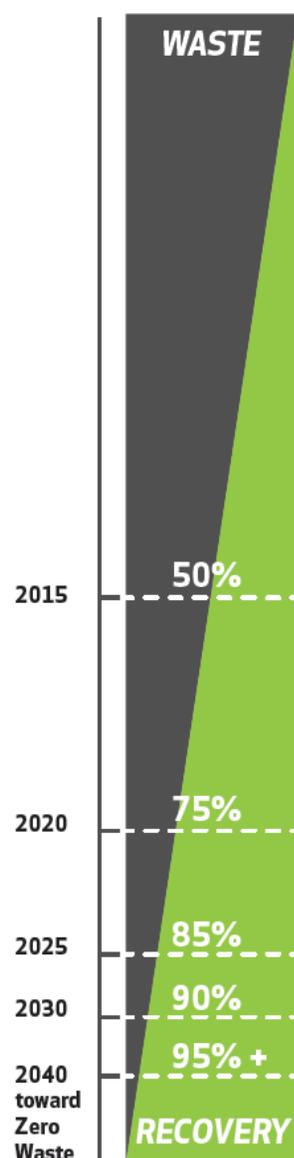




**AUSTIN RESOURCE RECOVERY  
MASTER PLAN  
DECEMBER 15, 2011**

# Outline



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

# AUSTIN CITY COUNCIL ACTIONS



May 19, 2005, Resolution 20050519-44

Waste Reduction initiatives from UN  
Environmental Accords:

- Policy to achieve zero waste by 2040
- By 2012, programs to reduce per capita disposal 20%
- By 2012, ordinance that reduces use of a disposable product 50%

# AUSTIN CITY COUNCIL ACTIONS



- January 15, 2009 – Zero Waste Strategic Plan
- November 4, 2010 – Universal Recycling Ordinance (URO)
- December 15, 2011 – Adopted Zero Waste Master Plan
- March 2, 2012 – Adopted Single-Use Carryout Bag Ordinance
- April 25, 2013 & June 12, 2014 – Expanded URO
- FY 2013 – 40% diversion COA curbside

# ZERO WASTE GOOOOAL!



Fig. 19 - Diversion Goals



# DIVERSION RATE



Tons Diverted

---

Tons Diverted +  
Tons Disposed



DIVERSION



GENERATION

# CITY CONTROL VS INFLUENCE



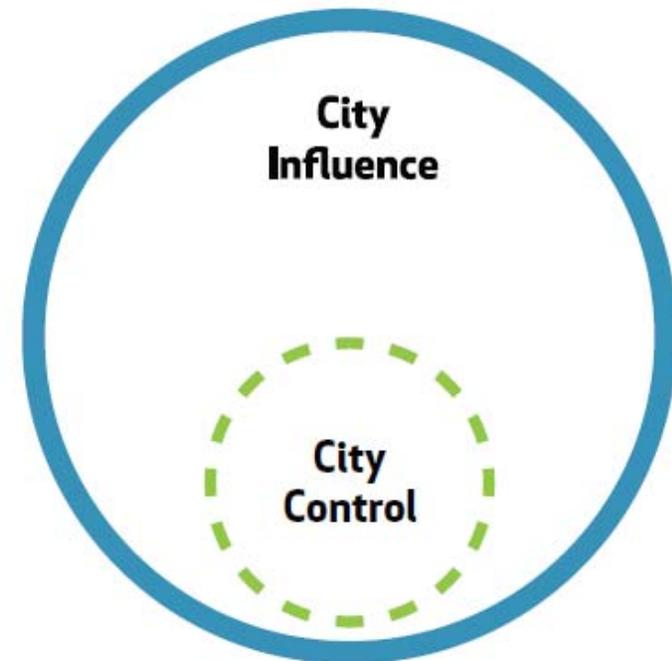
- **City of Austin Controlled**

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

- **City Influenced**

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

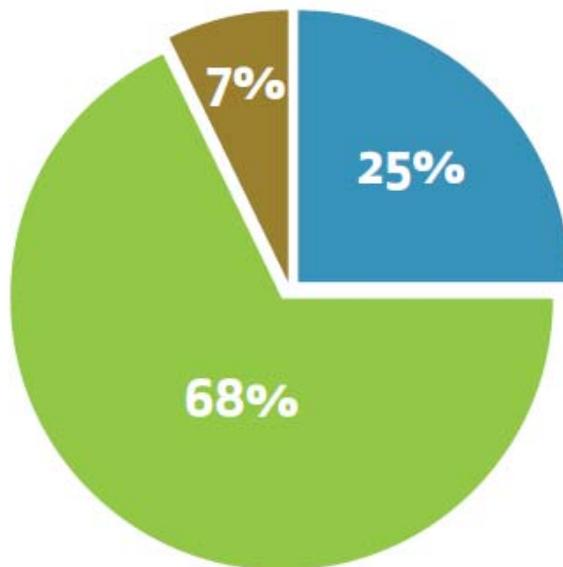
- **Free market**



# 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

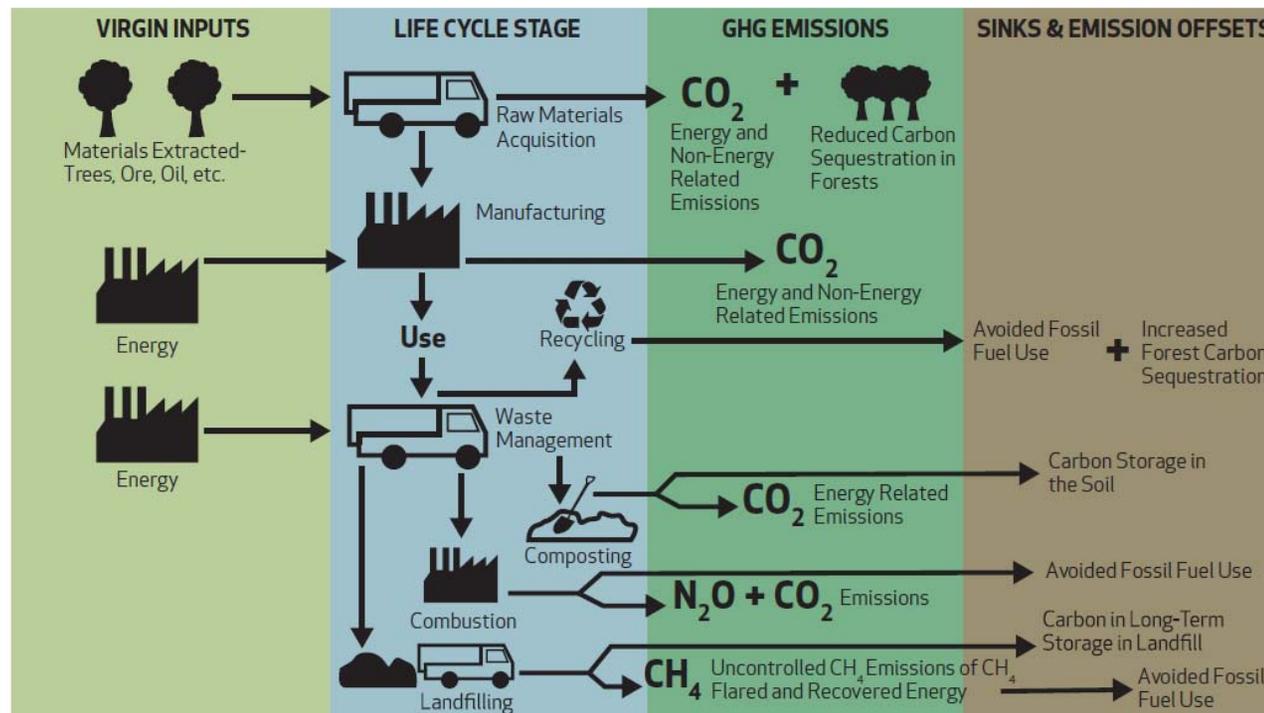
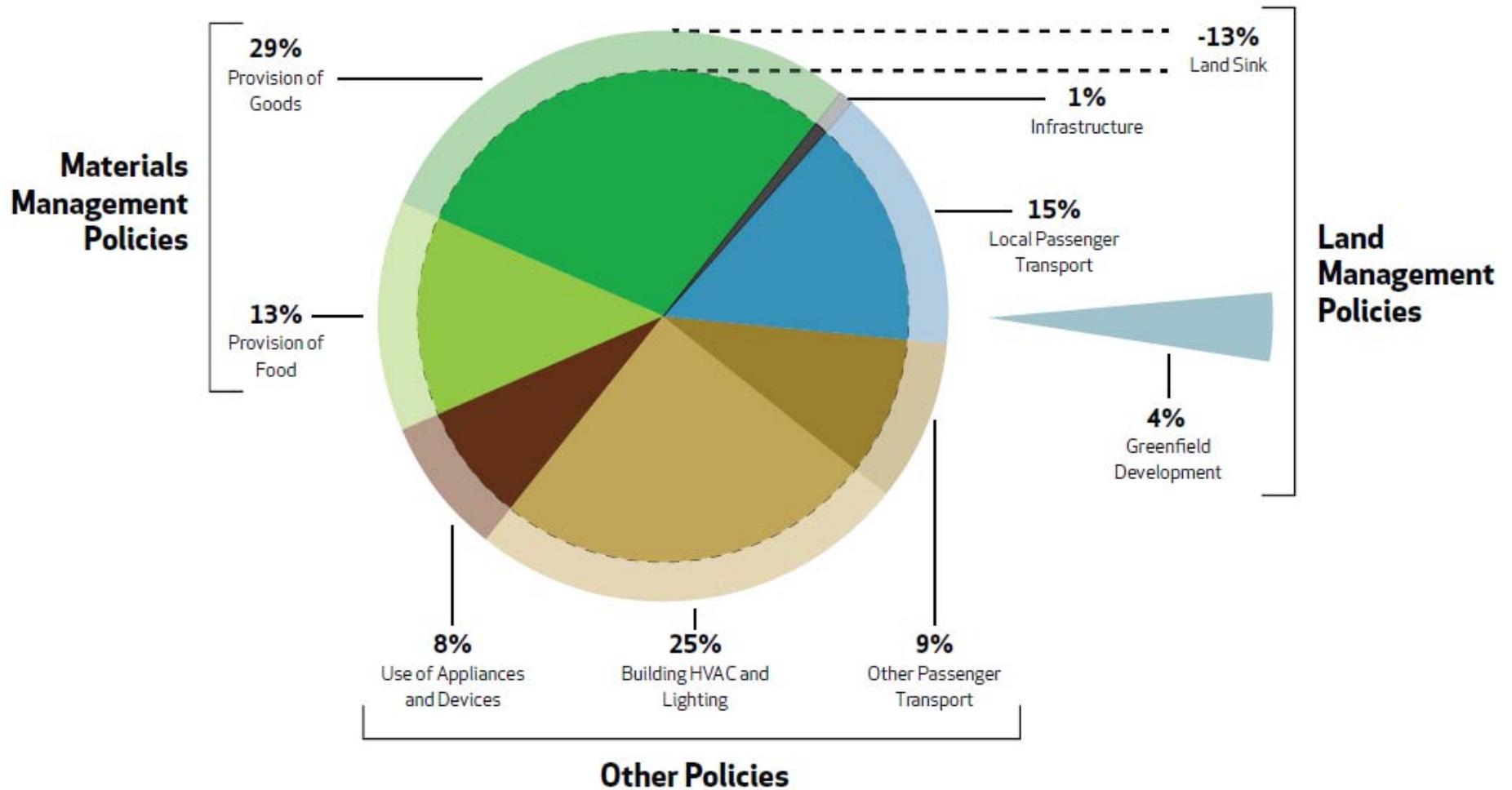


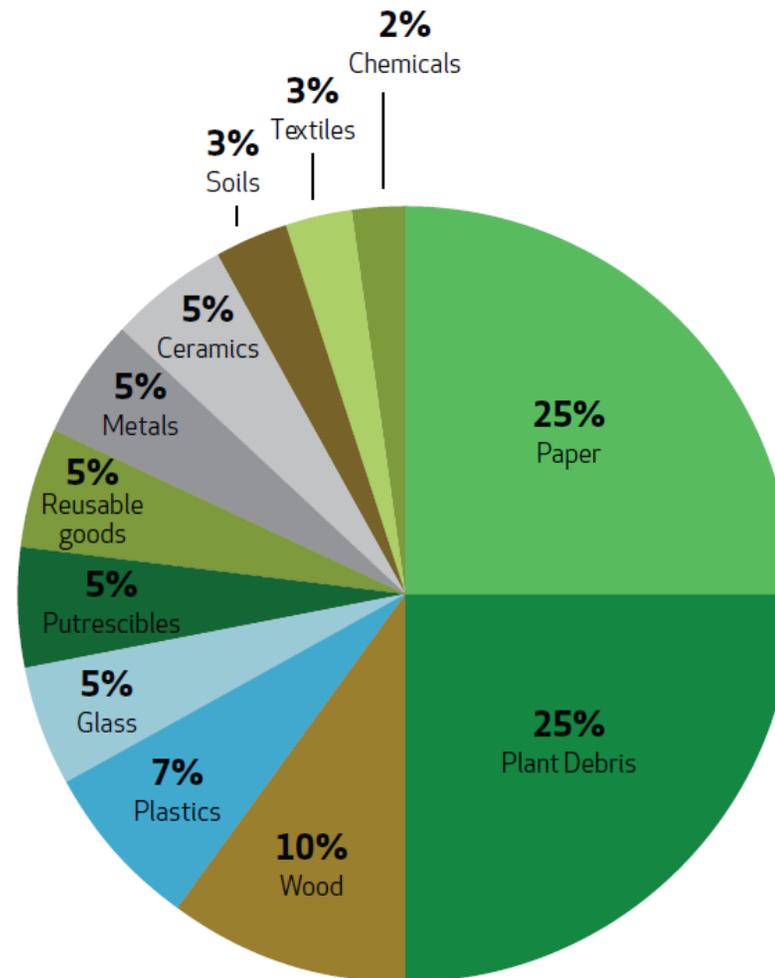
Fig. 8 - Systems-Based View of U.S. GHG Emissions (2006)<sup>12</sup>



# ZERO WASTE INITIATIVES



What's in the material stream?





# Waste Reduction Model (WARM)

United States Environmental Protection Agency

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



# Waste Reduction Model (WARM)

United States Environmental Protection Agency

## MTCO<sub>2</sub>E Emissions per 100 tons of Material (Large-quantity residential & commercial materials)

Material	Landfilled	Recycled or Composted	Net reduction
<b>Recyclable or Reusable Materials</b>			
Office Paper	153	-286	439
Corrugated Containers	46	-312	358
Aluminum Cans	4	-911	915
Steel Cans	4	-181	185
Plastics	4	-103	107
<b>Organics</b>			
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
<b>Outreach &amp; Support</b> <ul style="list-style-type: none"> <li>• Public education</li> <li>• Austin Green Business Leader</li> <li>• Austin Energy Green Building</li> <li>• Recycled Reads</li> </ul>	X	X	X	
<b>ARR Curbside Collection Services</b> <ul style="list-style-type: none"> <li>• Pay-As-You-Throw</li> <li>• Single-Stream Recycling</li> <li>• Yard trimmings/Organics</li> <li>• Brush</li> <li>• Bulky Items</li> <li>• Public area</li> </ul>	X	X	X	
<b>CBD Alley Recycling</b>	X	X		
<b>Recycling &amp; Composting Rebates</b>	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"> <li>• ReBlend</li> <li>• North facility</li> </ul>				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

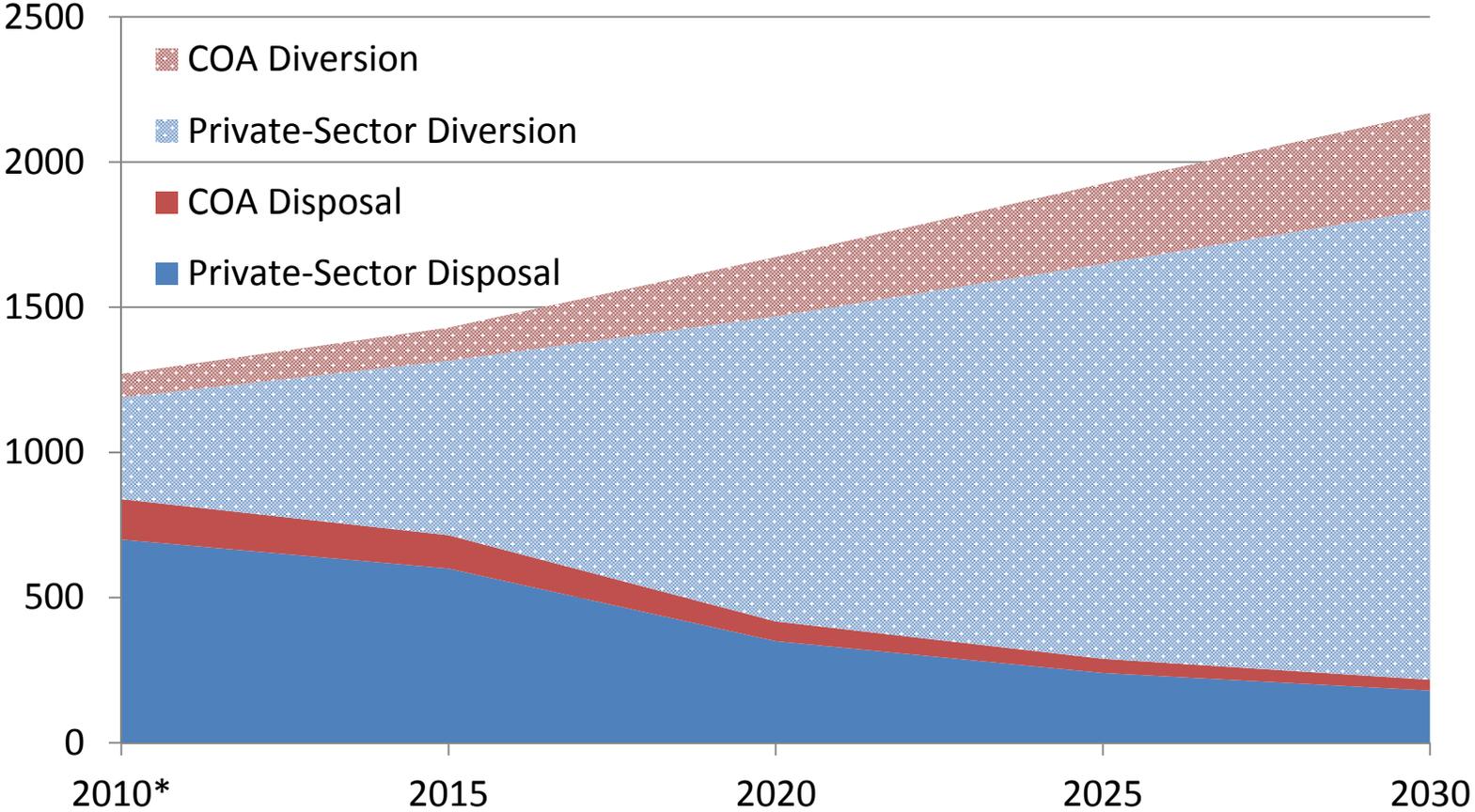
# ZERO WASTE INITIATIVES



## 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"> <li>• Single-Use Carryout Bag Ord.</li> </ul>		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"> <li>• Re-Made in Austin</li> <li>• Austin Materials Marketplace</li> <li>• (Re)Manufacturing Hub</li> <li>• Creative Reuse</li> </ul>	X	X	X	

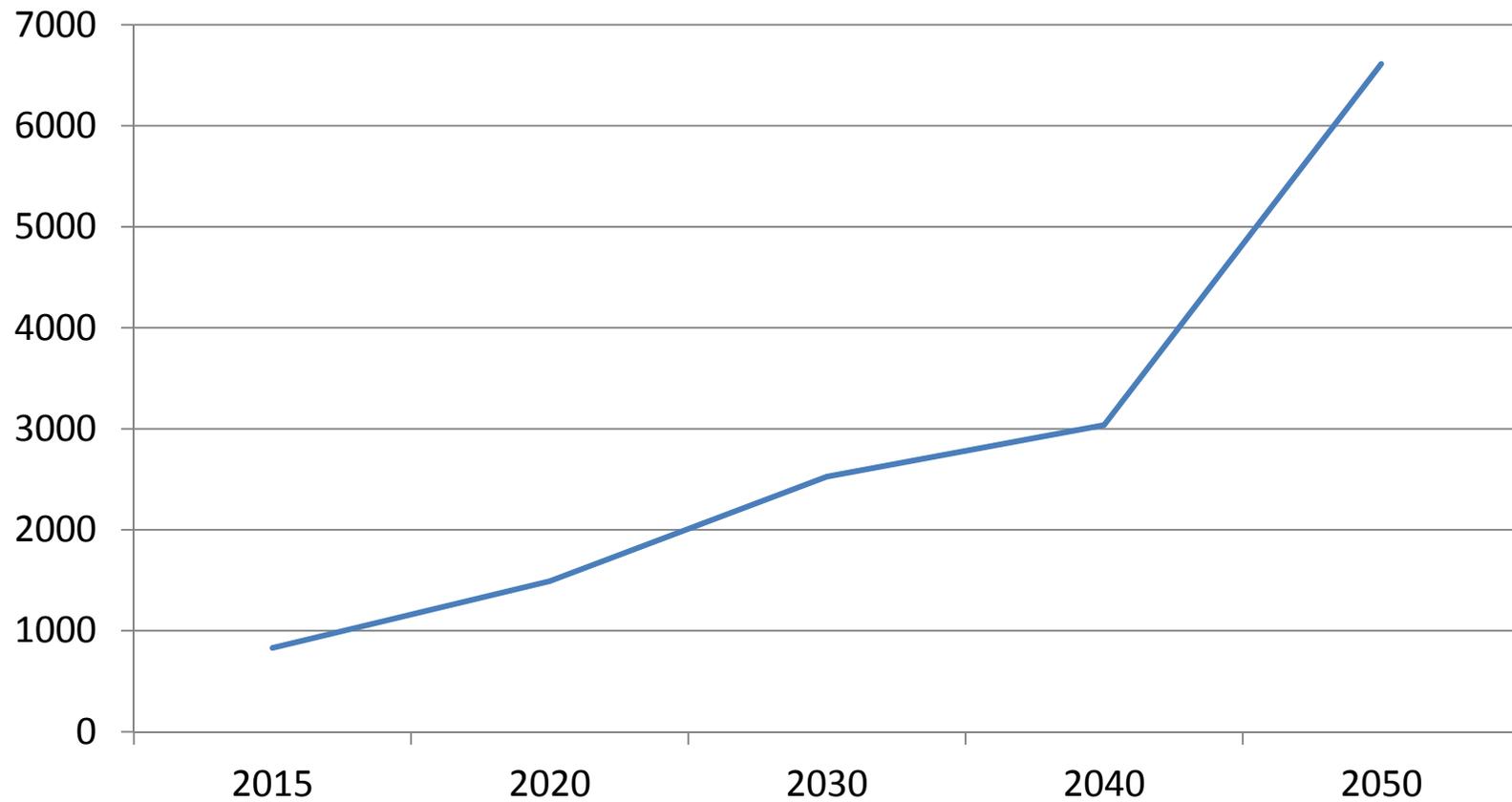
# PROJECTED DIVERSION (000s tons)



# PROJECTED GHG REDUCTIONS



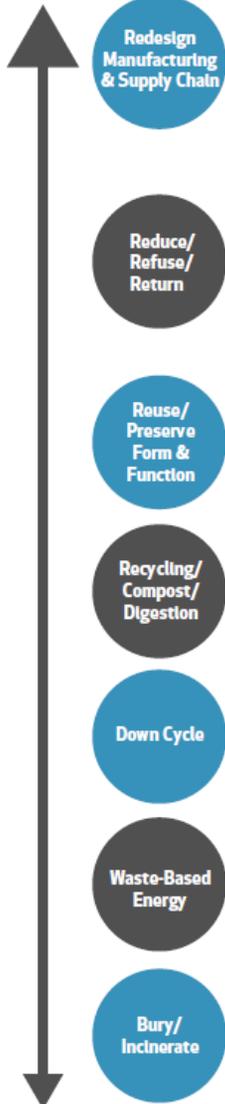
## MTCO<sub>2</sub>E (000s tons)







Highest Use



Lowest Use



Fig. 16 - EPA Food Waste Hierarchy

