NC Organics Recycling Study: 2011-15 Materials Recycled 2015 Food Recovered

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November 8, 2016
PRESENTATION OUTLINE

- NC Recycling Program
- Organics Management 2011-2015
- Food Recovered 2015
- Conclusions & Next Steps
NC DEQ’s Division of Environmental Assistance & Customer Service
Recycling and Materials Management Section

NC Recycling Program
circa 1990

- Diverse staff knowledge
- Local Government Team
- Recycling Business Team
- Technical Assistance
- Networks
- Grant funding:
  Non-profits, recycling businesses, and local governments
Navigating Organics Diversion in NC

- DWM Solid Waste Section
- DWR Animal Feeding Operations
- Division of Environmental Assistance & Customer Service
- State Vet’s Office
- DWR Non-Discharge Permitting Unit
- DWR Stormwater Permitting
NC ORGANICS RECYCLING STUDY: MATERIALS MANAGED 2011-2015 & FOOD RECOVERED 2015

North Carolina Department of Environmental Quality
Division of Environmental Assistance and Customer Service
Recycling and Materials Management Section
JUNE 2016

GENERAL/DATA
INPUTS
OUTPUTS
FOOD RECOVERED
NC Infrastructure: Composting & AD Facilities

Black = able to process materials excluding food waste
Orange = able to process materials including food waste

NOTE: Yard Waste ban in 1993
NCDEQ DWM requires annual reporting from composting, treatment and processing, C&D, and local government yard waste operations.
The NC “Evolving Ton” (for composters) ~640,000 TPY
Figure 3. Top North Carolina permitted composting facilities
Total amount processed, food waste processed and unused capacity, 2014-15

- **Compost Central**
  - 56,404 tons
  - 55% unused capacity

- **Wallace Farm**
  - 48,010 tons (3,292 tons food)
  - 66% unused capacity

- **City of Raleigh Yard Waste Center**
  - 40,930 tons
  - 76% unused capacity

- **Rose Acre Farm**
  - 36,085 tons
  - 94% unused capacity

- **City of Greensboro**
  - 29,657 tons
  - 42% unused capacity

- **Eastern Compost**
  - 26,311 tons (1,866 tons food)
  - 56% unused capacity

- **City of New Bern Yard Waste**
  - 21,733 tons
  - 28% unused capacity

- **McGill-Delway**
  - 122,424 tons (7,005 tons food)
  - 13% unused capacity

- **McGill-New Hill**
  - 82,131 tons (1,231 tons food)
  - 46% unused capacity

- **Earth Farms Organics**
  - 79,716 tons (18,480 tons food)
  - 34% unused capacity

- **Brooks Composting Facility**
  - 57,231 tons (9,342 tons food)
  - 24% unused capacity

- **Other sites**
  - 177,782 tons (5,397 tons food)
# Tipping Fees (FY 2014-2015) @ the gate

<table>
<thead>
<tr>
<th>Waste Type</th>
<th>Construction &amp; Demolition</th>
<th>Municipal Solid Waste</th>
<th>Organics</th>
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<tbody>
<tr>
<td></td>
<td>Facility Type</td>
<td>Landfill</td>
<td>Transfer Stations</td>
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<tr>
<td># Facilities Reported</td>
<td>Landfill</td>
<td>53</td>
<td>69</td>
</tr>
<tr>
<td>High ($/ton)</td>
<td>$ 65</td>
<td>$ 70</td>
<td>$ 72</td>
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<tr>
<td>Average ($/ton)</td>
<td>$ 38</td>
<td>$ 46</td>
<td>$ 41</td>
</tr>
<tr>
<td>Median ($/ton)</td>
<td>$ 39</td>
<td>$ 44</td>
<td>$ 39</td>
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<tr>
<td>Low ($/ton)</td>
<td>$ 14</td>
<td>$ 31</td>
<td>$ 22</td>
</tr>
</tbody>
</table>

Data Source: NCDEQ Division of Waste Management
Products manufactured at composting facilities

FY 2014-15
~544,000 tons created
58% sold
“Materials Managed” Conclusions

- Healthy composting infrastructure
- Available capacity (dispersed)
- Stable and competitive tipping fees (*collection)
- Compost demand (58% sold)
- 3.7 jobs/10,000 tons composted
- Compost rules update soon (to include AD)
- Need more data: landfill w/compost ops, community and backyard composting, WWTPs, and more

Next: food recovered
Figure 17 – Food scraps received (more than 100 tons) at NCDEQ permitted composting facilities.
Figure 18 – Food scraps (less than 100 tons) received at NCDEQ DWM permitted composting facilities.
Food Rescue

Food Recovery Network - Official Chapters

- Appalachian State University
- Belmont Abbey College
- Duke University
- High Point University
- North Carolina State University
- Pfeiffer University
- Salem College
- University of North Carolina at Chapel Hill
- University of North Carolina at Greensboro
- University of North Carolina at Pembroke
Figure 16 – 2015 Food diverted from the landfill through food rescue/donations, anaerobic digestion, animal feeding, and permitted commercial composting facilities (total 99,704 tons diverted).

- Composting, 46,613 tons, 47%
- Food Rescue, 15,202 tons, 15%
- Anaerobic Digestion, 18,242 tons, 18%
- Animal Feeding, 19,647 tons, 20%
50% Food Waste Reduction Goal by 2030
9.7 M People (2012)*
1,960 lbs of MSW/person/year*
1.2 million Tons food waste generated**

247 lbs food waste/person/year
12.6% of our waste is food waste

In 2015, we diverted 99,704 tons
(8.3% diversion rate based on 1.2 M T generated)

*NC DEQ FY 2011-12 Solid Waste and Materials Management Annual Report
**NC DEQ North Carolina 2012 Food Waste Generation Study
Food Waste Generated in NC

1.2 M tons “TODAY”

100%

550,000 tons left to reach 50% goal now

41.7%

800,000 tons to reach 50% goal in 2030

8.3%

Expecting 1.6 M tons By 2030

27 Food Waste Reduction Strategies

Values are from ReFED Report

Recycling

100,000 tons now
576,000 tons by 2030

53%

Other (animal feed, small scale composting, commercial greywater)

10%

WRRF w/AD

17%

Centralized AD

20%

Commercial Composting

Food Rescue (~25 million meals)

15%

Animal Feeding

18%

Anaerobic Digestion

20%

Composting

47%

Prevention Potential

110,000 tons now and 160,000 tons by 2030

Rescue Potential

44,000 tons now
64,000 tons by 2030 (110+ Million meals/yr)

Increase NC infrastructure 6.8x with prevention

Increase NC infrastructure 7x without prevention

Recycling

100,000 tons now
157,000 tons by 2030

576,000 tons by 2030

550,000 tons

800,000 tons

50% goal now

50% goal in 2030

100,000 tons recovered in 2015

550,000 tons

800,000 tons

100,000 tons

44,000 tons
NC FOOD RECOVERY PLAN

- Residential/Commercial Food Waste Generation
- Remaining tons to reach 50% Reduction
- Prevention (tons)
- Rescue (tons)
- Animal Feed (tons)
- AD (tons)
- Composting (tons)

50% Reduction Goal Achieved!

8% recovery rate in 2015
NC Situation: Total Permitted Capacity
Food Waste Composters FY 14-15

- Available Permitted Capacity, 746,709 tons, 68%
- Capacity Used FY 2014-15, 359,056 tons, 32%
- 36,000 Food Waste Composted FY 2014-2015
- Need to use 36% of the food waste composters’ available capacity to compost ~270,000 tons of additional food waste

Type 2/3/4 Composting Facilities (able to process pre/post consumer food waste)
Nuances in Capacity Questions

• Not all food waste from all sources are the same

• Not all capacity can take all kinds of organics (odorous, liquids, etc)
  • Feedstock balances are critical (need wood?)

• Quality and contamination will become more prominent issues
Flexibility in the System: Possible Lateral Expansion into Food Waste

- Certain organics-oriented facilities may be able to add food waste to their operations
  - Publics yard waste facilities
  - Farms
  - Septic haulers
  - Wastewater treatment plants (WTTPs)
  - Land-clearing debris facilities
- May fill voids in rural or other underserved areas of a state
Capacity and Regulatory Issues

• Proper regulations can lay the foundation for food waste diversion
  • Composting permitting
  • Anaerobic digestion permitting
  • Good Samaritan laws
  • Favorable tax laws

• Lack of a good regulatory structure can slow infrastructure development
Reality Check: All Capacity is Local

• Food waste historically has not traveled well - no inherent value to support transportation costs

• Food waste concentrated in urban areas: how does that affect and interact with capacity development?

• Will AD make urban-based capacity more viable?
Reality Check: Challenges to Capacity

• Can infrastructure disappear, or fail to develop?
  • NIMBY issues
  • Business model/profitability issues
  • Competition
  • Entrepreneurs leaving the business

• Special challenges for composters in urbanizing areas
The Other Capacity Question: Collection

- Who will step up?
- Substantial investment + generator commitments
- Need to overcome: space, service charges, contamination, truck technology, efficient access to outlets, etc.
- Residential vs Commercial
- Integration of edible food rescue (donations), animal feeding, composting, and other end markets
Conclusions

• Match feedstocks with different processes (diversification)
• Collection capacity may be a more difficult problem, especially absent policy drivers
• State support can be critical for both supply and demand development

Next Steps

• County-level Food Recovery Summits (build on local networks)
• Update organics recycling rules
• State recycling grant assistance (public & private)
Thank You!

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