

# **Is Zero Waste Possible In The Quad State Region?**

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# Overview

- **Presentation Examines Issue of Zero Waste From Different Perspectives**
- **Defining the Solid Waste Stream**
- **Materials Counted as Recyclables**
- **Comparison Profile of Waste Mgt. Practices in Quad State Communities**



# Overview - Continued

- **Comparing Recycling Rates From One State to Another**
- **Zero Waste Obstacles**
- **Ideas on Getting Beyond the Obstacles**



# Defining Solid Waste

- **U.S. EPA defines MSW (trash, garbage) as every day items**
  - **Product packaging, grass clippings, bottles, food scraps, newspapers, appliances, batteries, etc.**
  - **Combination of residential, commercial, institutional, industrial packaging & office waste**
  - **Not generally included: C&D, wastewater treatment sludges, non-hazardous industrial process wastes**



# Quantifying Solid Waste

- **U.S. EPA uses materials flow methodology to estimate nationwide waste stream**
- **Mass balance approach based on materials/products weight production data**
- **Adjustments made for imports/exports, diversions from MSW**



# Quantifying Solid Waste – Cont.

- **By comparison, Regions/Localities may apply site specific methodology involving sampling, sorting, weighing waste stream components**
- **Many locations weigh materials destined for recycling and disposal to determine “ground up” statistics**



# Determining Recycling Rates

## ➤ North Carolina

- **At state level, YW, Tires, Some Special Wastes excluded for consistency**
- **Per Capita Recovery Rate (Disposal Diversion) Tracked Instead of Recycling Rate**
- **Solid waste destined for landfill disposal tracked from combined residential, commercial, and industrial sources**



# Determining Recycling Rates

## ➤ South Carolina

- **Adopted EPA's definition of MSW but also includes tire-derived fuel, yard trimmings used as boiler fuel, & used motor oil in recycling rate**
- **Also separately track Total Solid Waste recycling rate which includes C&D, process waste and other materials**
- **MSW recycling rate determined by dividing amount recycled into amount generated (recycled + disposed) x 100**





# Determining Recycling Rates

## ➤ Tennessee

- **Counties report waste and recycling tonnages from Residential, Commercial, Institutional, Industrial & Other sources**
- **State accepts data from all categories including in-house industrial processes**  
(Pre-consumer material like saw dust sold a fuel for boiler operations, ash used in cement, etc.)
- **Waste diversion from MSW landfill calculated annually via a formula:**
  - Disposal tons to Class 1 (MSW) 3 & 4 (C&D) landfills, plus recycling tons, plus in-house industrial tons, compared to Class 1 landfill tons only
  - $\geq 25\%$  differential is the waste reduction goal for all Counties



# Determining Recycling Rates

## ➤ Virginia – Formula Driven

- **Step 1: Determine Base Recycling Rate (BRR) (Principal Recyclable Materials (PRM) / (PRMs + MSW Disposed) x 100)**
- **Step 2: Account for any Reuse, Residue, & Non-MSW Recycled Credits (Total credits can not exceed 5% pts. Above BRR)**
- **Step 3: Add Credits Tons to Step 1 Formula to Determine Adjusted Recycling Rate (ARR) #1**
- **Step 4: Add 2% Source Reduction Program Credit to ARR #1 (If eligible)**
- **MSW types: HH, Commercial, Institutional, Other (No Industrial)**



# Comparing Rates Across State Lines

- **Define what type of wastes included in total solid waste stream destined for disposal** (Sometimes can not segregate)
- **Determine which recyclables have tonnage data (generally gross weight)**
- **Note any outlier recyclables categories in one county vs. another (e.g., C&D, HHW, etc.)**
- **Normalize with consistent approach (VA formula. . .Speaker's Choice!)**



# Mental Break Moment!



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# Solid Waste Included In Recycling Rate

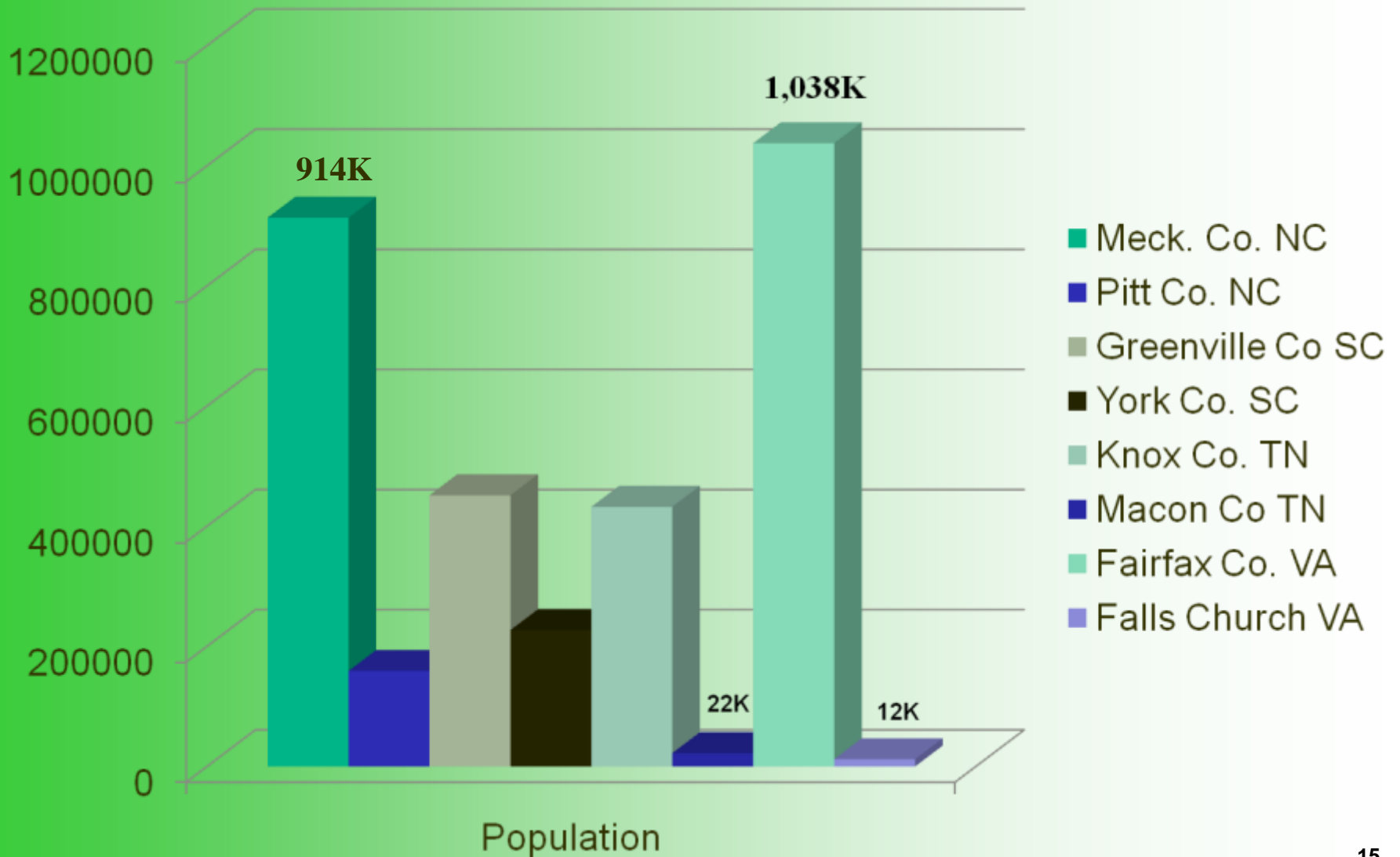
Material Category	Mecklenburg Co., NC	Pitt County, NC	Greenville Co., SC	York County, SC	Knox County, TN	Macon Co., TN	Fairfax County, VA	Falls Church, VA
REDUCTION TONS	-----	-----	-----	-----	-----	-----	<b>YES</b>	-----
REUSE TONS	-----	-----	-----	-----	-----	-----	-----	<b>YES</b>
RECYCLING TONS	-----	-----	-----	-----	-----	-----	-----	-----
Paper	YES	YES	YES	YES	YES	YES	YES	YES
Metals	YES	YES	YES	YES	YES	YES	YES	YES
Plastic	YES	-----	YES	YES	YES	YES	YES	YES
Glass	YES	YES	YES	YES	YES	-----	YES	YES
<b>Commingled Materials</b>	-----	YES	YES	YES	YES	-----	YES	YES
Yard Waste	YES	YES	YES	YES	YES	-----	YES	YES
Wood Waste	-----	YES	YES	YES	YES	-----	YES	YES
Textiles	-----	YES	YES	YES	YES	-----	YES	YES
Tires	YES	YES	YES	YES	YES	YES	YES	YES



# Solid Waste Included In Recycling Rate – Cont.

Material Category	Mecklenburg Co., NC	Pitt County, NC	Greenville Co., SC	York County, SC	Knox County, TN	Macon Co., TN	Fairfax County, VA	Falls Church, VA
Used Oil	YES	YES	YES	YES	YES	YES	YES	YES
Oil Filters	-----	YES	YES	YES	YES	-----	YES	YES
Antifreeze	YES	-----	YES	YES	YES	-----	YES	YES
Batteries	YES	YES	YES	YES	YES	YES	YES	YES
Electronics	YES	YES	YES	YES	YES	-----	YES	YES
Construction & Demo.	<b>YES</b>	<b>YES</b>	-----	-----	<b>YES</b>	-----	-----	-----
Food/Other Organics	-----	-----	YES	YES	YES	-----	-----	-----
Other	YES	YES	YES	YES	YES	YES	YES	-----
<b>Disposal Tons</b>	-----	-----	-----	-----	-----	-----	-----	-----
Residential	YES	YES	YES	YES	YES	YES	YES	YES
Commercial	YES	YES	YES	YES	-----	-----	YES	YES
Institutional	-----	-----	YES	YES	YES	YES	YES	YES
Industrial (Ofc/Pckging)	YES	YES	<b>YES</b>	<b>YES</b>	-----	-----	-----	-----
Industrial (Preprocng)	<b>YES</b>	<b>YES</b>	-----	-----	Nonprofits	Nonprofits	-----	-----

# Quad State Population Comparison



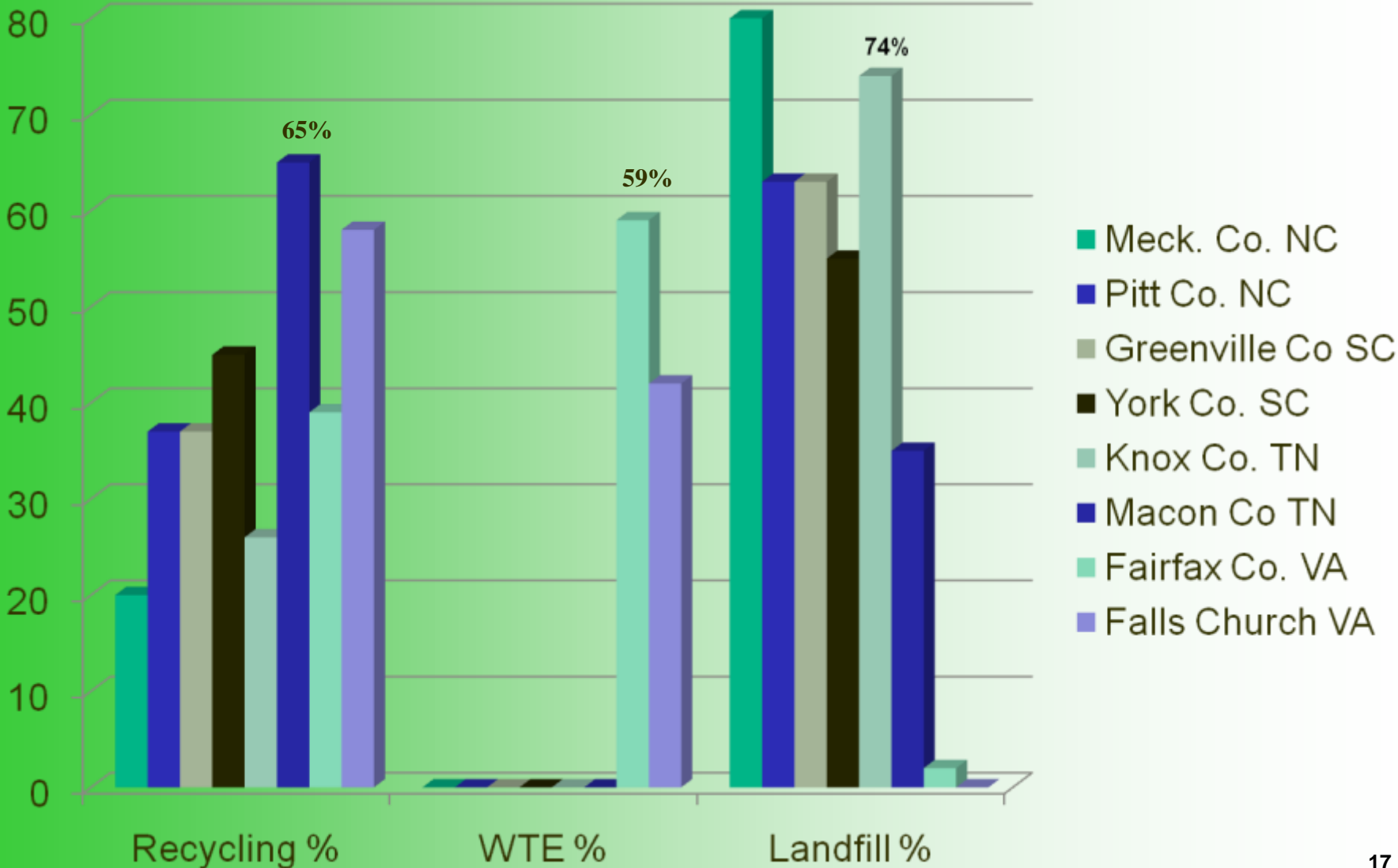
# Solid Waste Mgt. Comparison Insights

Material Category	Mecklenburg Co., NC	Pitt County, NC	Greenville Co., SC	York County, SC	Knox County, TN	Macon Co., TN	Fairfax County, VA	Falls Church, VA
Population	913.6K	159.0K	451.4K	227.0K	432.2K	22.2K	1,037.6K	11.9K
Recyclables Tonnage:	-----	-----	-----	-----	-----	-----	-----	-----
Paper	-----	-----	57,952	-----	65,293	437	-----	1,105
Metals	-----	-----	-----	60,848	-----	10,815	-----	630
Plastic	-----	-----	-----	-----	-----	-----	-----	YES
Glass	-----	-----	-----	-----	-----	-----	10,000	-----
Yard Waste	169,767	-----	64,496	-----	36,672	-----	214,353	3,608
Tires	12,536	-----	-----	-----	-----	-----	15,054	-----
C&D	20,568	8,285	-----	-----	2,225	-----	-----	-----
Other	-----	-----	-----	-----	-----	11,753	46,796	7,183
RECYCLING PERCENTAGE	20%	37%	37%	45%	26%	65%	39%	58%
WTE PERCENTAGE	-----	-----	-----	-----	-----	-----	59%	42%
LANDFILL PERCENTAGE	80%	63%	63%	55%	74%	35%	2%	<1%

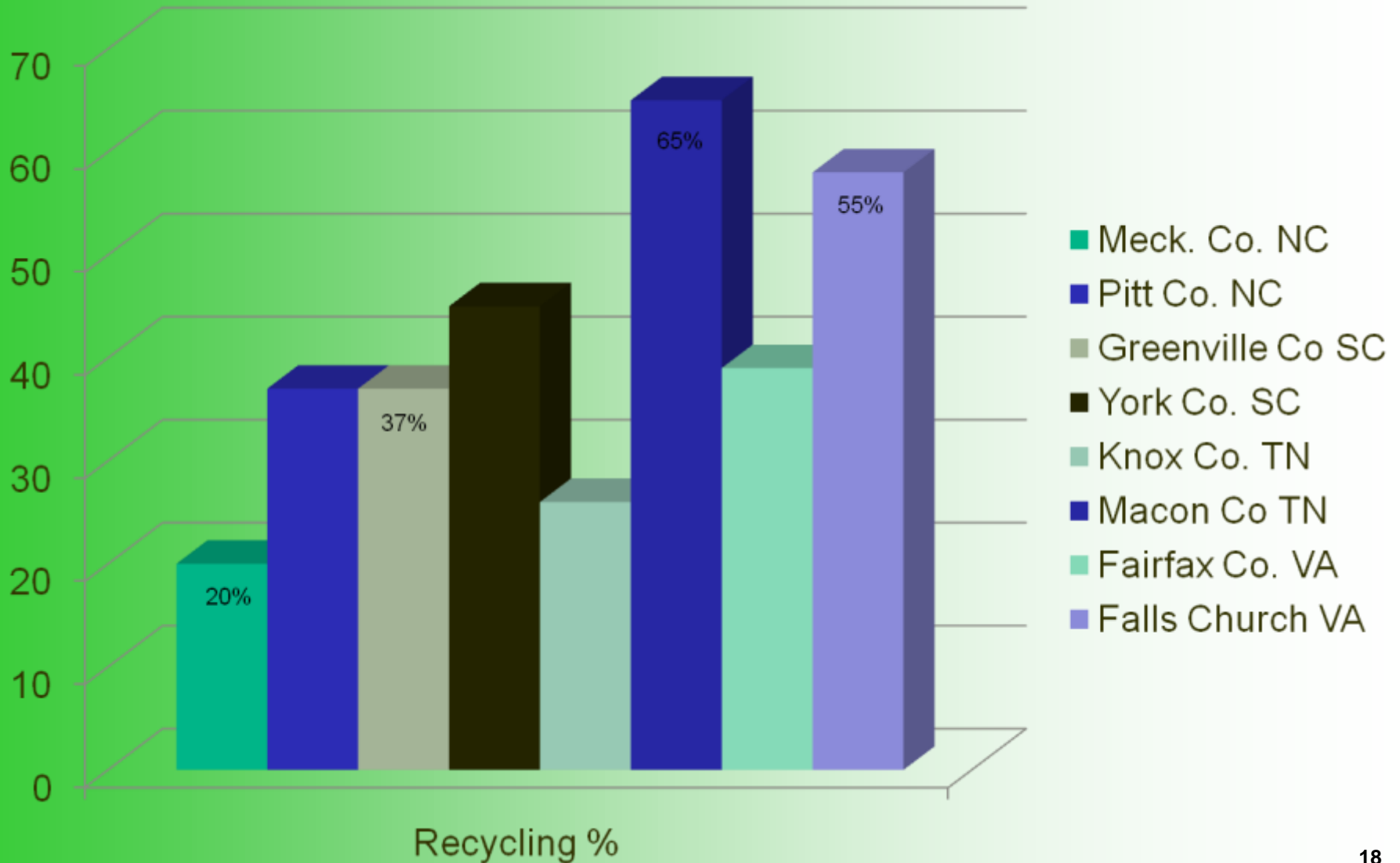




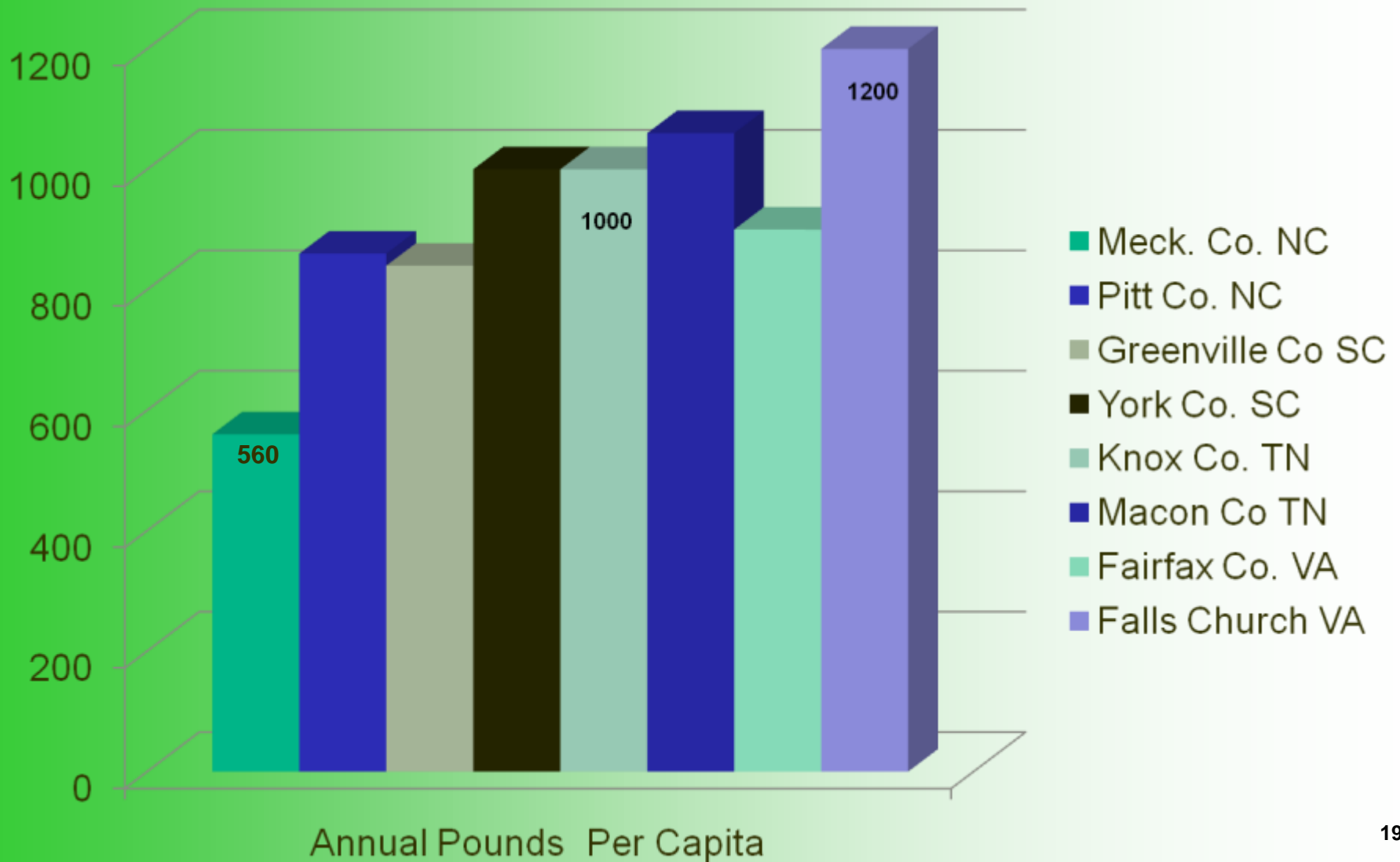
# Quad State Waste Mgt Comparison



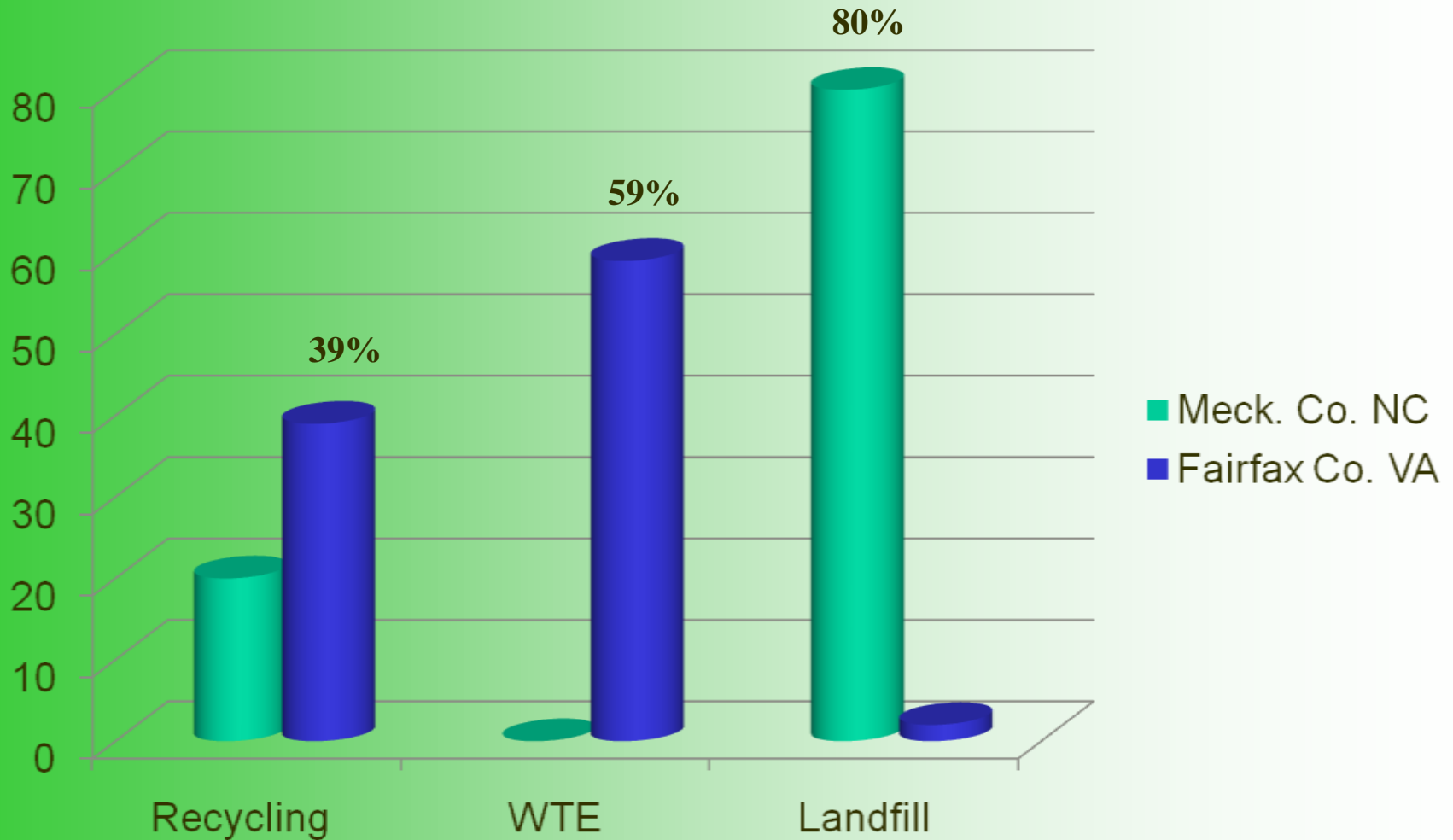
# Quad State Recycling Comparison



# Quad State Per Capita Recycling Comparison



# Mecklenburg Co. NC Vs. Fairfax Co. VA Waste Management PERCENTAGES



Recycle tons 259k (20%) vs. 468k (39%); WTE tons 0 vs. 722k (59%); LF 1.05m tons (80%) vs. 22k tons (2%); Sources: NC DENR (FY 09/10) & VA DEQ (CY 09)

# Mecklenburg Co. NC Vs. Fairfax Co. VA

## Per Capita Recycling Bottom Line

- **Mecklenburg Co. diverts 560 lbs. of recyclables from disposal annually vs. 900 lbs. in Fairfax Co. per capita**
- **Per capita, residents in Fairfax Co. (WTE Community) recycle 61% more than Mecklenburg Co. residents (Landfill Community)**



# Speaker With Post-Combustion Ferrous



# Higher Recycling Rates In WTE Communities

- **Landfills will accept recyclables including white goods for disposal**
- **Many commonly discarded HH items are multi-composite &/or contain metals not normally collected curbside as recyclables**
- **WTE liberates these and readily captures post-combustion for recycling**

Examples: Juice Boxes, Bicycles, Strollers, Irons, Light Fixtures, Hose Ends, Bathroom Scales



# Recycling – WTE Compatibility Report Answers The Tough Questions

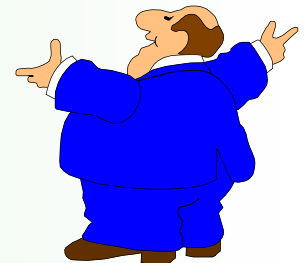
- How compatible if WTE burns paper & plastic
- Put or Pay contract issues
- PAYT program issues
- Relative cost of WTE
- WTE impact on recycling infrastructure
- High Recycling Rates in WTE Towns & Much More!
- Available from Kiser Environmental Consulting





# Recycling Rate Comparisons

- **National Average (EPA, 2006):** **33%**
  
- **Quad State Localities:**
  - **Pitt County, NC (FY 09/10)** **37%**
  - **York County, SC (FY 09/10)** **45%**
  - **Falls Church, VA (CY 09)** **58%**
  - **Macon County, TN (CY 2010)** **65%**
  
- **Kiser HH (FY06/07 - MSW Recycling):** **82%**
  
- **Kiser HH (3R Diversion):** **86%**
  
- **Kiser HH LF Diversion (3R & WTE):** **96%**



# Kiser HH - Select MSW Remaining (After Max 3R)

Aseptic juice box	Drugs/Medications (expired)	Peanut container (cardboard/metal)
Arrow indicators (plastic stickies)	Egg carton (soiled)	Pencil shavings
Badminton racket (broken)	Ink jet cartridge pull tabs	Pens (spent)
Balloons (used)	Foil (dirty)	Pizza box (soiled)
BBQ lighter	Glow stick	Popcorn bag
Butter wrappers	Glue stick (spent)	Poosum (dead)
Candle wax	Hand warmer	Spatula (broken)
Cat litter (Used)	Hot pockets cook wrap	Q tips
Catsup foil packages	Litter (in yard)	Silly putty
CD (damaged)	Mardi Gras beads (broken)	Vacuum cleaner bag (full)
Chicken bones	Matches (spent)	Stickers (on fruit/products)
Christmas decoration (old)	Muffin doily	Styrofoam packaging/containers
Goldfish snack foil/paper bag	Mustard container	Sun lotion foil packaging
Dental flossers	Newsprint (soiled)	Tinsel
Desiccant silica gel packet	Old cardboard (wet)	Tooth paste container
Diapers (disposable)	Paint (old latex)	Zinc tablet foil
Dice (gel like)	Paper plates (soiled)	And More. . .



# **What Public Officials Are Saying About The Zero Waste Concept**

- **It's not possible in the immediate future on a state level. Certainly not for a state with cheap and abundant landfill space.**
- **Don't know if it will ever happen at county level. . .lack of accessible markets is the main obstacle.**
- **Barriers for a county/ municipality to reach zero waste would be extensive infrastructure required to divert whole spectrum of discards, plus problematic materials like disposable diapers, composite packaging, etc.**



# What Public Officials Are Saying About The Zero Waste Concept - Continued

- **Most local governments lack the ambition to more comprehensively reduce their waste streams.**
- **Local governments can not control type and amount of consumer products and packaging coming at them**
- **Producers can be more responsible with products and packaging via product stewardship initiatives. This will move us closer to Zero Waste.**



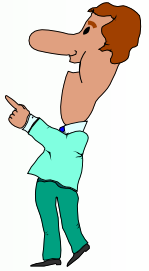
# Other Zero Waste Issues

- **Many are not willing to carefully segregate recyclables (viewed as inconvenience);**
- **Zero waste would require a mandate & most Americans don't like to be told what to do (could result in illegal dumping);**
- **Recycling programs subject to cut backs during tough economic times & tight municipal budgets**



# Other Zero Waste Issues – Cont.

- **Even with convenient curbside recycling programs there is still residue to manage (e.g., dual recycling stream residue (3% - 5%), single stream residue (8% - 15%))**
- **Defining what is included in recycling rate & quantifying the amount an on-going challenge (e.g., little consistency among federal and state levels, private sector does not typically report).**
- **Defining WTE as recycling would make Zero Waste much more likely (a non-start politically).**



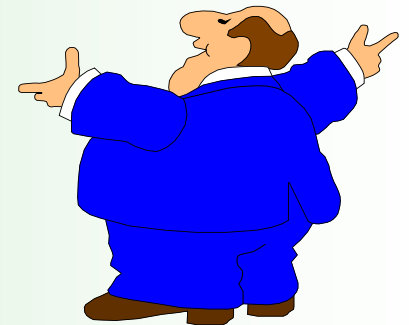
# Zero Waste Obstacles – Cont.

- **Local recycling quantification methods vary widely. Accurate results requires capital investment (e.g., scales), standardized accounting procedures, private sector cooperation, etc.**
- **Communities like San Francisco (70%+ recycling rate) mandate & count recycling of C&D; VA towns only allowed 5% reuse credit (VA DEQ); U.S. EPA doesn't count C&D as part of national recycling rate**
- **Even with maximum diversion effort (86%) Kiser Residential HH had long list MSW items left to manage**



# Bottom Line

- **Zero Waste is an exciting concept that still faces many obstacles in the real world dynamics of solid waste management**





# Mole Hill Sunset



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# Thank You!

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