Organics and Climate Change

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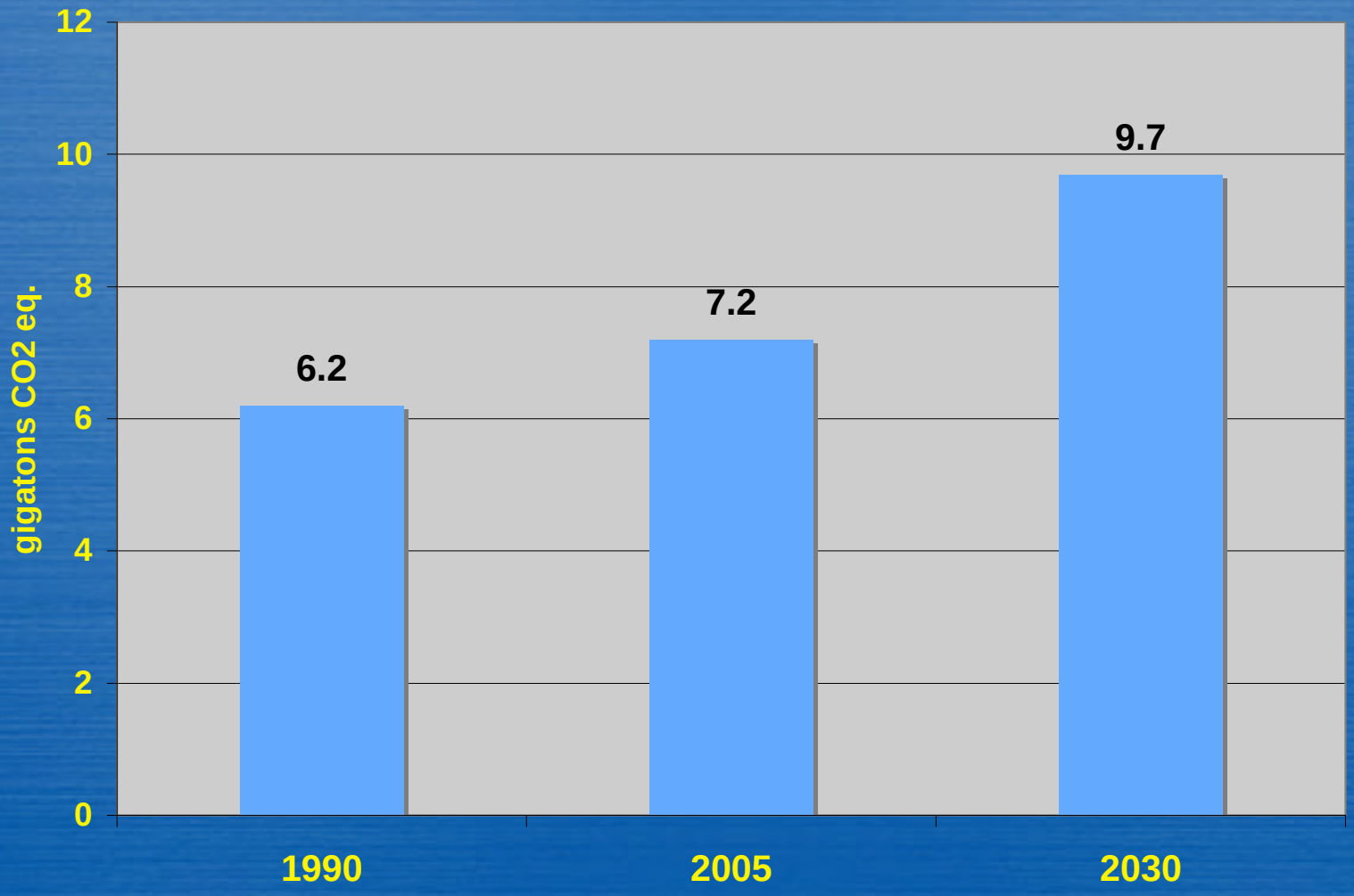
From the Table to the Farm: Options for Diverting Food from Landfills, Atlanta, May 6th, 2008

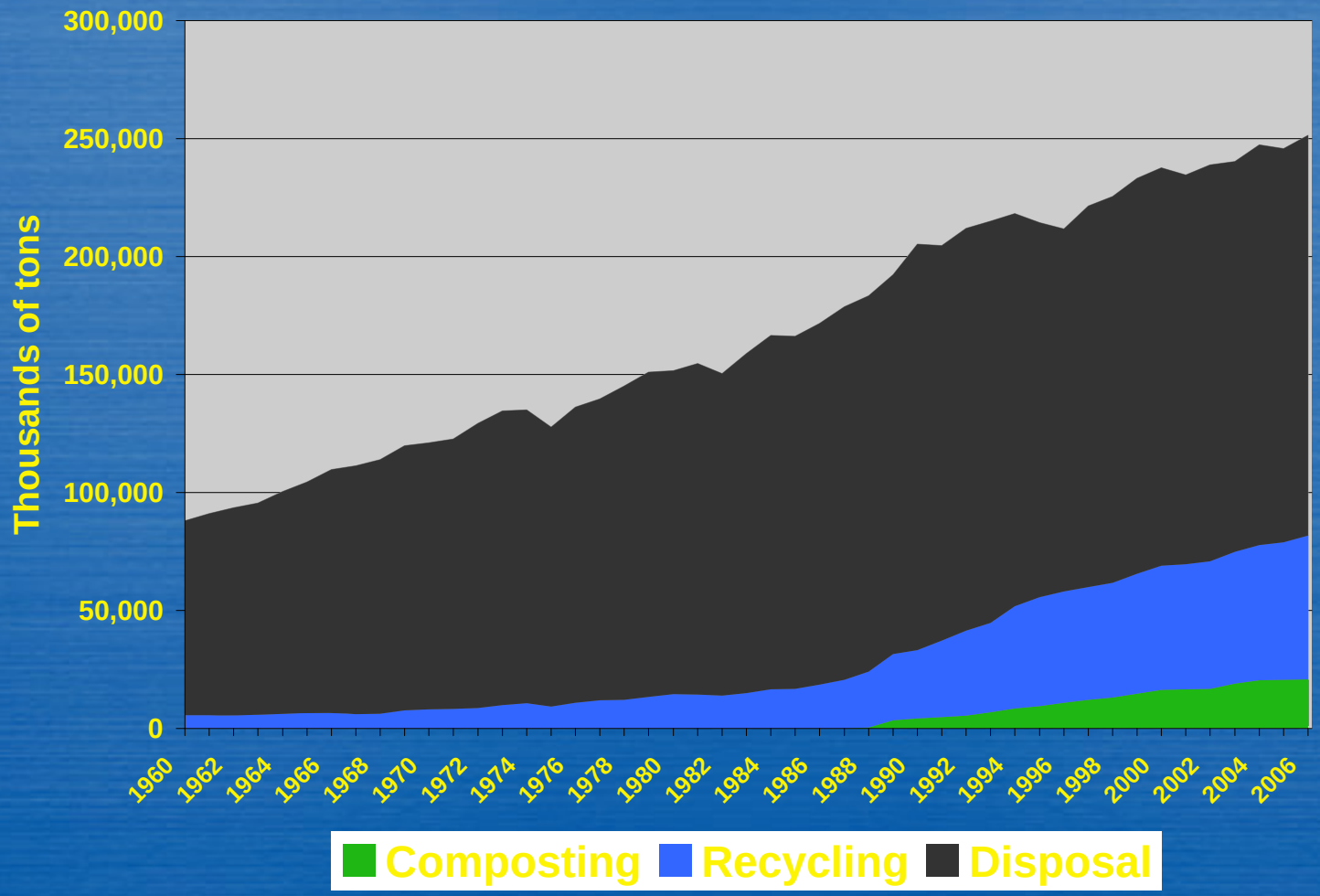
U.S. huge contributor

- 4.6% of global population
- Consume one-third of Earth's timber and paper
- Generate 22% of global CO_2 emissions

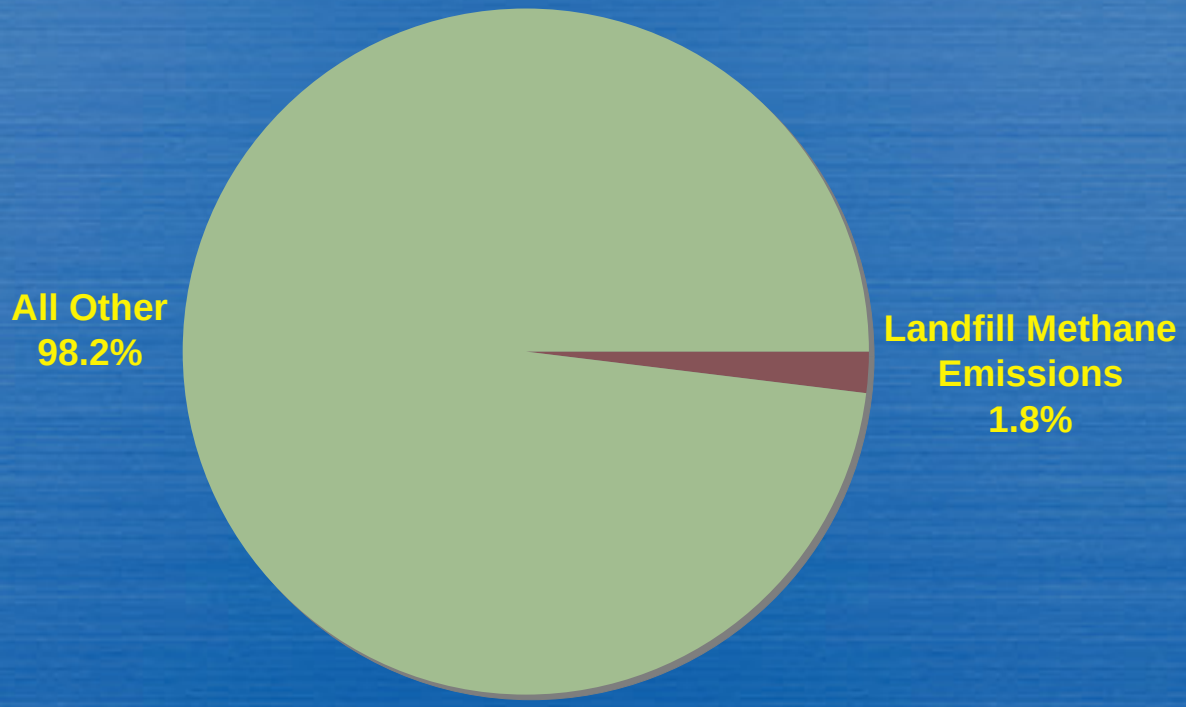
U.S. GHG Emissions



Wasting Trend in U.S.



Landfill greenhouse gas emissions, % of total



Total 2005 = 7,260 megatons CO_2 equiv.

The global warming potential concept

CO_2

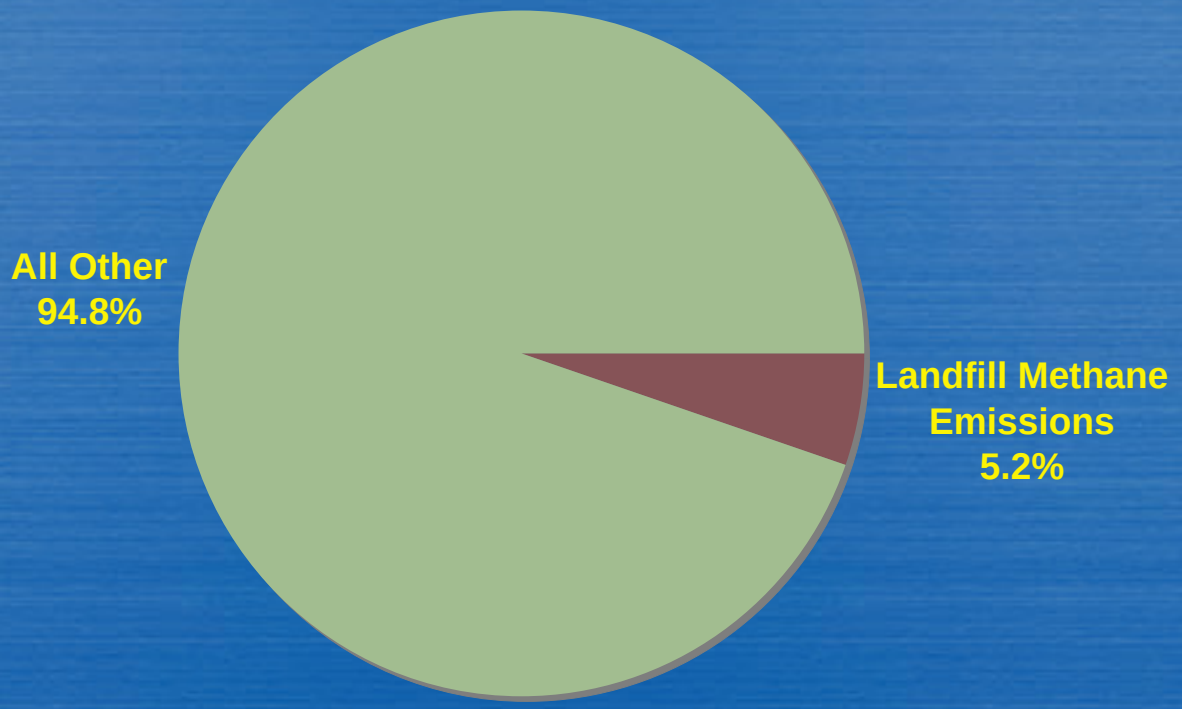
Methane - 100 year time horizon, 21 times more potent than CO_2

Methane - 20 yrs, 72 times more potent

Climate Change Tipping Point

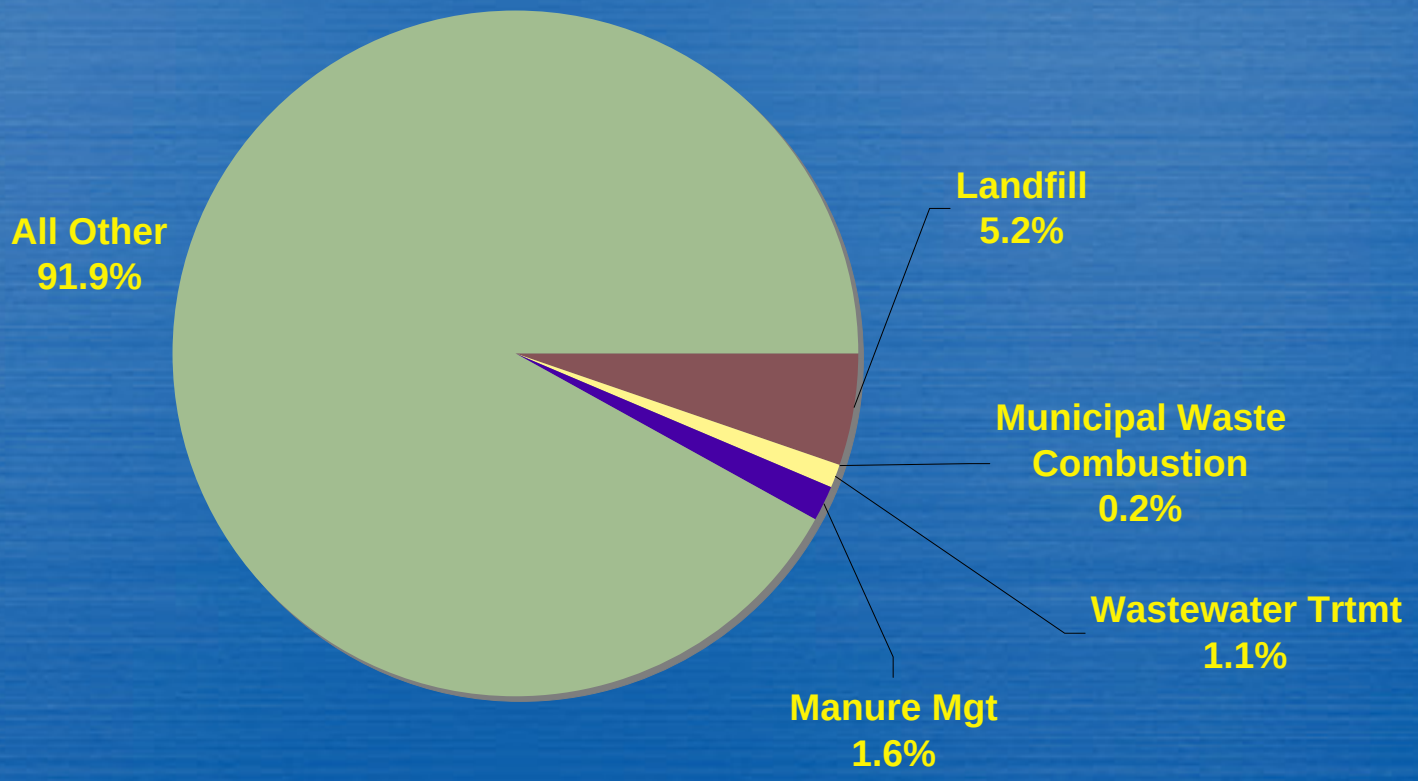
- Global emissions must peak and decline over the next 10 to 15 years in order to limit global warming to 2^{o}C above pre-industrial limits.
- Uncontrolled climate change will lead to widespread devastation, economically and environmentally.
- A short window of opportunity exists to radically reduce GHGs and stabilize atmospheric CO_2 concentrations before our climate reaches a “tipping point.”

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



Total 2005 = 8,754 megatons CO_2 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.

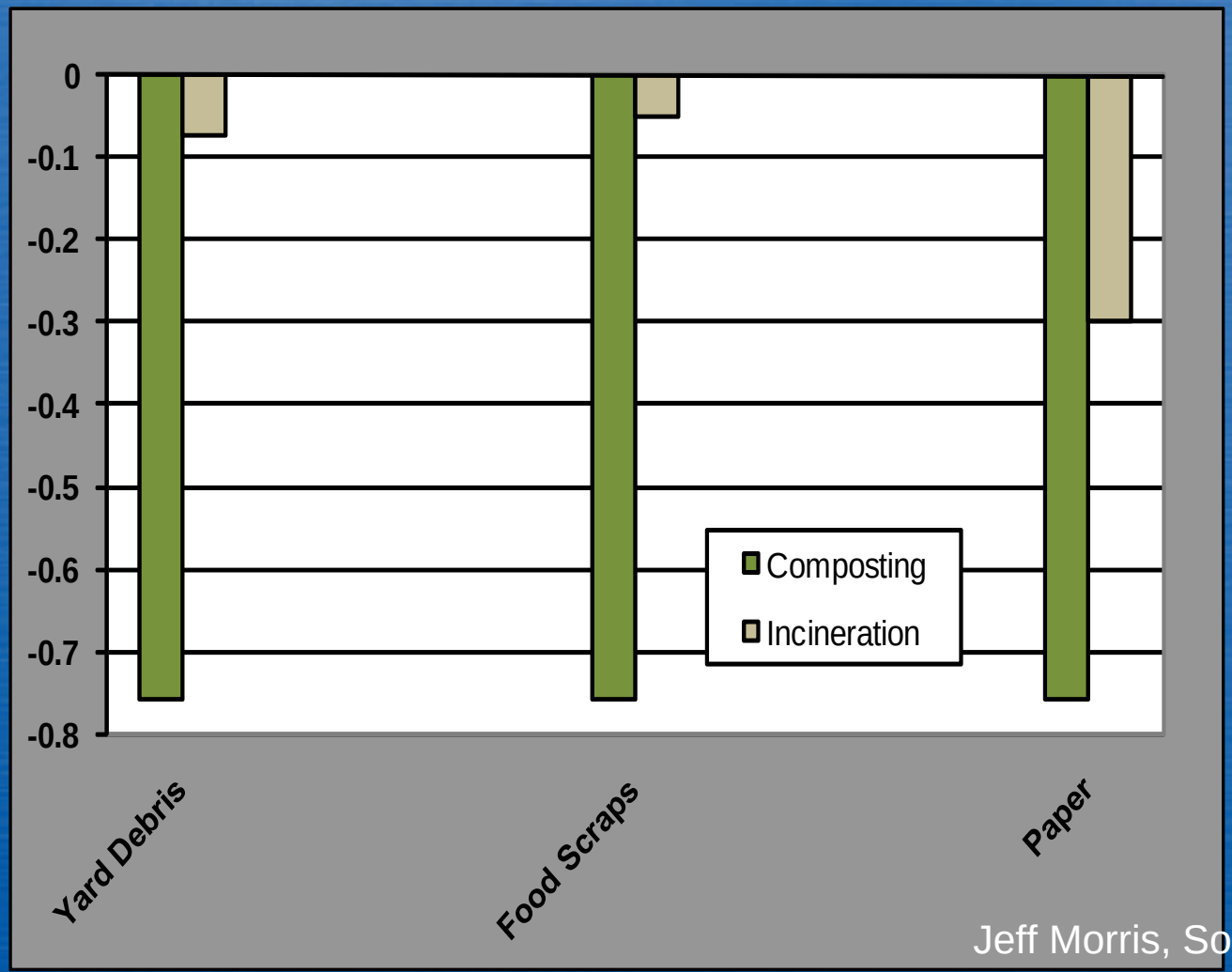
Myths

- 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

CO_2 Emissions: Composting Vs Incineration (kg eCO_2/kg)



Jeff Morris, Sound Resource Management

Composting, lots of models

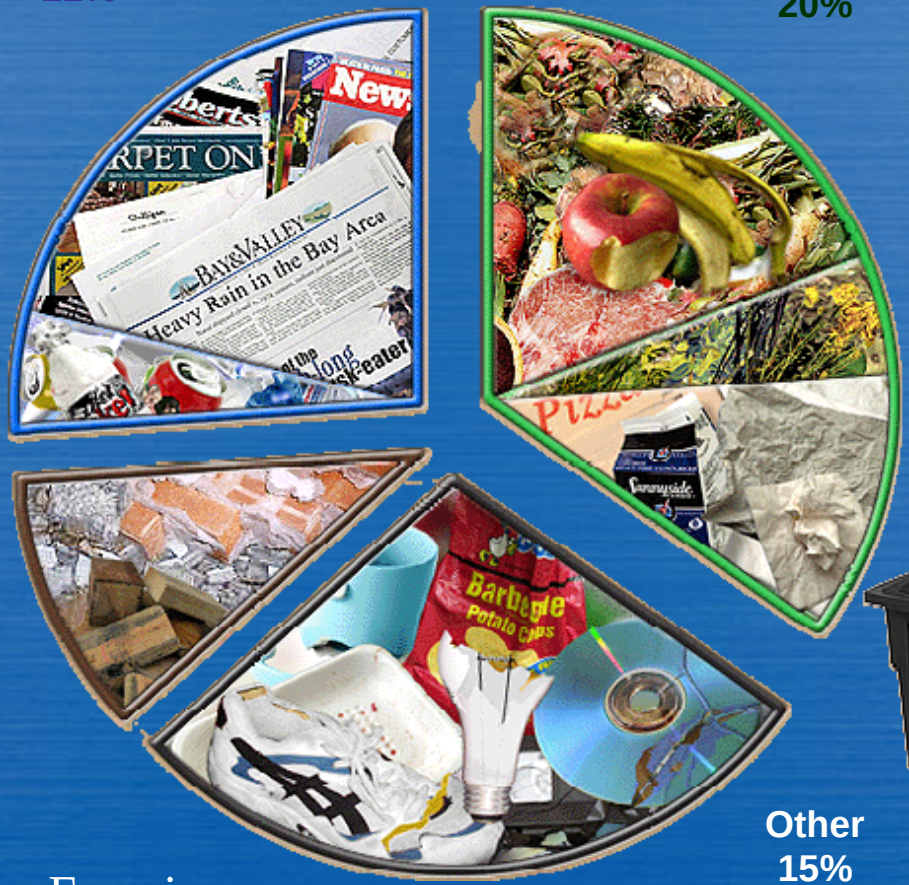
Composting & Recycling Collection System Designed For High Diversion

Recycled Paper
21%

Food Scraps
20%

Yard Trimmings
5%

Glass and Plastic Bottles
Aluminum and Steel Cans
5%



Compostable Paper
10%

Construction and
Demolition Waste
25%

Other
15%

Courtesy of City of San Francisco

Easy to Understand Program

Courtesy of City of San Francisco

Designed for Easy Participation

Kitchen Pail

Labeled Lids

Wheeled Cart

Courtesy of City of San Francisco

Stores Sell Compostable Kitchen Pail Bags

Courtesy of City of San Francisco


COMPOST:
LETTUCE DO MORE
FOR THE ENVIRONMENT


COMPOSTING:
A BERRY GOOD IDEA!
SUNSET SCAVENGER 330-1300

Jepson Prairie compost site

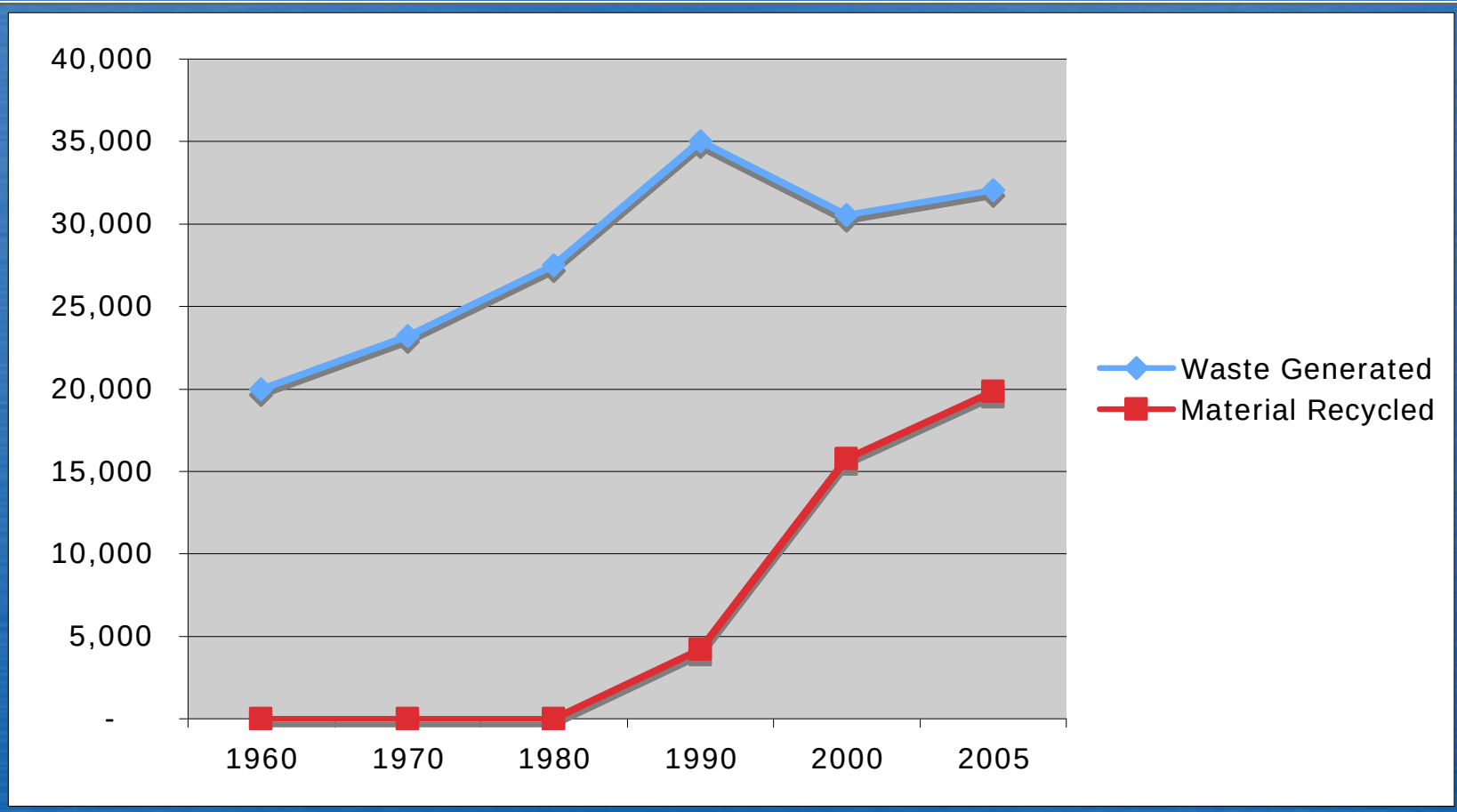
Benefits of Composting

- 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

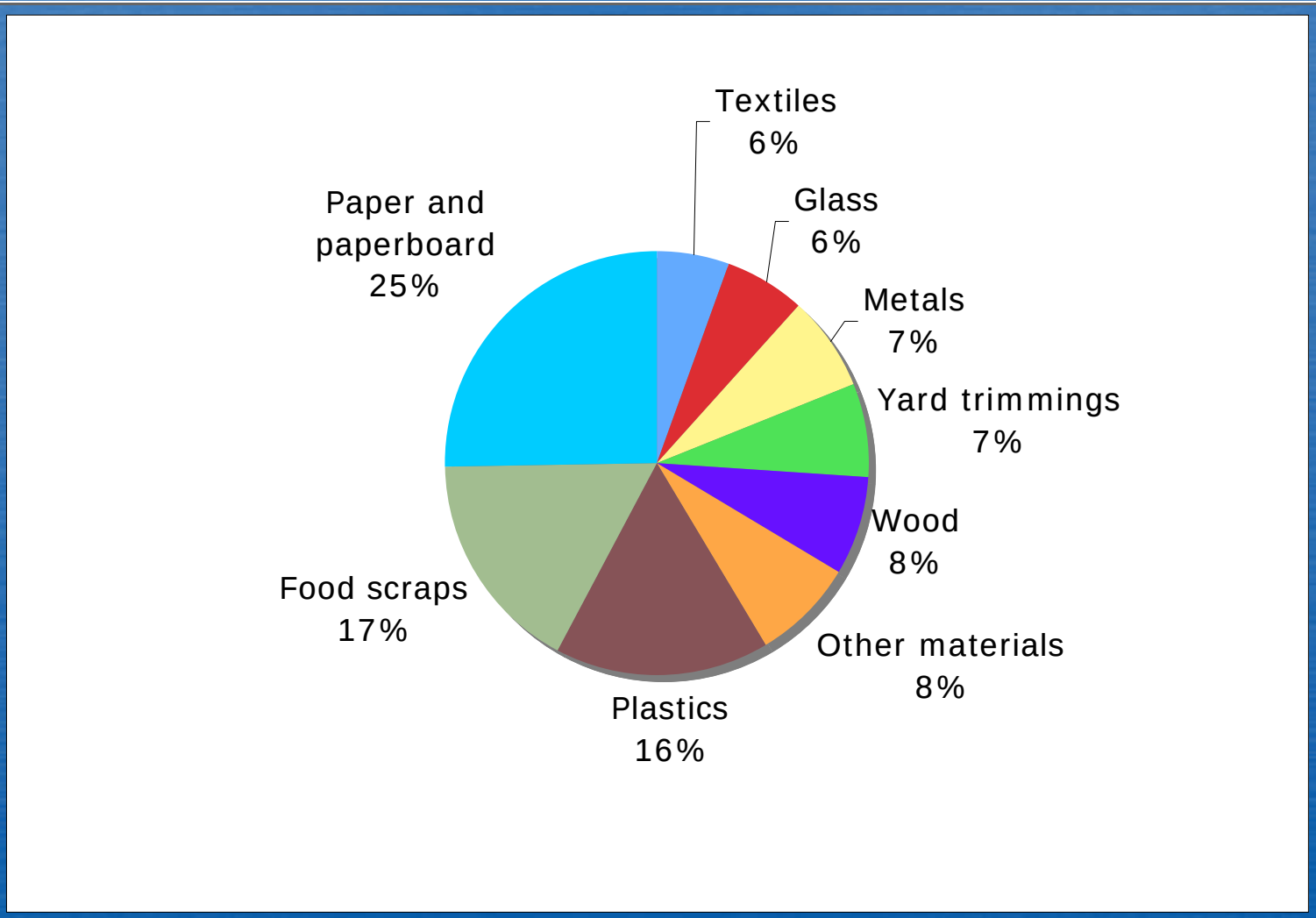
Yard Trimmings Generated and Recovered in the US, 2005



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

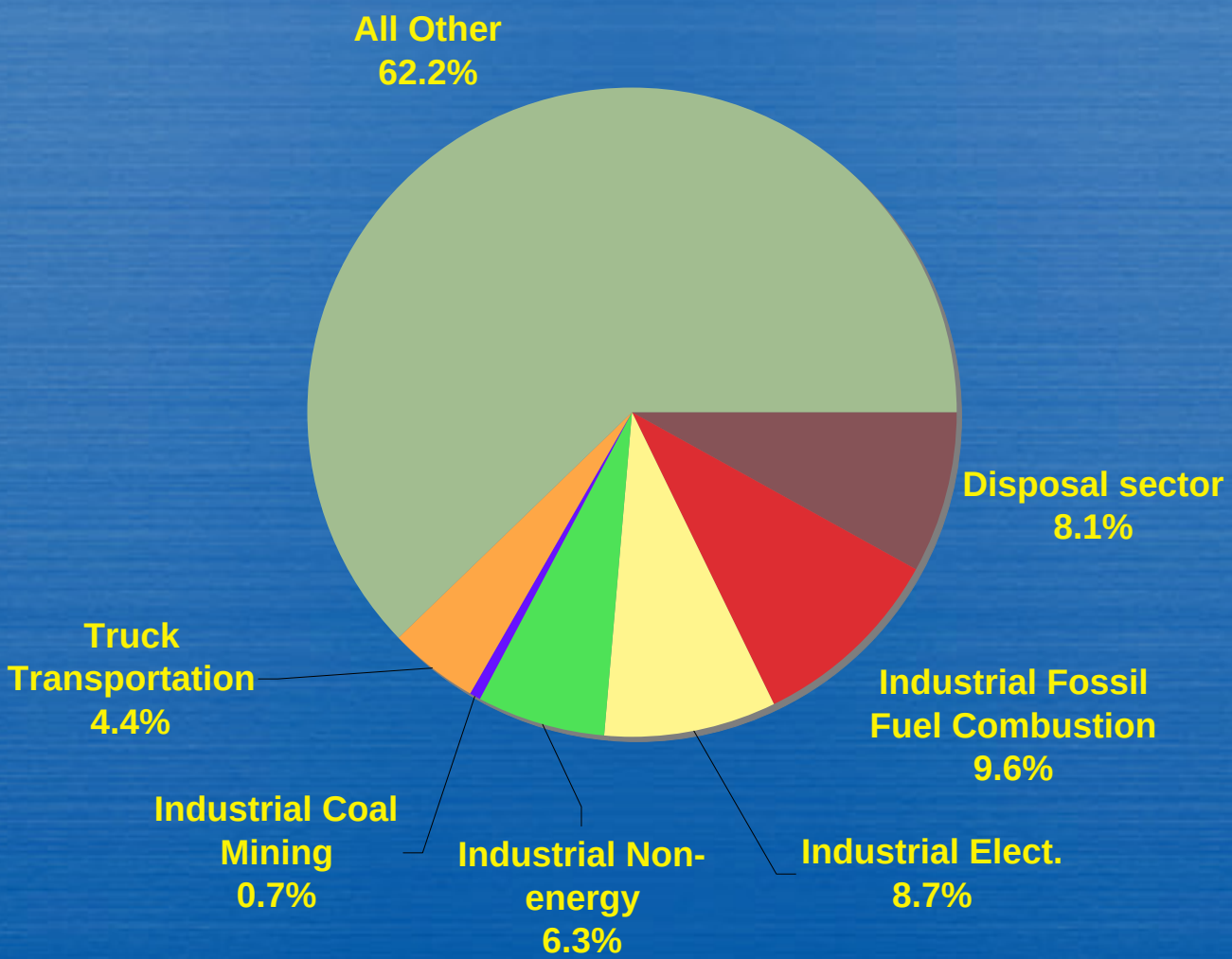
167 million tons per year in 2005

Municipal waste disposed



Upstream impacts are huge

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



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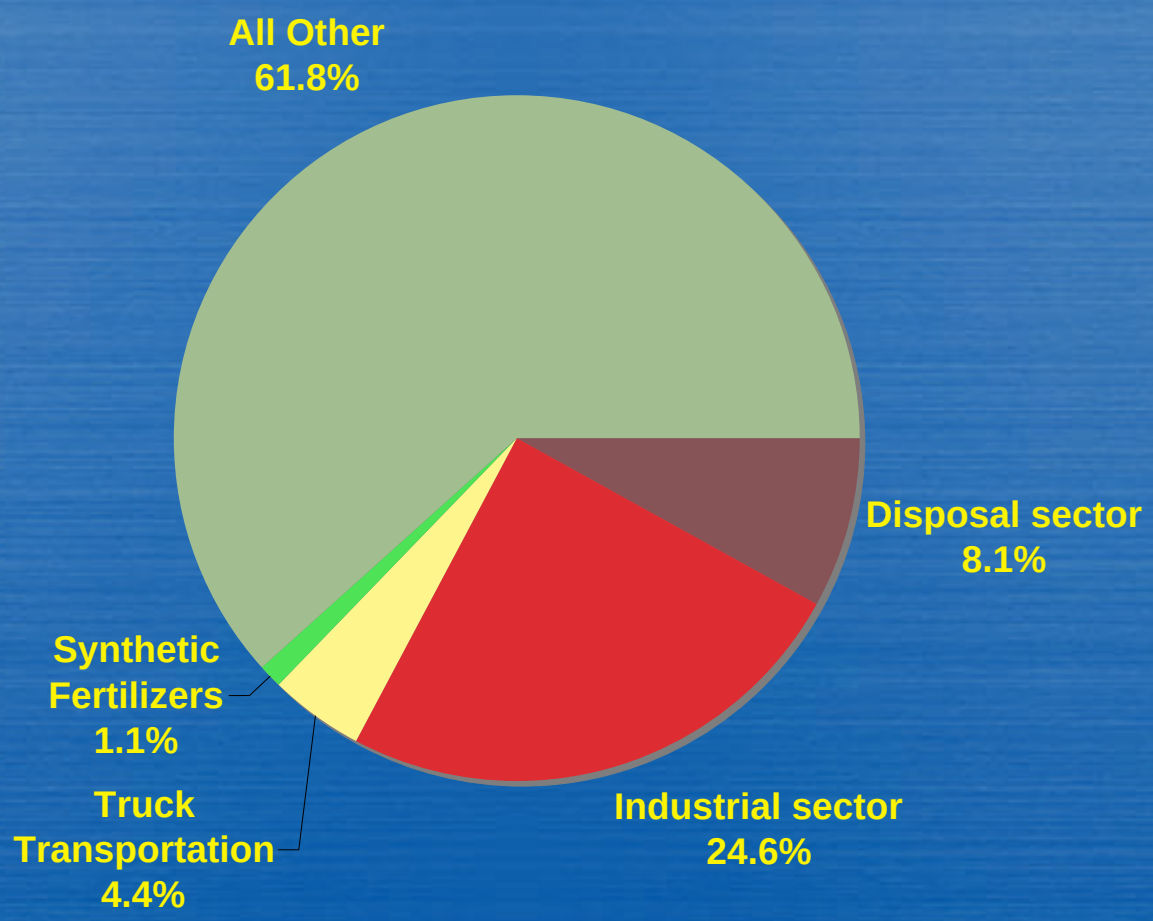

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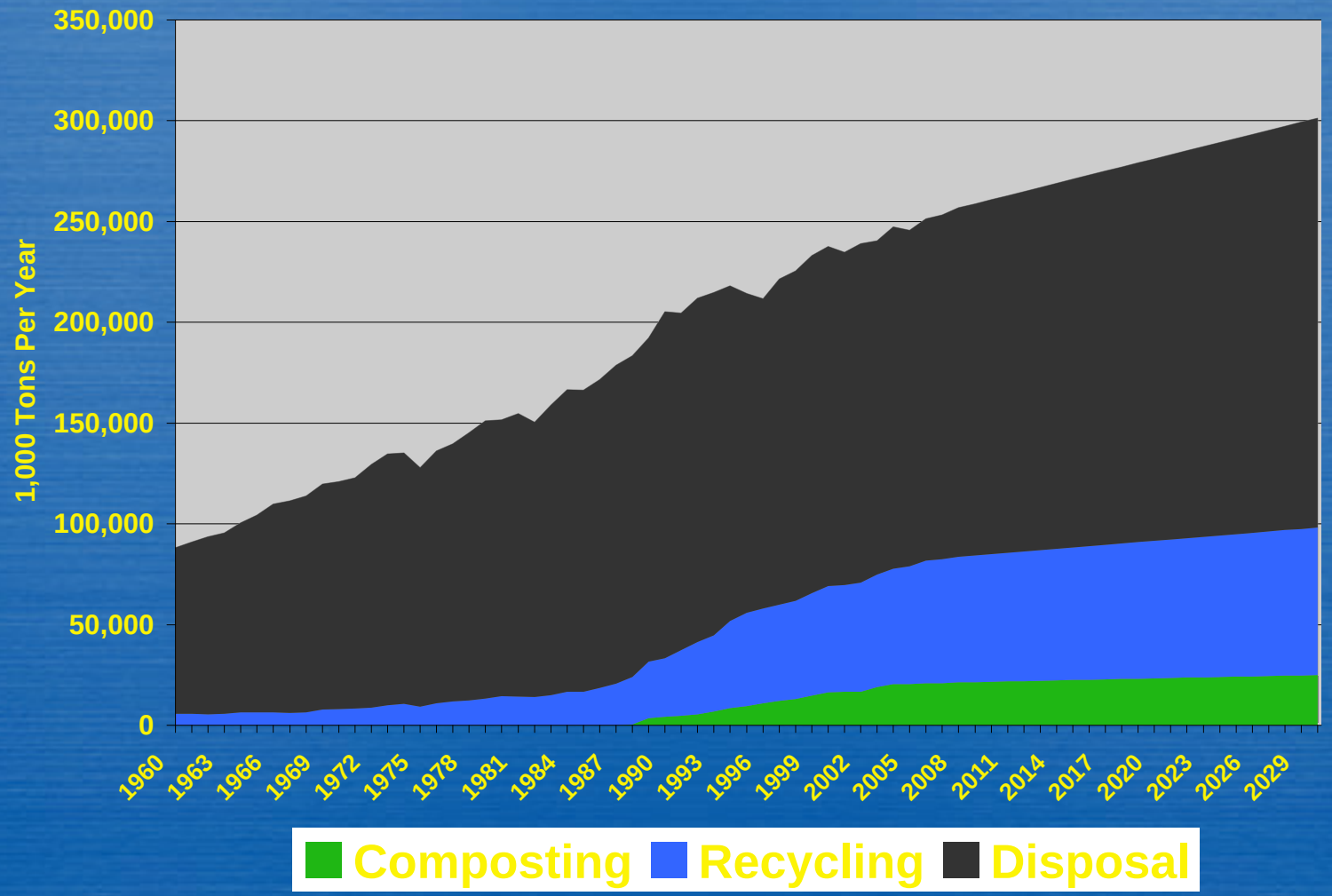
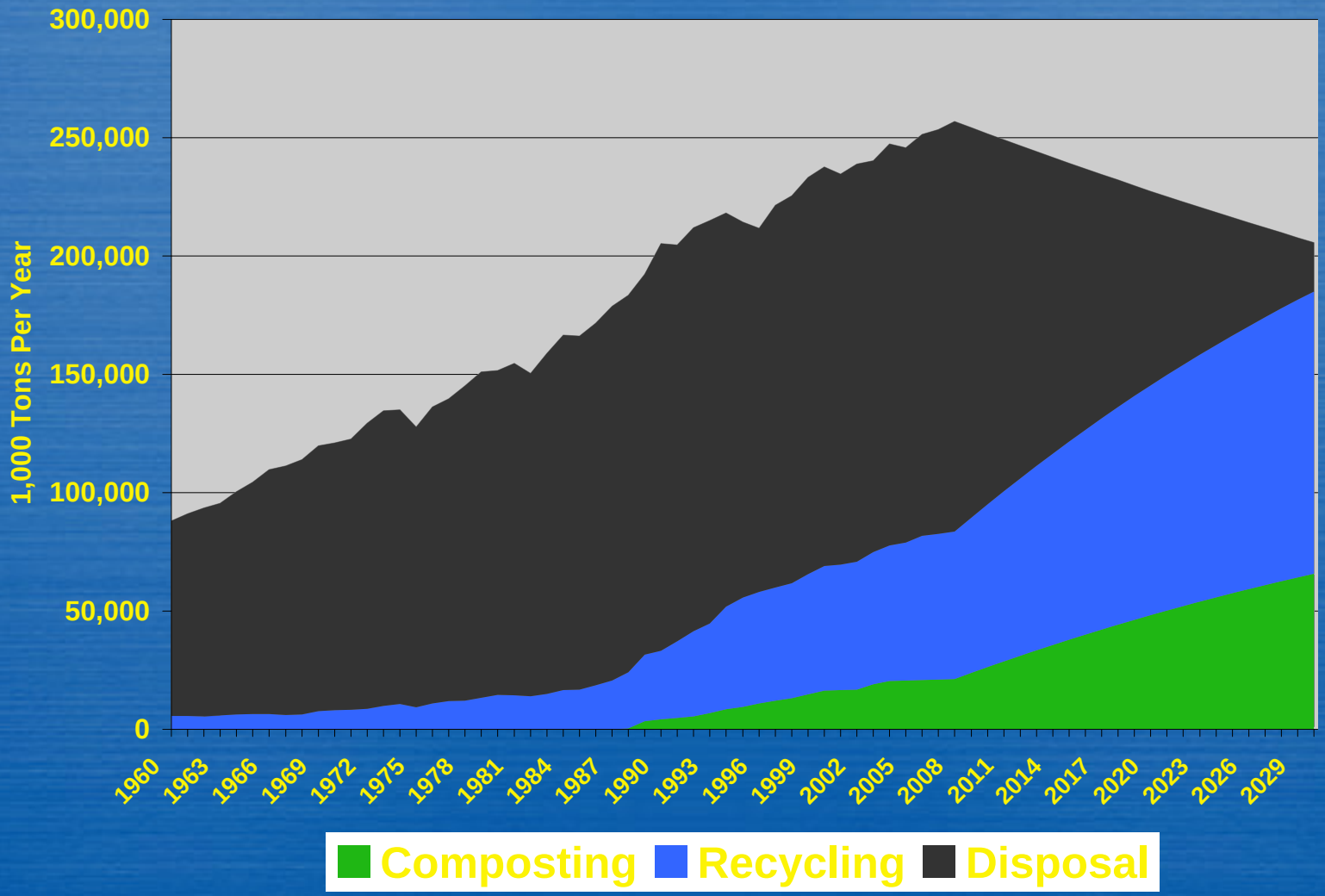


Zero Waste Path



Aiming for zero waste is key GHG abatement strategy

Abatement Strategy	Megatons CO_2 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.

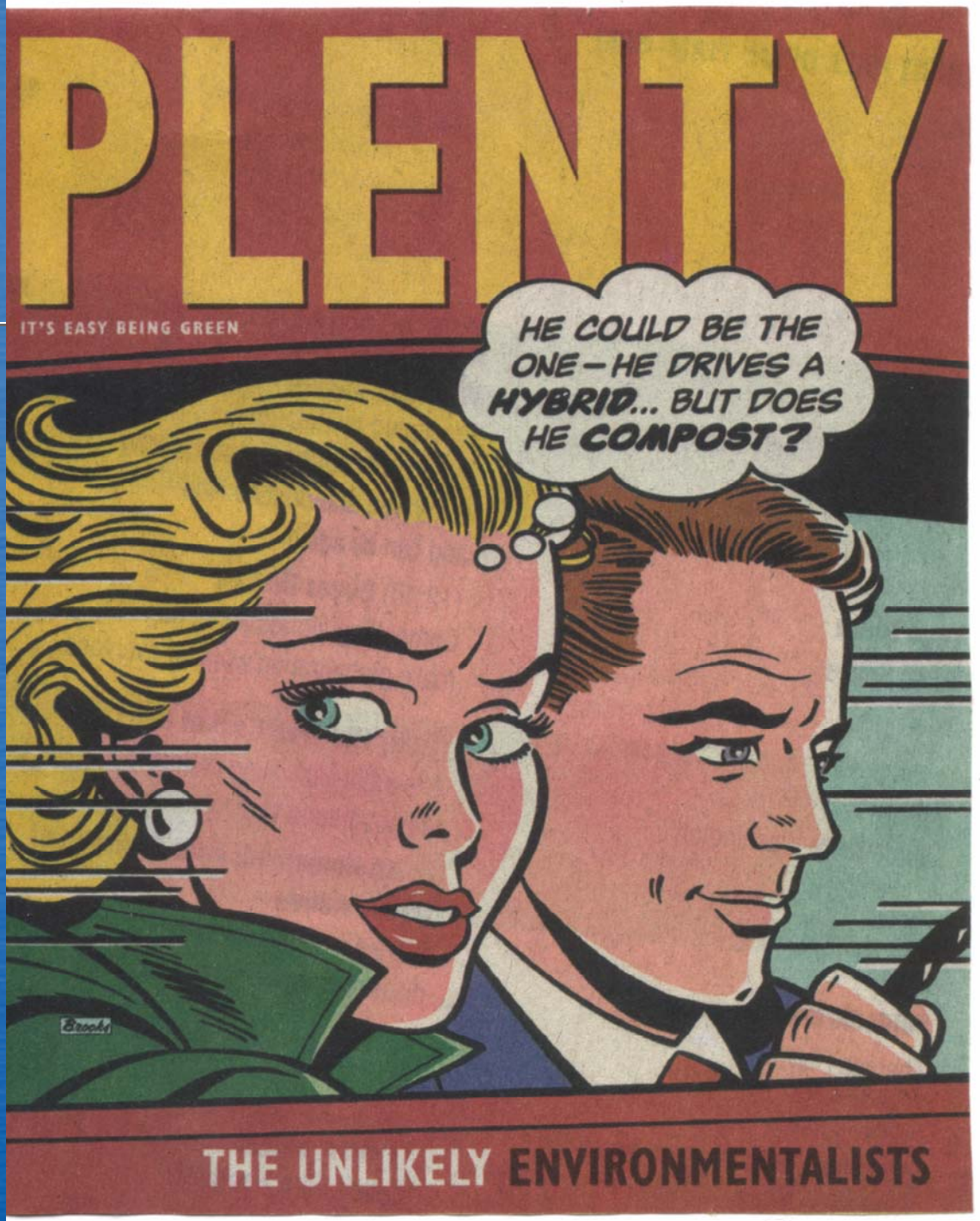
The Tipping Point

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

Source: Malcolm Gladwell, *The Tipping Point* (2002)

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?
Brooks
THE UNLIKELY ENVIRONMENTALISTS