Northeast Forum on Climate-Waste Connections

What is the Climate-Waste Prevention Connection?

June 4, 2009

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Greenhouse Gas Emissions and Materials and Land Management

Northeast Forum on Climate and Waste Connections
June 4th, 2009

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Introduction

There is broad, global agreement that the climate is changing and greenhouse gas (GHG) emissions must be reduced.

Domestic action:

- President Obama's budget calls for reductions of 14% below 2005 levels by 2020 and 83% below 2005 levels by 2050.
- EPA recently proposed to regulate GHG's under the Clean Air Act (the "Endangerment Finding").
- EPA/DOT notice to establish Vehicle GHG Emissions and CAFE Standards
- Numerous bills in Congress to reduce emissions. E.g. Waxman-Markey sets 83% cut by 2050.
- 33 states have Climate Action Plans to reduce emissions

cap and trade

appliance energy
efficiency standards

corporate average fuel
economy (CAFE) standards

emissions control
technology mandates

How will the cuts be achieved?

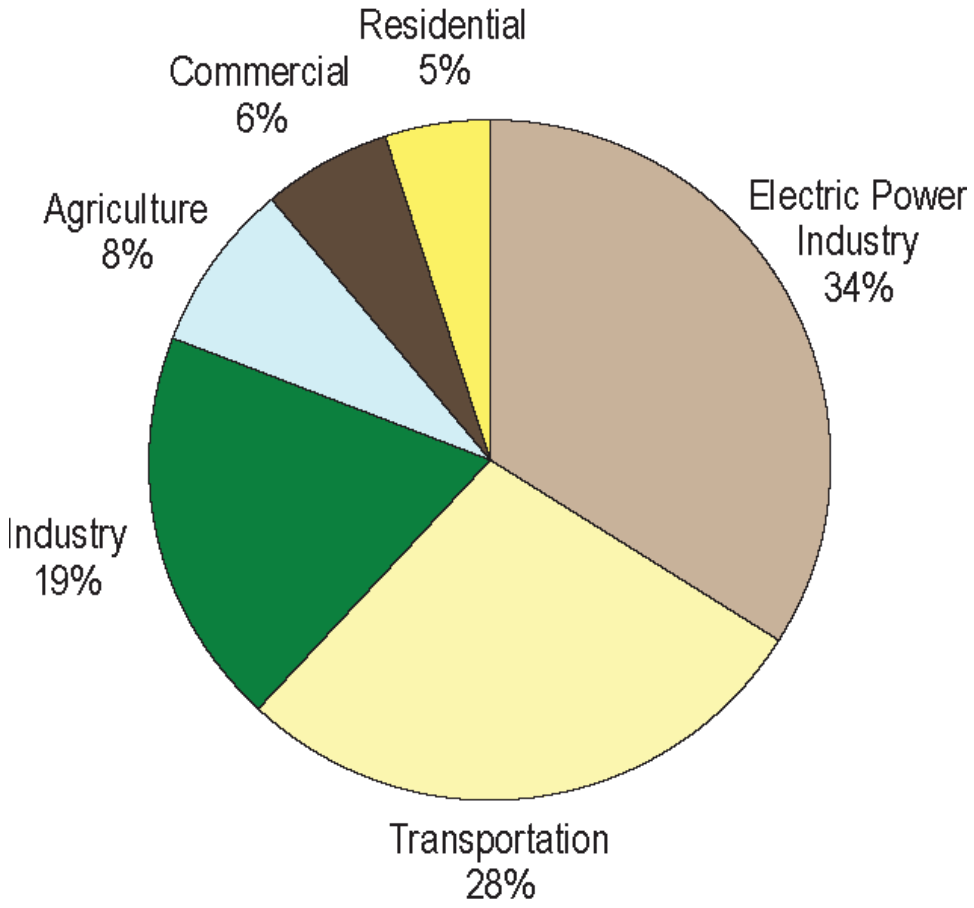
renewable electricity mandates

building energy
use codes

carbon capture and
storage (CCS) incentives

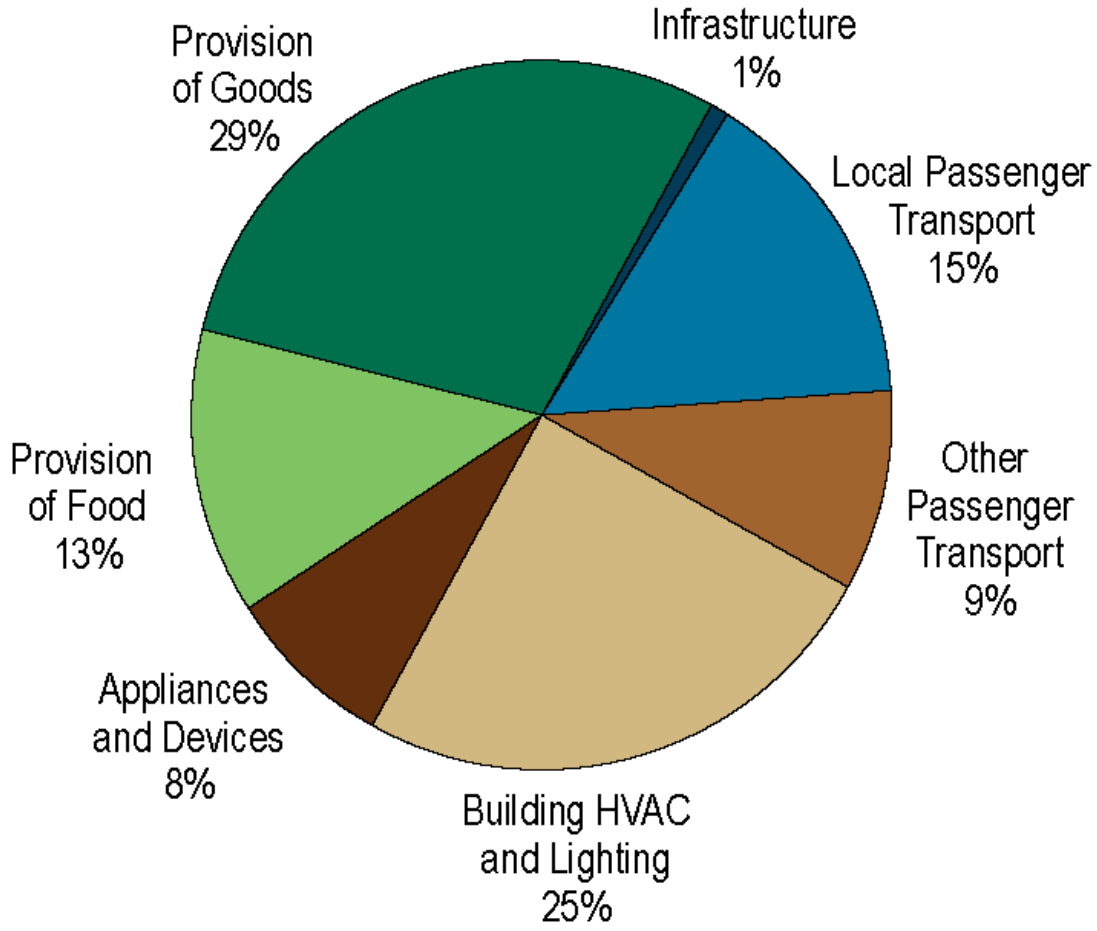
materials management?

U.S. GHG Emissions (2006): Economic Sectors View



Source: *U.S. Inventory of GHG Emissions and Sinks: 1990-2006.* U.S. EPA, 2008. Excludes U.S. territories.

U.S. GHG Emissions (2006): Systems View



Source: Draft values from *Opportunities to Reduce Greenhouse Gas Emissions through Materials and Land Management Practices*. U.S. EPA. (forthcoming).

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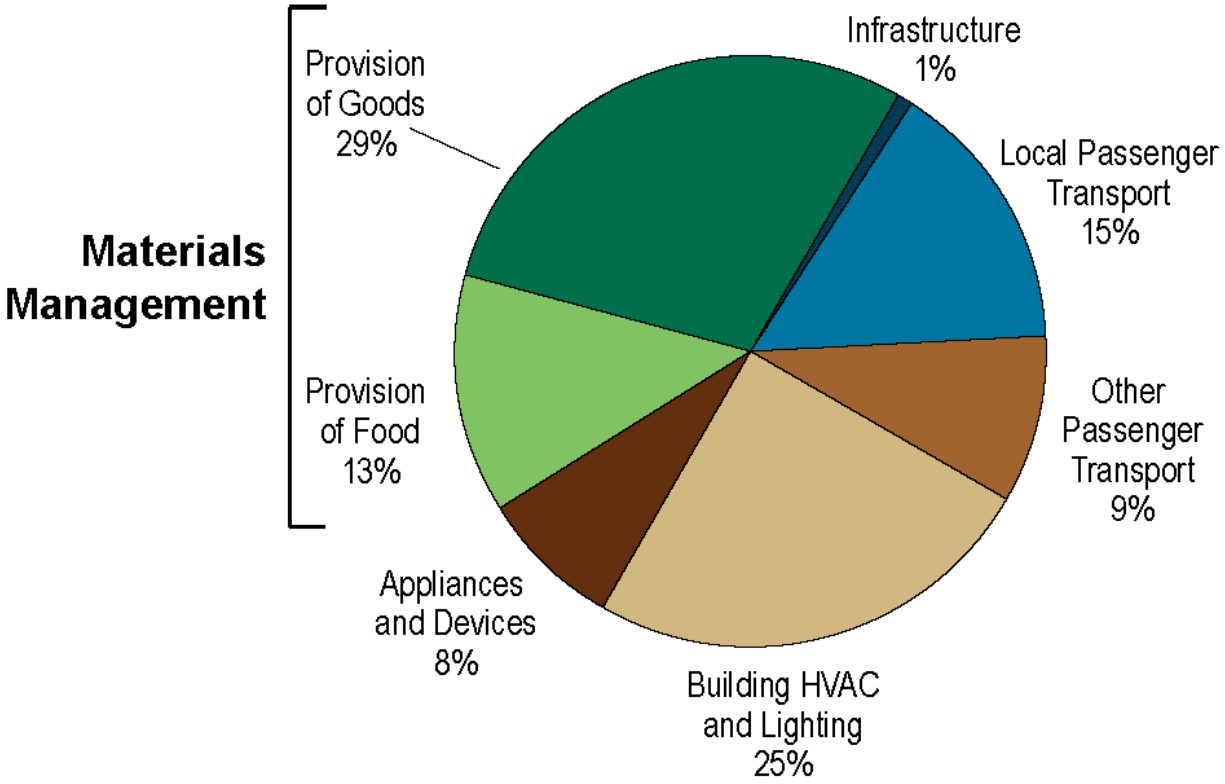

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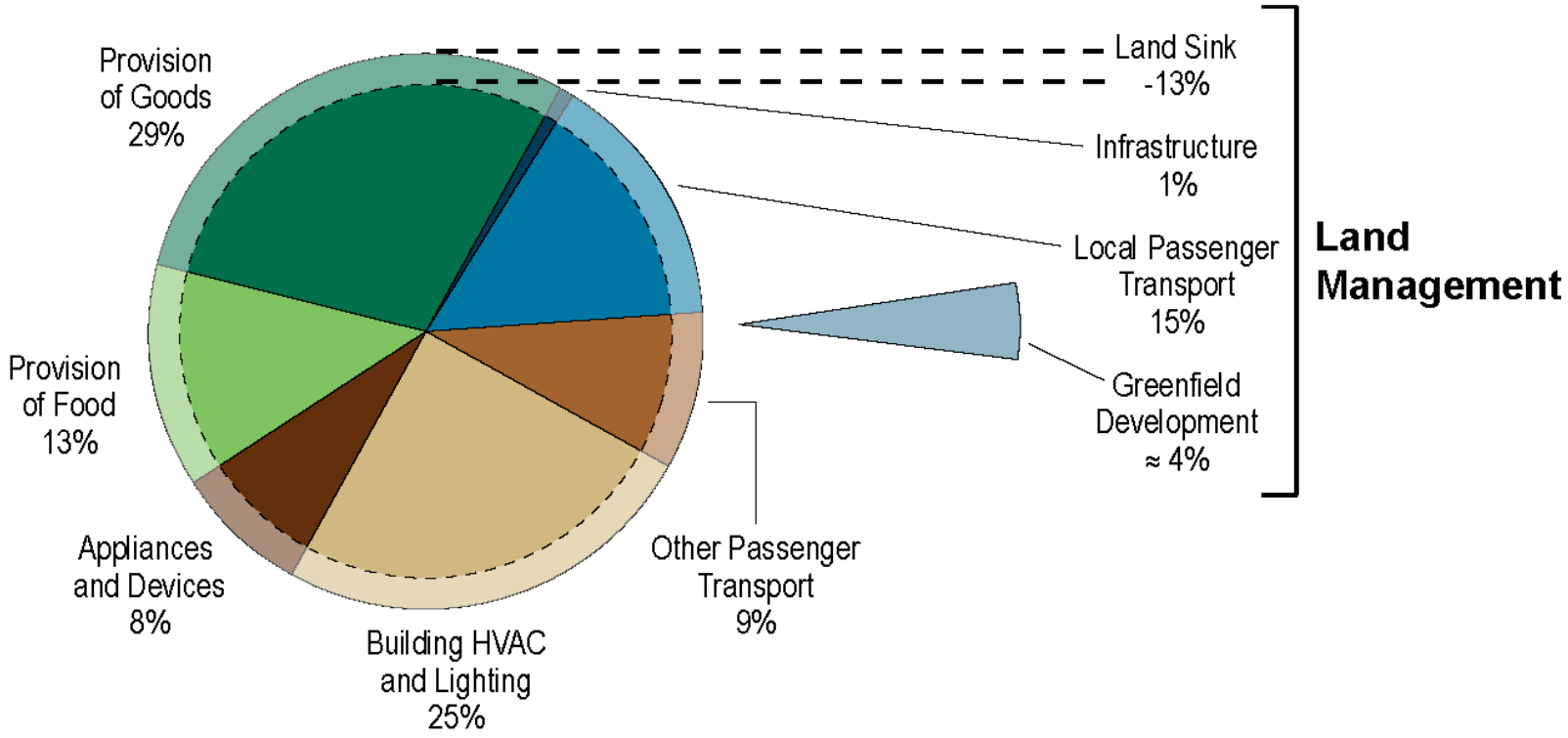


Source: Draft values from *Opportunities to Reduce Greenhouse Gas Emissions through Materials and Land Management Practices*. U.S. EPA. (forthcoming).

* The land-based carbon sink, represented by the outer ring, offset the equivalent of 13% of total U.S. anthropogenic emissions in 2006 and is graphically represented here as a semi-transparent ring that erases emissions from all other slices The entire pie chart represents total U.S. emissions in 2006; once the offset provided by the land-based carbon sink is applied, the inner portion of the pie chart represents net U.S. emissions in 2006.

** Greenfield development represents emissions from land clearing (equivalent to roughly 4% of U.S. emissions in 2006), which are not currently included in the *U.S. Inventory of GHG Emissions and Sinks*.

Technical Potential Reductions from Materials Management

Source reduction	
Reduce packaging use by 50%	40-105 MMTCO2e/yr
Reduce use of non-packaging paper products by 50%	20–70 MMTCO2e/yr
Extend the life of personal computers by 50%	25 MMTCO2e/yr
Reuse/Recycling	
Recycle all construction materials	150 MMTCO2e/yr
Increase national MSW recycling and composting rate from 32.5% to 100%	300 MMTCO2e/yr
Compost all food scraps	20 MMTCO2e/yr
Energy Recovery/Disposal	
Combust for electricity generation all currently landfilled MSW	70-120 MMTCO2e/yr
Combust MSW remaining with 50% recycling rate	66-113 MMTCO2e/yr
Capture for electricity generation all landfill methane	150 MMTCO2e/yr

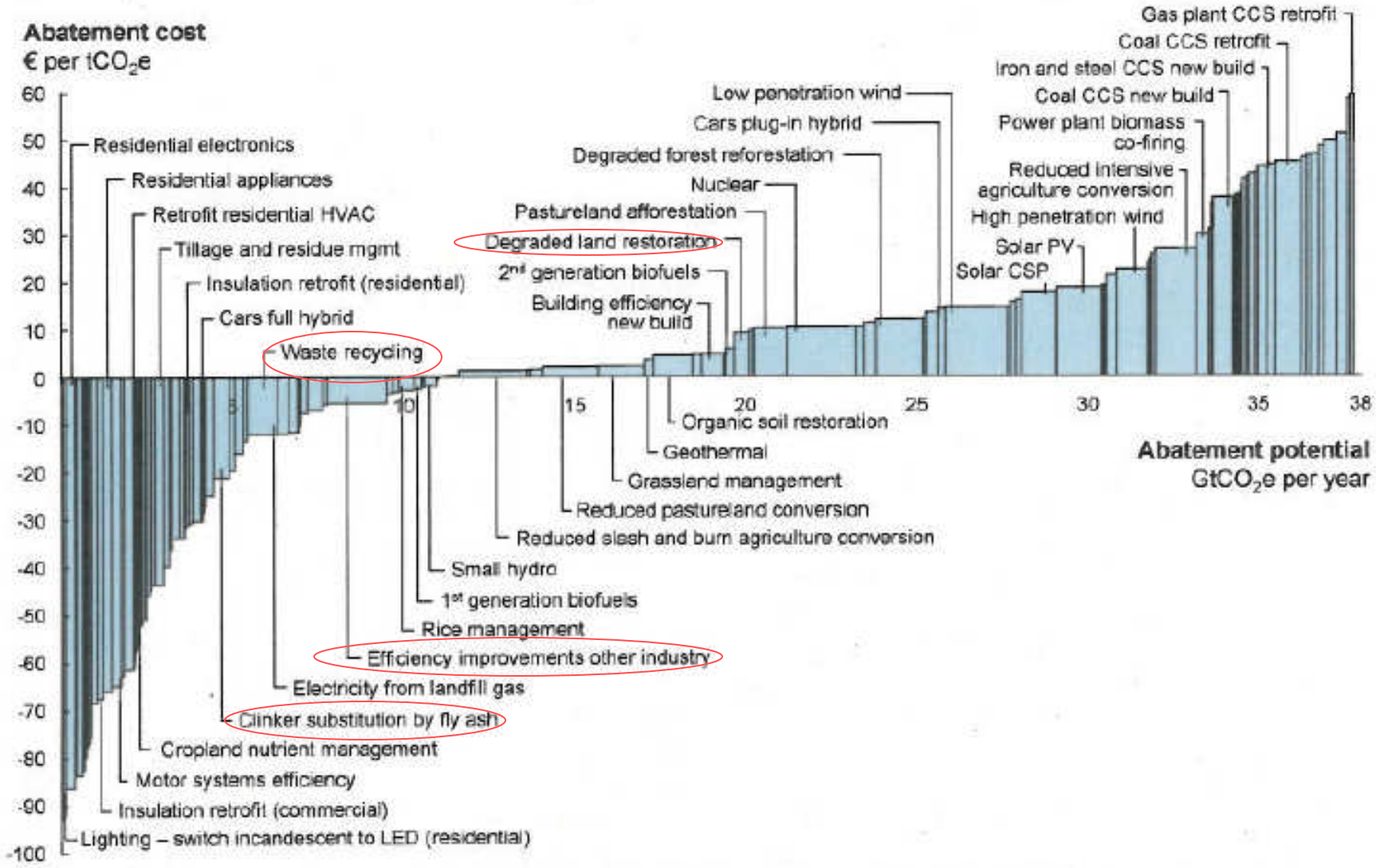
Note: Total U.S. 2006 Emissions = 7054 MMTCO2e

Source: Draft values from *Opportunities to Reduce Greenhouse Gas Emissions through Materials and Land Management Practices*. U.S. EPA. (forthcoming).

Pathway to Low Carbon Economy – McKinsey January 2009

Exhibit 1

Global GHG abatement cost curve beyond business-as-usual – 2030



Note: The curve presents an estimate of the maximum potential of all technical GHG abatement measures below €60 per tCO_2e if each lever was pursued aggressively. It is not a forecast of what role different abatement measures and technologies will play.

Source: Global GHG Abatement Cost Curve v2.0

Outstanding Questions

- What is the cost of mitigation for materials management opportunities?
- Which policy levers can be used?

Climate/materials on the state level

- 33 states have completed climate action plans
- Out of those, 31 include materials management activities as part of the plan.
- Typical activities include:
  - Recycling initiatives (25 states)
  - Waste to energy systems (18 states)
  - Production/purchase of locally grown produce (13 states)

Climate/materials on the state level

- Funding for materials management available now through The American Recovery and Reinvestment Act of 2009
  - $3.2 Billion for Energy Efficiency and Conservation Block Grants specifically allows for:
    - Material Conservation Programs including source reduction, recycling, and recycled content procurement programs that lead to increases in energy efficiency.
    - Reduction and Capture of Methane and Greenhouse Gases generated by landfills or similar waste-related sources.

Conclusions

Systems and life cycle accounting show the potential of materials management to reduce GHG emissions.

Materials and land management opportunities should be included in the response to climate change.

Economic analysis, policy options, and action plans are needed.

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Connecticut Climate Change

Integrating Climate Change and Waste Management Programs

June 4, 2009

Lynn Stoddard, CT DEP

Connecticut Climate Change

Presentation Outline

1. CT initiatives to integrate climate change and waste programs
   - CT Climate Change Action Plan
   - CT Solid Waste Management Plan
   - CT Disaster Debris Management Plan
   - Other CT efforts
2. Regional initiatives to integrate climate and waste
   - NEWMOA Climate-Waste Action Plan
3. Resources and additional info

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2005
CT Climate Change
Action Plan

Connecticut Climate Change

Foundation for CT climate change action

- 2001: Signing of New England Governors/Eastern Canadian Premiers Climate Change Action Plan, includes regional greenhouse gas (GHG) reduction targets, goals
- 2002: Creation of Governor's Steering Committee on Climate Change, includes agency heads from:
  - Clean Energy Fund
  - Environmental Protection
  - Transportation
  - Administrative Services
  - Public Utility Control
  - Policy and Management

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Action Plan development

- 2003: CT Climate Change Stakeholder Dialogue – 9 months, 5 workgroups, over 75 meetings, over 80 participants to develop state action plan
- 5 focus areas
  - Cleaner electricity generation
  - Cleaner transportation and smarter land use
  - More efficient energy use – residential, commercial, industrial
  - Reduced emissions from agriculture, forestry, and waste management
  - Public education

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2005 CT Climate Change Action Plan

- Presented to General Assembly in January 2005
- 55 actions in five focus areas
- If successfully implemented, achieves/exceeds 2010 and 2020 GHG reduction goals
  - 1990 GHG levels by 2010
  - 10% below by 2020

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Waste-related Recommended Actions in CT Climate Change Action Plan

- Increase source reduction/recycling to 40%, based on state recycling goal at that time
- Support economically viable landfill gas-to-energy projects
- Procurement of environmentally preferable services and products
- Energy efficiency measures – compact fluorescent bulb handling/recycling
- Waste collection and transport – reduce distances, cleaner diesel, rail, intermodal

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Potential GHG benefits of source reduction/recycling

- Look at entire life cycle of materials
- Reduce emissions from raw materials and manufacturing
- Increase forest carbon storage
- Reduce transportation-related emissions
- In states that rely on landfills for disposal, reduce landfill methane (methane has 21 X global warming potential of CO2)

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More detail on recycling action in CCAP

- Increase source reduction/recycling of MSW to 40% by 2010, maintain at 40% through 2020
- CT recycling levels were approximately 25% at that time
- Most MSW is disposed through resources recovery, not landfills
- Used EPA Waste Reduction Model (WARM) – calculates GHG reductions for baseline and alternative waste management methods
- Estimated GHG emissions reductions (within and outside of CT):
  - 0.91 MMTCO2e in 2010 (416,000 tons of MSW)
  - 0.97 MMTCO2e in 2020 (443,000 tons of MSW)

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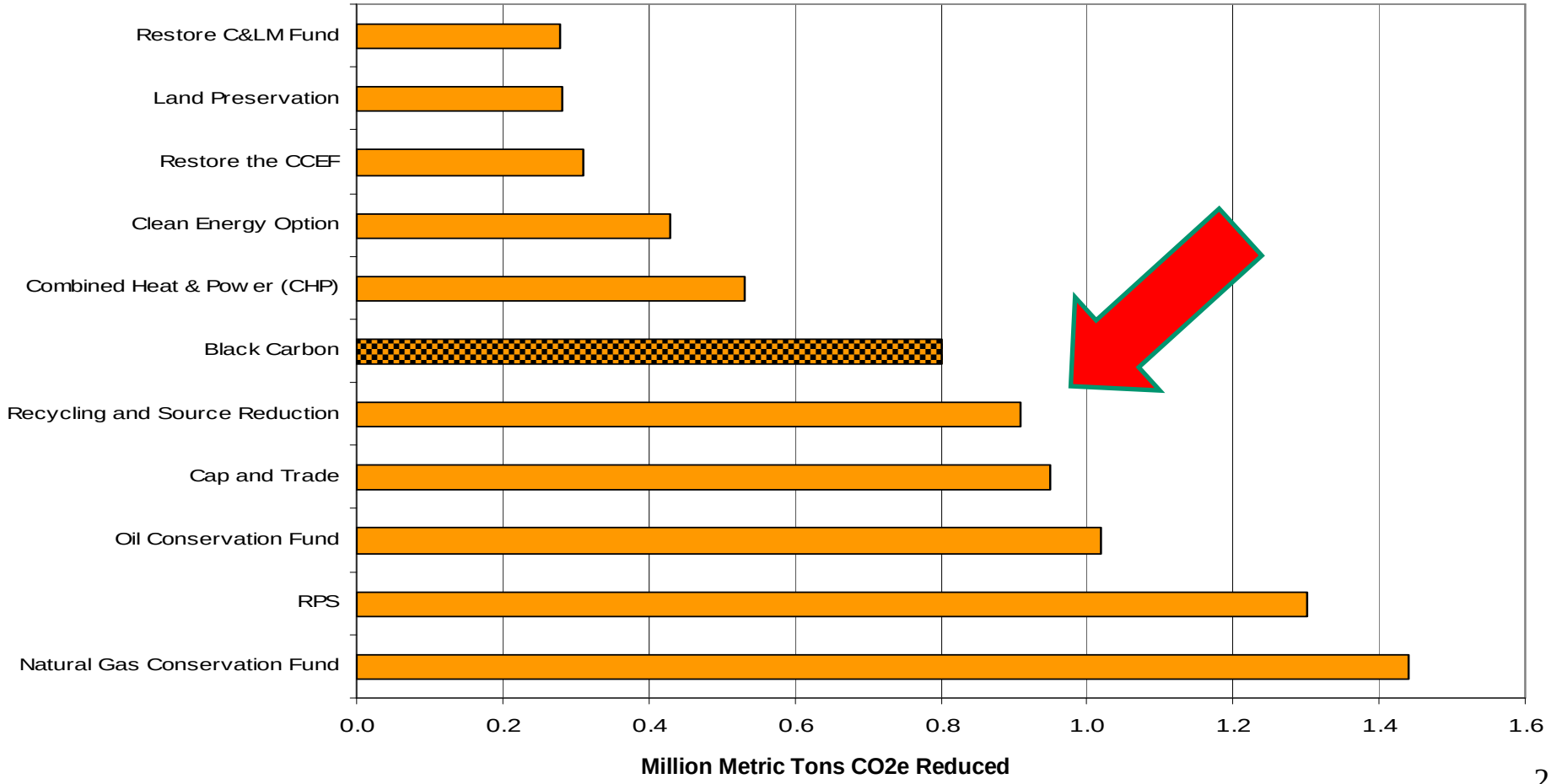
CT Climate Change Action Plan
GHG reductions for top 10 actions for 2010



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CT Climate Change Action Plan
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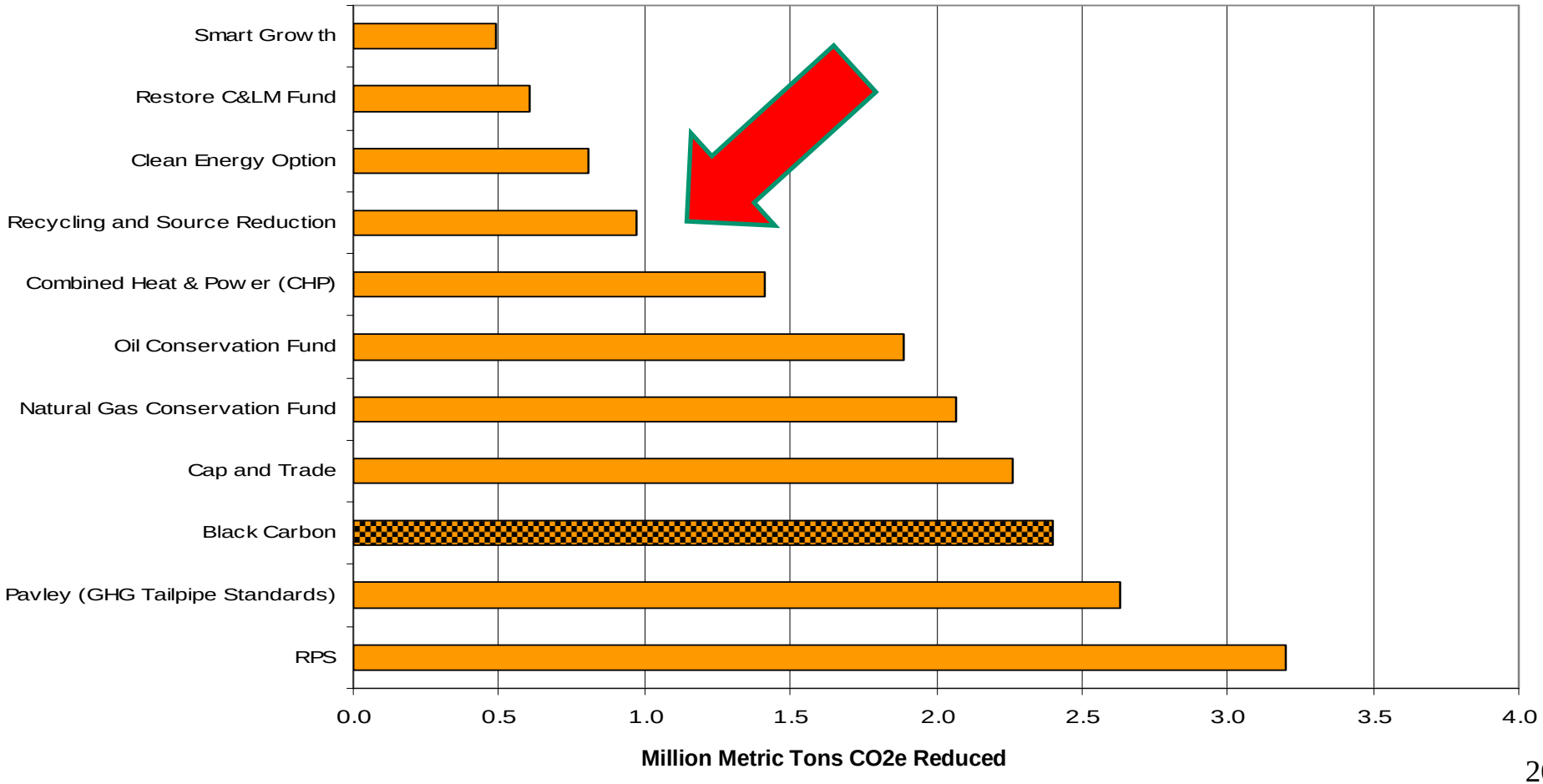

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2006
CT Solid Waste Management Plan

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Climate change integration into Solid Waste Management Plan

- 2016 draft Waste Management Plan increases source reduction/recycling goal to 58%
- Acknowledges state GHG reduction goals, GHG benefits of recycling, recycling component of Climate Change Action Plan, and consistency of plans
- Promotes education that coordinates recycling with climate change and other environmental issues

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2008
CT Disaster Debris Management Plan

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Climate adaptation and disaster debris

- Regardless of mitigation, GHG emissions of past decades will continue to result in changes to CT climate
- Disaster Debris Plan summarizes climate impacts projected for CT
- Rising sea level, more intense storms, extreme rainfall will likely result in increased disaster debris, especially in coastal communities
- Debris will come from storm-damaged trees, homes, businesses, and infrastructure
- CT has almost $405 billion of insured coastal exposure (2004 figures)
- Need to plan for likely increase in debris waste stream

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Other CT Efforts

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Climate/recycling opportunities through AARA

- Energy Efficiency and Conservation Block Grant provides funding of “material conservation programs including source reduction, recycling, and recycled content procurement programs that lead to increases in energy efficiency”
- DEP encouraging eligible towns to apply for funding to start unit-based pricing programs and purchase collection containers
- OPM info on Block Grants will point out recycling programs as potential use of funds

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Other CT links between climate change and recycling

- Developing program to support municipal climate change efforts that includes tools and incentives for GHG actions in many areas, including recycling
- Recycling highlighted as key GHG strategy in climate change presentations to towns, schools, general public
- Recycling included in state climate change outreach materials (website and print)
- Recycling included in initiatives recognized in annual CT Climate Change Leadership Awards Program

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NEWMOA's Draft Climate-Waste Action Plan

NEWMOA Background

- NEWMOA – non-profit interstate governmental association focusing on pollution prevention, solid and hazardous waste management, and waste site cleanup; members include state env. agencies in CT, ME, MA, NH, NJ, NY, RI, & VT
- NEWMOA Board of Directors: waste and P2 program directors of member states
- Board of Directors initiated development of Climate-Waste Action plan in 2007 in response to challenge by state agency commissioners

Overview of NEWMOA draft plan

- Presents a strategy for mitigating and adapting to climate change through:
  - improving waste prevention and recycling initiatives
  - increasing renewable energy on contaminated sites
  - implementing greener site remediation
  - improving management and recycling of disaster debris

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Scope of draft plan

- Background on waste management in the northeast and how products, materials, and wastes generate greenhouse gases and contribute to climate change
- Overview of how waste prevention, recycling, composting, and waste site cleanup programs can contribute to climate mitigation
- Discussion of how waste programs can collaborate on a regional basis on adaptation to climate change
- Presentation of guiding principles for implementation
- Recommended NEWMOA strategies and regional actions

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Status

- Currently under review by state environmental commissioners
- By mid-June NEWMOA's Directors will map out next steps
- Full presentation on the NEWMOA Climate-Waste Action Plan scheduled for July 23 EPA Regions 1 and 2 Climate-Waste webinar

Resources and Additional Info

Connecticut Climate Change

Resources and additional info

- www.ctclimatechange.com
- www.ct.gov/dep, key word “solid waste management plan”
- www.ct.gov/dep, key word “disaster debris management plan”
- Lynn Stoddard
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