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Lighting a path to sustainable waste management practices

Using Waste Characterization and Reporting Data to Assess State Goalsetting

Federation of New York Solid Waste Associations

STRIVE FOR SUSTAINABILITY

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EREF History & Mission



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- 501(c)3 charity began in 1992
- Non-lobbying organization
- Not a membership organization
- **Mission:** To fund and direct scientific research & educational initiatives for sustainable waste management practices to benefit solid waste field and the communities it serves.

Session Overview



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Presentation Outline

- a) Basis for State Policies and Goals
- b) National Summary
- c) Policy Analysis
- d) Explore Achievability



Analysis of Waste Sustainability Goals

- Why do we set sustainability goals?
- What kind of goals are being set?
- What do the goals incentivize?
- How is success measured?
- What rates are achievable?
- What is the impact of goals?



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National Inventory of State Waste Management Goals

- When setting solid waste policy, states cite many reasons:
 - Increase sustainability
 - Protect environmental quality
 - Increase recycling participation
 - Reduce carbon footprint
 - Protect public health
 - Maximize beneficial use of materials
 - Reduce materials sent to unfavorable endpoint

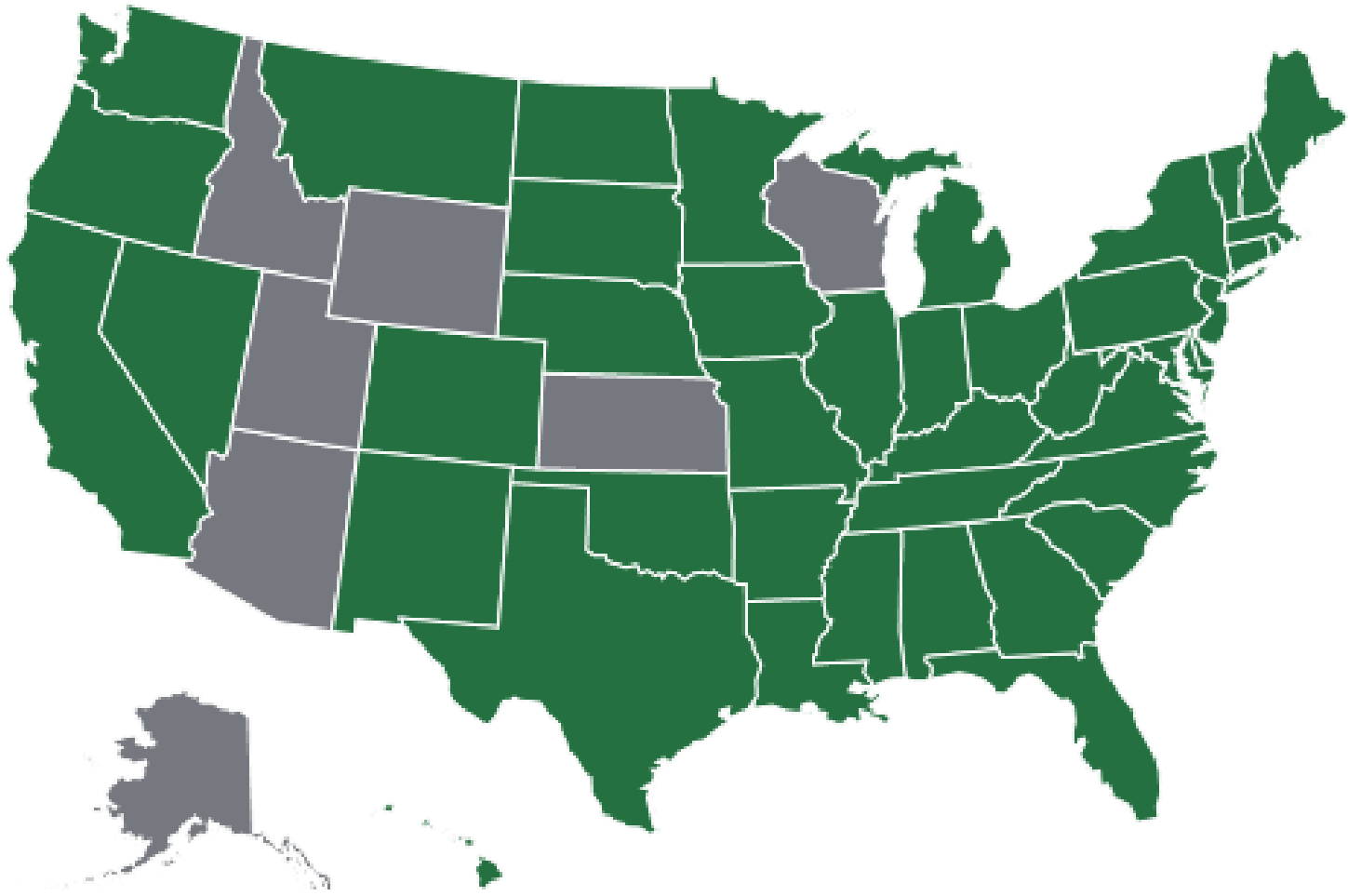
At a Glance...



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- Most (43) states have recycling, diversion or waste reduction goals.



State Goals- Structure



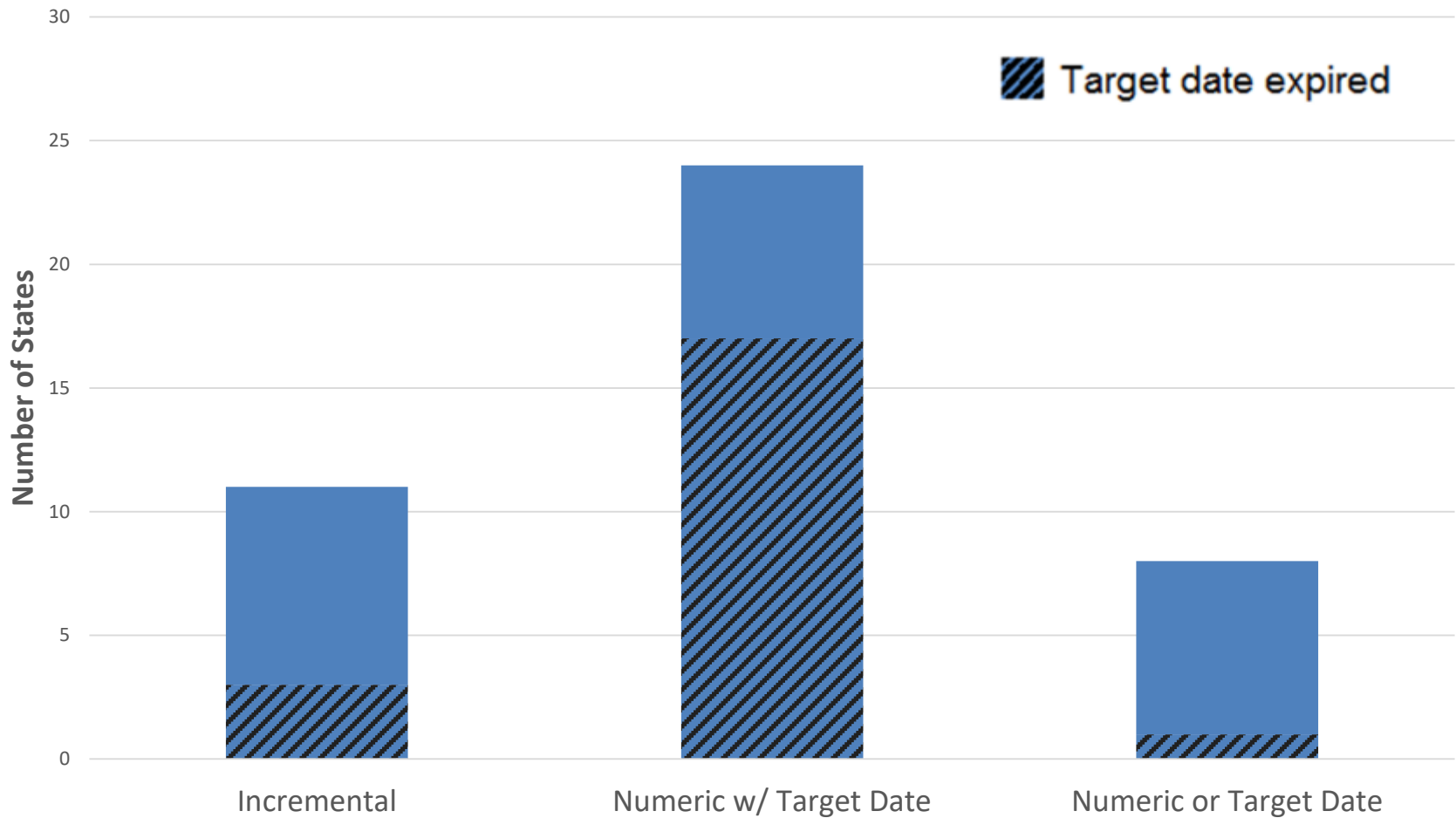
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- Goals use similar **structure** and **language**
- Three distinct categories, based on structure of the goal:
 1. Incremental, numeric goal with target dates
 2. Numeric goal with target date
 3. Numeric goal OR a future target date

State Goals- Structure



State Waste Management Goals- Structure



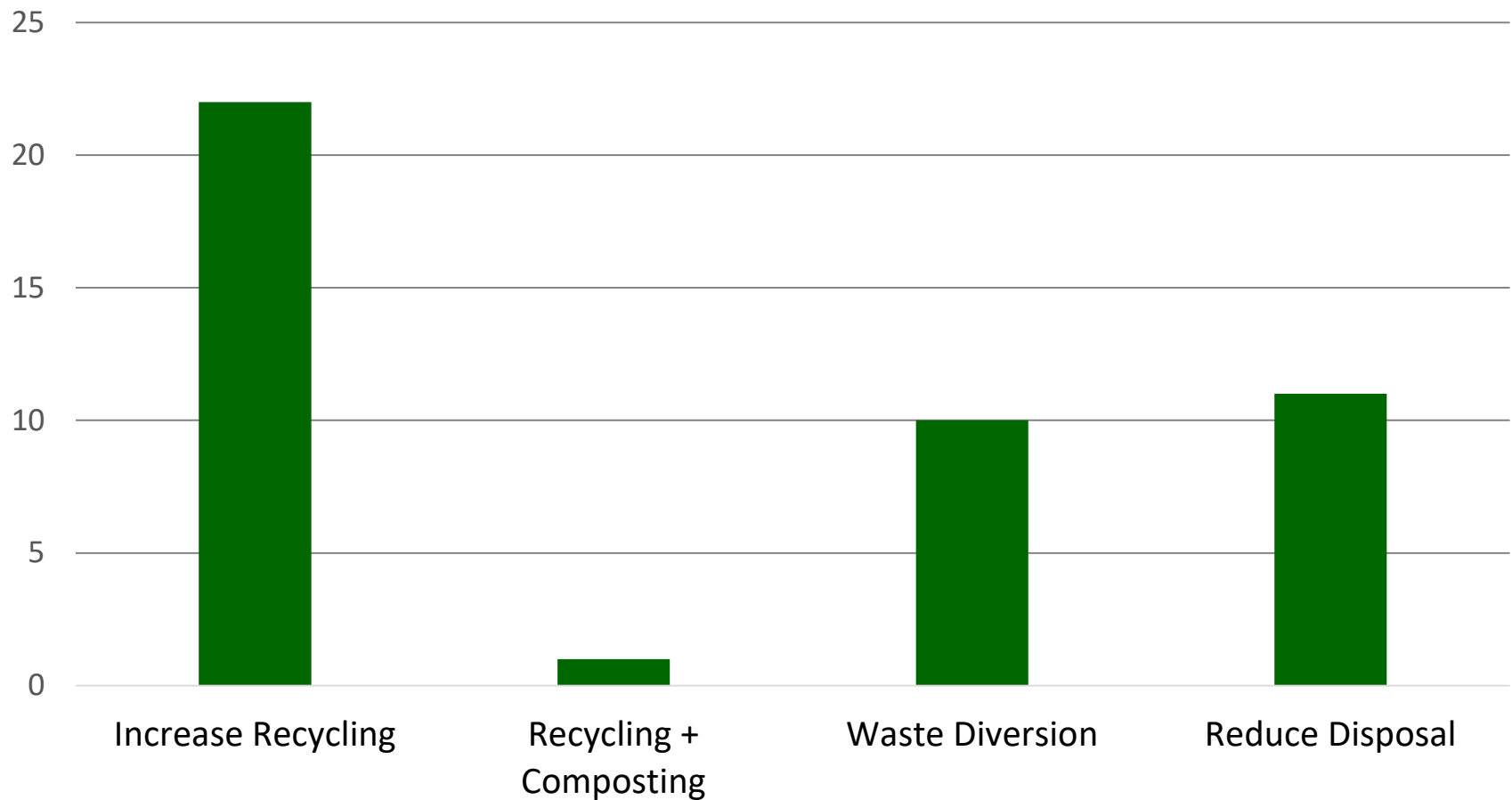
- Goals use similar **structure** and **language**
- 4 distinct categories, based on language and metrics, with goals focused on:
 1. increasing recycling
 2. improving both recycling and composting
 3. diverting waste from landfills or WTE facilities
 4. reducing waste disposal

State Goals- Language



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State Waste Management Goals- Language



Example State Goals



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Increased Recycling

- (FL): Recycle at least 75% of the MSW that would otherwise be disposed of by 2020
- (IN): Recycle at least 50% of MSW

Recycling + Composting

- (OR): Achieve 50% recovery through recycling and yard debris collection by 2000

Waste Diversion

- (MI): Find uses for 50% of the MSW stream by 2015.

Disposal Reduction

- (TN): Reduce MSW disposal by 25% on a per-capita basis (1995 base year)

State Goals- Recycling



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“Recycling” is the most common language used in waste management goals:

State	Recycling Goal	Target Date
Florida	75%	2020
Connecticut	60%	2024
Minnesota	35%/50%/75%	2030
South Carolina	35%	2005
Illinois	25%	1996
Maryland	20%/35%	2005
Oklahoma	10%	2011

What is Recycling?



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18 different definitions of recycling

State Goals- Recycling



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As written, one **cannot** directly compare state-to-state or rate-to-rate! Even though they use the same language, states define these terms differently. States may include:

- Waste-to-Energy as recycling, diversion, or disposal
- Source reduction or reuse included in terms
- Basis of current, historic or per-capita generation

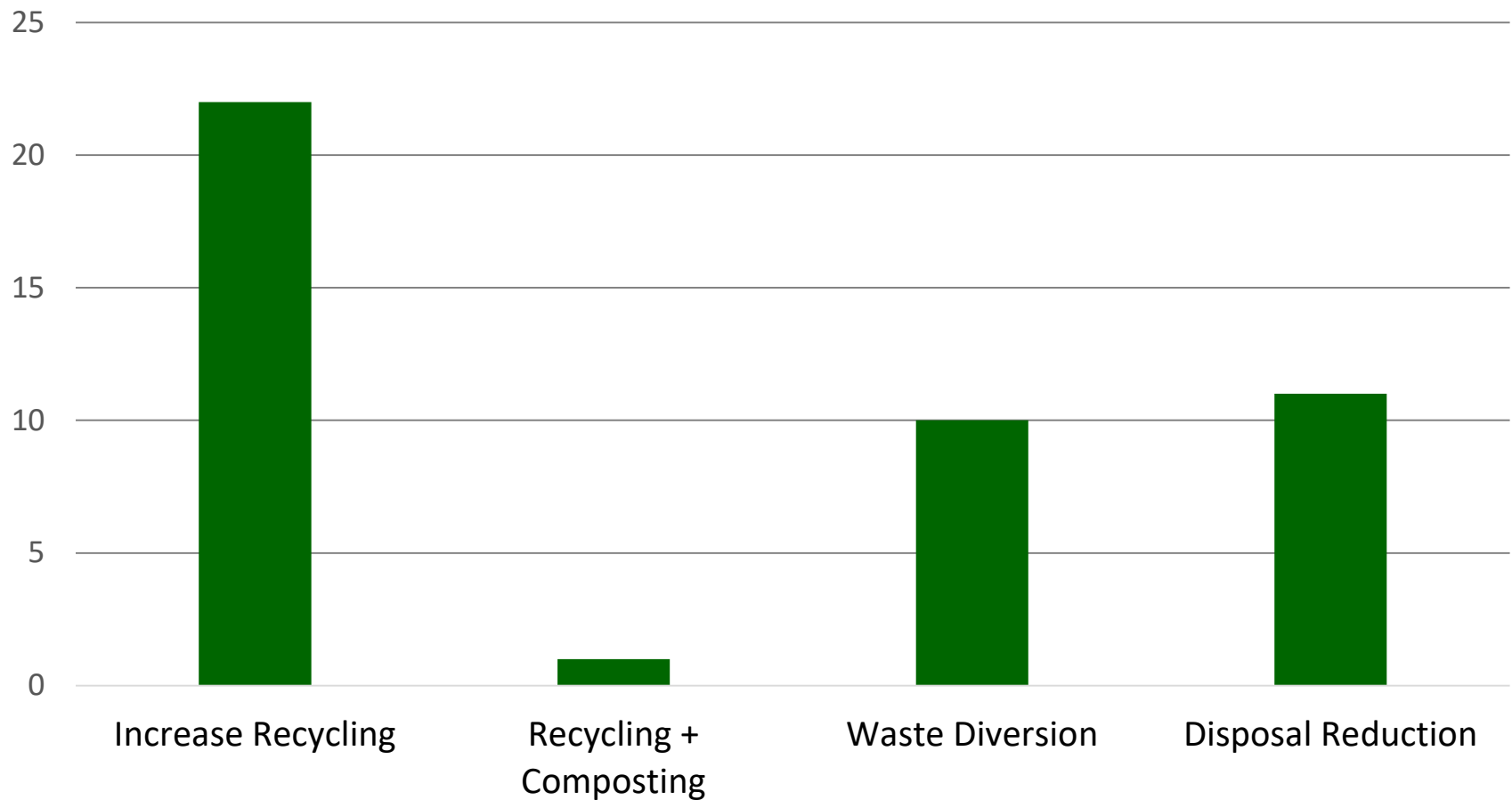
Analysis Strategy: Examine what is measured in state rates

State Goals- Language

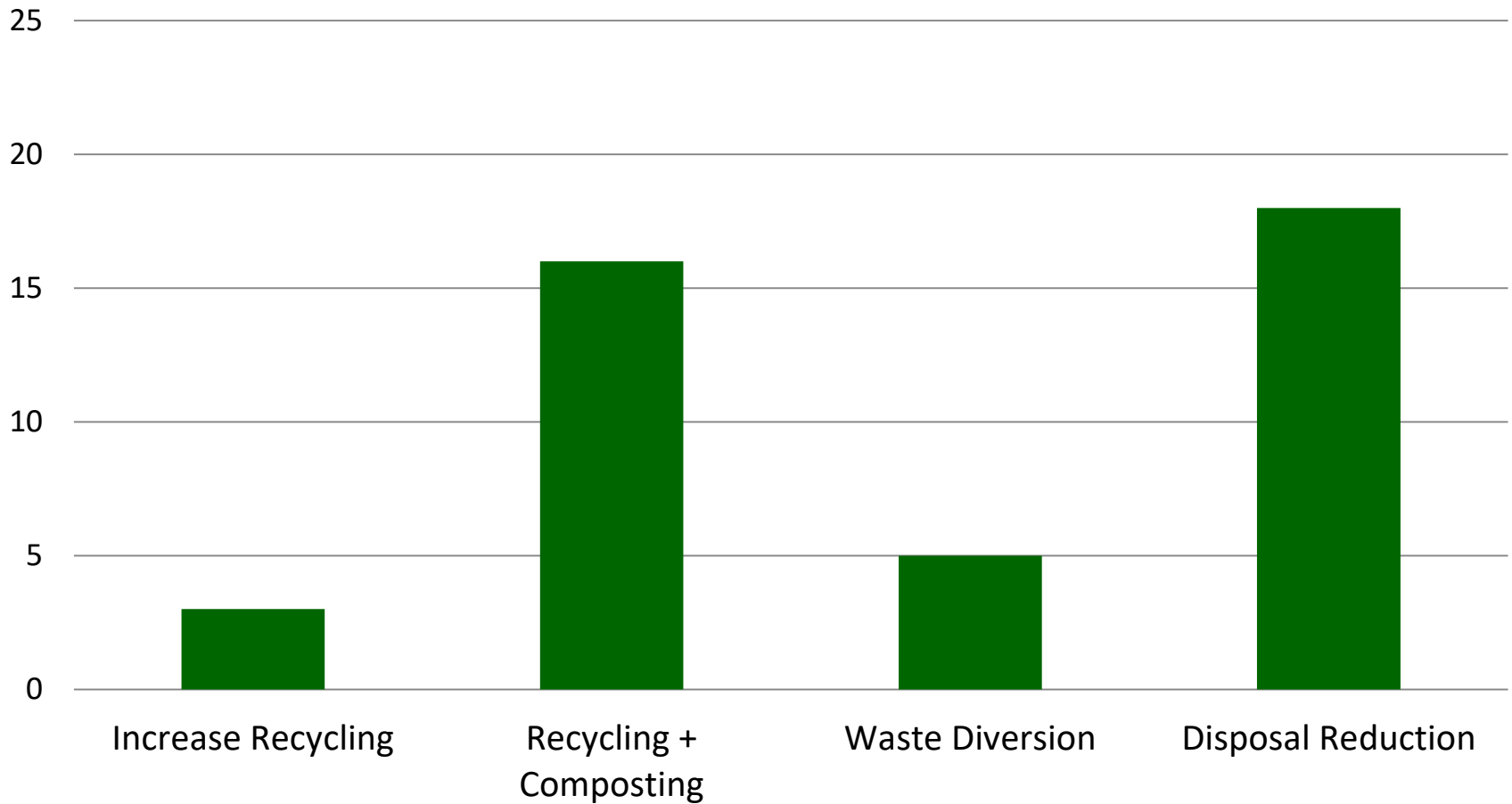


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State Waste Management Goals- Language



State Waste Management Goals- Operations





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Assessing Rate Achievability Through Theoretical Maximum Rates

Theoretical Maximum Rates



Science-based definitions with waste composition data provide the maximum recycling and diversion rates:

- Quantify mass of applicable waste components

- Food waste
- Yard trimmings
- Paper
- Plastic
- Metal
- Glass
- Textiles

Excludes non-recoverable materials

- Assume 100% recovery of materials to compute the theoretical maximum recycling and diversion rates

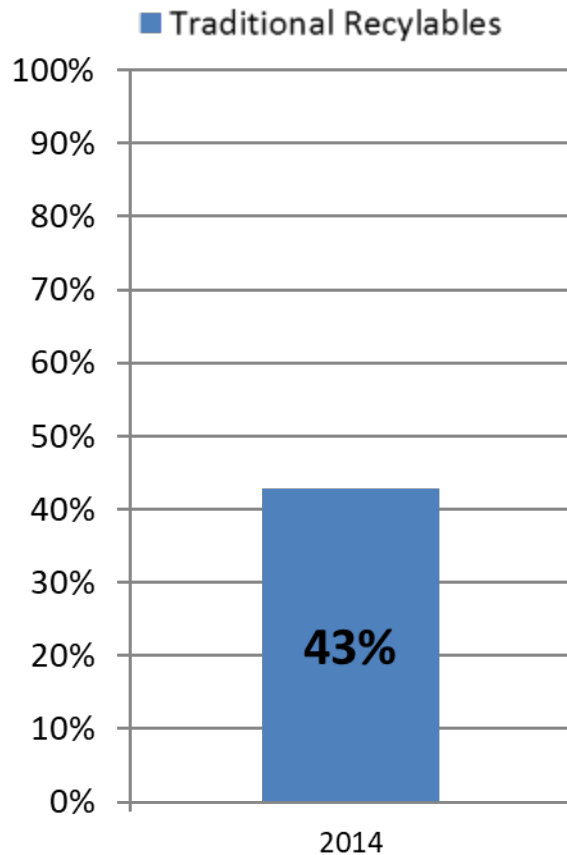
Recycling Results: EPA Facts and Figures



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Theoretical Max Recycling

43% of the waste stream is commodity recyclables



Example Materials Included



Example Materials Excluded

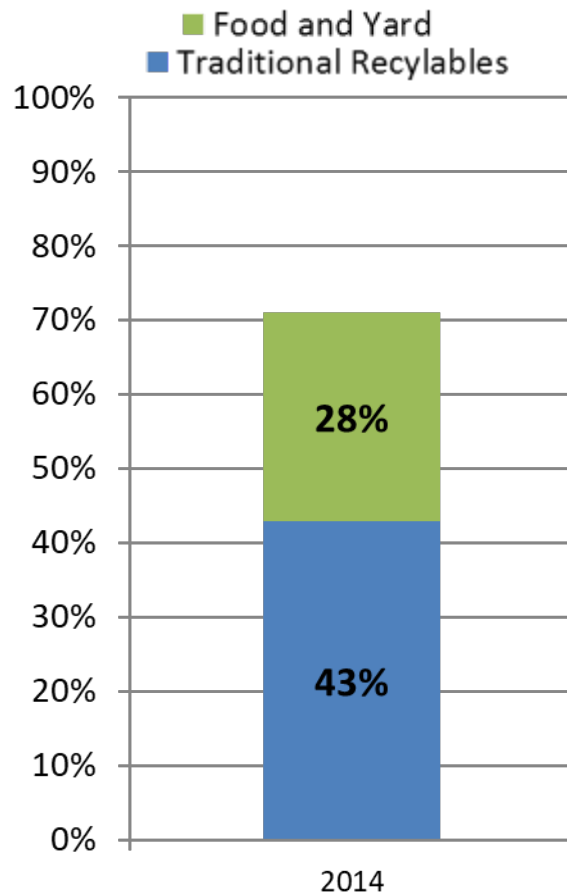


Composting Results: EPA Facts and Figures



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Food and Yard Waste comprise an additional
28% of the MSW stream

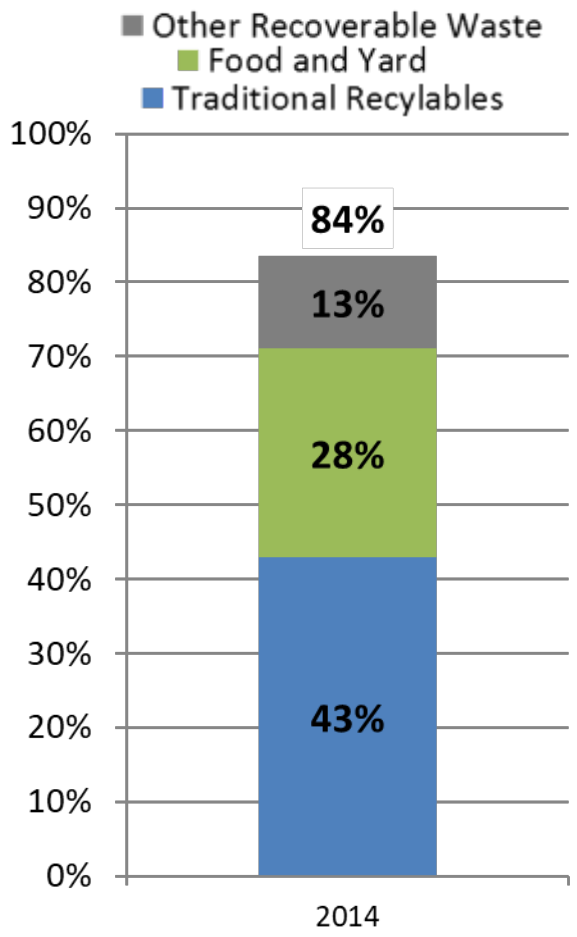


Recovery Results: EPA Facts and Figures



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Other Recoverable Waste comprises an additional 13% of the MSW stream



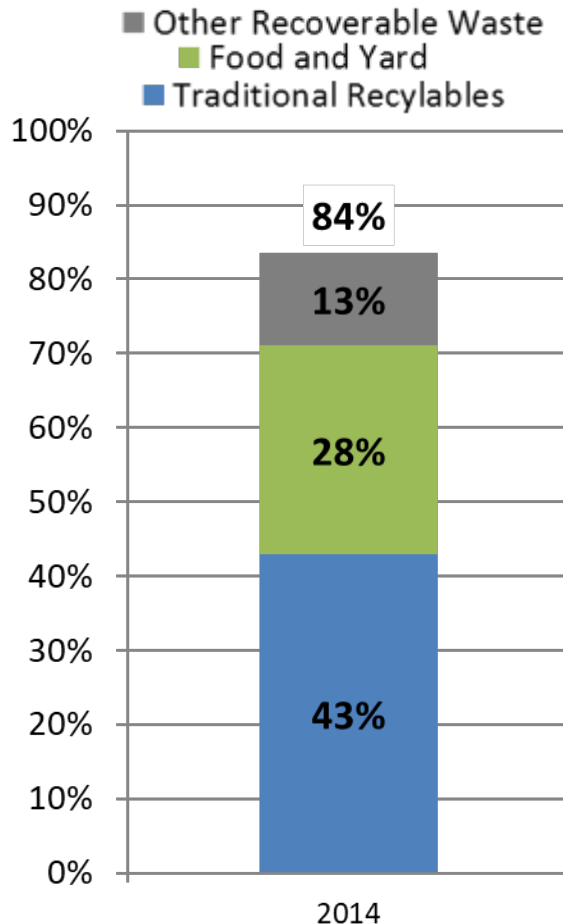
Example Materials Include



Summary Results: EPA Facts and Figures



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Theoretical Maximum Recycling

43% of the MSW stream

States set recycling goals >50%

Theoretical Maximum Recovery

84% of the MSW stream

9 states with zero waste plans

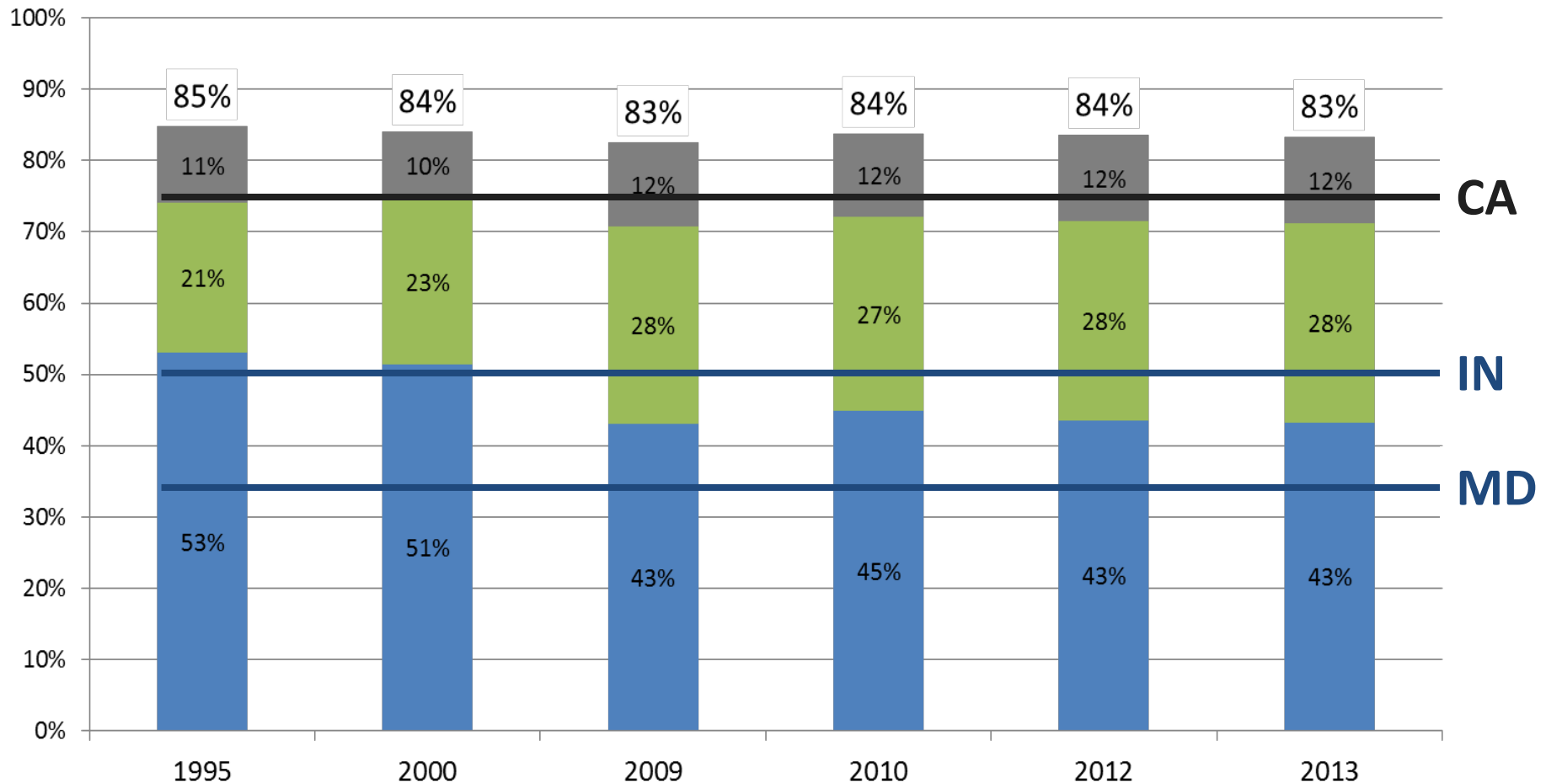
Temporal Results: EPA Facts and Figures



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Theoretical max recovery based on EPA waste composition

■ Traditional Recyclables ■ Food and Yard ■ Other Recoverable Waste



State Goals and Policies

- State goalsetting efforts are driven by various motivators, centered around public and environmental health
- Although goals use similar language, definitions and metrics are inconsistent
- States cannot look to neighbors to for achievability

Waste composition studies

- Provide a benchmark for policy goals through theoretical maximum recycling or recovery rates.

- When setting policy goals, states cite many reasons:
 - Increase sustainability
 - Protect environmental quality
 - Increase recycling participation
 - Reduce carbon footprint
 - Protect public health
 - Maximize beneficial use of materials
 - Reduce materials sent to unfavorable endpoint

- Beginning to see shift toward impact-based goal setting, in addition to recycling or recovery rates.
Ex: Oregon DEQ, NYC 80x50
- Interest in measuring capture rates of specific recyclable materials, rather than overall recycling rate
Is 1 ton of glass = 1 ton of aluminum?

Connecting waste management goals to the motivation for setting goals (i.e. sustainability, environmental health, public health)



Thank you!

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Photo Credits:

- | | | |
|---|---|---|
| 1. and 3. Stock Photos (paper and cans) | 8. Xtroy (paper recycling, glass recycling) | 14. Kmart (stove) |
| 2. City of Concord, NC (plastics) | 9. RecycleNation (OCC) | 15. Landscape Solutions MI (yard) |
| 4. County of Olmsted, MN (yard waste) | 10. RecycleCartons.ca (Gable-top) | 16. Ecofashiontalk.com (textiles) |
| 5. San Diego County, CA (food waste) | 11. Ebay (non-recyclable paper products, peanuts, trash bags, white goods, glass) | 17. WakeGov.com (soiled paper) |
| 6. Ian Lindsay, (WTE) | 12. Amazon (plastic cutlery) | 18. Costco.com (compostable silverware) |
| 7. Hofstetter (LFG) | 13. greenfuture.io (metals) | 19. Squarespace (SMART) |