



**National  
Waste & Recycling  
Association<sup>SM</sup>**

Collect. Recycle. Innovate.

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# THE EVOLVING TON: RECYCLING & SUSTAINABLE MATERIALS MANAGEMENT

CURC

OCTOBER 8 2016

# WHAT ARE RECYCLABLES?



- Raw materials
- Compete with other raw materials
- Commodities with fluctuating value

# VIRGIN VS. SECONDARY



- Predictability of quantity
- Predictability of quality



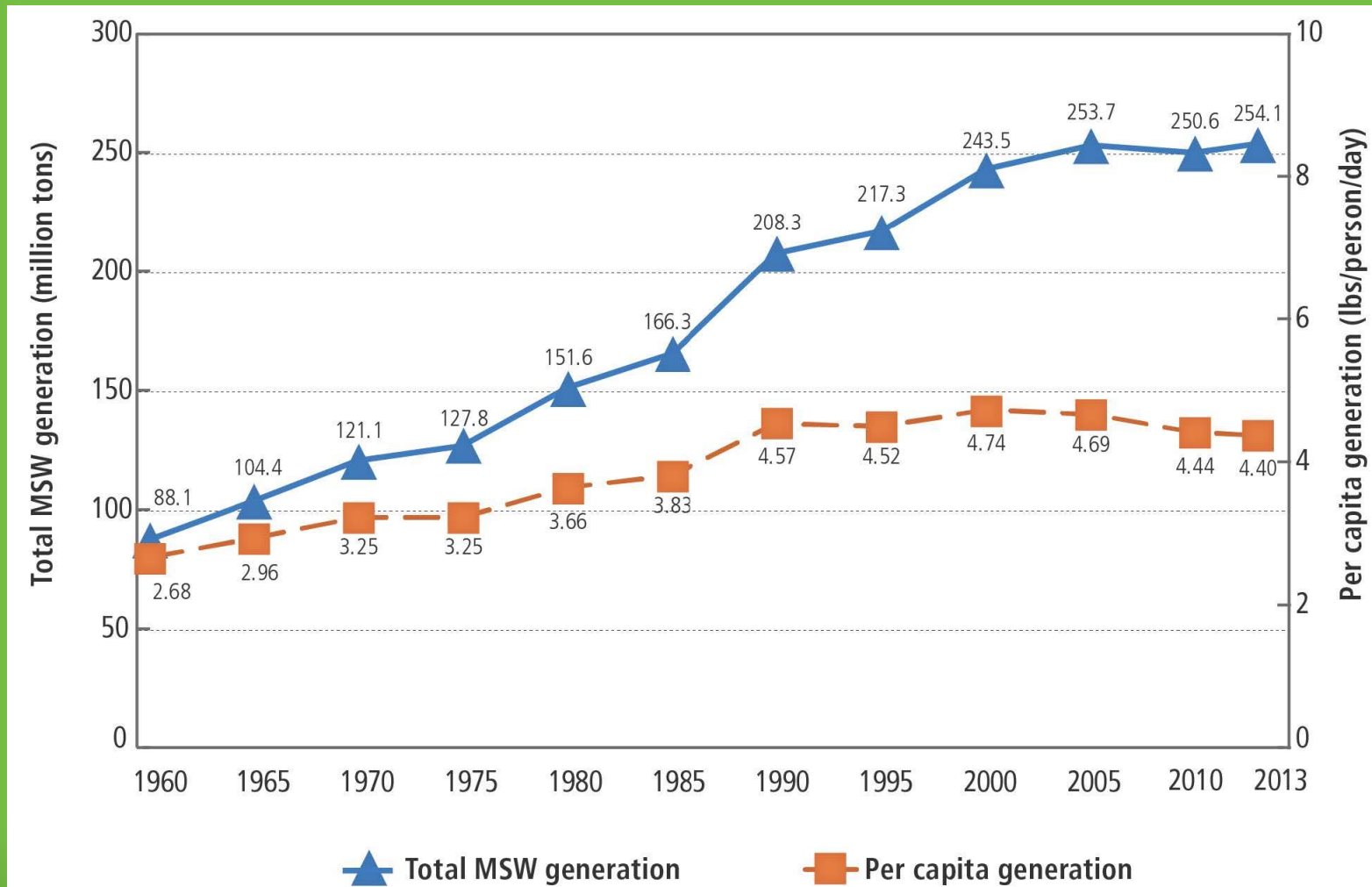
# WHAT I WILL COVER



- Less waste
- Why less waste
- What it means



# MSW GENERATION RATES



# WHY LESS WASTE?



- Recycling/composting?
- Recession?
- Evolving ton?
- Source reduction?
- Zero waste?



# PAPER: 2000 - 2013



- 19,140,000 ton loss
- 22% decrease
- Mostly printed paper
- Online shopping



# PLASTIC: 2000 - 2013



- 6,960,000 ton gain
- 27% increase
- Packaging is 43%
- Durables on the rise





# DEMATERIALIZATION



# SOURCE REDUCTION



NWNA Bottle  
2005



14.6 Grams

Eco-Shape Bottle  
2012



9.2 Grams

# IMPACT ON MRFS



- Volume up
- Weight down
- Costs up
- Revenues down
- Changing specs
- Paper no longer dominant

# ZERO WASTE = ?



# ZW: SMART CAPITALISM



- “Cost” becomes an “asset”
- Input/output control
- Profit motivated
- Internal rewards





# ZW COMPANIES: 2014



- Dr Pepper
- Nestles
- SC Johnson
- Unilever
- Dove Body Wash
- Hormel
- New York State
- EasyJet
- Original Unvertpackt
- Franz Bakery
- Eaton
- Phoenix Open (WM)
- Sidel
- Southwest Airlines
- Kimberly Clark
- GM
- Hanson
- American Anthropology Association

# ZW SUBSTANCE 2014



- “Lightest 2-liter bottle in the industry”
- Reduced 44% of waste per ton of product since 2010
- Reduced global manufacturing waste by 62 as a ratio to production.
- 200 sites now zero waste to landfill (>75%)
- 15% less plastic (will share new technology)
- Cut packaging by 4.72 million pounds: 37 packaging reduction projects
- Agencies cut paper use by 43%, save \$11.1 million in four years
- Paperless airplane
- Waste-free supermarket
- 98% landfill free
- 39 manufacturing facilities landfill free
- 100% landfill free through recycling, composting, energy from waste
- Plastic beer bottle with standard “champagne” base
- Upcycle used leather seat coverings into new products
- Club KC: circular economy: collect recyclable fibre in exchange for finished products
- Composting food waste from cafeterias at global HQ
- Supplier of heavy building materials cut landfill waste by 35.3%
- Paper-free review process

# ORGANICS



Proud to  
support  
**LOVE**  
**FOOD**  
hate waste



# ORGANICS



## Love Food Not Waste



Eugene businesses  
turn food scraps  
into compost & crops.

### REDUCE

Do you really need to purchase that much food?

Will all of the food you prepare reach your customers?

### RESCUE

Consider local options for repurposing unused food.

Can the unused food be donated to feed people? Animals?

### RECYCLE

Can the food go into composting bins?

Can the food be collected (e.g., yellow grease)?



# SUSTAINABLE MATERIALS MANAGEMENT



“Materials management is an approach to serving human needs by using/reusing resources most productively and sustainably throughout their life cycles, generally minimizing the amount of materials involved and all the associated environmental impacts.”

# SUSTAINABLE MATERIALS MANAGEMENT



- Is recycling the ultimate goal?  
or
- Less overall waste in the ecosystem?





# ENVIRONMENTAL IMPACTS



- Uses less resources
- Uses less energy
- Lower overall environmental footprint
- Not recyclable



# HOW CAN WE MEASURE?



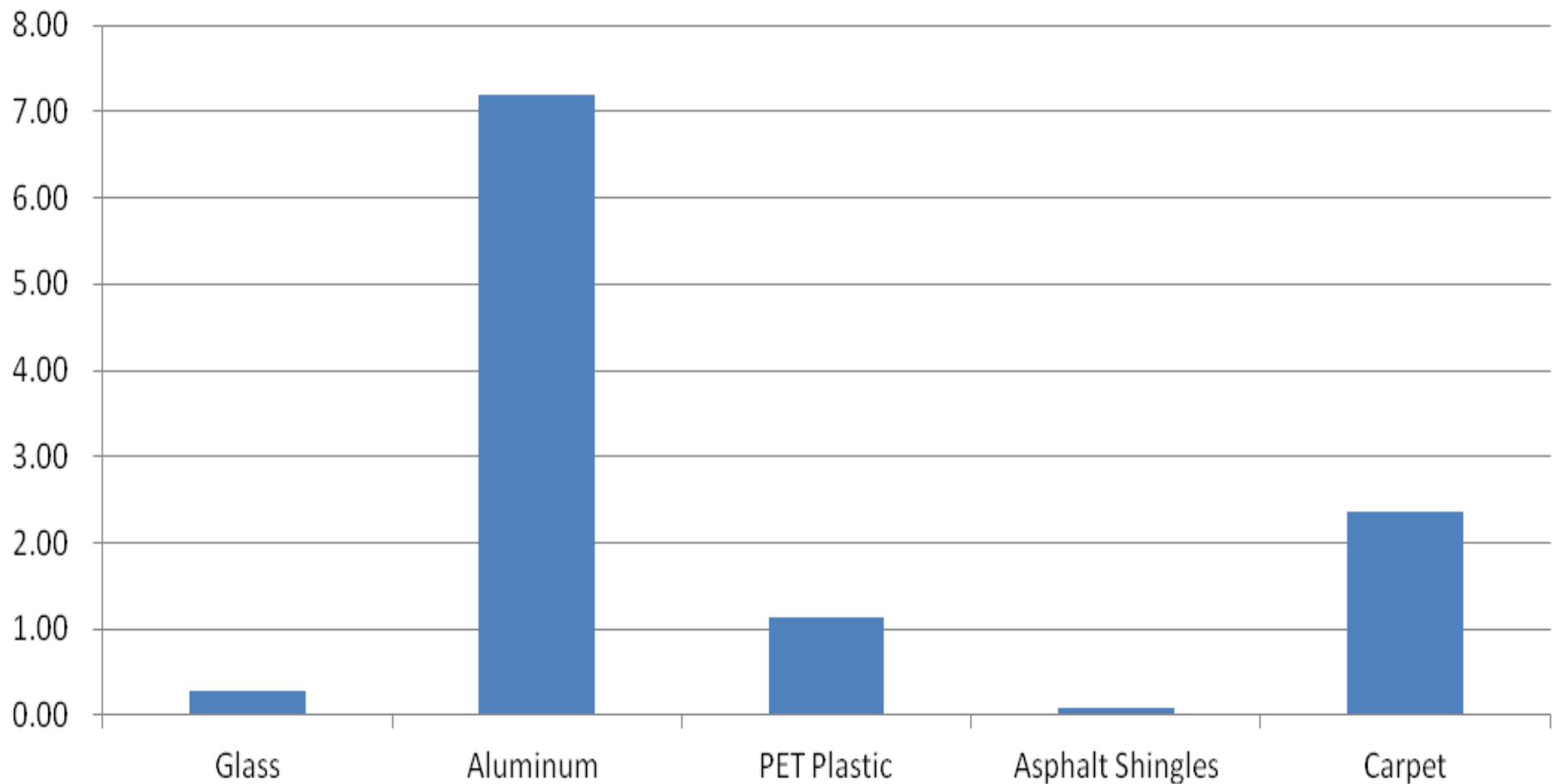
- Weight
- Volume
- Per capita disposal
- GHG impact



# GHG SAVINGS



GHG saving per ton of material recycled (MTCO<sub>2</sub>e)



# THE GOOD NEWS







FOR MORE INFORMATION:

Chaz Miller

202-364-3742

[www.environmentalistseveryday.org](http://www.environmentalistseveryday.org)

[cmiller@wasterecycling.org](mailto:cmiller@wasterecycling.org)

# THE EVOLVING TON



- Less paper
- More plastic
- Electronics
- Future products?



# LIGHTWEIGHTING







# SOURCE REDUCTION



United States  
Environmental Protection  
Agency

Solid Waste  
and Emergency Response  
(5306W)

EPA530-R-99-034  
November 1999  
[www.epa.gov/osw](http://www.epa.gov/osw)

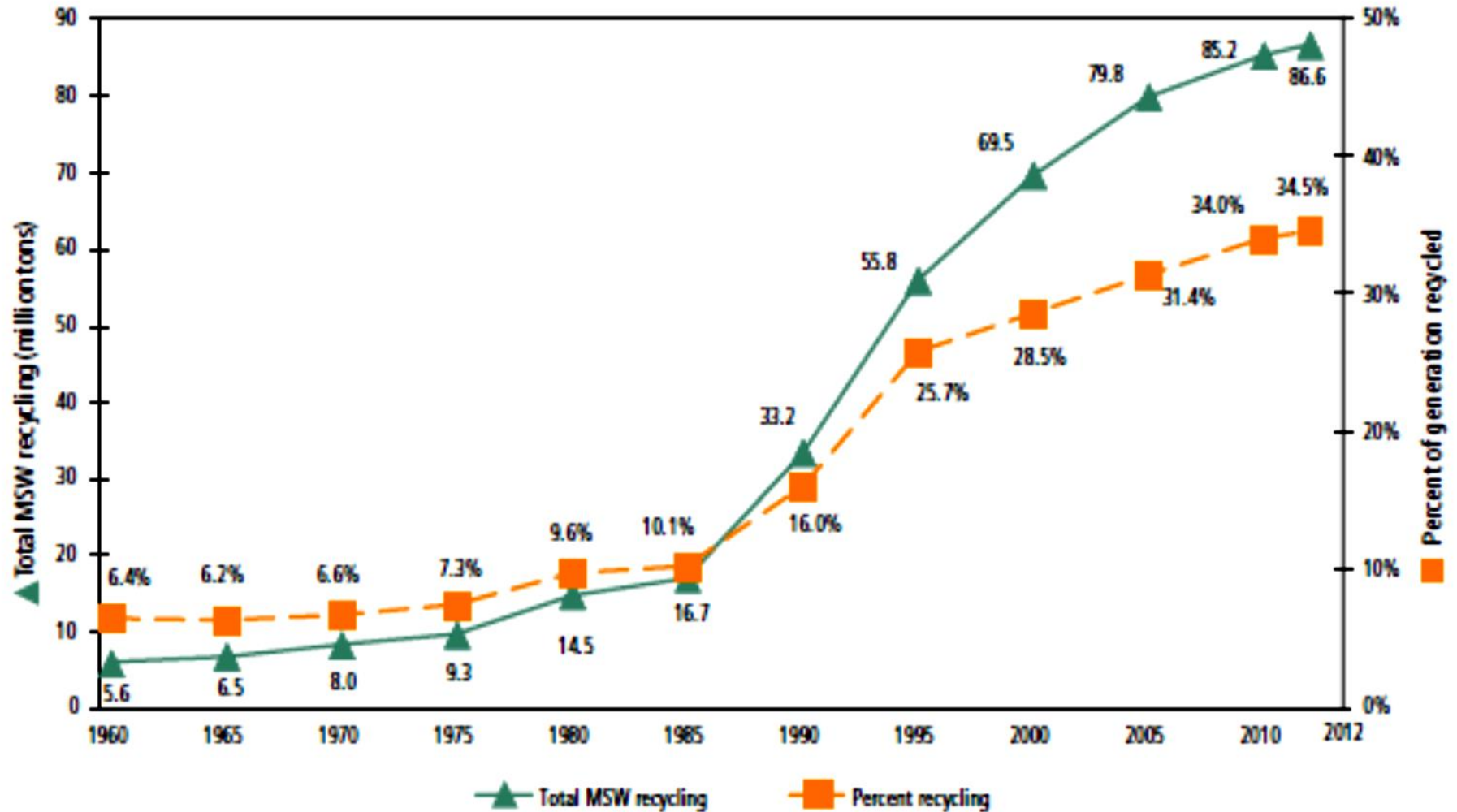
## National Source Reduction Characterization Report For Municipal Solid Waste in the United States

Source Reduction

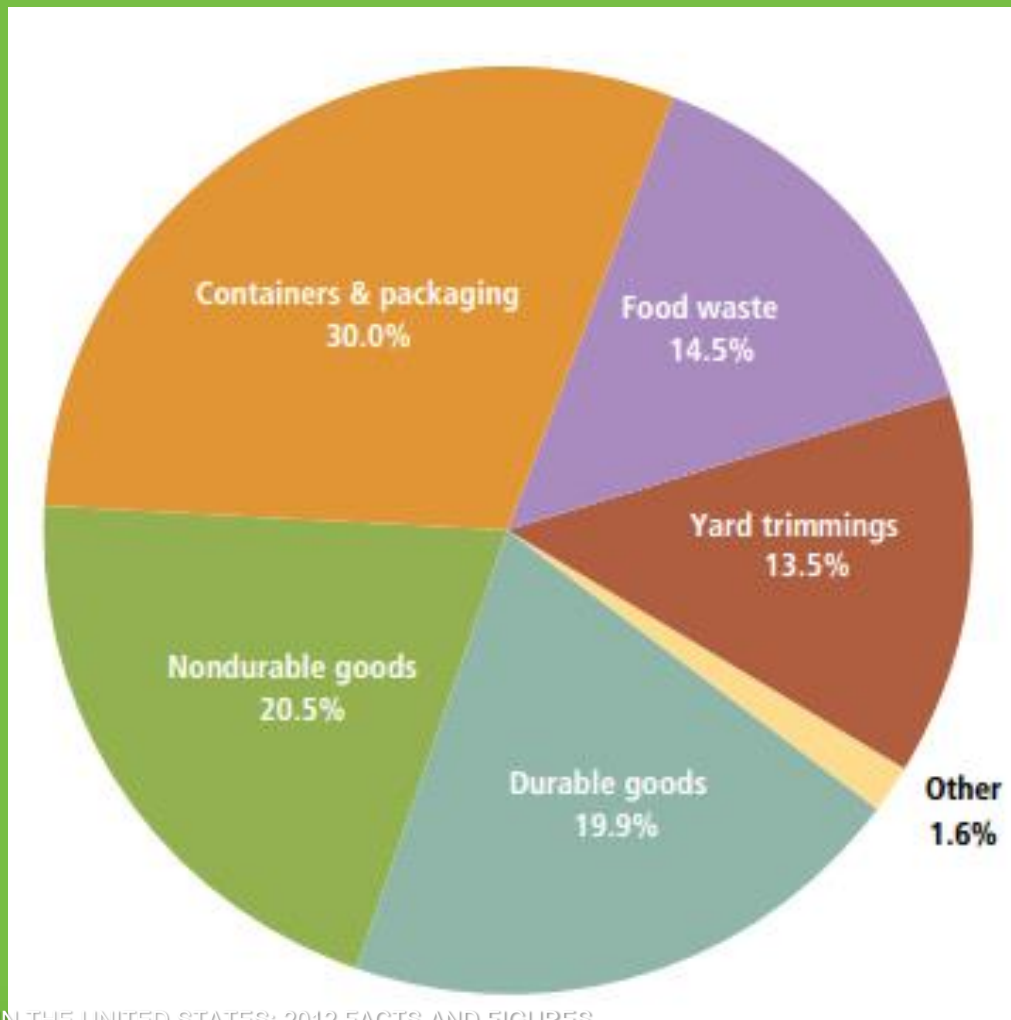
Waste Prevention

Sustainable Resource

# RECOVERY RATES



# 2012 Generation by Product Type



# WHY THIS MATTERS





# FUTURE: OVERALL



- Less waste?
- Less disposal?
- Evolving material mix
- Continued zero waste by industry
- More emphasis on organics
- More realistic recycling goals?

# WHAT COULD HAVE BEEN:



- 2010: 250.5 million tons (actual)
- 2010: **+8.1 million tons (population)**
- 2010: **+77.0 million tons (previous decades)**

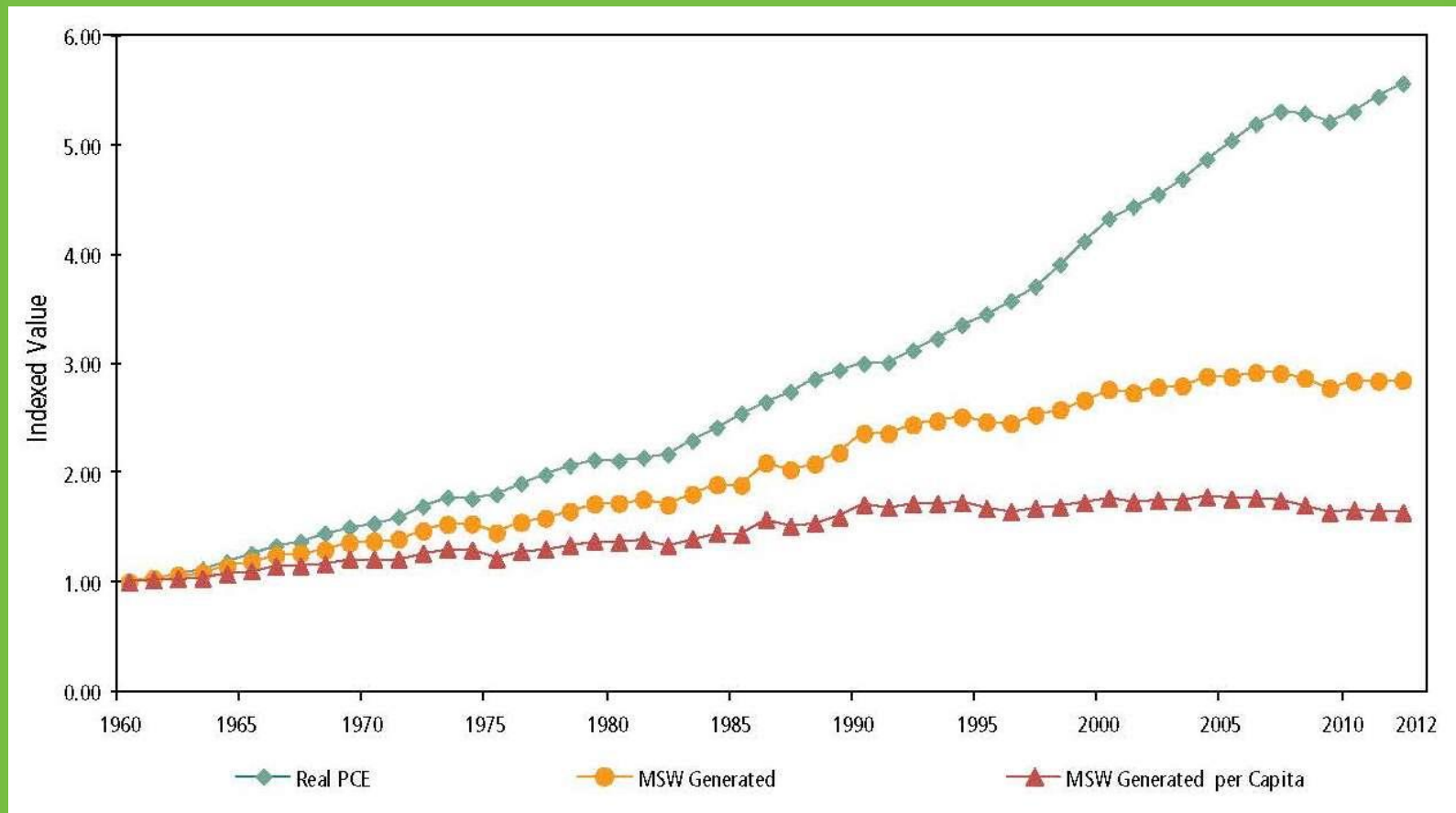
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# WASTE & THE ECONOMY





# Which is Better From a Life Cycle Perspective?

(Note: Use Phase not included)

Coffee Packaging (11.5 oz product)	*Package Wt.	*Product-to-Packaging Ratio	*Energy Consumption (MJ/11.5 oz.)	*CO2 eq Emissions/ 11.5 oz	**Efficient Use of Space (relevant for storage and transportation)	**Recyclable postconsumer	***MSW Waste Generated (lbs./ 100,000 oz. of product)
	~ 4 oz.	3:1	4.21	0.33	no	yes	1,305
	~3 oz.	5:1	5.18	0.17	no	yes	847
	~0.4 oz.	29:1	1.14	0.04	yes	no	176

# THE GOOD NEWS

