Zero Waste Strategy LCA Results:

Why the Vancouver Region Should Fund & Promote 3Rs not 2Ds

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VBOT: Waste Management Forum 09

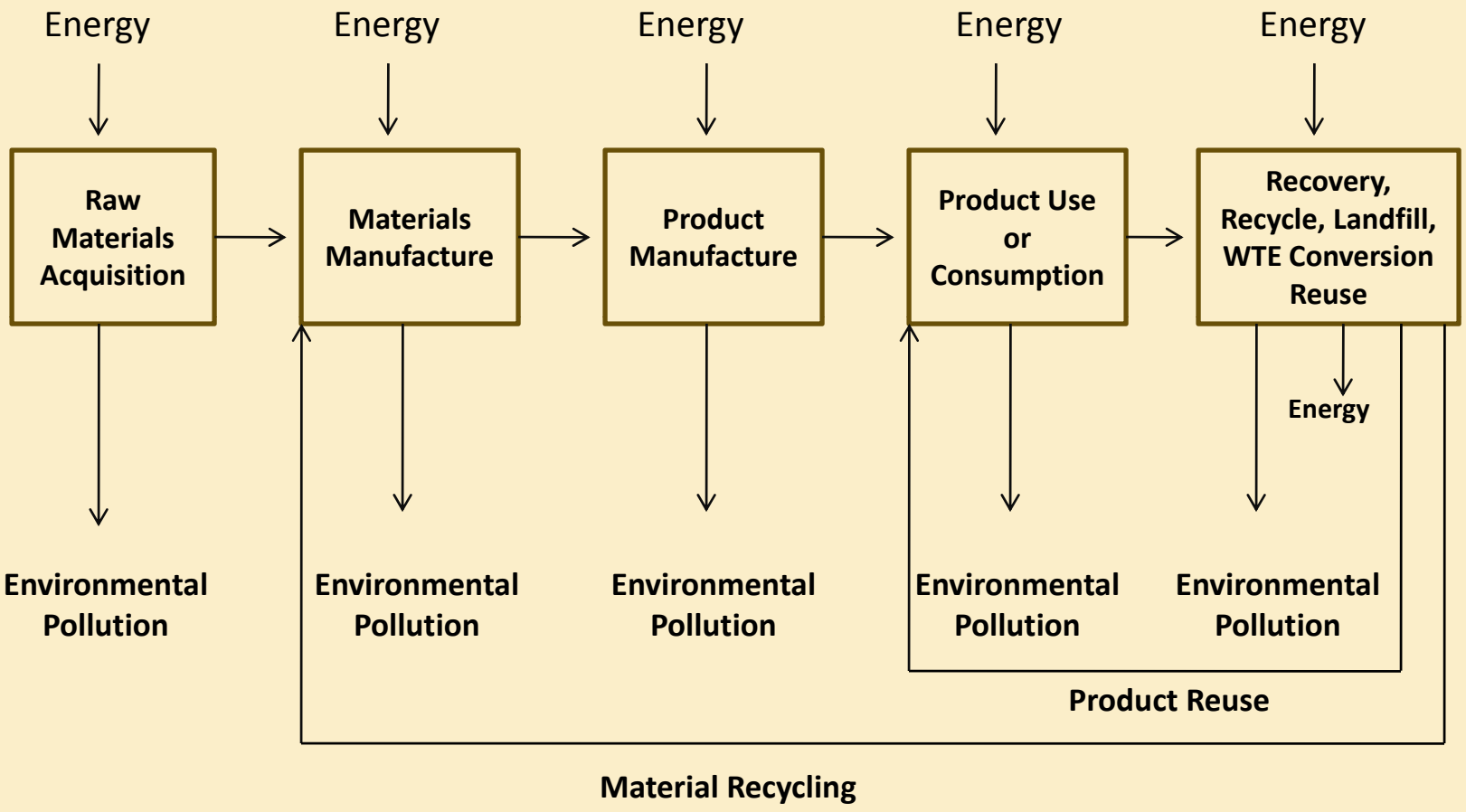
Presentation Outline & Summary

- MSW: garbage glob vs. discarded resources
- Recycling widely preferable to disposal in terms of energy & pollution savings
- Disposal is interim solution not THE solution
- Landfills better than WTE for climate, human health and ecosystems
- WTE needs steady fuel supply, which can interfere with waste prevention & recycling opportunities
- Recycling provides green jobs and local economic development potential

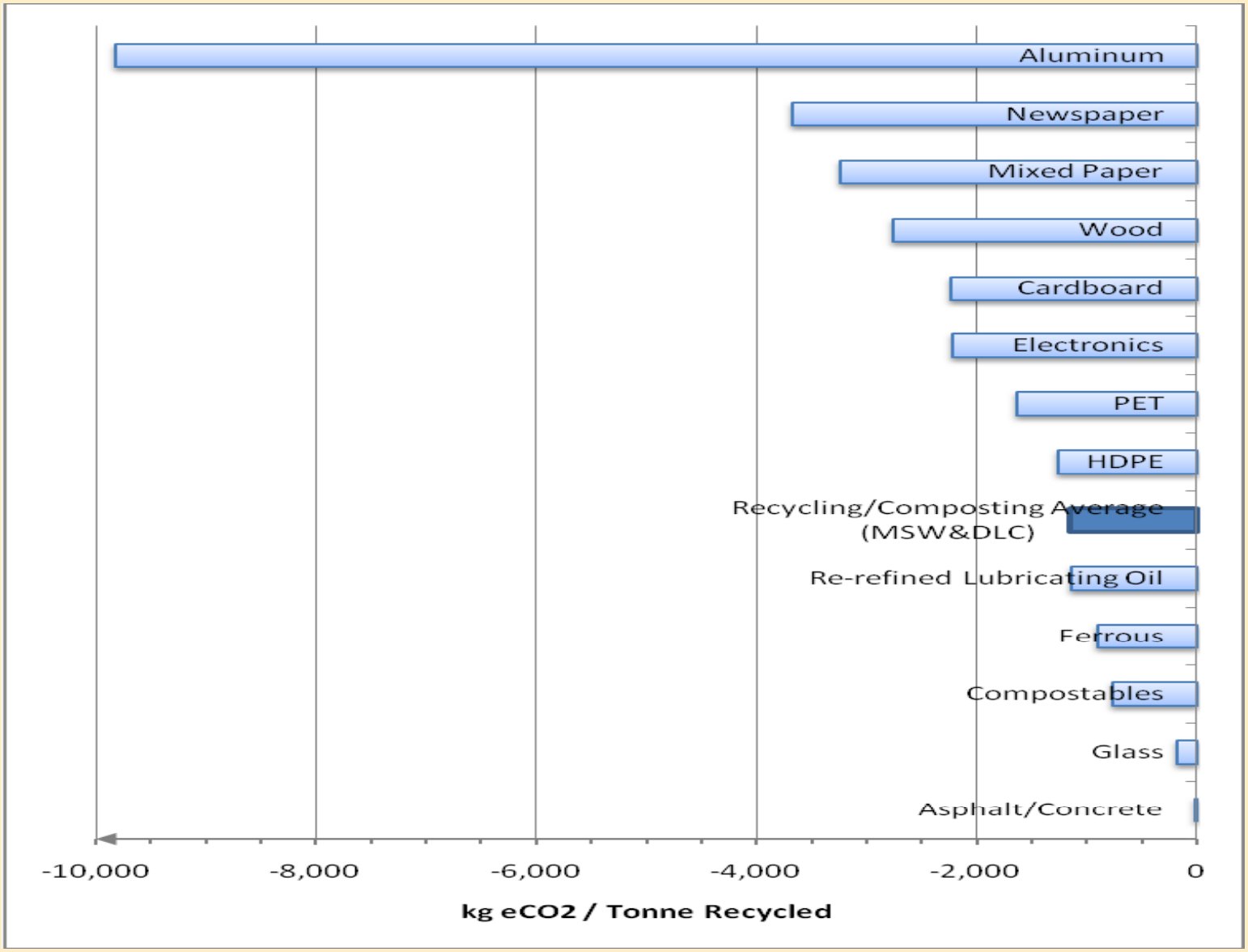
Zero Waste Focus:

Waste Materials Are Resources
That Reduce Pollution & Energy Use!

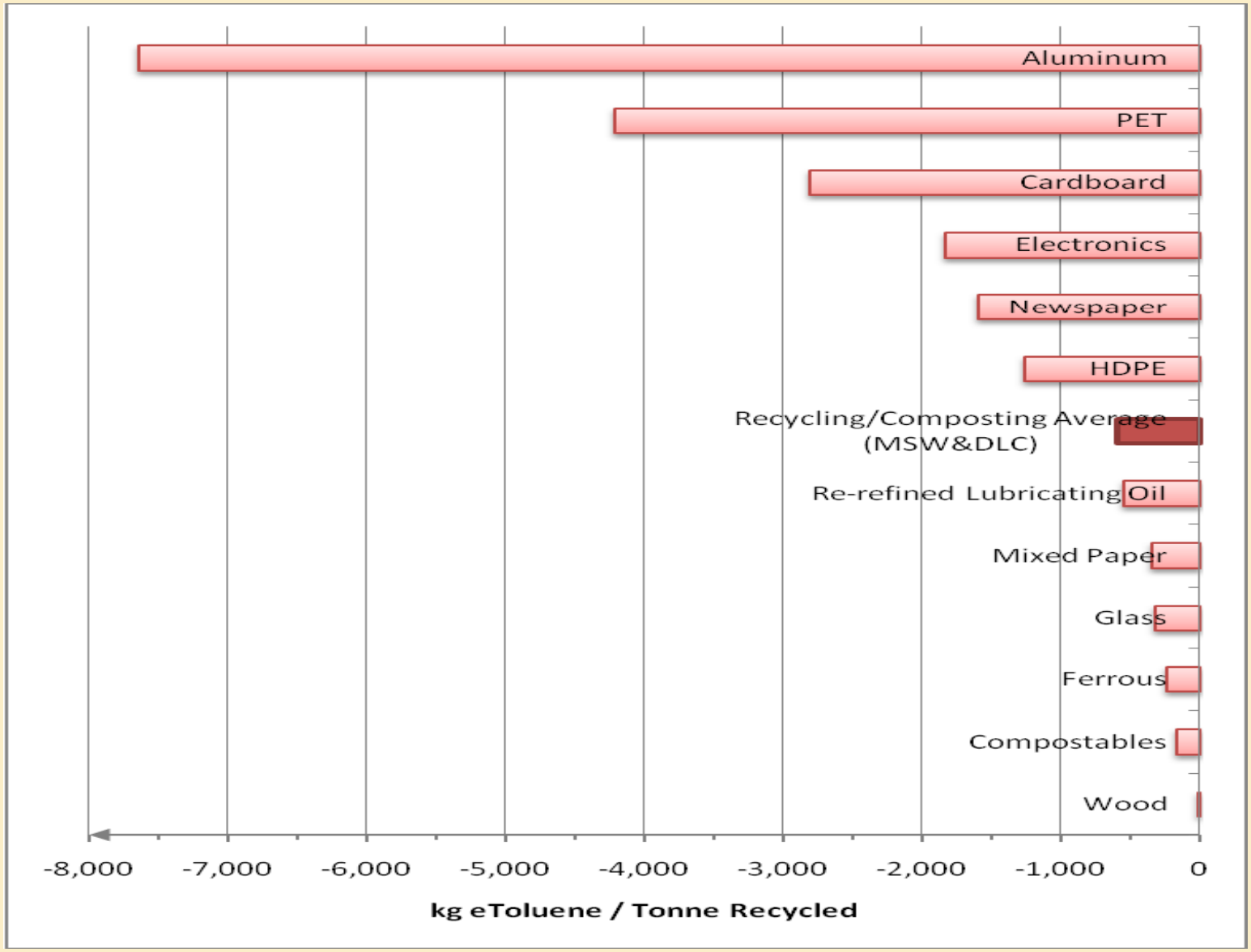
Life Cycle Analysis (LCA)



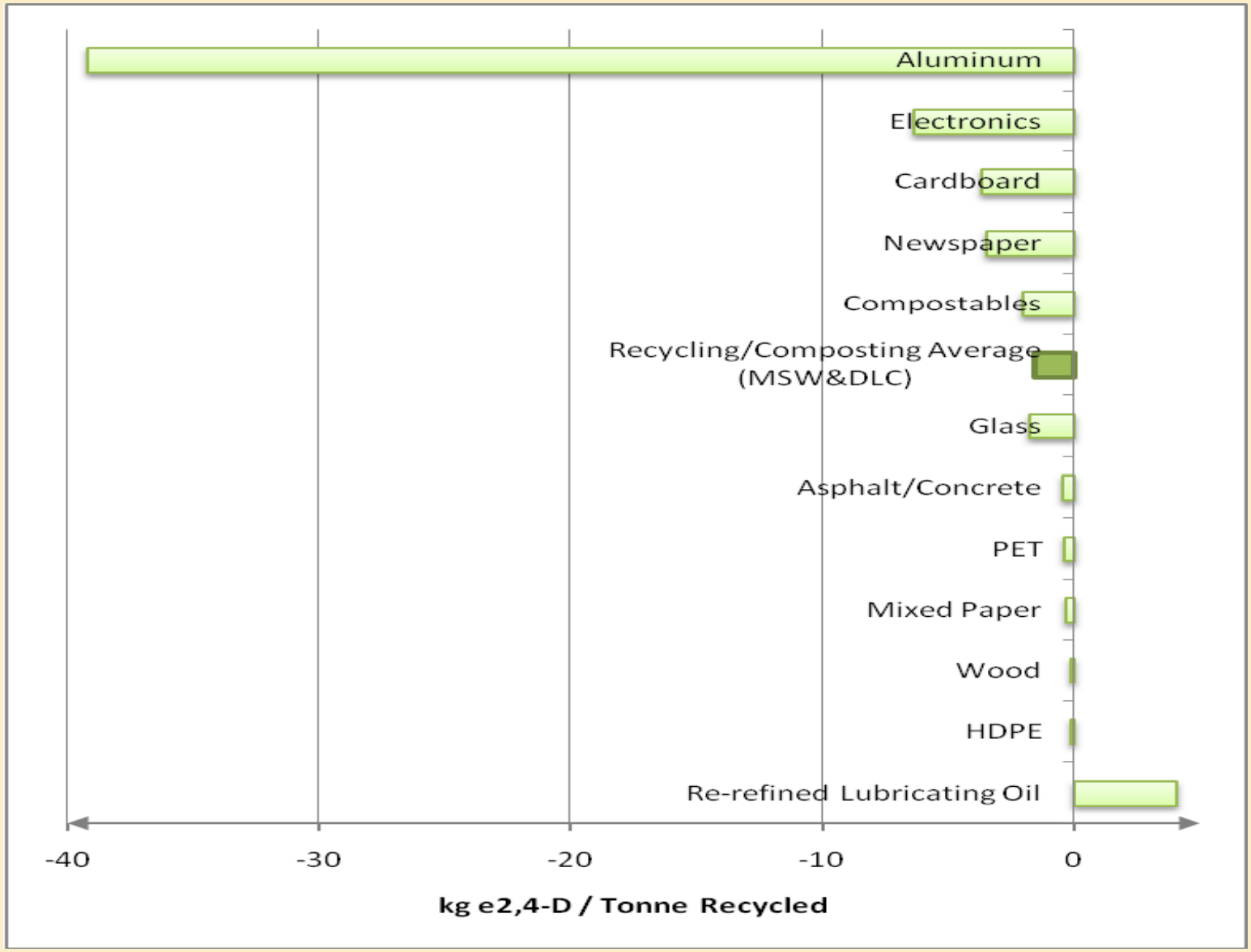
Greenhouse Gas Emissions per Tonne – Select Recyclable Materials (2008)



Human Health Emissions per Tonne – Select Recyclable Materials (2008)



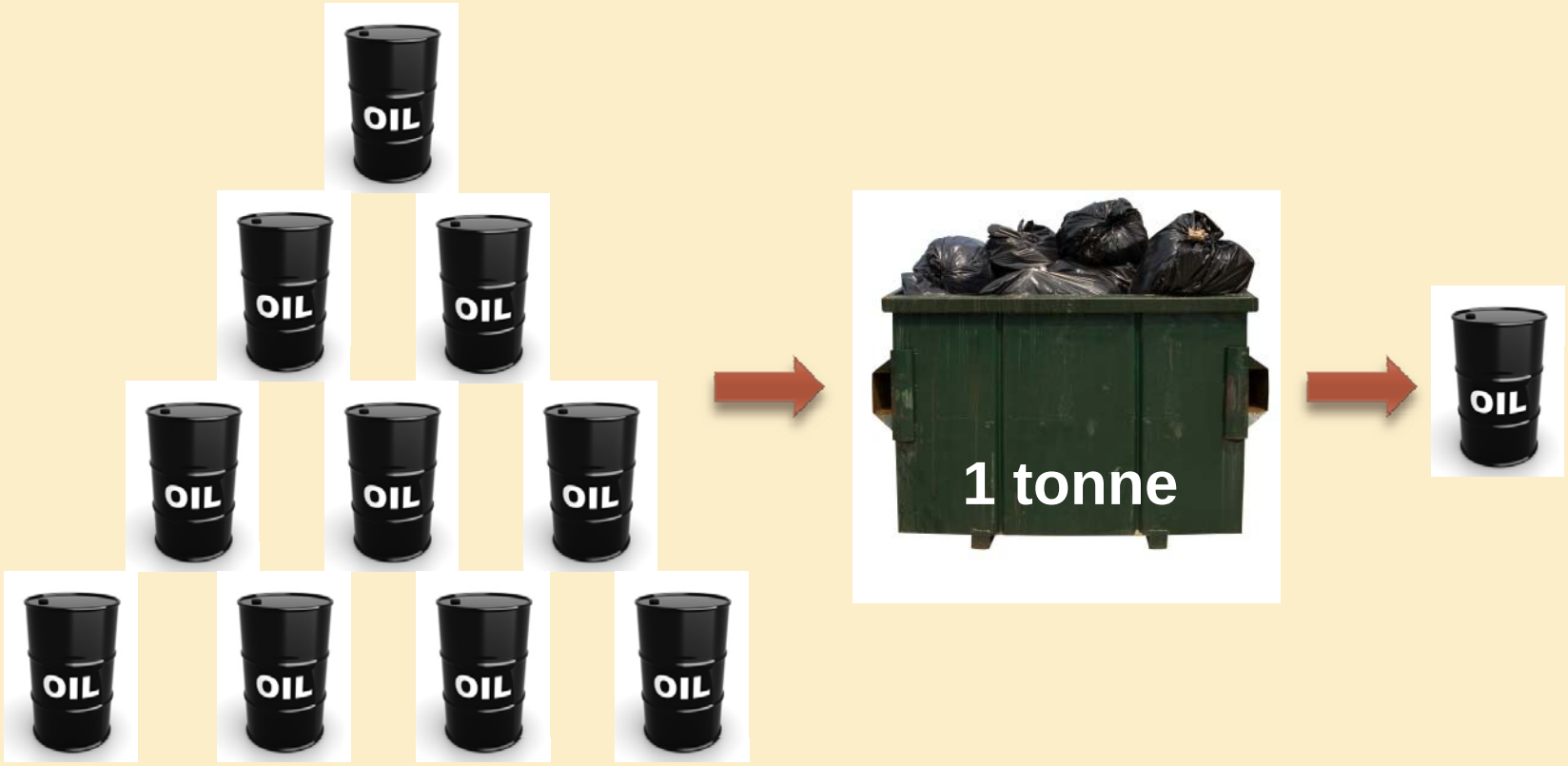
Ecosystem Toxicity Emissions per Tonne – Select Recyclable Materials (2008)



Garbage is:

Renewable & Sustainable Energy?

Incineration lobbyists say that
1 tonne of garbage = 1 barrel of oil



The full picture: it takes **8-10 barrels** of oil to produce 1 tonne of garbage. From this perspective, garbage is neither a sustainable nor a renewable fuel.

Incineration lobbyists say that 1 tonne of garbage = 1 barrel of oil

Recycling **saves** the equivalent of 4 barrels of the oil needed to produce 1 tonne of garbage

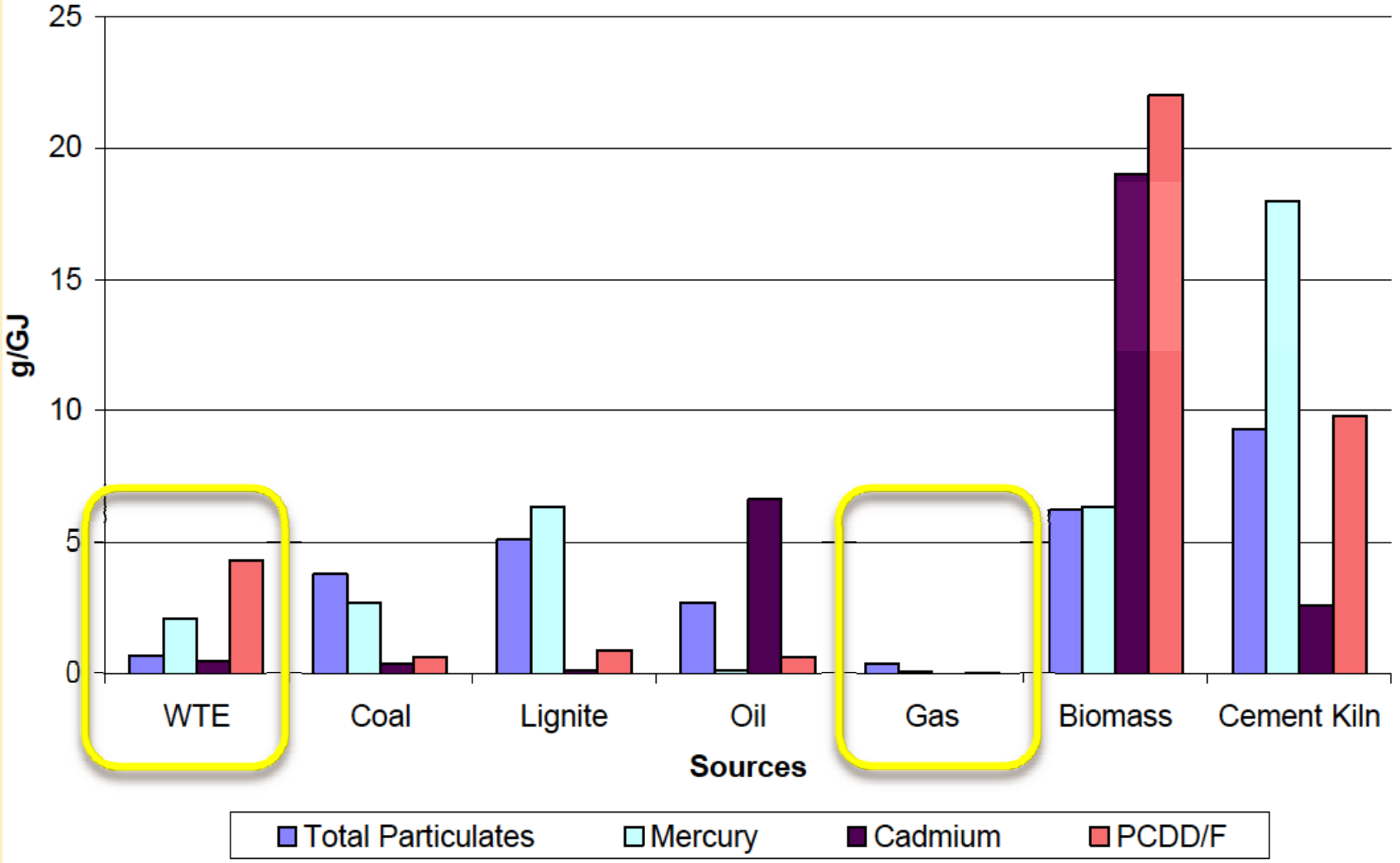
Garbage is:

Clean & Green Energy?

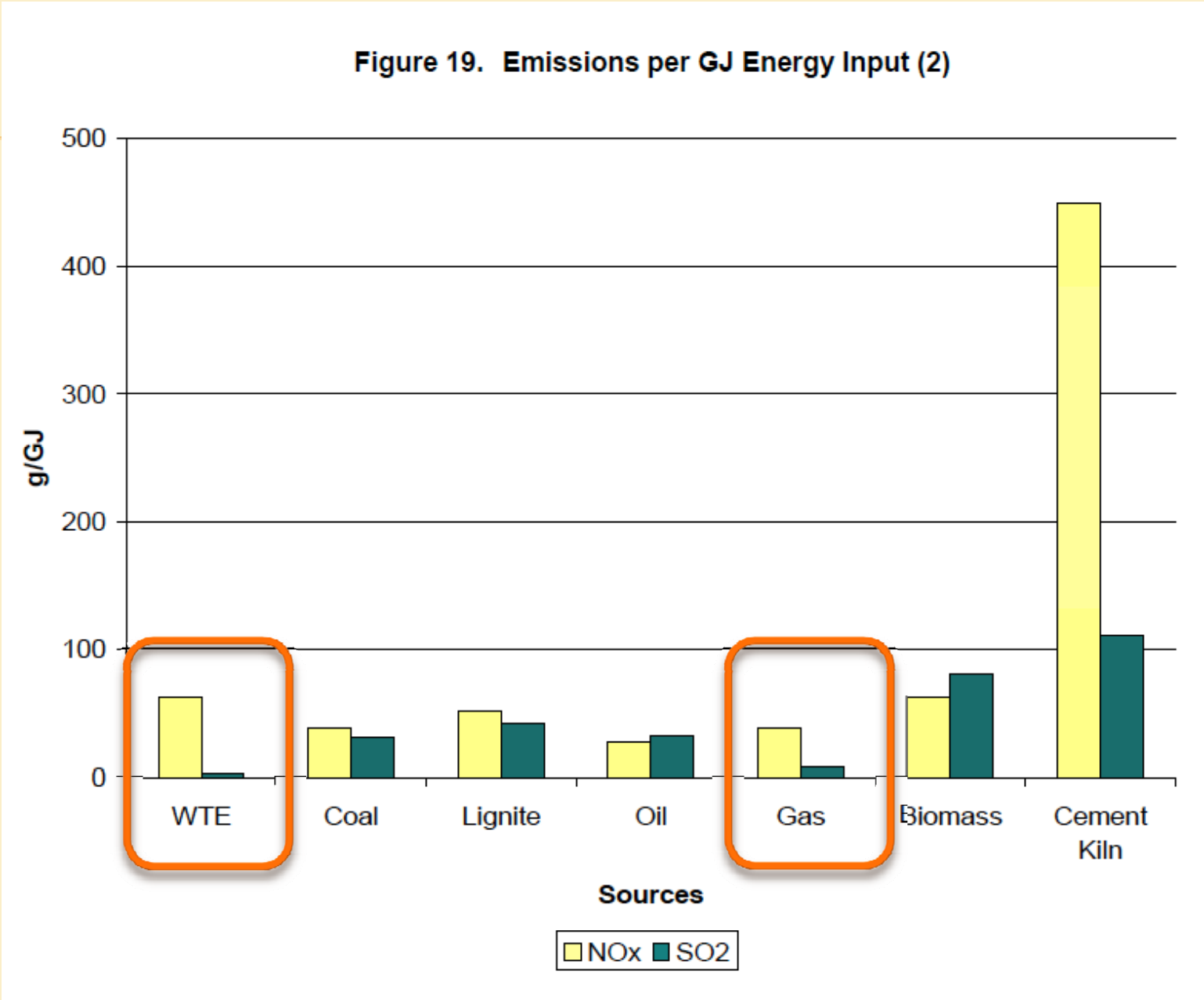
GHG Emissions for Electricity Generation (tonnes eCO2 per GWh)

Coal	900 – 1000
MSW Waste-to-Energy	600 - 900
Natural Gas	350 - 400
BC Consumption Avg.	87
Wind	0

Figure 18. Emissions per GJ of Energy Input (1)



Source: AECOM Canada (2009). *Management of Municipal Solid Waste in Metro Vancouver.*



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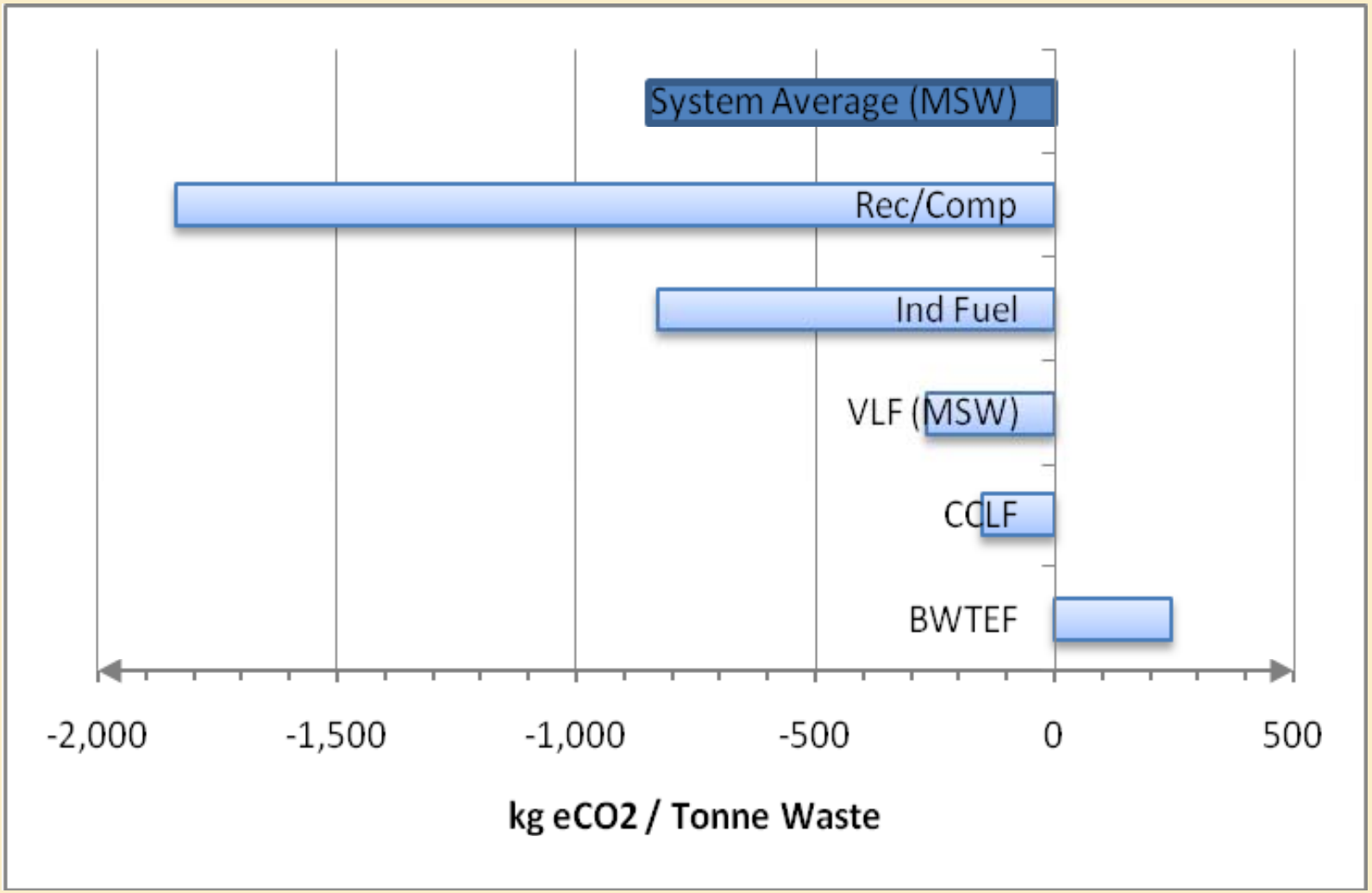
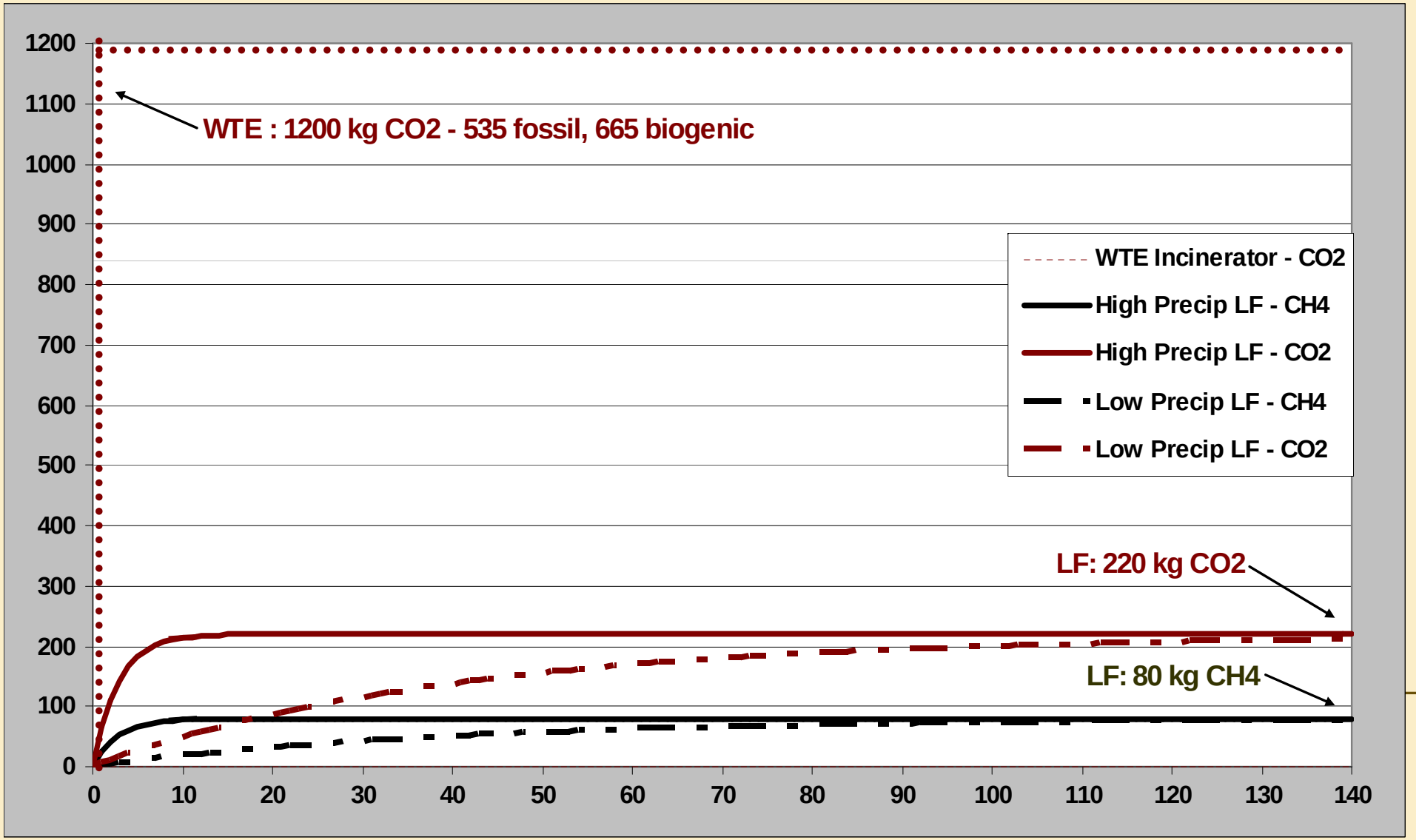
Greenhouse Gas Emissions per Tonne – MSW (2008)



Average Environmental Impact per Tonne – MSW (2008)

	Climate (eCO2)	Health (eToluene)	Ecosystems (e2,4-D)
Recycling & Composting	-1,835	-945	-2
Landfill	-215	60	<0.1
WTE	245	105	2

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



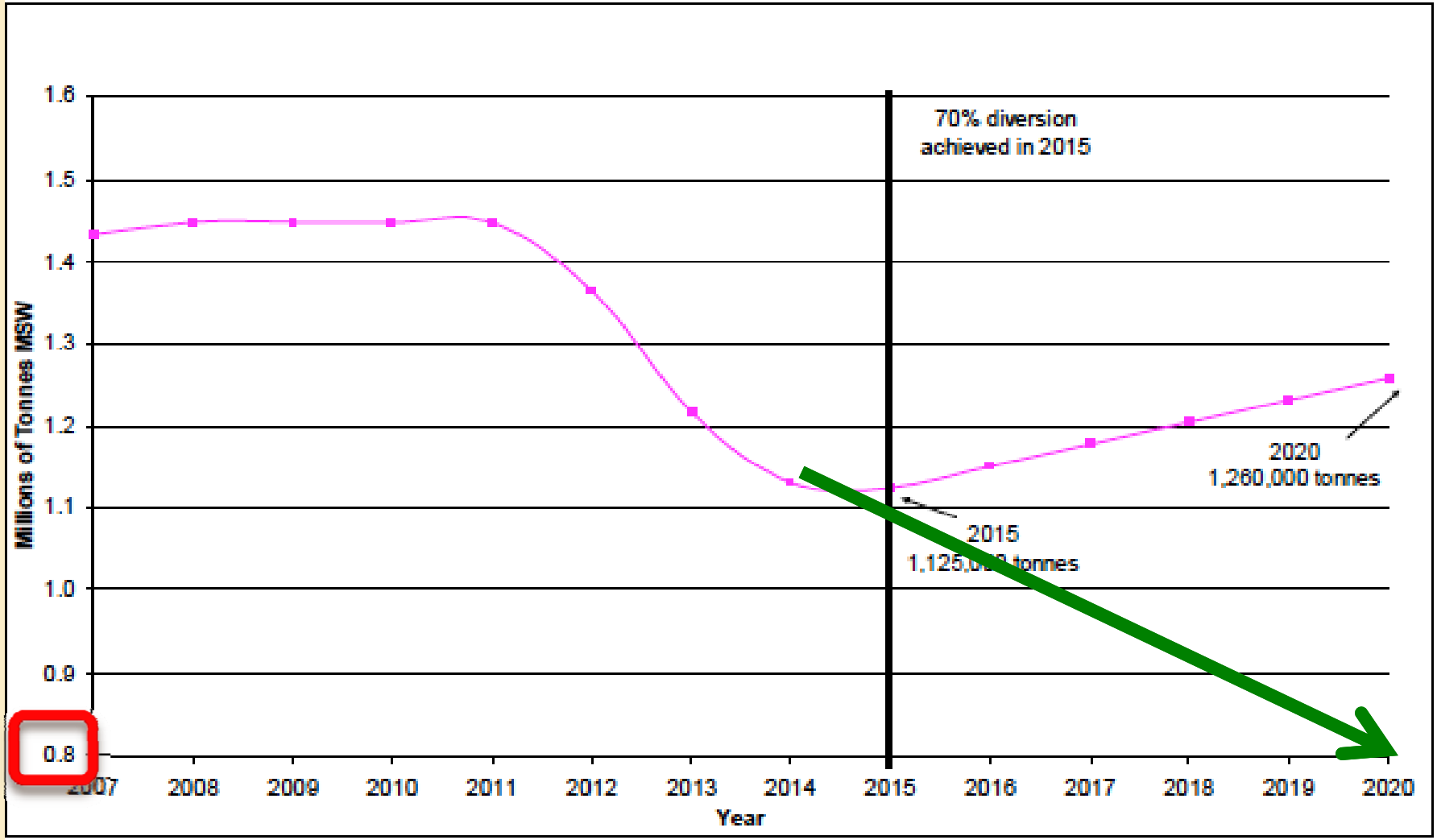
Carbon Content Stored in Landfill – Select Recyclable Materials (US EPA, 2008)

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

Zero Waste Strategy:

Benefits & Methods

Waste Requiring Further Treatment and Disposal



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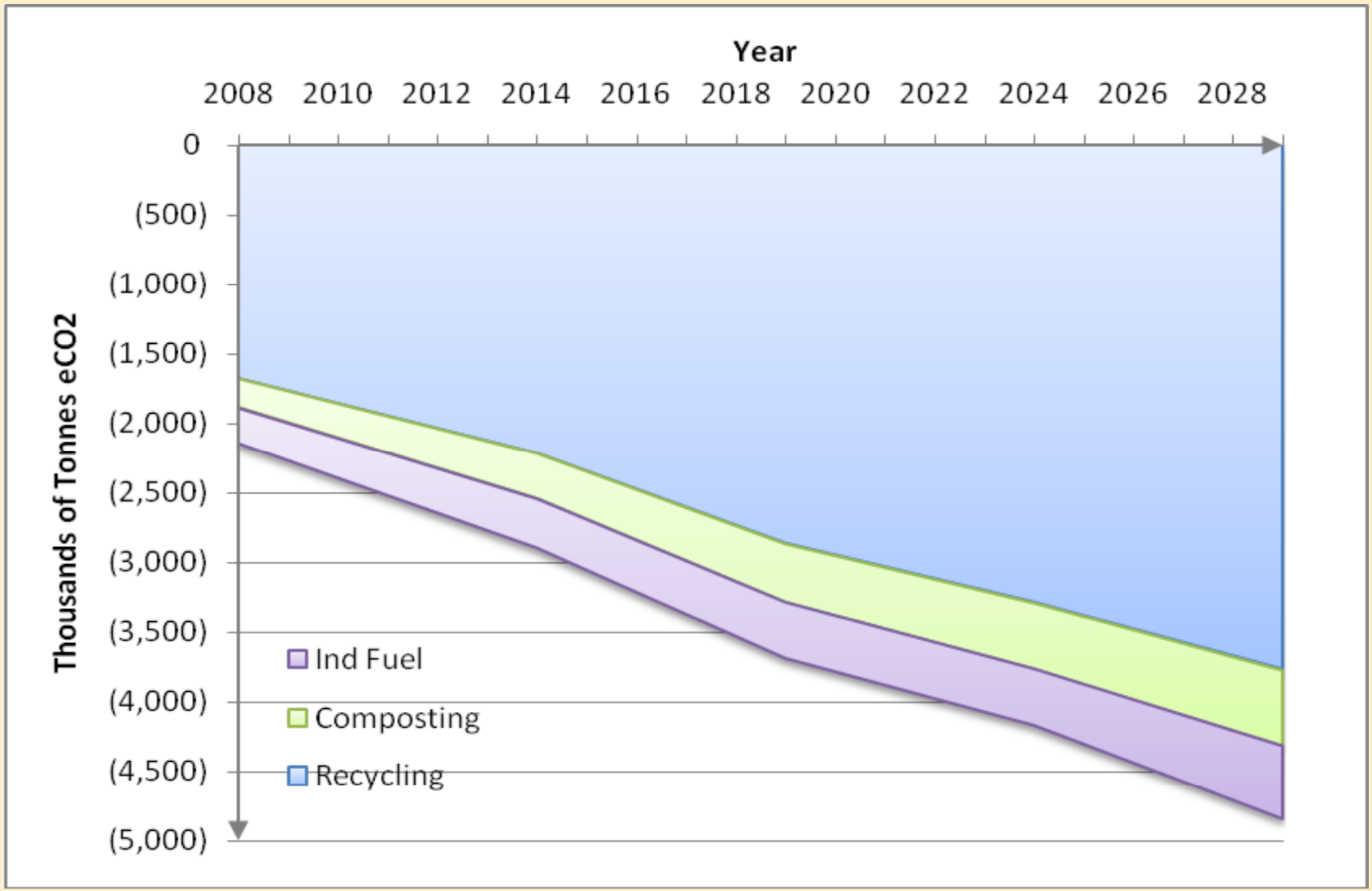
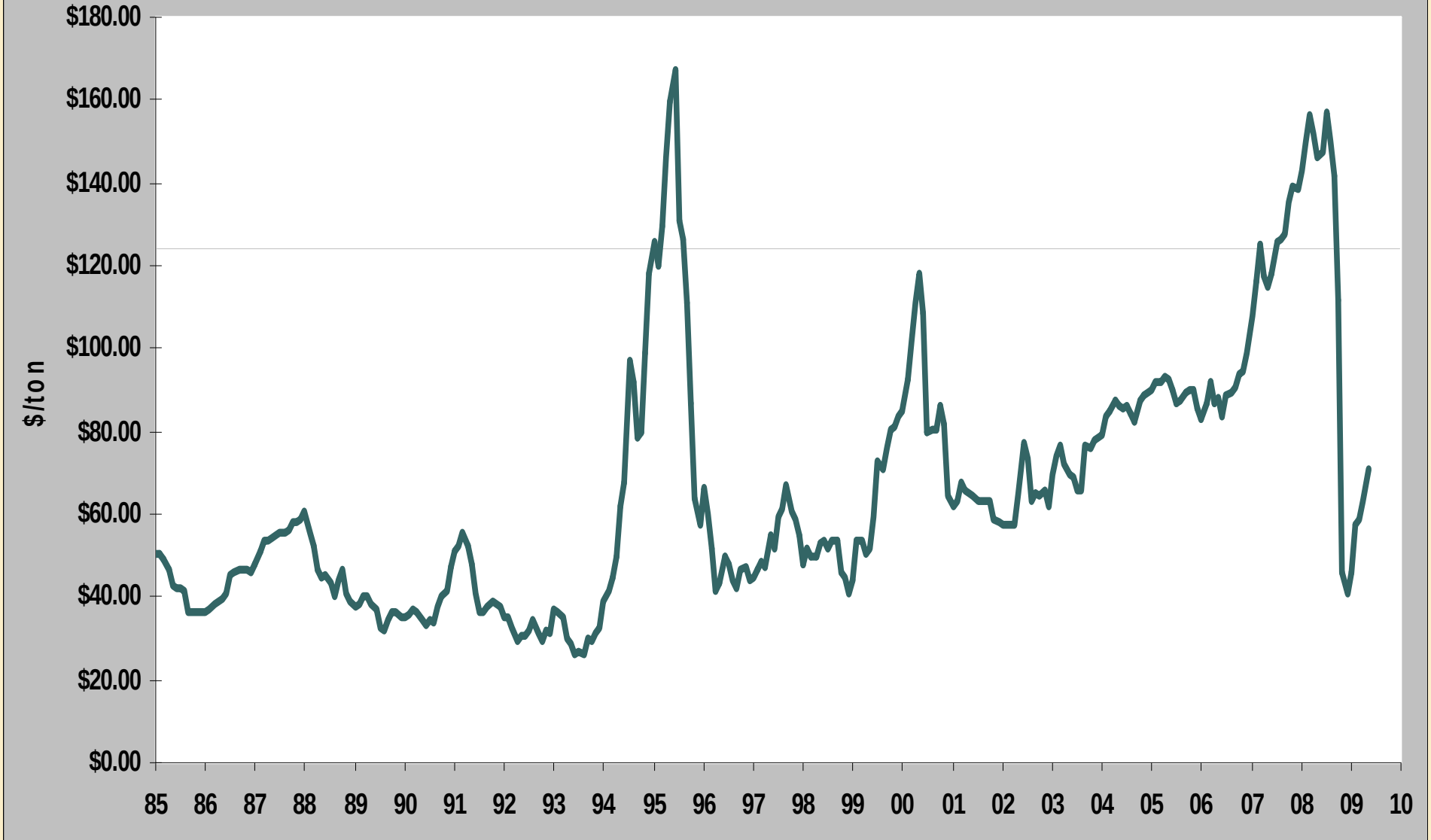
Net GHG Emissions from Waste Diversion (2008-29)
Zero Waste Scenario



Average Value for Curbside Recycled Materials
Pacific Northwest, 1985-2009



Zero Waste Strategy Methods

- Economic Incentives – linear garbage rates, deposits and refunds, EPR, sin taxes
- Collection Opportunities - curbside, on site, streetside, and public event containers for recyclables & compostables
- Bans & Regulations – disposal bans, recycling bylaws, building code specs for collection containers
- Education & Social Marketing

Conclusions

- Zero waste strategy optimizes environmental and local economic development potentials of recycling
- Disposal should be viewed as bridging option on the road to zero waste
- Landfills definitely better than WTE for climate, and at least as good for human health and ecosystems
- WTE is neither clean, green, renewable, nor sustainable
- WTE needs steady fuel supply, which can interfere with waste reduction & recycling opportunities
- Recycling provides green jobs and local economic development potential

Thank you.

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