EBC Solid Waste Management Program

New England Regional Conference of State Solid Waste Directors
Welcome

David Murphy

Chair, EBC Solid Waste Management Committee

Vice President
Tighe & Bond
Introduction & Overview

David Adams, P.E.
Program Chair & Moderator
Senior Vice President / Principal
Sanborn, Head & Associates, Inc.
Solid Waste Management Issues for Massachusetts

John Fischer

Branch Chief, Bureau of Air & Waste
Massachusetts Department of Environmental Protection
Solid Waste Master Plan
Disposal Reduction Goals and Progress

GOALS

- 30% reduction by 2020 from 2008 baseline
  - 6,550,000 to 4,550,000 tons
- 80% reduction by 2050 (to 1,310,000 tons)

PROGRESS

- 2015 disposal = 5,510,000 tons
- 16% reduction from 2008 to 2015
Solid Waste Master Plan
for 2021-2030

- Will begin development and stakeholder discussions in summer 2017
- Expect to develop and complete new plan by 2020
- Issues presented today will be among the key issues addressed
- Primary forum will be MassDEP Solid Waste Advisory Committee (SWAC)
Top 5 Issues to Discuss (in no particular order)

- Construction Materials Reuse & Recycling
- Improving Recycling Quality & Reducing Contamination
- Increasing Waste Ban Compliance
- Addressing Materials Management Capacity Need
- Ensuring Sound Landfill Post Closure Monitoring & Maintenance
Construction Materials
Reuse & Recycling

- Current recycling rates through C&D processors hovering around 20-25%
- MassDEP’s goal to increase to 50% by 2020
- DSM C&D Markets Study just posted online
- Shows that will be difficult to achieve 50% at processors alone
- Assessing methodology – should also count reuse, donation, and source separated recycling
C&D – Key Initiatives

- Targeted grants – Recycling Business Development Grants
  - wood and bulky rigid plastics
  - Applications due June 30
- Recycling Loan Fund loans - ongoing
- BMP guidance for construction materials reuse and recycling through RecyclingWorks in Massachusetts
- Follow up to get more data on reuse and recycling activity beyond processors and transfer stations
Recycling Quality

- Collaborative effort with recycling industry (haulers & MRFs), municipalities & The Recycling Parternship
- Recycling IQ Kit – on MassDEP website
  - Educational materials & SOPs
  - Also intensive TA to selected communities
- Goal to reduce contamination & improve quality
- Improve sustainability, efficiency and performance
Waste Ban Compliance

- 2017 – seeing failed load rates > 20% - 1 of 5 loads
- Especially cardboard from businesses
- 2013 waste characterization data 40% of MSW = banned materials
- If could divert even ¼ of this (10% of MSW) would be > 450,000 tons
- Comprehensive approach
  - Inspections/enforcement
  - Facility & 3rd party data
  - RecyclingWorks in Massachusetts assistance
Enforcement by Material Type

- Paper/Cardboard: 85%
- Bottles & Cans: 5%
- Leaf & Yard Waste: 2%
- White Goods (Large Appliances): 2%
- Metal Containers: 2%
- Metal: 1%
- Glass Containers: 0%
- Commercial Food Waste: 0%
- Lead Acid Batteries: 0%
- Cathode Ray Tubes (CRTs): 2%
- Failing to provide information: 0%

MassDEP did not calculate disposal data for 2013.
Materials Management Capacity

- In-state landfill capacity projected to drop 800K tons by 2021
- Projected net export between 500K and 1.5 million tons/year
- No new disposal capacity being developed
- Some new and expanded transfer or disposal capacity
- MassDEP limited ability to influence new disposal capacity – & limited local willingness to accept
Materials Management Capacity

- More success in leveraging other capacity
- 175K tons of AD capacity now (for organics)
  - Plus 140K tons at GLSD ramping up now
  - Several other facilities moving forward > 100K tons additional
- Development of de-packaging and slurrying operations that can source AD facilities (or compost/animal feed)
  - Now 5 active in Mass.
  - Stop & Shop de-packaging/AD facility
Post Closure Landfill Management

- Hundreds of landfills approaching end of initial 30 year post closure monitoring and maintenance period
- Most, if not all, will continue to need cap and slope maintenance
- Most will continue to show need for some landfill of groundwater monitoring
- Also need for continued financial assurance mechanisms (FAMs)
Contact Information

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http://www.mass.gov/dep/recycle/priorities/dswmpu01.htm
Solid Waste Management Issues for New Hampshire

Michael Wimsatt

Director, Waste Management Division
New Hampshire Department of Environmental Services
Five Critical Solid Waste Management Challenges for New Hampshire

Presented by
Mike Wimsatt, Director, Waste Management Division
NH Department of Environmental Services
at
EBC Solid Waste Management Program
New England Regional Conference of State Solid Waste Directors
Westborough, Massachusetts
May 4, 2015
Five Critical SW Management Challenges for New Hampshire

1. Overview of NHDES’ Solid Waste Program
2. Five Challenges
3. Conclusion
NHDES’ SW Management Program

- Facility Permitting
- Engineering/Design Review
- Compliance Assurance
  - Education / Technical Assistance
  - Facility Data Review
  - Financial Assurance
  - Facility Inspections
  - Enforcement
- Operator Training & Certification
- Auto Salvage / Green Yards
- J-M Asbestos Disposal Sites
- Grants Management
RSA 149-M
NH Solid Waste Management Act

- RSA 149-M:2
  Establishes a 40% diversion goal
  - Current recycling rate 31% +/-

- RSA 149-M:3
  Hierarchy of Waste Management
  1. Source reduction
  2. Recycling and reuse
  3. Composting
  4. Waste to energy
  5. Incineration w/o energy recovery
  6. Landfilling
Solid Waste Facilities Regulated

- 270 +/- Operating SW Facilities
  - Transfer Stations / Recycling Centers
    - Municipal Solid Waste
    - Scrap Metal
  - Processing / Treatment Facilities
    - Waste-to-Energy
    - Material Recovery (MRFs)
    - Composting
    - Incinerators
    - Medical Waste Treatment
- Landfills
  - 150 +/- Auto Salvage Yards
  - 360 +/- Asbestos Disposal Sites
  - 300 +/- Closed Landfills
NH Solid Waste Disposal Statistics

- Approx. 1.1M tons of NH generated waste landfilled in 2016
- Approx. 2.1M tons total waste landfilled in 2016
- Permitted landfill capacity to 2022 (6 operating MSW landfills)
- Additional capacity likely to come from expansion of existing facilities
Destination of NH Generated MSW

- Exports: 3%
- Landfilling: 46%
- Recycling: 31%
- Incineration: <1%
- Waste to Energy: 20%
Challenge No. 1
Maintaining an Integrated SW Management System

- Negative progress in honoring waste management hierarchy
- Landfilling predominates
- Waste-to-Energy facing pressures
- Continuing pressures on recycling
- Organics diversion slow to occur
- Agency’s ability to influence is limited
Challenge No. 2
Attracting and Siting Innovative Technology Facilities

- Perception of regulatory structure as an impediment
- Rural nature of state / low population density
- Natural gas prices / electric rate challenges
- Balance between encouraging innovations and the need for protectiveness
Challenge No. 3

Solid Waste Imports

- Subject to interstate commerce law
- 6 operating landfills - contrasts with neighboring states
- Makes NH attractive for imports

Risks
- Reduces capacity for in-state waste
- Potential impact on public acceptance
- Gains attention of elected officials
Challenge No. 4
Perfluorochemicals as Emerging Contaminants

- Widespread use in industry, and in commercial and consumer products
- Possible presence in leachate and implications for leachate management
- Possible presence in landfill gas
- Potential impacts to on-site and off-site groundwater
Challenge No. 5
Closed Landfills

- Largely municipally owned
- Helping towns to understand and embrace long term post-closure care responsibilities
- Recent gas management challenges
- General O&M
  - Cap maintenance
  - Groundwater monitoring
- Emerging contaminant challenges
  - PFCs and 1,4-dioxane
Five Critical SW Management Challenges for New Hampshire

1. Maintaining integrated SW management system
2. Attracting and siting innovative technology facilities
3. Solid waste imports
4. Perfluorochemicals as emerging contaminants
5. Closed landfills
Thank you!

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SOLID WASTE UPDATES
FOR
Rhode Island

- Mark Dennen, CPG-
  Supervising
  Environmental Scientist
- RIDEM/ Office of
  Waste Management
5 Solid Waste Topics

- Food Waste
- Future of Landfills in RI
- Solar Development at Closed Landfills
- Climate Change and its effect on Closed Landfills
- E-Waste
Overview of Waste Management in Rhode Island

- 1 Large Active Landfill run by Rhode Island Resource Recovery Corp. (pseudo-state Corporation)
  - Also runs large scale composting and recycling program
  - Incineration discouraged by statute
- 1 small municipal landfill
- 1 Large C&D Processing Facility (2000 tons/day)
- 1 Large Anaerobic Digester (in construction- 200 tons/day)
- 1 Large Medical Waste processing facility
- No reasonable expectation of truly NEW landfills or incinerators in the future
Food Waste Ban RIGL 23-19.9-17

- Effective 1/1/2016
- Commercial and Various Institutional Organic Waste Generators
- >104 tons/yr organic waste
  - Food scraps
  - Food processing waste
  - Soiled paper
  - Non-recyclable paper
- >52 tons/yr in 2018
Food Waste Ban RIGL 23-19.9-17 (continued)

- If within 15 miles of compost or A.D. Facility
- Waste Handling Options
  - Send to compost facility
  - Send to A.D. facility
  - For agricultural use (animal feed)
  - Recycle or treat on-site
- Waiver option: facility fee > RIRRC non-contract commercial tipping fee
## 2016 Composting Facility Comparison

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<th>Small-scale</th>
<th>Medium-scale</th>
<th>Large-scale</th>
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<tr>
<td><strong>Waste Quantity</strong></td>
<td>0-25</td>
<td>25-600</td>
<td>&gt;600</td>
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<td>(yds³)</td>
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<tr>
<td><strong>Waste Types</strong></td>
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<td>Putrescible Wastes</td>
<td>Limited types</td>
<td>More types (pilot program)</td>
<td>Extensive types</td>
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<td>Registration</td>
<td>No</td>
<td>Yes (at start)</td>
<td>Yes (every 3 years) $3,000</td>
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<td>Requirement</td>
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<tr>
<td>Buffer zone</td>
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<td>Yes</td>
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<tr>
<td>requirements</td>
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<td>Operating standards</td>
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<td>No*</td>
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<td>Finished compost</td>
<td>Class A</td>
<td>Class A</td>
<td>Class A, B or C per defined markets</td>
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<td>quality</td>
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</table>

*no adverse effects- surface groundwater, wetlands, odors, vectors, dust, litter
History of A.D. Facility Regulation Usage

1. 1 Facility Under Construction, 1 licensed but never started

2. Current applicant (Orbit Energy):
   - Approx. 200 tons/day organic input
   - Wet digestion process
   - Methane- 3.2 MW combined with power production
   - Solid digestate- compost facility input
   - Has secured air permit and wastewater discharge permits
   - Is currently accepting sewage sludge for seeding waste
Landfill Closure Program

- Landfills closed after 1992 need multi-layer engineered cap
  - Mandated by Solid Waste Regulations
- Landfills closed before 1992 addressed in the framework of Site Remediation Regulations. Closure usually driven by:
  - Significant potential for Environmental Harm
  - Desire for site reuse
    - Solar
    - Acceptance of BUD material
Climate Change and Closed Landfills

- Landfills built near the coast are being subjected to submersion by rising sea levels as well as increased frequency of severe storms.
Site was threatened by erosion caused by starving of sand due to dredging of salt pond

Erosion accelerated by Superstorm Sandy and Winter Storms in 2013

Slope collapsed sending solid waste across beaches north of the site.

Temporary volunteer cleanup while remedy was being designed.
Block Island Landfill
Western Slope of Landfill
Revetment Design

1.5 FT MIN. DEPTH OF SAND SOIL OR 25% LOAM/75% SAND MIX; PLANT BEECHGRASS ACROSS ENTIRE SLOPE

TOP OF PROPOSED STONE PORTION OF REVESTMENT IS EL +18 FT

2 LAYERS OF ARMOR STONE, AVG 6000 LB SIZE

ESTIMATED 1% WAVE CREST EL +13.0 FT W/ 1 FT SEA LEVEL RISE.

PROPOSED STONE REVESTMENT

1% (100 YR) SWL EL +7.9 FT

MSW +11.15 FT

MLW -1.70 FT

EXISTING GROUND SURFACE SEAWARD OF PROPOSED REVESTMENT PER SURVEY

3 LAYERS OF GEOTEXTILE FABRIC;
2 LAYERS OF MIRAFI 140N PLACED ON EXCAVATED SOIL SUBGRADE
WITH 1 LAYER OF MIRAFI 60X PLACED ABOVE AS PROTECTION

SMALL STONE TO FILL VOIDS

TYPICAL REVESTMENT SECTION

SCALE 1” = 20’

Source Fairbanks Engineering Corp 2016 CRMC application
Status of Site

- Approval obtained by RIDEM and Coastal Resource Management Council
- Currently stockpiling materials onsite
- Delay of remedy due to archaeological concerns
Solar Development at Landfills
SOLAR ENERGY AT SITES THAT HAVE NOT UNDERGONE CLOSURE

- Environmental Investigation to characterize risk and propose a remedy
- Landfill Gas- may affect buried lines, structures
- Impervious Area may raise storm water issues as well as wetland permitting
- Investigative work and remedy selection can be concurrent with Solar Studies
Status of Solar Landfill Projects

- 1 Landfill has solar project complete in first phase
- Several landfills are progressing to implementing solar
- The Department has not yet created specific guidance such as MA DEP.
Cost /Weight Allocation

• EACH MANUFACTURER MUST:
  • Register and pay $5,000 fee/year to sell electronics
  • Must have a program to collect e-waste or pay RIRRC to join state program
  • May do program on their own to may band together
  • RIRRC Estimates total e-waste generated for state and assigns target weights:
    • Based on % of market/collection share
    • Currently 6 lbs./person
2008
E-waste statute passed

2013
RIDEM E-Waste Regulations Promulgated
• Split between RIDEM/RIRRC

2015
Economics of e-waste recycling changed
• Collection # sites 27 - 5.

2015
RIDEM E-Waste Regulations Promulgated
• Split between RIDEM/RIRRC

2016
RIDEM puts in prohibition against mid-year shutdowns.

2016
January
RIDEM puts in prohibition against mid-year shutdowns.

2016
Summer
Kaizen event/more inspection

2017
Statute change
Results

- Inspected collections and found
  - Discrepancies in quantities collected (over 1 million lbs)
  - Highly suspicious mid-year reporting (many manufacturers were at exactly ½ required quantity)
  - Major deviations from plan (charging consumers for televisions)
  - Manufacturer groups realized they were far under required quantities
  - Plans and reports of poor quality and inconsistent
Goals

To create a coordinated Program between RIDEM/RIRRC to:

1. Improve data quality
2. Increase collection convenience for customers

In 2 years:

• 80% of reports submitted are verified and accurate;
• Permanent municipal collection locations increase from 10 to 15.
• Better distribution of information to consumers
• Reduce RIRRC operating losses
Action Items

- Standardize form for:
  - Collection sites
  - Quarterly reporting w/ record keeping
  - Yearly Plan with 2 year renewal

- Update Regulations/statue to:
  - include printers as e-waste

- New submission date
  10/15/2018

- +/- 10% carryover
For More Information:

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Solid Waste Management
Issues for Rhode Island

Cathy Jamieson

Solid Waste Program Manager
Vermont Department of Environmental Conservation
VERMONT:

5 CRITICAL SOLID WASTE ISSUES

EBC OF NE
MAY 2017

Cathy Jamieson, Solid Waste Program Manager
VT ANR Waste Management & Prevention Division
Moving from “waste”
VT Waste Composition

~50% of MSW could be recycled/composted

~60,000 tons/yr food disposed
5 Solid Waste Challenges

- Markets
- Contamination of Materials
- Costs
- Emerging Contaminants
- Contaminated Soils in Urban Areas
Markets:

Striving for Circular Economy

- Recyclables
  - Evolving Ton

- C&D Materials
  - Fragile, limited options

- Compost
  - Diversified Products
Contamination of Materials

- Single Stream Recycling
  - Wishful recycling
  - Glass

- Organics
  - Confusion about containers, bags, plastic ware, etc.
  - PLU stickers

- Statewide outreach: Challenging due to difference in materials accepted at facilities.
We start with six.

Now anywhere in Vermont you can recycle these six items at the curb or transfer stations. You may be able to recycle even more, so check with your local district. But if you’re ever unsure, start with these six. A simple step that protects the environment. Learn more at VTrecycles.com.
Costs

- Balance
- Convenient services
- How to be consistent
- Options
Emerging Contaminants

- Closed landfill groundwater monitoring
  - Costs of increased monitoring and response actions
- Landfill leachate monitoring and management
- Predicting what’s next…. 
Lightly Contaminated Soils aka “Development Soils”

- Focus on Arsenic, Lead, PAHs

- VT Conducted background study
  - Arsenic: 16 ppm (statewide)
  - Lead: Urban 111 ppm, Rural 41 ppm
  - PAHs: Urban 0.580 ppm, Rural 0.026 ppm

- Developing Rules for management other than landfill
Strategies

- Set Goals & Policies, State Plans
- Legislation / Mandates
- Bans on Disposal
- Outreach
- Product Stewardship/ EPR Programs
- Incentives (PAYT, Grants, Convenience)
- Partnerships
GOAL: To decrease the amount of waste disposed

STRATEGY: To provide more consistent services statewide by increasing convenience, choices, and incentives for alternative disposal options

Highlights:
- Focuses on recyclables and organics
- Phased-in approach to allow development of infrastructure
- Organics Hierarchy
VT Universal Recycling Law

- **Required Diversion (bans) = Motivation**
  - Recyclables 2015
  - leaf, yard, and clean wood 2016
  - food scraps, phased in, 2020

- **Parallel Collection = Convenience**

- **Pay As You Throw = Incentive**

- **Recycling in Public Spaces = Lead by Example**

- **New State Plan = Consistency**
Stay Tuned!

Website -- www.vtrecycles.com

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Follow us on Facebook, Twitter, & Instagram @VTrecycles
Panel Discussion

Moderator: David Adams, *Sanborn Head*

Panelists:
- Mark Dennen, *Rhode Island*
- John Fischer, *Massachusetts*
- Cathy Jamieson, *Vermont*
- Michael Wimsatt, *New Hampshire*
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