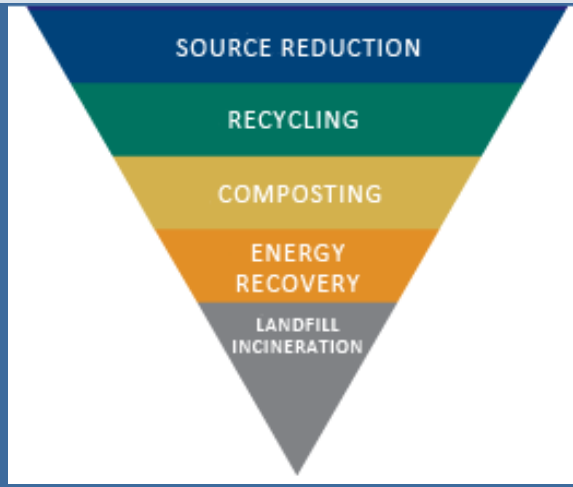
CT's Solid Waste Management System

Existing Infrastructure



System Overview

- **Roles** of **Participants**
- **Components**
  - Collection & Transportation
  - Transfer & Aggregation
  - Distribution
    - Recycling
    - Resource Recovery
    - Landfills (Ash Residue, Special Wastes, Municipal Solid Waste)
- **Trends**
- **Discussion**

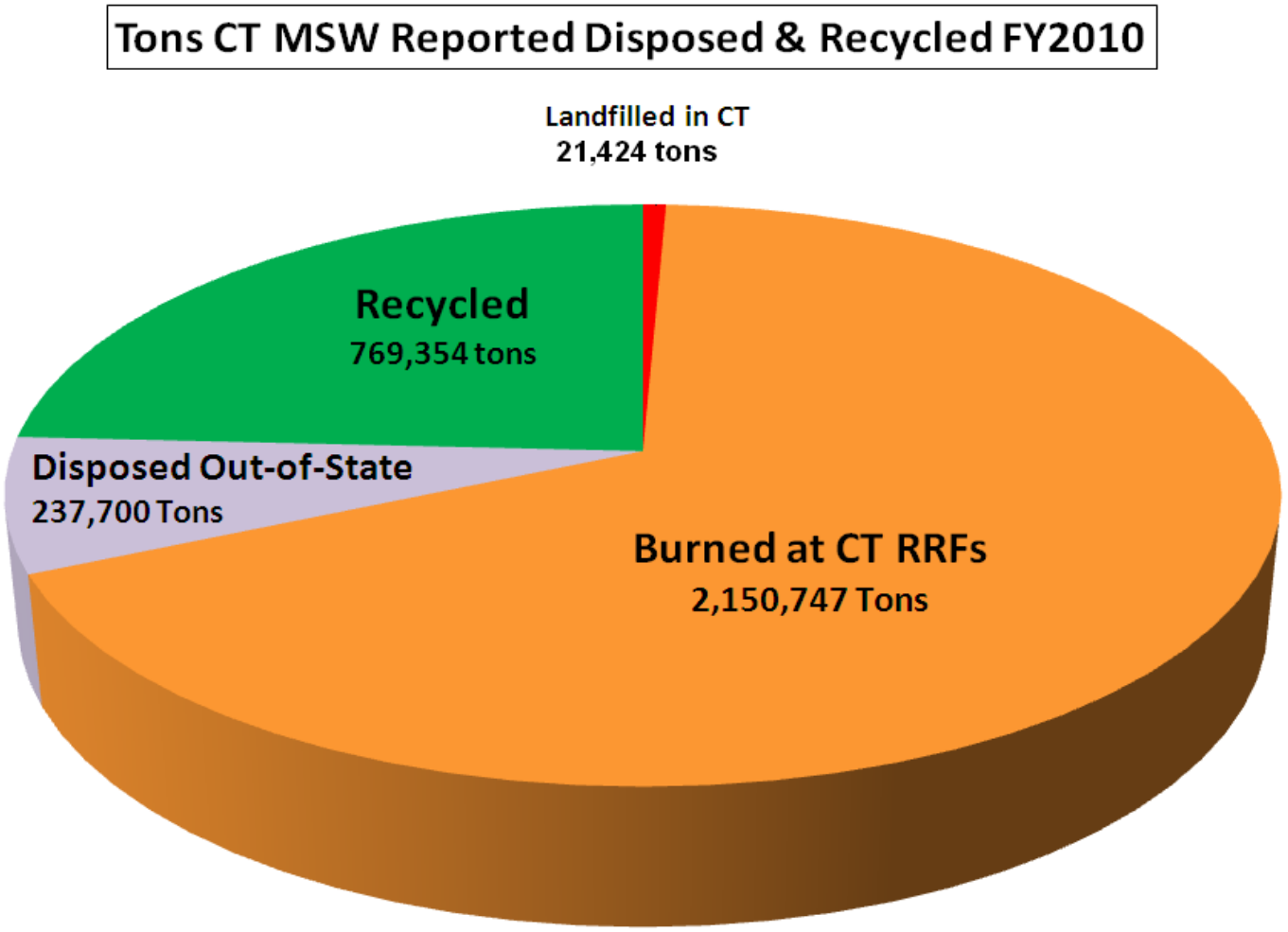
Solid Waste Management Participants: Shared Responsibility

	REGULATION	ENFORCEMENT	PLANNING	FACILITY FINANCING	SERVICE PROVISION
Federal	✓	✓			
State	✓	✓	✓		
CRRA		✓	✓	✓	✓
Municipal		✓		✓	✓
Other Regional Authorities		✓		✓	✓
Private Sector		✓		✓	✓

92% Recycled or Recovered for Energy

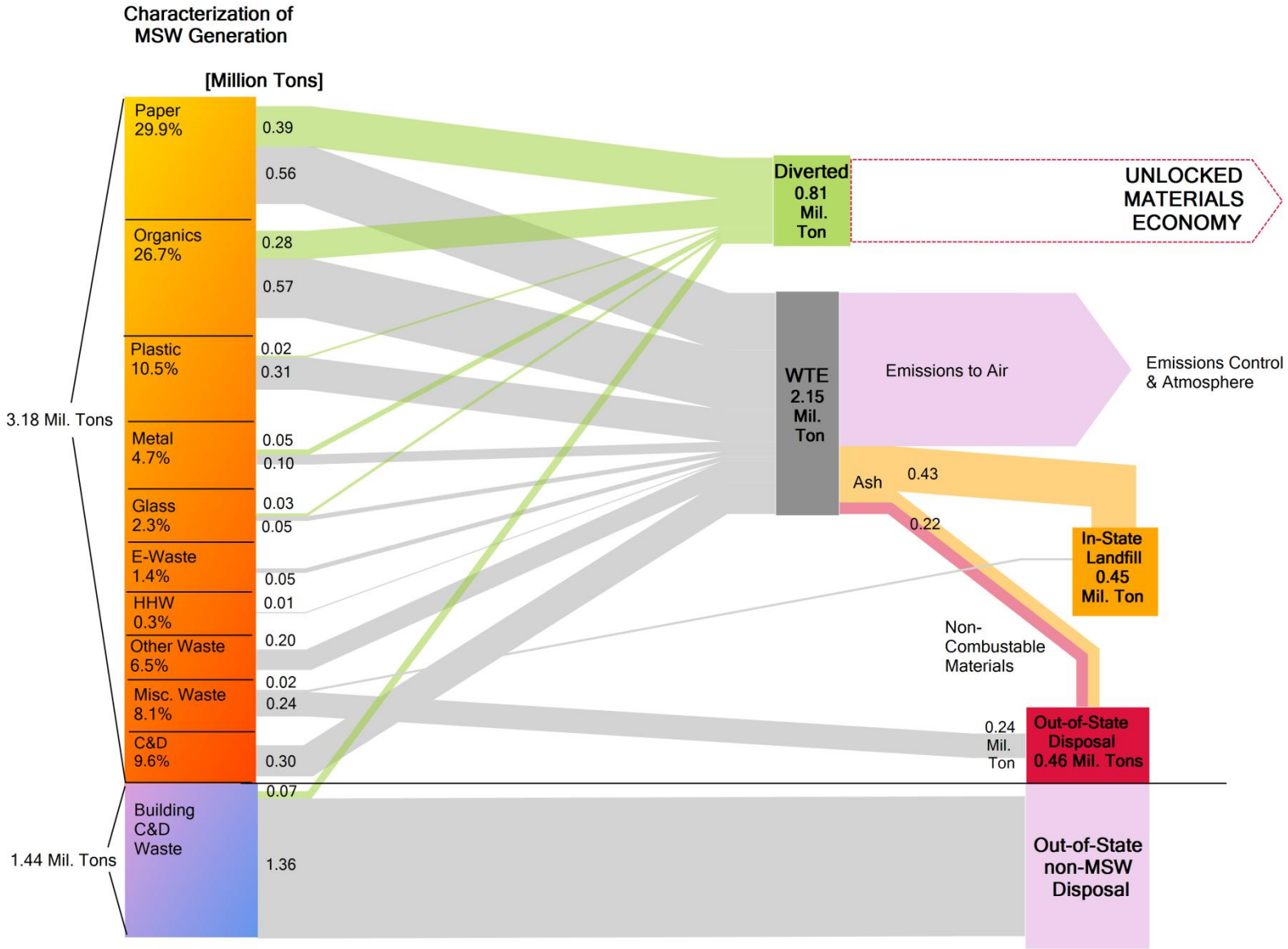
<1% Landfilled in-state

7% Sent out of state for Energy Recovery or Landfilling



www.ct.gov/dep/lib/dep/reduce_reuse_recycle/data/average_state_msw_statistics_fy2010.pdf

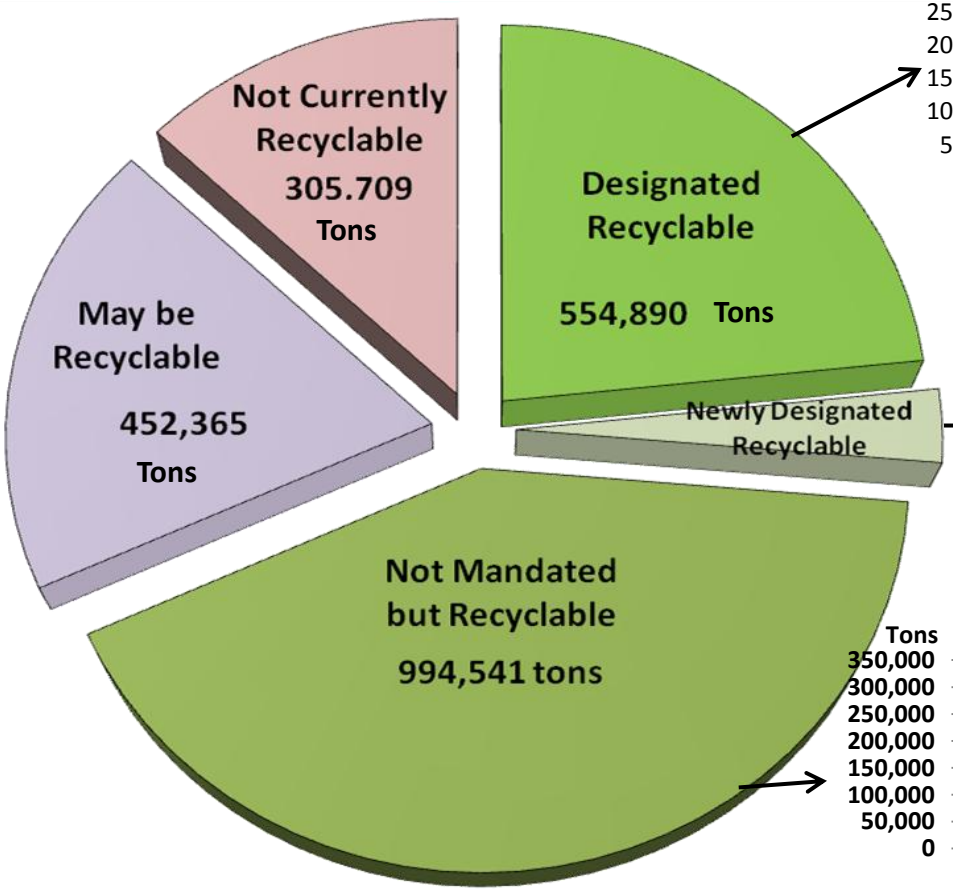
Current Connecticut Waste MFA

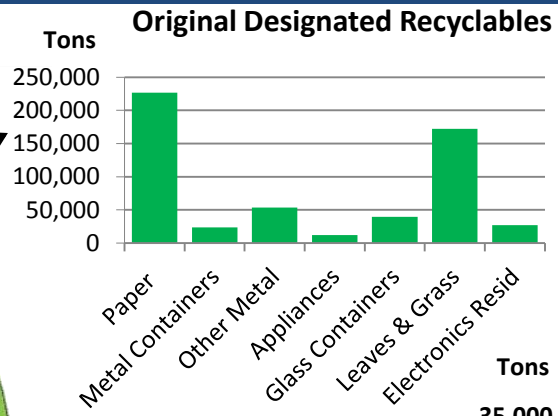


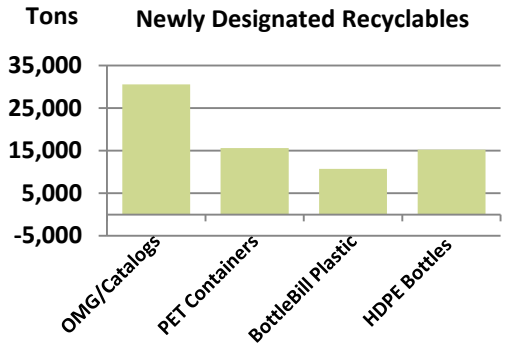
source: Burmeister, Clark, Gonzalez, Greenfield, Yale School of Forestry & Environmental Studies

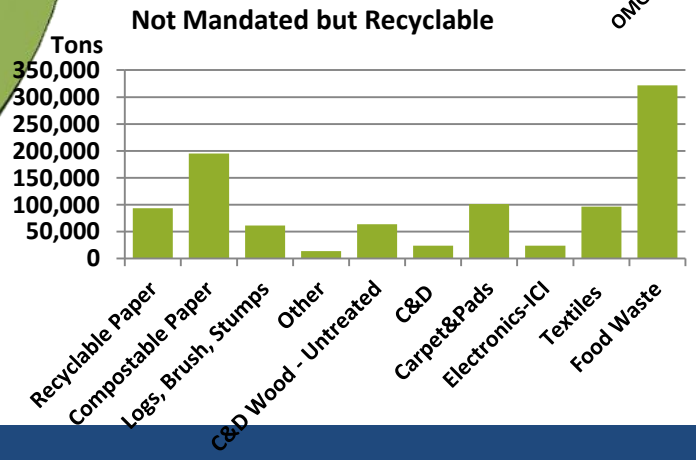
CT 2009 MSW Disposal Characterization Summary – Types & Tonnage of MSW Found in the Disposal Stream at Sampling Stations at CT RRFs and TS

We are focused on unlocking the value, especially of the known recyclables

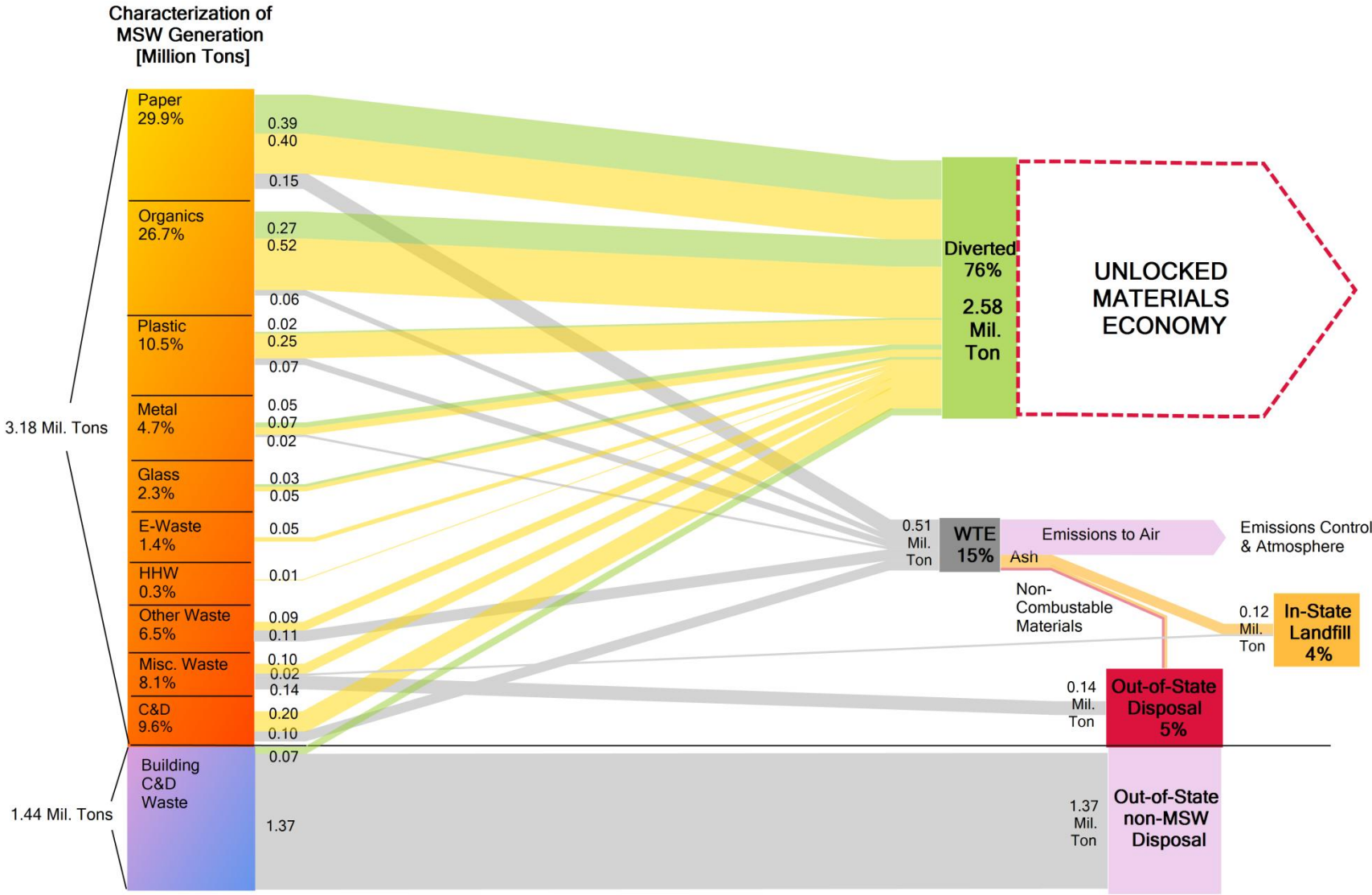






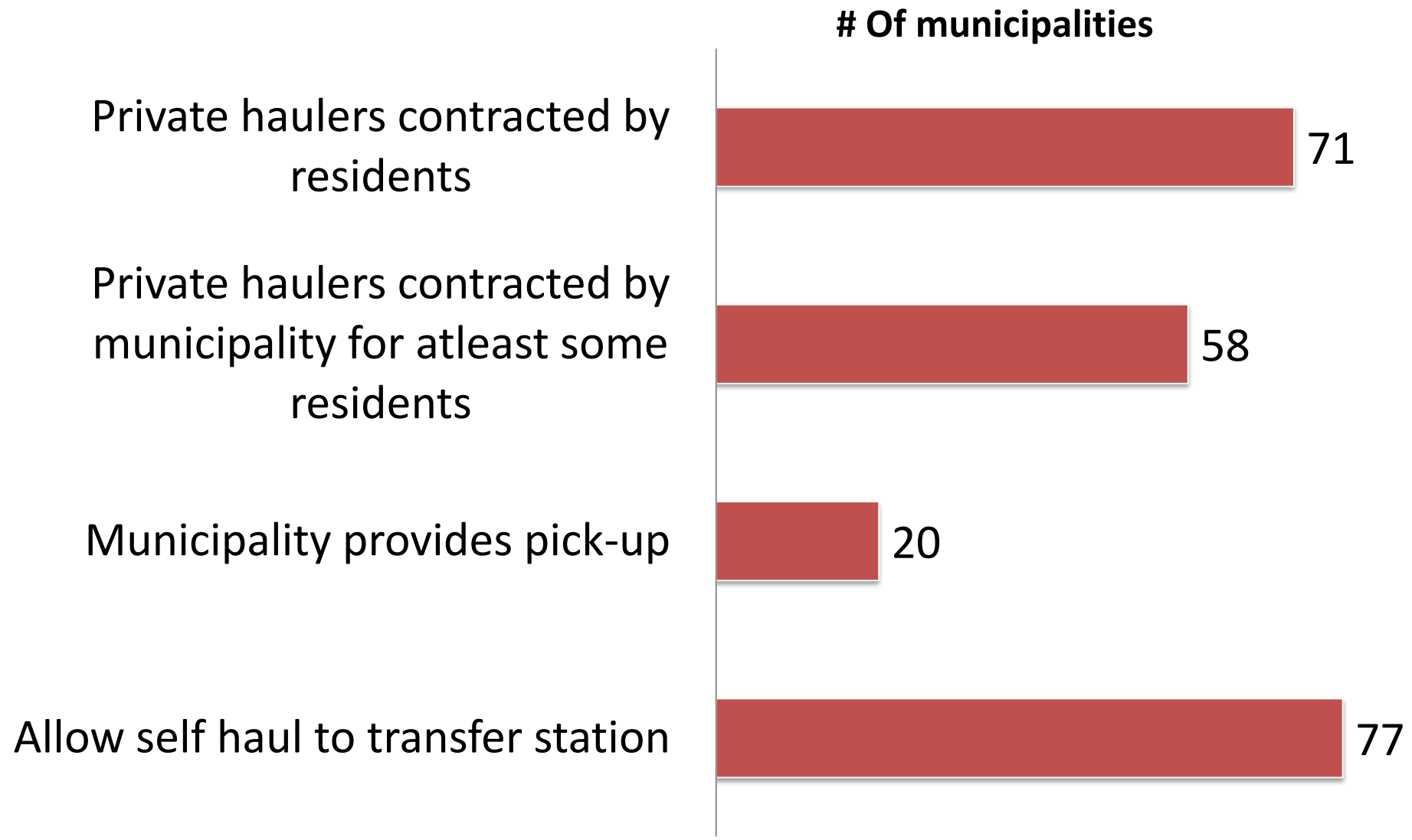


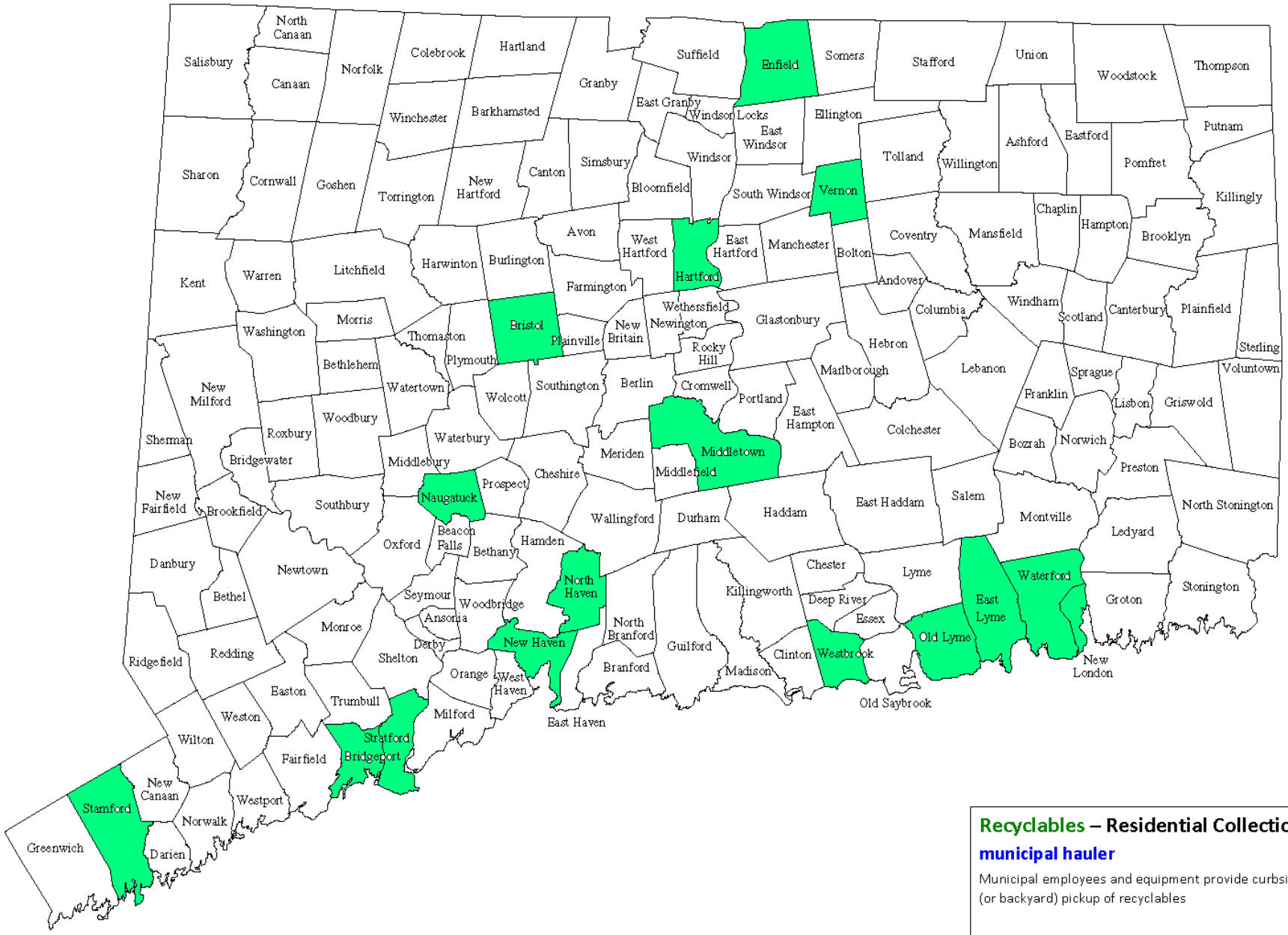
Scenario: Maximizing Recycling Potential



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

Varied Residential Curbside Recycling Collection

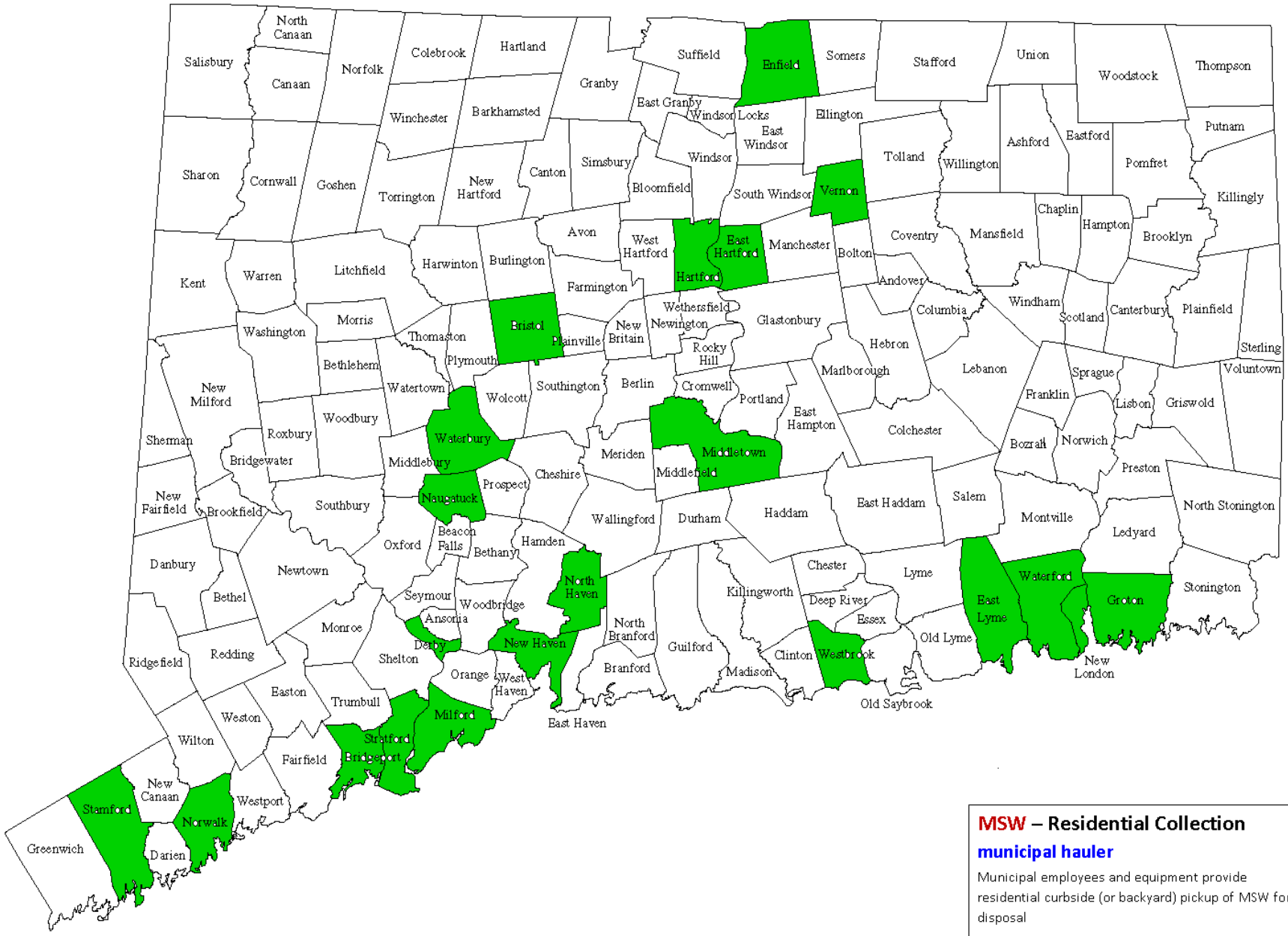




Recyclables – Residential Collection

municipal hauler

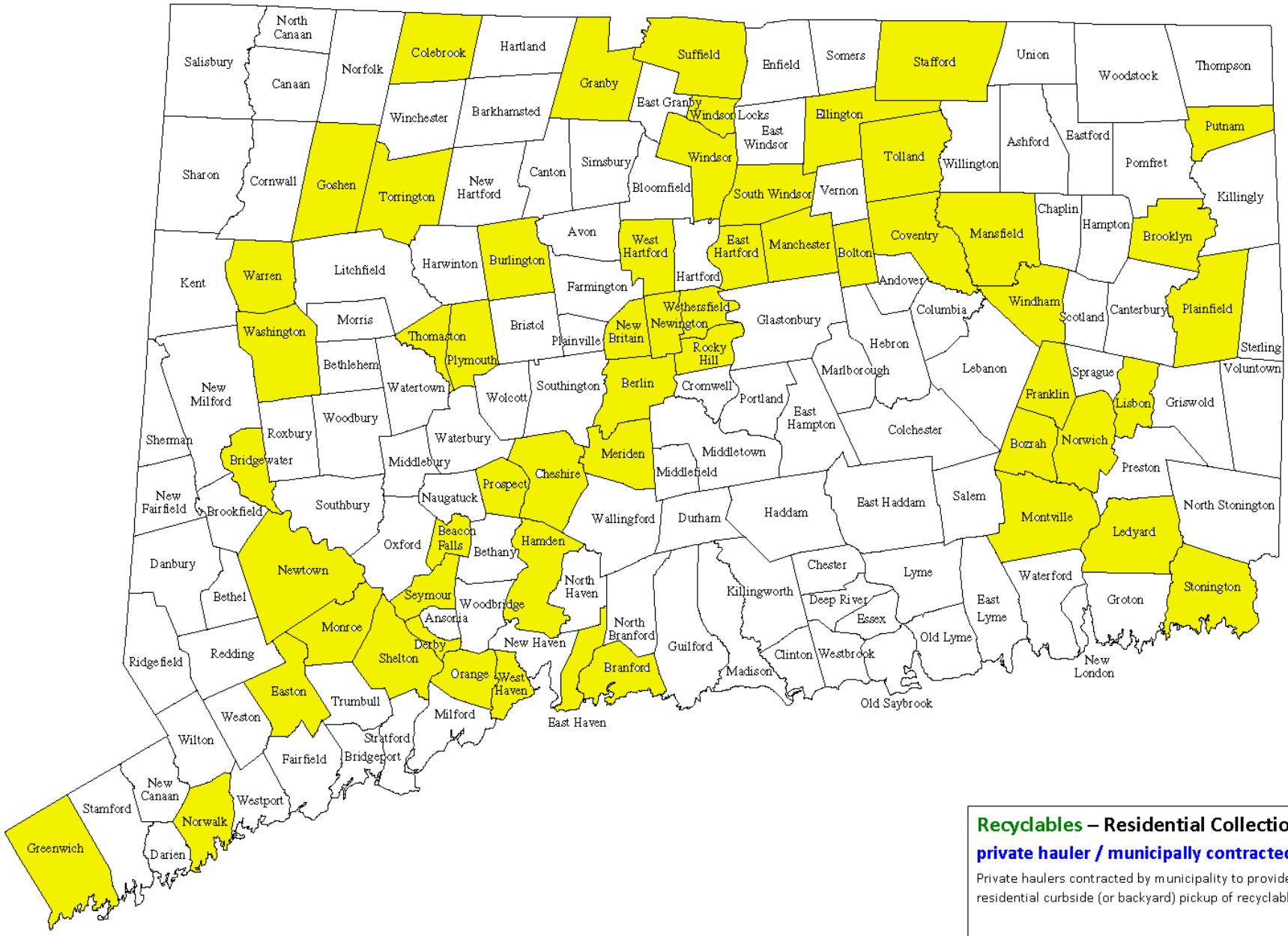
Municipal employees and equipment provide curbside (or backyard) pickup of recyclables



MSW – Residential Collection

municipal hauler

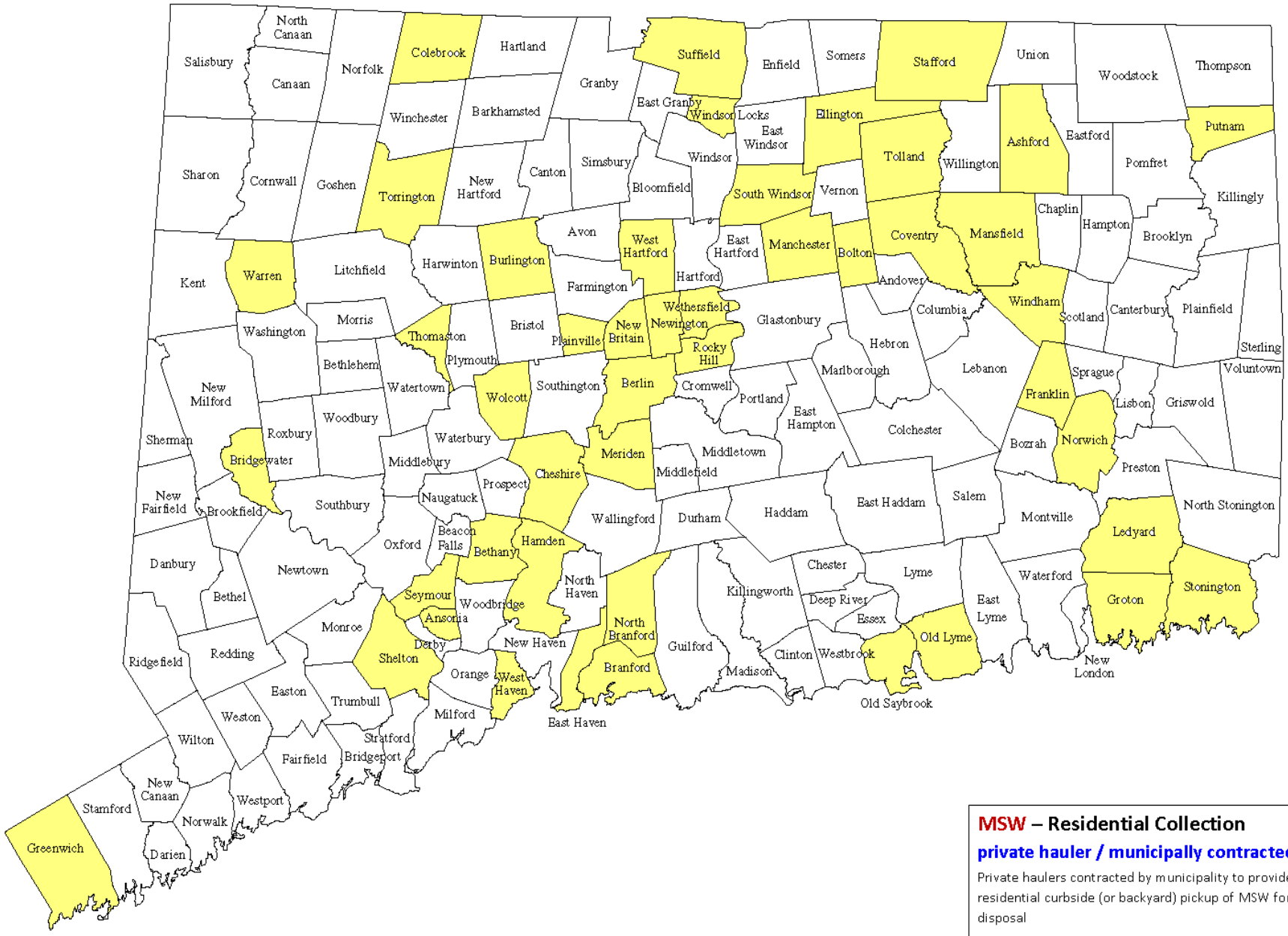
Municipal employees and equipment provide residential curbside (or backyard) pickup of MSW for disposal



Recyclables – Residential Collection

private hauler / municipally contracted

Private haulers contracted by municipality to provide residential curbside (or backyard) pickup of recyclables



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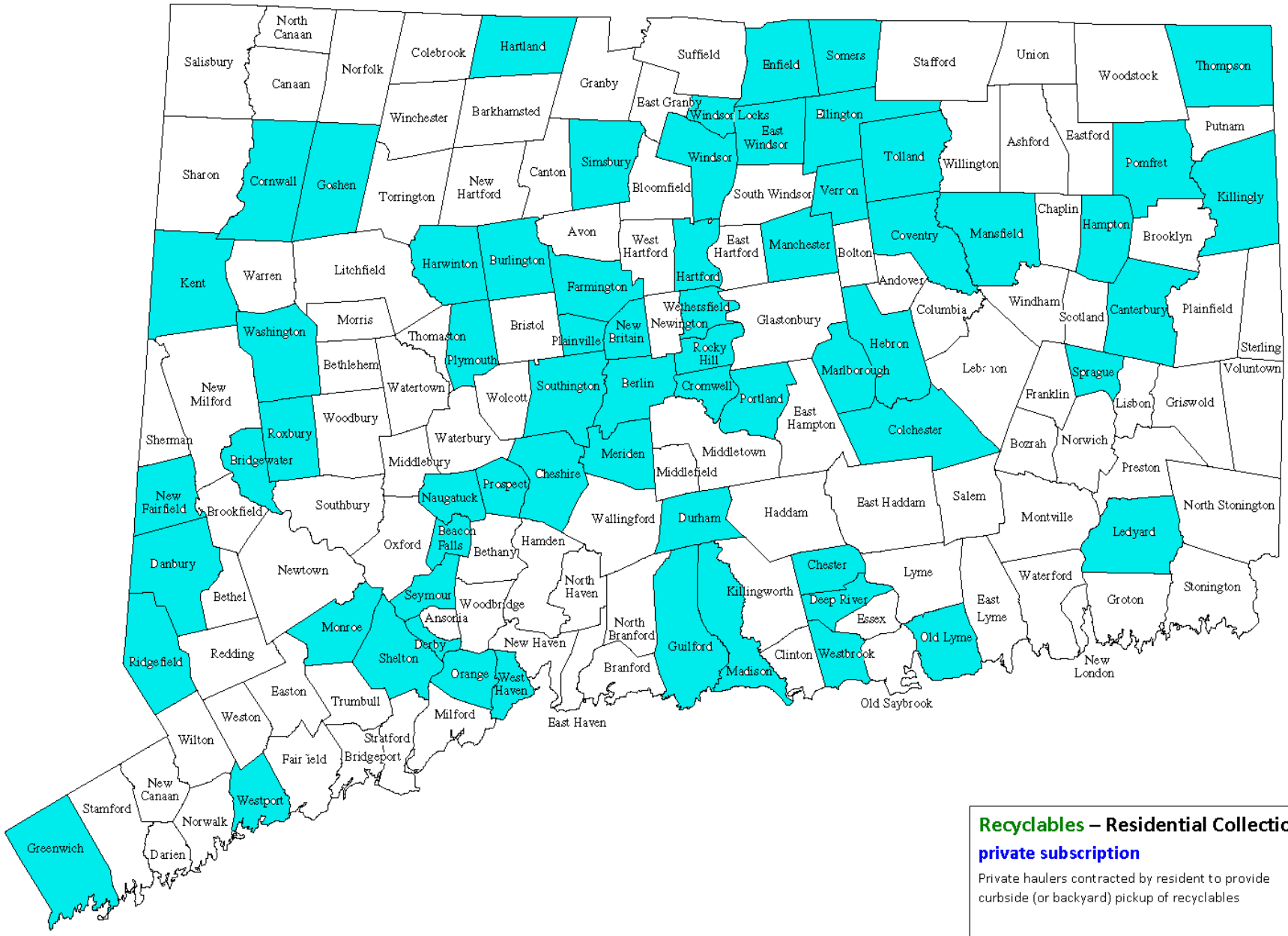
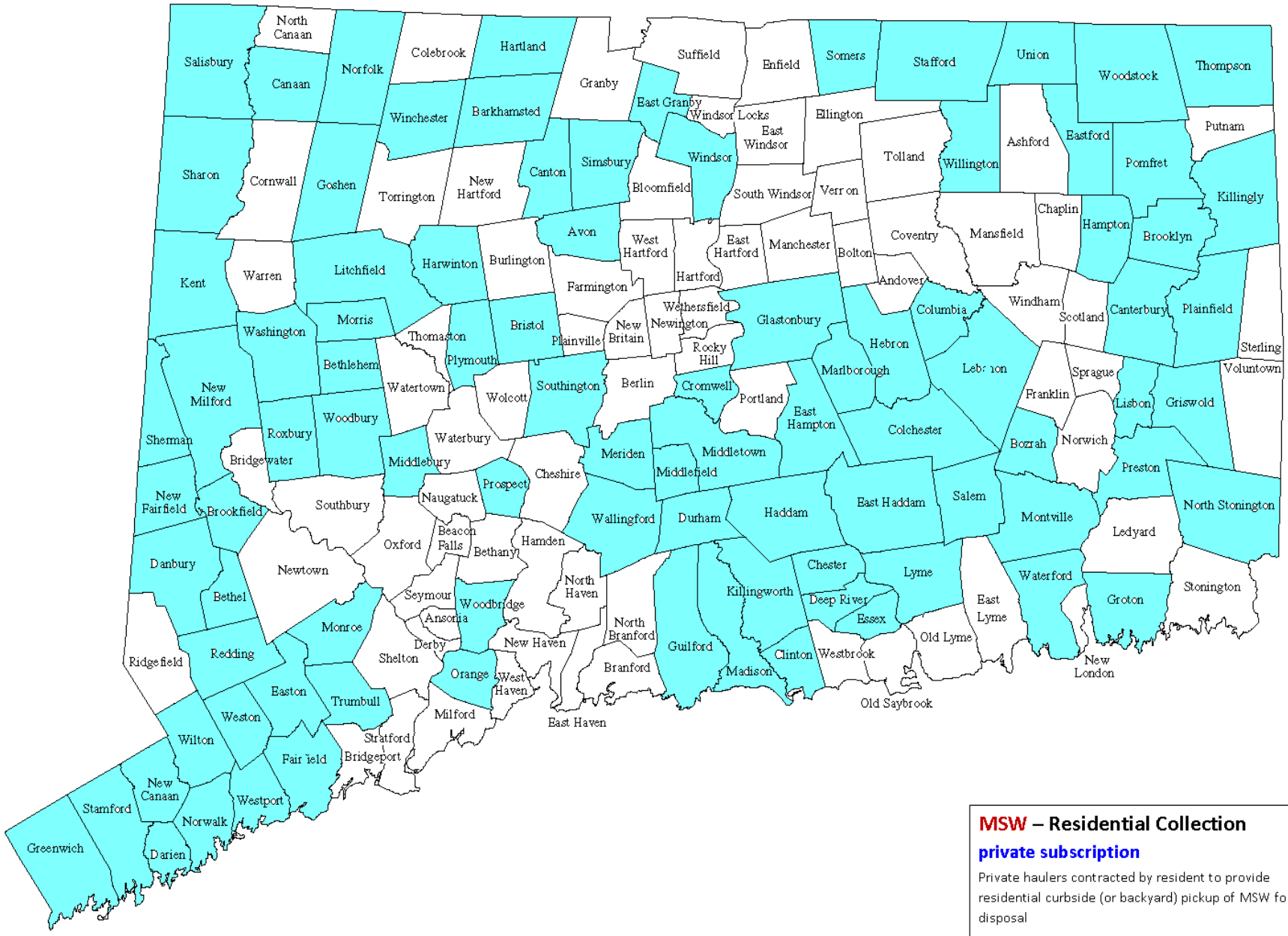


Recyclables – Residential Collection

private subscription

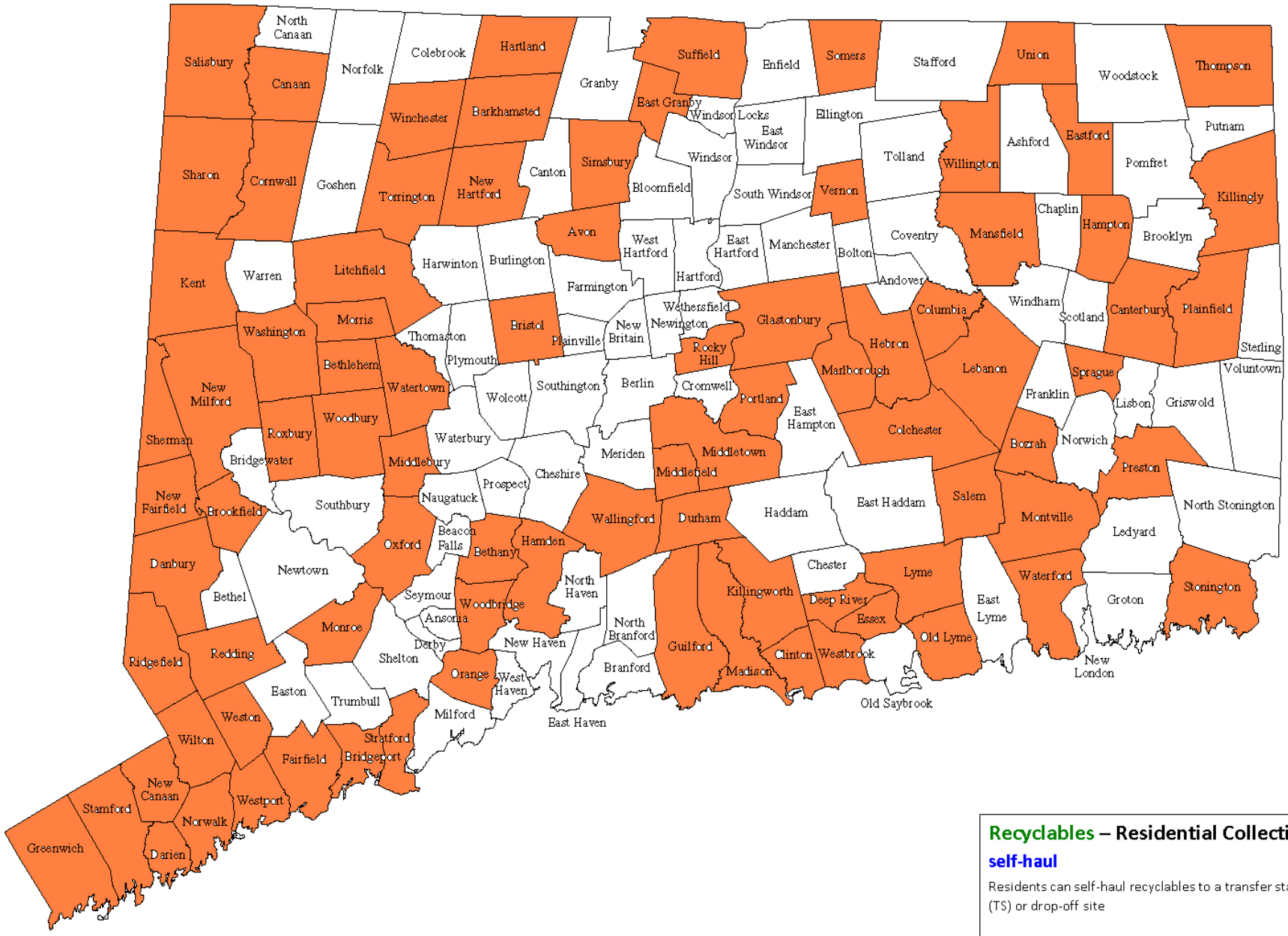
Private haulers contracted by resident to provide curbside (or backyard) pickup of recyclables



MSW – Residential Collection

private subscription

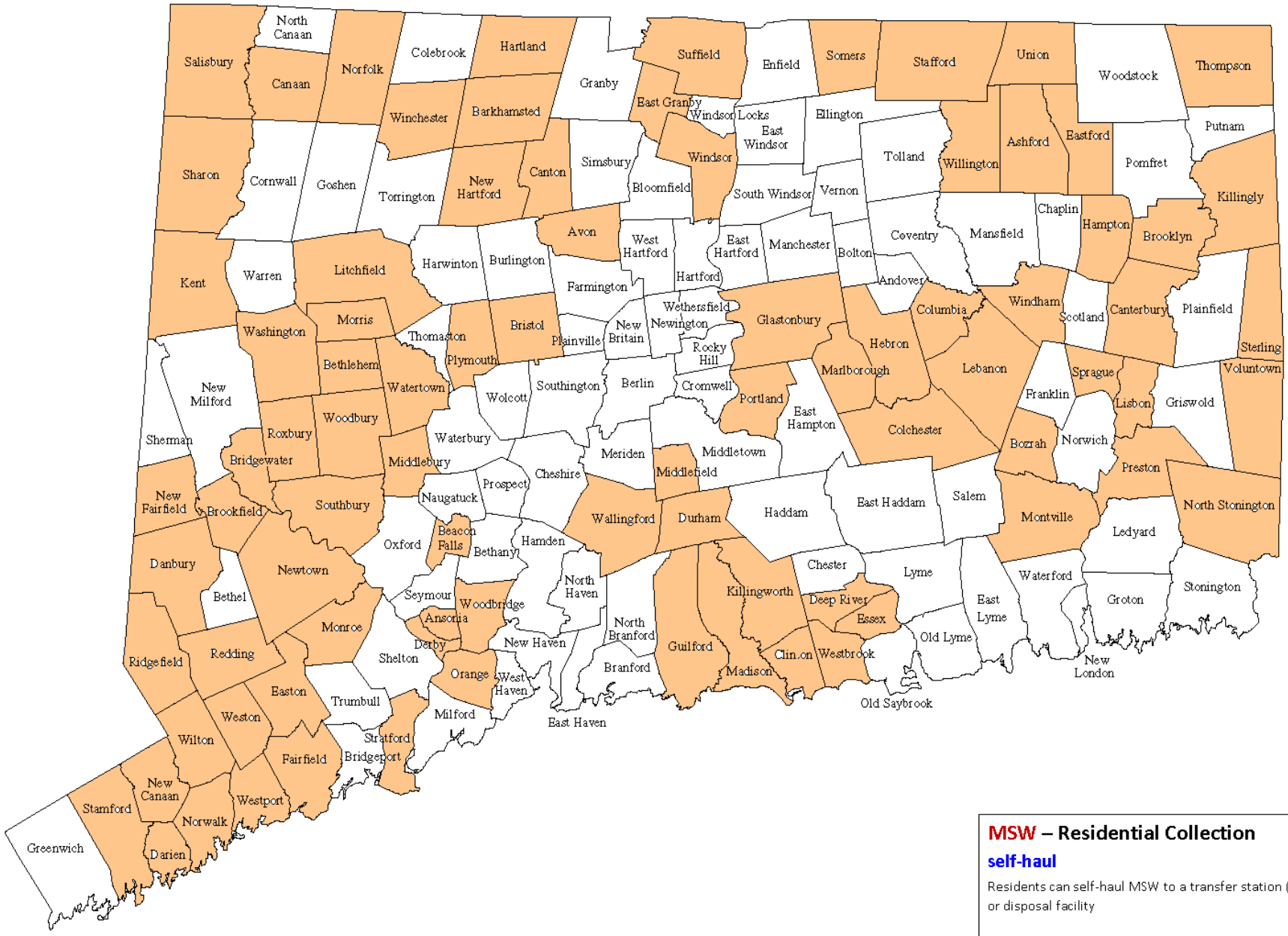
Private haulers contracted by resident to provide residential curbside (or backyard) pickup of MSW for disposal



Recyclables – Residential Collection

self-haul

Residents can self-haul recyclables to a transfer station (TS) or drop-off site



MSW – Residential Collection

self-haul

Residents can self-haul MSW to a transfer station (TS) or disposal facility

Equitable Collection of Recyclables

PA 10-87 Sections 5 & 7
CGS 22a-241j and 22a-241l

Each **municipality** which provides municipal trash collection for **residences and businesses** shall:

- **Offer the same type of collection of designated recyclable items.**
- By July 1, 2011

Each collector shall provide written or pictorial instructions on separation of recyclables.

Each collector offering trash collection to **residences** shall:

- **Offer the same type of collection of designated recyclable items.**
- By July 1, 2011

Each collector shall provide written or pictorial instructions on separation of recyclables.

Collector can adjust fees but must include the charge for recyclables in the charge for trash collection.

Each contract between a collector and a business shall:

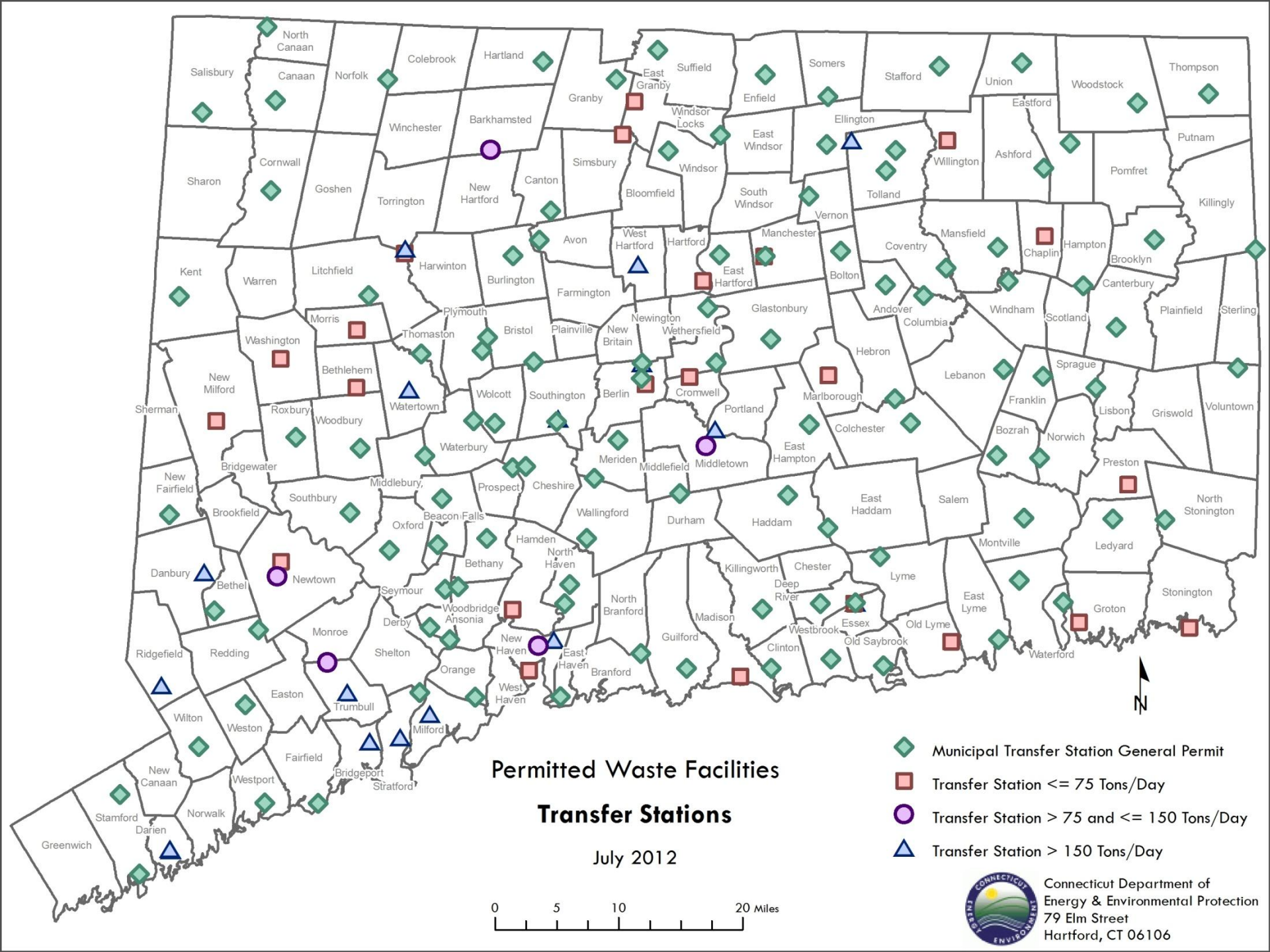
- Make provision for collection of designated recyclables
- By July 1, 2012

Can be same collector or customer's identification of existing recyclables collector.

Collector must provide clear written or pictorial instructions.

Transfer Stations

- An aggregation point that links collection and disposal
- Any location or structure where more than 10 cubic yards of solid waste, generated elsewhere, may be stored for transfer or transferred from transportation units and placed in other transportation units for movement to another location… *CGS 22a-207*
- In CT there are:
  - 150+ Municipal Transfer Stations
  - 6+ Commercial Transfer Stations
  - + Transfer activities occurring at other permitted facilities



Permitted Waste Facilities

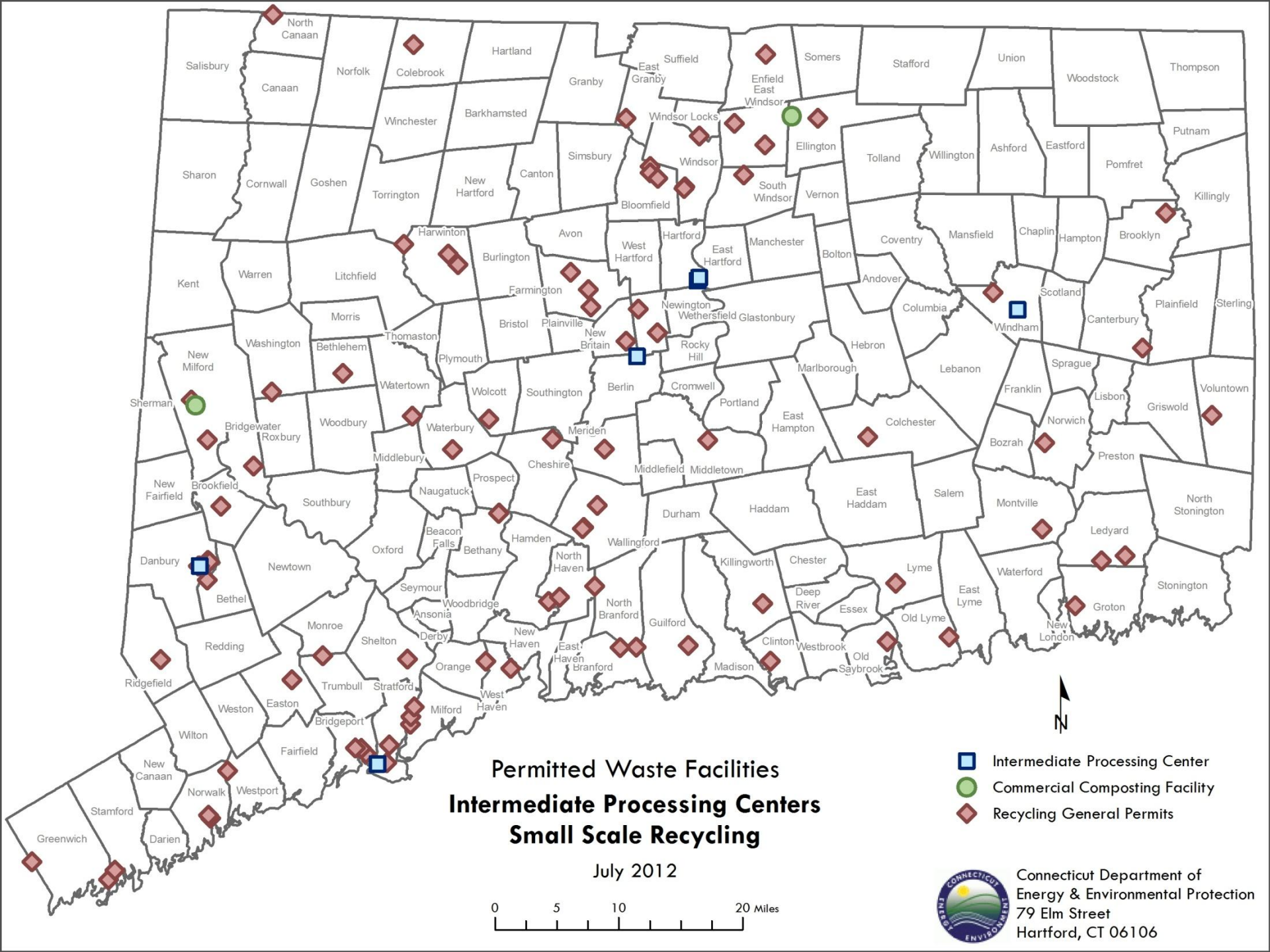
Transfer Stations

July 2012

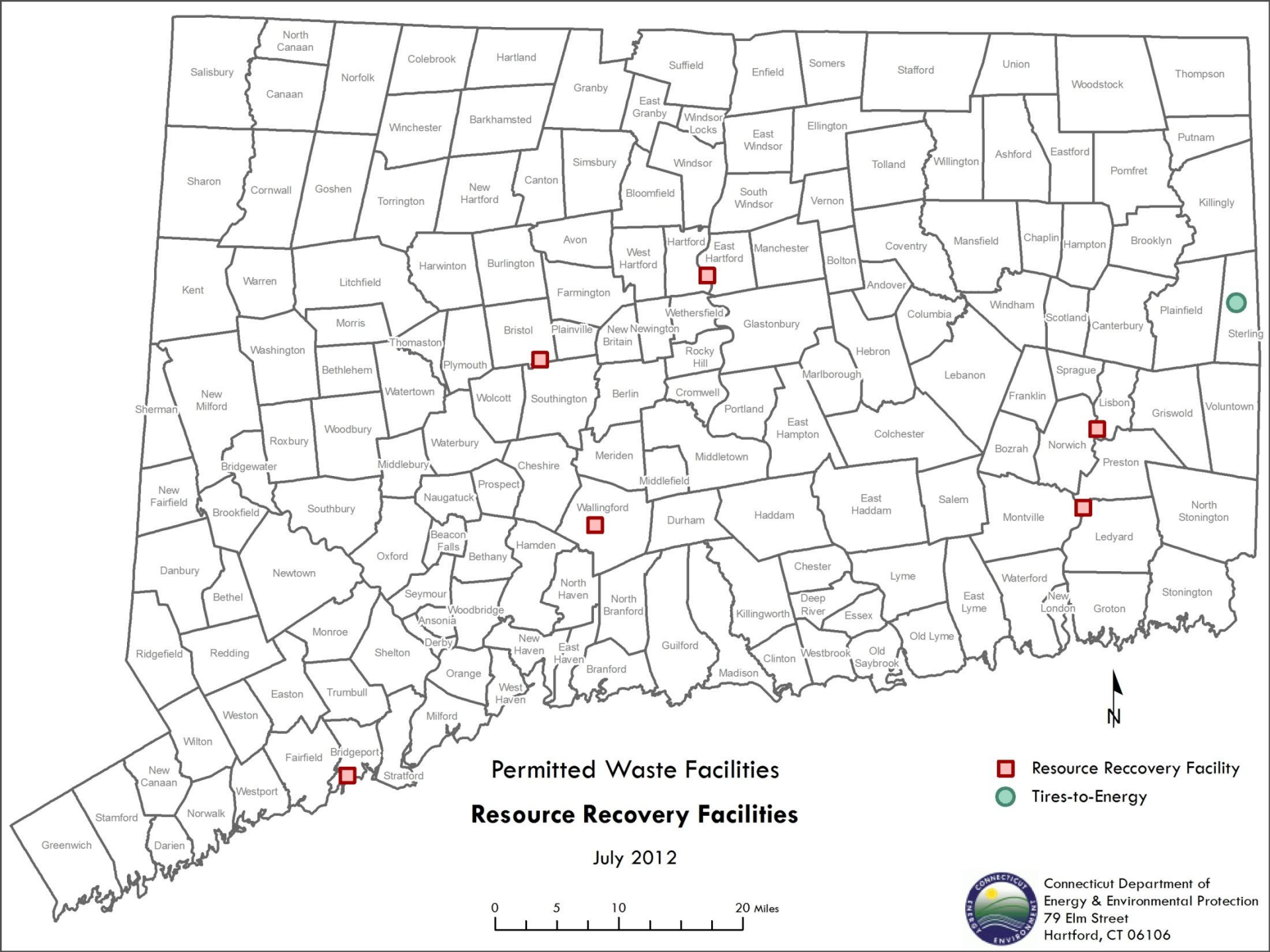
Connecticut Department of
Energy & Environmental Protection
79 Elm Street
Hartford, CT 06106

Recycling Facilities

- A facility where recyclable materials are removed from the waste stream for recycling or reuse and which can market or deliver for reuse marketable materials
- Intermediate Processing Centers (IPCs) are large-scale regional recycling Facilities, including
  - **Hartford IPC** – CRRA
  - **Berlin IPC** – Automated Material Handling (Murphy Road Recycling, Inc.)
  - Former regional facilities
    - Murphy Road Recycling, Inc.—primarily receives materials from other Murphy Road Recycling, Inc. facilities
    - Stratford IPC – CRRA- recyclables currently transferred to Hartford IPC—may resume functioning
    - Danbury [now being transferred by Winter Brothers Waste Systems of CT]
    - Groton [now being transferred to Willimantic Waste Paper Co.
- Combined capacity currently exceeds the amount of materials typically processed and can accommodate increased volume of recyclables



Connecticut Department of
Energy & Environmental Protection
79 Elm Street
Hartford, CT 06106


Permitted Waste Facilities
Resource Recovery Facilities
July 2012
Resource Reccovery Facility
Tires-to-Energy
0 5 10 20 Miles
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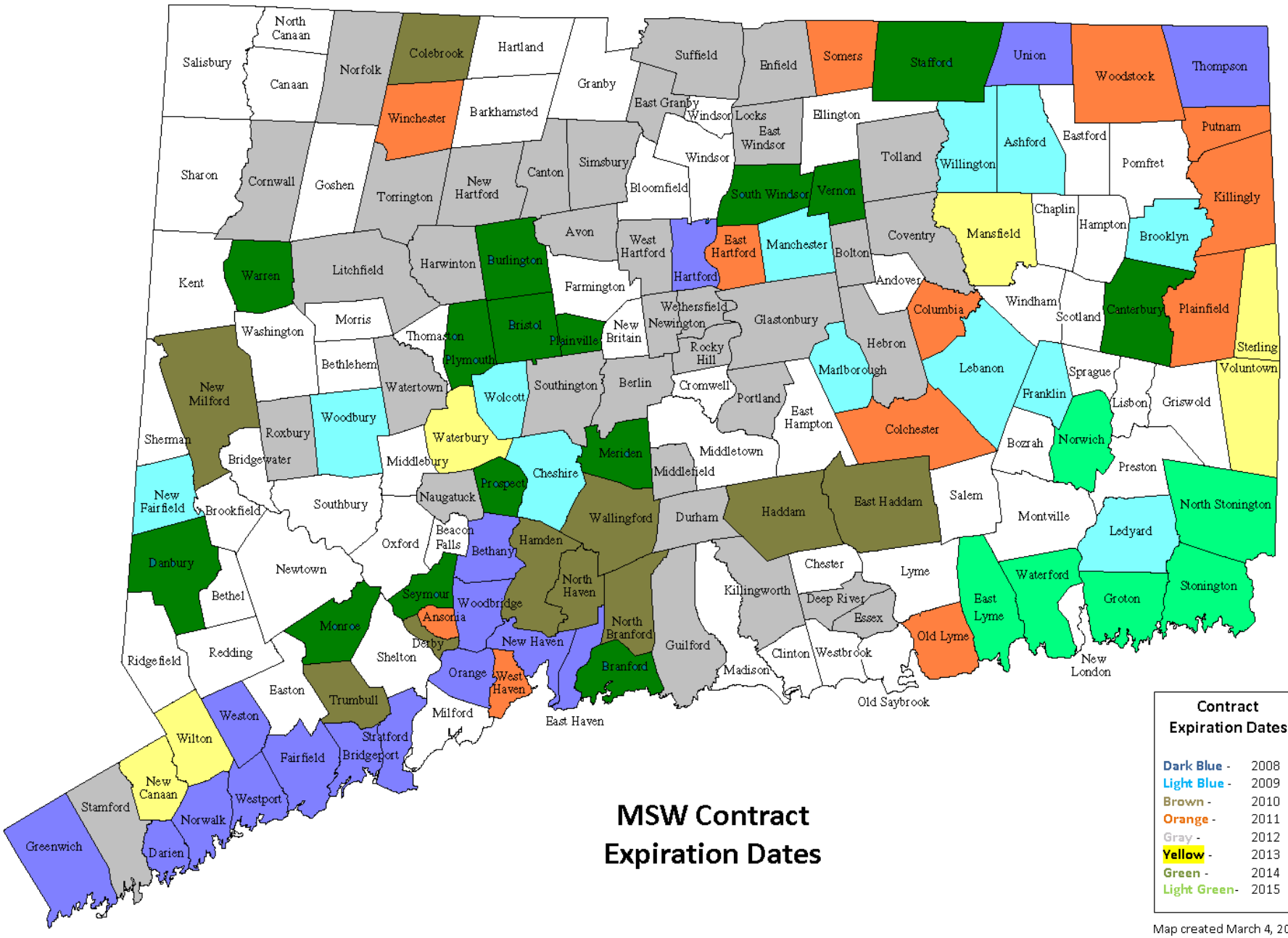
Connecticut Department of
Energy & Environmental Protection
79 Elm Street
Hartford, CT 06106

CT Resource Recovery Facilities

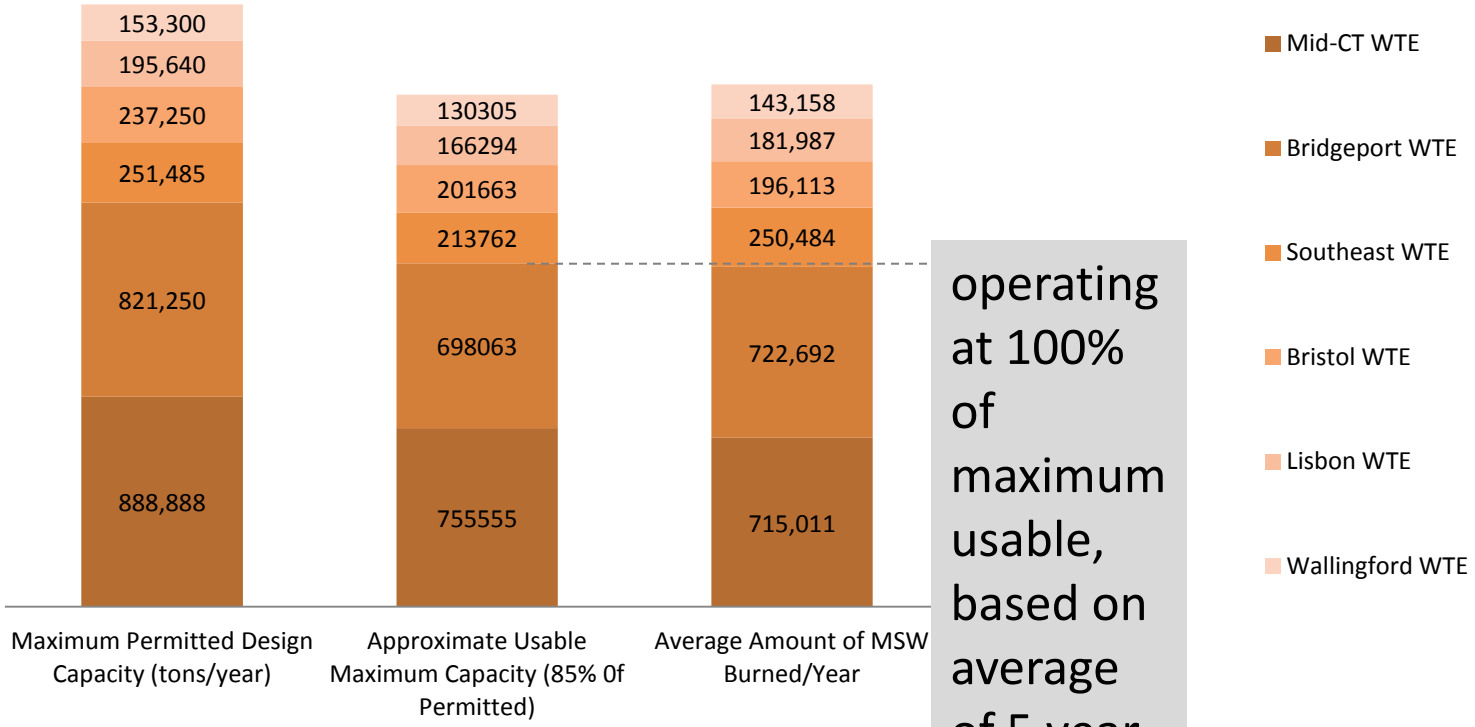
Location	Contract Expiration	Current Owner	Expected Owner
Hartford	2012	CRRA	CRRA
Bristol	2014	BRRFOC	Covanta
Bridgeport	2015	Wheelabrator	Wheelabrator
Wallingford	2015	Covanta	Covanta
Preston	2015	SCCRRA	Covanta
Lisbon	2020	ECRRA	ECRRA



Map created March 4, 2011

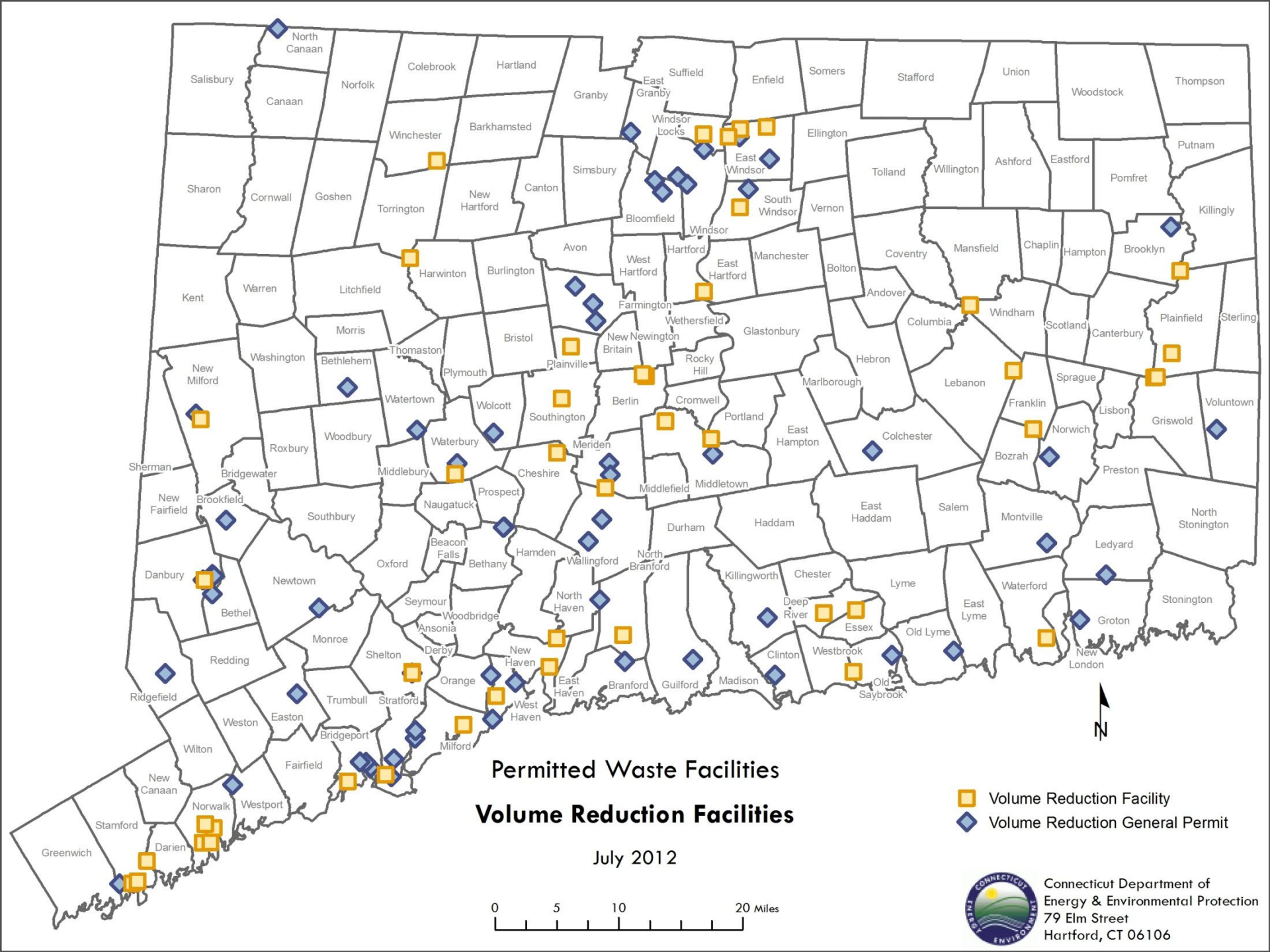
Data from 2008 Solid Waste Management Full Cost Accounting Survey

Waste to Energy Resource Recovery Facility Capacity and Utilization Comparison



operating at 100% of maximum usable, based on average of 5 year period FY2000 – FY2004

Source: CT DEEP, Yale F&ES



Permitted Waste Facilities

Volume Reduction Facilities

July 2012

Volume Reduction Facility

Volume Reduction General Permit

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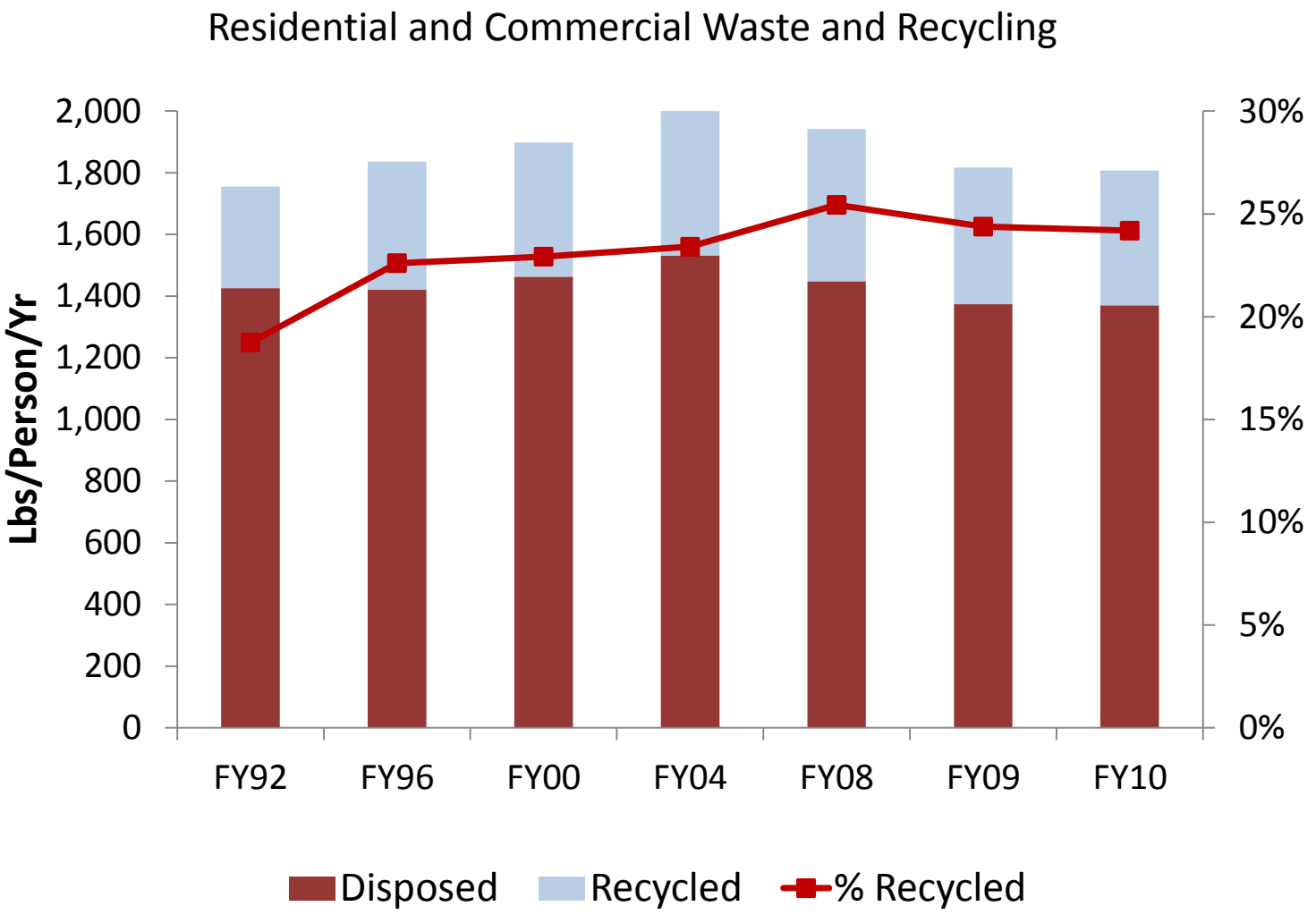
Energy & Environmental Protection
79 Elm Street
Hartford, CT 06106

Landfills

- Per statutory hierarchy, least preferred method
- Few active landfills of any kind in CT
  - 1 active MSW landfill with limited capacity [Windsor]
  - 1 active ash residue landfill [Wheelabrator's landfill in Putnam]
  - ~25 total (mostly oversized MSW, demolition waste, or special waste)
- 300+ closed landfills

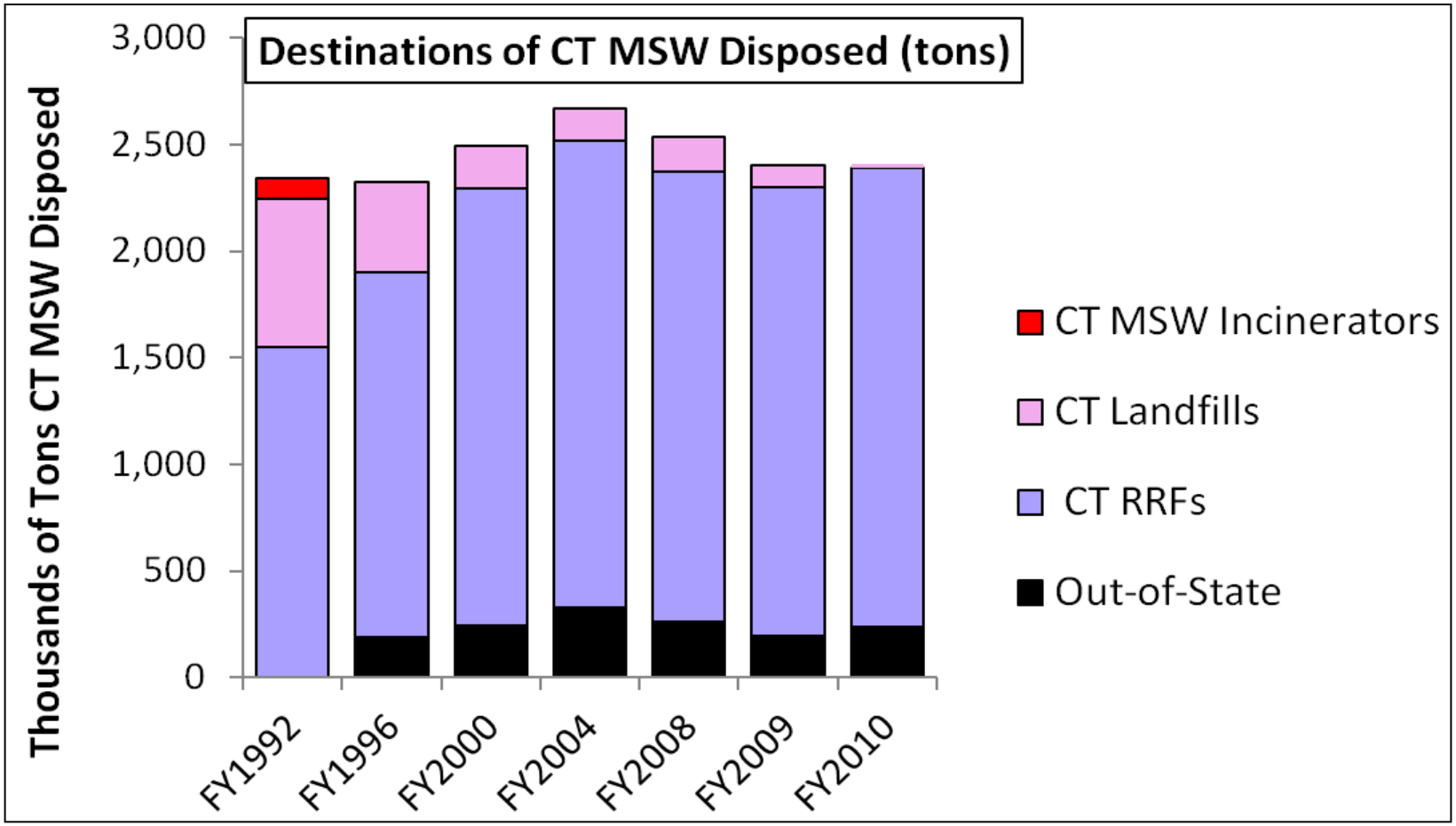
CT Solid Waste Trends:

Recent trend: reversing the disposal rate

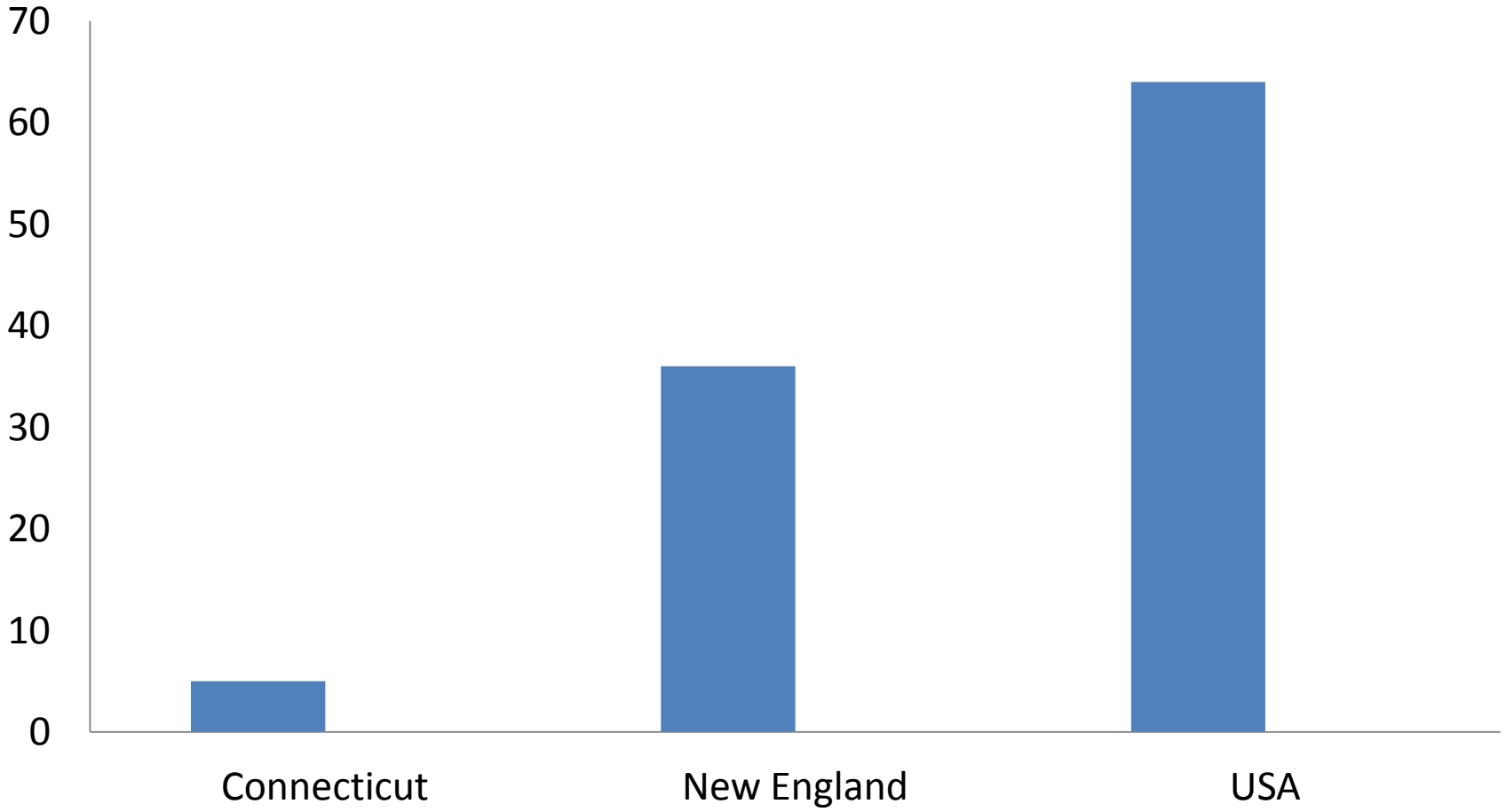


CT Solid Waste Trends:

Phasing out land disposal; using facilities out of state



CT Least Reliant on Landfills (% Solid Waste Landfilled)



Discussion

Working Group Goals

- The goal of the Modernizing Recycling Working Group is to transform the waste economy in Connecticut.
- To do so we need to move from a mindset of waste management to a mindset of value extraction from materials.
- The result will be reduced costs for municipalities and businesses.
- This further integrated approach to sustainable materials management in Connecticut will drive environmental and economic benefits today and for future generations.
- To fundamentally redefine the state solid waste infrastructure and management system to enable optimal recovery of materials from the waste stream and to provide economical and environmentally sound disposal of materials not reused or recycled.

What does the “Future State” look like?

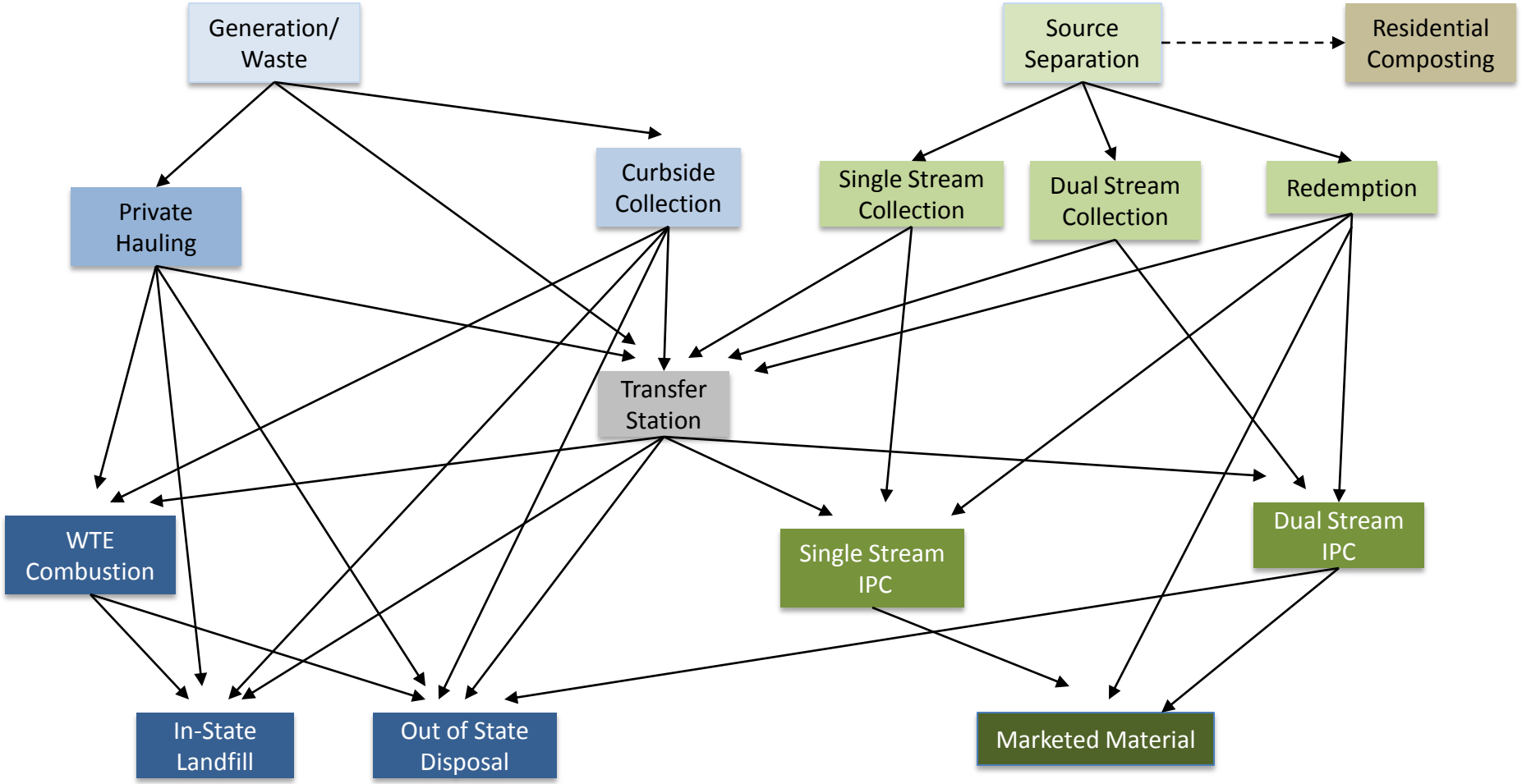
- **Objectives**
  - Reduce disposal rate to stabilize costs
    - Overall cost reductions will be realized as reduced tons are disposed, even if tipping fees rise
  - Use economic signals to drive smart decisions and reduce trash
  - Create jobs: Locally? Regionally?
  - Maximize capture of materials through increased markets [supply and demand]
  - Fragmentation of system addressed to optimize efficiencies
  - Other?

- **Potential variables**
  - Reduced income from the sale of electricity from the RRFs is shifting revenue balance between tipping fees and power sales (i.e., how to address potential tipping fee increases)
  - Fuel price volatility (natural gas and petrol)
  - Regulatory decisions in other states
  - Increasing solid waste assessment fees in other states
  - Other variables?

Advancing CT's Infrastructure

- **How do Potential Future Scenarios define infrastructure needs?**
  - With increase to 75% recycling rate
  - Organics removed from disposed waste stream
  - Significant decreased capacity of in-state RRFs (if facilities close)
    - Where do the non-recyclable materials go?
    - Timing of establishment of next generation technologies
  - Scale of aggregation raised to level higher than municipal
    - What is optimal?
  - Are the state's recyclables processing facilities and transfer stations optimally located?
    - Could these facilities be better coordinated and utilized, based on technical and geographic criteria?
  - How will we close infrastructure gaps?
- **What is needed to enhance Connecticut's integrated waste management system and sustainable materials management approach?**
  - What is the role of self-sufficiency in developing a sustainable infrastructure for CT?
  - Are municipal solid waste collection and management services available at reasonable cost?
  - Are solid waste management services in Connecticut sustainable as currently structured?
- **How do municipal choices affect statewide outcomes?**
  - Given that each municipality has flexibility in determining how it manages its own solid waste, is CRRA adequately equipped and authorized to act on a statewide basis?

MSW System Components



Source: CT DEP & CT LPRI 2009, 2010; Yale F&ES 2012

CT Materials Management: System Components

Component	Generation	Collection & Transportation	Aggregation & Transfer	Distribution: Processing, Recovery	Distribution: Disposal
Asset type	Materials	Routes Receptacles Contracts Municipalities	Facilities-Public Facilities-Private Permits Redemption Deposits Contracts Municipalities	Facilities-Public Facilities-Private Contracts	Facilities-Public Facilities-Private Contracts
Owner	Municipalities Private businesses Institutions	Individuals Municipalities Private businesses Institutions	Municipalities CRRA & Other Regional Authorities Private businesses (Small, few facilities) Private businesses (large, multiple facilities, sometimes same as collection businesses)	Municipalities CRRA Recovery (recycling) - multiple private businesses Recovery (energy)- Private business (Covanta and Wheelabrator for MSW)	Municipalities Wheelabrator
Operator	Municipalities Private businesses institutions	Municipalities Private businesses	Municipalities Private businesses	Municipalities Private businesses	Municipalities Wheelabrator
Regulator	Municipalities CT DEEP US EPA	Municipalities	Municipalities CT DEEP	Municipalities CT Siting Council (some) CT DEEP	Municipalities CT DEEP US EPA