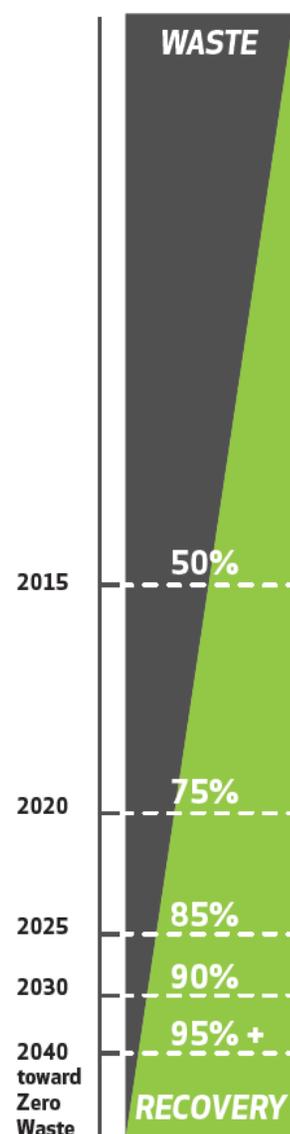




AUSTIN RESOURCE RECOVERY MASTER PLAN DECEMBER 15, 2011

www.austintexas.gov/department/austin-resource-recovery-master-plan-documents

Outline



- Related Council Resolutions
- City Control vs. Influence
- GHG emission calculations
- Zero Waste Initiatives
- Projected Diversion
- Projected Emission Reductions

CITY COUNCIL RESOLUTION



May 19, 2005, Resolution 20050519-44

Waste Reduction initiatives from

UN Environmental Accords:

- Policy to achieve zero waste by 2040
- Programs to reduce per capita disposal 20%
- Ordinance to reduce disposable product use 50%

RESULTS



- Zero Waste Master Plan, 12/15/11
- 40% diversion COA curbside
- Single-Use Carryout Bag Ordinance
- Universal Recycling & Composting Ordinance

ZERO WASTE GOOOOAL!



Fig. 19 - Diversion Goals



DIVERSION RATE

Tons Diverted

Tons Diverted +
Tons Disposed



DIVERSION



GENERATION

CITY CONTROL VS INFLUENCE



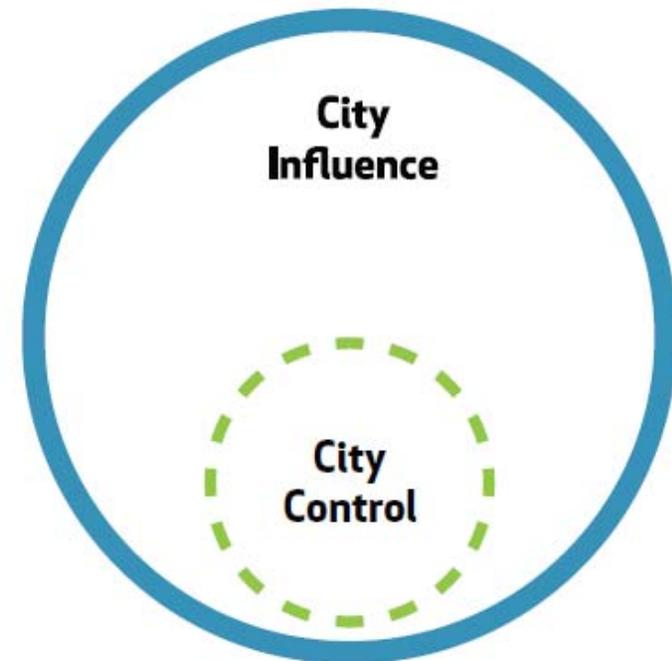
- **City of Austin Controlled**

- City collection
- Contracted collection
- City facilities
- Purchasing
- Design or contract specs

- **City Influenced**

- City programs: Outreach, Education, Financial Incentives
- Ordinances

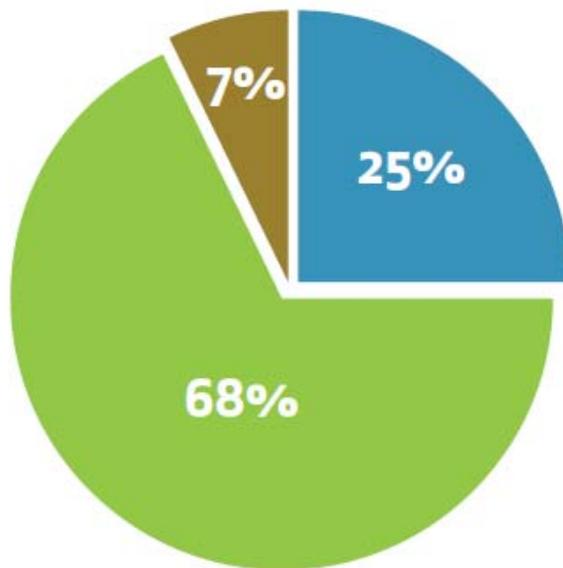
- **Free market**



CITY CONTROL VS INFLUENCE



Fig. 5 - Citywide Generation: Influence Versus Control



Tons controlled by City:	360,500 (25%)
Tons controlled by private sector:	976,100 (68%)
Self haul tons:	108,700 (7%)
<hr/>	
Total tons generated:	1,445,300



Chapter 4 / Sustainability

Department Focus

Support sustainability & slowing climate change by:

- Reducing raw material use
- Using recycled-content products
- Reducing or eliminating need for landfills
- Establishing local end markets



Chapter 4 / Sustainability

Department Climate Protection Plan

- Energy – conservation & renewables
- Water conservation
- Transportation
 - Collection routing efficiencies
 - Alternative fuels, hybrid technologies
- Decrease landfill disposal
- Green purchasing



SUSTAINABILITY
TOOLS FOR
ASSESSING &
RATING COMMUNITIES

ICLEI STAR Community Index – Austin

- Waste Minimization:

- Progress toward 100% reduction by 2050
- Waste management plan
- Specific product bans
- Public education campaign
- Regional coalition
- Incentives or regulations
- Services for residents & businesses
- Targeted programs
- Critical material streams





Chapter 4 / Sustainability

Fig. 10 - Zero Waste Synergy with Sustainability Efforts

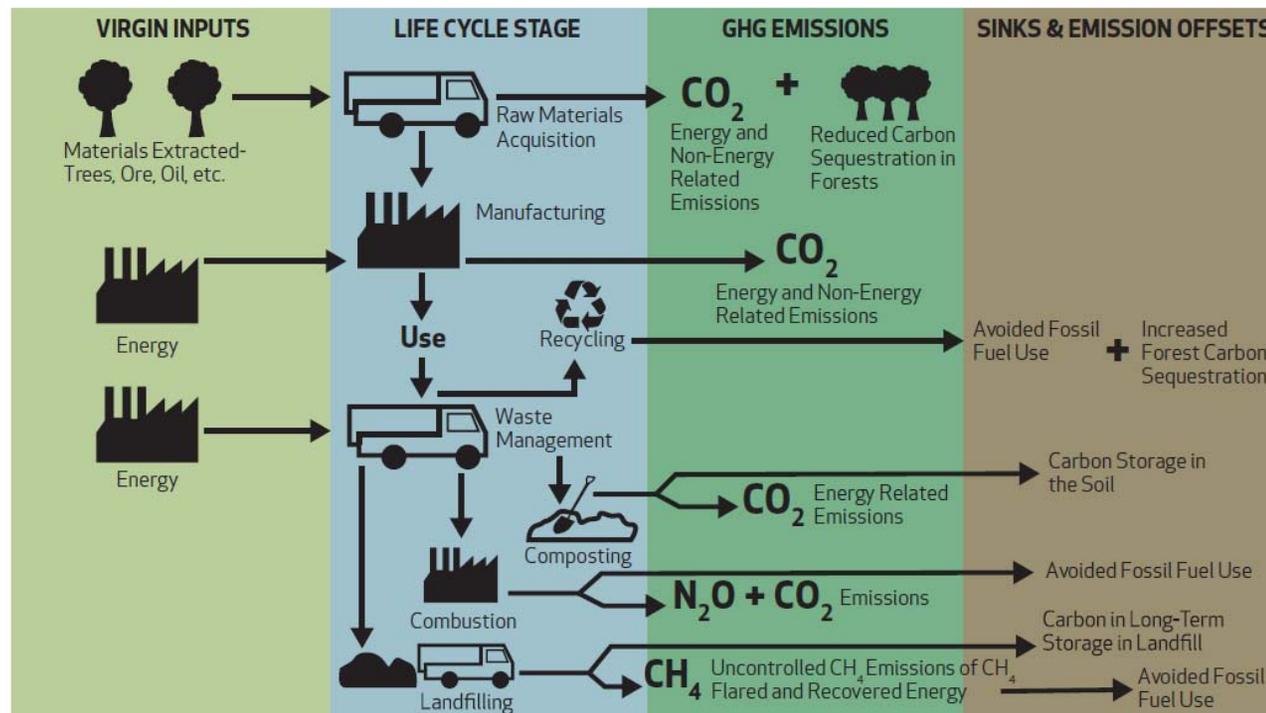
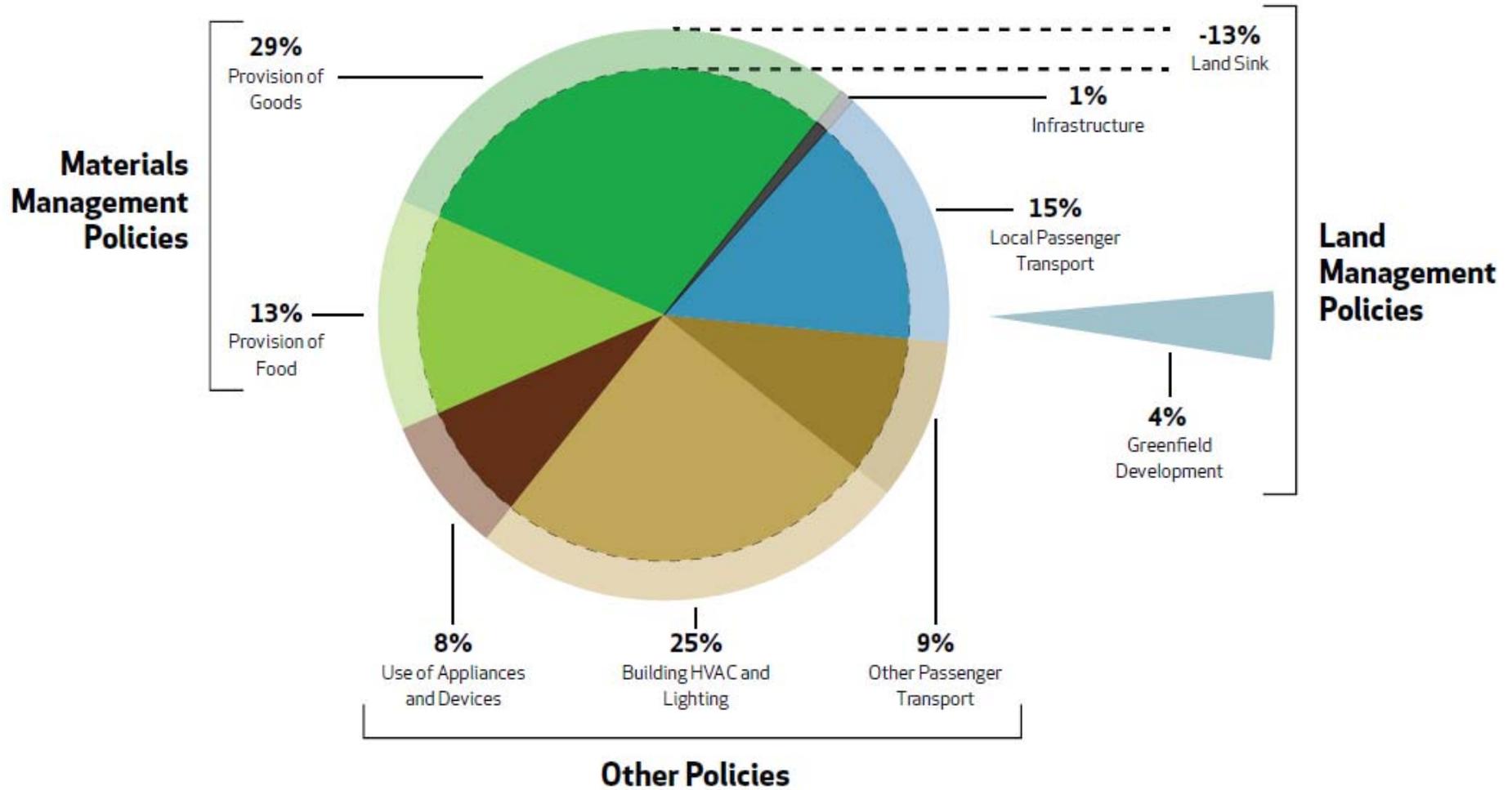


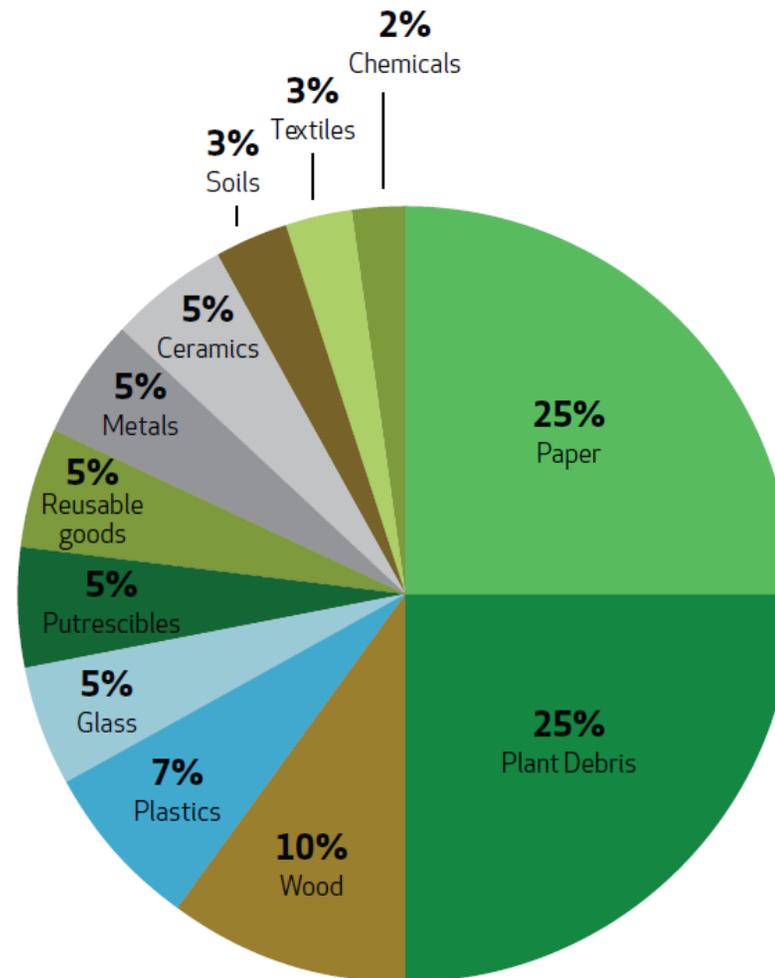
Fig. 8 - Systems-Based View of U.S. GHG Emissions (2006)¹²



ZERO WASTE INITIATIVES



What's in the material stream?





Waste Reduction Model (WARM)

United States Environmental Protection Agency

- Estimates GHG emissions
- 50 types of material
- Material management options
 - Source Reduced
 - Recycled
 - Composted
 - Combusted
 - Landfilled



Waste Reduction Model (WARM)

United States Environmental Protection Agency

MTCO₂E Emissions per 100 tons of Material (Large-quantity residential & commercial materials)

Material	Landfilled	Recycled or Composted	Net reduction
Recyclable or Reusable Materials			
Office Paper	153	-286	439
Corrugated Containers	46	-312	358
Aluminum Cans	4	-911	915
Steel Cans	4	-181	185
Plastics	4	-103	107
Organics			
Food Waste (non-meat)	64	-15	79
Mixed Organics	24	-14	38
Yard Trimmings	-21	-12	-9

ZERO WASTE INITIATIVES



What's in the material stream?

Organics

- Food residuals
- Scrap paper
- Yard trimmings

Recyclable or Reusable Materials

- Glass
- Metal
- Paper
- Plastic
- Textiles

Construction & Demolition Debris

- Wood
- Concrete
- Asphalt
- Masonry

Household Hazardous Waste

- Paint
- Pesticides
- Batteries
- Auto fluids

ZERO WASTE INITIATIVES



City of Austin Controlled

ARR Programs & Services	Organics	Reusables, Recyclables	C&D	HHW
Outreach & Support <ul style="list-style-type: none"> • Public education • Austin Green Business Leader • Austin Energy Green Building • Recycled Reads 	X	X	X	X
ARR Curbside Collection Services <ul style="list-style-type: none"> • Pay-As-You-Throw • Single-Stream Recycling • Yard trimmings/Organics • Brush • Bulky Items • Public area 	X	X	X	
CBD Alley Recycling	X	X		
Recycling & Composting Rebates	X	X		

ZERO WASTE INITIATIVES



City of Austin Controlled

ARR Facilities	Organics	Reusables, Recyclables	C&D	HHW
Resource Recovery Centers	X	X	X	X
Household Hazardous Waste <ul style="list-style-type: none"> • ReBlend • North facility 				X
FM 812 Landfill – gas management				



ZERO WASTE INITIATIVES



City of Austin Controlled: Alternative Disposal Options

- Thermal Conversion – Direct Combustion
- Thermal Conversion – Pyrolysis
- Pyrolysis/Steam Reforming
- Thermal Conversion – Gasification
- Thermal Conversion – Plasma Arc Gasification
- Thermal Conversion – Thermal and Catalytic Depolymerization
- Biological/Chemical Conversion Technologies
- Biochemical Conversion – Anaerobic Digestion
- Chemical Conversion Hydrolysis
- Aerobic Digestion
- Steam Injection Bio Reactor

ZERO WASTE INITIATIVES



City of Austin Influenced

Citywide Zero Waste Policies	Organics	Reusables, Recyclables	C&D	HHW
Universal Recycling/Composting Ord.	X	X		
Single-use & non-recyclables <ul style="list-style-type: none"> • Single-Use Carryout Bag Ord. 		X		
Special Events Ord. w/Zero Waste	X	X		
C&D Recycling Ord.	X	X	X	
Extended producer responsibility (Take-back)	X	X		
Recycling Economic Development <ul style="list-style-type: none"> • Re-Made in Austin • Austin Materials Marketplace • (Re)Manufacturing Hub • Creative Reuse 	X	X	X	

Table 26 - Diversion Initiatives - City of Austin Controlled



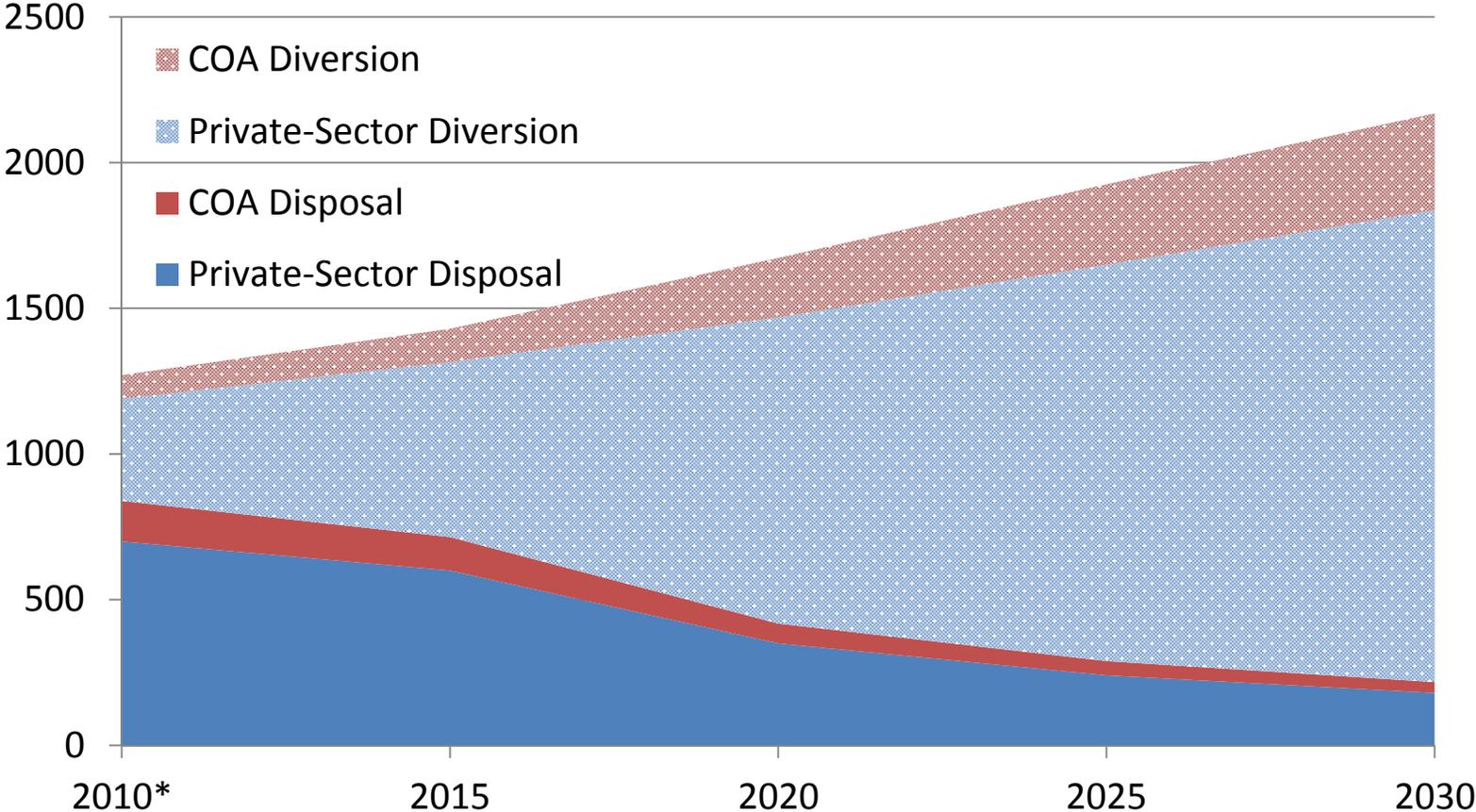
Diversion Initiatives	In Tons				
	FY 2010 (Actual)	FY 2015	FY 2020	FY 2025	FY 2030
Reuse Collection					
Reuse Austin and Teachers Reuse Center	0	500	2,000	5,000	10,000
Expanded reuse entrepreneur opportunities	0	500	5,000	10,000	15,000
Recycling Collection					
Single Stream Recycling - residential	52,479	75,000	80,000	85,000	90,000
Clean Austin - Expanded bulk collection and recycling	194	1,000	4,000	10,000	15,000
Public area recycling containers	0	400	1,000	2,000	4,000
Event Recycling Ordinance	0	250	500	1,000	1,500
Organics Collection					
Compost Incentive Program	0	1,000	2,000	3,000	4,000
Residential organics collection (yard trimmings, brush, food scraps)	29,806	30,000	50,000	75,000	80,000
Storm-Ready Austin - Storm Debris Management Program	0	6,000	10,000	10,000	10,000
Household Hazardous Waste					
South Austin HHW facility	132	150	200	500	1,000
North Austin HHW facility	0	150	200	500	1,000
Expand door-to-door and retail take-back collection	0	50	100	250	500
Producer Responsibility Initiative	0	0	50,000	75,000	100,000
Projected City-Hauled Diversion - Reuse, Recycling, Composting, HHW	82,611	115,000	205,000	277,250	332,000
Projected City-Hauled Waste Disposal	138,757	115,000	68,000	49,000	37,000
Projected City-Hauled Waste Generation	221,368	230,000	273,000	326,250	369,000
City-Hauled Diversion Rate	38%	50%	75%	85%	90%

Table 27 - Diversion Initiatives -Private-Sector Controlled



Diversion Initiatives	In Tons				
	FY 2010 (Est.)	FY 2015	FY 2020	FY 2025	FY 2030
Waste Reduction					
Waste Reduction Assistance Program (WRAP)	0	5,000	10,000	15,000	20,000
Waste Pairing (by-product synergies)	0	10,000	30,000	35,000	40,000
Recycling Collection					
C&D Debris Ordinance Development, Implementation, Enforcement	0	50,000	100,000	150,000	180,000
Commercial and multifamily recycling (plus URO impacts)	350,000	450,000	700,000	850,000	1,000,000
Glass collection pilots for multifamily and commercial sites	0	5,000	10,000	20,000	30,000
Expanded multifamily drop-off recycling services	0	30,000	100,000	140,000	150,000
Organics Collection					
Commercial and multifamily organics (plus URO impacts)	0	50,000	100,000	150,000	200,000
Projected Private-Hauled Diversion Reuse, Recycling, Composting, HHW	350,000	600,000	1,050,000	1,360,000	1,620,000
Projected Private-Hauled Waste Disposal	700,000	600,000	350,000	240,000	180,000
Projected Private-Hauled Waste Generation	1,050,000	1,200,000	1,400,000	1,600,000	1,800,000
Private-Hauled Diversion Rate	33%	50%	75%	85%	90%

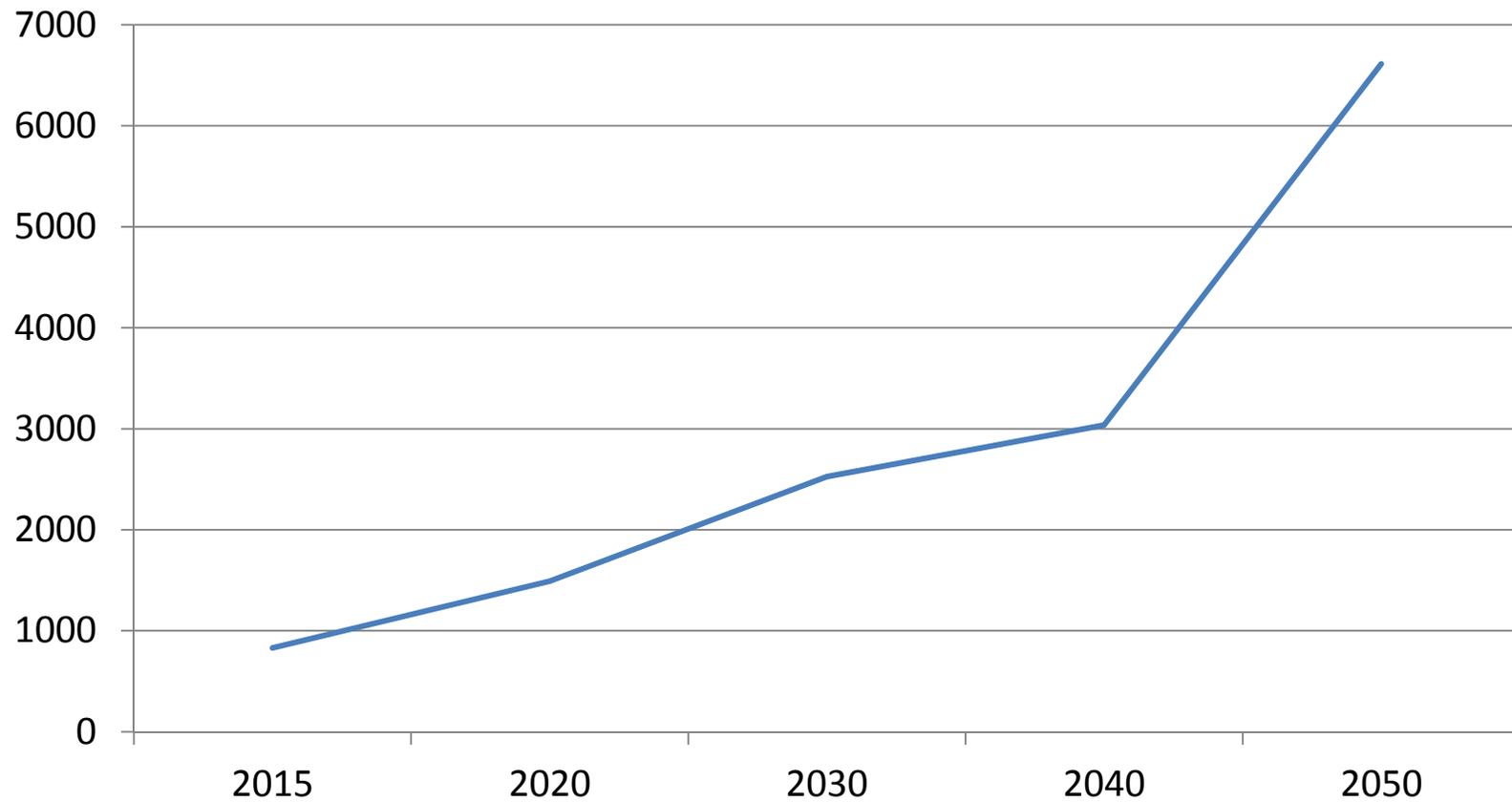
PROJECTED DIVERSION (000s tons)



PROJECTED GHG REDUCTIONS



MTCO₂E (000s tons)







Highest Use

Redesign
Manufacturing
& Supply Chain

Reduce/
Refuse/
Return

Reuse/
Preserve
Form &
Function

Recycling/
Compost/
Digestion

Down Cycle

Waste-Based
Energy

Bury/
Incinerate

Lowest Use





Fig. 16 - EPA Food Waste Hierarchy

