

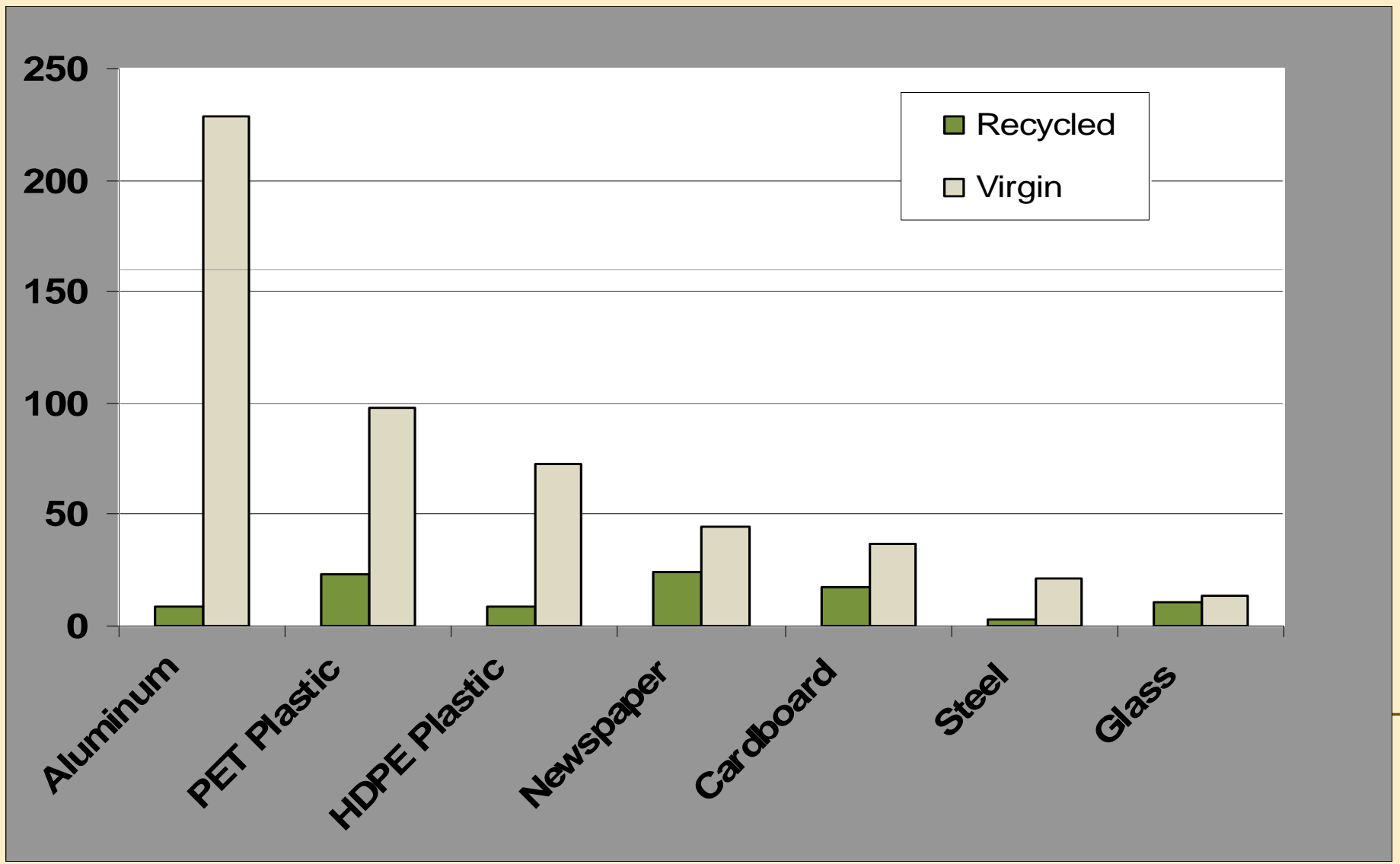
The Green Economy:

3 Rs vs. 2 Ds
Reduce, Reuse, Recycle vs. Dump, Destroy

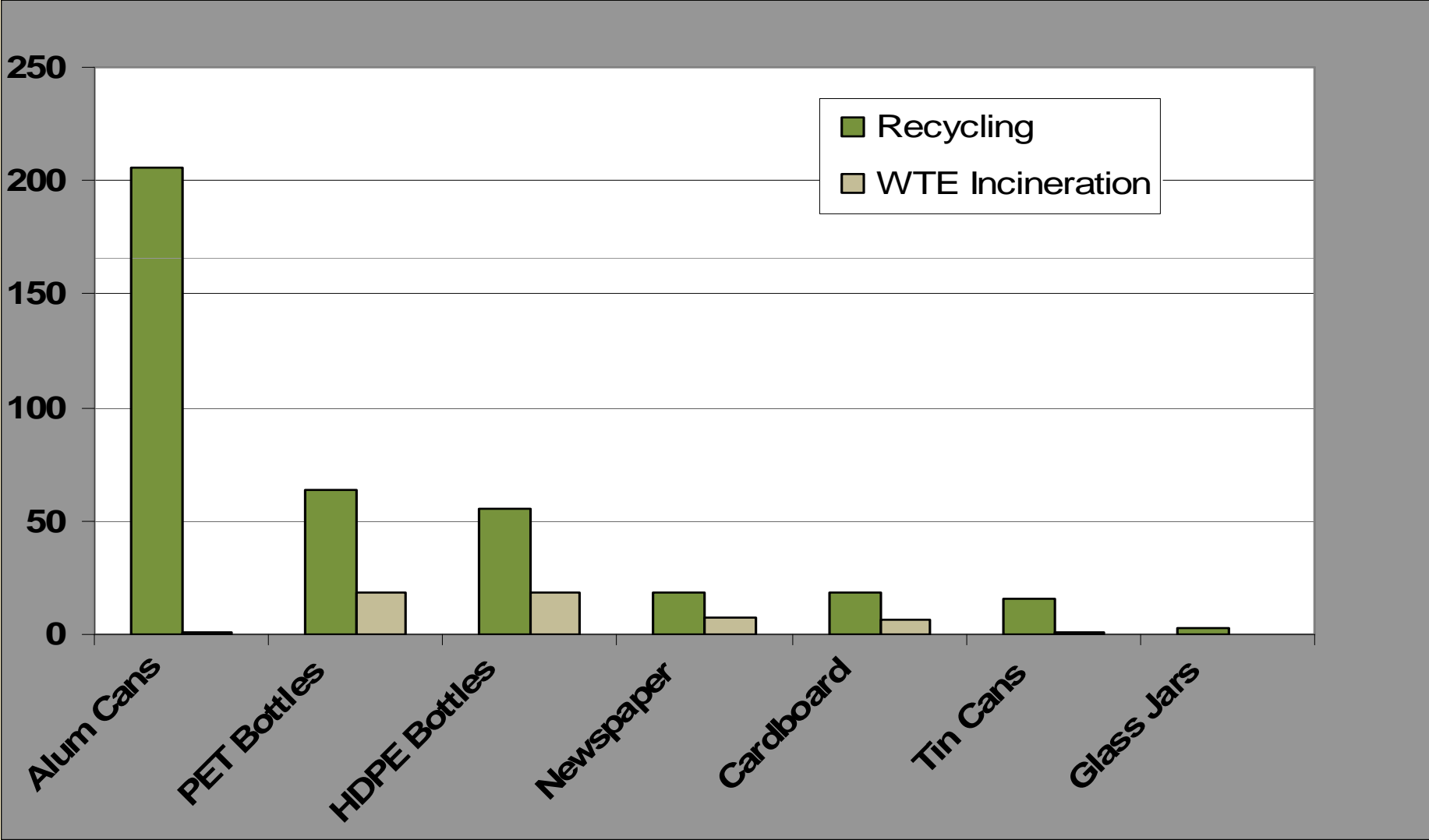
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ECONomics: The Green Economy Summit by RCBC

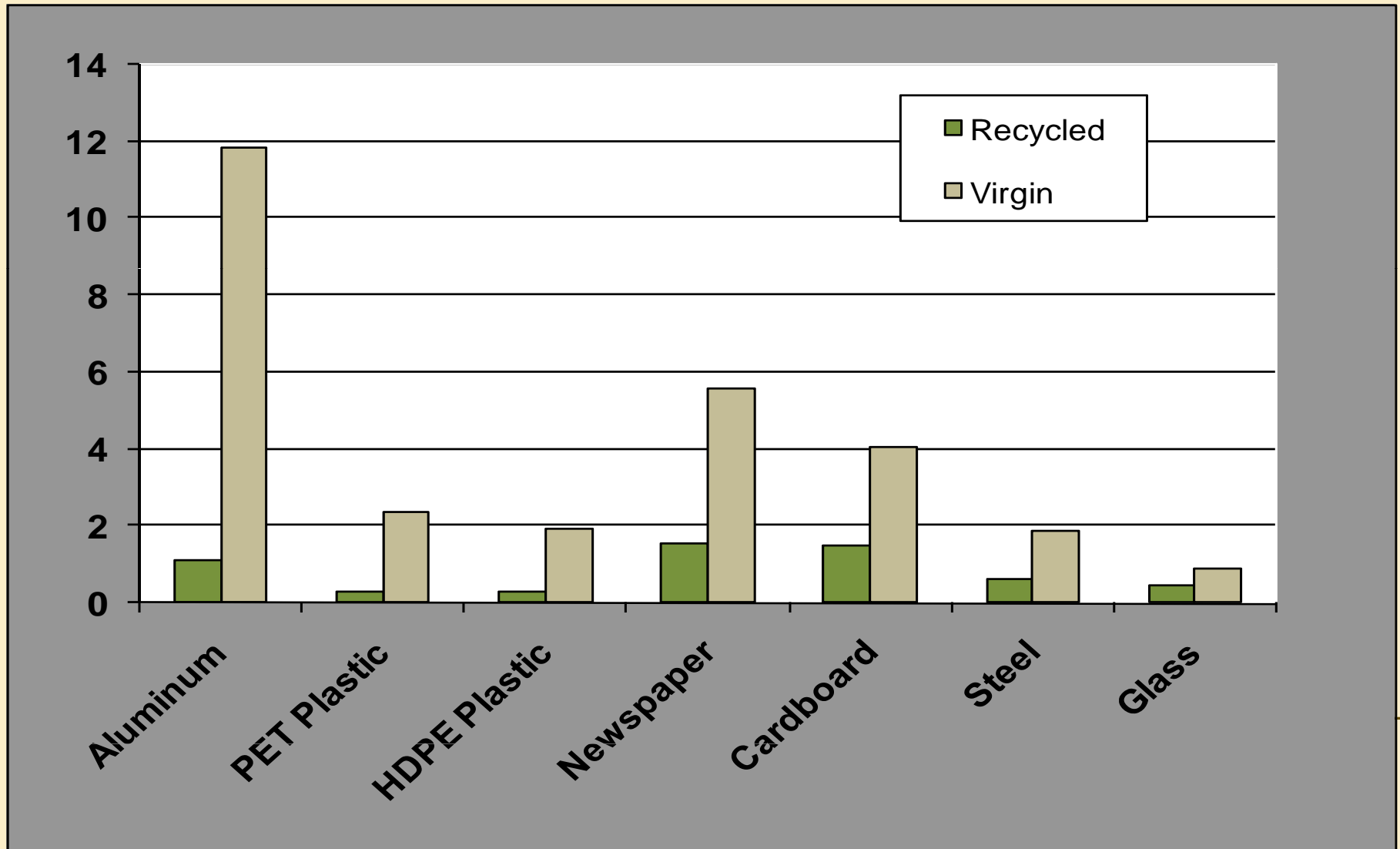
Energy Use: Recycled & Virgin Content Products (million Btus per ton)



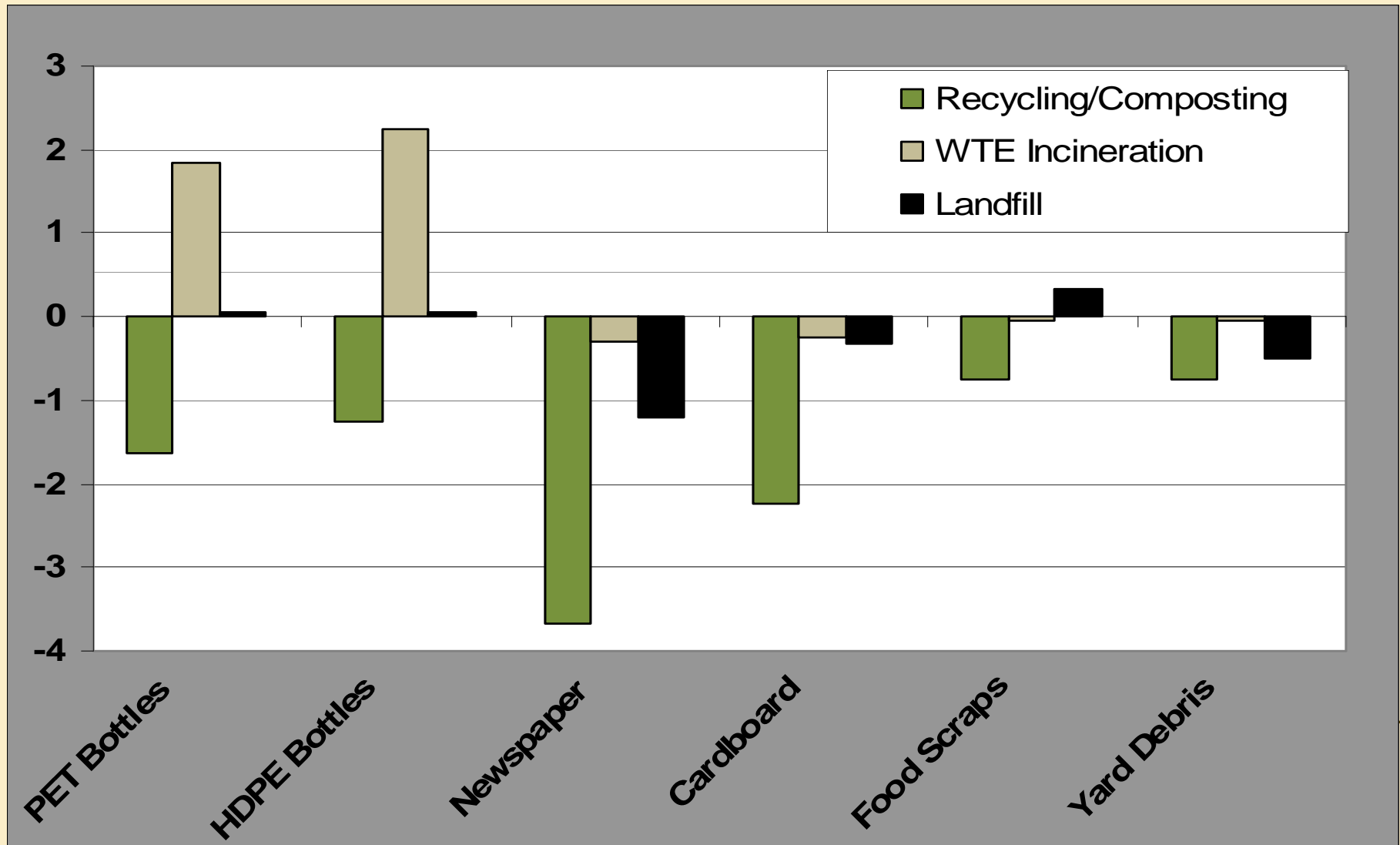
Energy Conserved by Recycling vs. Generated by WTE Incineration (million Btus per ton)



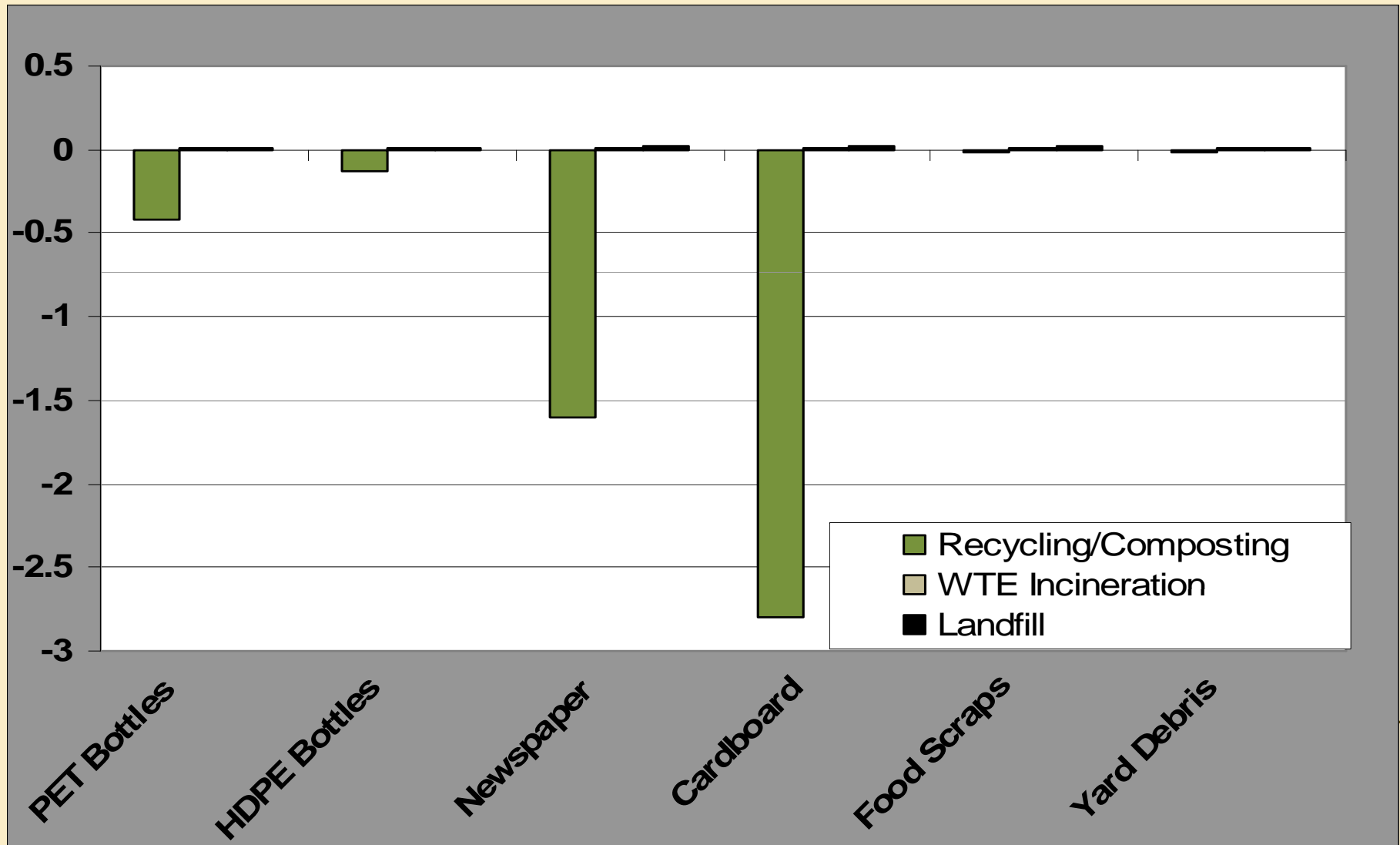
GHG Emissions: Recycled & Virgin Content Products (tonnes eCO₂ per tonne)



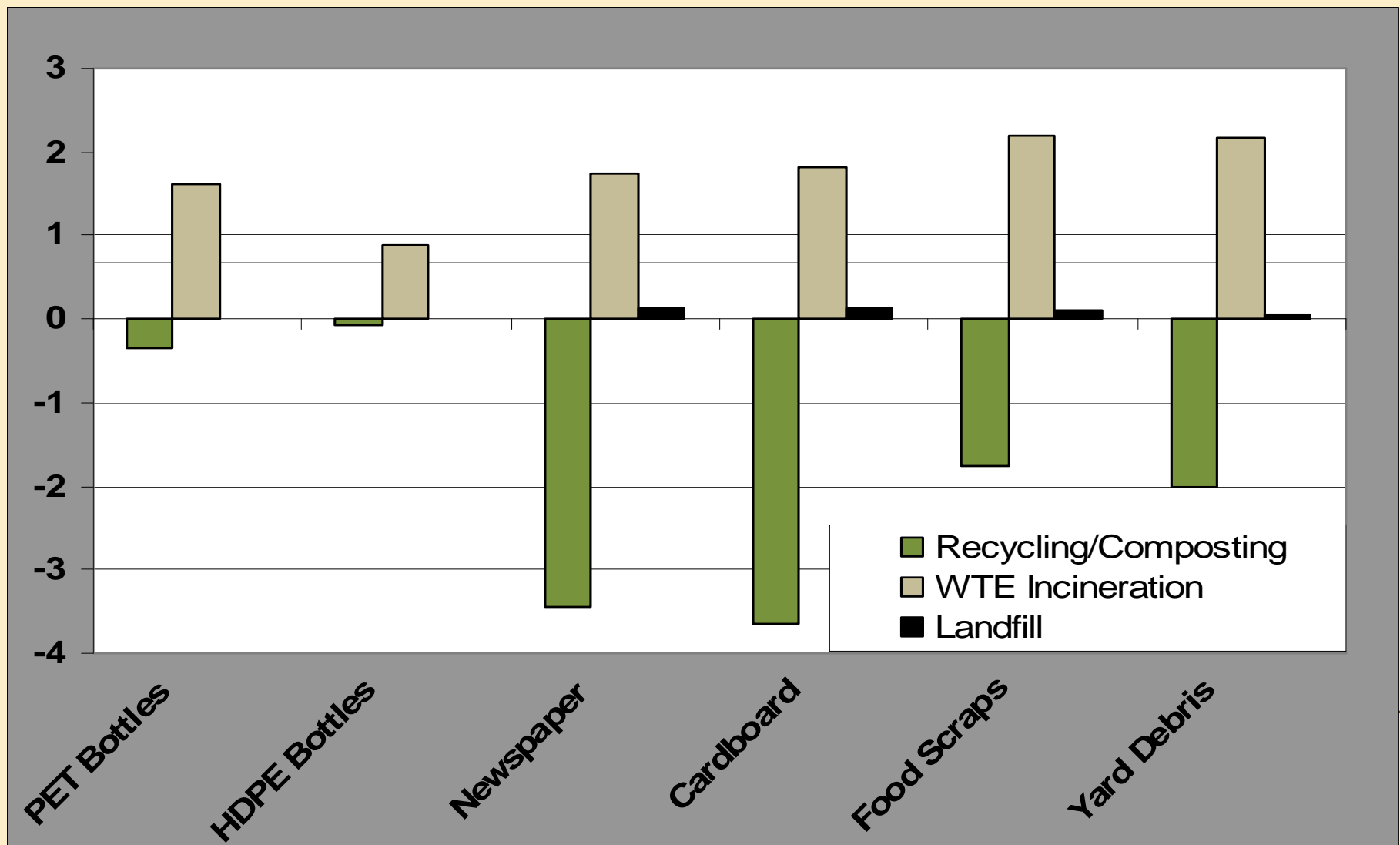
GHG Emissions Increase/(Decrease) (tonnes eCO₂ per tonne)



Health Threatening Emissions Increase/(Decrease) (tonnes eToluene per tonne)



Ecosystems Toxicity Emissions Increase/(Decrease) (kilograms e2,4-D per tonne)



Average Environmental Impact Increase/(Decrease) (kilograms per tonne)

	Climate (eCO ₂)	Health (eToluene)	Ecosystems (e2,4-D)
Recycling & Composting	-1,750	-930	-2
Landfill	-270	50	>-0.5
WTE	285	95	1

Possible Reasons for Divergent Results from LCAs

- ❖ Landfill carbon storage included?
 - ❖ Realistic projections for landfill gas control?
 - ❖ Fossil CO₂ emissions from MSW combustion included?
 - ❖ Electricity offset – coal, natural gas or renewables?
 - ❖ Realistic WTE and LFG electricity generation?
 - ❖ Emissions profile – minimal or robust?
 - ❖ Environmental impacts other than climate change included?
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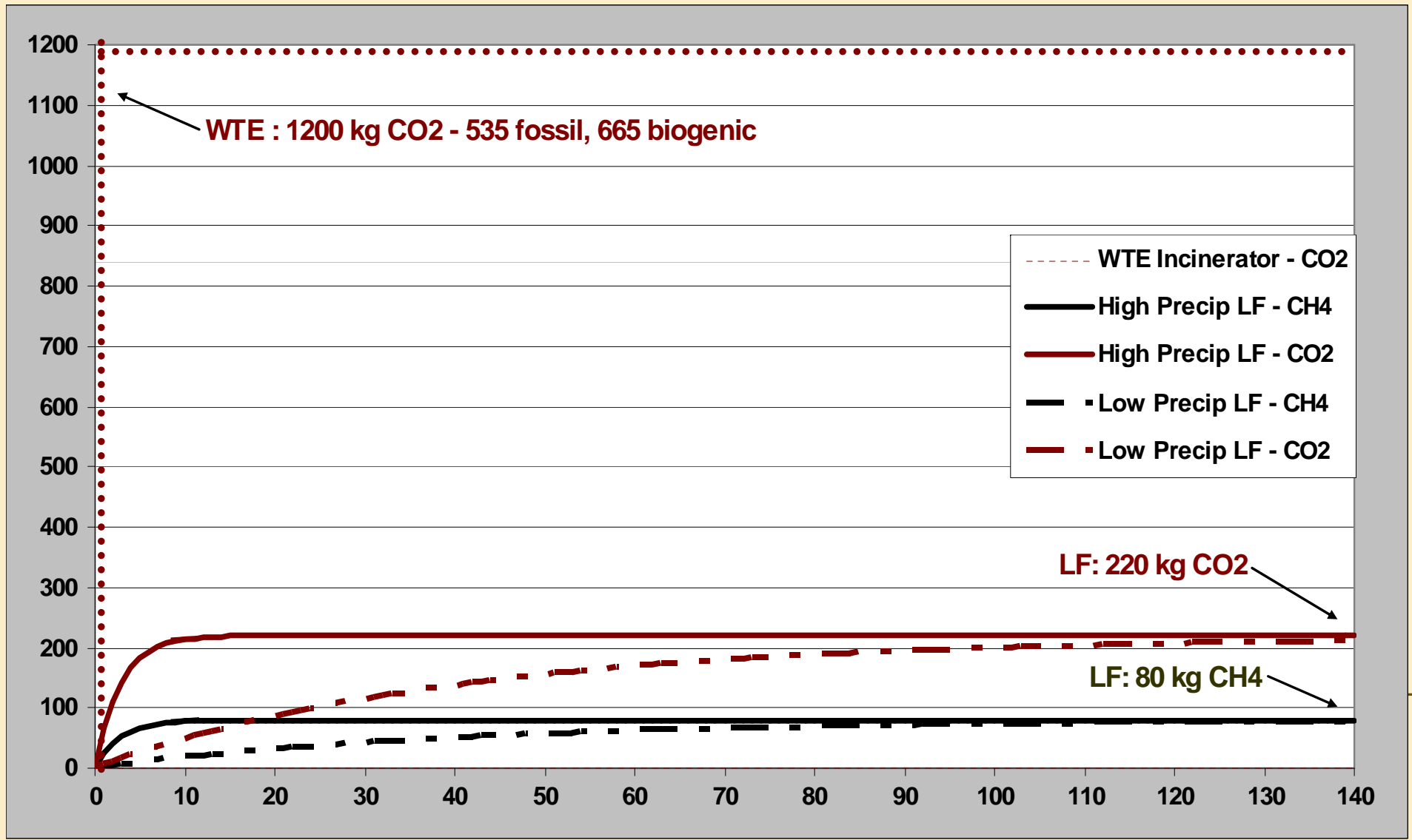
Portion of Carbon Content of an MSW Material That is Stored in Landfills (US EPA estimates, 2008)

Newspaper	86%
Cardboard	55
Food Scraps	16
Grass	53
Leaves	85

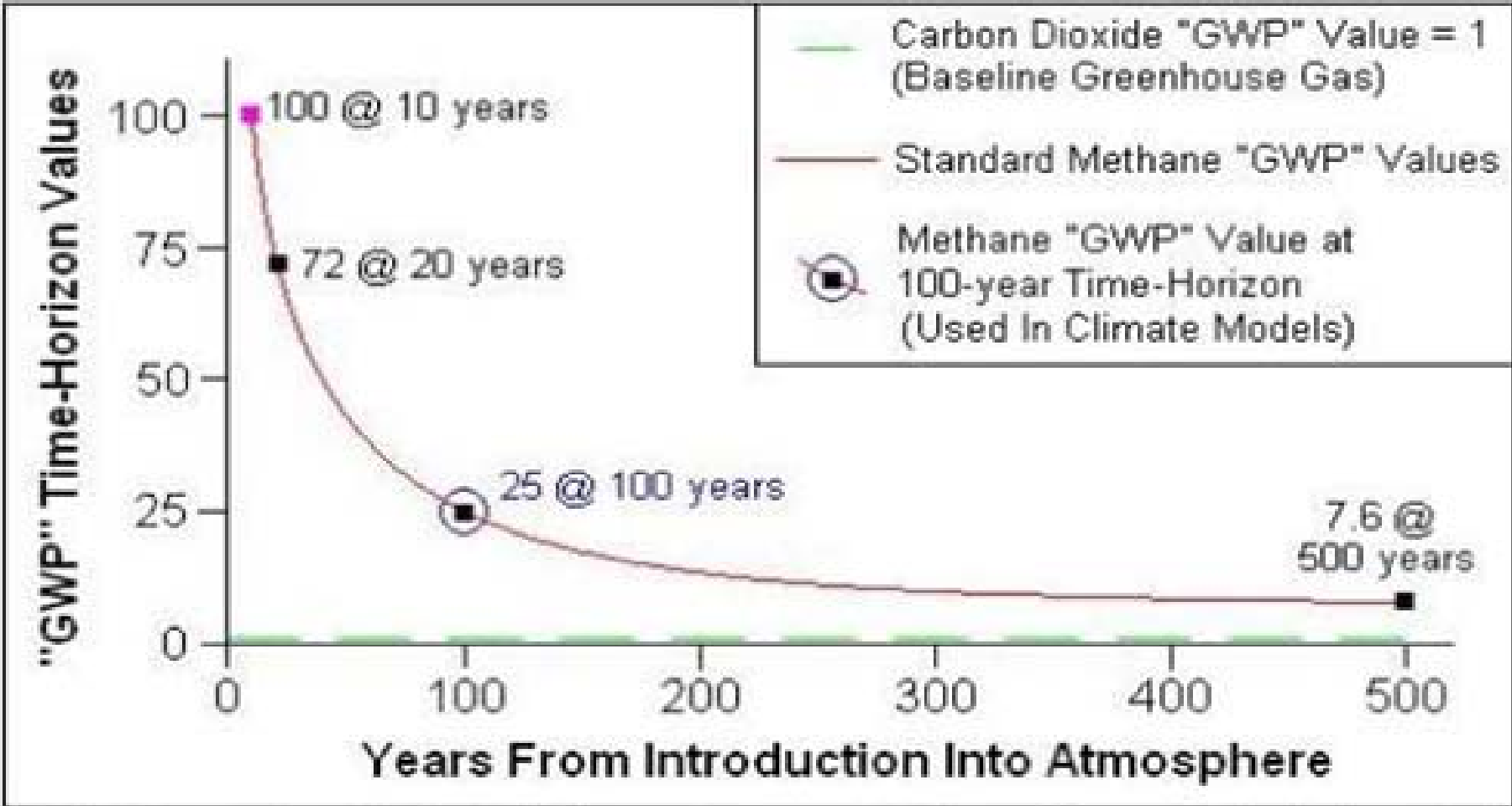
GHG Emissions for Electricity Generation (tonnes eCO₂ per GWh)

Coal	900
Natural Gas	350
BC Consumption Avg.	87
Wind	0

CO2 & CH4 Cumulative Generation Over 140 Years (kilograms per tonne of MSW disposal)



GWP for Current Releases of Methane over Different Time Horizons



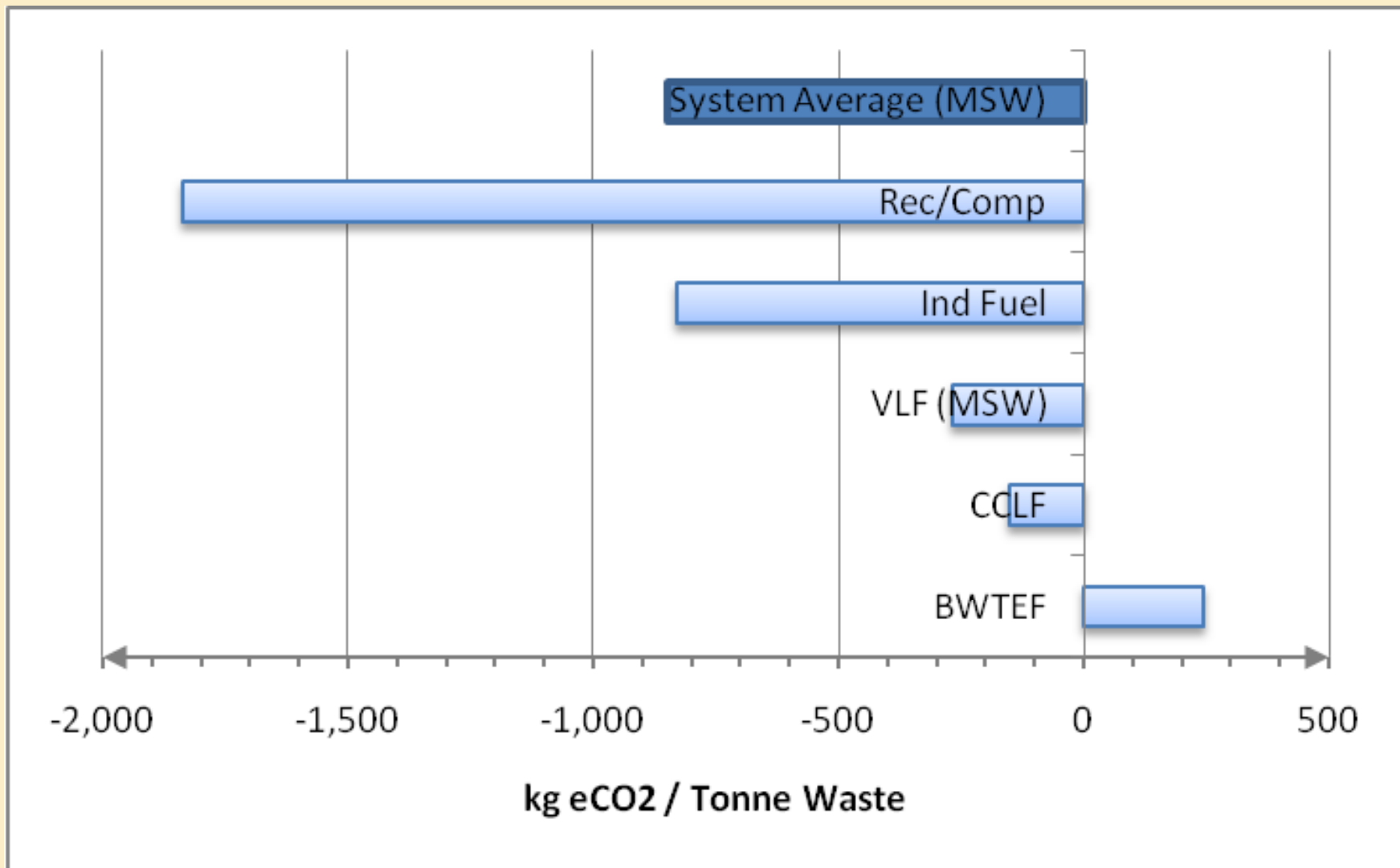
Source: IPCC, Fourth Assessment Report Data (2007)

Lifetime Generation & Release of CO₂ & CH₄ (kilograms per tonne of MSW disposal)

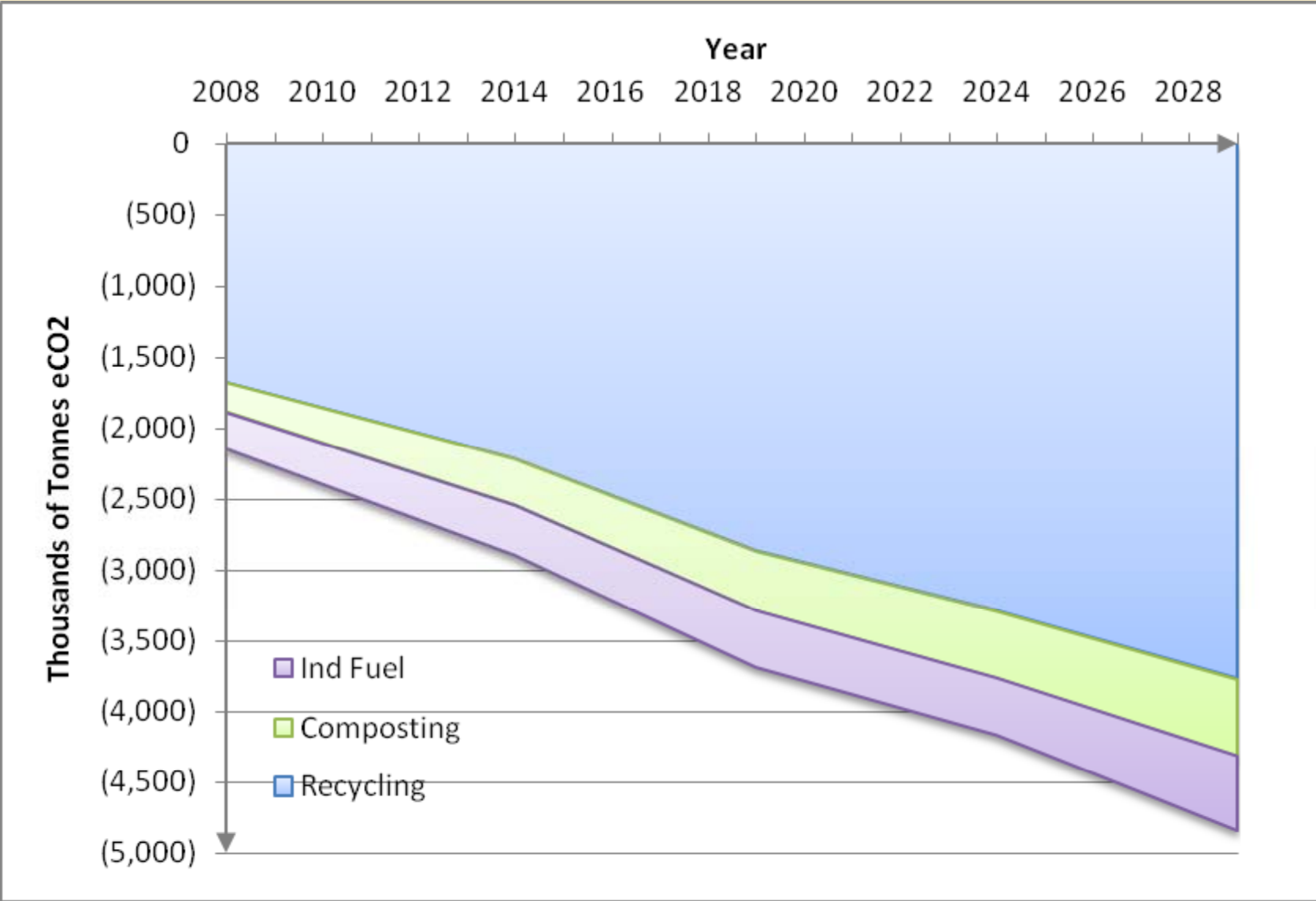
	<u>Generation per Tonne MSW</u>			<u>Releases per Tonne MSW</u>		
	<u>WTE</u>	<u>Landfill</u>		<u>WTE</u>	<u>Landfill</u>	
		<u>Precip LF</u>	<u>Precip LF</u>		<u>LFG Capture Rate</u>	<u>LFG Capture Rate</u>
		High	Low		75%	90%
Fossil CO₂	535			535		
Biogenic CO₂*	665	220	220	665	395	430
Methane (CH₄)		80	80		20	8
GHG eCO₂	535	2,000	2,000	535	500	200
Total eCO₂	1,200	2,220	2,220	1,200	895	630

* Includes CO₂ from combusting methane in captured landfill gas.

GHG Emissions Increase/(Decrease) – 2008 (kilograms eCO₂ per tonne)



Net GHG Emissions from Waste Diversion (2008-29) Zero Waste Scenario



The End
Thank you.
