



Austin Zero Waste Goals and Programs

**Bob Gedert, Director
Austin Resource Recovery
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Ancient History

“Individual Responsibility”

- **Responsible Agent: Individual Households**
- **Waste Composition: Ash, Wood, Pottery, Broken tools, Spoiled Food**
- **Collection: No organized collection**
- **Disposal: Buried in soil – primarily compostable**
- **Diversion: Nearly everything repaired or reused.**



Middle Ages

“Waste + Rodents = Disease”

- **Responsible Agent:** Individual Household – Urban Pits - Unmanaged
- **Waste Composition:** Ash, Wood, Primitive Products, Spoiled Food
- **Collection:** No organized collection
- **Disposal:** Buried, burned, or piled
Urban waste = spread of disease
- **Diversion:** Salvagers – metal, leather, textiles, food scrap for animal feed



Industrial Revolution

“Scavenger Collection”

- **Responsible Agent: Scavengers**
- **Waste Composition: Ash, Wood, Discarded Products, Ceramics, Food**
- **Collection: Street Dumping - Hired Help, Scavengers**
- **Disposal: Buried or Burned**
- **Diversion: Glass, Metal, Paper, Textiles, Charcoal, Wood, Brick**
Street and Dump Scavenging

Industrial Revolution “Scavenger Collection”





Early 20th Century

“Solid Waste Management”

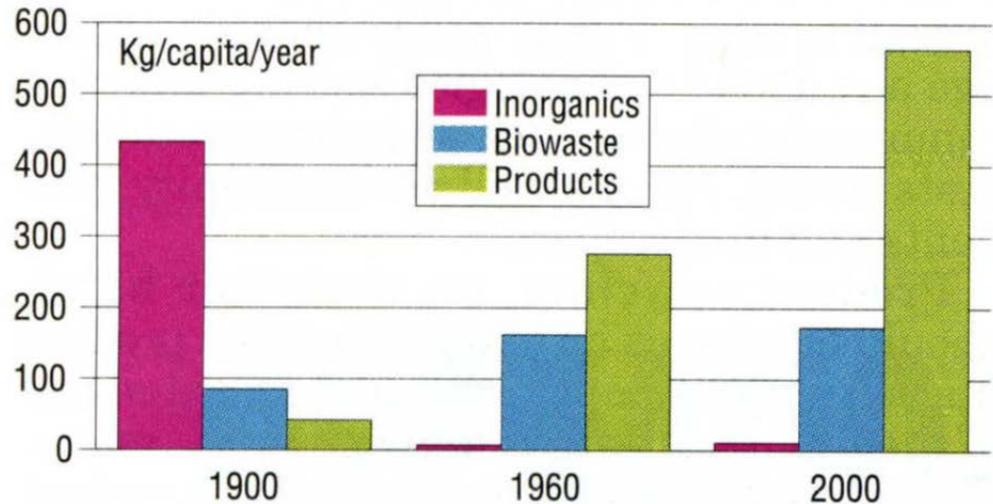
- **Responsible Agent: Organized Municipal “Sanitation” Workers**
- **Waste Composition: Ash, Wood, Discarded Products, Ceramics, Food**
- **Collection: Street Curbside Collection**
- **Disposal: Managed Dumps**
- **Diversion: Glass, Metal, Paper, Textiles, Charcoal, Wood, Brick**
Street and Dump Scavenging



Early 20th Century “Solid Waste Management”



Figure 1. Change in municipal solid waste composition; 1900 data for New York City, 1960 and 2000 data for U.S.



Sources: Melosi 1981; US EPA 2005



Late 20th Century

“Integrated Waste Management”

- **Responsible Agent: Organized Municipal “Solid Waste” Workers**
- **Waste Composition: Discarded Products, Hazardous Waste, Food, Electronics, Ceramics, “Composites”**
- **Collection: Street Curbside Collection**
- **Disposal: “Sanitary Landfills”, Waste to Energy, Incineration, Ocean Dumping**
- **Diversion: Curbside Recycling**

Late 20th Century

“Integrated Waste Management”



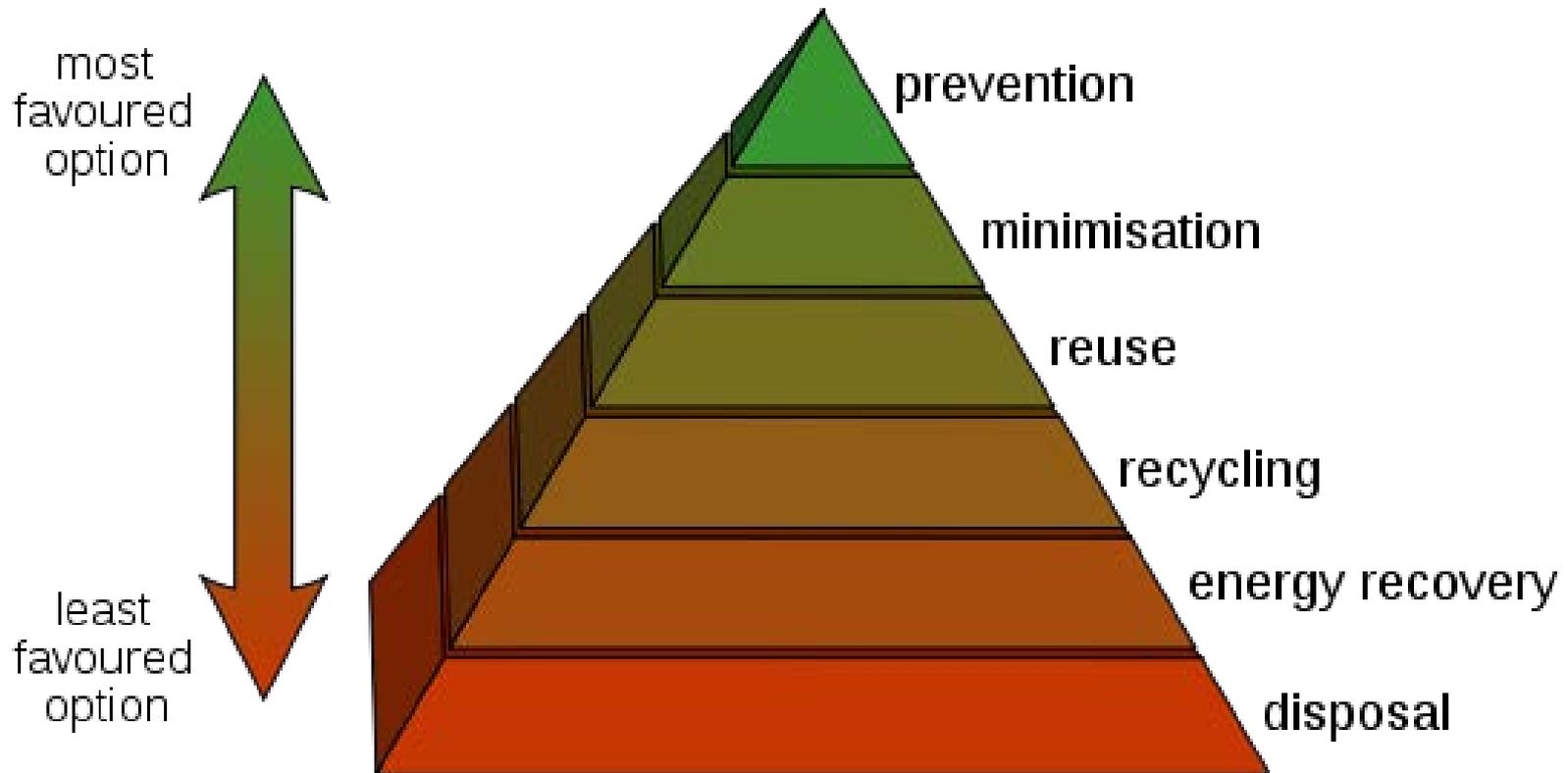


Early 21st Century “Materials Management”

- **Responsible Agent: Organized Municipal “Resource Recovery”**
- **Waste Composition: Discarded Products, Hazardous Waste, Food, Electronics, Ceramics, “Composites”**
- **Collection: Street Curbside Collection**
- **Disposal: Sanitary Landfills, Waste to Energy, Waste Conversion Technologies**
- **Diversion: “Materials Management”**



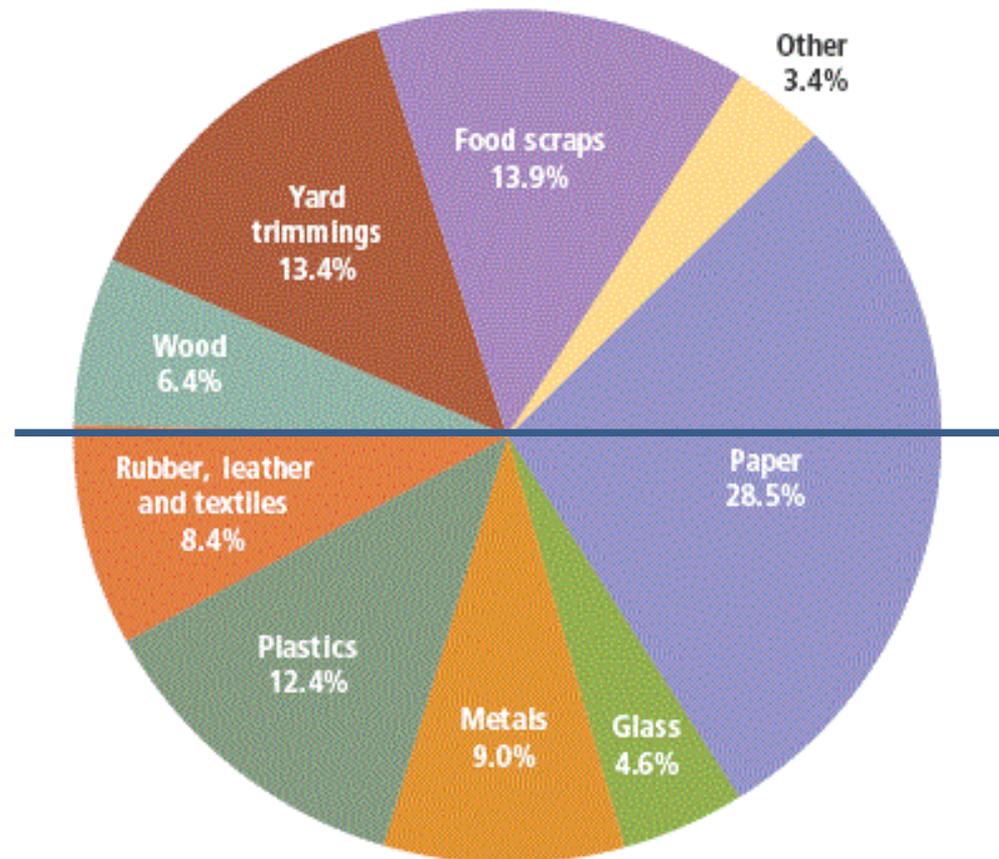
Early 21st Century “Materials Management”





Early 21st Century “Materials Management”

Figure 5. Total MSW Generation (by material), 2010
250 Million Tons (before recycling)



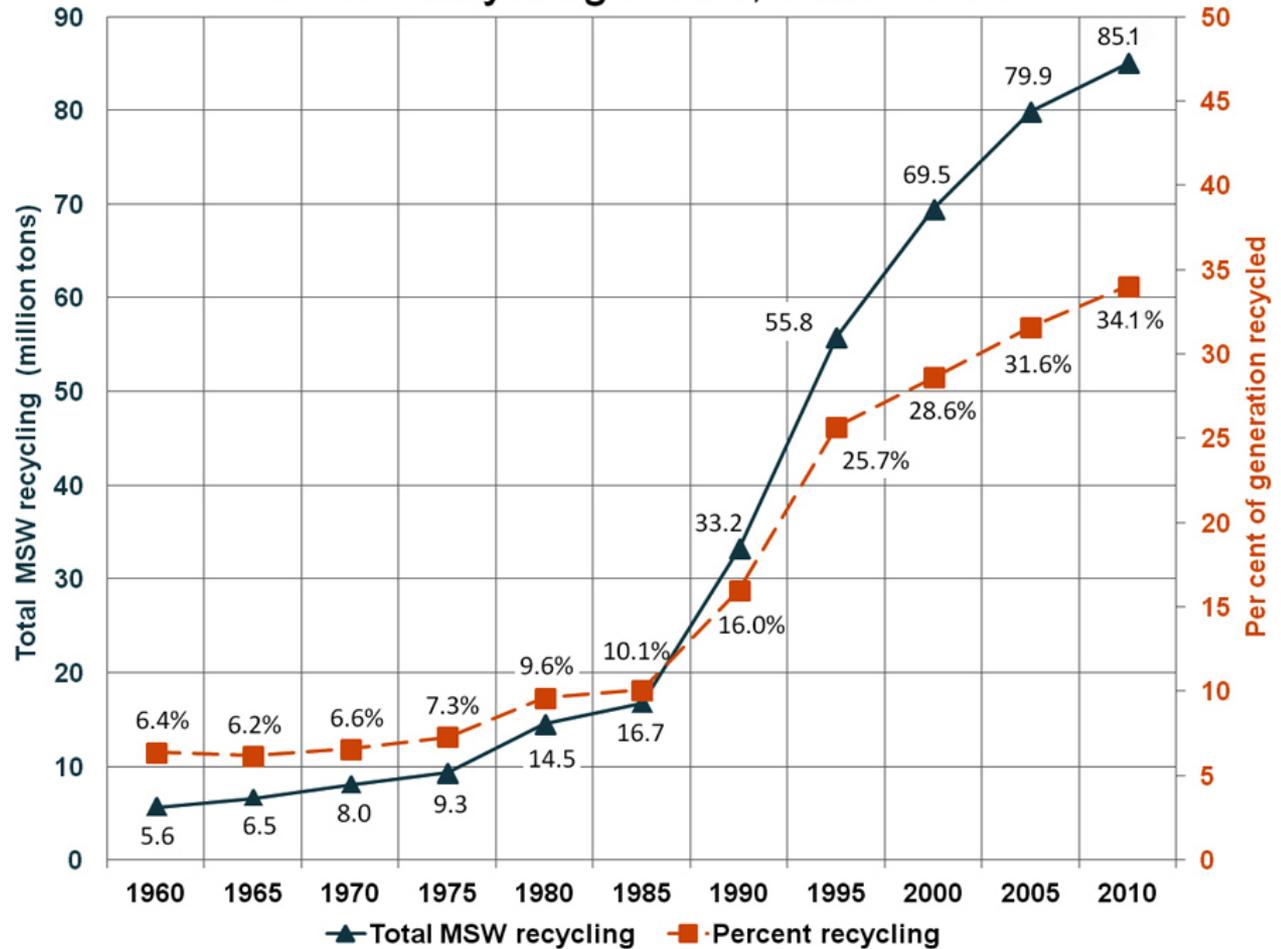
**American
MSW Waste
Generation**

Source: US Environmental Protection Agency, 2012



Early 21st Century “Materials Management”

MSW Recycling Rates, 1960-2010



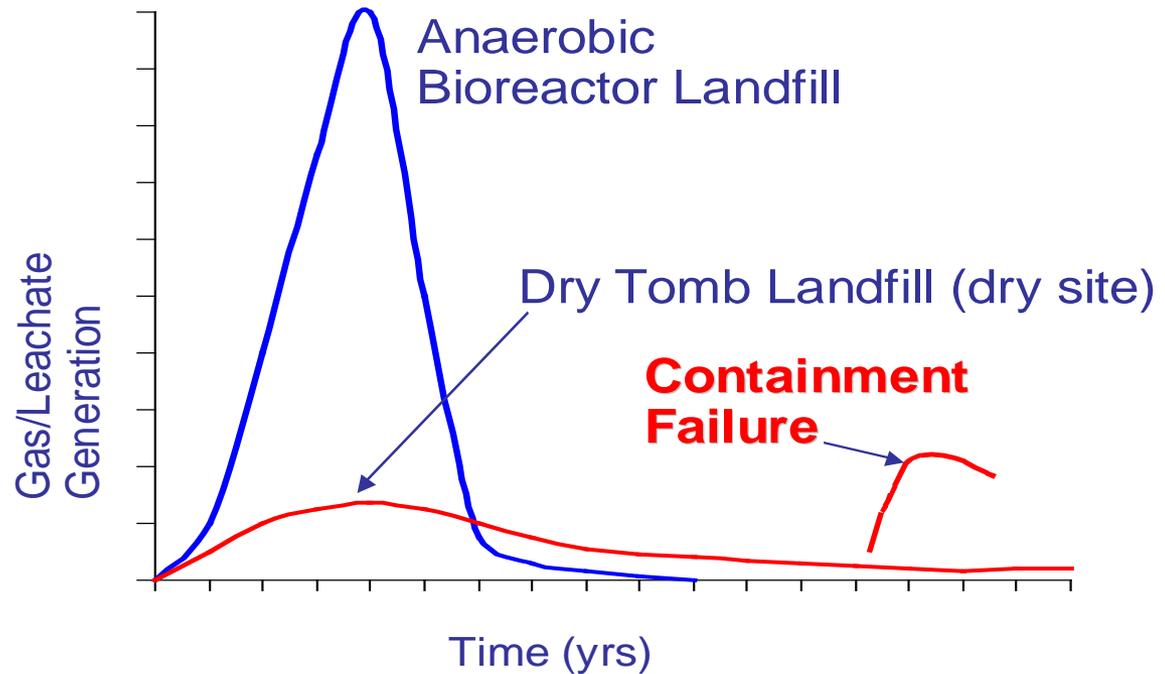
American
Recycling
Diversion

Source: US Environmental Protection Agency, 2012



“Landfill Management”

Landfill Decomposition



All Landfills
will have
Containment
Failure



New Direction

Past:

Sanitation Waste Collection

Recent:

Integrated Waste Management

New Direction:

Materials Management

> Zero Waste Goal!



Where did it begin for Austin?

Community Value to be “Green”

2005 - World Environment Day in SF

United Nations –

Urban Environmental Accords

- **100 Largest Cities Asked to Adopt**
- **Zero Waste by 2040 as part of Accords**
- **City of Austin as co-signer**

2008 - Contracted ZW consultant

2009 - Council adopted ZW Strategic Plan

2011 – Council adopted ZW Master Plan



Austin Resource Recovery

On the Path of
Resource Recovery

On the Journey
Toward Zero Waste

New Name:



The logo consists of three overlapping curved lines in blue, green, and brown, forming a partial circle on the left side of the slide.

Austin Resource Recovery

Vision: To be the national Zero Waste leader in the transformation from traditional integrated waste collection to sustainable resource recovery.

Mission: To achieve Zero Waste by providing excellent customer services that promote waste reduction, increase resource recovery and support the City's sustainability efforts.

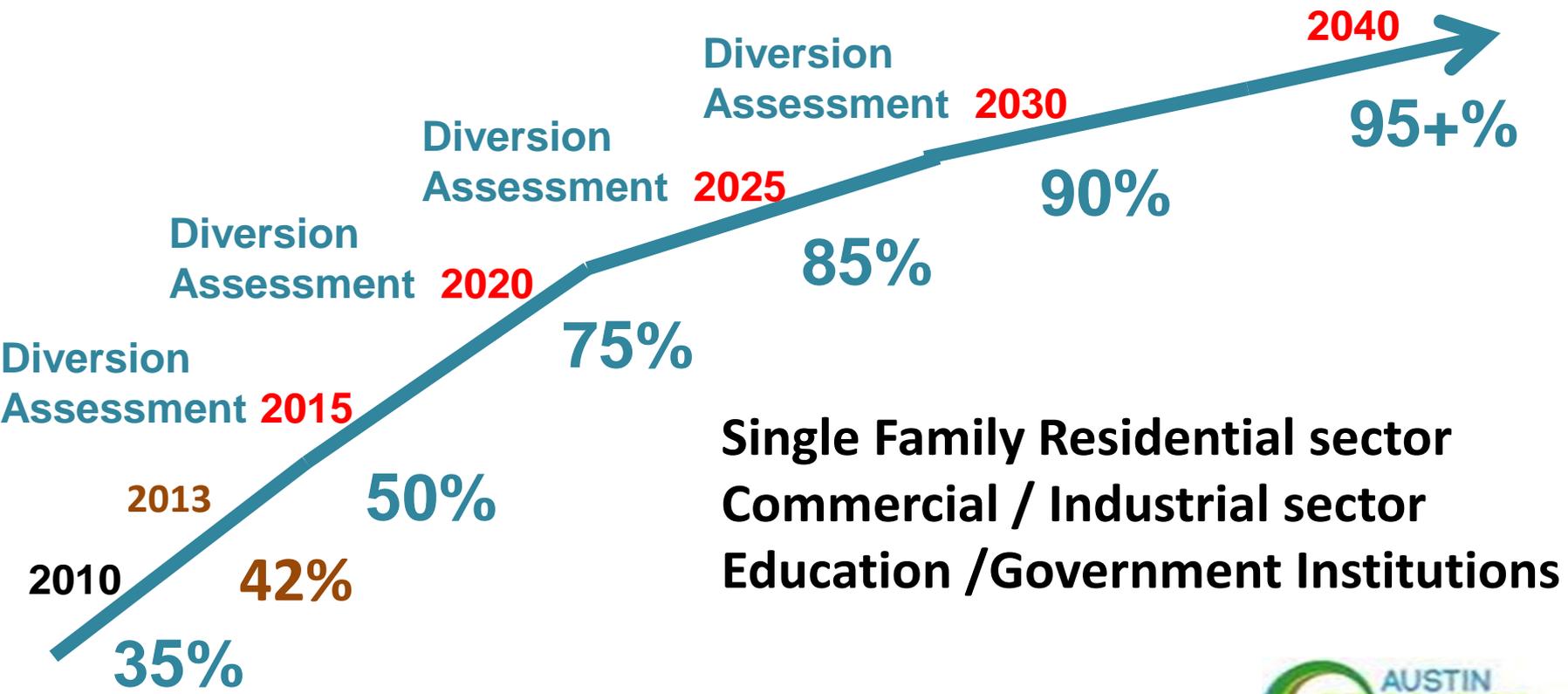


Definition of Zero Waste

Zero Waste is a goal that is ethical, economical, efficient and visionary, to guide people in changing their lifestyles and practices to emulate sustainable natural cycles, where all discarded materials are designed to become resources for others to use. Zero Waste means designing and managing products and processes to systematically avoid and eliminate the volume and toxicity of waste and materials, conserve and recover all resources, and not burn or bury them. Implementing Zero Waste will eliminate all discharges to land, water or air that are a threat to planetary, human, animal or plant health.



Austin Resource Recovery Master Plan: *Zero Waste Diversion Goals*



Single Family Residential sector
Commercial / Industrial sector
Education / Government Institutions



The logo consists of three curved, overlapping bands in blue, green, and brown, resembling a stylized 'C' or a partial circle.

Austin Zero Waste

Four Keystone Initiatives

- **Materials Management = 4-Rs**
- **Expanded Recycling Opportunities**
- **Organics Collection & Composting**
- **Economic Development Growth**

The logo consists of three overlapping, curved bands in blue, green, and brown, resembling a stylized 'A' or a series of arcs.

Austin Master Plan

- **Zero Waste**
- **Sustainability**
- **Waste Reduction**
- **Reuse**
- **Recycling**
- **Materials Management**
- **Composting Organics**
- **Household Hazardous Waste**
- **Disposal Management**
- **Greening Special Events**

The logo consists of three overlapping, curved, concentric shapes in shades of blue, green, and gold, resembling a stylized 'A' or a series of arcs.

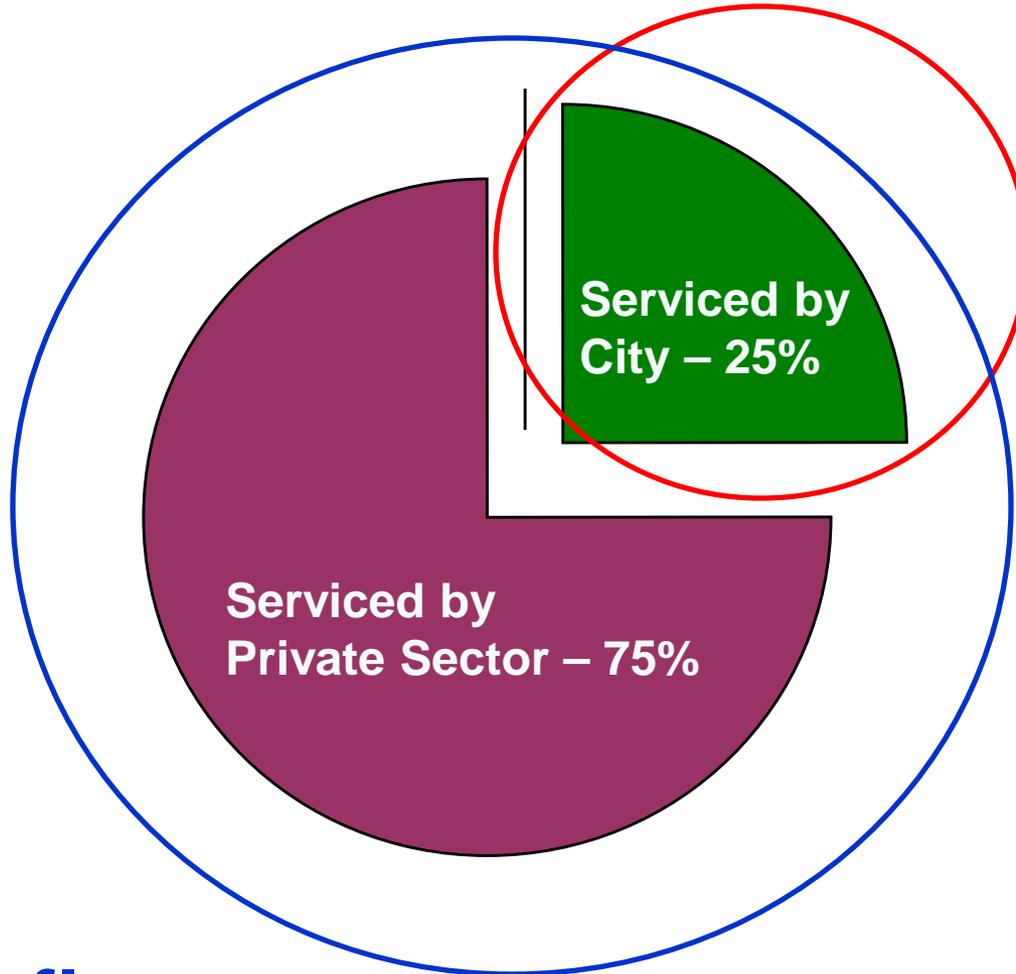
Austin Master Plan

- **Recycling Economic Development**
- **Citizen and Community Partnerships**
- **Private/Public Partnerships**
- **University Partnerships**
- **City Departmental Partnerships**
- **Pilots and Demonstration Projects**
- **Policies & Ordinances**
- **Metrics and Measurements**
- **Financial Models**



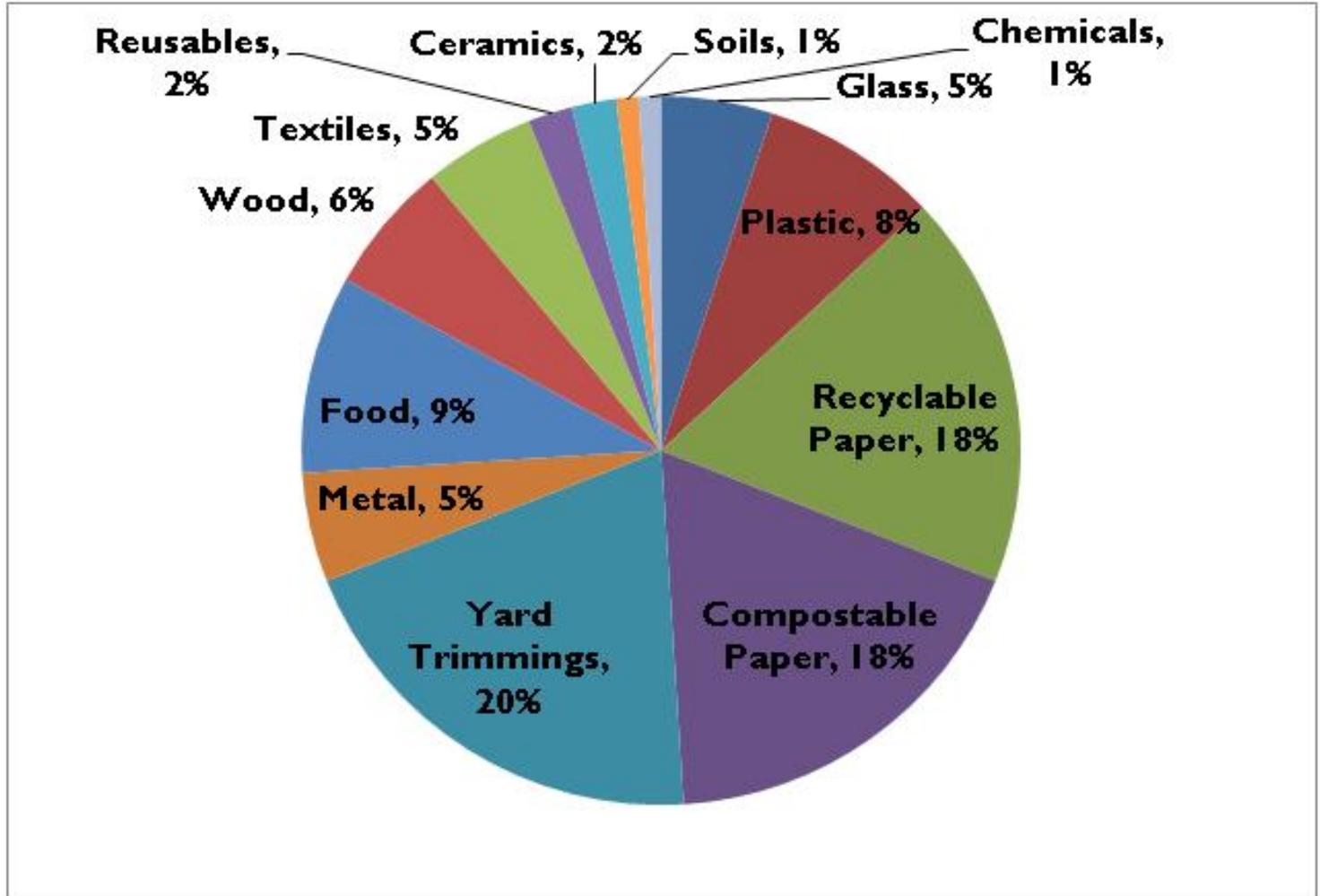
Distribution of Collection

Circle of Direct Control



Circle of Influence

Materials Management



Based on information from CAPCOG, Regional Solid Waste Management Plan 2002- 2022, February 9, 2005, pg. 10, and Austin Zero Waste Strategic Plan, December 4, 2008, pgs. 5-6.



ARR Master Plan

Zero Waste Synergy with Sustainability Efforts

- City Green Purchasing
- Routing Efficiencies – 10% reduction miles
- CNG, Bio-Diesel, Hybrids & Alternative Fuels



Waste Reduction – First Priority

- Waste Reduction – Catalog Choice
- Waste Reduction Assistance Program
- “Highest and Best Use”



Reuse and Repair Businesses

- Creative Arts / Teacher Resource Center
- 5 Reuse Austin Drop-off sites for reusables



ARR Master Plan

Single-Stream Recycling Collection



- Long-Term Processing Contracts
- Add materials to Single Stream Program
- Provide 96 gal and 64 gal blue containers
- Transition from biweekly to weekly (2016)

Single-Stream Organics Collection



- Promote Residential Backyard Composting
- Collect yard trimmings in 96 & 64 gal carts
- Adding food scraps and compostable paper
- Universal Recycling and Composting Ord.



ARR Master Plan

Household Hazardous Waste



- Expanded Saturday and Daily Hours
- Battery Retail take-back program
- Enlarged door-to-door collection
- Pharmaceutical Take-back program
- Adding North HHW Service Site

Closed Landfill Management



- Post-Closure Care of City Landfill
- Expanded Gas Capture - LFGTE
- Solar Farm – 150 acres
- Eco-Industrial Park – 100 acres
- Research & Development – Support ZW



ARR Master Plan

Recycling Economic Development

- 
- Support By-Product Synergies – Waste Pairings
 - Business Waste Reduction Assistance Program
 - Eco-Industrial Park (at closed city landfill)
 - Brownfield Redevelopment Program
 - Hired Recycling Economic Development Liaison

Partnerships

- 
- Community & Non-Profit Partnerships
 - Regional Cooperation & Inter-local Agreements
 - Public / Private Partnerships
 - Education Institution Partnerships
 - Research and Development Program



ARR Master Plan

Policies & Ordinances

- 
- **Universal Recycling and Composting Ord.**
 - Phase 1 multifamily complexes, offices
 - Phase 2 retail, restaurants and industrial
 - **Green Event Recycling Ordinance**
 - **Construction, Demolition, and Deconstruction**
 - **Single Use Disposable Products / Packaging**
 - **Refundable Deposit (Bottle Bill)**

Incentives and Rewards

- **Business Assistance and Recognition**
- **Composting & Events Rebate Programs**
- **Rate Structure Incentives**



ARR Master Plan

Organics Pilot

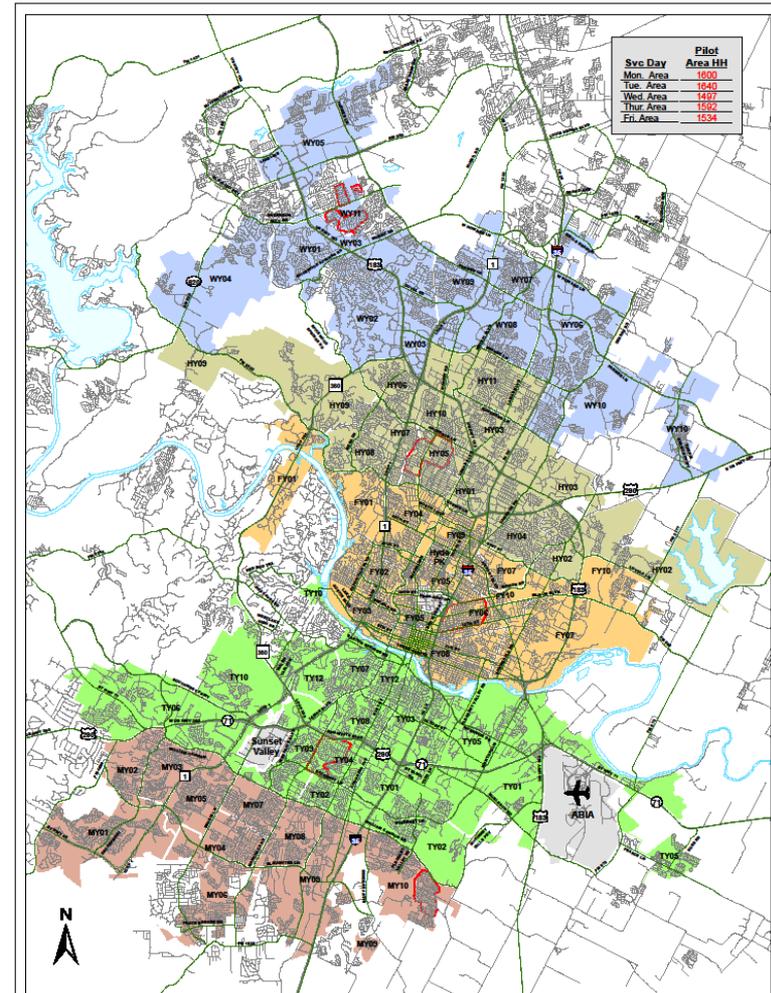
Transition to Single-Stream Organics Collection

- Promote Residential Backyard Composting
- Collect yard trimmings in 96 & 64 gal carts
- Add food scraps and compostable paper



Residential Organics Collection

- **7,900 Single-Family Households**
- **Five geographic areas = one area serviced per day**
- **Demographic Diversity**
- **Start: Dec. 2012**
- **Full City Deployment in 2016**



Residential Organics Collection

- **Distributed: Kitchen food scrap containers**
- **Distributed: 96 gal Green Organic carts**
- **Literature, Instructions, Website**
- **Add yard trimmings, food scraps and compostable paper to Green Organics carts**



Residential Organics Collection

- Container Labeling
- Do's and Don'ts
- Call 3-1-1 or Website: AustinRecycles.com

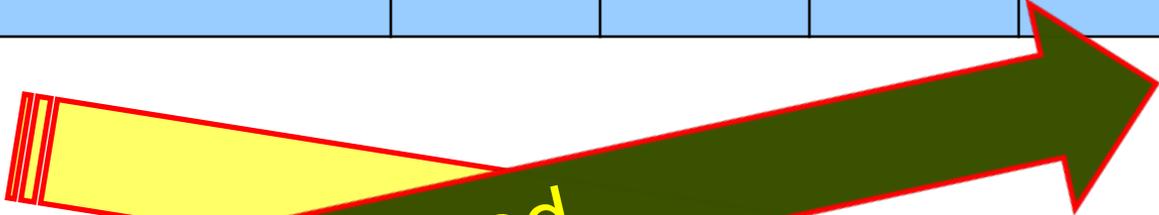




Residential Diversion

assumes average 2.0% population growth per year

Diversion Initiatives – City Hauled (tons)	2010	2015	2020	2025	2030
Total Residential Diversion - Reuse, Recycling, Composting	82,000	125,000	205,000	277,250	332,000
Residential Waste Disposal	150,000	125,000	68,000	49,000	37,000
Residential Waste Generation (with population growth)	232,000	250,000	273,000	326,250	369,000
Residential Diversion Rate	35%	50%	75%	85%	90%



Resources Recovered



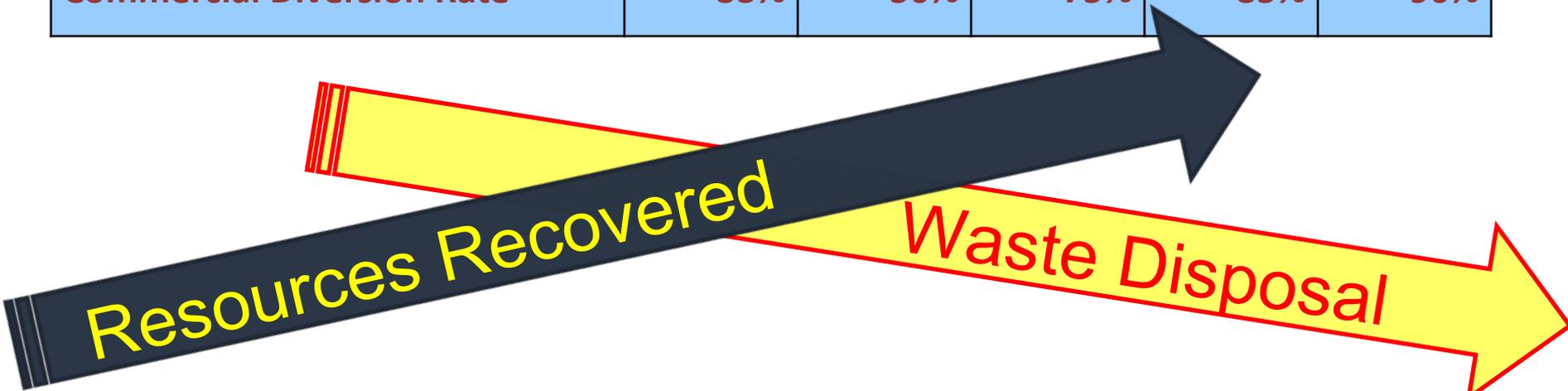
Waste Disposal



Commercial Diversion

assumes average 3.0% business growth per year

Diversion Initiatives – Private Sector Hauled (tons)	2010	2015	2020	2025	2030
Total Commercial Diversion - Reuse, Recycling, Composting	350,000	600,000	1,050,000	1,360,000	1,620,000
Commercial Waste Disposal	700,000	600,000	350,000	240,000	180,000
Commercial Waste Generation (with population growth)	1,050,000	1,200,000	1,400,000	1,600,000	1,800,000
Commercial Diversion Rate	33%	50%	75%	85%	90%



Resources Recovered

Waste Disposal



Pay As you Throw Rate Structure

The Evolution of the
waste can



- Unit Pricing Per Gal of Trash Service
- Conservation Rewarded
- Wasters Pay More per Month
- Finance new programs through rates
- PAYT encourages waste reduction
- City Council supports stratified rates



New Programs = New Costs

New Diversion Programs	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20
Reuse Austin – Eco-Depots & Teacher Resource Center	\$0	\$400,000	\$410,000	\$415,000	\$420,000	\$425,000	\$430,000	\$435,000
Recycling – Multi-Family expansion, Central Business District, & C&D Recycling	\$400,000	\$500,000	\$520,000	\$540,000	\$560,000	\$580,000	\$600,000	\$620,000
Composting Organics – Food Waste Collection, Storm Ready Austin, & compost incentives	\$400,000	\$800,000	2,000,000	3,000,000	3,250,000	3,500,000	3,750,000	4,000,000
Household Hazardous Waste North Site	\$0	\$0	\$875,000	\$900,000	\$925,000	\$950,000	\$975,000	\$1,000,000
New Ordinances – Added Staffing & Resources	\$85,000	\$90,000	\$95,000	\$100,000	\$105,000	\$110,000	\$115,000	\$120,000
Special Events Diversion – new ordinance & services	\$70,000	\$75,000	\$80,000	\$85,000	\$90,000	\$95,000	\$100,000	\$105,000
Economic Development – Re-Made in Austin & Eco-Industrial Park	\$100,000	\$600,000	\$600,000	\$600,000	\$600,000	\$600,000	\$350,000	\$100,000
Communications – Public Education & Marketing	\$3,500,000	\$3,500,000	\$3,500,000	\$3,500,000	\$3,500,000	\$3,500,000	\$3,500,000	\$3,500,000
Total Additional Expenses	\$4,555,000	\$5,965,000	\$8,080,000	\$9,140,000	\$9,450,000	\$9,760,000	\$9,820,000	\$9,880,000
Annual Disposal Savings	\$4,800,000	\$4,400,000	\$4,000,000	\$3,600,000	\$3,200,000	\$2,800,000	\$2,400,000	\$2,000,000
\$ per Household per Month	\$0	\$0.68	\$1.74	\$2.30	\$2.52	\$2.73	\$2.83	\$2.91
Increase in Monthly Rates	\$0	\$0.68	\$1.06	\$0.56	\$0.22	\$0.21	\$0.10	\$0.08



2013 Rates

Pay-As-You-Throw Rate Structure

FY13 Residential Rates	Per Gallon Trash Cart	Monthly Trash	Monthly Recycling	Monthly Organics	Total Monthly Fee	Customer Base
Trash Cart Size						
24 gallon	\$0.16 x 24	\$3.85	\$4.75	\$4.75	\$13.35	5%
32 gallon	\$0.16 x 32	\$5.10	\$4.75	\$4.75	\$14.60	20%
64 gallon	\$0.16 x 64	\$10.25	\$4.75	\$4.75	\$19.75	65%
96 gallon	\$0.25 x 96	\$24.00	\$4.75	\$4.75	\$33.50	10%



Residential Recycling Collection

Learned Lessons

- **Varied Set Out Rates (85% to 50%)**
- **Routing Challenges**
- **Contamination Challenges (14%)**
- **Pounds per Household Varied**
- **Customer Education – 9 zones**
- **Truck Styles – Automated works best**
- **Container Sizing – 96 Gal / 64 Gal carts**



Residential Organics Collection

Learned Lessons

- **Varied Set Out Rates (85% to 10%)**
- **Routing Challenges**
- **Contamination Challenges (5%)**
- **Pounds per Household Varied**
- **Customer Education – Varied Needs**
- **Truck Styles – Semi-Auto works best**
- **Container Sizing – 96 Gal / 64 Gal carts**



Marketing Programs

- **9 Zone Residential Education**
- **Dare to Go Zero video series**
- **Annual Calendar**
- **Public Meetings – Community Values**
- **Recycle Right Campaign**
- **Container Labels**
- **Business Assistance**
- **Private Hauler Assistance**



HHW & Electronics Collection

- **HHW Collection Drive Through**
- **Elderly Door stop Collection**
- **Paint Recycling “Austin ReBlend”**
- **Battery Retail Collection**
- **Electronics Collection “Project Reconnect”**
- **Advanced Recycling Fees - TVs/Electronics**

- **Need North HHW collection facility**
- **Need Retail Collection of CFLs & pharm.**
- **EPR = Extended Producer Responsibility**



Climate Impacts

- **Hotter Dryer Summers**
- **Warmer Dryer Winters**
- **Long-term Drought**
- **More violent storms**

- **Diesel fuel line vaporization**
- **Conversion to CNG and Hybrids**
- **Varied start times to reduce heat stroke**
- **More water breaks**
- **Storm Debris Management**



Service Standards

Community Support

- **City Council Support**
- **Transparent and Accountable**
- **Reflect Community Values (e.g. living wage)**
- **Monthly citizen commission meeting**
- **Open budgetary discussion**
- **Change-oriented operations**
- **Define “price points”**
- **Consumer choice – Pay As You Throw Rates**
- **Customer Service must be highest priority**



Service Standards

Customer Satisfaction

- **60% “Standard” Government Service**
- **70% “Acceptable” Customer Service**
- **80% “High Quality” Customer Service**
- **90%+ “Gold Standard” Customer Service**

- **Austin 85% - focused on improvements**
- **Expand metrics to reflect community values**
- **Routing can affect service delivery**
- **Color coded trucks offer customer security**
- **Neighborhood meetings – stay in touch**



Bob.Gedert@AustinTexas.gov

http://austintexas.gov/sites/default/files/files/Trash_and_Recycling/MasterPlan_Final_12.30.pdf