

THE PARADIGM SHIFT

What's Wrong With Our Financials?



SERDC
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THE OLD PARADIGM

Recycling is source separated from trash

OCC is large and flat

Fiber is 2 dimensional, mostly newspaper

Containers are 3 dimensional

Containers are bottles and cans made of one material

MRFs are sources of net revenue

Markets accept what MRF's produce



THE PARADIGM SHIFT





THE PARADIGM SHIFT

SHIFTING CONSUMER BEHAVIOR
AND NEW PACKAGING DESIGNS ARE
CAUSING A **SIGNIFICANT CHANGE**
IN THE COMPOSITION OF WASTE
STREAMS PROCESSED BY MRFS



THE PARADIGM SHIFT

QUALITY STANDARDS HAVE
INCREASED AT THE SAME TIME
THERE HAS BEEN A SIGNIFICANT
DECREASE IN THE PRICES
IN THE GLOBAL MARKET



COMPOSITION

MORE

PAPER AND NEWSPRINT

Increased online consumption of news and media has *significantly reduced the amount of newspapers and magazines* available to recycle.

SOURCE REDUCTION

Aluminum and metal containers are becoming thinner and lighter, requiring more units and effort at the MRF to collect and sort the same metric tonnage.

FLEXIBLE PACKAGING

Manufacturers are seeking out and using flexible composite plastic packaging, instead of paper or glass. These materials are difficult to recycle, if they can be recycled at all.

CONTAMINATION ON THE RISE

From a combination of “wishful recycling”, carelessness, and lack of knowledge, contamination has risen over 50% in 2 years.



CONTINUING DECLINES
IN THE VOLUME OF
NEWSPRINT **GENERATED**
FOR RECYCLING BY U.S.
CONSUMERS HURTS MRF
OPERATING EFFICIENCY



THE AMOUNT OF RECYCLED NEWSPAPER HAS FALLEN DRAMATICALLY



TONS OF RECYCLED ONP 2003-2013



Source: EPA, American Forest and Paper Association, Communications Management Inc.

Electronic consumption of news has significantly reduced newspaper circulation and recycling

Daily & Sunday paper circulation to U.S. households fell from 70% to 32% from 1990 to 2013





2005 SUNDAY NEWSPAPER



2015 SUNDAY NEWSPAPER

WHAT REPLACES NEWSPRINT?



CHANGING PARADIGM – CARDBOARD IS NOT ALWAYS LARGE AND FLAT



CHANGING PARADIGM – PAPER IS NOT ALWAYS FLAT SHEETS





**ONGOING PLASTIC
CONTAINER SOURCE
REDUCTION (LIGHTWEIGHTING)
BY THE LARGEST CONSUMER
PRODUCT COMPANIES
REDUCE PLASTIC AVAILABLE
FOR RECOVERY**





RECYCLABLES WEIGH LESS



- **Many packaging types are thinner and lighter than in the past**
 - Newspapers reduce paper sheet 10-15% in 2000s
 - 2 liter soda bottle weighs 25% less than in 1970s
 - PET water bottle weights down 32% 2000-2008
 - Aluminum Cans 17% lighter than in 1990
 - Milk jugs (HDPE) 30% lighter than 1980





**THIS MEANS FAR
MORE UNITS TO
SORT TO MAINTAIN
SAME WEIGHT OF
RECYCLING**





**FLEXIBLE PACKAGING IS
GAINING POPULARITY
WITH CONSUMERS, BUT
THESE CONTAINERS ARE
NON-RECYCLABLE AND
MUST BE SORTED OUT TO
LANDFILL WHEN THEY
REACH THE MRF**

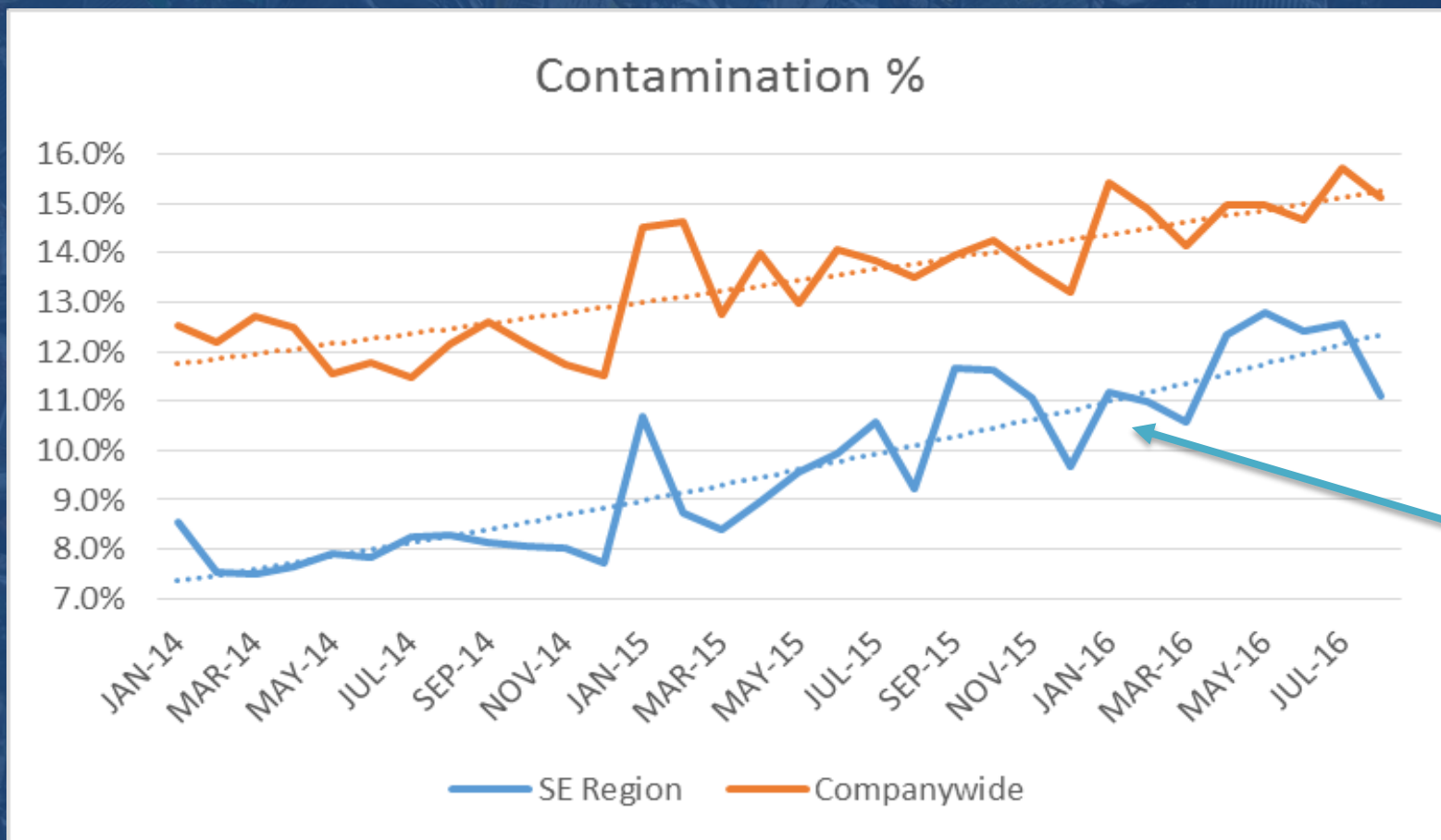


**“VIRTUALLY NONE
OF THESE FLEXIBLE
PACKAGING
MATERIALS ARE
RECYCLABLE
ANYWHERE IN
THE WORLD”**

– Natural Resources Defense Council



CONTAMINATION ON THE RISE



For every 100 tons that come to a ReC MRF, 15 tons end up in the landfill

50% increase in 2 years!



CONTAMINATION ON THE RISE



- Wishful Recycling
- Carelessness
- Lack of education/knowledge
- Out of sight, Out of mind – covered carts on the rise
- Complicated and differing guidelines – Good enough is the victim of the perfect?





THE LOADS COMING IN NOW AVERAGE 16% CONTAMINATION

– WASTE MANAGEMENT SUSTAINABILITY REPORT (2014)

DANGEROUS CONTAMINATION

- **Risk to Employees**

- Medical wastes – diapers, syringes, fluids, risk of blood borne pathogens
- Hazardous materials and chemicals – solvents, pool chemicals, HHW that makes it into recycling
- Explosion and fire hazards – propane cylinders, gas cans, ammunition, batteries
- Cut/puncture hazards – needles, knives, scrap metal

Lack of care in households for what goes in the recycling container



DANGEROUS CONTAMINATION

- **Risk to Plant Equipment**

- Appliances
- Auto parts
- Construction debris
- Wires, hoses, cables, chains
- Textiles and clothing, carpet
- Tarps, swimming pools



BAGS, BAGS, EVERYWHERE



CONTAMINATION

< BACK

24

PLASTIC BAGS ARE A MULTI-MILLION DOLLAR PROBLEM





**MOST CONTAMINENTS
MUST BE REMOVED BY
HAND THAT'S THE
CURRENT STATE OF
THE ART**



QUALITY



MARKETS FOR SUB-STANDARD QUALITY HAVE DRIED UP OPERATION GREEN FENCE

ISRI PAPER STANDARDS UNDER REVISION

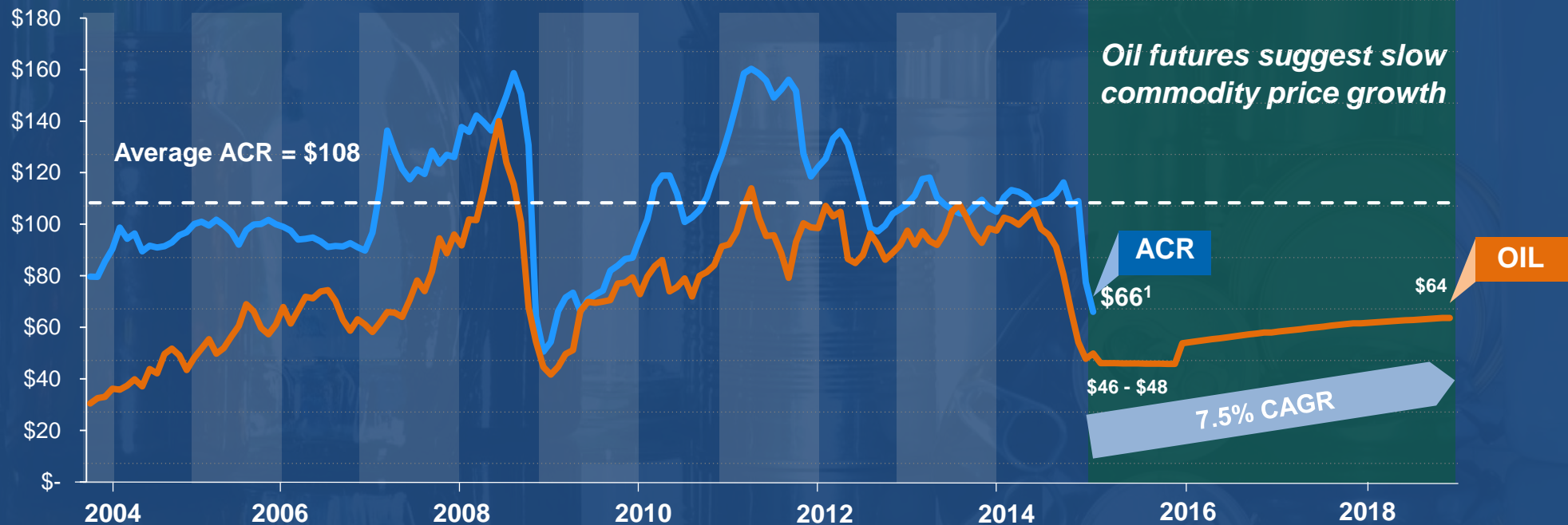


COMMODITIES

AVERAGE COMMODITIES VALUES CORRELATED WITH OIL

MORE

ACR and oil prices* appear to be correlated over the last decade and long dated oil future contracts indicate slow growth in prices over the next four years



* PAST PERFORMANCE IS NOT NECESSARILY INDICATIVE OF FUTURE RESULTS



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THE NEW PARADIGM

Recycling is increasing less separated from trash

OCC is sometimes large and flat, but also 3D and small

25% of Fiber is now 3 dimensional, much less newspaper

Containers are thinner, lighter, flatter, less rigid, and more diverse in materials

MRFs are sources of cost

Markets have strict quality requirements



COSTS

**MRF FINANCIAL PERFORMANCE
HAS SUFFERED DUE TO THE
CUMULATIVE NEGATIVE EFFECT
OF STREAM COMPOSITION
CHANGES ON PRODUCTIVITY &
COMMODITY VALUE**

SUMMARY

NEW PARADIGM DEMANDS CHANGES

- MRF Design and Operation
- Packaging design for recyclability
- Reduce contamination in inbound
- Recognize the new economic realities



THANK YOU

