

Organics and Climate Change

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Institute for Local Self-Reliance

From the Table to the Farm: Options for Diverting Food from
Landfills, Atlanta, May 6th, 2008





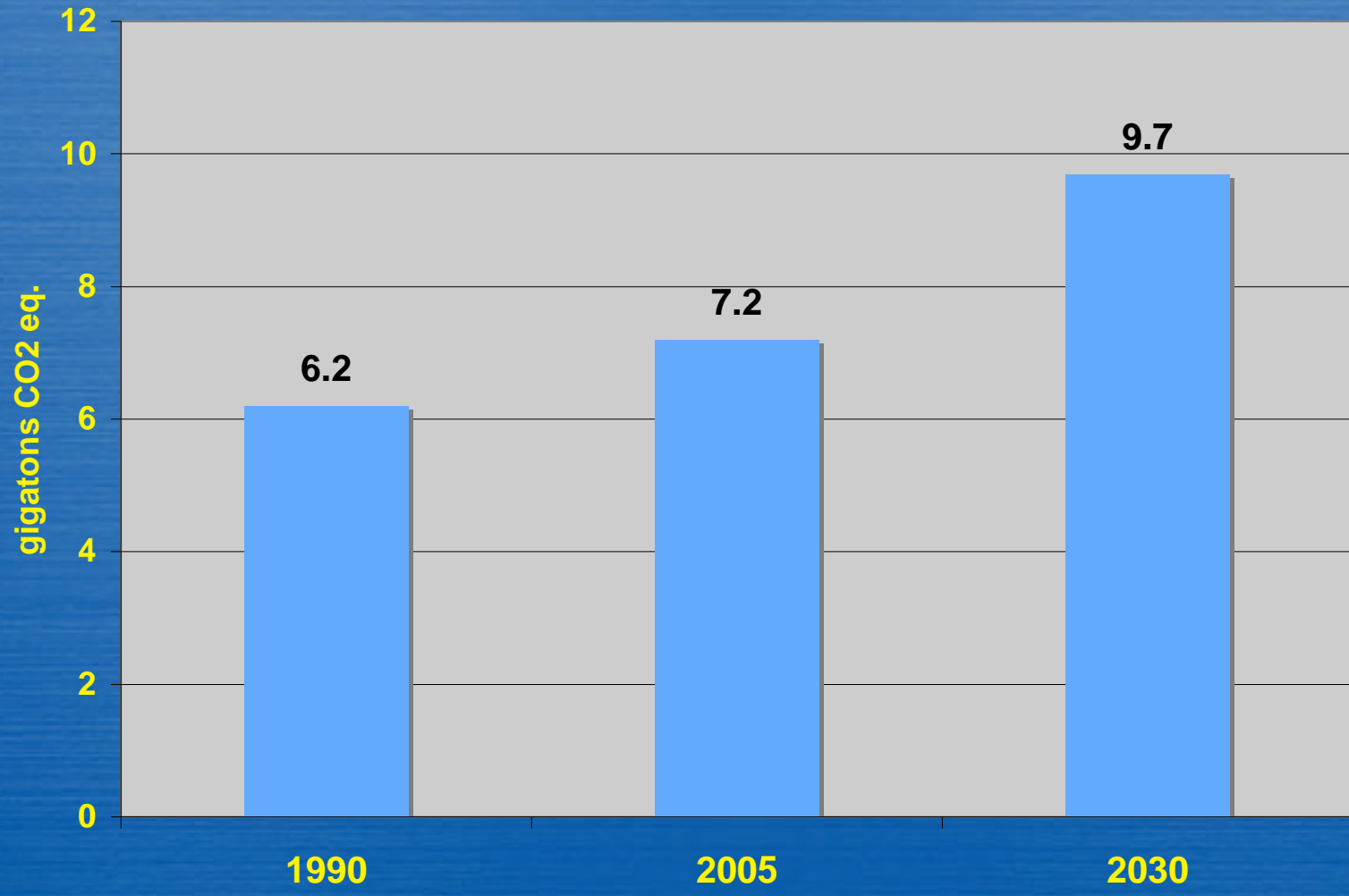
U.S. huge contributor

- 4.6% of global population
- Consume one-third of Earth's timber and paper
- Generate 22% of global CO₂ emissions



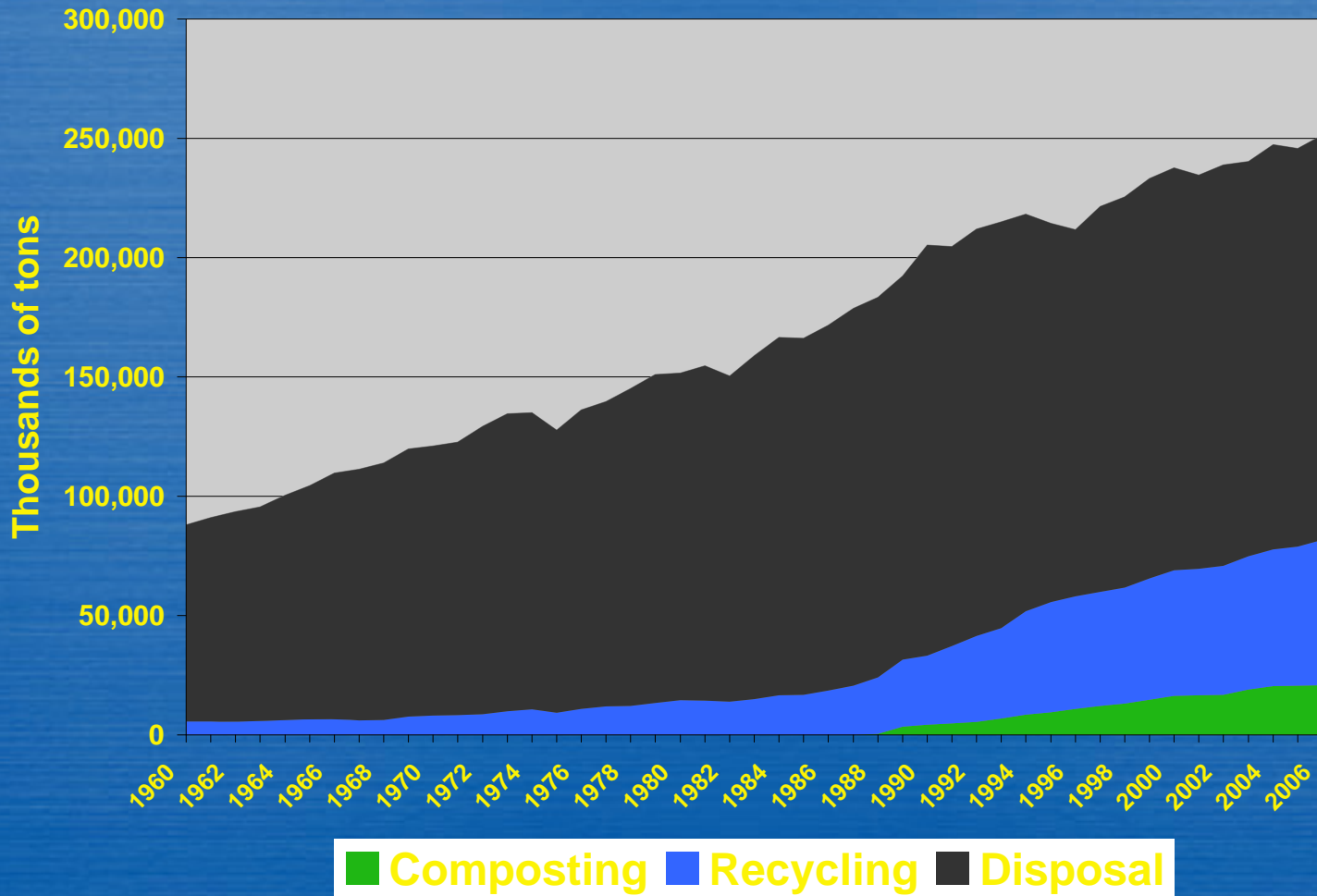


U.S. GHG Emissions



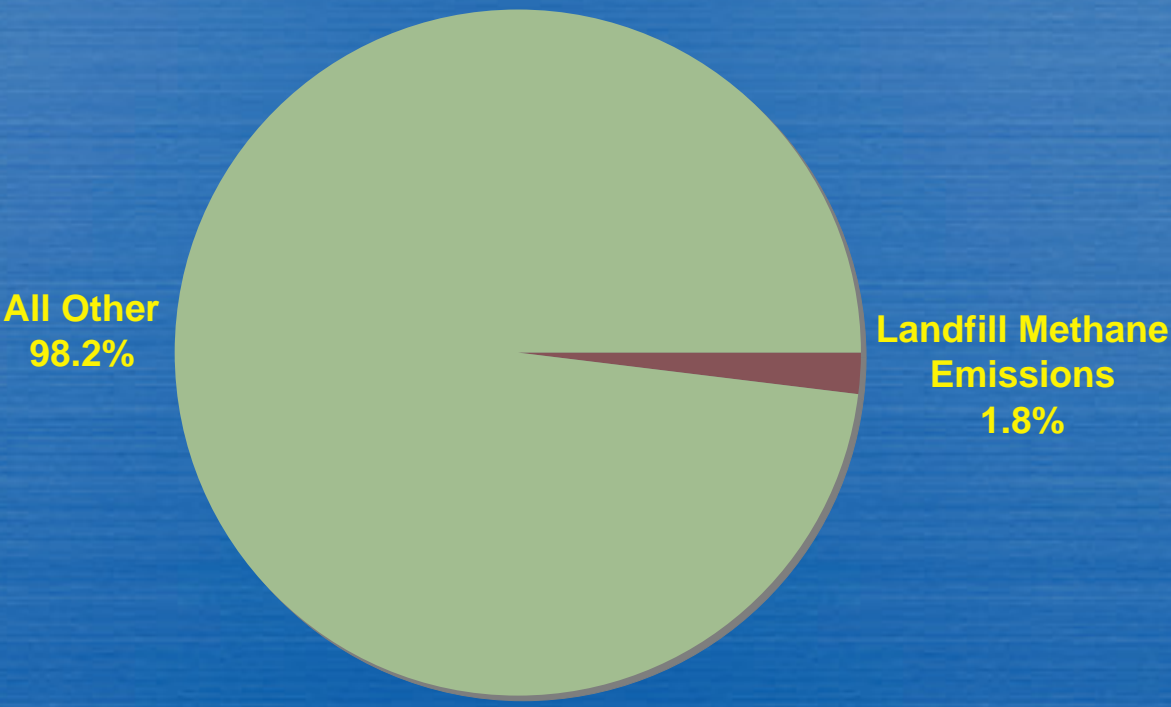


Wasting Trend in U.S.





Landfill greenhouse gas emissions, % of total



Total 2005 = 7,260 megatons CO₂ equiv.



The global warming potential concept

CO₂

Methane - 100 year time horizon, 21 times more potent than CO₂

Methane - 20 yrs,
72 times more
potent

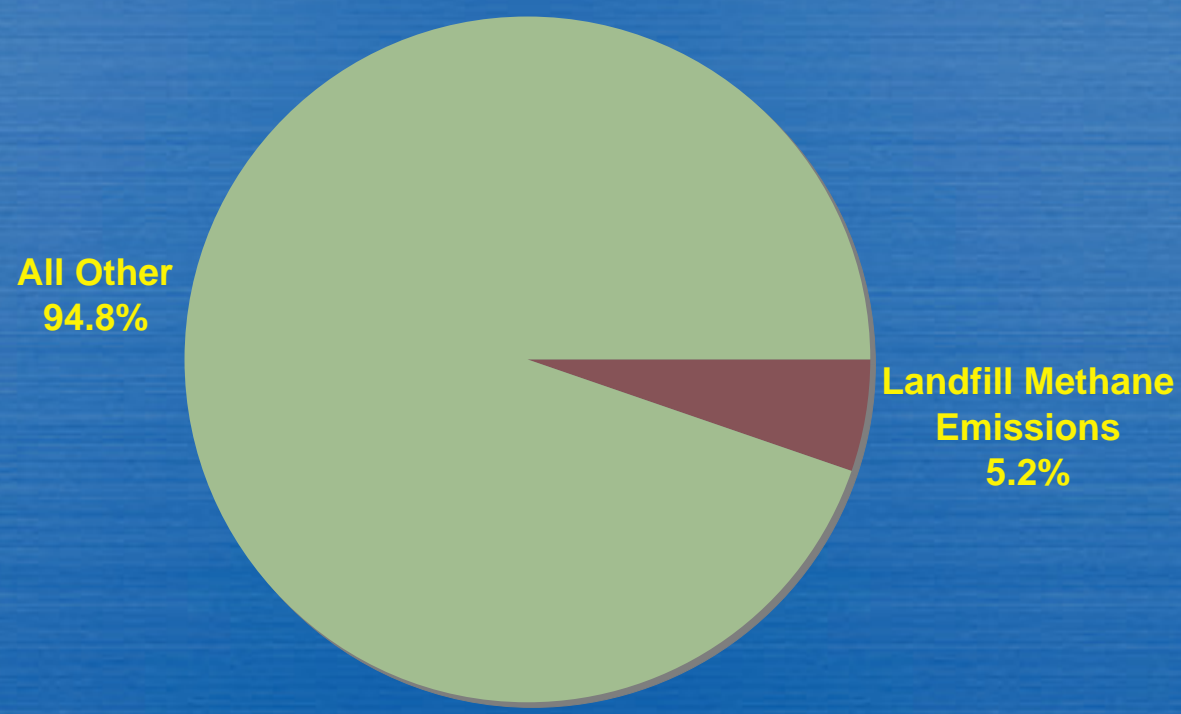


Climate Change Tipping Point

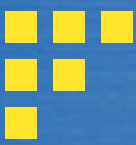
- Global emissions must peak and decline over the next 10 to 15 years in order to limit global warming to 2°C above pre-industrial limits.
- Uncontrolled climate change will lead to widespread devastation, economically and environmentally.
- A short window of opportunity exists to radically reduce GHGs and stabilize atmospheric CO₂ concentrations before our climate reaches a “tipping point.”



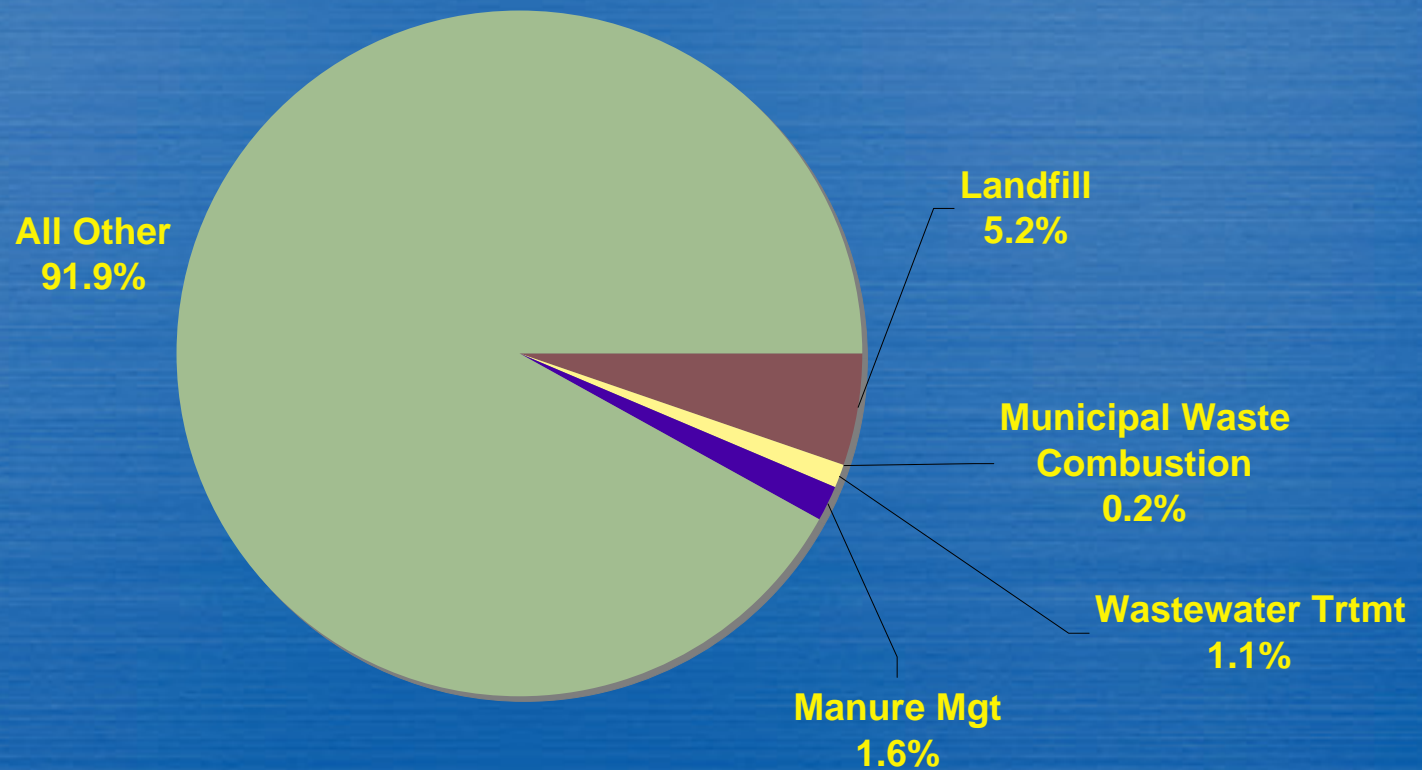
Landfill greenhouse gas emissions, % of total, 20 yr time horizon



Total 2005 = 8,754 megatons CO₂ equiv.




Disposal sector emissions, 8.1% of total, 20 yr horizon





Landfill Gas Capture Systems Band-Aid Approach at Best

- 75% capture rate based on instantaneous collection efficiency estimates when systems are at peak efficiency
- Rules do not require gas collection for the first 5 years.
- Rules allow removal of gas collection systems 20 years after landfill closes.
- All landfill barriers will ultimately fail during post-closure period, after which precipitation will re-enter the landfill and in time cause second wave of decomposition without any controls.
- Gas generated inside landfills escapes all day, everyday from every landfill in America.
- Over lifetime of landfill, gas capture could be as low as 20%.



“Bioreactors” will not improve landfill gas capture

- Increase methane 2 to 10 times in early years.
- Will likely reduce efficiency of methane gas collection systems.
- Delay installation of a final cover for years.
- Hasten the onset of climate change by releasing potent emissions over a short-time period.



Myths

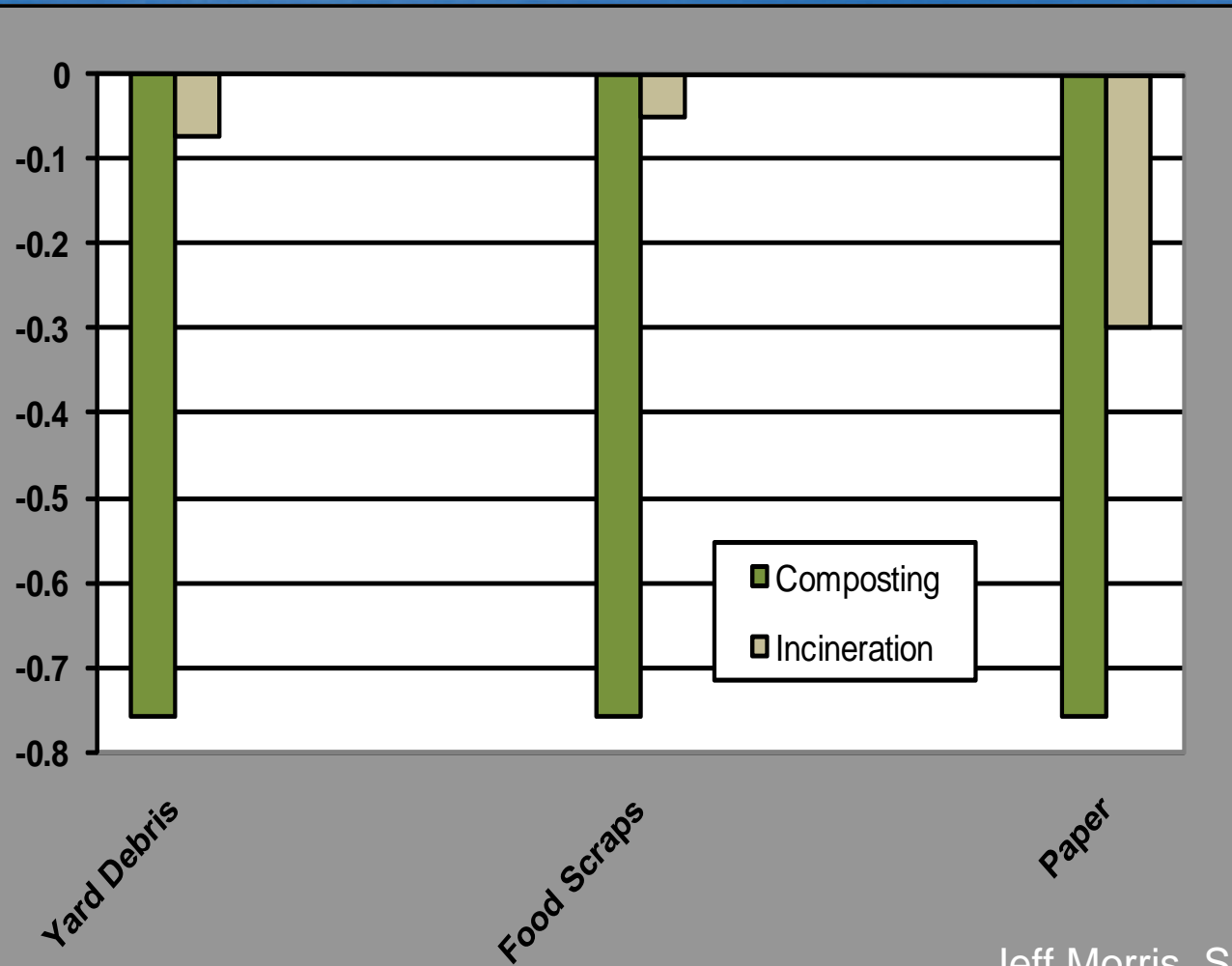
- Landfill gas capture systems are an effective way to address methane emissions from landfills.
- Wet landfills or “bioreactors” will improve landfill gas capture.
- Landfills and incinerators are sources of renewable energy.
- Subsidizing landfill gas capture or incinerators through renewable energy incentives is good for the climate.
- Waste incinerators reduce greenhouse gases and help fight global warming.

Organics Diversion: Core Climate Protection Strategy



- Prevents landfill methane emissions
- Stores carbon
- Reduces energy use for irrigation
- Substitutes for energy-intensive fertilizers, pesticides, fungicides
- Improves soil's ability to store carbon
- Improves plant growth, and thus carbon sequestration
- Anaerobic digestion offsets fossil fuel consumption

CO₂ Emissions: Composting Vs Incineration (kg eCO₂/kg)



Composting, lots of models



Composting & Recycling Collection System Designed For High Diversion



Easy to Understand Program

1 Recycle

Place all bottles, cans, foil, paper and cardboard in the blue cart - **MAKING RECYCLING EASIER!**



not accepted in the blue cart:
plastic bags
 Styrofoam
 mirrors, window glass or light bulbs
 ceramic dishes or cups
 plastics other than bottles
 juice boxes

2 Compost

Place all of your food scraps, food-soiled paper and yard trimmings in the green cart.



Use your kitchen pail to hold food scraps

You can line kitchen pail with paper bag or newspaper.

Fill with food scraps - even meat and bones.

Paper bag and contents go in the green cart.

Paper milk cartons can also be used to hold food scraps and are compostable!

not accepted in the green cart:
plastic bags
 Styrofoam
 plastic flower pots or trays
 diapers
 kitty litter or animal feces
 rocks, stones or dirt

Your New Program Reduces Garbage!

As you can see, more things are recyclable than ever before. With your help we will:

- Protect our environment! Recycling more means less garbage being sent to the landfill
- Reduce litter through the use of fidded carts
- Make San Francisco the first large U.S. city to collect food scraps for composting city-wide

3 Garbage

Place what is left over - non-recyclables - into the black cart.

No hazardous materials. For household hazardous waste information, call 415-554-4333.



Questions?
Call 415-330-1300 or visit www.sunsetscavenger.com

Composting Collection



All Food

fruits, vegetables, meat, poultry, seafood, shellfish, bones, rice, beans, pasta, bread, cheese and eggshells.

全部食物

水果、蔬菜、肉類、家禽、海鮮、骨頭、米飯、豆類、麵粉、麵包和餅乾、有殼的蛋、蛋殼

被食品弄髒的紙類

弄髒的紙皮盒、餐巾、紙碟、咖啡濾渣、茶袋、木頭和木屑、竹制碗筷

植物

花卉剪枝、樹枝、樹葉、草、雜草和野草

Food-soiled Paper

waxed cardboard, napkins, paper towels, paper plates, paper milk cartons, tea bags, coffee grounds, filters, wooden crates, sawdust.

Toda Comida

frutas, verduras, carnes, mariscos, crustáceos, huesos, arroz, frijoles, pastas, pan, quesos, cáscaras de huevo.

Papel Manchado por Comida

cartón encerado, servilletas, platos y toallas de papel, filtros y posos de café, recipientes de cartón para leche, bolsas de té, cajas de madera, aserrín.

Plantas

recortes de flores y arboles, hojas, césped cortado, malezas, hierbas.

Plants

floral trimmings, tree trimmings, leaves, grass, brush, weeds.

No!

- plastic bags/napkins/trays
- Styrofoam
- bottles and cans
- aluminum foil
- liquids
- hazardous waste

不收!

- 塑膠袋 / 保鮮膠紙 / 膠碗
- 泡沫膠
- 樽和罐
- 鋁箔
- 液體
- 有害物品

iNo!

- botones/enclavadores/paños de plástico
- espejos de poliestireno
- botellas y latas
- papel de aluminio
- líquidos
- desechos peligrosos



YOUR COLLECTION DAY IS:

你的收集日期是：
EL DÍA DE RECOLECCION ES

Containers must be on the curb, at a loading dock or otherwise accessible on collection day.
收集日期應在路邊、可搬運碼頭、或能在可以方便收集的位置。

Los recipientes deben colocarse en el bordillo o en una zona de carga o en un lugar accesible.

Questions?
330-1300

Courtesy of City of San Francisco

Designed for Easy Participation



Kitchen Pail



Labeled Lids

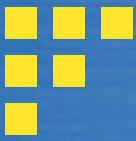


Wheeled Cart

Stores Sell Compostable Kitchen Pail Bags



Courtesy of City of San Francisco





Jepson Prairie compost site





Benefits of Composting

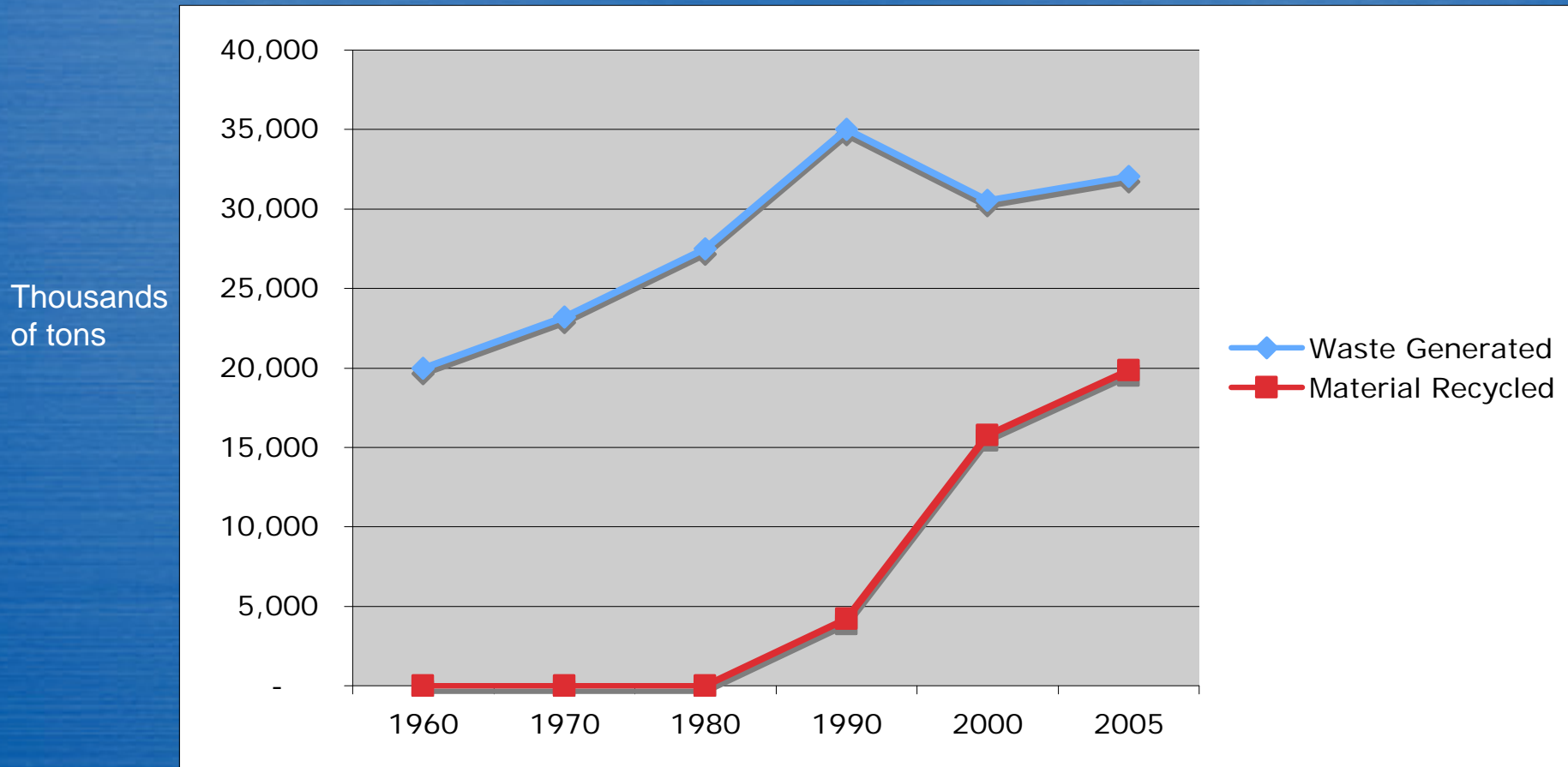
- Creates a rich nutrient-filled material, humus,
- Increases the nutrient content in soils,
- Helps soils retain moisture,
- Reduces or eliminate the need for chemical fertilizers,
- Suppresses plant diseases and pests,
- Promotes higher yields of agricultural crops,
- Helps regenerate poor soils,
- Has the ability to cleanup (remediate) contaminated soil, and
- Can help prevent pollution and manage erosion problems.



Compost Applications

- landscape and nursery
- agricultural and horticultural
- vegetable and flower gardens
- tree and shrub planting
- sod production and roadside projects
- wetlands creation
- soil remediation and land reclamation
- sports fields and golf courses
- sediment and erosion control

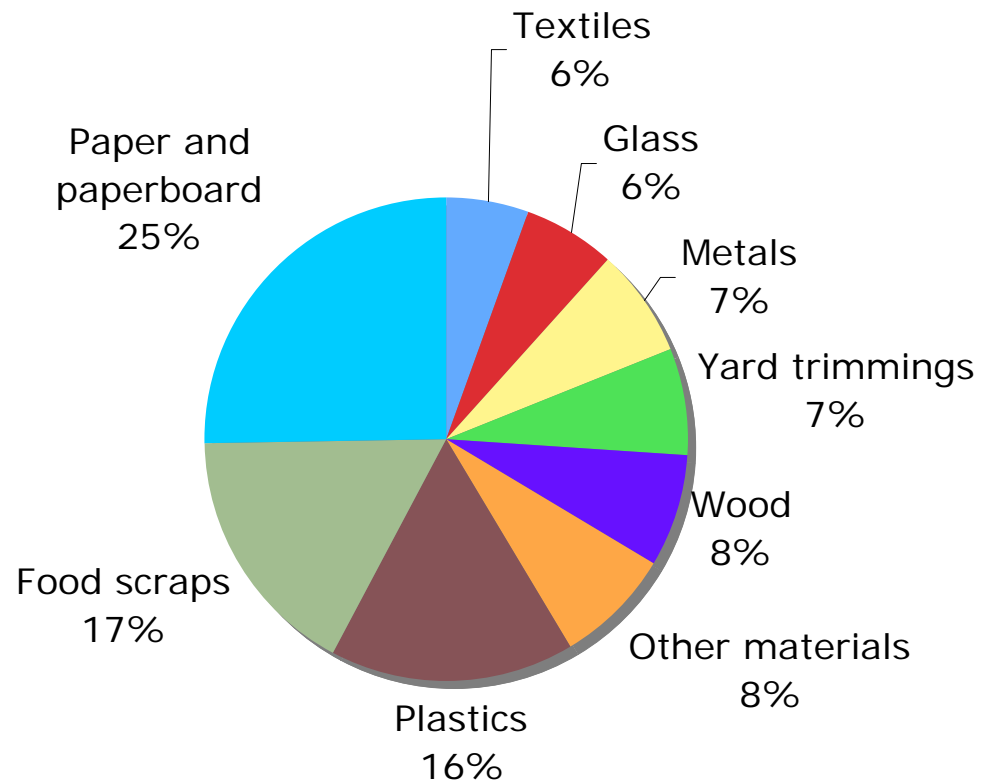
Yard Trimmings Generated and Recovered in the US, 2005



Source: US EPA, 2005 data (<http://www.epa.gov/epaoswer/non-hw/muncpl/msw99.htm>)

167 million tons per year in 2005

Municipal waste disposed

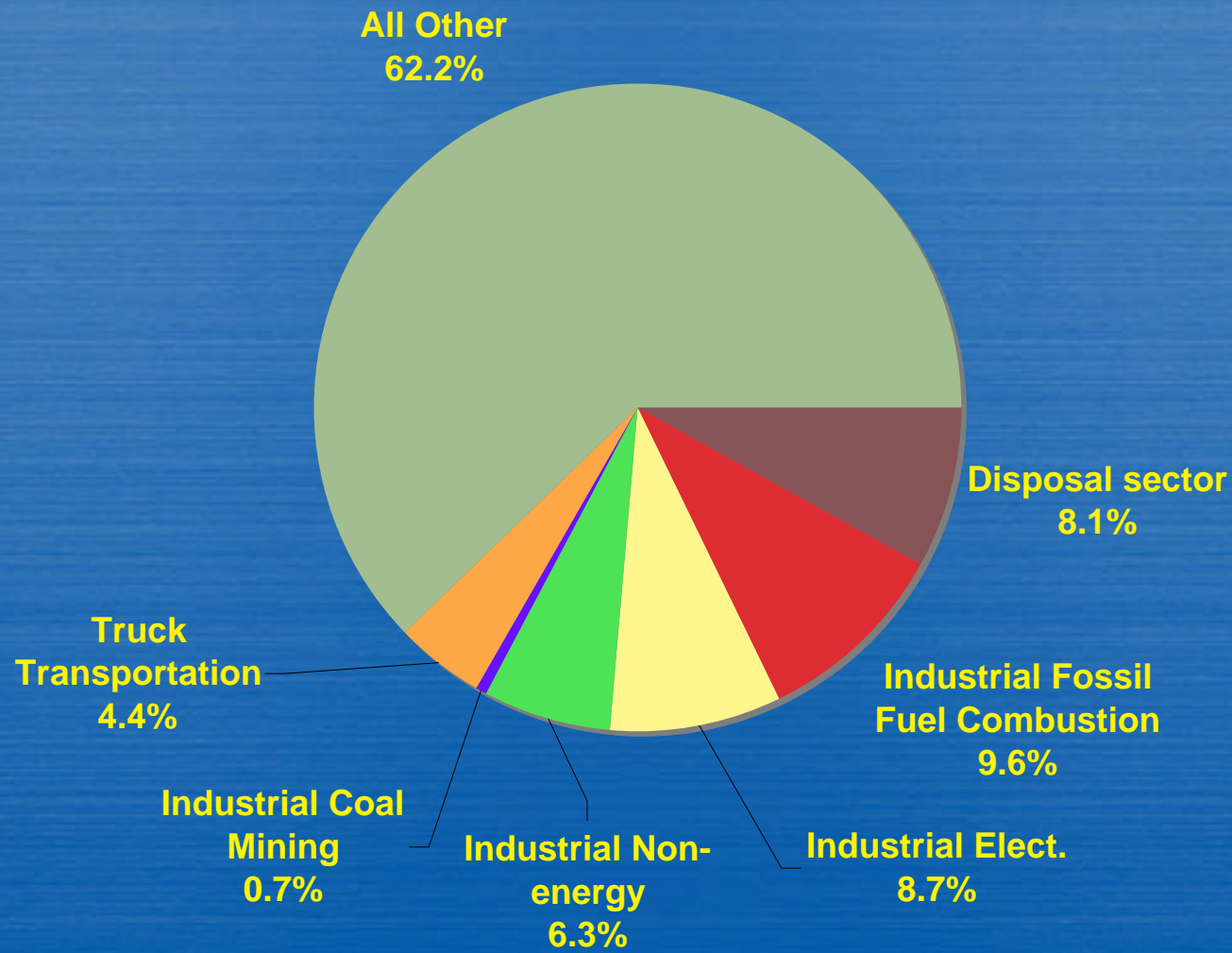




Upstream impacts are huge

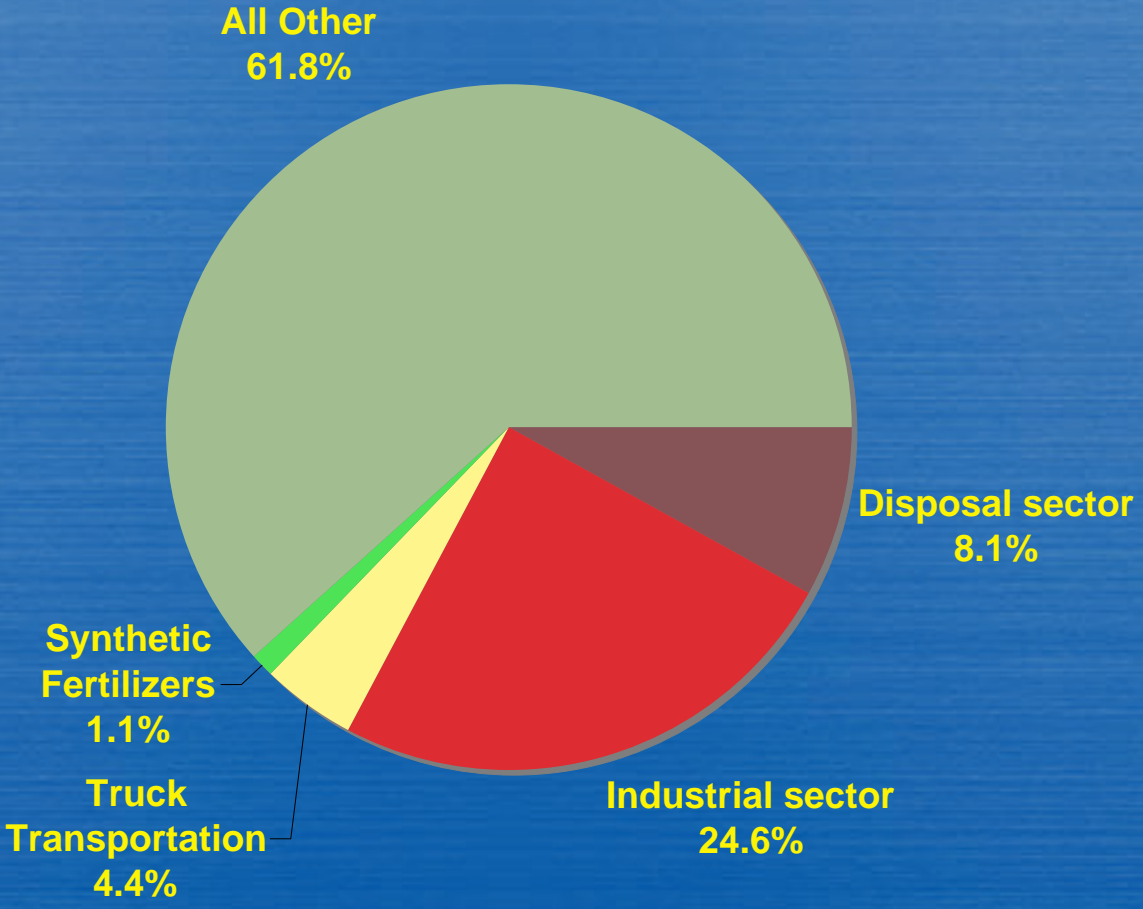


Sectors impacted by wasting, % of total, 20 yr horizon



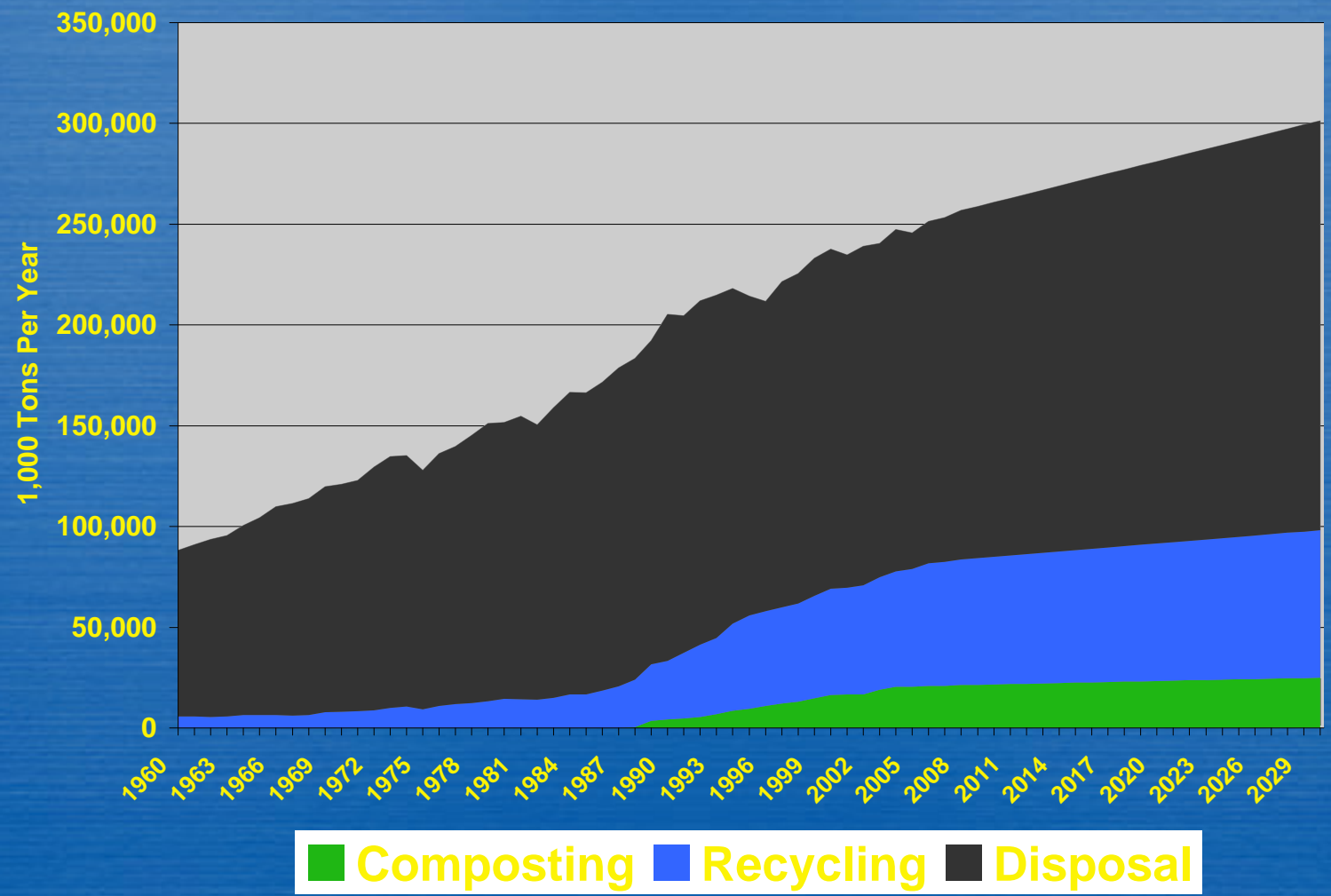


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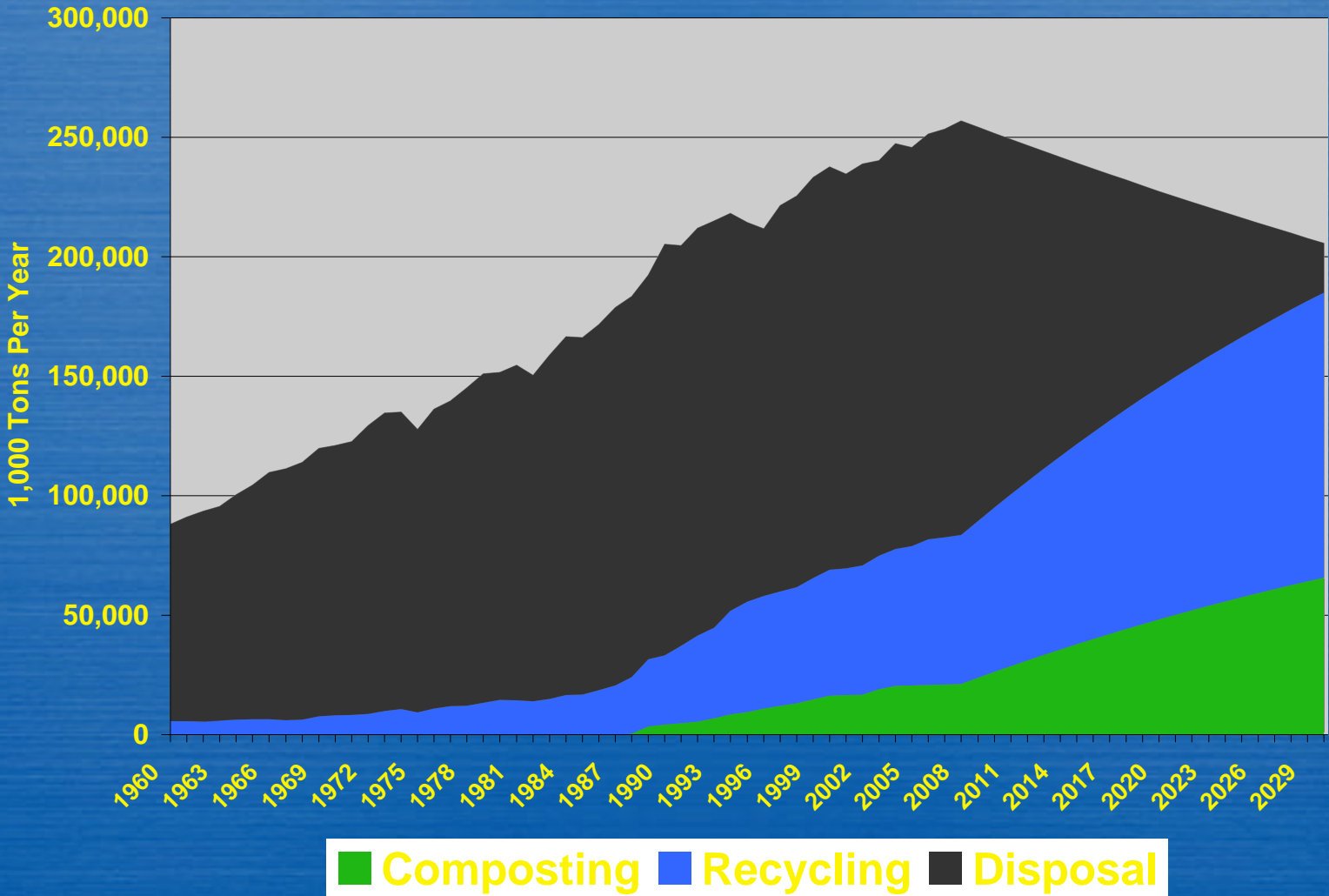


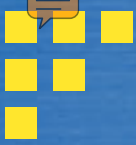
Wasting Trend in U.S.





Zero Waste Path





Aiming for zero waste is key GHG abatement strategy

Abatement Strategy	Megatons CO₂ eq.	% of Abatement Needed in 2030 to Return to 1990
Lighting	240	6.9%
Vehicle Efficiency	195	5.6%
Lower Carbon Fuels	100	2.9%
Forest Management	110	3.1%
Carbon Capture & Storage	95	2.7%
Wind	120	3.4%
Nuclear	70	2.0%
Landfill methane capture	65	1.9%
Reducing waste via prevention, reuse, recycling, composting	406	11.6%



Zero waste path: less coal plants



By dramatically reducing waste disposal, the U.S. can take the equivalent of 21% of its coal-fired power plants off the grid by 2030 -- accounting for 12% of the total reduction needed to return U.S. annual GHGs to the 1990 level.

Business-as-usual: more coal plants



“If U.S. energy infrastructure evolves in line with U.S. Department of Energy projections, by 2030 the nation would have built numerous coal-fired power plants (without carbon capture technology) and with lives up to 75 years.”

McKinsey Report, *Reducing U.S. Greenhouse Gas Emissions: How Much and at What Cost?*

Siting, approval & permitting



Nuclear: “severe bottlenecks in permitting” “further delay caused by some investors waiting for demonstration...that expanded nuclear power is profitable”

Carbon capture & storage: “difficult permitting & liability issues” “yet to be proven on commercial scale” “not expected to be available until after 2020”

McKinsey report recommendation: “Streamline approval & permitting procedures”



Priority Policies

1. Levy a surcharge on disposed materials.
2. Retire existing incinerators and halt construction of new incinerators or landfills.
3. End “renewable energy” subsidies to disposal.
4. Stop disposing organic materials.
5. Provide incentives to create jobs.
6. Regulate single-use plastics.
7. Regulate paper.
8. Adopt pay-as-you-throw fees.
9. Make manufacturers responsible for their products.
10. Continue improving WARM.



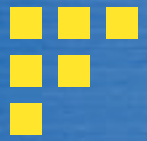
The Tipping Point

- Innovators, the adventurous ones
- Early adopters, infected by innovators
- Early Majority
- Late Majority
- Laggards



COOL2012 Connections

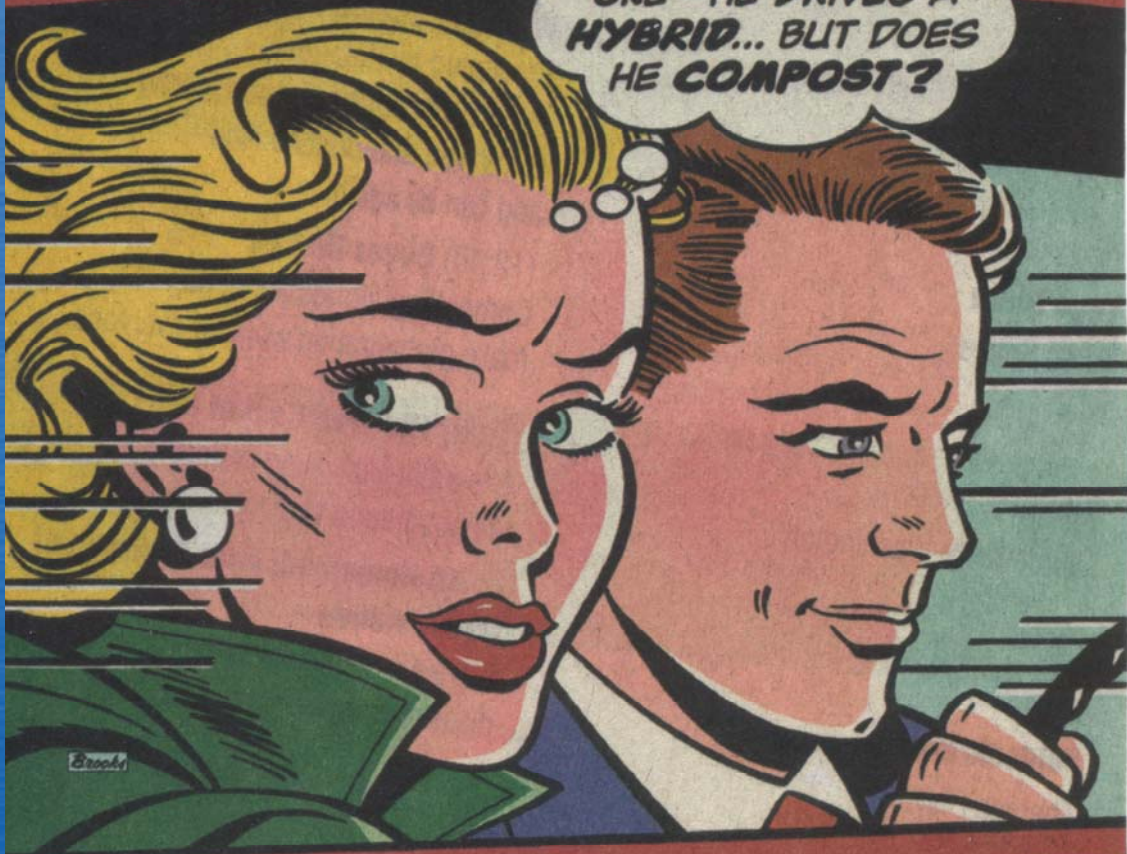
- Climate protection
- Soil protection and revitalization
- Sustainable agriculture
- Forest preservation
- Anti-nuclear power
- Green jobs and pro-worker
- Zero waste
- Environmental health (anti-PVC)
- Anti-junk mail
- Anti-waste incineration



PLENTY

IT'S EASY BEING GREEN

HE COULD BE THE ONE - HE DRIVES A HYBRID... BUT DOES HE COMPOST?



THE UNLIKELY ENVIRONMENTALISTS