

Road to Zero Waste

ORANGE COUNTY, NC | 2023-2045

DRAFT



ORANGE
COUNTY
NORTH CAROLINA

**ORANGE
COUNTY
SOLID WASTE**

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Orange's County Definition of Zero Waste

The reduction of solid waste to nothing, or as close to nothing as possible, by minimizing excess consumption by means of responsible production, consumption, and reuse and maximizing the recovery of solid wastes through recycling and composting.

GOAL: **Zero Waste by 2045.**



Project Goals (1-8)

GOAL 1 – Develop a comprehensive and easily understandable Solid Waste Master Plan, with identifiable action items and a plan summary.

GOAL 2 – Develop a comprehensive strategy by 2045 that will lead to “Zero Waste”, as defined by the County.

GOAL 3 – Integrate the Plan’s efforts with the ongoing climate action plans of the County, its Towns (Hillsborough, Chapel Hill & Carrboro), the University, and the University Health Care system.

GOAL 4 – Select a sustainable business model that incorporates financial, social, and environmental aspects, including carbon footprint reduction impacts on our community.

Continued...



Project Goals (1-8)

GOAL 5 – Identify future programs, initiatives, facilities, and infrastructure to achieve the Zero Waste goal, as defined by the County, while ensuring the long-term financial stability of the County’s solid waste and recycling program.

GOAL 6 – Identify strategies to increase public education and participation in waste reduction and waste diversion programs through awareness of reduction, reuse, recycling, and composting; while addressing ordinance and enforcement requirements.

GOAL 7 – Develop and include an equitable comprehensive public engagement process that effectively includes input by the general public, including groups that historically have been marginalized, and key interest groups, including municipal and university partners, and keeps the public informed and updated on the process.

GOAL 8 – Ensure all proposed programs and policies are in regulatory compliance with local, state, and federal requirements.

GBB Perspective: How to Get to Zero Waste

A Road to Zero Waste Plan is guided by the following questions:

- ▶ How to prevent, reduce, reuse?
- ▶ What to recycle / divert?
- ▶ How to collect and process?
- ▶ What to do with what is left?
- ▶ How to finance?

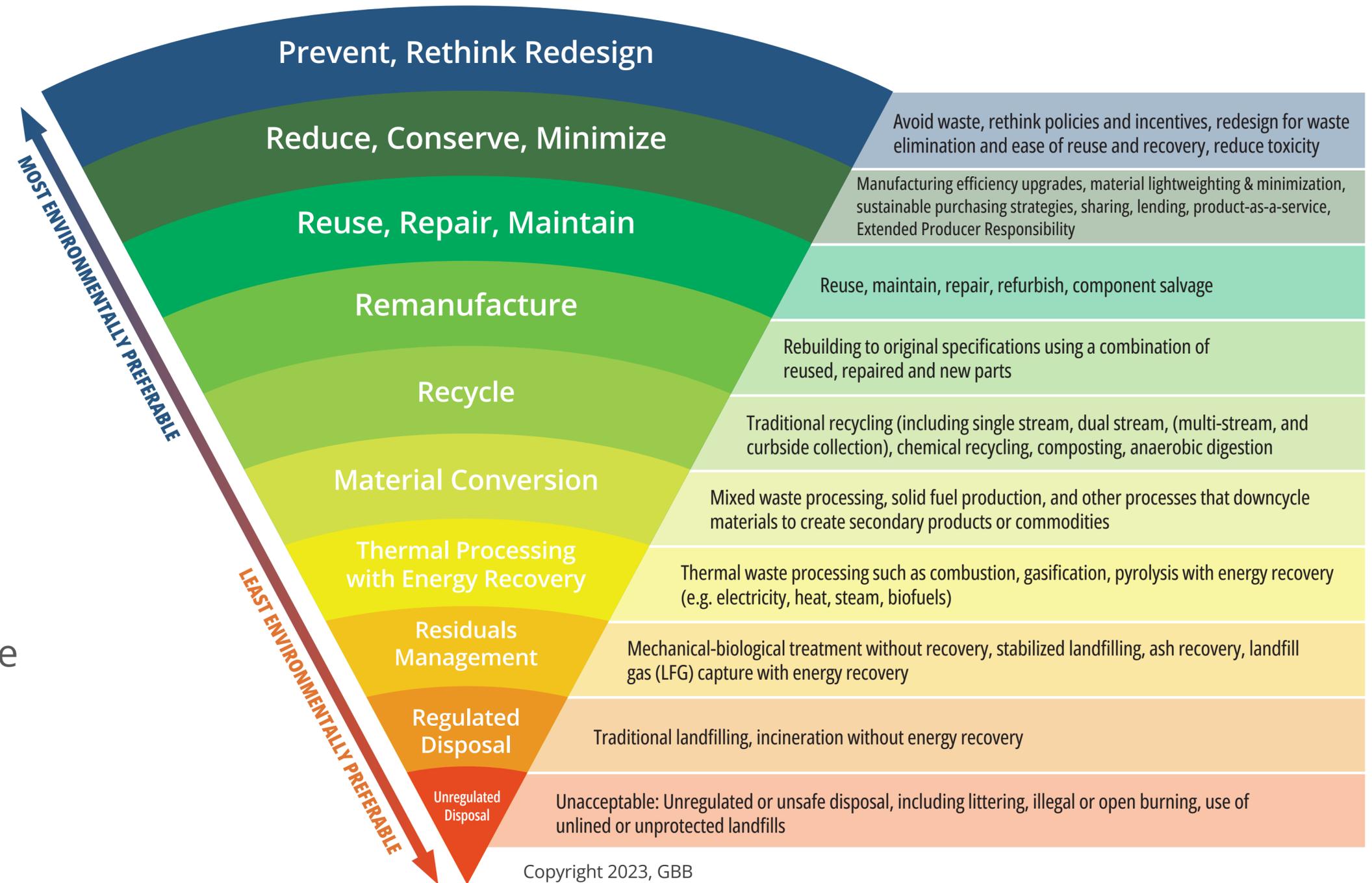


KEY PILLARS OF ZERO WASTE INCLUDE:

1. Reduction/reuse of materials, food capture & distribution, bulky material collection for reuse/donation, store promotion of refill/reuse packaging models
2. Increased recycling: current curbside materials, food scraps, mattresses, electronics, paint
3. Use of a sustainability lens for what is left

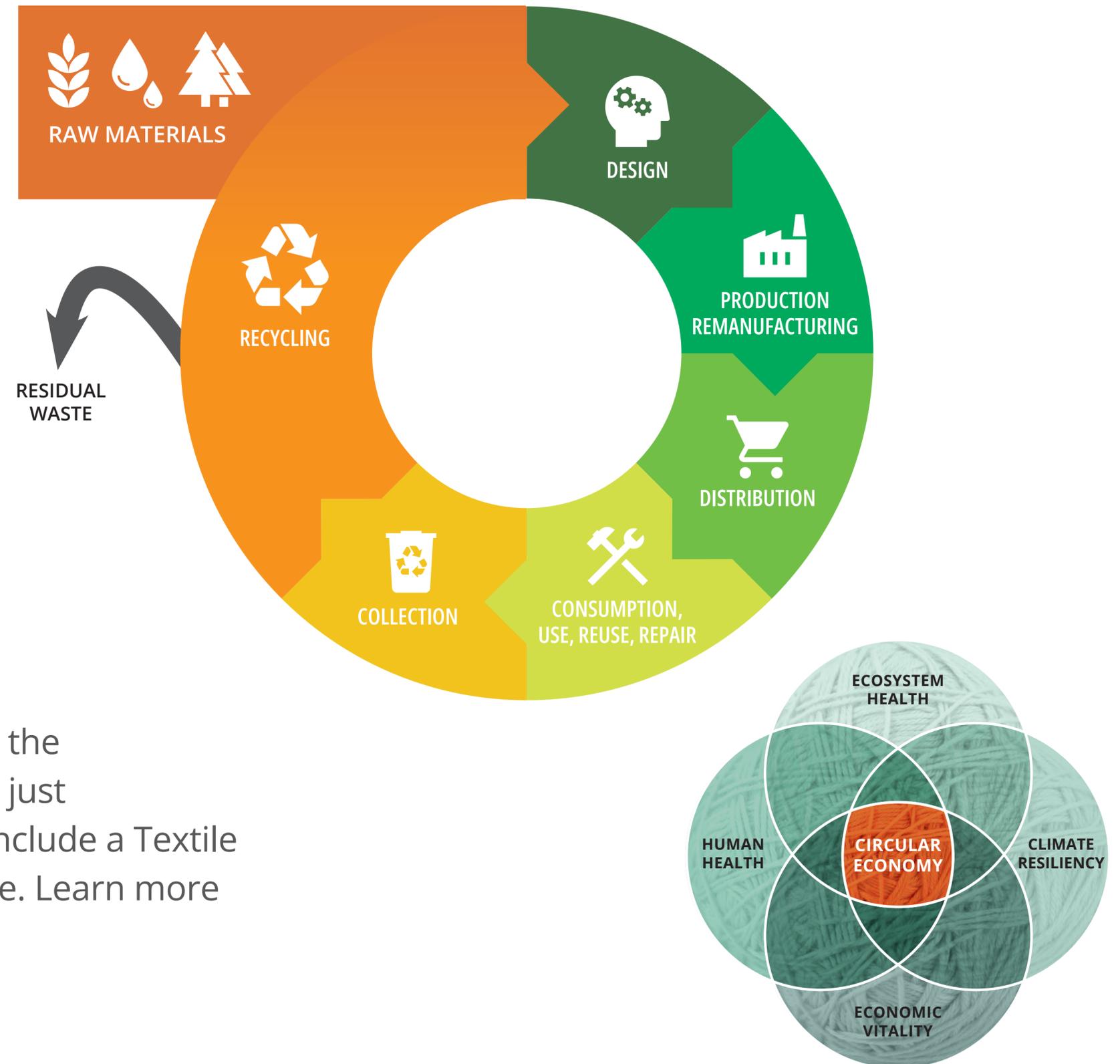
Sustainable Materials Management Hierarchy

The SMM Hierarchy tool helps establish preferred management practices for waste materials to prevent waste generation in the first place.



Advance the Circular Economy (CE)

- ▶ CE goals: design out waste and pollution, keep products and materials in use and regenerate natural systems.
- ▶ Using SMM Hierarchy and the CE Model serves the Road to Zero Waste.
 - Local example: Circular Triangle. An organization in the Triangle region of North Carolina that accelerates a just transition to a circular economy, whose initiatives include a Textile Incubator to encourage keeping clothing in local use. Learn more about the incubator at www.circulartriangle.org.



Zero Waste Plan Must Reflect Community Input

Orange County Public Engagement Activities in 2022



Solid Waste Advisory Group



Public Meetings



Website/Social Media



Free and Paid Ads (print)
and TV Coverage



Farmers Market Blitz



Online survey (English, Spanish,
Mandarin, Burmese)

Engaging Traditionally Marginalized Community Members

- ▶ **PUBLIC SURVEY IN 4 LANGUAGES:**
English, Spanish, Burmese, Mandarin.
- ▶ **4 COMMUNITY LISTENING SESSIONS**
3 in-person sessions (1 hybrid), 1 virtual session; interpreters available.
- ▶ **SIGNAGE & INFORMATIONAL MATERIALS**
To reach communities with limited internet access or exposure to news networks in places residents gather or access resources.
- ▶ **ADVERTISING SURVEY & PUBLIC MEETINGS**
Local media outlets: newspapers, community-based radio, area newsletters and listservs.

Public Feedback Summary



Current system working well but want County to be on forefront of solid waste **innovation**.



Overwhelming support for increased efforts for **food waste management**.



Desire systemic change with maximum effort on **preventing waste**.



Increased outreach and education efforts needed; **consistency** in drop-off materials.



Invest in state-of-the-art **facilities** to handle waste within County or regionally.



Robust recycling and food waste management within **K-12 systems**.

Current Programs

WASTE & RECYCLING CENTERS (WRCs)

- ▶ Hazardous Household Waste Drop-off
- ▶ 24-Hour Recycling Drop-off Sites (3 unstaffed) includes *Glass On The Side* program
- ▶ Rigid Plastics Recycling (at 5 staffed WRCs)
- ▶ Shred Center
- ▶ Salvage Shed
- ▶ Construction & Demolition Waste
- ▶ Food Waste Drop-Off Sites

RECYCLING COLLECTION

- ▶ Urban Curbside (weekly)
- ▶ Residents within the town limits of Hillsborough, Carrboro & Chapel Hill (including the portion within Durham County) in single-family homes or duplexes qualify for weekly curbside recycling collection
- ▶ Rural Curbside (every other week)
- ▶ 100% of the unincorporated areas of Orange County
- ▶ Multi-Unit Housing
- ▶ Recycling cart sites at multi-unit housing complexes in Carrboro, Chapel Hill & Hillsborough; available to residents 24/7 for single-stream recycling collection
- ▶ Commercial (recycling, cardboard, food waste)

DISPOSAL OPERATIONS

- ▶ Operation of the Integrated Solid Waste Management facility at Eubanks Road which contains:
 - The Construction and Demolition Landfill
 - Regulated Material Recycling
 - Mulch and Compost Sales
 - Asbestos program

EDUCATION & OUTREACH

- ▶ Composting Education:
 - Composting Presentations & Workshops
 - Compost at Home
 - Compost Bins for Sale
- ▶ Waste Reduction:
 - Skip the Straw
 - Skip the Stuff
 - Zero Waste Move-In/Move-Out
- ▶ Recycling Stars Program

GOVERNMENT BUILDINGS, PUBLIC SCHOOLS, OTHER

- ▶ Limited MSW collection for select government buildings and schools

Key Factors for a Zero Waste Future in Orange County

- ▶ **CHANGE** - We can't achieve zero waste without it.
- ▶ **POPULATION GROWTH** - Is projected to increase 18% between 2020 to 2040.
- ▶ **TRIANGLE J CONSORTIUM** - The County is collaborating with Triangle J on solid waste issues.
- ▶ **RECYCLING COLLECTION** - The County takes over urban recycling collection in July 2024.
- ▶ **C&D LANDFILL** - Has 20+ years of life remaining at current fill rate.
 - Diverting more recyclables from C&D material will extend the life of the landfill.
- ▶ **CONTROL** - The County currently does not control all aspects of solid waste collection.
 - MSW is currently only collected from WRCs (drop-off sites) and from select government buildings and schools.
 - Food Waste Collection sites are partially dependent upon the Farmers Markets remaining open in their current locations, otherwise they may have to move, which would have a negative impact to program usage.
 - The County can build upon the success of its current food waste collection at restaurants and bars.
- ▶ **EUBANKS ROAD DISPOSAL FACILITY** - Has significant limitations at present as well as adjacent community concerns.
 - Future facility investment is critical for County control of materials including MSW.

Current Solid Waste Collection in Orange County (Baseline)

	Tons Now Managed by Orange County	Tons Now Managed by the Towns	Total Tons Now Managed by Orange County & the Towns
MSW	6,816	16,006	22,822
Recycling	16,510	0	16,510
Yard & Food Waste	8,101	5,260	13,361
C&D	23,629	0	23,629
Total:	55,056	21,266	76,322

The impact of the Road to Zero Waste Plan focuses on increasing recycling plus diversion of yard and food waste tonnages.

KEY POINTS:

1. Based on population waste generation estimates, there should be more MSW attributable to Orange County and the Towns than is captured and processed by them presently because MSW collection is handled by the municipalities and/or under private waste collection and disposal.
 - Recognizing the present limited collection of MSW, the County has the most control over increasing and tracking the diversion of recyclables and yard/food waste.
2. County population growth is projected to be 18% from 2020 to 2040; this will increase waste materials and disposal in the region.
3. If the Road to Zero Waste actions are not undertaken, the 2045 Zero Waste goal will not be achievable.

Road to Zero Waste Scenarios For Orange County

SCENARIO 1

No current facility changes;
current program adjustments;
no new programs.

▶ **Lowest Cost.**

SCENARIO 2

Includes all of Scenario 1
recommendations plus some
current facility changes; current
program adjustments and new
programs.

▶ **Medium Cost.**

SCENARIO 3

Includes all of Scenario 1 &
Scenario 2 recommendations
plus Sustainable Materials
Management (SMM) campus;
current program adjustments
and new programs.

▶ **Highest Cost.**

SCENARIO 1

- ▶ Additional 4 FTE employees.
- ▶ In addition to the 4 FTE, \$200,000 estimated to cover materials and fees.
- ▶ **Lowest cost, *least impact.***

SCENARIO 1

#	Focus Area	Recommendation	Public Input	Impact on Adjacent Systems	Equity Impact (RE: One Orange Equity Framework)	System Flexibility Over Time	Geographic Coverage Area	Timeline*	Lifecycle of the Project	Impacts all Businesses & Residences?
1	Marketing	Update imagery; Public education & social media; Expand app; Create rallying point	Need improved website/app; prioritize making recycling easy and accessible.	None	Meets	High	Whole County	Quick win	Annually	Yes
2	Marketing	Focus on all language speakers in signage/messaging.	Increased efforts are needed, but more importantly, to make recycling easy.	None	Meets	High	Whole County	Quick win	Annually	Yes
3	Waste Prevention	Raise awareness on reuse and waste prevention.	Desire to put maximum efforts toward preventing waste in the first place.	None	Meets	High	Whole County	Quick win	Annually	Yes
4	Policy	Advocate for more material bans and revise the solid waste ordinance.	Desire to reduce or ban some items in hospitals and schools.	None	Meets	Low	Whole County	Long	One-time	Yes
5	Policy	Create County-level commercial and multifamily recycling requirements.	Mandating commercial & multi-family recycling is a top choice.	None	Meets (w/ more universal-provided & subsidized services for MFB)	Low	Whole County	Medium	One-time	Focuses on Multifamily/business
6	Partnerships	Innovation partnerships with UNC and UNC health system.	The current system works well but desires to be at the forefront of waste innovation.	None	Meets	High	Whole County	Ongoing	Annually	Yes
7	Waste Prevention	County purchasing for waste prevention and ag-related to food waste.	Prioritized waste prevention above all other activities.	None	N/A	High	Whole County	Short	One-time	Focuses on County business operations
8	Waste Prevention	Consider becoming part of a reuse marketplace.	Most important question: "How should waste be prevented, reduced, or reused?"	None	Meets	Medium	Whole County	Short	One-time	Yes

**Environmental Benefits/
Air Quality**
(see Appendix for tonnage projections)

Improved:
Low estimate based on EPA:

- Additional 15,000 tons of recycling
- Additional 6,000 tons of organics

Env. Benefits/GHG Avoided

Improved:

- -44,912 MTCO2E avoided
- Equivalent to 10,000 cars taken off the road

Impact on SWPF
(Residential tons only)

\$9.66

- 6.8% increase over current \$142/year

SCENARIO 2

Note: Scenario 2 assumes all recommendations from Scenario 1 are implemented.

- ▶ Includes New Recommendations
- ▶ Additional 2 FTE employees.
- ▶ Additional \$500,000 estimated to cover materials and fees.
- ▶ **Medium cost, *bigger impact.***

SCENARIO 2

#	Focus Area	Recommendation	Public Input	Impact on Adjacent Systems	Equity Impact (RE: One Orange Equity Framework)	System Flexibility Over Time	Geographic Coverage Area	Timeline*	Lifecycle of the Project	Impacts all Businesses & Residences?
9	Facilities	Consistency across items accepted at WRCs (with exception of HHW)	Consistent schedule; carless; expanded services/access; additional materials.	Transportation /Energy: reduction in miles traveled	Meets	Low	Whole County	Short	One-time	Yes
10	Enforcement	Enforcement at WRCs (with staff and/or security cameras)	Necessary to enforce illegal dumping & cross-contamination with more focus.	None	Meets	Medium	Whole County	Short	One-time	Yes
11	Facilities	More accessible drop-off options/locations for multifamily buildings.	Mandating commercial/multifamily recycling is among the top 2 policies desired by respondents.	None	Meets	Medium	Whole County	Short	One-time	Focuses on Multifamily
12	Programs	Offer multiple cart sizes.	The current carts are too big/heavy.	None	Meets	Low	Whole County	Short	One-time	Yes
13	Programs	Create model programs across all schools for metal, paper, plastic, glass, food waste, etc.	Food waste collection at schools is among the top 2 public space focus wanted.	None	Meets	High	Whole County	Quick win	One-time	Focuses on K-12 population and staff
14	Waste Prevention	Implement deconstruction ordinance updates/facility audits/collect C&D recycling data.	Proactive C&D diversion among top 2 waste prevention areas of focus wanted.	None	Meets	Low	Whole County	Long	Annually	Yes

Environmental Benefits/ Air Quality
(see Appendix for tonnage projections)

Improved:

- Mid-point estimate based on EPA:
- Additional 31,000 tons of recycling over now (not cumulative)
- Additional 16,000 tons of organics over now (not cumulative)

Env. Benefits/ GHG Avoided

Improved:

- - 93,778 MTCO2 avoided
- Equivalent to 21,000 cars taken off the road

Impact on SWPF (Residential tons only)

\$19.89

- Cumulative 14% increase over current \$142/year

SCENARIO 2: RECOMMENDATION #9

Summary of Materials Accepted at all Orange County WRCs

WRC Name	Materials Types																				Material Types Accepted Now	Material Types to Add
	1. Trash/Garbage	2. Single-Stream Recycling	3. Yard Waste	4. Food Waste	5. Scrap Metal	6. Plastic Bags & Film	7. Clothing, Textiles, & Shoes	8. Large Rigid Plastics	9. Used Cooking Oil	10. Motor Oil & Oil Filters	11. Anti-Freeze	12. HHW	13. Batteries	14. Electronics	15. Appliances	16. Clean Wood	17. Tires	18. Glass	19. Styrofoam/EPS	20. #1 Berry boxes, clamshells		
<i>Full-Service District Waste & Recycling Centers</i>																						
Eubanks Road	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	18	2
Walnut Grove Church Road	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	18	2
<i>Neighborhood Satellite Waste & Recycling Centers</i>																						
Bradshaw Quarry Road	Y	Y	N	N	Y	N	N	Y	N	Y	Y	N	Y	Y	Y	Y	Y	Y	N	N	12	8
Ferguson Road	Y	Y	Y	N	Y	N	N	Y	N	Y	Y	N	Y	Y	Y	Y	Y	Y	N	N	13	7
High Rock Road	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	N	N	16	4

SCENARIO 3

Note: Scenario 3 assumes all recommendations from Scenarios 1 & 2 are implemented.

- ▶ Includes New Recommendations
- ▶ Estimated \$175,000 master plan fees.
- ▶ Estimated \$7M-\$12M for the Single-Stream Recycling (SSR) facility assuming no need to purchase property & \$250,000 for equipment; plus 5 FTE employees.
- ▶ Organics program development \$1.4M.
- ▶ **Highest cost, *biggest impact.***

SCENARIO 3

#	Focus Area	Recommendation	Public Input	Impact on Adjacent Systems	Equity Impact (RE: One Orange Equity Framework)	System Flexibility Over Time	Geographic Coverage Area	Timeline*	Lifecycle of the Project	Impacts all Businesses & Residences?
15	Facilities	Phased Master Plan for Eubanks Rd (Admin/Disposal Center) and/or alternate location(s)	Significant structural/layout limitations and adjacent community concerns.	Transportation /Energy: potential reduction in miles traveled	Meets (w/ implementation at alternative site only)	Low	Whole County	Medium	One-time	Yes
16	Facilities	Consolidation of SSR transfer and MSW transfer.	The public wants a "sustainable materials management center."	Transportation /Energy: potential reduction in miles traveled	Pending	Medium	Whole County	Medium	One-time	Yes
17	Programs	Organics program development.	Overwhelming support for increased food waste management efforts.	Wastewater: from removing organics from landfill	Pending	High	Whole County	Short	Annually	Yes

**Environmental Benefits/
Air Quality**
(see Appendix for tonnage projections)

Improved:
Low estimate based on EPA:

- Additional 15,000 tons of recycling
- Additional 6,000 tons of organics

High estimate based on EPA:

- Additional 47,000 tons of recycling over now (not cumulative)
- Additional 26,000 tons of organics over now (not cumulative) organics

Env. Benefits/GHG Avoided

Improved:

- -142,644 MTCO2E avoided
- Equivalent to 32,000 cars taken off the road.

**Impact on SWPF
(Residential tons only)**

\$57.10 to \$62.76

- Cumulative 40.2%-44.2% increase over current \$142/yr.

Key Impacts of Road to Zero Waste Scenarios

The Road to Zero Waste Plan includes impacts on diversion tonnages as described in the tables to the right.

Note: Financial impacts are modeled at 25% for residential only.

SINGLE-STREAM RECYCLING <i>BASELINE IS 16,150 TONS</i>	Scenario 1	Scenario 2	Scenario 3
Additional Tonnage: Cumulative	15,000 tons	31,000 tons	47,000 tons
Additional Tonnage: Incremental	15,000 tons	16,000 tons	16,000 tons
Residential Tonnage at 25%	3,750 tons	4,000 tons	4,000 tons
Net Tip Fee @ \$28.65/ton	\$107,438	\$114,600	\$114,600

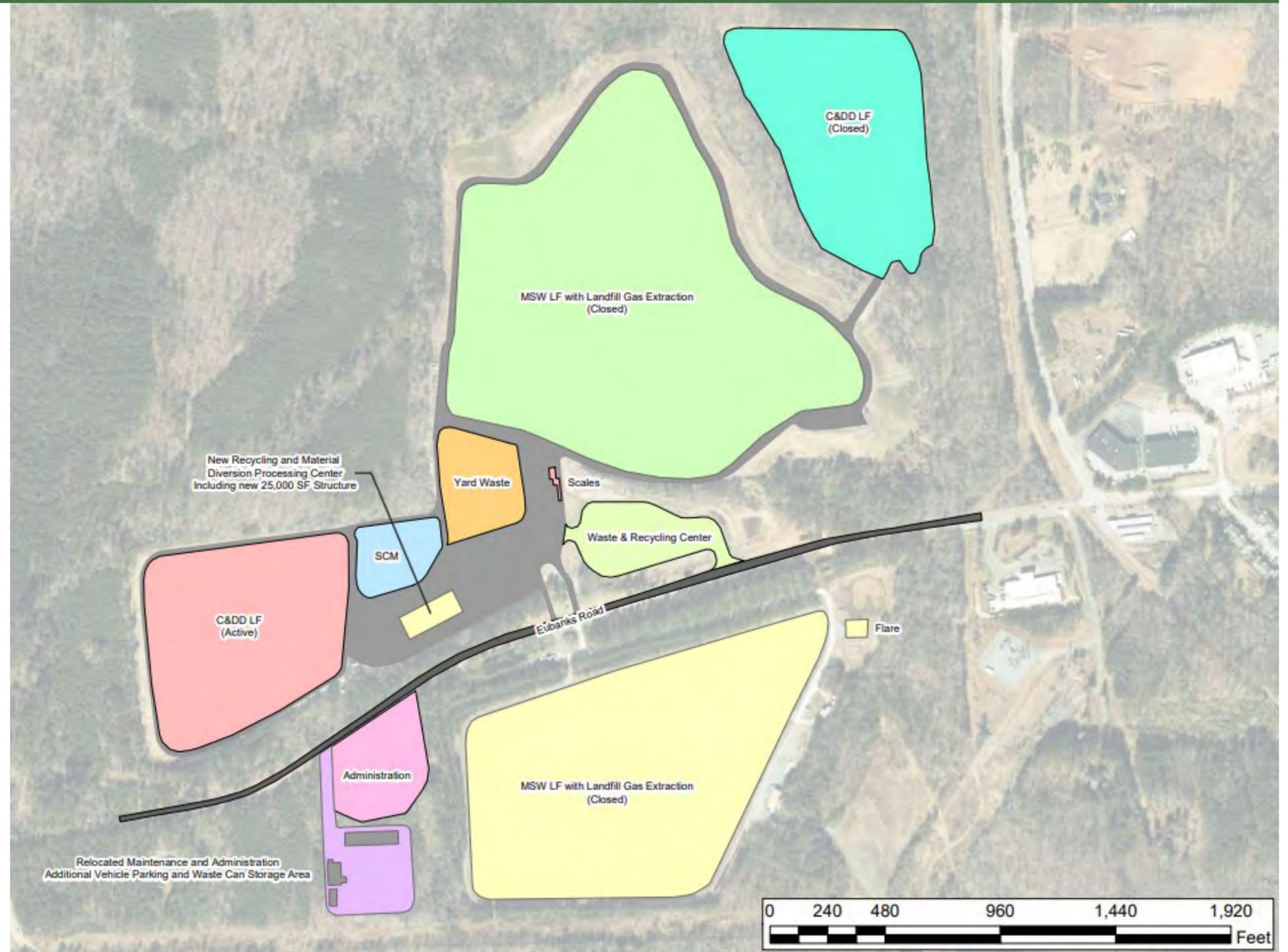
ORGANICS (YARD + FOOD WASTES) <i>BASELINE IS 13,361 TONS</i>	Scenario 1	Scenario 2	Scenario 3
Additional Tonnage: Cumulative	6,000 tons	16,000 tons	26,000 tons
Additional Tonnage: Incremental	6,000 tons	10,000 tons	10,000 tons
Residential Tonnage at 25%	1,500 tons	2,500 tons	2,500 tons
Net Tip Fee @ \$22.00/ton	\$33,000	\$55,000	\$55,000

SCENARIO 3: RECOMMENDATION #15

Eubanks Road Disposal Facility Possible Concept for the Future

- ▶ Need to improve the Material Recovery Facility now located at Eubanks Road.
- ▶ A new covered facility to address transfer/processing of SSR and incorporate other material streams that are now separated in the location.
- ▶ Staffing efficiencies could be gained by co-located material recovery operations to a single location.
- ▶ Master plan needed to look at relocating maintenance facility and yard to make room for expanded processing capability.

Reflecting adjacent community concerns, an alternate site should also be considered.



In Closing

The three scenarios presented herein require varying degrees of infrastructure, funding, and programming; the evaluation of which has considered public input and financial, environmental, equity, and lifecycle impacts.

The Road to Zero Waste project team is now recommending Scenario 3 as the chosen path forward for finalizing the *Road to Zero Waste Plan*.

Myriad stakeholders, paired with the Solid Waste Advisory Group (SWAG), will help to implement the *Road to Zero Waste Plan* moving forward, and there is a great foundation within Orange County to build up its Materials Management Program.

However, the County's Zero Waste goal by 2045 is not achievable without change.

Community buy-in and support are vital to success.

ORANGE COUNTY'S ROAD TO ZERO WASTE FUTURE IS HERE!

PREPARED BY:



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