Northeast Forum on Climate-Waste Connections

Working Together: Reducing GHGs Through Materials Management

July 23, 2009

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Solid Waste Management in the Northeast

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Overview

- How is solid waste generated & managed in the Northeast?
- Who is responsible for waste management in the region?
- How do state solid waste plans line up with state climate action plans?

What's in Municipal Solid Waste (MSW)?

- Paper (33%)
- Yard Trimmings (13%)
- Food scraps (13%)
- Glass/metal/plastics/wood (each ~5-12%)
- Rubber, leather, textiles (~3% each)
- Miscellaneous wastes (~3%)
- ~2/3 of MSW organics

(Source: US EPA, 2007)

National MSW Picture

- 254 million tons
- 4.6 pounds per person
- 63 million tons recycled
- 22 million tons composted
- Recovery rate ~33%

(Source: US EPA, 2007)

MSW in the Northeast

- ~52 million tons of MSW generated in 2005
- ~36 million tons disposed in landfill or incineration
- NE disposal & recycling capacity is regional

(Source: NEWMOA - based on 2005 data)

MSW Recycling in the Northeast

- 20 – 42% state MSW recycling rates
- ~16 million tons recycled 2005

(Source: NEWMOA states)

- Recycling rates vary among states
  - New England: ~29%
  - NJ: ~35.9%
  - NY: ~43%

  (Source: *Biocycle*)
- Recycling rates increased in 1980-1990s; flat since 2000

MSW Recycling in the Northeast

- Materials recycled:
  - glass
  - paper & cardboard
  - plastics
  - aluminum & steel cans
  - yard & food waste
- Room for improvement

C&D Waste in Northeast

- Wood, brick, concrete, asphalt pavement, glass, metal, drywall, asphalt shingles, & misc. waste
- Generation: >12 million tons
- States define & track materials differently
- Most waste is landfilled

(Source: NEWMOA, 2006 data)

C&D Waste Recycling

- ~10% recovered (not incl. asphalt, brick, & concrete)
- Metals recovery ~53%
- Disposal & recycling capacity: regional markets
- Significant potential to increase recycling

(Source: NEWMOA)

Industrial Waste

- Non-hazardous industrial waste Northeast/year:~1.1 billion tons (e.g., paper, plastic, pallets, equipment, packaging)
- ~2.19 million tons of hazardous waste generated in the Northeast in 2007

(Source: US EPA)

Waste Managers

- Municipalities:
  - fund & arrange for hauling and disposal
  - educate residents
  - promote recycling, EPP & product stewardship
- Haulers, consolidators, recyclers, & disposal facilities (incl. resource recovery):
  - pick up, transport, process, & manage waste
  - most are private entities

Waste Managers

- State agencies:
  - Develop policy frameworks ("Solid Waste Master Plans")
  - establish, implement, & enforce regulations
  - Provide grants, technical assistance
  - Collect & analyze data
  - Educate public & other entities; promote EPP & product stewardship

Regional Perspective on Waste

"Regional Waste Shed"-

- 74% of MSW disposed in Northeast went to facilities in the region in 2006
- All NEWMOA states export MSW to at least one other NEWMOA state for disposal
- Regional cooperation on reducing generation & increasing recycling

(Source: NEWMOA)

Waste & Greenhouse Gases (GHG)

- 35 – 46% of GHGs can be attributed to the provision of good & materials (Source: US EPA)
- Activities that contribute to GHG emissions:
  - raw material extraction
  - transportation
  - processing & manufacturing
  - shipping of goods

Embodied Energy

- "Embodied energy" - the amount of energy required to manufacture & supply to the point of use a product, materials, or service
- Need to estimate "embodied energy" for materials & products

Waste & GHG Reductions

- **Lost energy from discarding aluminum & steel cans, plastics, glass containers, newsprint, & corrugated cardboard packaging:**
  - **Amount of energy consumed by 10 million people/year**
  - **Amount of gasoline used in 6.5 million passenger cars/year**

(Source: National Recycling Coalition)

Waste Reduction/Recycling Opportunities with Climate Benefits

- 10-15% increase in the recycling of cans, bottles, newsprint, & corrugated cardboard packaging:
  - 3.9 - 19.3 fewer megatons of waste to landfills
  - 11.6 - 58 fewer megatons of GHG emissions to the atmosphere
  - Significant energy & $$ savings

(Source: National Recycling Coalition)

Organics & GHG Emissions

- Gas created when organics are landfilled; ½ gas is methane
- Methane: potent greenhouse gas, 21 - 72 times greater than CO_2
- MSW landfills - second largest source of methane; 23% in 2006
- Methane gas is captured at many landfills

(Source: US EPA)

Composting Organics

- Methane gas is released at landfills (even w/capture systems)
- Some sites flare methane
- Some organics have negative fuel value in incinerators
- Composting, anaerobic digestion, or onsite conversion to methane for direct energy use avoid much of the methane emissions

State Solid Waste & Climate Action Plans

- Highlights-
  - Source reduction top of hierarchy
  - Targeted recycling rates 40 - 58%
  - Common priorities: organics, C&D, MSW, e-waste
  - Climate Action plans for CT, ME, NH, NJ, RI, & VT include SW strategies
  - Climate actions in NY & MA in draft SW plans

Information

- NEWMOA - www.newmoa.org
- Northeast Recycling Council - www.nerc.org
- EPA - www.epa.gov/osw/nonhaz/municipal
- National Recycling Coalition - www.nrc-recycle.org
- *BioCycle* - www.jgpress.com/archives/_free/000848.html
- Grassroots Recycling Network - www.grrn.org
- Product Stewardship Institute - www.productstewardship.us

Beyond Waste: A Sustainable Materials Management Strategy for New York

Northeast Forum on
Climate & Waste Connections
July 23, 2009

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Summary

- State planning process
- Elements of the new plan
  - Findings
  - Recommendations
- Next Steps

State Planning Process

- Stakeholder Meetings – Spring 08
  - Environmental/labor -- WTE
  - Municipalities -- C&D
  - Waste Industry -- Long Island
  - Recycling Industry -- Organics
- Regional Meetings

State Planning Process

- Advisory Group
  - Local Solid Waste Managers/Authorities
  - Recycling and Waste Associations
  - Waste and WTE Companies
  - Recycling Industry
  - Environmental Advocates
  - DEC Regional Directors
  - DEC Staff

Elements of the New Plan

- Beyond Waste: Vision & Goals
- Climate Change and Waste
- Waste Prevention
- Reuse
- Recycling
- Composting and Organics Recycling
- Waste Disposal

Other Elements of the New Plan

- Product Stewardship
- SWM Planning, Roles and Responsibilities
- Financing and Financial Assistance
- Materials Composition & Characterization
- Agenda for Action
  - Legislative, regulatory, programmatic recommendations
- Implementation Schedule & Projections

DISCLAIMER

Information presented here is:

- preliminary draft
- not yet reviewed/approved by DEC upper management
- developed based on staff brainstorming, stakeholder input, advisory group input, and review of 1987 Plan

Beyond Waste: Vision

A Materials Management System That:

- Captures economic value of materials
- Minimizes greenhouse gas emissions
- Maximizes materials & energy efficiency
- Impacts the design of products and packaging
- Achieves ever-increasing levels of recovery

Beyond Waste: Goals

- Minimize Waste Generation & GHG Impacts
- Maximize Reuse, Recycling & Organics Recovery
- Create Green Jobs
- Maximize the Energy Value of Materials Management
- Foster Good Local Planning
- Strive for Participation, Fairness and EJ
- Prioritize Investment in Recovery over Disposal
- Maximize Efficiency in Infrastructure Development
- Foster Technological Innovation
- Continue to ensure SWMFs are designed and operated well

Climate Change & Waste

Findings

- Waste contributes to climate change
  - Methane emissions from landfills
  - Production and distribution of products and packaging

- Waste reduction, reuse and recycling mitigate climate change

Climate Change & Waste

Recommendations

- Maximize Waste Reduction and Reuse
- Divert Organics from Disposal
- Maximize Recycling
- Collect/Convert Landfill Gas to Energy

Waste Prevention

Findings

- Waste prevention has the highest potential for avoiding environmental and climate impacts
- Some waste prevention gains have been achieved, but driven by economics and not policy
- Negative trends include planned obsolescence, convenience products

Waste Prevention

Recommendations

- Implement state agency sustainability programs to achieve goals for waste and paper use reduction (EO4)
- Expand resources dedicated to education and outreach
- Implement Product & Packaging Stewardship legislation

Reuse

Findings

- Reuse provides multiple environmental, economic and social benefits
- Significant infrastructure exists, particularly through charities
- Potential to expand reuse in key sectors – building deconstruction, food redistribution

Reuse

Recommendations

- Support and promote materials exchanges, reuse/thrift stores and food and clothing donations programs
- Encourage and incentivize deconstruction and building materials reuse
- Encourage planning units to develop reuse infrastructure

Recycling

Findings

- Huge gains between 1987 and 1997
- Wide variation in program performance statewide; though good data is scarce
- Program implementation inconsistent
- Recycling markets are variable
- Market development initiatives must focus on organics, plastics, c&d and glass

Recycling

Recommendations

- Broad-scale recycling public education program
- Support markets by buying recycled (EO4)
- Ensure recycling in all sectors
- Encourage/require incentive, education and enforcement programs
- Create new recycling metrics and reporting systems
- Update Solid Waste Management Act to move beyond 50%

Organic Material Diversion

Findings

- Organics are 30-40 percent of MSW generated; ~30% of MSW disposed
- Recycling organics has multiple environmental benefits
- Organic materials are diverse; variety of strategies and technologies need to be employed
- Costs vary widely depending on technology, feedstock, etc.

Organic Material Diversion

Recommendations

- Demonstrate organics recovery at state agencies
- Restrict disposal of leaf & yard waste; consider additional restrictions as infrastructure develops
- Expand existing compost facilities to accept food waste where feasible
- Obtain additional resources for organics recovery
- Require municipalities to evaluate organics recovery and implement where feasible

Waste Disposal

Findings

- WTE is environmentally acceptable and should retain its place in the SWM Hierarchy as preferable only to landfilling
- Landfilling is the predominant means of waste disposal
- Public sector role in landfill operations is declining
- Many variables in assessing future capacity

Next Steps

- Format and finalize Draft Plan
- Proceed through internal review
- Release Draft for public comment
- Hold Regional Meetings
- Finalize Plan

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