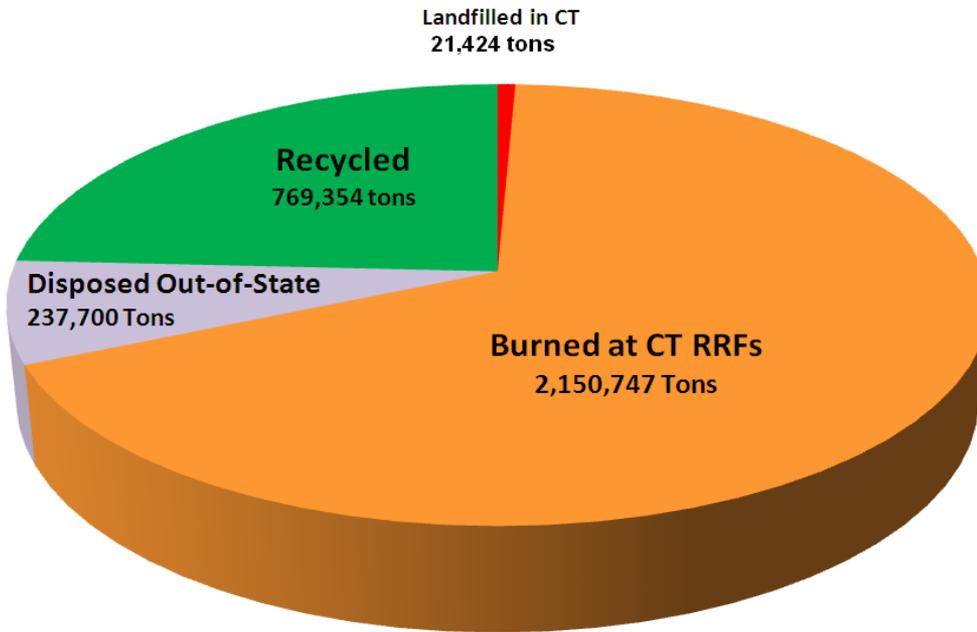


# Governor's Working Group on Waste and Recycling:

Waste Transformation Emerging  
Insights and Next Steps

# CT is leader in environmental outcomes and recovery rates both in US and Globally

Tons CT MSW Reported Disposed & Recycled FY2010



- 92% Recycled or recovered for energy
- <1% Landfilled in-state
- 7% Sent out of state for energy recovery or landfilling

- Currently we recycle about 25 percent
- The majority of the remainder is sent to Resource Recovery Facilities (Waste to Energy) and set on fire to generate power
- Very little of our waste is currently entering landfill
- We are actually on track for Zero Land fill within the next 24-36 months

However, 3 issues are on track to ripen in the next 12-60 months that are forcing us to rethink the way our waste system works

- Low and declining natural gas pricing driving electricity prices down
- Approaching electricity contract end for RRF facilities
- High and increasing costs, municipal responsibility for MSW disposal and declining budgets

# Luckily, we have discovered something that many of you likely already know, there's a lot of money in trash

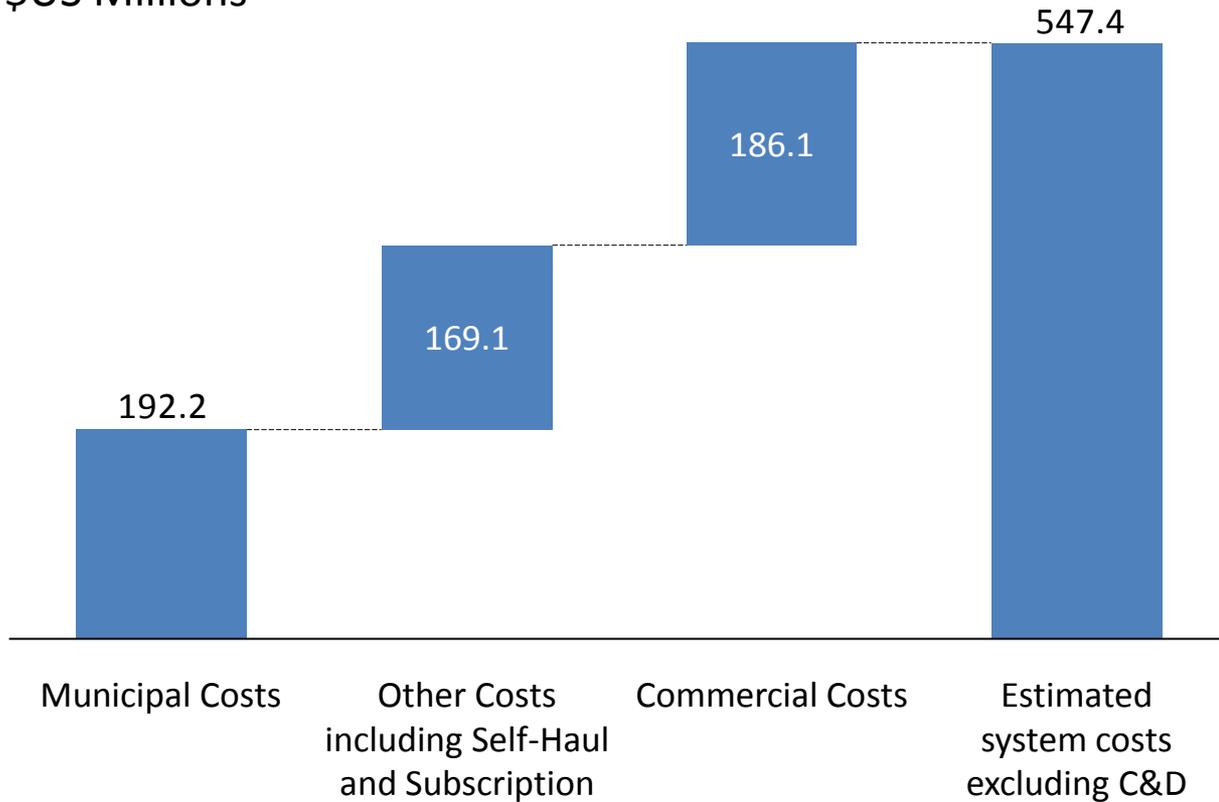
- We have kicked off a year long effort that we call “Unlocking the Materials Economy”
- Governor Malloy convened the Working Group in April 2012 to submit recommendations to fundamentally transform our environmental and economic outlook with regards to materials management
- Final Recommendations are due December 1, 2012 in preparation for the 2013 legislative session

# GWG analysis has uncovered 3 main challenges that need to be addressed

- System and municipal costs are too high
- Commodity value extraction is too low
- System infrastructure needs to be diversified

# System costs are too high

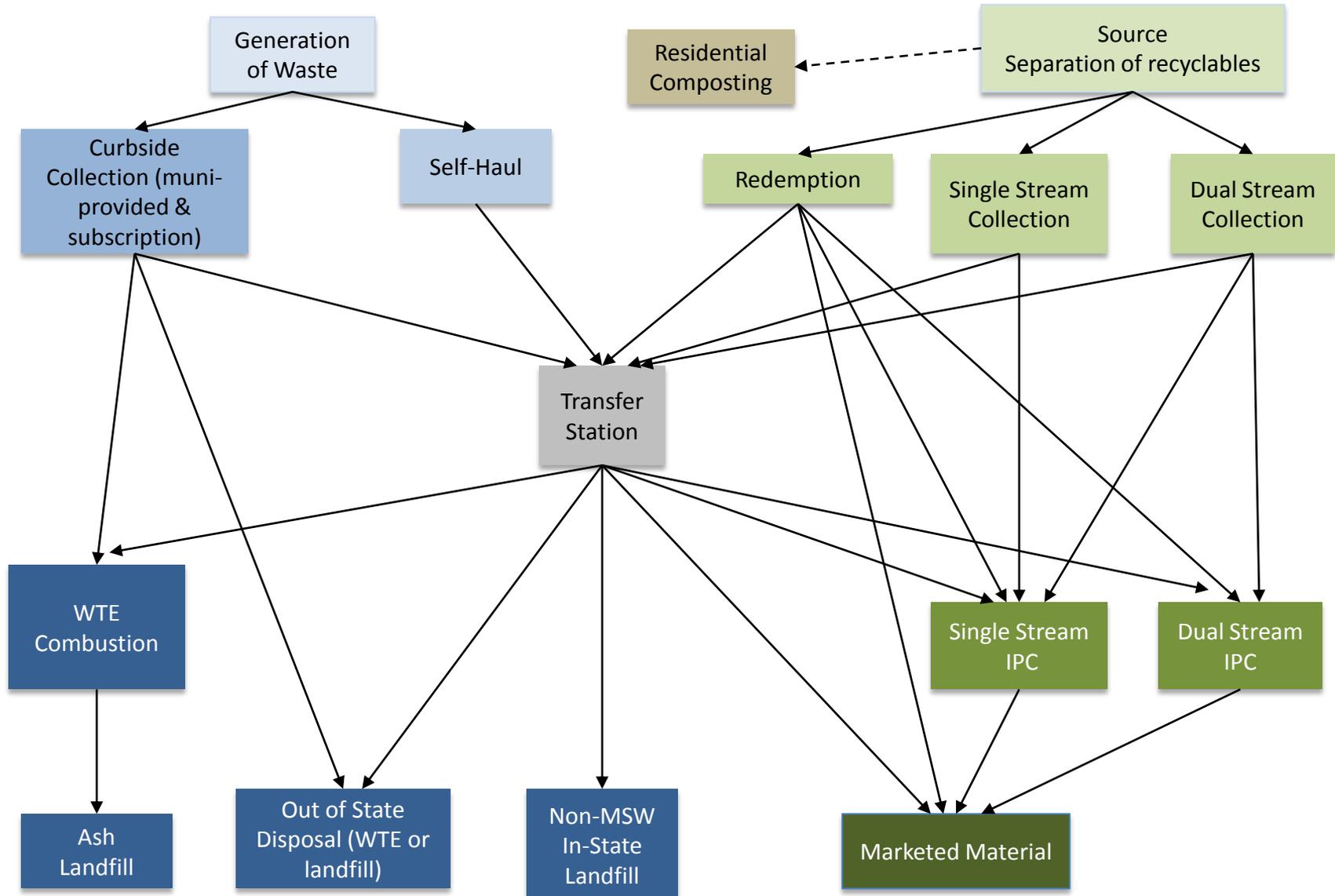
Estimated CT annual waste and recycling system costs  
\$US Millions



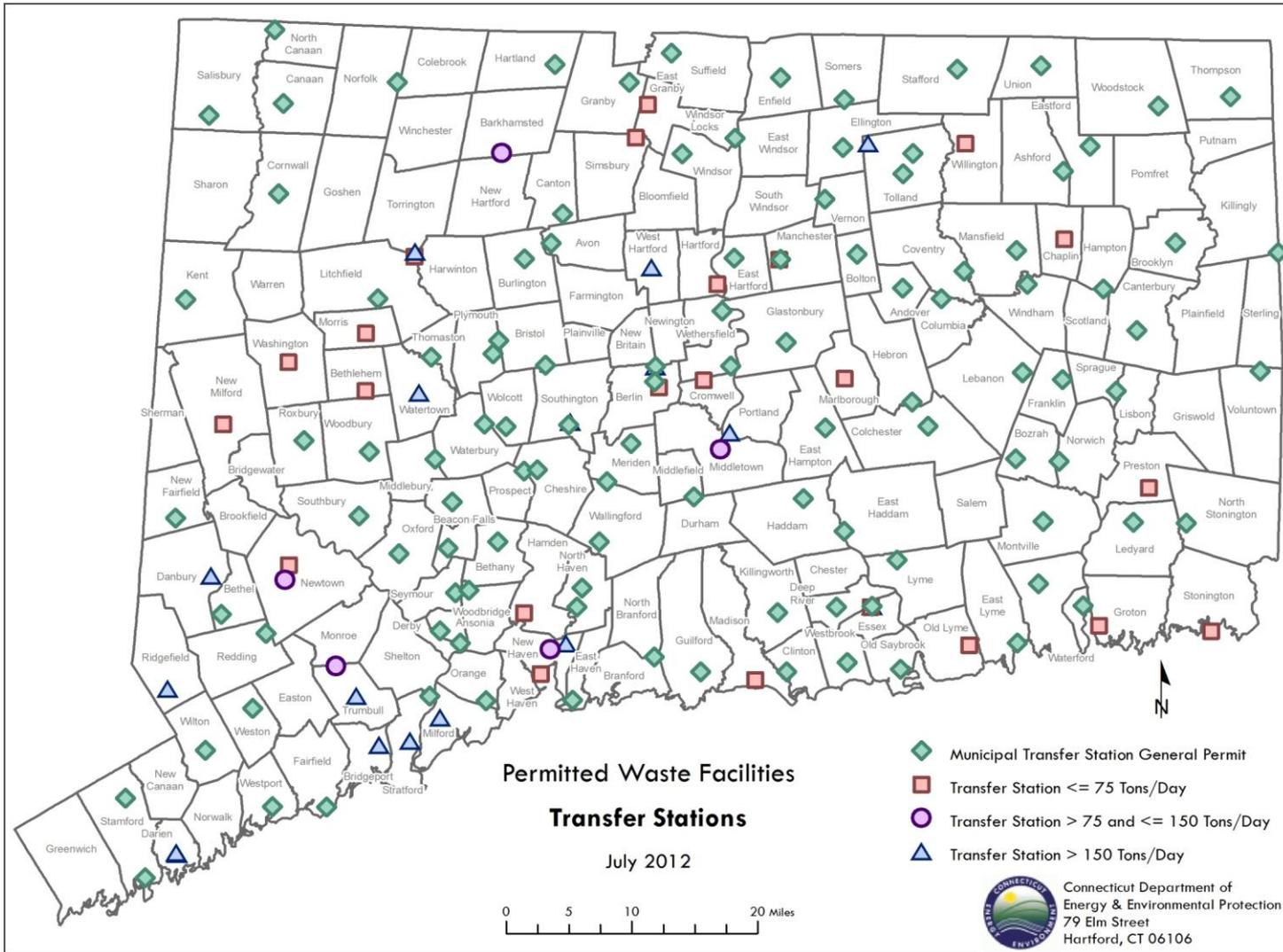
Major Cost drivers include :

- Collection costs
- Fragmentation/duplication driven by 169 municipalities
- Socialized costs in property taxes-no economic signals
- Too many transfer stations, not optimally located

# A highly complicated system



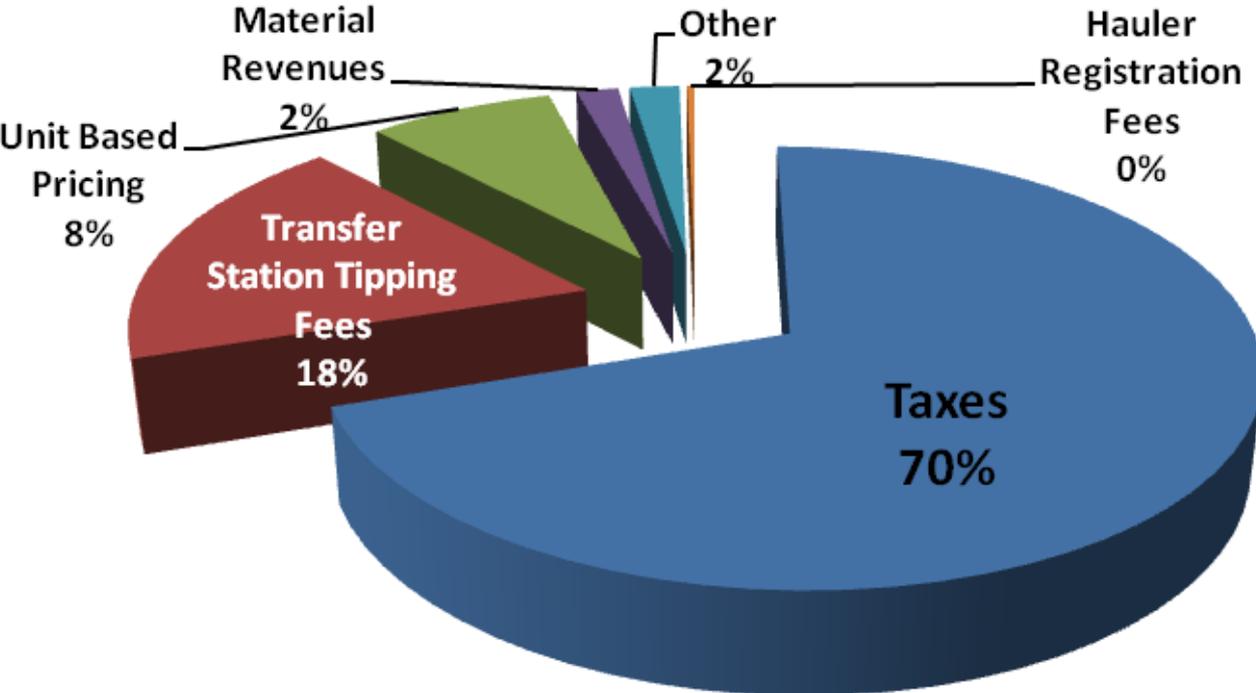
# 155 transfer stations in the state of CT—More than necessary?



155 transfer stations are not optimally located geographically

Sited transfer stations provide a significant pre-permitted opportunity for new infrastructure

# Most waste management is paid through property taxes, which socializes the cost across the community



- Some citizens are subsidizing the costs of others
- businesses subsidizing costs of residential collection
- No price signals to drive lower disposal and higher recycling

Based on responses in CT DEEP Municipal Services and Cost Accounting Survey 2008-2010.

# Residential Collection Service is delivered in 4 ways, reflecting significantly different needs at the municipal level

Collection Option	MSW Collection		Recycling Collection	
	(households)	% of State	(households)	% of State
Municipal Crews	367,000	27%	268,741	19%
Municipal Contract	332,000	24%	431,494	31%
Self Haul Option	403,000	29%	383,482	28%
Subscription Option	458,000	33%	277,824	20%
<b>Total:</b>	<b>1,560,000</b>	<b>113%</b>	<b>1,361,541</b>	<b>98%</b>

**Total Housing Units:** 1,385,975

- 1) Roughly 50% of households have organized refuse and recycling collection.
- 2) The balance subscribe with a hauler or can use a transfer station or drop-off.
- 3) Roughly 250,000 households (18%) live in 5 or more unit dwellings.
- 4) Roughly 71% of households have curbside recycling service options through the municipality or a subscription, leaving 29% with drop-off as the only recycling option.
- 5) This dynamic is changing rapidly as more single stream processing capacity comes on line, and with CT nearing full compliance with parallel collection requirements.

# The groundwork has been laid for regional aggregation, but more work needs to be done

## Regional Solid Waste Operations

### Mid-Connecticut Project



- > Waste processing facility, refuse-derived fuel trash-to-energy plant, recyclables processing facilities, and CRRRA Trash Museum in Hartford
- > Transfer stations in Essex, Ellington, Torrington and Watertown
- > Canaan, Durham, Lyme, Old Lyme, Middlefield and Tolland deliver trash but not recyclables. Residents may take advantage of Mid-Connecticut Project electronics recycling collections.

### Southwest Division



- > CRRRA contracts for towns to deliver trash to mass-burn trash-to-energy plant in Bridgeport
- > Recycling processing center and Garbage Museum in Stratford
- > Greenwich, East Haven deliver recyclables but not trash; Bethany delivers trash but not recyclables

### Southeast Project



- > Mass-burn trash-to-energy facility in Preston

**Norwalk-area towns** jointly contract for transportation and disposal of trash and recyclables.

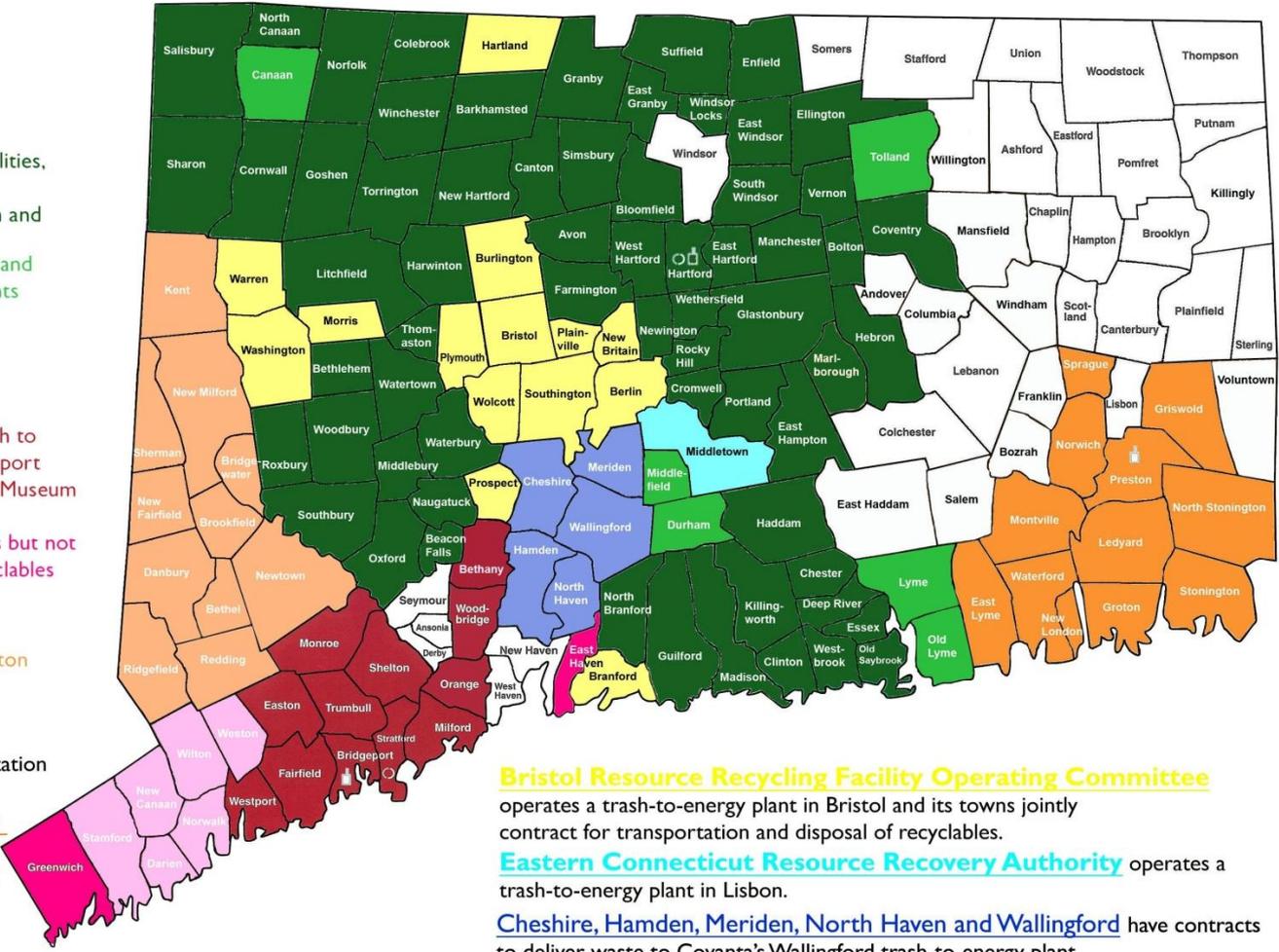
**Housatonic Resources Recovery Authority** operates a recycling processing center in Danbury and its towns jointly contract for transportation and disposal of trash.

### **Bristol Resource Recycling Facility Operating Committee**

operates a trash-to-energy plant in Bristol and its towns jointly contract for transportation and disposal of recyclables.

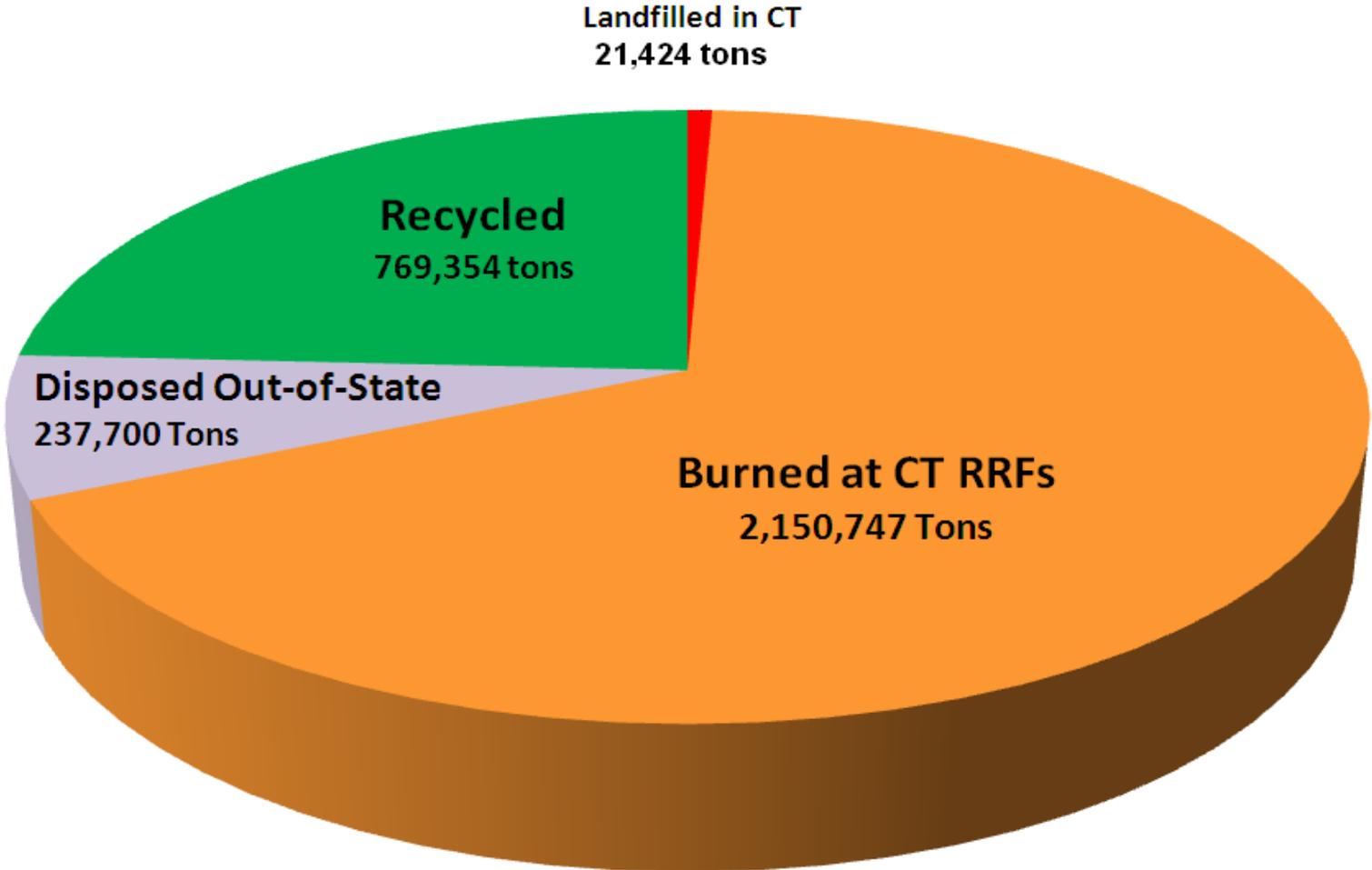
**Eastern Connecticut Resource Recovery Authority** operates a trash-to-energy plant in Lisbon.

**Cheshire, Hamden, Meriden, North Haven and Wallingford** have contracts to deliver waste to Covanta's Wallingford trash-to-energy plant.



# Current System is heavily reliant on Waste to Energy

**Tons CT MSW Reported Disposed & Recycled FY2010**



# Given electricity pricing, BTU extraction from incineration is not the most efficient way to extract value from waste

- Electricity costs are likely to stay low in the near term
- EPR needs to be expanded strategically
- Double or triple current recycling rate
- High value commodities need to be prioritized and aggregated and to whatever extent possible, sold within the State
  - Aluminum
  - Tin
  - PETs

# There are several options for managing system challenges

## Costs

- Municipal Responsibility
- Unit-Based Pricing

## Value Extraction

- EPR
- Regional Aggregation
- Industry development

## Infrastructure

- Organics
- Long-term Contracts
- Private Investment

# Next steps in diagnostic

- Benchmark current system costs and estimate improvements with key policy decisions
- Incorporate Materials & Markets opportunity analysis and insights
- Current state Jobs and Economic Impact analysis
- Incorporate C&D analysis and benchmarking from other states
- Receive and synthesize input from key stakeholders in current system
  - Municipalities
  - Haulers/Collection

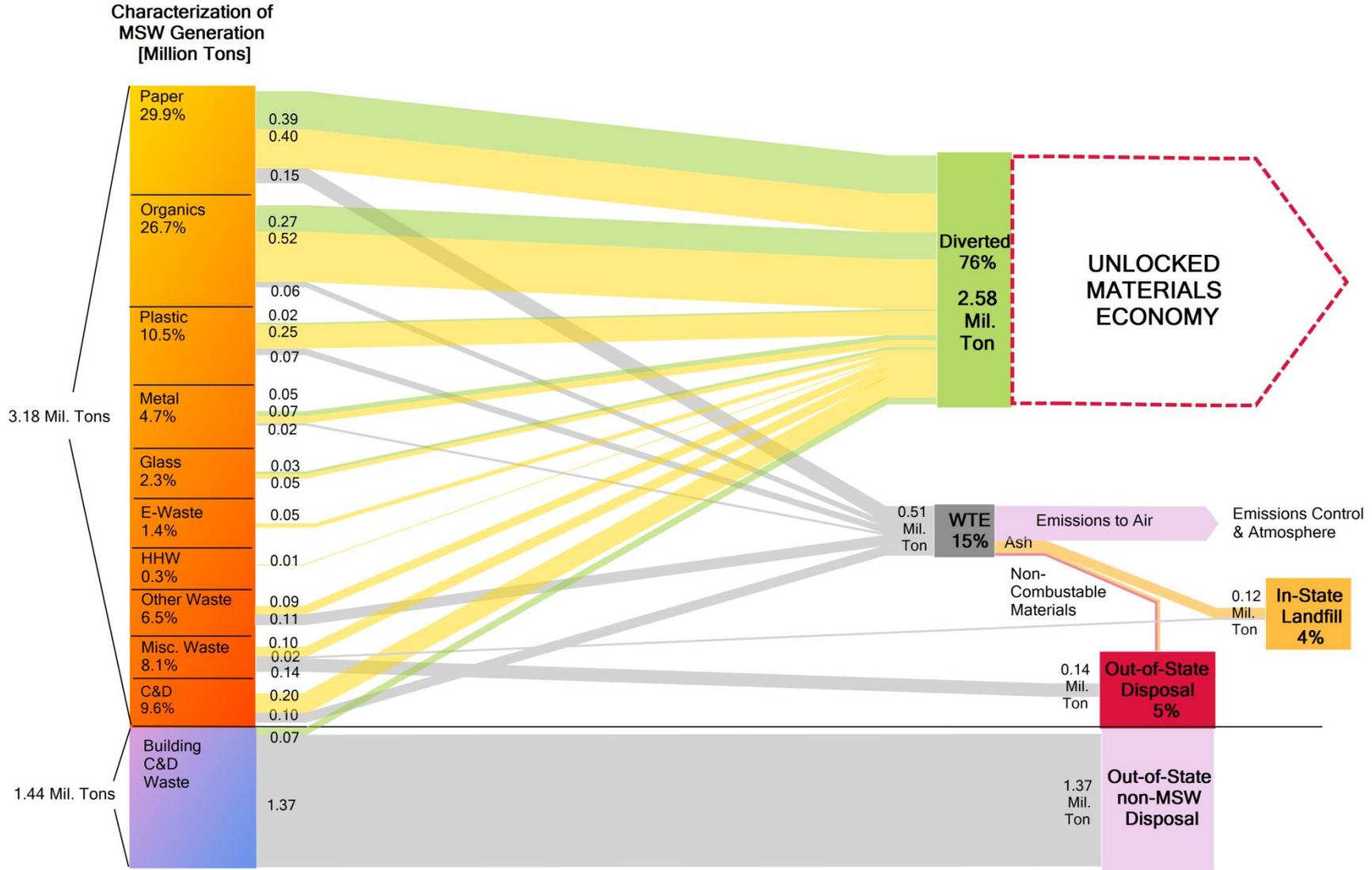
# Appendix

- Unit-Based Pricing
- Organics
- Extended Producer Responsibility

# Current and Potentially Achievable Materials Recovery Estimates

Materials	Current System			Recovery	Additional Recovery			Recovery
	Disposed (tons)	Recycled (tons)	Total (tons)	Rates (%)	Residential (tons)	Commercial (tons)	Total (tons)	Rates (%)
Recyclable Paper	361,000	410,000	771,000	53%	54,600	65,000	119,600	69%
Other Blue Bin Recyclables	116,000	100,000	216,000	46%	34,000	15,000	49,000	69%
Bottle Bill		48,000	48,000				48,000	
Other Packaging	152,000	200	152,200	0%	2,000	50,000	52,000	34%
Scrap Metal and Appliances	84,000	45,000	129,000	35%			0	
Durable Plastics	86,000		86,000	0%		10,000	10,000	12%
Other Paper, Glass and Plastic	130,000	0	130,000	0%	0	0	0	0%
Compostable	751,000	275,000	1,026,000	27%	25,000	75,000	100,000	37%
Other Organic	81,000		81,000	0%			0	0%
C&D (1)	335,000	9,800	344,800	3%	18,000	18,000	36,000	50%
HHW / Electronics	64,000	1,700	65,700	3%	26,000	6,600	32,600	52%
Other Waste	124,000		124,000	0%			0	0%
Textiles	97,000		97,000	0%			0	0%
<b>Totals:</b>	<b>2,381,000</b>	<b>889,700</b>	<b>3,270,700</b>	<b>27%</b>	<b>159,600</b>	<b>239,600</b>	<b>447,200</b>	<b>41%</b>

# Scenario: Maximizing Recycling Potential No action on C&D



source: Burmeister, Clark, Gonzalez, Greenfield, Yale School of Forestry & Environmental Studies

# Unit Based Pricing (Pay as you Throw)

- Decoupling solid waste from property taxes is beneficial:
  - UBP proven to increase recycling rates
  - Cheaper for residents to recycle
  - “Lack of reliance on property taxes to pay for services would expand the types of institutional structures that could control collection costs and develop new processing capacity”
- 70% of the cost of providing residential solid waste management services are paid through property taxes (based on respondents of DEEP survey)
- Potential exists to move from funding costs through property taxes to funding costs through user fees
- Trash and recycling is currently not incentivized, it is socialized
- Municipal approach may be too cumbersome, should consider administration with a regional approach
- Can help alleviate the issue of municipal control
- Will also divert yard waste

# Organics

- Represents one of the greatest opportunities and job creation
- Infrastructure is not in place to recover significant quantities of organics; this will require investing in new organics processing capacity and creating more efficient collection systems
- There may be opportunities to reduce collection costs to help fund increased materials and, especially organics recovery, through reduced fragmentation of collection system
- Will diversify systems infrastructure

# How Much Organic Waste Is There

- Residential (tons)

- Food Waste: 183,000
- Compostable Paper: 131,000
- Leaves and Grass: 142,000
- Other organics: 53,000

**Total: 510,000 tons (rounded)**

- Commercial (tons)

- Food Waste: 138,000
- Compostable Paper: 64,000
- Leaves and Grass: 30,000
- Other organics: 22,000

**Total: 254,000 tons (rounded)**

# Extended Producer Responsibility

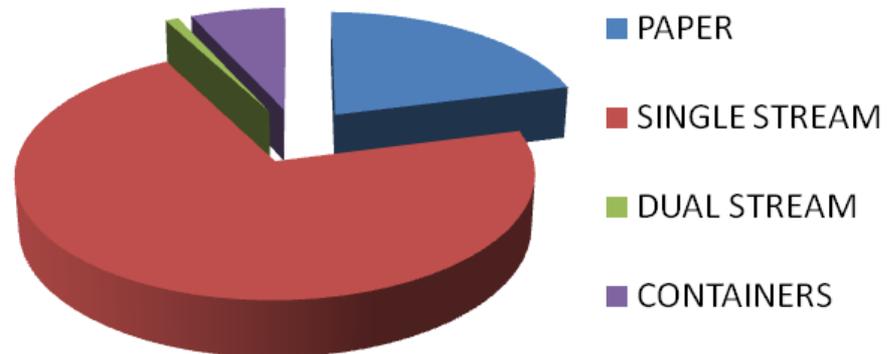
- Can have a high recovery of electronics
- Offers flexibility
- Places responsibility of product's life onto the producer, takes burden off of governments
- Allows for flexibility in recycling programs and targeted efforts
- Increases extraction

# Materials Recovery Facilities, Incoming CT Packaging Materials (2011)

All SECTORS, 500,000 TONS



RESIDENTIAL ONLY, 220,000 TONS



# System costs are high (1/2)

Collection Option	MSW Collection		Recycling Collection		Total Costs (\$)
	(households)	Cost (\$)	(households)	Cost (\$)	
<i>Typical Costs in Municipal Budgets</i>					
Organized Collection	699,000	\$72,280,000	700,000	\$25,000,000	
Disposal Costs	699,000	\$47,530,000	700,000	\$0	
Self Haul Option	280,000	\$47,370,000	<i>included</i>		
Other Solid Waste Management Related Costs	<i>not included</i>				\$20,000,000
<b>Estimated Municipal Costs:</b>		<b>\$167,180,000</b>		<b>\$25,000,000</b>	<b>\$192,180,000</b>

<i>Other Costs Outside Municipal Budgets</i>					
Self Hauler Transport Cost	280,000	\$32,323,200	<i>included</i>		
Subscription Collection	407,000	\$97,680,000		\$39,072,000	
<b>Estimated Additional Costs:</b>		<b>\$130,003,200</b>		<b>\$39,072,000</b>	<b>\$169,075,200</b>
<b>Estimated System Costs:</b>					
	<b>1,386,000</b>	<b>\$297,183,200</b>		<b>\$64,072,000</b>	<b>\$361,255,200</b>

# System costs are high (2/2)

Commercial MSW	(tons)	MSW Disposal		Recycling		
		Unit Cost (\$)	Total (\$)	(tons)	Unit Cost (\$)	Total
Subscription Curbside	53,000	\$240	\$12,720,000	58,000	\$160	\$9,280,000
Containerized	720,800	\$160	\$115,328,000	174,000	\$80	\$13,920,000
Roll-off and Compactors	265,000	\$110	\$29,150,000	52,200	\$40	\$2,088,000
Self Haul	21,200	\$170	\$3,604,000	5,800	<i>included</i>	
<i>Self Haul Costs</i>			<i>not included</i>			
<b>Total:</b>	<b>1,060,000</b>		<b>\$160,802,000</b>	<b>290,000</b>		<b>\$25,288,000</b>

**Estimated Total Commercial System Costs \$186,090,000**