



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

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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

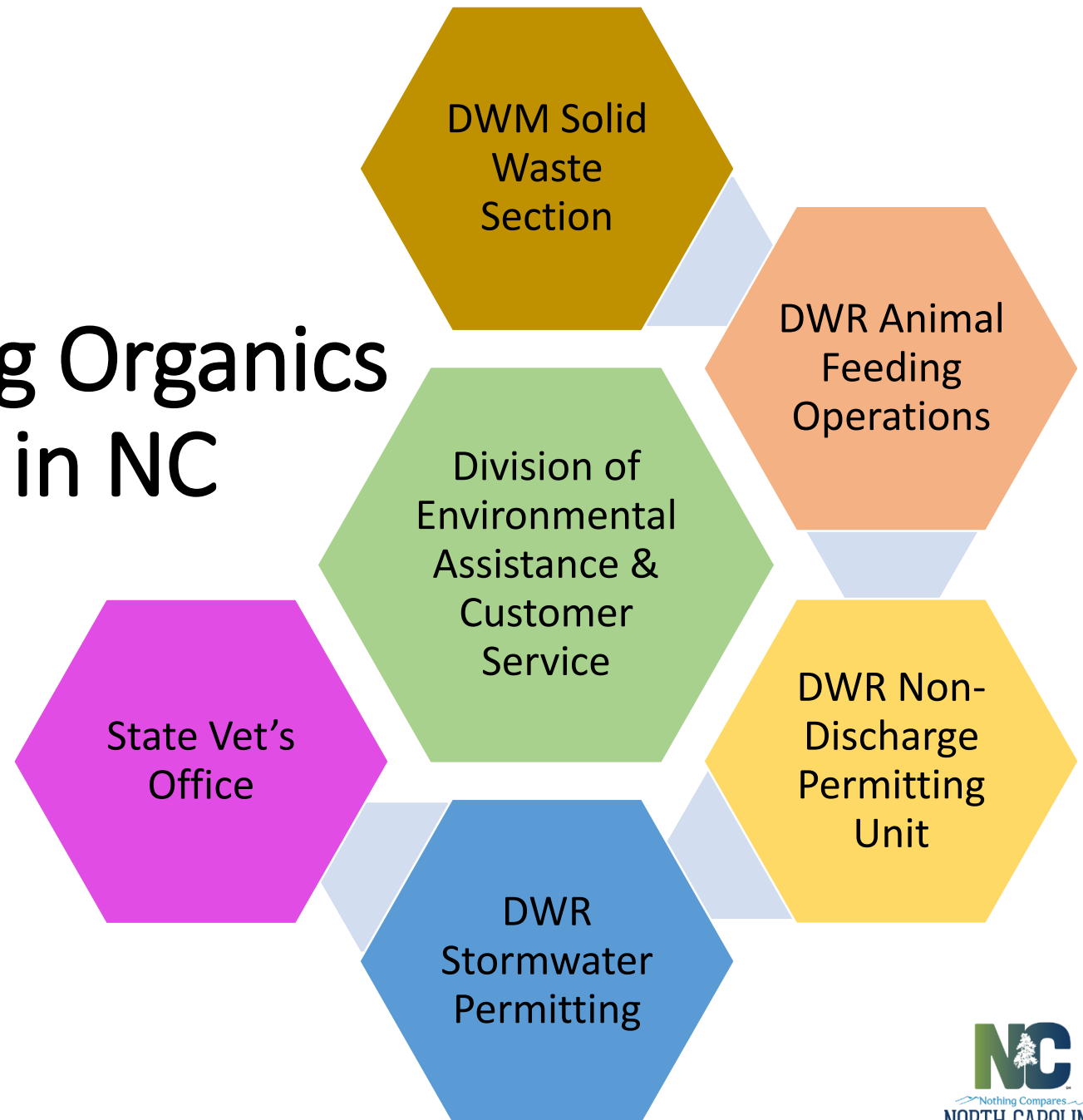
circa 1990

- 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



NC ORGANICS RECYCLING STUDY: MATERIALS MANAGED 2011-2015 & FOOD RECOVERED 2015

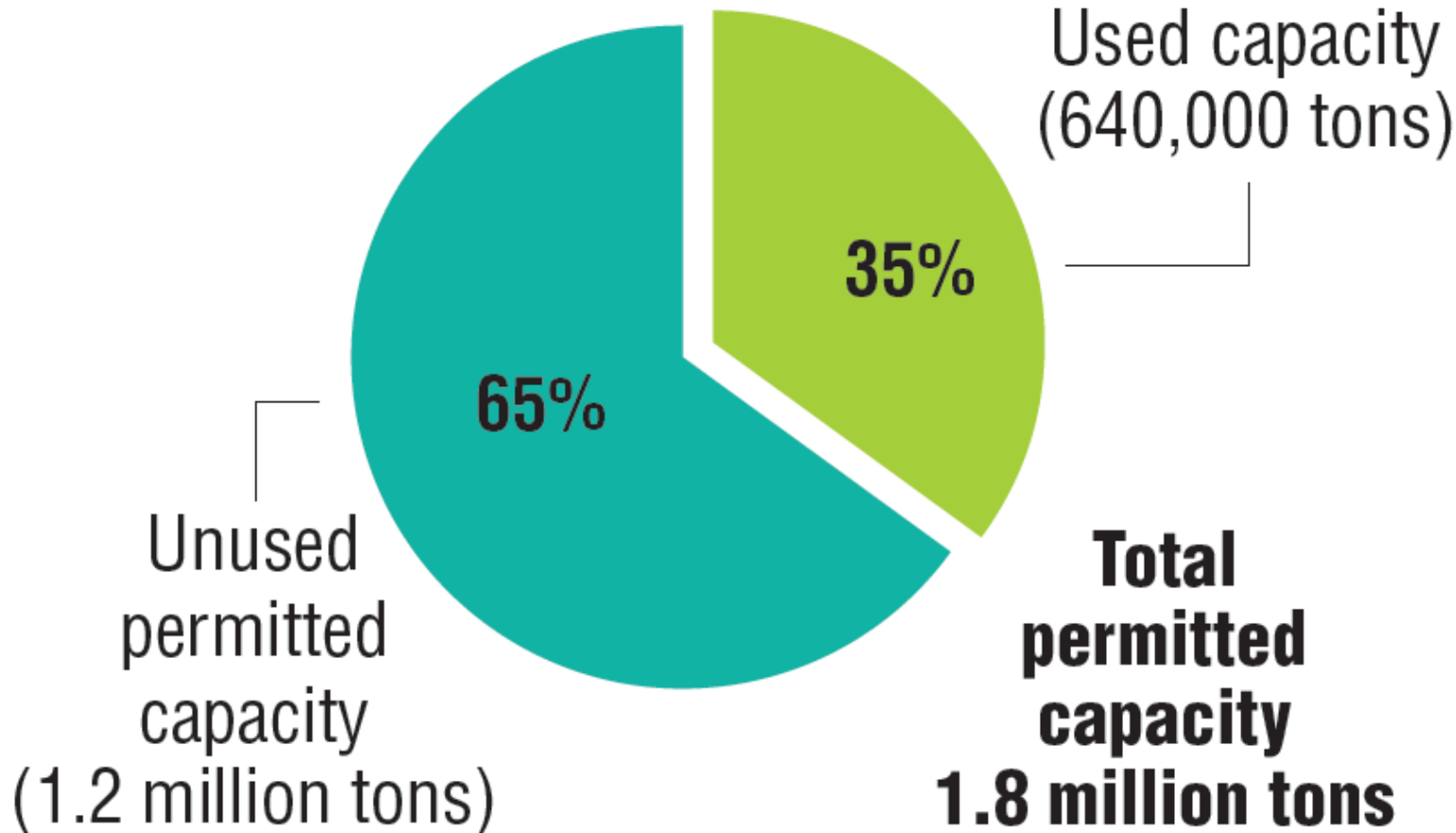


**GENERAL/DATA
INPUTS
OUTPUTS
FOOD RECOVERED**

NC Infrastructure: Composting & AD Facilities



Figure 1. North Carolina used vs. unused permitted composting capacity, 2014-15



DATA

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

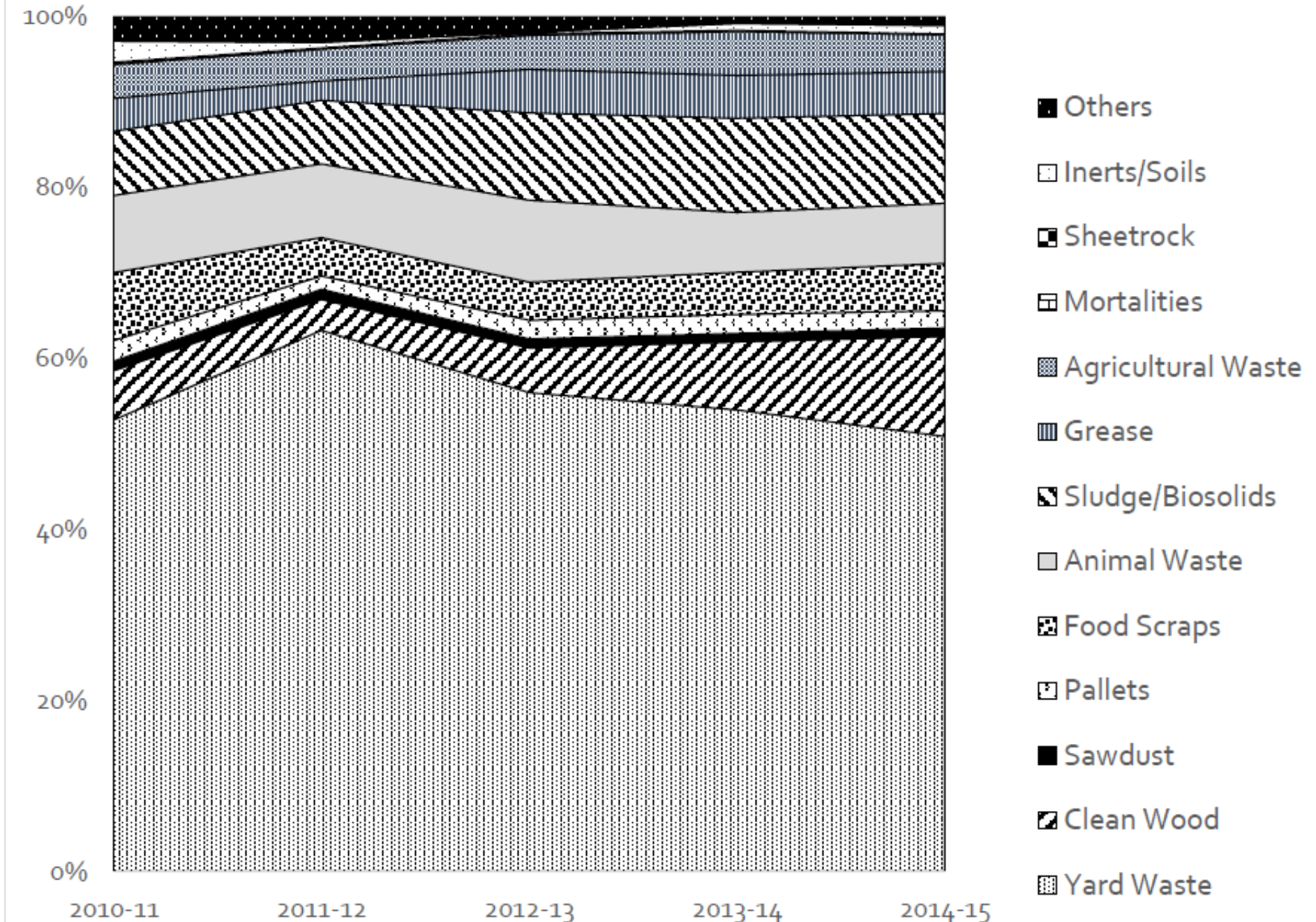


Figure 3. Top North Carolina permitted composting facilities

Total amount processed, food waste processed and unused capacity, 2014-15



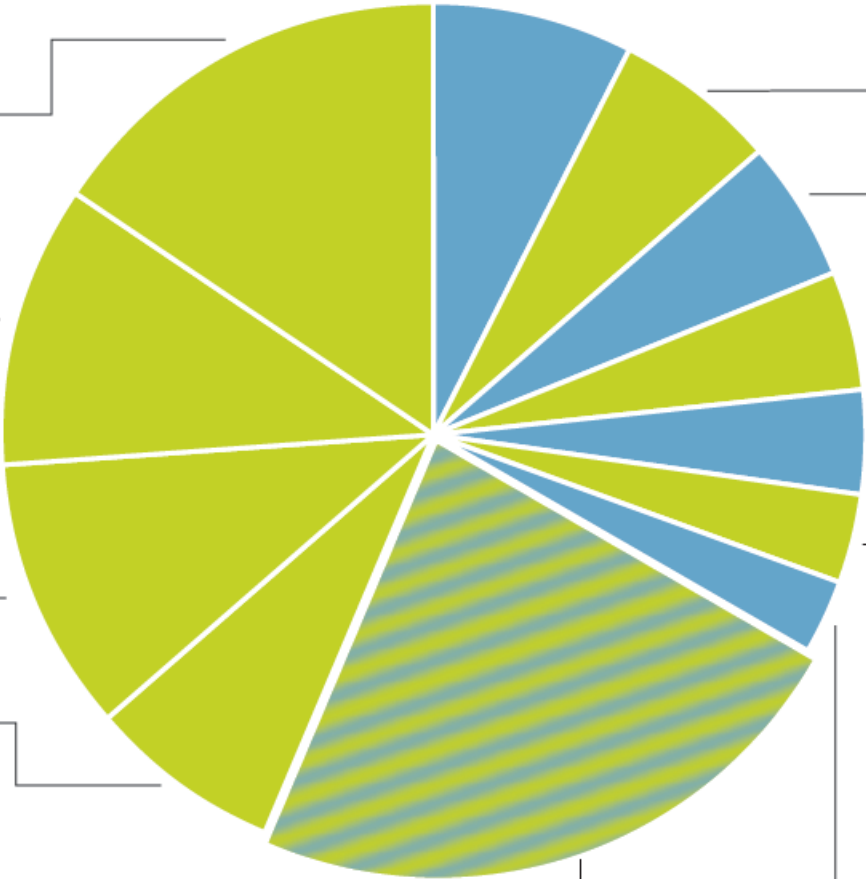
Private Public Private & Public

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

McGill-New Hill
82,131 tons (1,231tons 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)

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



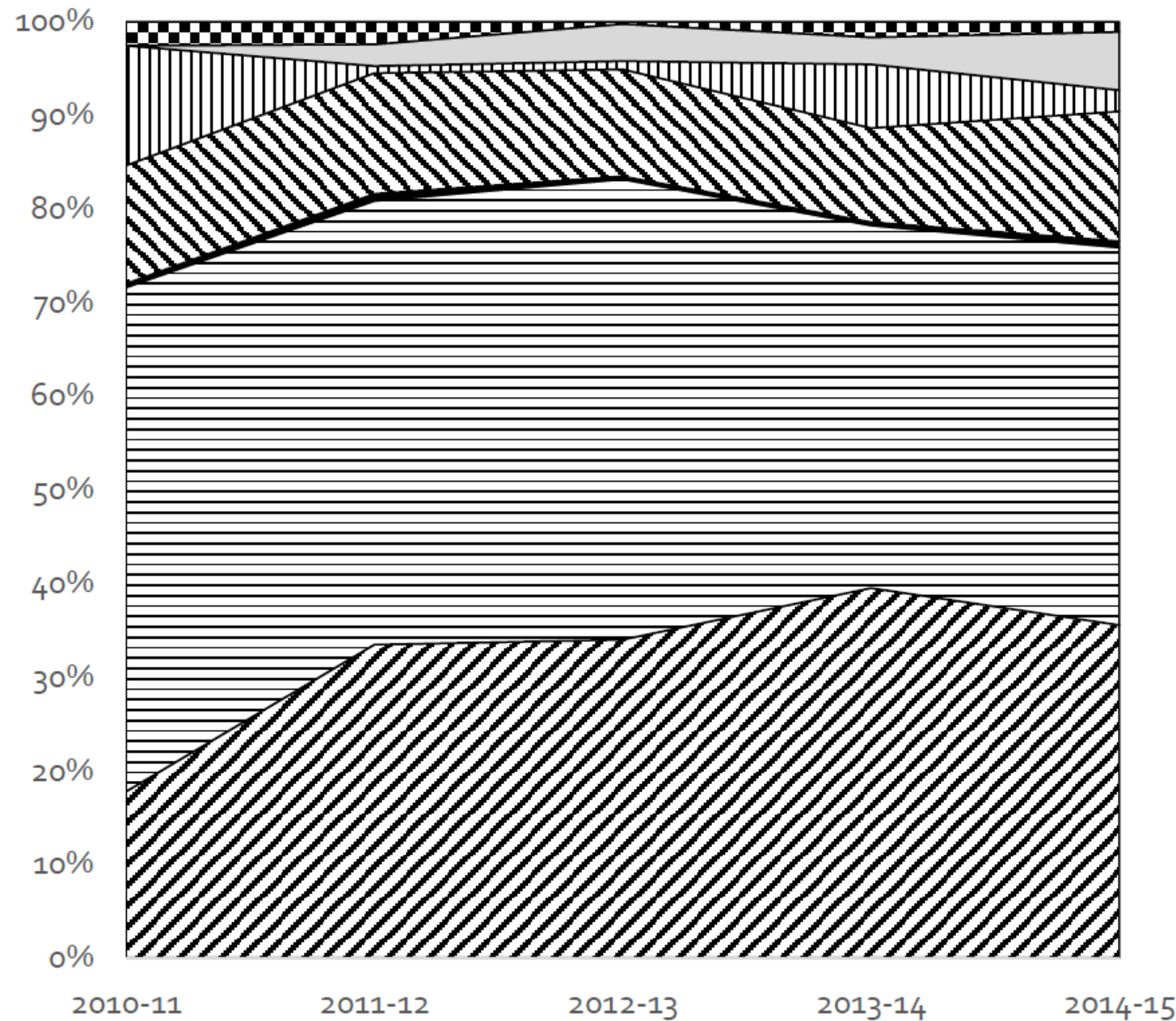
Tipping Fees (FY 2014-2015) @ the gate

Waste Type	Construction & Demolition		Municipal Solid Waste		Organics
Facility Type	Landfill	Transfer Stations	Landfill	Transfer Stations	Composting
# Facilities Reported	53	69	39	113	20
High (\$/ton)	\$ 65	\$ 70	\$ 72	\$ 80	\$ 49
Average (\$/ton)	\$ 38	\$ 46	\$ 41	\$ 52	\$ 26
Median (\$/ton)	\$ 39	\$ 44	\$ 39	\$ 51	\$ 25
Low (\$/ton)	\$ 14	\$ 31	\$ 22	\$ 29	\$ 10

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.

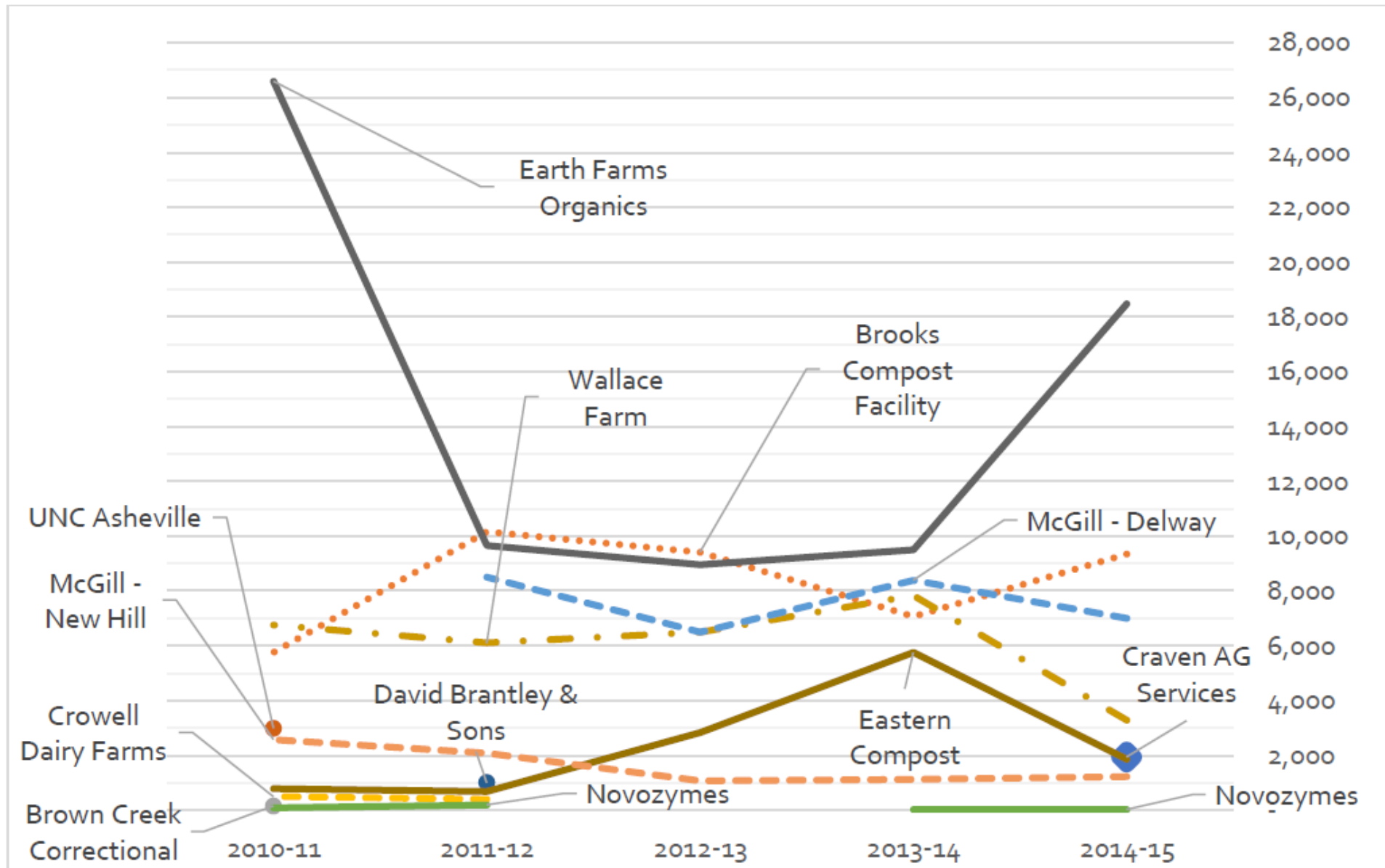
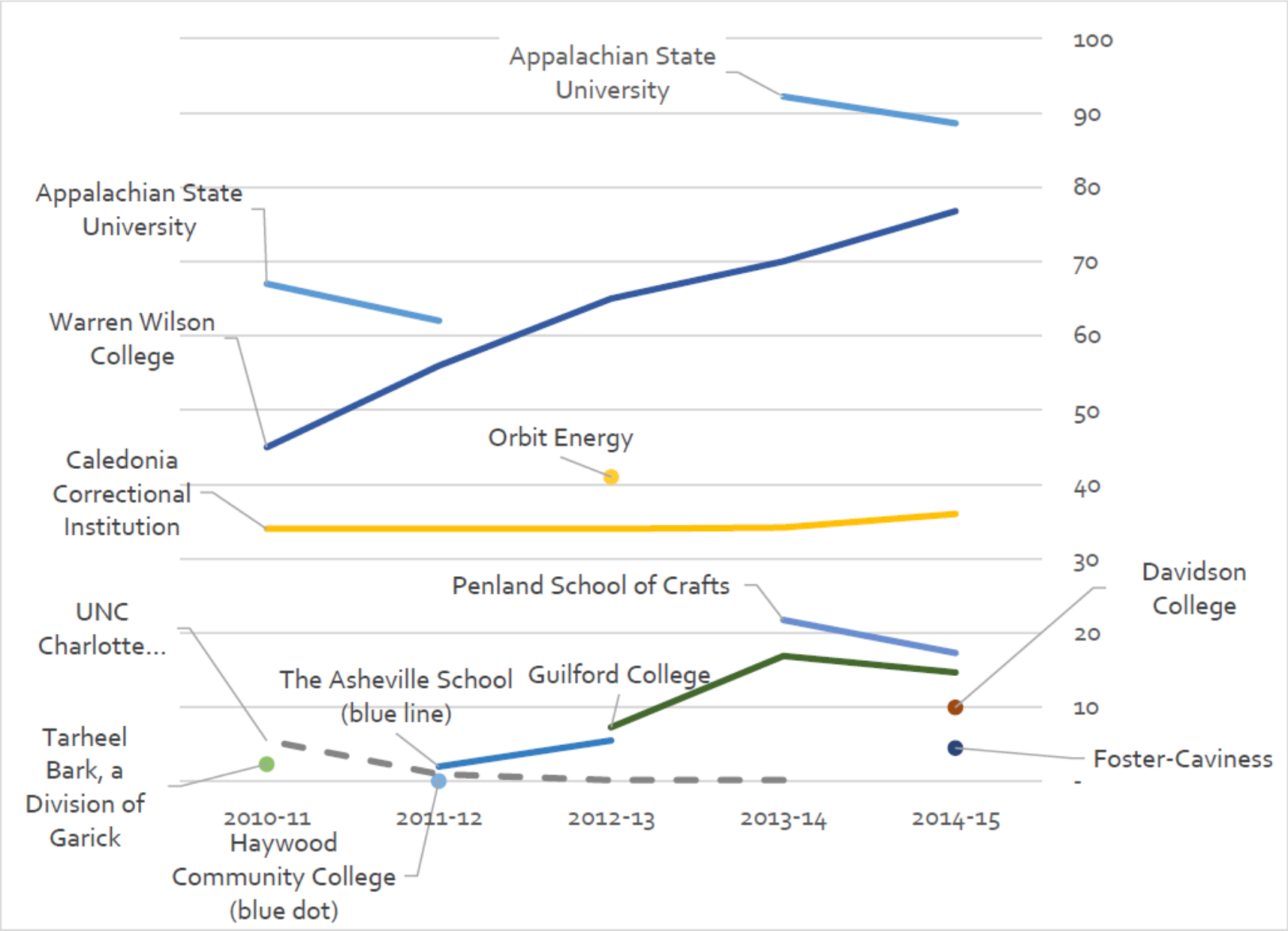
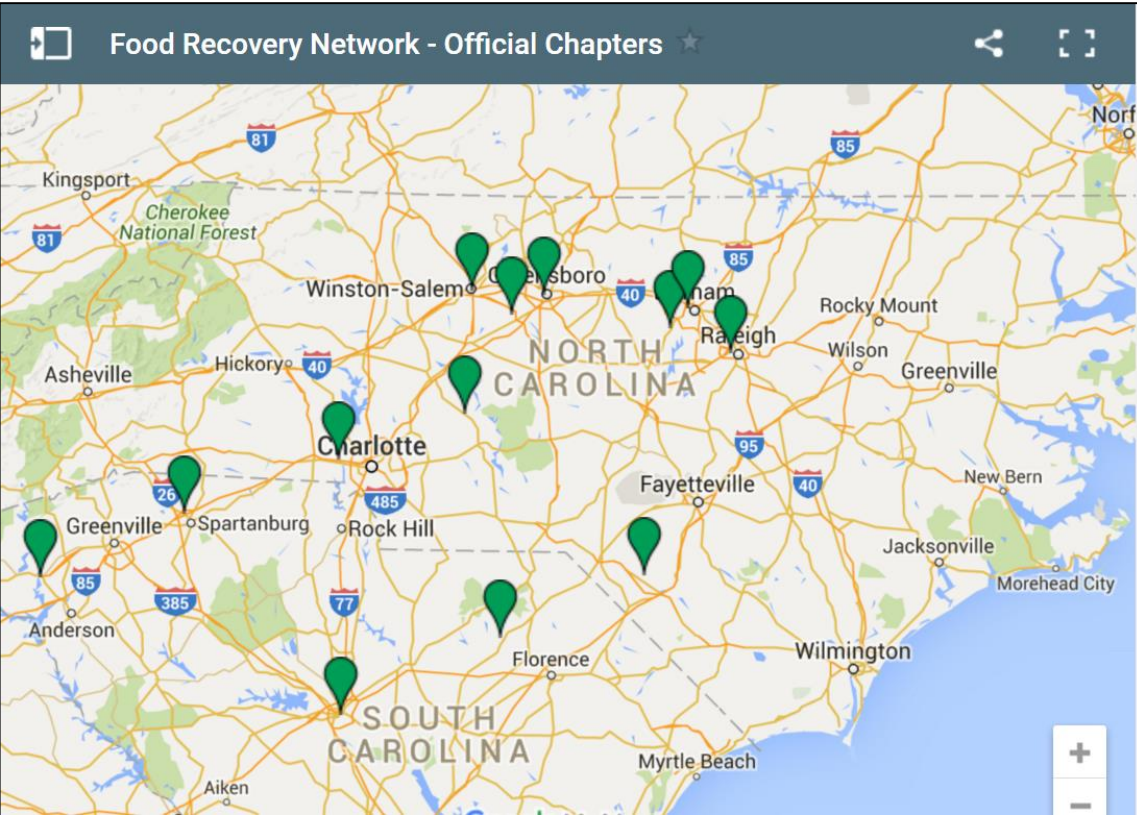


Figure 18 – Food scraps (less than 100 tons) received at NCDEQ DWM permitted composting facilities.

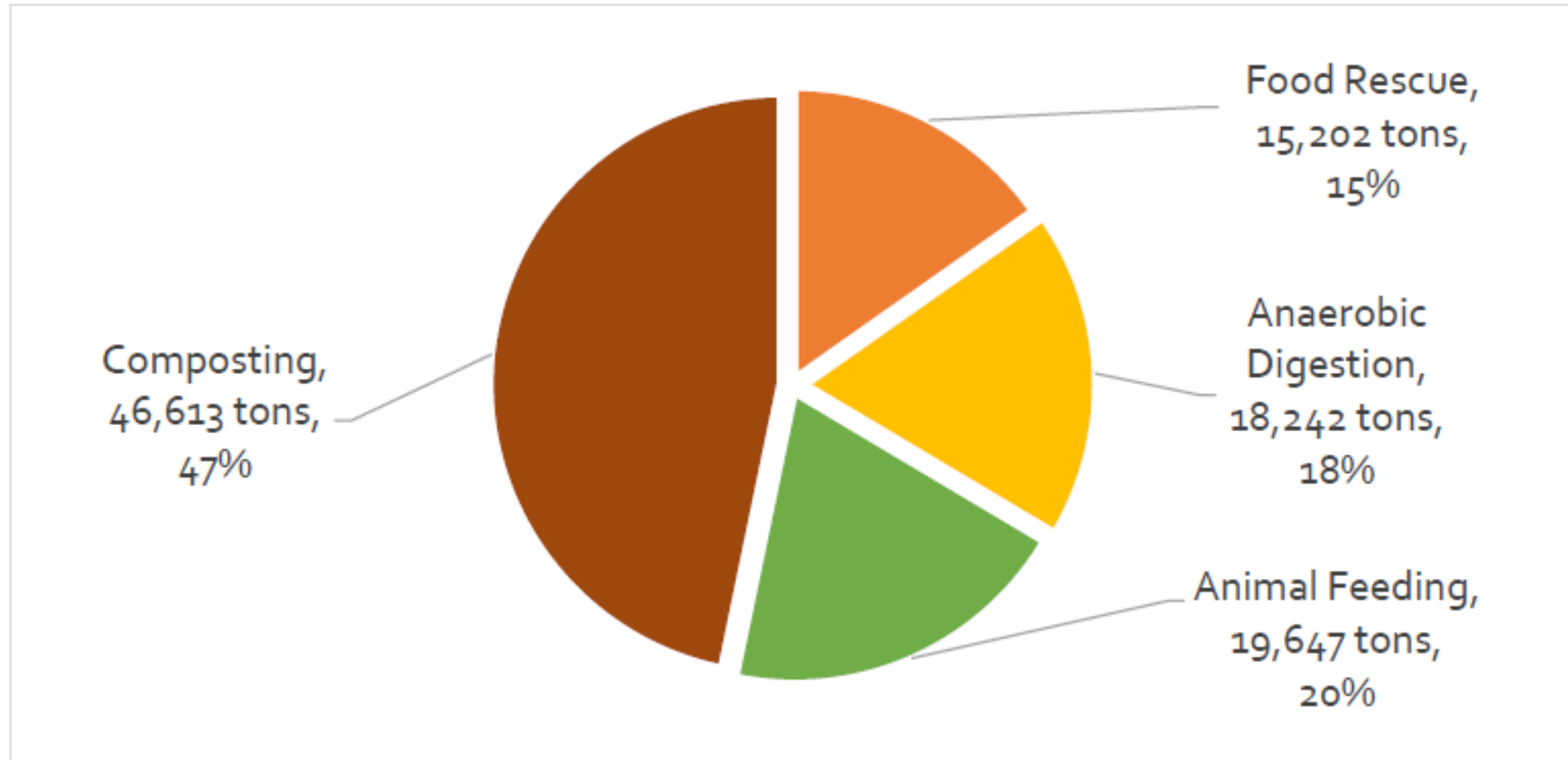


Food Rescue



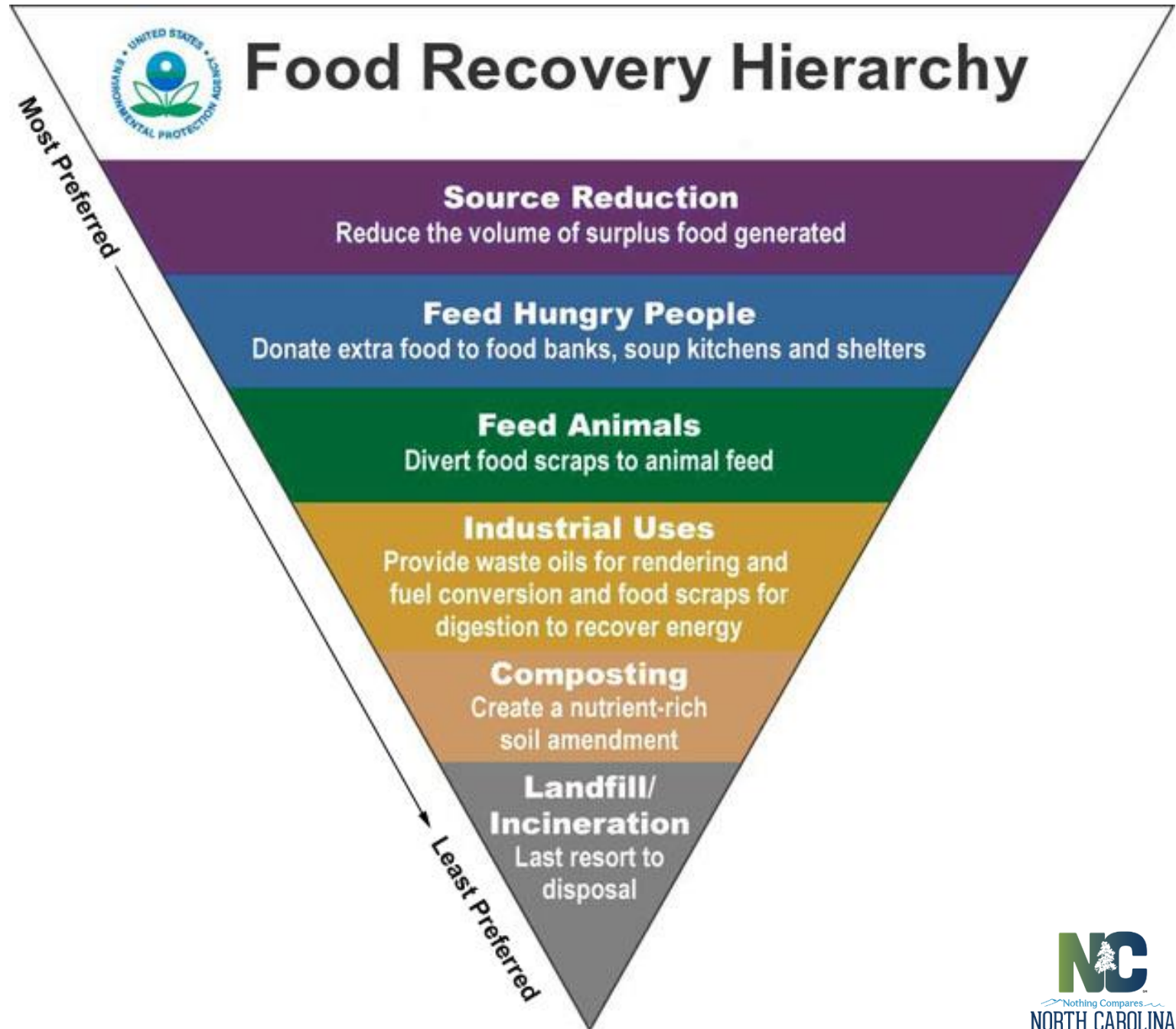
- APPALACHIAN STATE UNIVERSITY
- BELMONT ABBEY COLLEGE
- DUKE UNIVERSITY
- HIGH POINT UNIVERSITY
- NORTH CAROLINA STATE UNIVERSITY
- PFEIFFER UNIVERSITY
- SALEM COLLEGE
- UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL
- UNIVERSITY OF NORTH CAROLINA AT GREENSBORO
- UNIVERSITY OF NORTH CAROLINA AT PEMBROKE

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).





50% Food Waste Reduction Goal by 2030



NC ORGANICS RECYCLING STUDY:
MATERIALS MANAGED 2011-2015
& FOOD RECOVERED 2015



NC
Environmental Assistance
and Customer Service
JUNE 2016

North Carolina 2012 Food Waste Generation Study

August 2012



A comprehensive report quantifying the amount of food waste
generated in North Carolina by residents and commercial businesses.



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

27 Food Waste Reduction Strategies

Values are from ReFED Report

Increase NC infrastructure
6.8x with prevention

1.2 M tons
"TODAY"

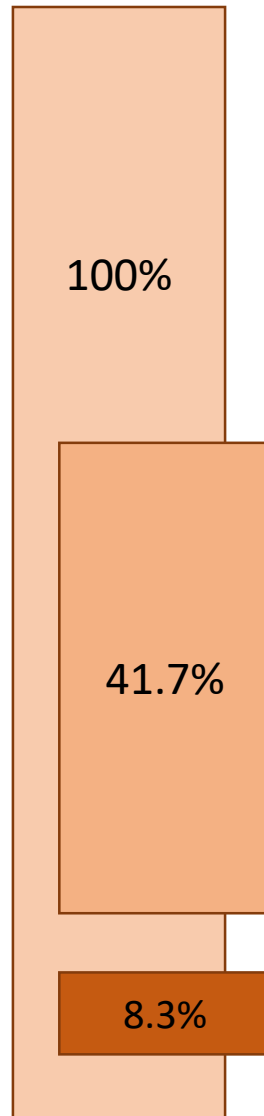
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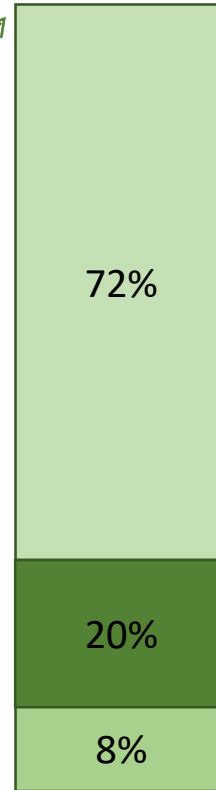
Expecting
1.6 M tons
By 2030



550,000 tons
left to reach 50%
goal now

800,000 tons
to reach 50% goal
in 2030

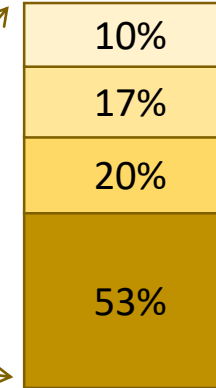
100,000 tons
recovered in 2015



Recycling
100,000 tons now
576,000 tons by 2030

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)



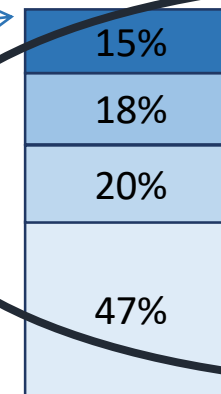
Others (animal feed, small scale
composting, commercial greywater)

WRRF w/AD

Centralized AD

Commercial Composting

Increase NC
infrastructure
7x without
prevention



Food Rescue (~25 million meals)

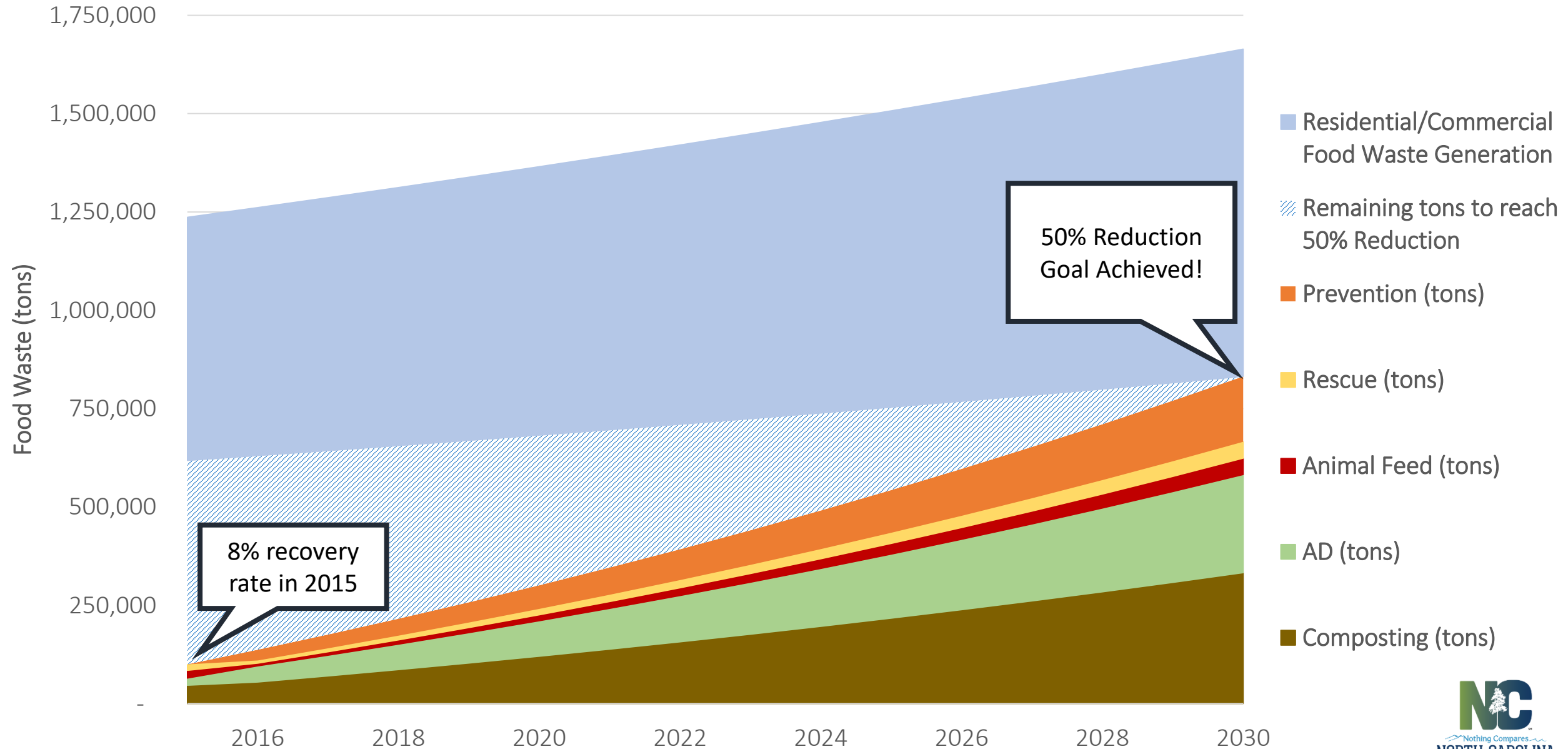
Animal Feeding

Anaerobic Digestion

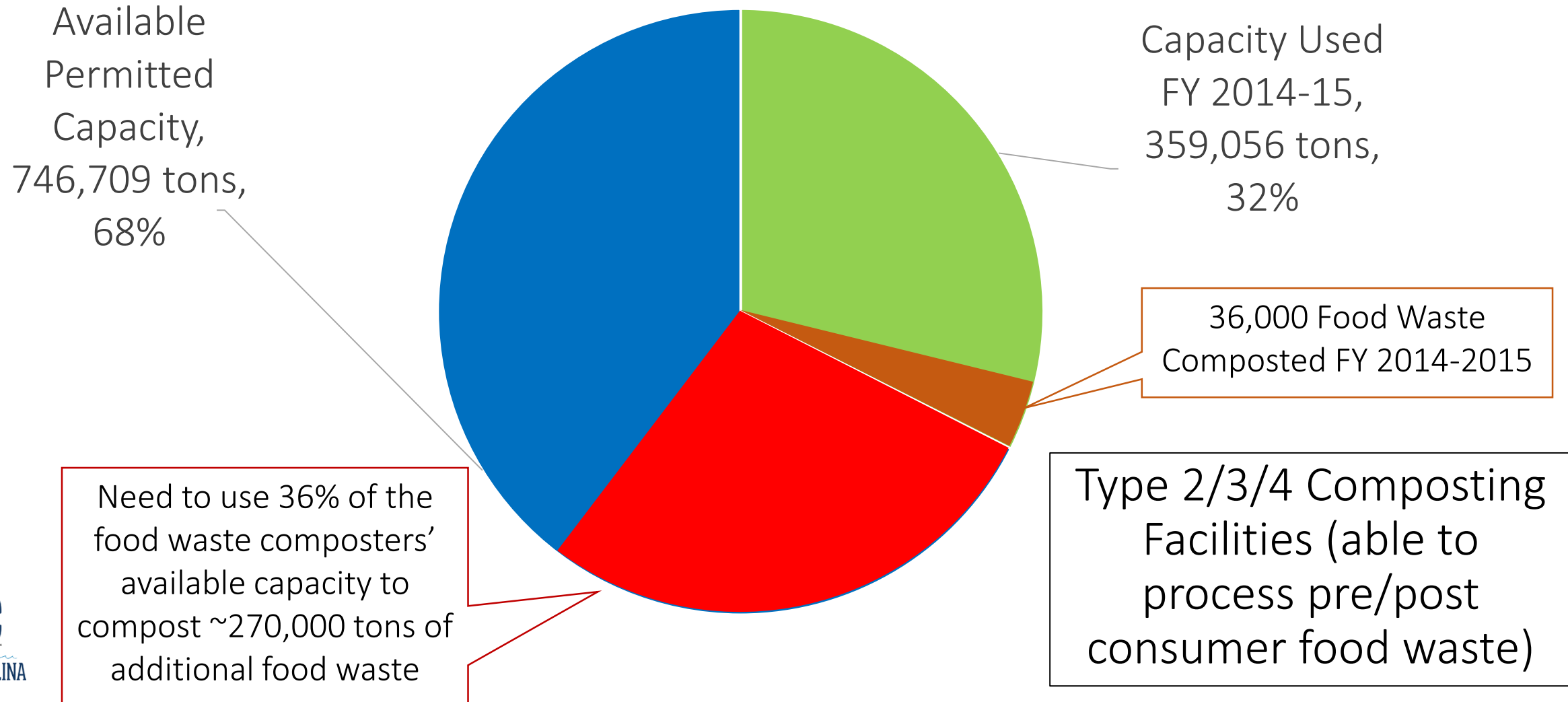
Composting



NC FOOD RECOVERY PLAN



NC Situation: Total Permitted Capacity Food Waste Composters FY 14-15



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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