper in a paper or plastic bag depending on requirement of incoming MRF. It is a big problem at MRFS</p> <p>Empty metal paint cans, small metal items in can</p>	<p>Food contaminated paper                      Loose metal less than 2 inches                      Metal larger than 30 x 8 inches or more than 30 pounds                      Loose shredded paper                      Frozen food boxes                      Plastics:                      Bags and film                      Foam/expanded plastics                      Large items (e.g., toys, lawn furniture, storage crates)                      Lids and trays                      Clamshells and bakery containers                      Food contaminated                      Biodegradable plastics                      Cups, plates, silverware                      Blister packaging                      Any plastics with a capacity of less than 6 ounces.</p>	<p>Ream wrappers                      Beer/soda paperboard carriers                      (policy decision)</p>	<p><b>Batteries</b>  <b>Antifreeze</b>  <b>Glass</b>  <b>Yard debris</b>  <b>Motor oil</b></p>



# What about Prohibitives?

- Measured at collection
  - It is an education problem if too many prohibitives
- Goal –
  - No more than 5% prohibitives in collected recycling stream
    - Measured by both haulers and MRFs
    - Needs to be put into collection contracts/permits/franchises/etc.

# Processing Goals

	Current Status	Goal – 1 year Going to the right market
Paper – average of all Brown Kraft	98 75	98 80
Plastic – All	70-75	80
Metal - All – Al, Fe, Etc.		80
Glass- if part of collection system  - All co-mingled collectors	80	80% to non-disposal market * ADC is a disposal market Measure <ul style="list-style-type: none"> <li>• % going to glass to glass</li> <li>• % going to aggregate</li> <li>• % in paper</li> </ul>
Recyclables In Residual	Measured	Measured
Total Residual		Measured
Total non-program		Measured incoming

# Why only 1 year?

- We don't know how hard or expensive it is to increase efficiency
- Have agreed to measurement and to setting future goals after we have data
- Need to have local government agree to integrate standards into their processes to level the playing field

# What is next?

- Developing measurement and reporting protocol.
- Developing an adoption plan
  - Integrating into economic and policy systems
  - Marketing and communication
- Developing consistent messaging for programs
- MOU signed by all parties targeted for early summer.

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