Northeast Resource Recovery Association

Recycling Markets – Gambling or Good Business?

Single Stream Markets

Recent Movement and Future Trends

About Us

In 1981, four New Hampshire municipalities founded the Northeast Resource Recovery Association, then called the New Hampshire Resource Recovery Association, to provide a clearinghouse for current, up-to-date information and a source of technical and marketing assistance in the general areas of waste reduction and recycling.

As amended July, 1995

Articles of Agreement
of
Northeast Resource Recovery Association
(formerly New Hampshire Resource Recovery Association)

Article 1. The name of this corporation shall be

Northeast Resource Recovery Association

Article 2. The object for which this corporation is established is

as a clearinghouse for relevant information, as a source of education in the field of solid waste management, as a cooperative agent with state, regional and local governmental agencies, as a market development service.

Working Together to Make Recycling Strong!

MOM and NRRA Workshops

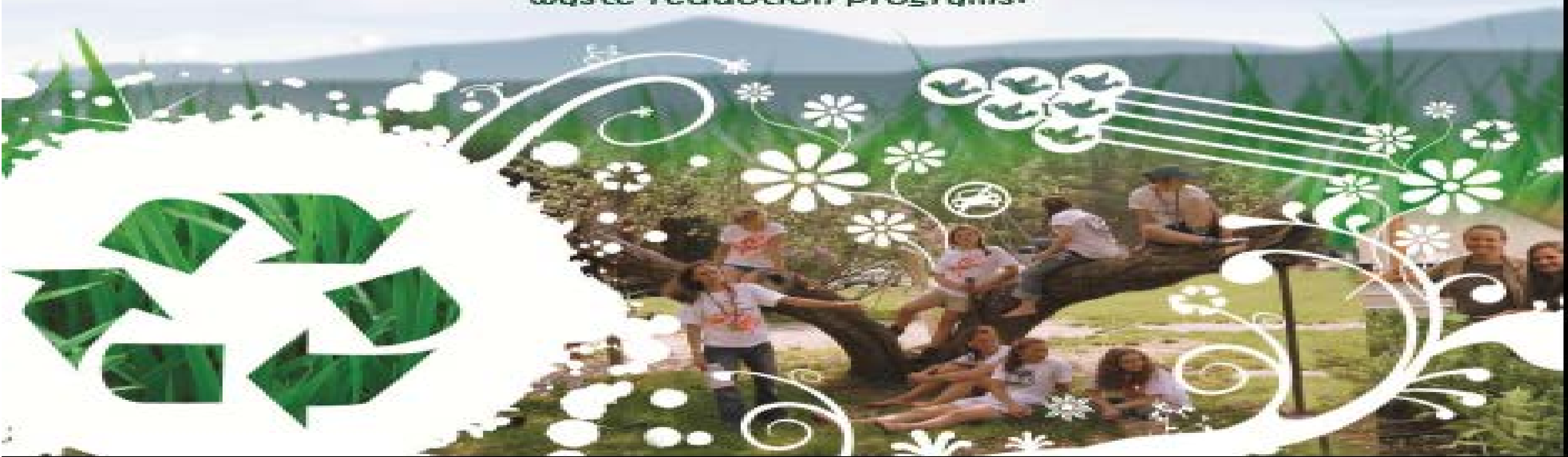
MOM - Members/Operations/Marketing meetings are held monthly.

In addition. NRRA conducts workshops and facility tours several times a year that can be used for continuing education credits toward transfer facility operator certifications and renewals.

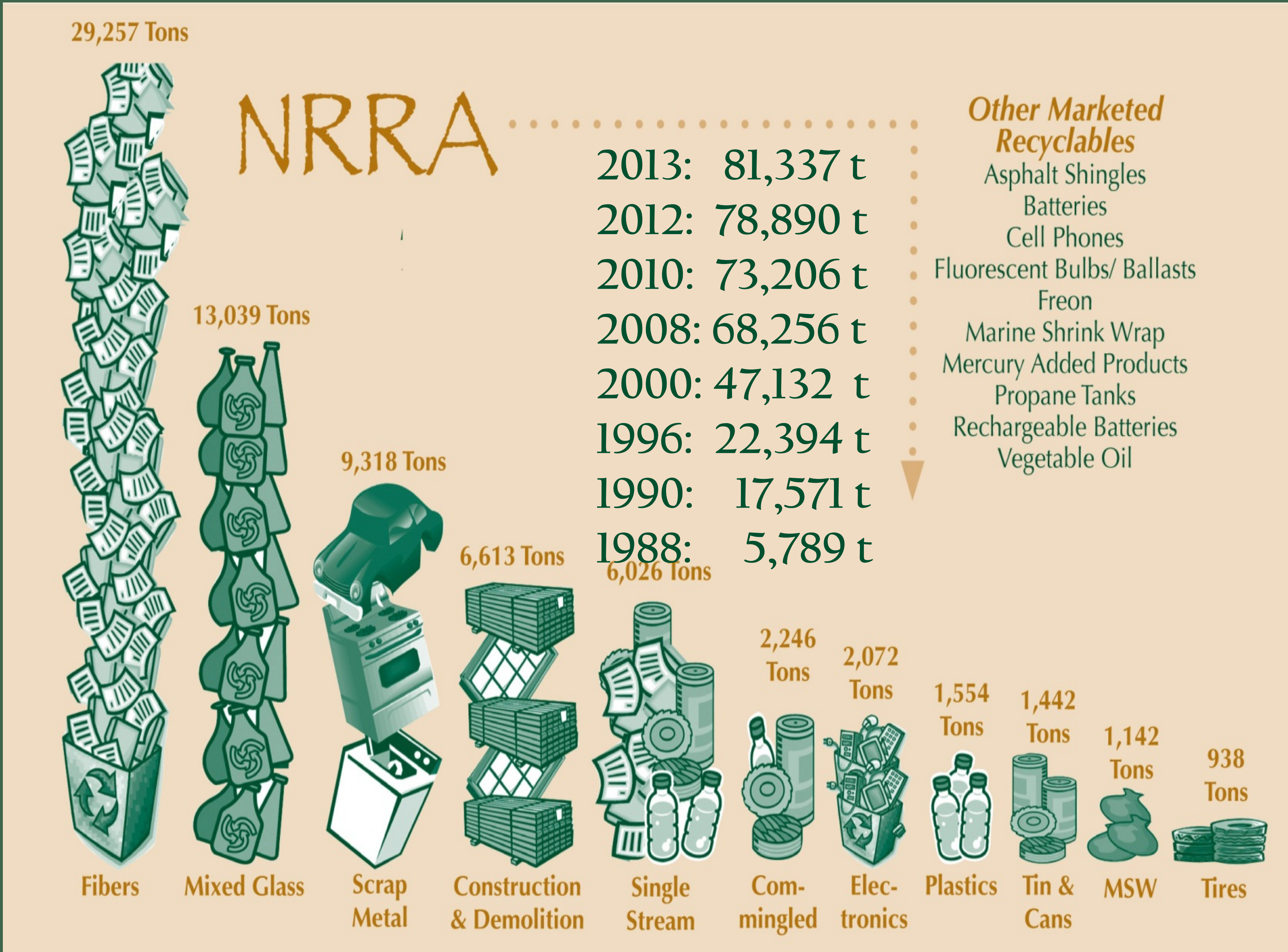
A program of Northeast Resource Recovery Association
2101 Dover Road, Epsom, NH 03234 / 1.800.223.0150 / www.nrra.net

The NRRA School CLUB

The NRRA School CLUB builds community action by directing youth,teachers, schools, and communities to a clear understanding of pertinent solid and hazardous waste issues and supporting sustainable waste reduction programs.




SAVE THE DATE!
"Rooted in the Past ...
... Reaching for the Future"
Nationally Recognized
33rd Annual Northeast
Recycling Conference & Expo
June 9th & 10th, 2014
Radisson Hotel Manchester, NH
Partnering with:
EarthShare New England
MassRecycle
National Recycling Coalition, Inc.
SWANA
Register by May 14th, 2014 and SAVE up to 20%
For conference details and pricing or to register, go to: www.nrra.net or call 1-800-223-0150


NRRA
2013: 81,337 t
2012: 78,890 t
2010: 73,206 t
2008: 68,256 t
2000: 47,132 t
1996: 22,394 t
1990: 17,571 t
1988: 5,789 t
Other Marketed Recyclables
Asphalt Shingles
Batteries
Cell Phones
Fluorescent Bulbs/ Ballasts
Freon
Marine Shrink Wrap
Mercury Added Products
Propane Tanks
Rechargeable Batteries
Vegetable Oil
29,257 Tons
Fibers
13,039 Tons
Mixed Glass
9,318 Tons
Scrap Metal
6,613 Tons
Construction & Demolition
6,026 Tons
Single Stream
2,246 Tons
Com-mingled
2,072 Tons
Elec-tronics
1,554 Tons
Plastics
1,442 Tons
Tin & Cans
1,142 Tons
MSW
938 Tons
Tires

“Talkin’ Trash”

NRRA

Scope of MSW

- **Includes materials historically handled in the MSW stream and sent to municipal landfills:**
  - product packaging
  - newspapers
  - office and classroom paper
  - bottles and cans
  - boxes
  - wood pallets
  - food scraps

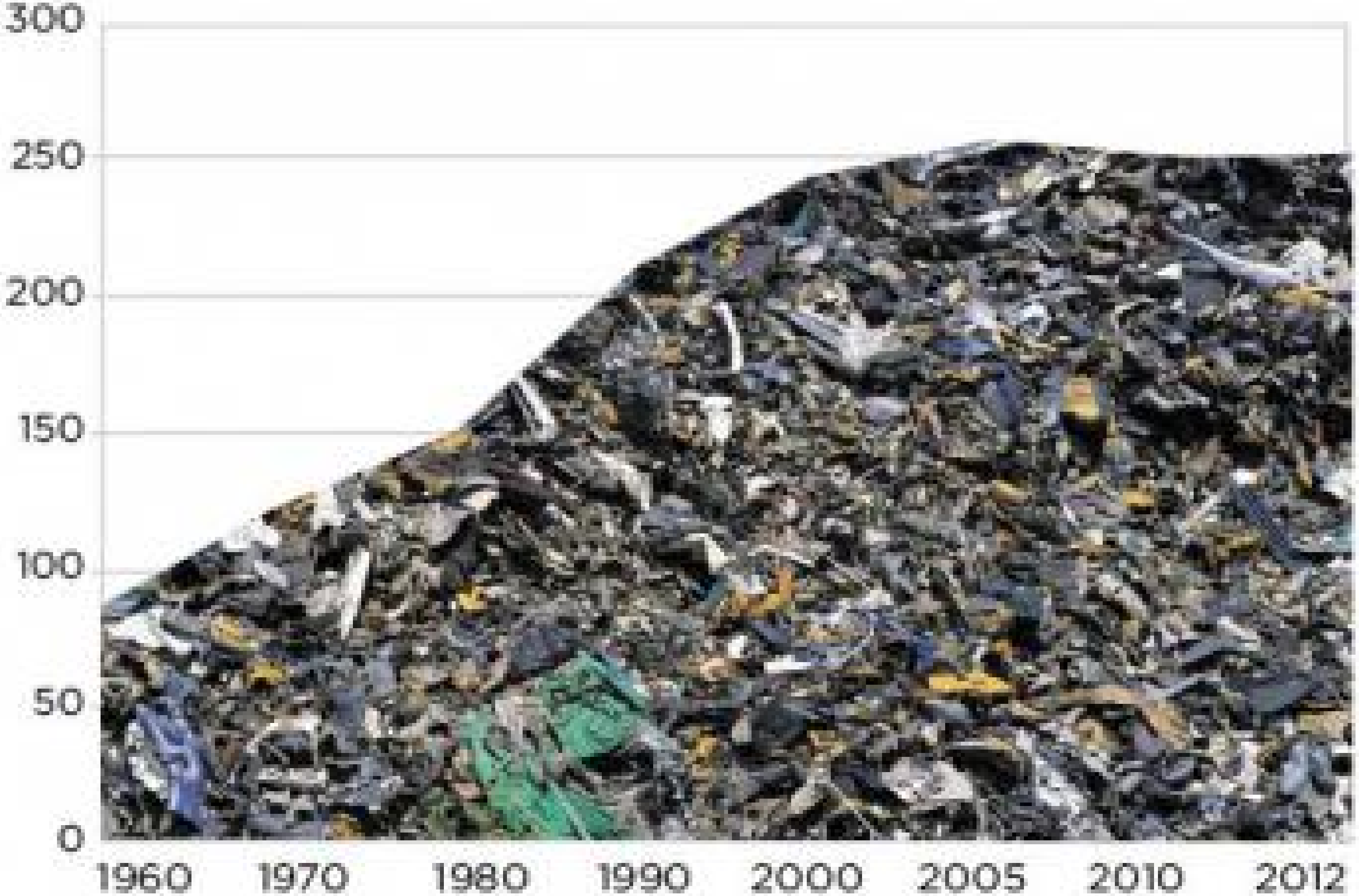
Scope of MSW, cont.

Not counted typically:

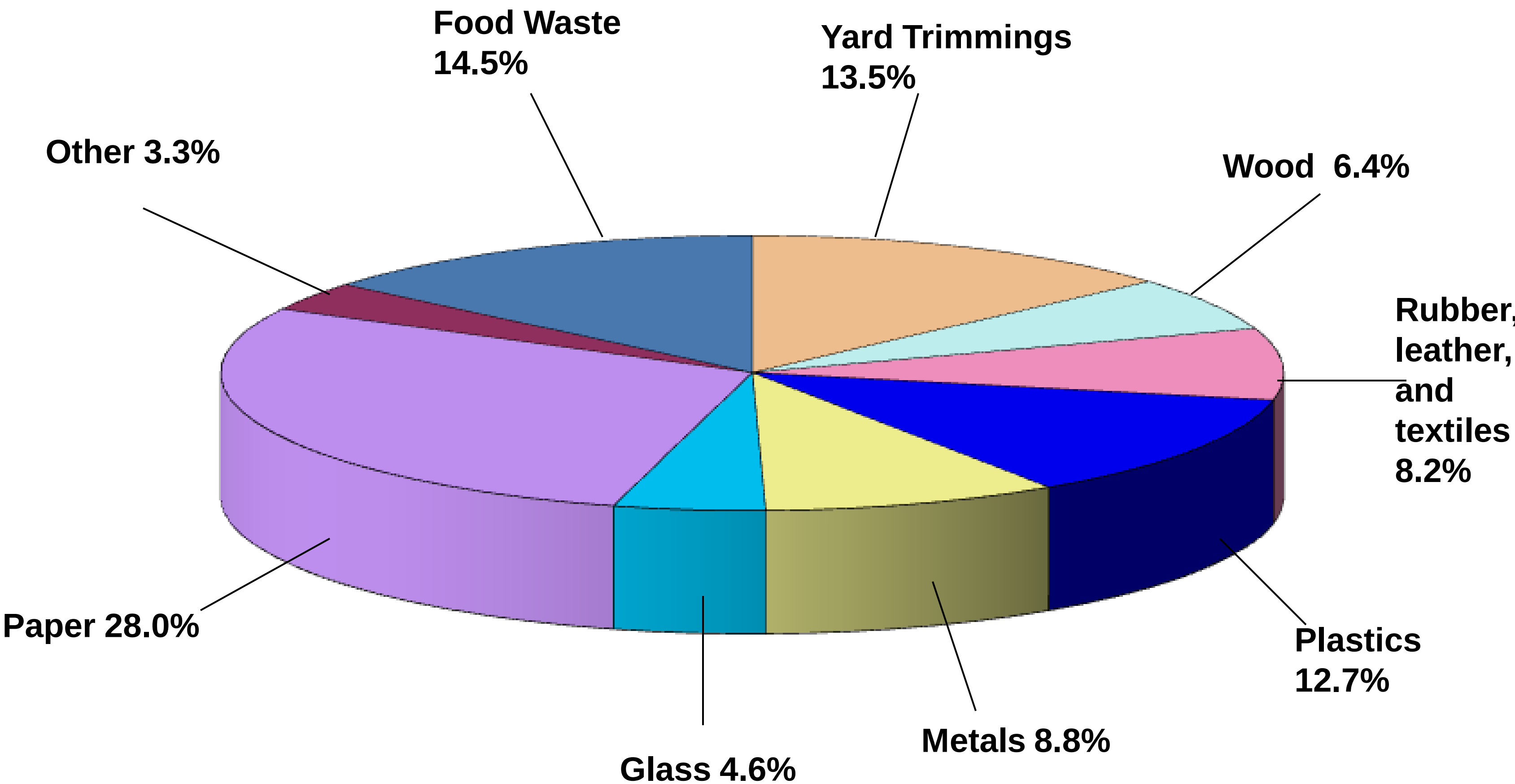
- grass clippings
- clothing
- furniture
- appliances
- automobile tires
- consumer electronics
- batteries

Figure 1. MSW Generation Rates, 1960 to 2012

The weight of solid waste generation has begun to flatline in the last decade.



Municipal Solid Waste Generation in 2011
250 Million Tons (before recycling)



EPA 2011 Facts and Figures

How Waste is Managed?

- **Recovery** (Recycling and Composting)

  34.7%

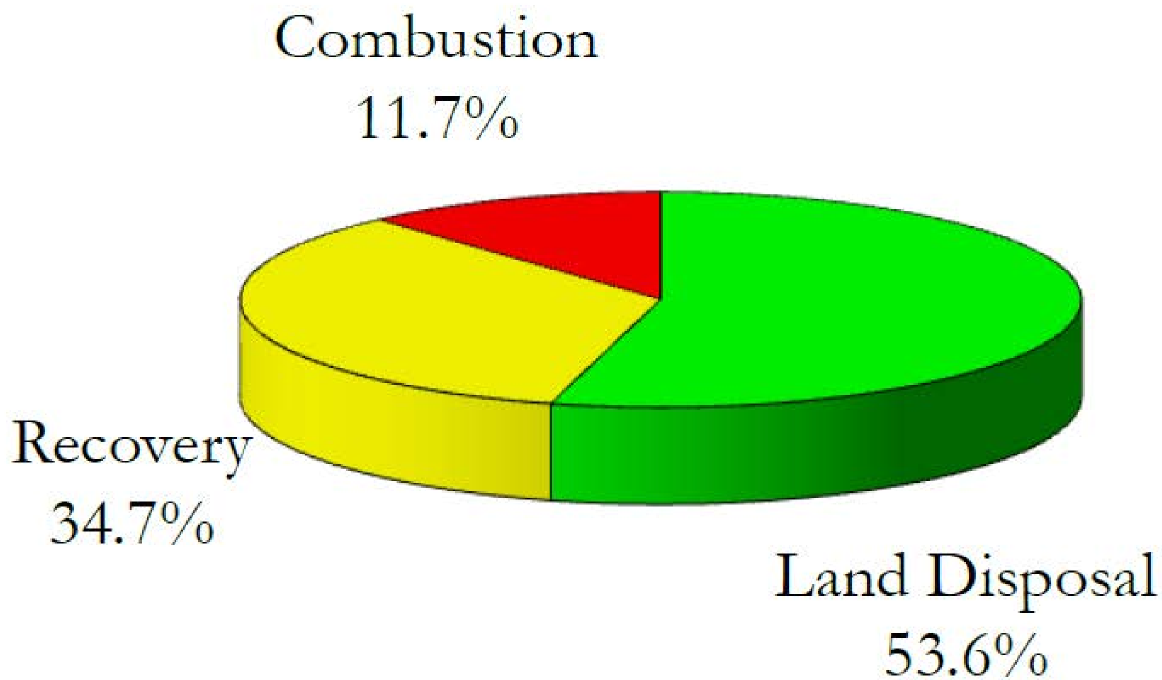
- **Land Disposal**

  53.6%

- **Combustion**

  11.7%

MSW Management in the U.S.



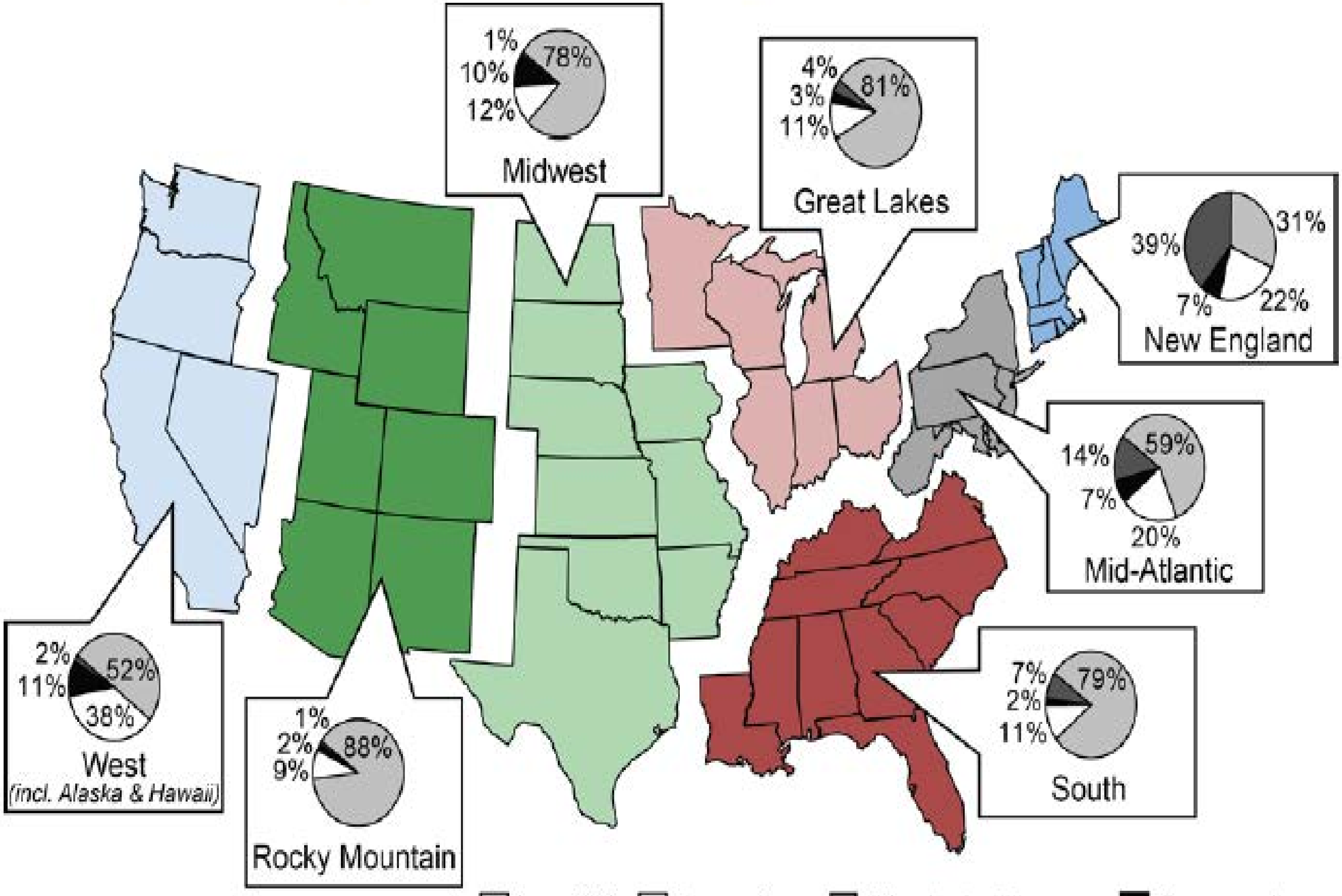
EPA 2011 Facts and Figures

Table 1. Generation, Recovery, and Discards of Materials in MSW, 2012*
(in millions of tons and percent of generation of each material)

Material	Weight Generated	Weight Recovered	Recovery as Percent of Generation	Weight Discarded
Paper and paperboard	68.62	44.36	64.6%	24.26
Glass	11.57	3.20	27.7%	8.37
Metals				
Steel	16.80	5.55	33.0%	11.25
Aluminum	3.58	0.71	19.8%	2.87
Other nonferrous metals†	2.00	1.36	68.0%	0.64
Total metals	**22.38**	**7.62**	**34.0%**	**14.76**
Plastics	31.75	2.80	8.8%	28.95
Rubber and leather	7.53	1.35	17.9%	6.18
Textiles	14.33	2.25	15.7%	12.08
Wood	15.82	2.41	15.2%	13.41
Other materials	4.60	1.30	28.3%	3.30
Total materials in products	**176.60**	**65.29**	**37.0%**	**111.31**
Other wastes				
Food, other‡	36.43	1.74	4.8%	34.69
Yard trimmings	33.96	19.59	57.7%	14.37
Miscellaneous inorganic wastes	3.90	Negligible	Negligible	3.90
Total other wastes	**74.29**	**21.33**	**28.7%**	**52.96**
Total municipal solid waste	**250.89**	**86.62**	**34.5%**	**164.27**

* Includes waste from residential, commercial, and institutional sources.
† Includes lead from lead-acid batteries.
‡ Includes recovery of other MSW organics for composting.
Details might not add to totals due to rounding.
Negligible = Less than 5,000 tons or 0.05 percent.

Regional MSW Management, 2008[6]



MSW TIP FEES

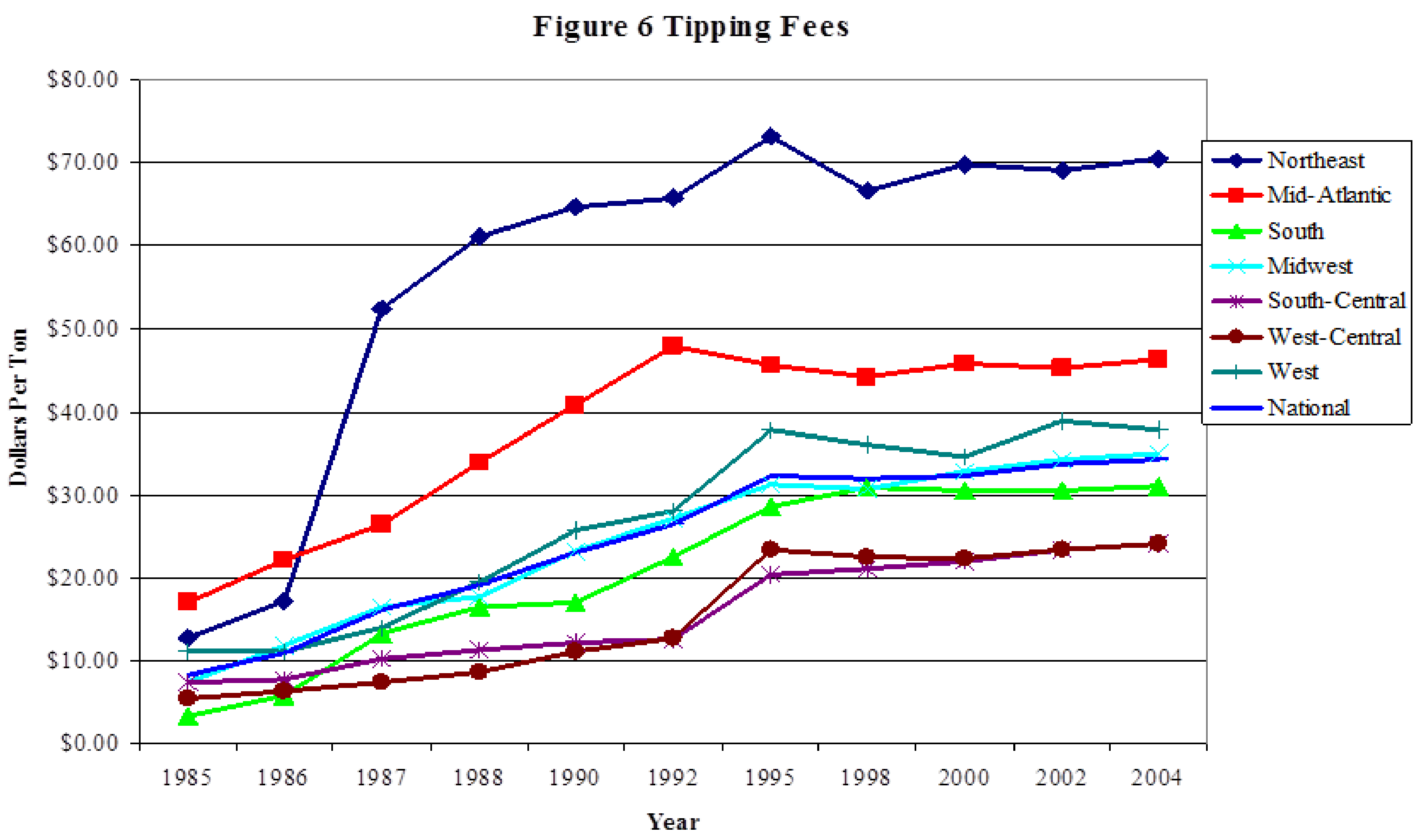


Figure 6 Tipping Fees
$80.00
$70.00
$60.00
$50.00
$40.00
$30.00
$20.00
$10.00
$0.00
Dollars Per Ton
1985
1986
1987
1988
1990
1992
1995
1998
2000
2002
2004
Year
Northeast
Mid-Atlantic
South
Midwest
South-Central
West-Central
West
National

MSW

Municipal Solid Waste

Name of Company

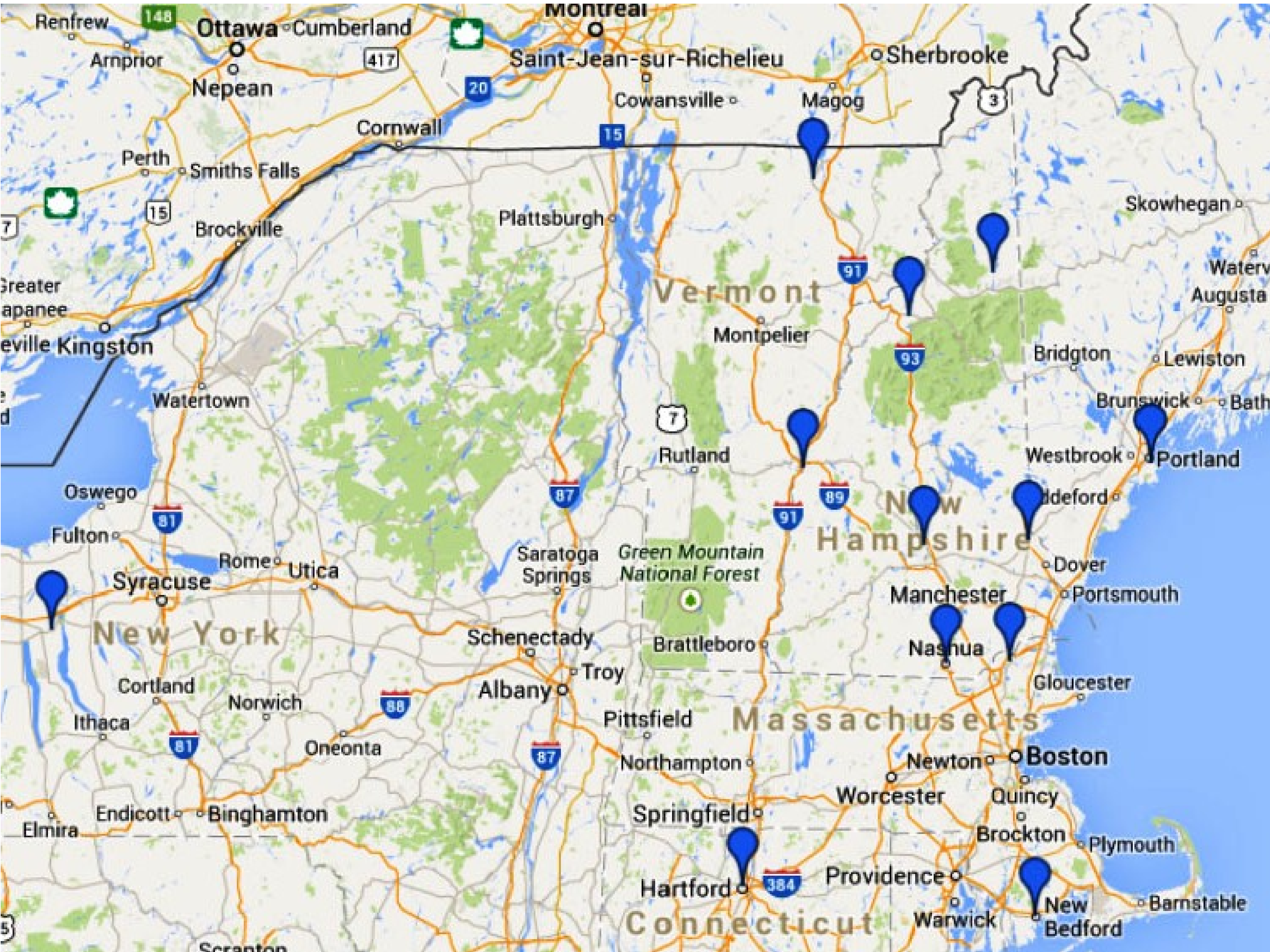
	3 Year		5 Years		7 Years		
	MSW Haul	MSW Disposal Fees	MSW Haul	MSW Disposal Fees	MSW Haul	MSW Disposal Fees	Rental Fees
A	$145.00	$65.00	CPI	CPI	CPI	CPI	$50.00
B	$280.00	$72.00	CPI	CPI	CPI	CPI	$100.00
C	$185.00	$68.00					NA
D	$225.00	$72.00					As needed
E	$275.00	$76.00	PPI	PPI	PPI	PPI	$0.00
F	$140.00	$72.00	CPI	CPI	CPI	CPI	$50.00

Disposal fees are based on per ton.

MSW Spot Market Rates Sept 2013

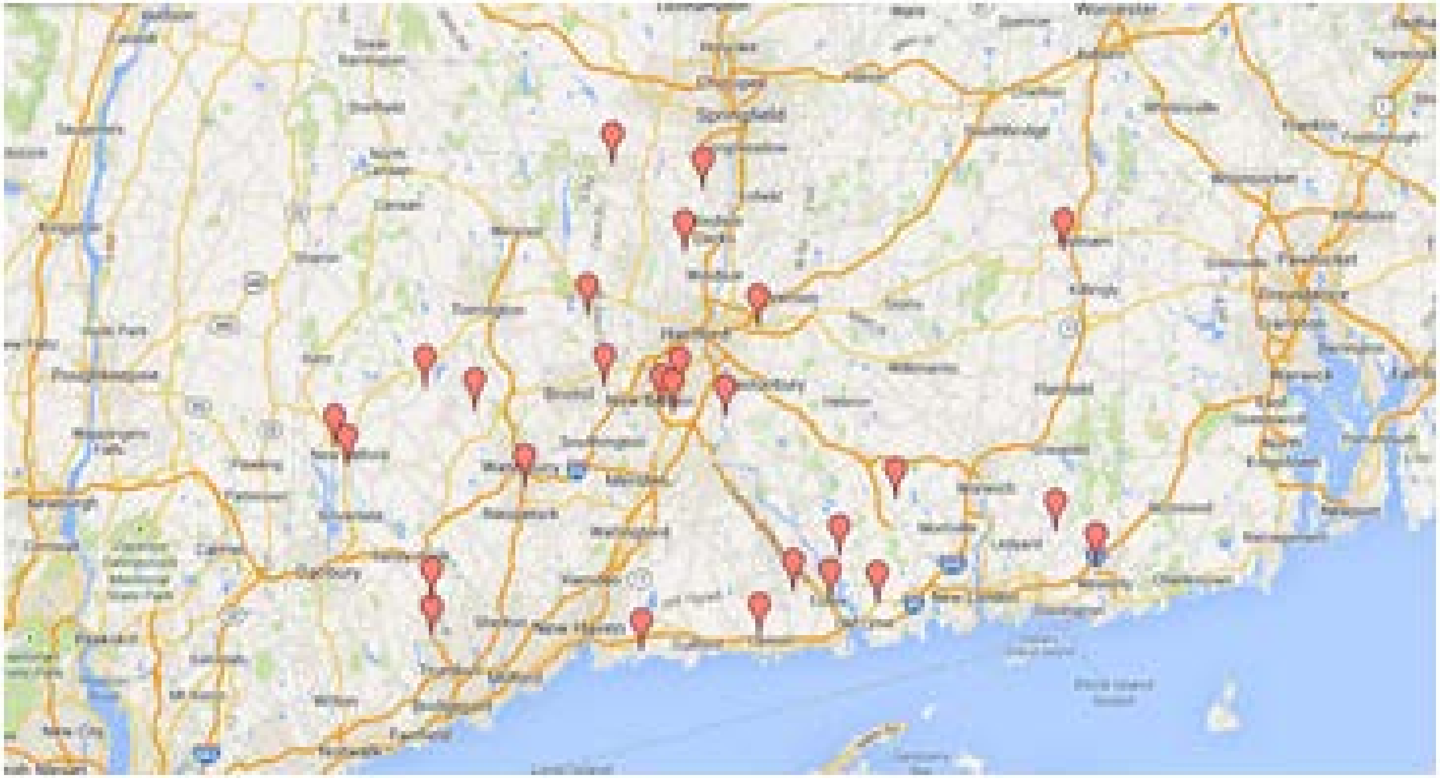
Location	Tip Only	Tip and Transportation
Brattleboro, VT	$100.00	$120.00
Penacook, NH - Coop	$66.00	$92.00
Chesterfield , NH	$67.50	$87.50
Haverhill, Mass.	$65.00	$90.00
So. Portland, Me	$55.00	$82.50
New Bedford, Mass	$65.00	$87.50
Concord, NH - City	$57.00	$87.00
Western New York State	$40.00	$81.50
Berlin, N. H.	$50.00	$75.00
Total Costs	$565.50	$803.00
Average Costs Per Ton	$62.83	$89.22

Landfill Tipping Fees in USA	High	Low	Average
Alabama	$47.00	$26.00	$37.60
Alaska (4 Landfills)	$85.00	$21.00	$60.88
Arizona	$38.25	$30.00	$33.05
Arkansas	$43.00	$33.00	$36.50
California	$76.82	$34.37	$52.07
Colorado	$66.00	$28.00	$49.60
Connecticut (1 Landfill)	$57.15	$57.15	$57.15
Delaware (3 Landfills)	$84.00	$84.00	$84.00
Florida	$83.92	$25.50	$43.65
Georgia	$45.00	$30.55	$38.27
Hawaii	$90.00	$39.00	$75.17
Idaho	$67.70	$30.00	$44.41
Illinois	$60.00	$28.00	$43.46
Indiana	$60.10	$32.00	$44.20
Iowa	$40.50	$25.00	$34.15
Kansas	$43.50	$30.50	$37.46
Kentucky	$55.00	$33.50	$44.69
Louisiana	$31.00	$19.80	$26.96
Maine (4 Landfills)	$115.00	$72.00	$91.00
Maryland	$70.00	$52.00	$62.70
Massachusetts	$100.00	$60.00	$78.50
Michigan	$88.00	$25.00	$46.82
Minnesota	$63.33	$26.66	$47.04
Mississippi	$47.00	$11.00	$26.48
Missouri	$48.11	$30.00	$38.38
Montana	$31.05	$16.50	$25.51
Nebraska	$45.00	$21.00	$31.13
Nevada	$31.00	$13.70	$24.83
New Hampshire	$87.55	$67.00	$77.85
New Jersey	$96.00	$44.31	$72.39
New Mexico	$62.01	$14.98	$33.80
New York	$102.00	$49.50	$86.30
North Carolina (4 Landfills)	$65.84	$27.50	$41.59
North Dakota	$43.81	$34.65	$38.92
Ohio	$52.80	$30.00	$39.66
Oklahoma	$50.29	$25.75	$38.31
Oregon	$83.75	$28.50	$55.74
Pennsylvania	$103.00	$63.25	$75.96
Rhode Island (1 Landfill)	$75.00	$75.00	$75.00
South Carolina	$66.00	$29.00	$42.61
South Dakota	$59.00	$34.00	$41.90
Tennessee	$48.00	$30.50	$41.15
Texas	$41.00	$5.00	$28.95
Utah	$33.00	$15.00	$24.29
Vermont (2 Landfills)	$87.14	$77.50	$82.32
Virginia	$66.00	$32.00	$46.11
Washington	$142.01	$28.80	$70.44
West Virginia	$69.25	$41.75	$49.46
Wisconsin	$66.00	$35.00	$50.20
Wyoming	$102.00	$35.00	$60.40
COPYRIGHT Green Power Inc 2000 -2011		Total Average	$49.78
This page last updated: 02/13/2014 14:52:36			

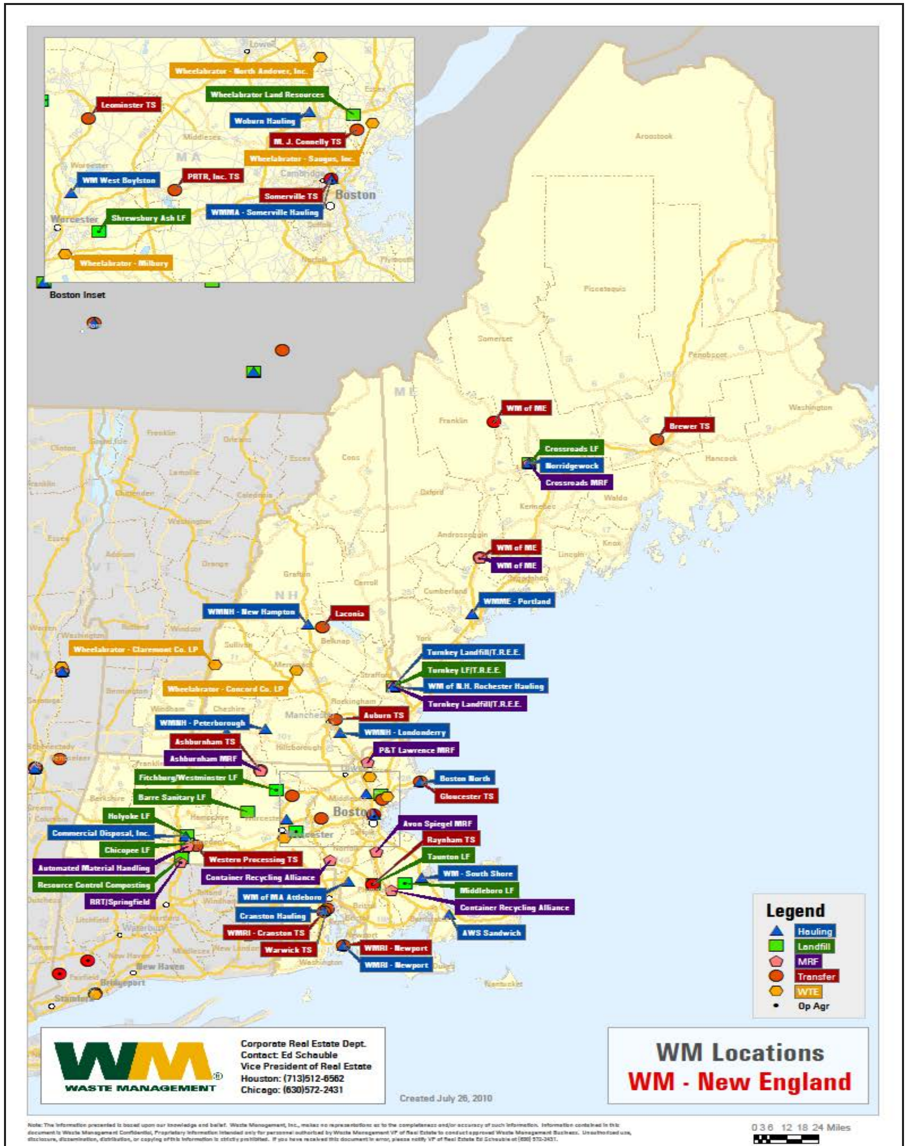


Montreal
Renfrew
148
Ottawa
Cumberland
Arnprior
Nepean
417
20
Saint-Jean-sur-Richelieu
Sherbrooke
Cowansville
Magog
3
Cornwall
15
Perth
Smiths Falls
15
Brockville
Plattsburgh
Skowhegan
91
Vermont
Augusta
Kingston
Montpelier
93
Bridgton
Lewiston
Watertown
7
Brunswick
Bath
Rutland
Westbrook
Portland
Oswego
87
89
81
91
Fulton
Hampshire
Saratoga Springs
Green Mountain National Forest
Dover
Rome
Utica
Syracuse
Manchester
Portsmouth
New York
Schenectady
Brattleboro
Nashua
Troy
Cortland
Albany
Gloucester
Norwich
88
Ithaca
Pittsfield
Massachusetts
81
Oneonta
87
Newton
Boston
Northampton
Worcester
Quincy
Endicott
Binghamton
Elmira
Springfield
Brockton
Plymouth
Hartford
384
Providence
New Bedford
Barnstable
Warwick
Connecticut

Connecticut Active Landfills

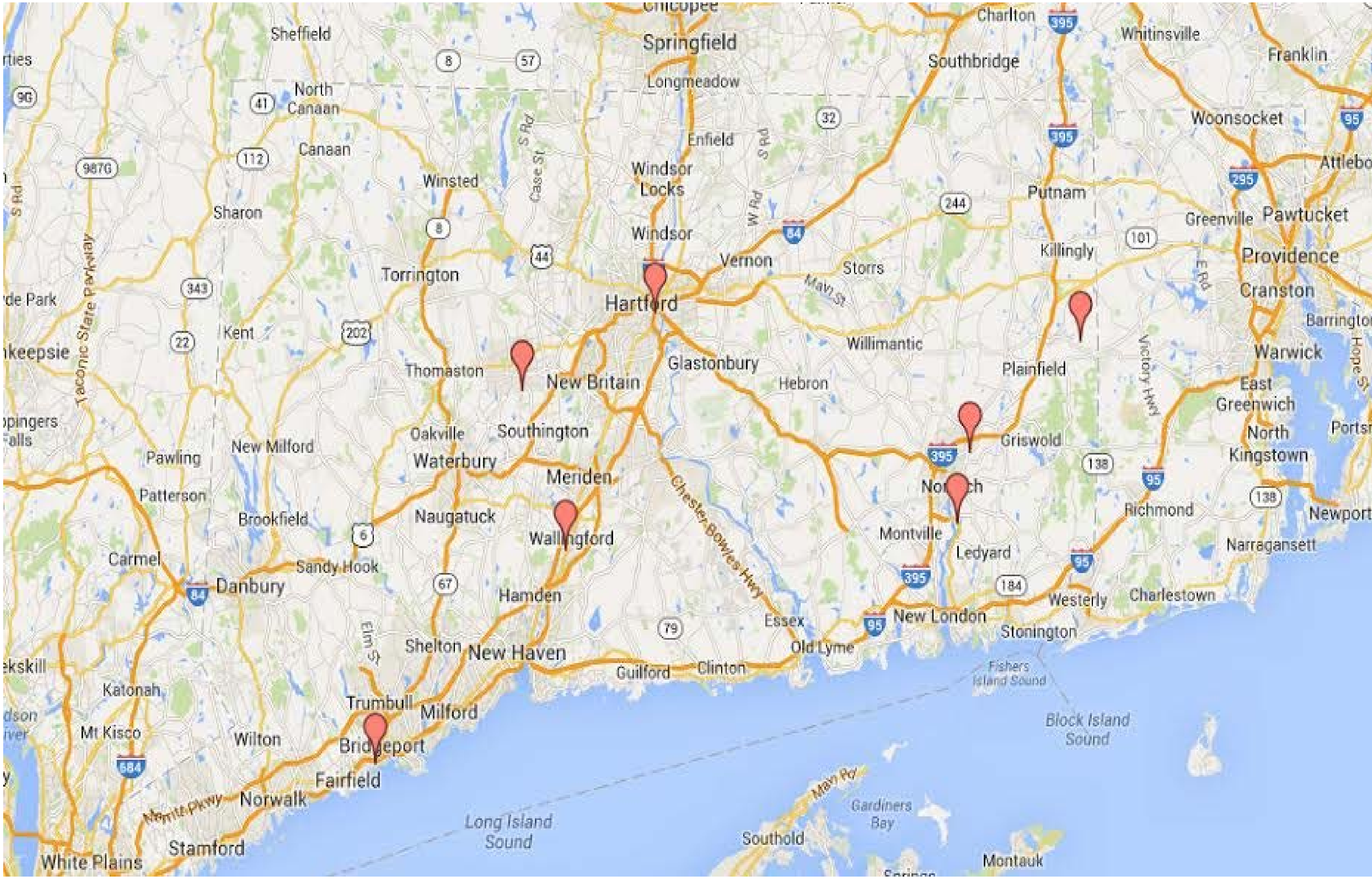


Waste Management in New England



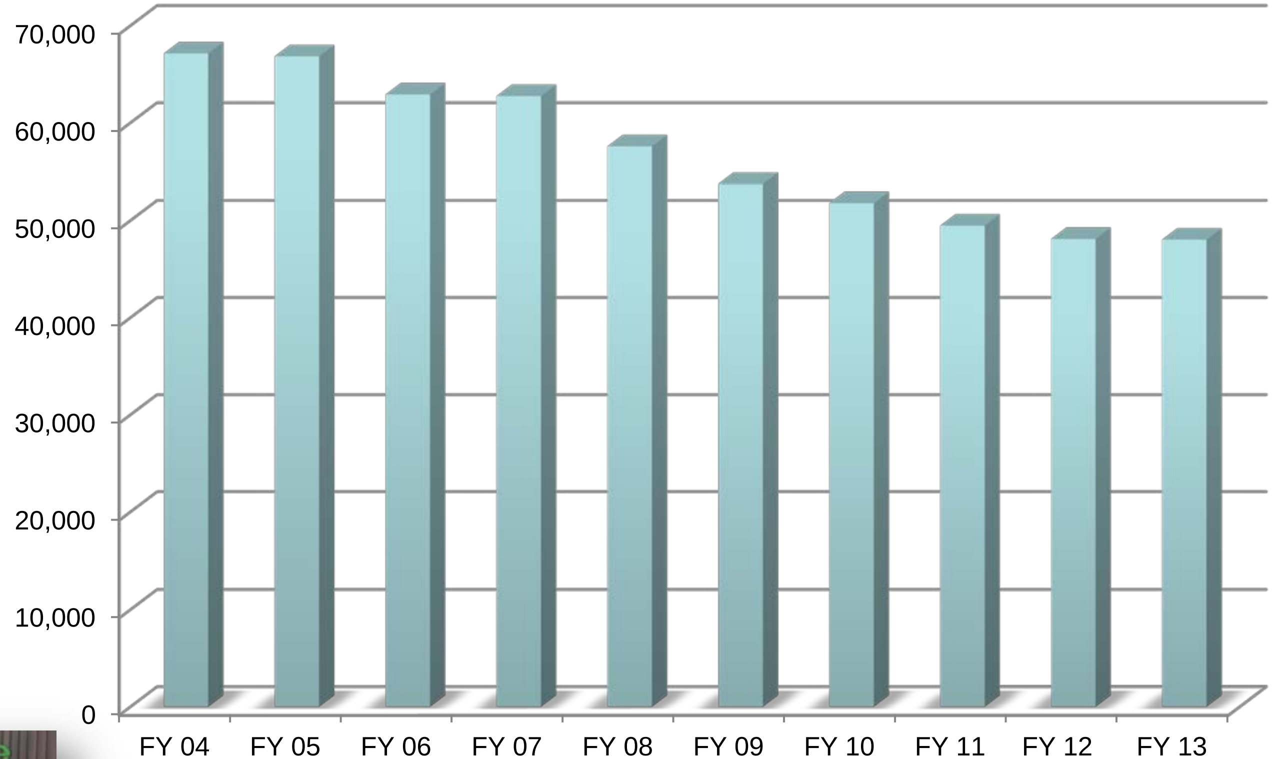
- National:
- - Fortune 200 NYSE Company, 43k Employees
- - 360 Collection Ops & 20M Customers
- - Large network of LFs & TSs
- - Operate 114 LFGTE plants - 500 MW
- - Operate 17 WTE plants – 680 MW
- - Energy created from waste powers over 1M homes & displaces 14 M barrels of oil or 3.3 M TPY of coal
- - Operate 150 Recycling Facilities – 8.5M TPY
- - Nearly 50% of revenues come from "Green Services"
- In New England:
- - Approx. 40k Comm. & 40 Muni. Customers
- - 16 Collection Districts
- - 11 Transfer Stations
- - 13 Disposal sites (LF & WTE)
- - 6 Recycling Facilities
- - 2 C&D Processing Operations
- - 2 Organics Processing (+1 in 2014)

Connecticut Resource Recovery Facilities

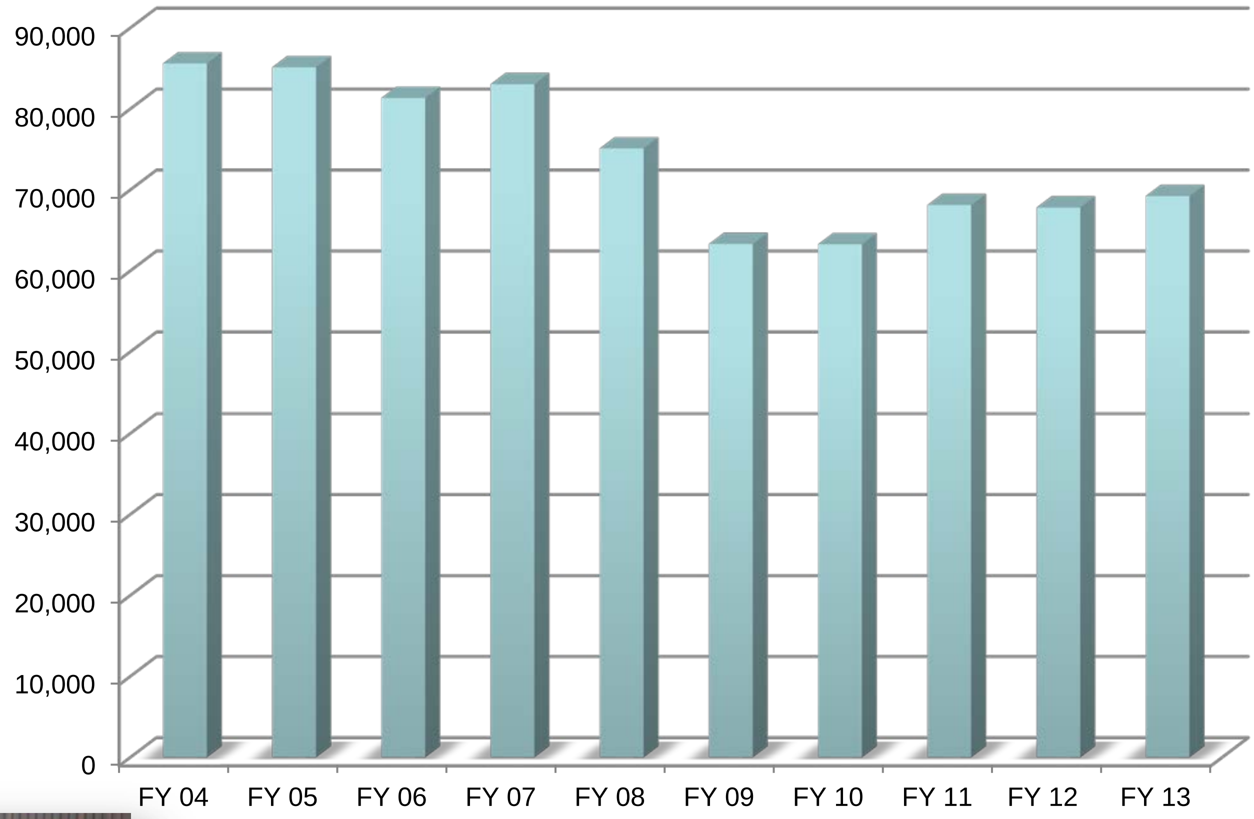


The Competition for Waste

Residential Waste tons have decreased by 29% over the past 10 years…



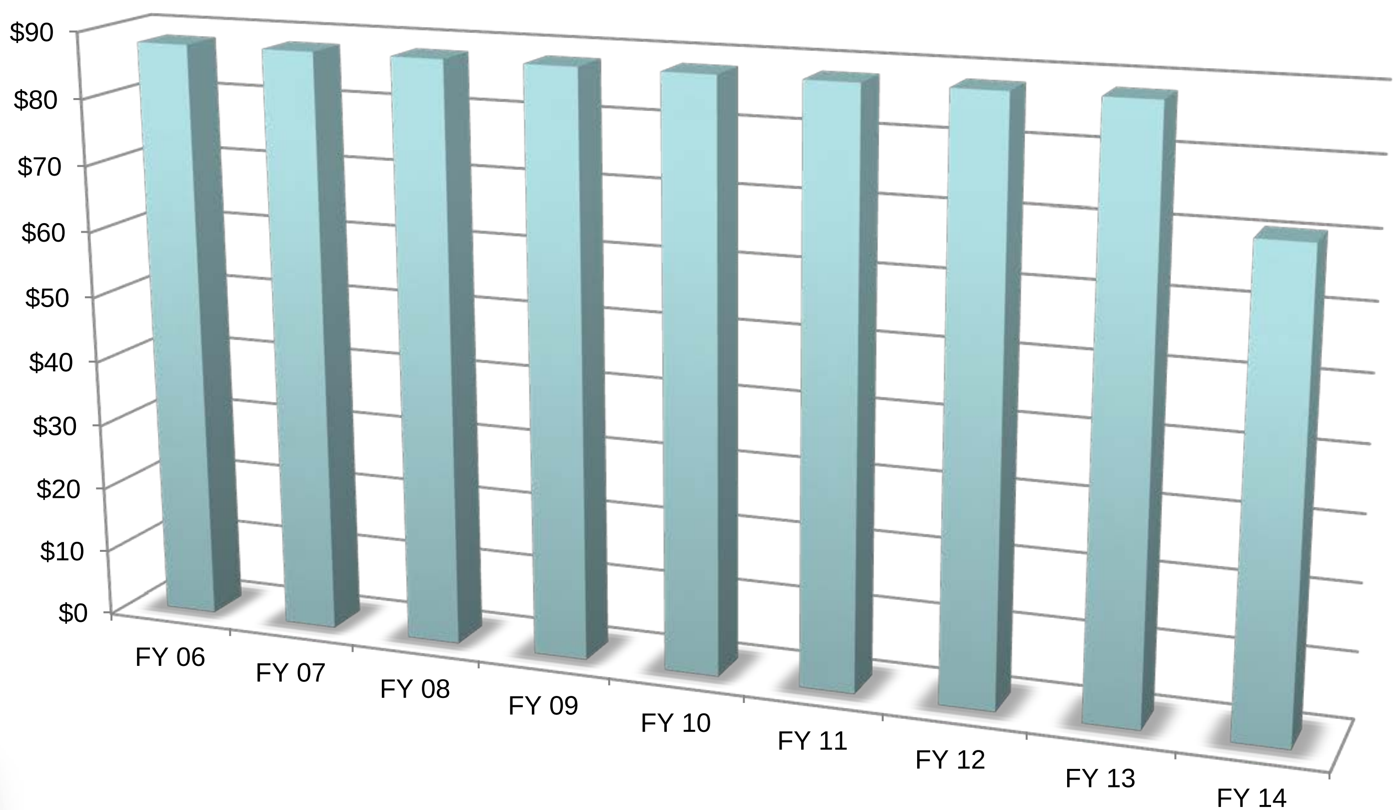
Commercial Waste decreased by 26% from 2004 – 2009, but then increased 9% from 2009 – 2013… overall down 19%



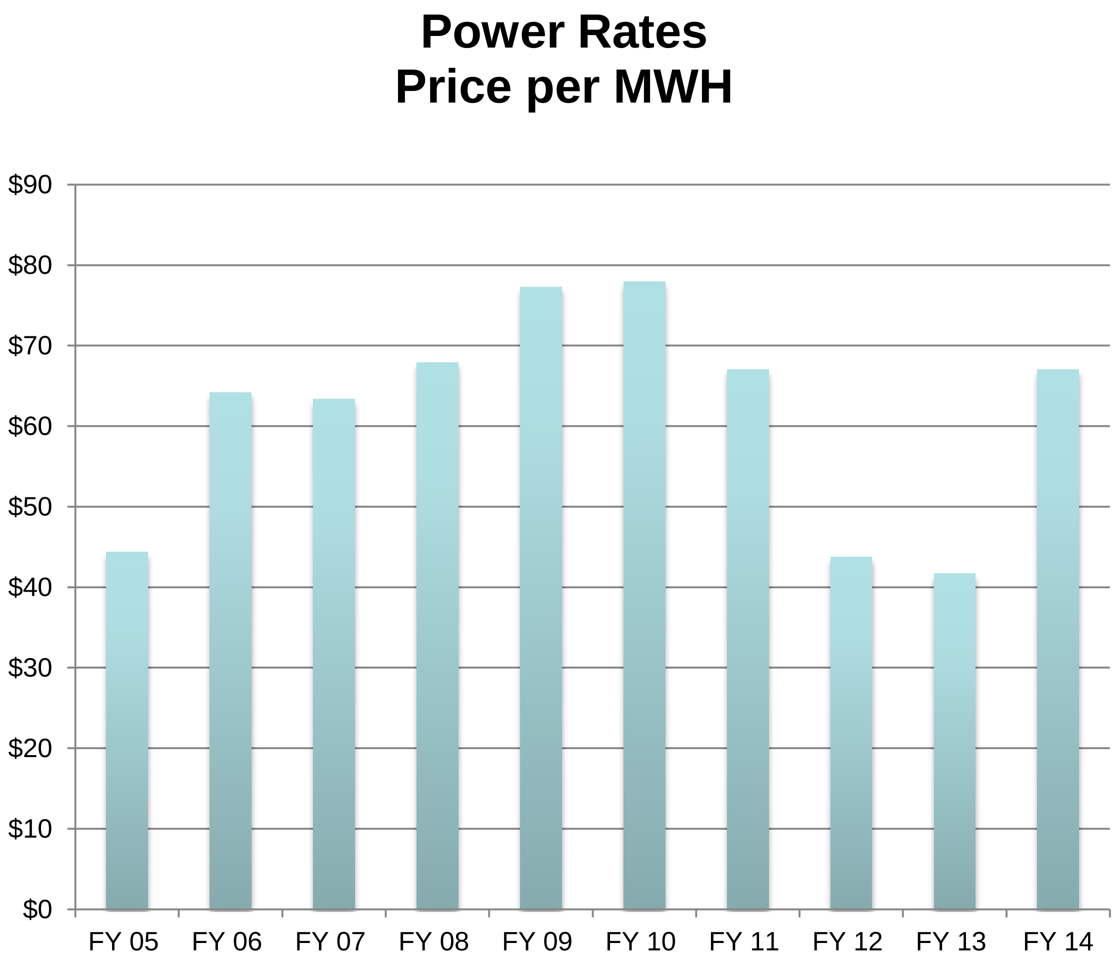
Tipping Fees: Reduced 20%

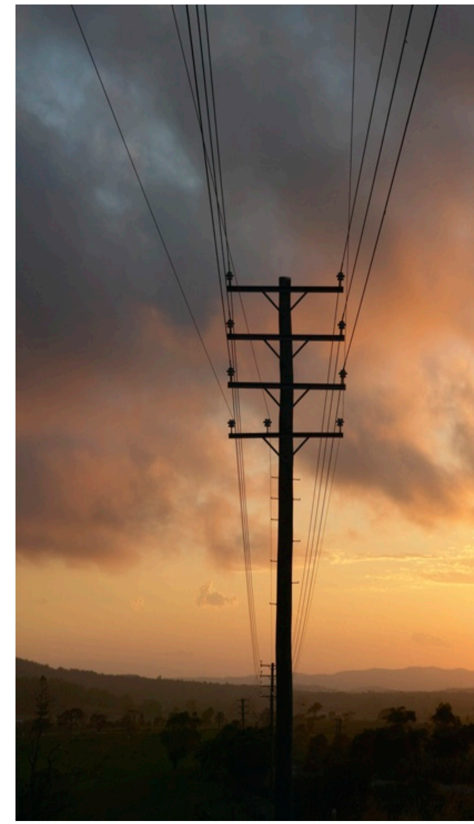
MSW Tipping Fees

Per Ton: Reduced from $88 to $70.50

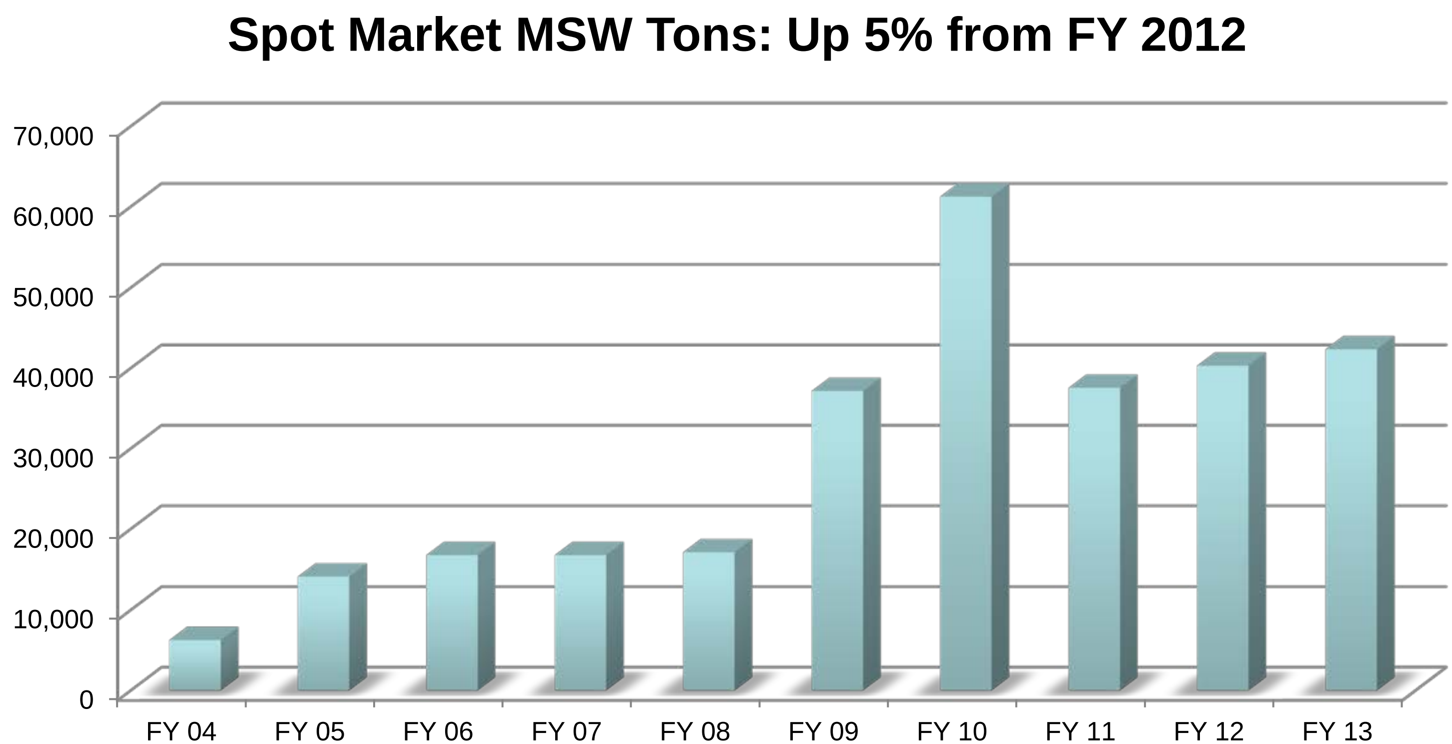


Electrical Rates



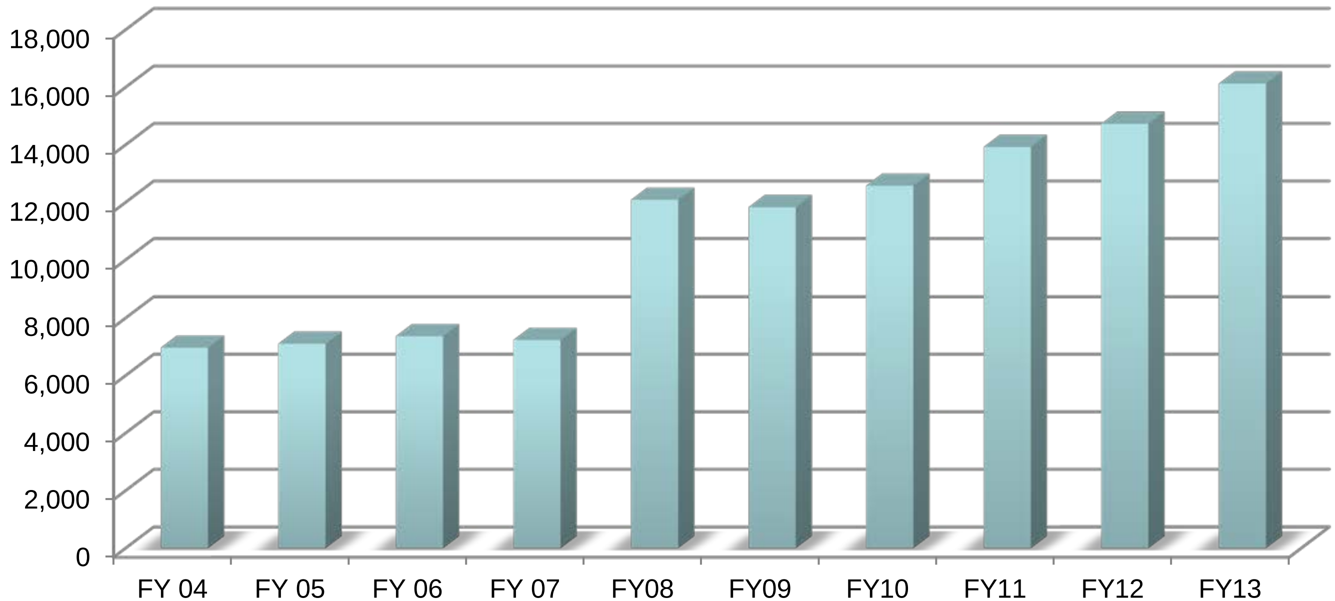


Spot Market Tons Have Increased



New Sources of Waste

**Associate & Contract Member
Tons Up 131% Over Ten Years**



Mining Trash and Returning Ash

MSW Landfill

Ashfill

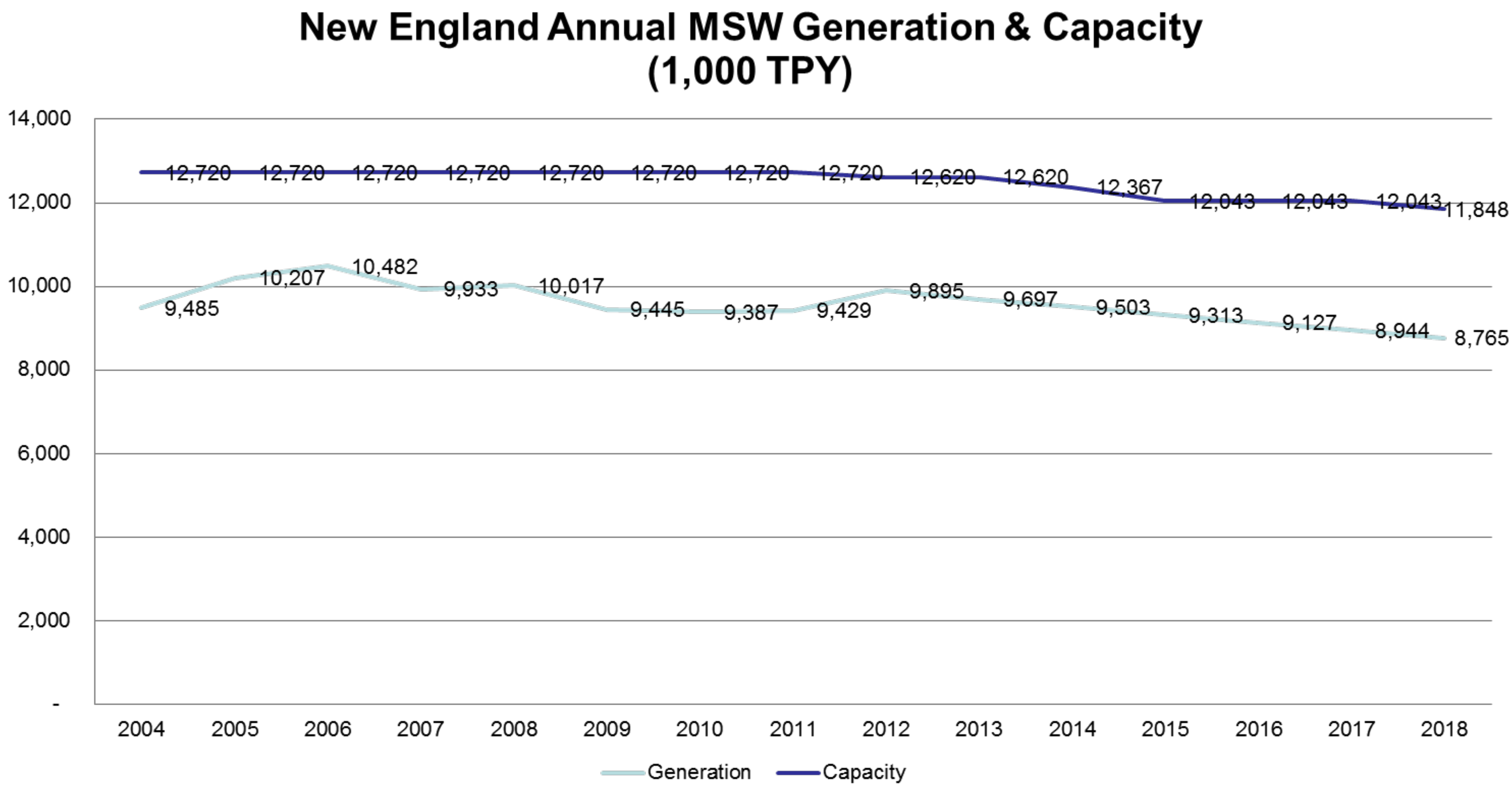
Market Dynamics – Summary

1.Greater % of MSW is being directed to WTE plants and recycling operations, trend is expected to continue.

2. Less MSW and organics in landfills is reducing gas generating potential and impacting energy recovery opportunities at landfills.

3. Municipalities and customers are requesting recycling services that are cost neutral, leading to expanded SS recycling and organics processing.

Market Dynamics – Capacity > Generation



Assumes New England GDP growth as per FP&A

Assumes 2% annual reduction in generation due to green wave

2009 NE population of 13.8m generating 3.78 #p/d or 0.69 tons pp/y (higher than Nat's avg of 2.88 #p/d or 0.53 tons pp/y)

Waste Industry Reflections

•Volumes are declining

•Landfill disposal capacity is no longer a “short-term” threat

•The decrease in waste generation in the NE Region is reflective of what is occurring nationally.

At the <u>Regional</u> level:

•Waste tons being disposed have declined ~1M tons in the last 8 yrs. Driven by the local economy and growing waste diversion.

•We do not see waste volumes returning to the levels we saw in the last decade. They are gone for good!

Market Dynamics – Summary

- As more players pursue a smaller pie in an age of increased expectations…

- “It's Not Just Garbage Anymore”

“Show me the Money”

Recycling Savings – Found Money

- **1,510 tons total MSW Waste @ $90 = $135,900**
- **Recycling@34% = 1,000 tons MSW @ $90 = $90,000**
- **Existing Diversion Savings of 510 tons = $45,900**

  Recycling@68% = 510 tons MSW @ $90 = $ 45,900

  TOTAL RECYCLING SAVINGS POTENTIAL + $91,800

- **Of the remaining 490 tons of MSW @ 245 tons are food waste for another $22,050 saved. Total savings from diversion = $113,850 or the difference of 1510 of MSW vs 245T MSW + 245T Organics + 1020T Recycling.**
- ***Instead of $135,900 the Budget is now $22,050.***

NRRA

A. Know the Current Market

Average tip was $71 and average haul was $208. Typical weight of 10 tons per haul yields an average haul rate of $20 per ton for an all-in average price of $91 circa May 2010 from one location.

Average tip is now around $62 per ton with average haul rate of $27 per ton for all in rate of $89.

Current Market Costs trending downward due to slightly lower tip fees, but offset by an upturn in haul rates.

Rental rates (if any), CPI increases (if any), administrative fees (if any), and environmental fees(if any) can all add to the total.

A. Know the Current Market -Negotiate from Strength-

CPI?

2.5% increase per year over five year deal?

With CPI

1,000 tons annually @ $90 per ton = $473,000

Without CPI

1,000 tons annually @ $90 /no cpi = $450,000

Savings of $23,000!

NRRA

A. Know the Current Market - Negotiate from Strength

No To Fees

No rental | No Admin | No Environmental

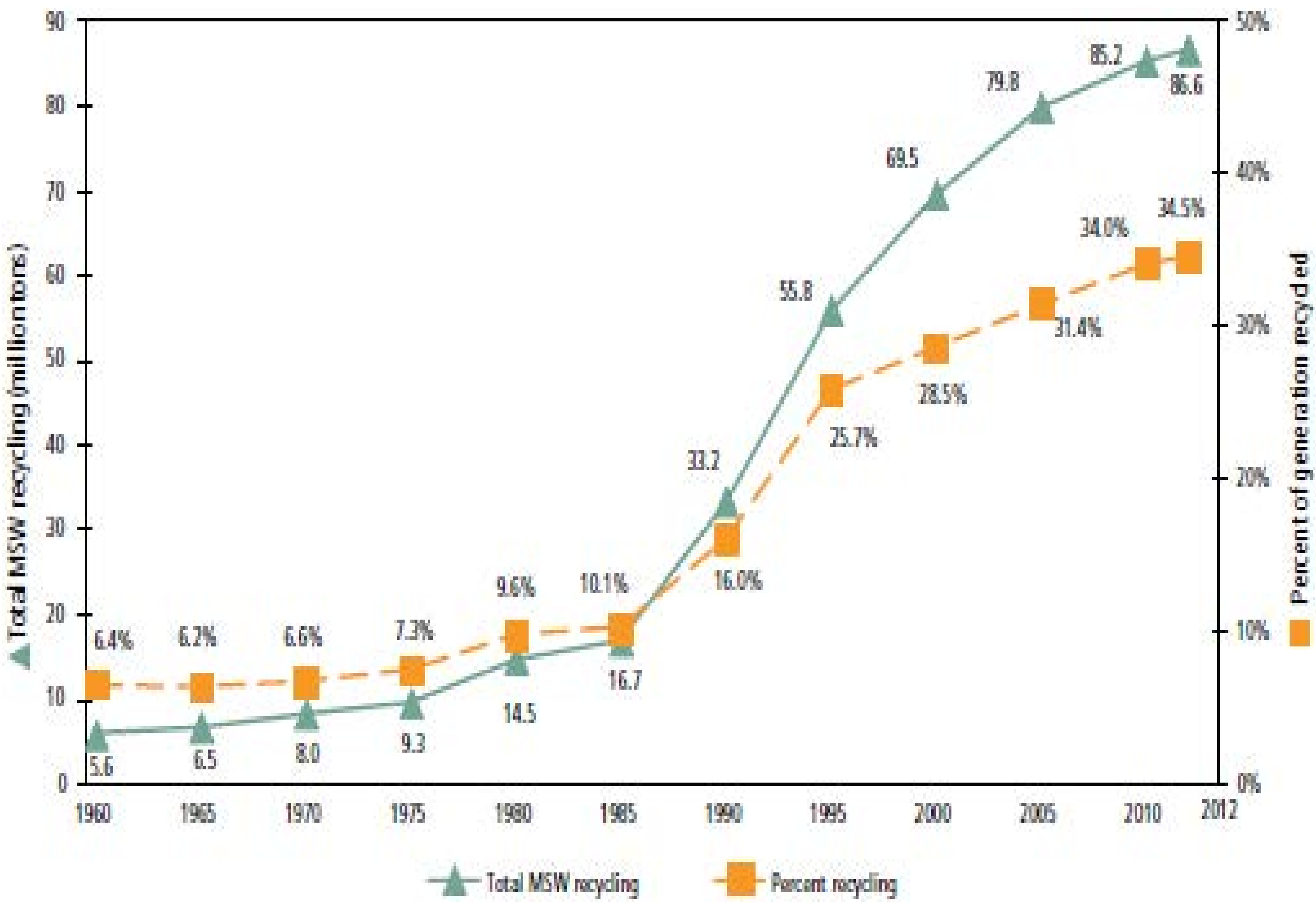
Yes to Clause

"Most favored Nation Clause"

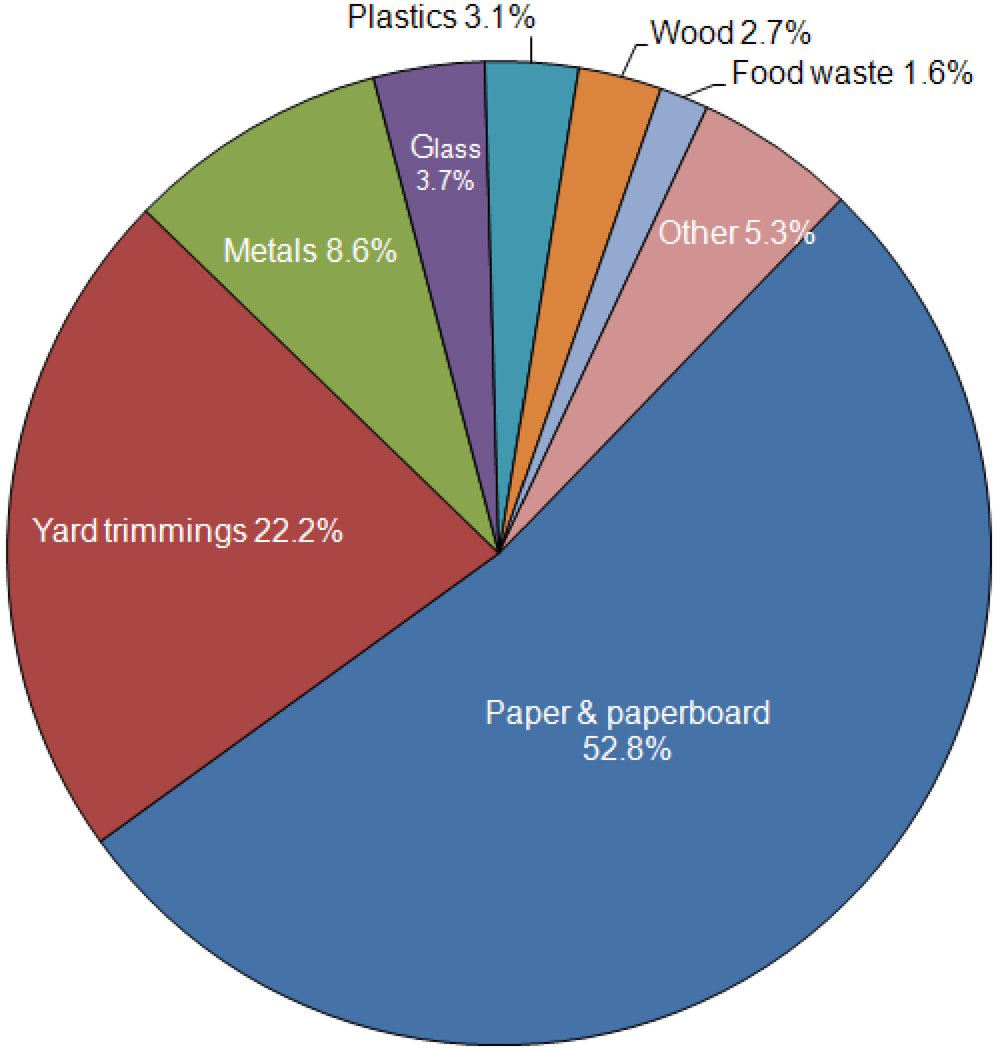
Priceless!

Recycling Today

Figure 2. MSW Recycling Rates, 1960 to 2012



Total MSW Recovery (by material), 2011
87 Million Tons



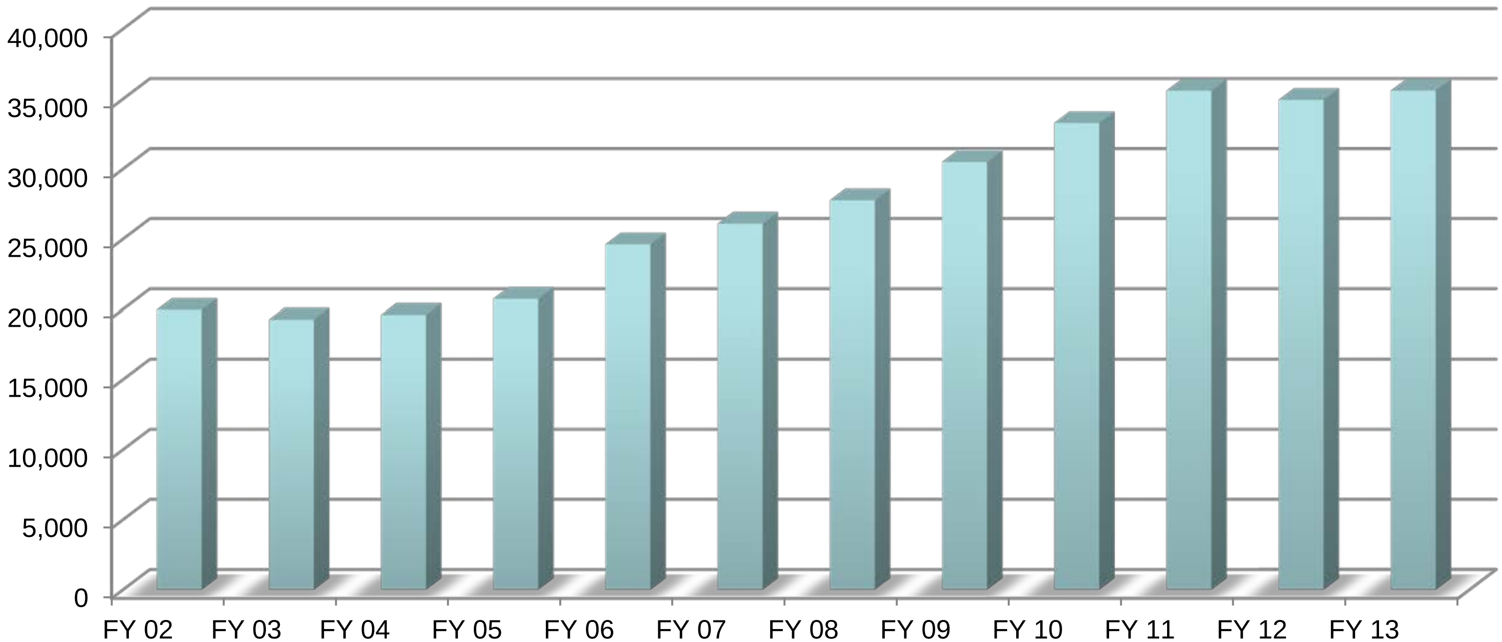
Commodity Recycling Trends

	1970	1980	1990	2000	2011
Paper and paperboard	15%	21%	28%	43%	66%
Glass	1%	5%	20%	23%	28%
Metals	4%	8%	24%	35%	34%
Plastics	Neg.	<1%	2%	6%	8%
Yard trimmings	Neg.	Neg.	12%	52%	57%
Rubber tires	13%	6%	12%	26%	45%
Lead-acid batteries	76%	70%	97%	93%	96%

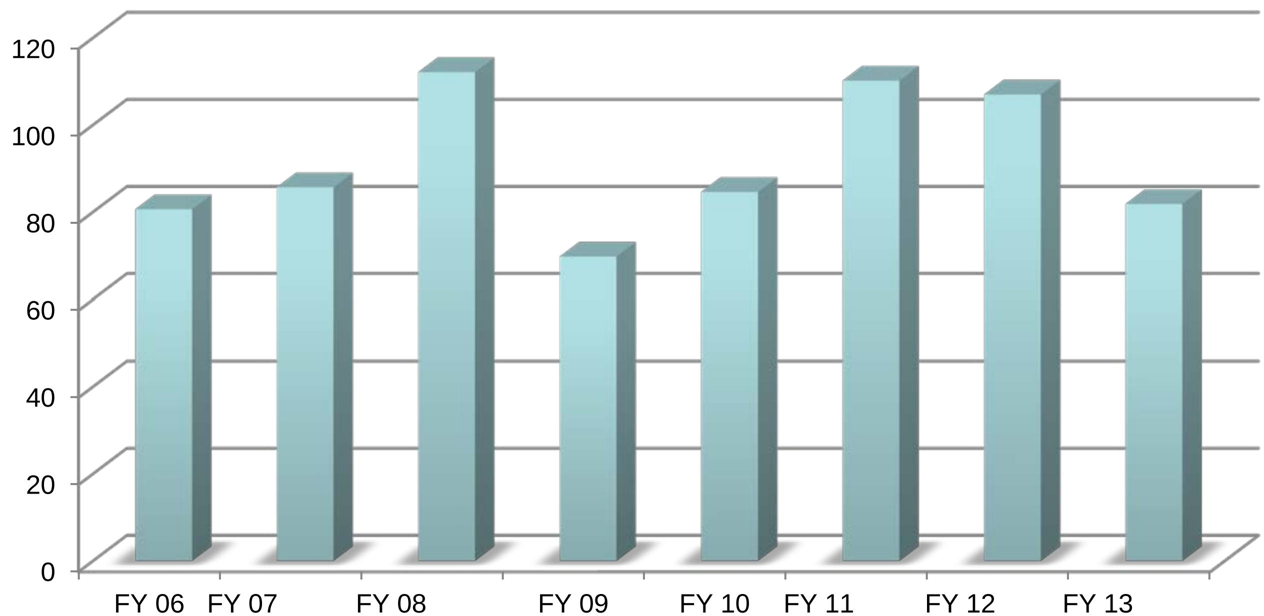
EPA 2011 Facts and Figures

Neg. = less than 5,000 tons or 0.05 percent.

Recycling tons increase 78%



Recycling Markets ($ per ton)



Serious Recycling

China looks to recycle 70 percent by 2015

By dylan
Created 11/11/2011 - 09:12
By Editorial Staff, Resource Recycling

China has launched an ambitious goal of recycling 70 percent of the nation's waste streams by 2015, in hopes of transforming the world's second largest economy into one that is sustainable.

The recycling guidelines, included in a government document outlining the policy, cover metal, paper, plastic, glass, tires, cars and electronic devices. The policy seeks to establish a comprehensive collection network that uses "advanced technology," reports the official *Xinhua News Agency* [1].

"It's extremely urgent to establish such a system; the absence of which not only prevents the recycling of resources but also poses an imminent threat to the environment," reads the document, according to the state-run news agency.

China, as part of the plan, will also provide favorable financing and land-use for the recycling industry. Additionally, it will impose "extended duty" on producers and sellers to recycle their products and design them for their end of life. The plan calls for new investment in the recycling industry, including small- and medium-sized businesses.

The goals outlined in the document are part of China's current five-year plan, which is a comprehensive policy meant to guide the country's economic development and is the twelfth implemented since the People's Republic was founded in 1949. According to various media and other reports, China has been taking steps to ease the impact the country's precipitous economic growth has had on the environment, and the new five-year plan is a reflection of these new concerns.

According to *Xinhua*, China recycled 154 million tons of waste in 2009, resulting in $78.85 billion in economic activity.

Not so Much

Nov 17 2011

Sens. Carper, Snowe Celebrate Unanimous Approval of Resolution in Support of Recycling

WASHINGTON – Last night, Sens. Tom Carper (D-Del.) and Olympia Snowe (R-Maine), Co-Chairs of the Senate Recycling Caucus, celebrated the unanimous Senate approval of a resolution that expresses support for improvement in the collection, processing and use of recyclable materials throughout the United States. The resolution reinforces the importance of recycling to the U.S. economy. It is estimated that recycling processors directly or indirectly employ over 450,000 Americans in local communities throughout the United States. These jobs account for more than $90 billion in economic output or roughly 0.6 percent of United States' Gross Domestic Product, which is more than the fishing and forestry industries combined.

November 7, 2013

RE: The Escalation of Green Fence - Earth Goddess Action

Dear Adam Clark,

Over the past months we have communicated to you about changes in the requirements related to the acceptable quality standards for recyclable commodities being exported to China. We had anticipated the Green Fence initiative to end in the fall of 2013, but this is not taking place. Greater inspections will be continuing for the foreseeable future.

Below is the press release announcing Phase III. We do believe, despite the comment below about a November end to Phase III, a continued heighten level of scrutiny will be maintained for all recyclables shipped to China.

According to the General Administration of Customs of PRC, China Customs started the action of the "Earth Goddess -- Phase III "within the framework of the World Customs Organization. This action will be carried out from October 7th to the end of November and focus on combating the illegal behavior of smuggling hazardous waste which exports from Europe, North America etc. to Asia - Pacific regions.

The "Earth Goddess --Phase III" is an extension of "Green Fence" on the International law enforcement cooperation platform, which is carried out by China Customs at the beginning of this year to attack the "foreign garbage". Up to now, "Green Fence" has undertaken 54 smuggling cases of "foreign garbage," and seized 33500 tons of waste battery, waste slag, waste paint, tires and old clothes.

At present, the 43 World Customs Organization members including America and Netherlands, 3 WCO Regional Intelligence Liaison Office and the "Basel Convention" Secretariat, the International Criminal Police Organization, the United Nations Environment Program, International Network for Environmental Compliance and Enforcement, EU Environmental Enforcement Network have participated in this action.

CHRC will continue to work with you to ensure you are up-to-date on all developments related to shipments to China. Our efforts will continue to focus on having our inspectors visit your facilities on a regular basis to review with you the status of the material you generate as our self-inspection status makes us responsible for acceptable quality being shipped. CCIC has also informed us that they will strengthen their own on-site inspections.

The communication of on-going material quality to our office in Shanghai helps our organization know how to work with you to manage your shipments and avoid costly claims. Your production of quality material will ensure consistent movement. Thank you for your continued support. If you have any question related to this new initiative please contact your CHRC sales representative and they will be pleased to assist you.

OCC falls by $10-15 at US mills as exports to China plummet by $20-25

OAKLAND, CA, Dec. 5, 2013 - China was the main driver behind a second $10-15 national decline in the last six months at US mills for old corrugated containers (OCC). The declines occurred as of Dec. 5, vs levels on Nov. 5, as well-supplied containerboard and boxboard mills resisted additional orders in some cases or sold oversupply tons back into the open market, contacts said. OCC declined the most on a sequential basis -- $15 -- in both the Southeast/Atlanta and Pacific Northwest markets. Levels were down $10 in most of the rest of the USA, along with a $5 fall in the Midwest/Chicago region.

Pricing declined because of slower movement of exports to China -- where US prices dropped by $20-25 in the last 30 days. It was the largest decline in a year since a similar decline in December 2012, according to PPI Pulp & Paper Week's levels.

Los Angeles port OCC to China was $174/ton today, from $194 on Nov. 5, and double-sorted and select OCC from New York/New Jersey ports were down $20-25 to Nhava Sheva port in India. To mills in Mexico from Dallas, OCC was down to roughly $115.

"We're choking on it," explained one buyer for a mid-sized board mill in the East, referring to OCC.

In the West, one supplier told of bringing on additional warehouse space because of oversupply. Mills from various mill systems including the largest ones, International Paper (IP) and RockTenn, had mills taking downtime, such as RockTenn's Seminole operation in Florida, and IP's Maysfield, KY, or flatly cutting back or refusing orders, contacts said this week.

The export prices plummeted as some sellers raced to meet a Chinese government deadline for 2014 permits. One supplier in Southern California said the 2014 permit is based off of tonnage shipped to China in 2013, so some are moving tons as quickly as they can to reach a level this year that they hope to follow next year, the contact said. Further, export demand from China for US OCC for test linerboard and duplex board machines was not strong, various contacts said.

Other recovered paper grades for US mill mostly held in price as of Dec. 5, vs levels on Nov. 5. The main changes were reductions on office paper, coated book stock, and sorted (postconsumer) white ledger in the New York/Northeast region, and declines on mixed paper in New York/Northeast and old newspapers No. 8 in California.

"It's all about movement right now," said one supplier in the Pacific Northwest on Dec. 3. "Export has dropped at least $25 on OCC from the orders taken early last month."

"The market is somewhat awash in OCC and DLK (new double-lined kraft corrugated clippings) today," said a supplier in the Northeast on Dec. 4.

Profits Become Elusive In Recycling – Forbes – Fall 2013

San Francisco, CA CA -0.11%-Recycling is a great business, as long as commodity prices are high.
Waste Management WM +2.02%, the country's largest waste hauler and processor, has long been an advocate of recycling and reuse. Five years ago, the company recycled around 6 million tons of materials in the U.S. explained CEO David Steiner during a meeting recently at the BSR conference San Francisco. It set a goal of recycling 20 million tons by 2020 and began up to $100 million a year in recycling facilities and technology.
Last year, the company recycled 12 million tons of materials. The company has even helped General Motors GM -0.64% and Toyota turn manufacturing facilities in zero-waste centers, turning old plastic armrests into pelletized fuels. When you think of WM, think less waste, more management.
Unfortunately, the commodities markets aren't playing along, said Steiner. With the slump in commodity prices, the profits from recycling have dried up.
"Recycling is not profitable. We have lost money in recycling over the last one and a half years," he said. "Investment has slowed to a trickle."
Steiner, however, says that doesn't mean that Waste Management will dump the idea. The benefits of recycling—fewer landfills, less demand for virgin materials-are still there. Instead, he has begun to advocates new types of contracts that limit risks for both sides of the transaction. When commodity prices are high, municipalities can share a greater portion of the resale revenue. But a floor will also exist so that the trash hauler' s profits are eviscerated by high diesel costs or other factors beyond its control.
In other words, **garbitrage.**

“If you want us to invest, we need a sustainable business model,” he said.

Whether or not we will see these contracts anytime soon, expect to see a stream of interesting concepts come out of the trash and recycling industry. Simply put, we generate a lot waste, virgin materials over the long haul will continue to get more expensive, and technologies and new business models are getting more adept at extracting value from castoffs.

Late last month, for instance, eRecyclingCorps raised $105 million to expand its smart phone recycling business. The company isn’t primarily interested in raw materials. It wants to undercut Apple AAPL +8.2% and Samsung by collecting old iPhones and Samsung Galaxy 4s, wiping the memory, and refurbishing them for consumers in emerging nations.

Plastic recycler MBA Polymers is booming, says founder and president Mike Biddle. The company is expanding overseas. It has also benefitted from recent recycling efforts by car makers. Auto makers have been going into their old dumps to recover copper and other metals. When they do, the auto makers also end up segregating the plastics, glass and other materials they find. The piles of plastic effectively become ready-made plastic mines for MBA.

The challenge, though, is in the details.

The single recycling bins popular in the U.S. have increased recycling rates here, but they also add to the cost, said Steiner. “The costs go way up,” he notes. Organic waste constitutes about 30 percent of the U.S. waste stream. You can compost some of it, but most of it lives up to its reputation as garbage. Methane can be captured form organic waste—Waste Management built an LNG plant at its Livermore, Calif. Landfill and has converted about 70 percent of its truck fleet to natural gas—but gas prices have also plunged with fracking.

Paper is profitable to recycle, he notes, but glass rarely, if ever, is profitable. That’s why bottle laws exist. Glass also shreds the recycling machinery.

Still, it’s tough to ignore the potential. A few years ago, Steiner noted that the value in Waste Management’s landfills came to $12 billion, close to the annual revenue of $14 billion.
“We need to understand how to unlock the value of it,” he said.

We are sending money to the landfill

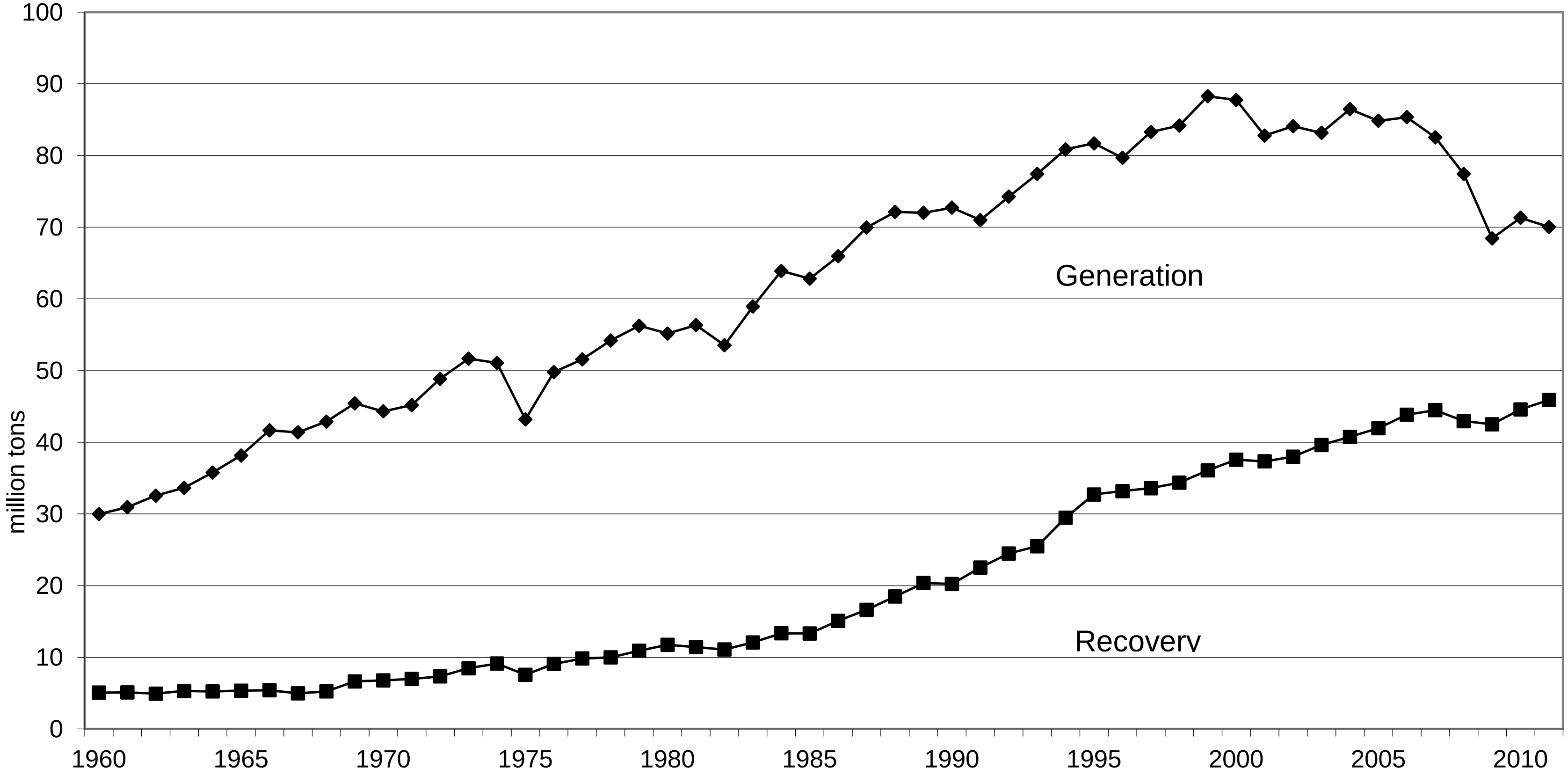
Material	Recycling Rate	Value of Unrecovered
Paper	57%	$3.1 Billion
Aluminum Cans	55%	$1.3 Billion
Plastic Bottles	27% HDPE, 29% PET	$1.6 Billion
Steel Cans	65%	$0.4 Billion
Glass Bottles	28%	$0.1 Billion
Total		**$6.5 Billion/Year**

Resource Recycling
Portland, Oregon

Fibers First and Foremost

- Setting the table for the rest of the markets.

Paper and paperboard generation and recovery, 1960 to 2011



PPI PULP&PAPER WEEK

PRICE WATCH: Recovered Paper - Domestic

March 5, 2014

US$ per short ton for open market purchases by mills, FOB seller's dock, for delivery this month. (Further specifications below.)

Incorporating Official Board Markets

	Northeast			Midwest (Chicago)[4]	Southeast[4]	Southwest[4]	LA-SF		Pacific NW[4]
	New England	New York	Buffalo				LA	SF	
MIXED PAPER									
Mixed (2) - OBM*	40-45 (+0)	55-60 (+0)	30-35 (+0)	35-40 (+0)	50-55 (+0)	50-55 (+0)	70-75 (+0)	60-65 (+0)	55-60 (+0)
BROWN GRADES									
Boxb cutt (4) - OBM*	70-75 (+0)	70-75 (+0)	60-65 (+0)	70-75 (+5)	70-75 (+0)	70-75 (+0)	90-95 (+0)	90-95 (+0)	60-65 (+0)
OCC (11) - OBM*	115-125 (+15)	115-125 (+15)	115-125 (+15)	90-100 (+10)	115-125 (+25)	100-110 (+10)	125-135 (+0)	115-125 (+0)	95-105 (+5)
DLK (13) - OBM*		140-150 (+15) (Northeast)		115-125 (+10)	130-140 (+25)	120-130 (+10)	130-140 (+0)	130-140 (+0)	110-120 (+5)
GROUNDWOOD									
ONP (6) - OBM*[1]									
ONP (8) - OBM*	60-65 (+0)	60-65 (+0)	50-55 (+0)	50-55 (+0)	55-60 (+0)	55-60 (+0)	75-80 (+0)	70-75 (+0)	70-75 (+0)
	Northeast						LA-SF[3]		
OMG (10)		85-90 (+0)		75-80 (+0)	90-95 (+0)	85-90 (+0)	95-105 (+5)		90-95 (+0)
CGS (44)		85-90 (+0)		80-85 (+0)	90-95 (+0)	90-95 (+0)	95-105 (+5)		90-95 (+0)
WBN (24)		230-240 (+0)		220-230 (+0)	225-235 (+0)	225-235 (+0)	250-260 (+0)		230-240 (+0)
HIGH GRADES									
SOP (37)		155-165 (+5)		125-135 (+0)	135-145 (+5)	140-145 (+5)	170-180 (+10)		140-150 (+10)
CBS (43)		155-165 (+5)		125-135 (+0)	140-145 (+5)	140-145 (+5)	165-175 (+10)		135-145 (+10)
SBS heavy print (45)		165-175 (+5)		135-145 (+0)	150-155 (+5)		175-185 (+10)		
SWL (40)		255-265 (+0)		200-210 (+0)	205-215 (+0)	225-235 (+0)	235-245 (+0)		210-220 (+0)
MWL (41)[2]		255-265 (+0)		200-210 (+0)	205-215 (+0)	225-235 (+0)	235-245 (+0)		210-220 (+0)
SBS light print (45)		210-220 (+0)		195-205 (+0)	200-210 (+0)	210-220 (+0)	225-235 (+0)		
PULP SUBS									
SBS unprinted (47)		310-320 (+10)		270-280 (+0)	290-300 (+10)	280-290 (+10)	275-285 (+0)		
HWS (30)		320-330 (+10)		270-280 (+0)	305-315 (+10)	310-320 (+10)	295-305 (+0)		
HWEC (31)		350-360 (+10)		300-310 (+0)	320-330 (+10)	325-335 (+10)	320-330 (+0)		295-305 (+0)

*** OBM PRICES**
Prices for grades designated "OBM" are a continuation of the prices originally published in Official Board Markets ("OBM", "The Yellow Sheet") and are reported on the same basis as published historically in OBM. See www.risi.com/RCPmethodology for a complete description of what has and has not changed about OBM prices. (Price not marked * are consistent with prices published historically in P&PW.)

SPECIFICATIONS
Prices represent open market board and paper mill purchases agreed to for delivery in the indicated month. Contractually indexed transactions are excluded. Specifications: baled; full-truckload quantities; exclusive of delivery charges, premium or distress lots, and of all subsequent charges for packing, handling, destination considerations, or other special charges. Grades and preparation requirements are as defined in the current ISRI Scrap Specifications Circular.

NOTES
1. Because of low mill buying volume, ONP (6) prices were discontinued as of Dec. 5, 2013.
2. Preconsumer.
3. The price on the low end of the range is for the Bay Area and the price at the top end of the range is for the Los Angeles area.
4. As of Oct 2012, these region names were changed from a city to a region (e.g. "Chicago" to "Midwest"). This is a change in title, not in methodology. All references to the new names (e.g. "Midwest") as they apply to each price series above are consistent with the legacy names (e.g. "Chicago").

DISCLAIMER
While the information contained in this report has been obtained from sources believed to be reliable, RISI does not warrant or guarantee the accuracy and completeness of the information. All prices are best estimates of prices, and are composite prices as opposed to median or average prices.

PRICE WATCH: Recovered Paper - Export

March 5, 2014

Open market transactions for delivery this month, US$. (Further specifications noted at right.)

Incorporating Official Board Markets

	Destination	New York[1]		Chicago		LA[2]		SF/Oakland	
FAS port of origin (per ton)									
Mixed Paper (2) - OBM*	China	102-105	(+0)	71-74	(+1)	127-130	(+2)	116-119	(+1)
OCC (11) - OBM*	China	160-163	(-2)	134-137	(+2)	190-193	(+1)	179-182	(+0)
DLK (13)	China	181-184	(+0)			207-210	(+0)	197-200	(+0)
ONP (8) - OBM*	China	110-113	(+0)	79-82	(+1)	135-138	(+2)	124-127	(+1)
SOP (37)	China	192-195	(+5)			207-210	(+10)	197-200	(+10)
SWL (40)	Asia	292-295	(+0)			284-287	(+0)	277-280	(+0)
CFR to destination port (per tonne)									
Mixed Paper (2)	China	157-160	(+1)			158-161	(+2)		
OCC (11)	China	217-220	(-2)			223-226	(+1)		
Select OCC (11)	India	225-230	(+10)						
Double-sorted OCC (12)	India	240-245	(+10)						
DLK (13)	China	247-250	(+0)			247-250	(+0)		
ONP (8)	China	167-170	(+1)			168-171	(+2)		
SOP (37)	China	244-247	(+10)			245-248	(+11)		
SWL (40)	Asia[3]	350-380	(+0)			350-380	(+0)		

*** OBM PRICES**
Continuation of price series from Official Board Markets (see note at bottom of Price Watch: Domestic).

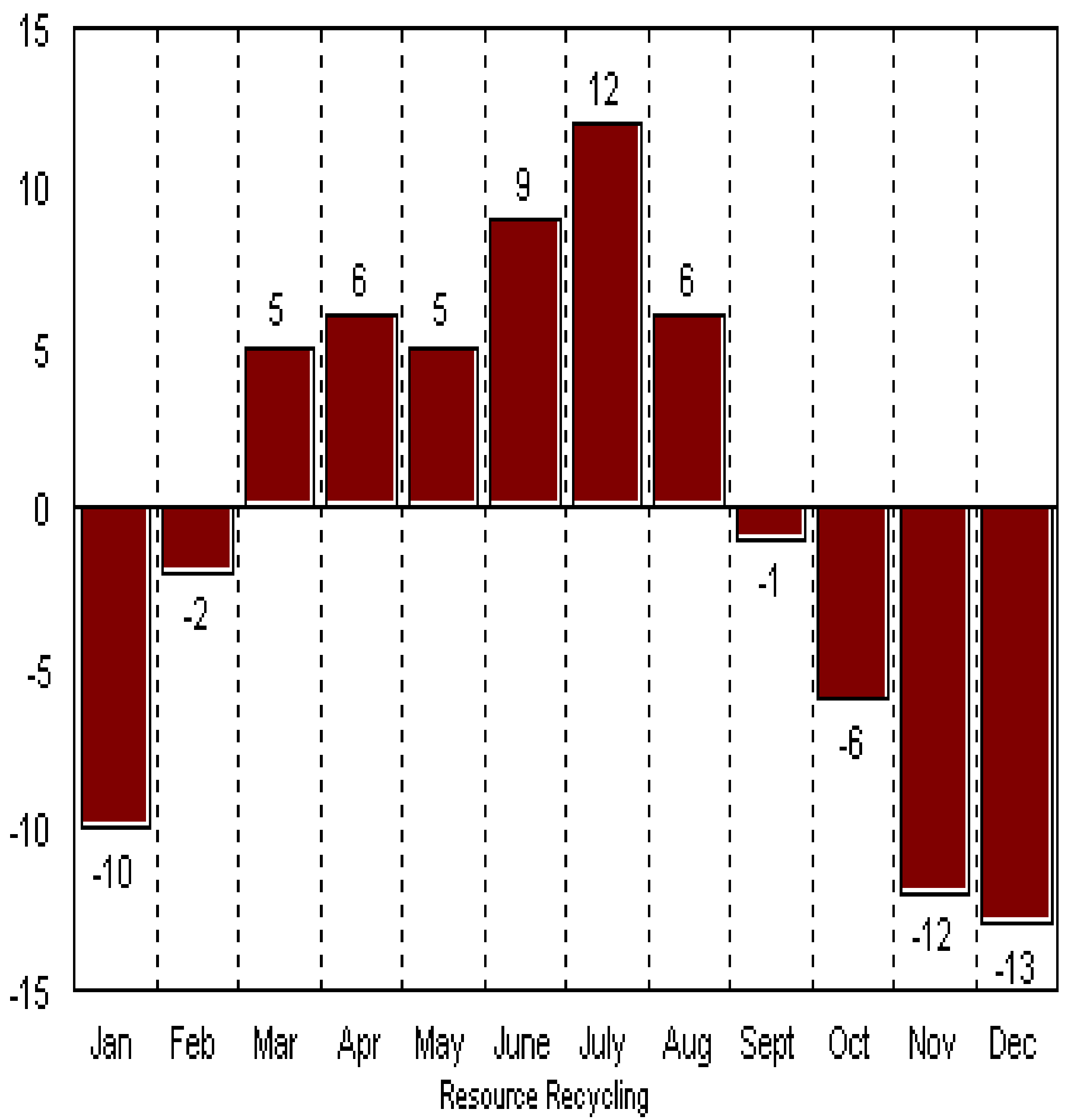
SPECIFICATIONS
Prices represent open market purchases agreed to for delivery within 30 days. Contractually indexed transactions (i.e. transactions whose price is determined in whole or in part by a formula in a long-term contract) are excluded. Specifications: baled; full-truckload quantities; exclusive of premium or distress lots. Grades and preparation requirements are as defined in the current ISRI Scrap Specifications Circular (now PS-13).

NOTES
1. "New York" includes ports in Northern New Jersey
2. "LA" includes Long Beach and LA ports
3. SWL prices are for ports in South Korea, Indonesia, and Thailand

316571302
3164999806
3164999801
3164999802
3164999803
MADE IN CHINA
TWIN PACK
Fresh Step
GUTHY RENKER
EXP
STORAGE RENTALS
Pet Rewind

Cardboard (OCC) Seasonal Pricing

15-year (1993-2008) averaging of monthly prices as compared to annual average



Overview of New England Yellow Sheet

NRRA		Mixed Paper		#6 News		#8 News		OCC		SOP	
		Low	High	Low	High	Low	High	Low	High	Low	High
2008	January	$ 80	$ 85	$ 65	$ 70	$ 105	$ 115	$ 110	$ 120	$ 215	$ 225
	February	$ 80	$ 85	$ 75	$ 80	$ 105	$ 115	$ 110	$ 120	$ 225	$ 235
	March	$ 80	$ 85	$ 80	$ 85	$ 115	$ 125	$ 130	$ 140	$ 225	$ 235
	April	$ 80	$ 85	$ 80	$ 85	$ 110	$ 120	$ 125	$ 135	$ 225	$ 235
	May	$ 80	$ 85	$ 80	$ 85	$ 110	$ 120	$ 115	$ 125	$ 215	$ 225
	June	$ 80	$ 85	$ 80	$ 85	$ 110	$ 120	$ 105	$ 115	$ 205	$ 215
	July	$ 80	$ 85	$ 80	$ 85	$ 125	$ 135	$ 105	$ 115	$ 215	$ 225
	August	$ 80	$ 85	$ 90	$ 95	$ 145	$ 155	$ 105	$ 115	$ 220	$ 230
	September	$ 80	$ 85	$ 85	$ 90	$ 140	$ 150	$ 105	$ 115	$ 225	$ 235
	October	$ 60	$ 65	$ 55	$ 60	$ 120	$ 130	$ 80	$ 85	$ 205	$ 215
	November	$ -	$ 5	$ -	$ 5	$ 35	$ 40	$ 40	$ 45	$ 155	$ 165
	December	$ -	$ 5	$ -	$ 5	$ 25	$ 30	$ 20	$ 25	$ 90	$ 100
2009	January	$ -	$ 5	$ -	$ 5	$ 25	$ 30	$ 20	$ 25	$ 90	$ 95
	February	$ 10	$ 15	$ -	$ 5	$ 25	$ 30	$ 25	$ 30	$ 90	$ 100
	March	$ 10	$ 15	$ 5	$ 10	$ 35	$ 40	$ 30	$ 35	$ 90	$ 100
	April	$ 15	$ 20	$ 5	$ 10	$ 45	$ 50	$ 35	$ 40	$ 90	$ 100
	May	$ 15	$ 20	$ 5	$ 10	$ 45	$ 50	$ 40	$ 45	$ 90	$ 100
	June	$ 25	$ 30	$ 5	$ 10	$ 50	$ 55	$ 55	$ 60	$ 100	$ 110
	July	$ 30	$ 35	$ 25	$ 30	$ 50	$ 55	$ 60	$ 65	$ 115	$ 125
	August	$ 35	$ 40	$ 30	$ 35	$ 55	$ 60	$ 60	$ 65	$ 125	$ 135
	September	$ 45	$ 50	$ 35	$ 40	$ 70	$ 75	$ 75	$ 80	$ 135	$ 145
	October	$ 45	$ 50	$ 35	$ 40	$ 70	$ 75	$ 70	$ 75	$ 145	$ 155
	November	$ 45	$ 50	$ 35	$ 40	$ 75	$ 80	$ 70	$ 75	$ 160	$ 170
	December	$ 50	$ 55	$ 35	$ 40	$ 80	$ 85	$ 70	$ 75	$ 170	$ 180
2010	January	$ 60	$ 65	$ 35	$ 40	$ 80	$ 85	$ 95	$ 105	$ 190	$ 200
	February	$ 65	$ 70	$ 35	$ 40	$ 80	$ 85	$ 125	$ 135	$ 205	$ 215
	March	$ 85	$ 90	$ 40	$ 45	$ 80	$ 85	$ 160	$ 170	$ 205	$ 215
	April	$ 85	$ 90	$ 40	$ 45	$ 80	$ 85	$ 130	$ 140	$ 190	$ 200
	May	$ 75	$ 80	$ 40	$ 45	$ 85	$ 90	$ 120	$ 130	$ 190	$ 200
	June	$ 70	$ 75	$ 40	$ 45	$ 80	$ 85	$ 110	$ 120	$ 190	$ 200
	July	$ 40	$ 45	$ 35	$ 40	$ 75	$ 80	$ 100	$ 110	$ 190	$ 200
	August	$ 40	$ 45	$ 35	$ 40	$ 70	$ 75	$ 100	$ 110	$ 210	$ 220
	September	$ 55	$ 60	$ 35	$ 40	$ 80	$ 85	$ 110	$ 120	$ 210	$ 220
	October	$ 65	$ 70	$ 35	$ 40	$ 80	$ 85	$ 120	$ 130	$ 210	$ 220
	November	$ 65	$ 70	$ 45	$ 50	$ 90	$ 95	$ 155	$ 165	$ 200	$ 210
	December	$ 65	$ 70	$ 45	$ 50	$ 90	$ 95	$ 160	$ 170	$ 200	$ 210
2011	January	$ 65	$ 70	$ 45	$ 50	$ 90	$ 95	$ 155	$ 165	$ 205	$ 215
	February	$ 65	$ 70	$ 45	$ 50	$ 90	$ 95	$ 155	$ 165	$ 220	$ 230
	March	$ 65	$ 70	$ 55	$ 60	$ 130	$ 140	$ 155	$ 165	$ 240	$ 250
	April	$ 65	$ 70	$ 55	$ 60	$ 130	$ 140	$ 150	$ 160	$ 260	$ 270
	May	$ 65	$ 70	$ 55	$ 60	$ 120	$ 130	$ 150	$ 160	$ 260	$ 270
	June	$ 75	$ 80	$ 60	$ 65	$ 120	$ 130	$ 150	$ 160	$ 260	$ 270
	July	$ 110	$ 120	$ 60	$ 65	$ 120	$ 130	$ 155	$ 165	$ 270	$ 280
	August	$ 120	$ 130	$ 65	$ 70	$ 130	$ 140	$ 155	$ 165	$ 280	$ 290
	September	$ 120	$ 130	$ 65	$ 70	$ 130	$ 140	$ 155	$ 165	$ 260	$ 270
	October	$ 120	$ 130	$ 65	$ 70	$ 130	$ 140	$ 155	$ 165	$ 240	$ 250
	November	$ 85	$ 90	$ 65	$ 70	$ 90	$ 100	$ 120	$ 130	$ 150	$ 160
	December	$ 55	$ 60	$ 35	$ 40	$ 75	$ 80	$ 115	$ 125	$ 140	$ 150
2012	January	$ 65	$ 70	$ 35	$ 40	$ 75	$ 80	$ 115	$ 125	$ 140	$ 150
	February	$ 75	$ 80	$ 35	$ 40	$ 75	$ 80	$ 130	$ 140	$ 160	$ 170
	March	$ 75	$ 80	$ 35	$ 40	$ 80	$ 85	$ 130	$ 140	$ 160	$ 170
	April	$ 80	$ 85	$ 35	$ 40	$ 85	$ 90	$ 130	$ 140	$ 140	$ 150
	May	$ 75	$ 80	$ 35	$ 40	$ 80	$ 85	$ 120	$ 130	$ 140	$ 150
	June	$ 75	$ 80	$ 35	$ 40	$ 75	$ 80	$ 120	$ 130	$ 150	$ 160
	July	$ 65	$ 70	$ 35	$ 40	$ 70	$ 75	$ 115	$ 125	$ 175	$ 185
	August	$ 55	$ 60	$ 35	$ 40	$ 60	$ 65	$ 100	$ 110	$ 175	$ 185
	September	$ 40	$ 45	$ 20	$ 25	$ 45	$ 50	$ 85	$ 90	$ 165	$ 175
	October	$ 45	$ 50	$ 20	$ 25	$ 45	$ 50	$ 85	$ 90	$ 165	$ 175
	November	$ 50	$ 55	$ 20	$ 25	$ 50	$ 55	$ 90	$ 100	$ 165	$ 175
	December	$ 50	$ 55	$ 20	$ 25	$ 60	$ 65	$ 95	$ 105	$ 155	$ 165

Overview of New England Yellow Sheet

NRRA		Mixed Paper		#6 News		#8 News		OCC		SOP	
		Low	High	Low	High	Low	High	Low	High	Low	High
2013	January	$ 50	$ 55	$ 20	$ 25	$ 60	$ 65	$ 95	$ 105	$ 160	$ 165
	February	$ 55	$ 60	$ 20	$ 25	$ 60	$ 65	$ 95	$ 105	$ 160	$ 165
	March	$ 60	$ 65	$ 25	$ 30	$ 70	$ 75	$ 105	$ 115	$ 160	$ 165
	April	$ 60	$ 65	$ 30	$ 35	$ 75	$ 80	$ 105	$ 115	$ 150	$ 155
	May	$ 50	$ 55	$ 25	$ 30	$ 65	$ 70	$ 100	$ 110	$ 140	$ 150
	June	$ 45	$ 50	$ 25	$ 30	$ 60	$ 65	$ 100	$ 110	$ 135	$ 145
	July	$ 45	$ 50	$ 25	$ 30	$ 60	$ 65	$ 100	$ 110	$ 145	$ 155
	August	$ 40	$ 45	$ 25	$ 30	$ 60	$ 65	$ 105	$ 115	$ 145	$ 155
	September	$ 40	$ 45	$ 25	$ 30	$ 60	$ 65	$ 110	$ 120	$ 145	$ 155
	October	$ 40	$ 45	$ 25	$ 30	$ 60	$ 65	$ 110	$ 120	$ 145	$ 155
	November	$ 40	$ 45	$ 25	$ 30	$ 60	$ 65	$ 110	$ 120	$ 145	$ 155
	December	$ 40	$ 45	$ 25	$ 30	$ 60	$ 65	$ 100	$ 110	$ 135	$ 145

Paper Market Ride

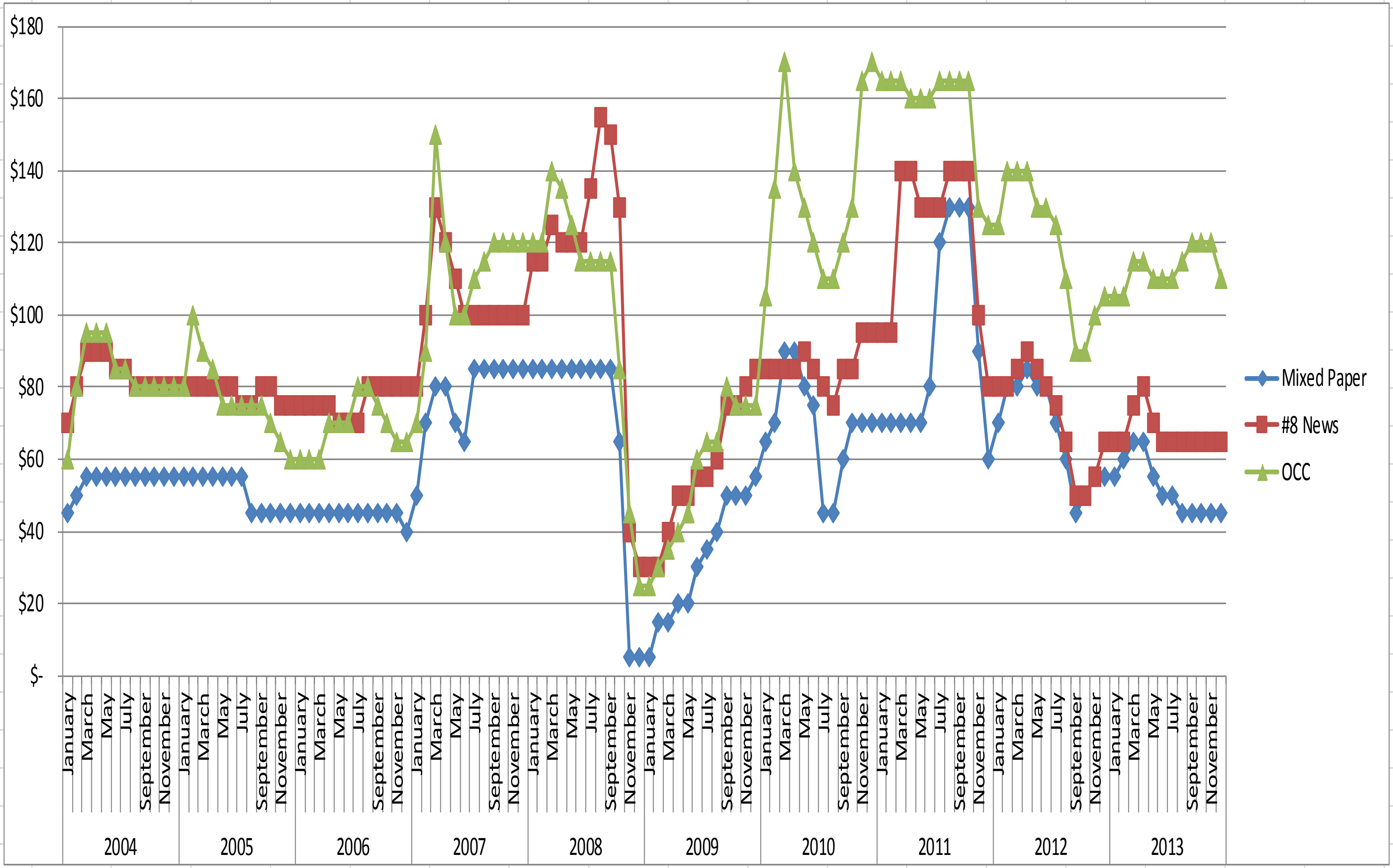


Figure 1 - OCC Price Summary
US Dollars per Tonne

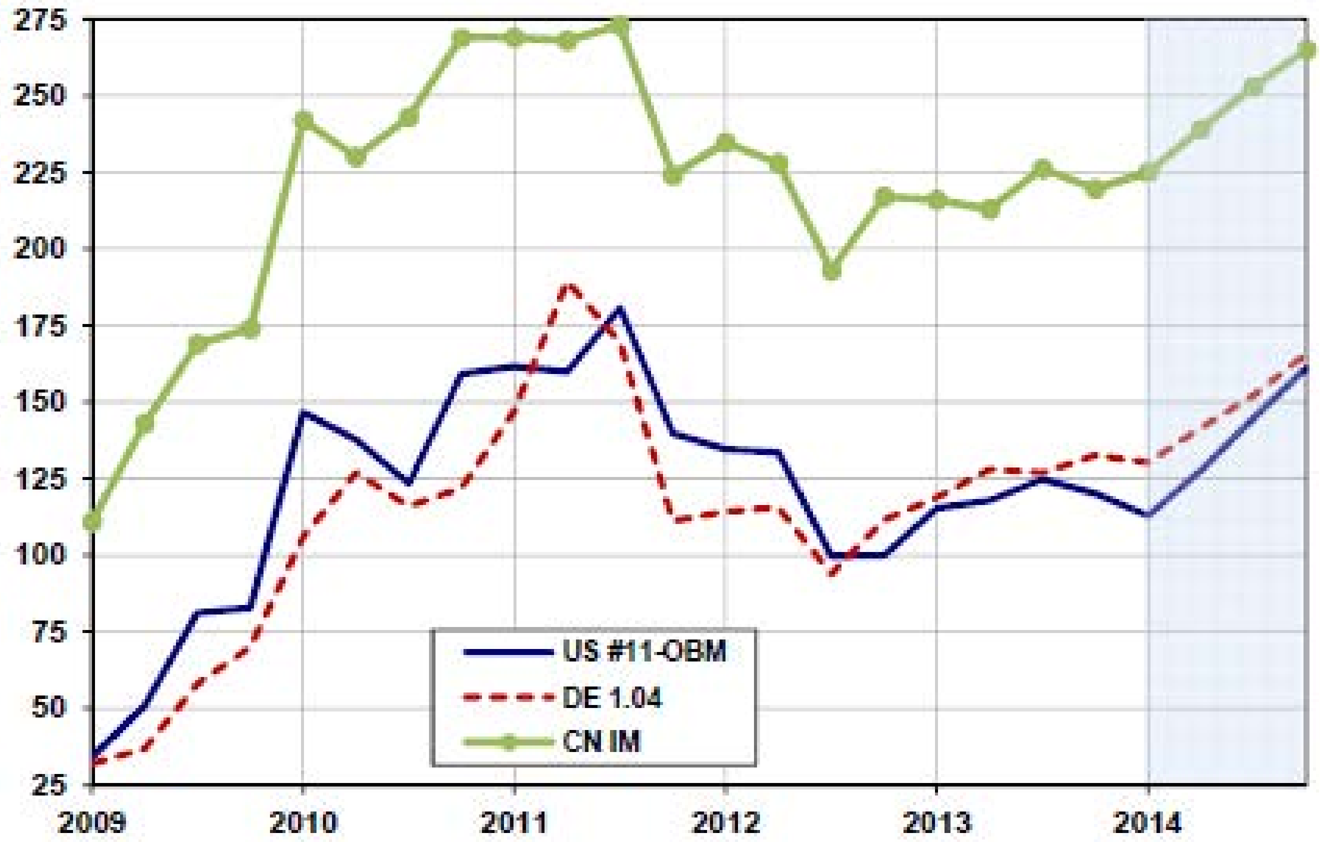
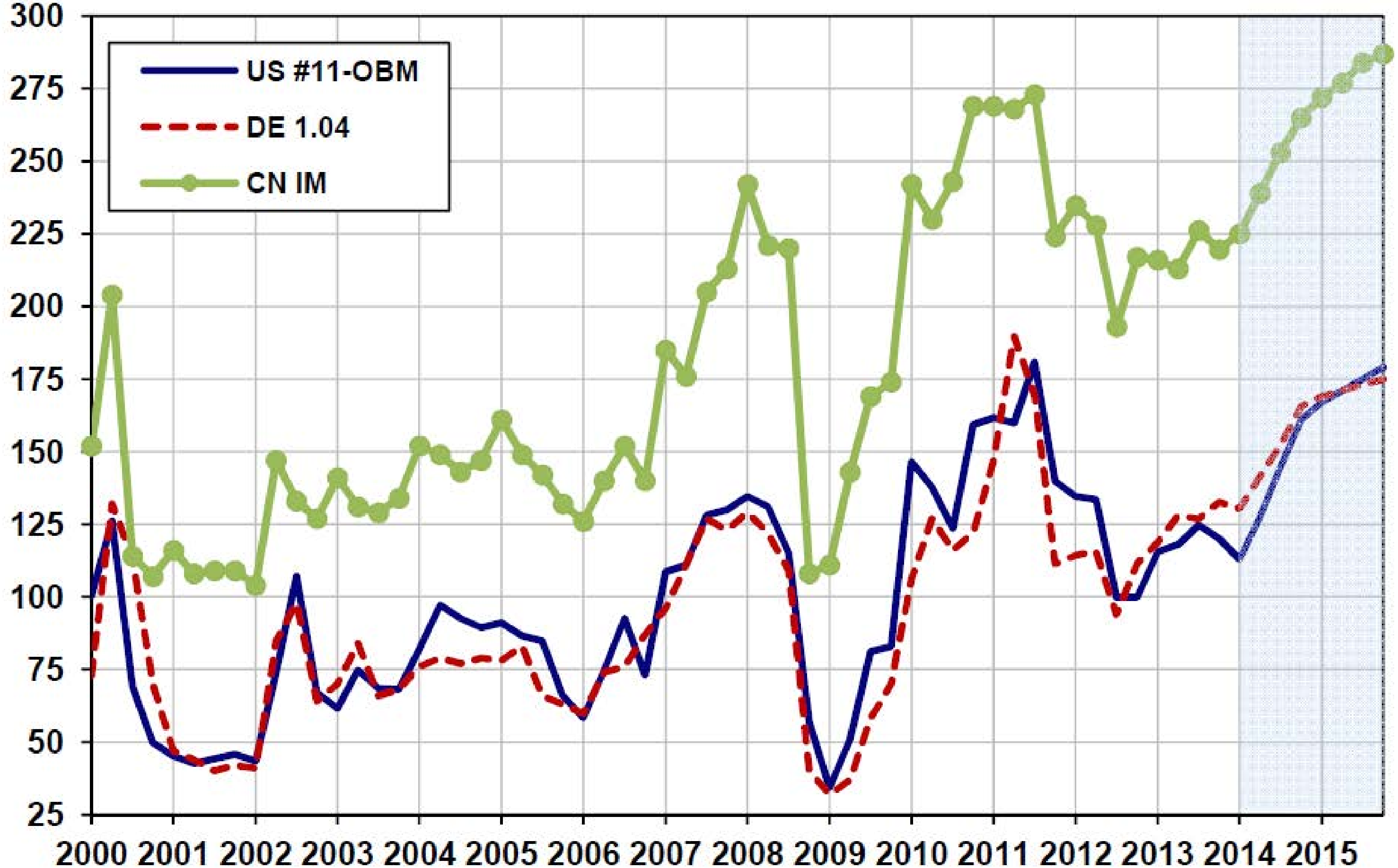


Figure 6
Historical and Forecast Prices for OCC
US Dollars per Tonne



US #11 is the average FOB price of OCC #11 in US market.

DE 1.04 is the domestic free delivered price of OCC1.04 in German market.

CN IM is the monthly average delivered CIF price of OCC to main ports in China sourced from US.

Table 3
Old Corrugated Containers (OCC) Price Forecast

	US OCC#11-OBM	German 1.04	China OCC Import
	US$/Tonne	Euro/Tonne	US$/Tonne
3Q2012	100	75	193
4Q2012	100	86	217
1Q2013	115	90	216
2Q2013	118	98	213
3Q2013	125	96	226
4Q2013	120	98	220
1Q2014	113	98	225
2Q2014	128	108	239
3Q2014	145	118	253
4Q2014	161	130	265
2011 Annual	161	110	258
2012 Annual	117	84	218
2013 Annual	120	95	219
2014 Annual	136	114	246
2015 Annual	173	134	280

RISI Projections 2013 4th Qtr

Table 1
Previous Forecasting Results

Region	Grade	Actual price in Q42013	Price forecast for Q42013 made in September
USA ($/tonne)	Soft Mixed #2 (OBM)	57	64
	ONP #8 (OBM)	68	74
	OCC #11 (OBM)	120	134
	Sorted Office Paper #37 (PPW)	146	155
Germany (Euro/tonne)	1.02	68	73
	1.11	125	127
	1.04	98	103
	3.10	155	158
China ($/tonne)	Mixed Paper Sourced from US	162	171
	ONP Sourced from US	176	179
	OCC Sourced from US	220	239
	Sorted Office Sourced from US	235	255

NRRA

RISI Projections

Table 2
Real GDP Growth Rates
Percent Change

	2011	2012	2013	2014	2015
Real GDP					
United States	1.8	2.8	1.9	2.8	3.3
Euro Area	1.6	-0.6	-0.4	1.0	1.4
China	9.3	7.7	7.7	7.5	7.2
Japan	-0.4	1.4	1.7	1.6	1.7

Market Realities

2008		#8 News	OCC	SOP
2008	February	$ 85	$ 115	$ 120
	March	$ 85	$ 125	$ 140
	April	$ 85	$ 120	$ 135
	May	$ 85	$ 120	$ 125
	June	$ 85	$ 120	$ 115
	July	$ 85	$ 135	$ 115
	August	$ 85	$ 155	$ 115
	September	$ 85	$ 150	$ 115
	October	$ 65	$ 130	$ 85
	November	$ 5	$ 40	$ 45
	December	$ 5	$ 30	$ 25
2009	January	$ 5	$ 30	$ 25
	February	$ 15	$ 30	$ 30
	March	$ 15	$ 40	$ 35
	April	$ 20	$ 50	$ 40
	May	$ 20	$ 50	$ 45
	June	$ 30	$ 55	$ 60
	July	$ 35	$ 55	$ 65
	August	$ 40	$ 60	$ 65
	September	$ 50	$ 75	$ 80
	October	$ 50	$ 75	$ 75
	November	$ 50	$ 80	$ 75
	December	$ 55	$ 85	$ 75
2010	January	$ 65	$ 85	$ 105
	February	$ 70	$ 85	$ 135

YELLOW SHEET - 2011 History

2011	OCC	2011	Mixed	2011	#8 News.
			Paper		
Jan	155-165	Jan	65-70	Jan	90-95
Feb	155-165	Feb	65-70	Feb	90-95
Mar	155-165	Mar	65-70	Mar	55-60
Apr	150-160	Apr	65-70	Apr	55-60
May	150-160	May	65-70	May	55-60
June	150-160	June	75-80	June	120-130
July	155-165	July	110-120	July	120-130
Aug	155-165	Aug	120-130	Aug	130-140
Sept	155-165	Sept	120-130	Sept	130-140
Oct	155-165	Oct	120-130	Oct	130-140
Nov	120-130	Nov	85-90	Nov	90-100
Dec	115-125	Dec	55-60	Dec	75-80

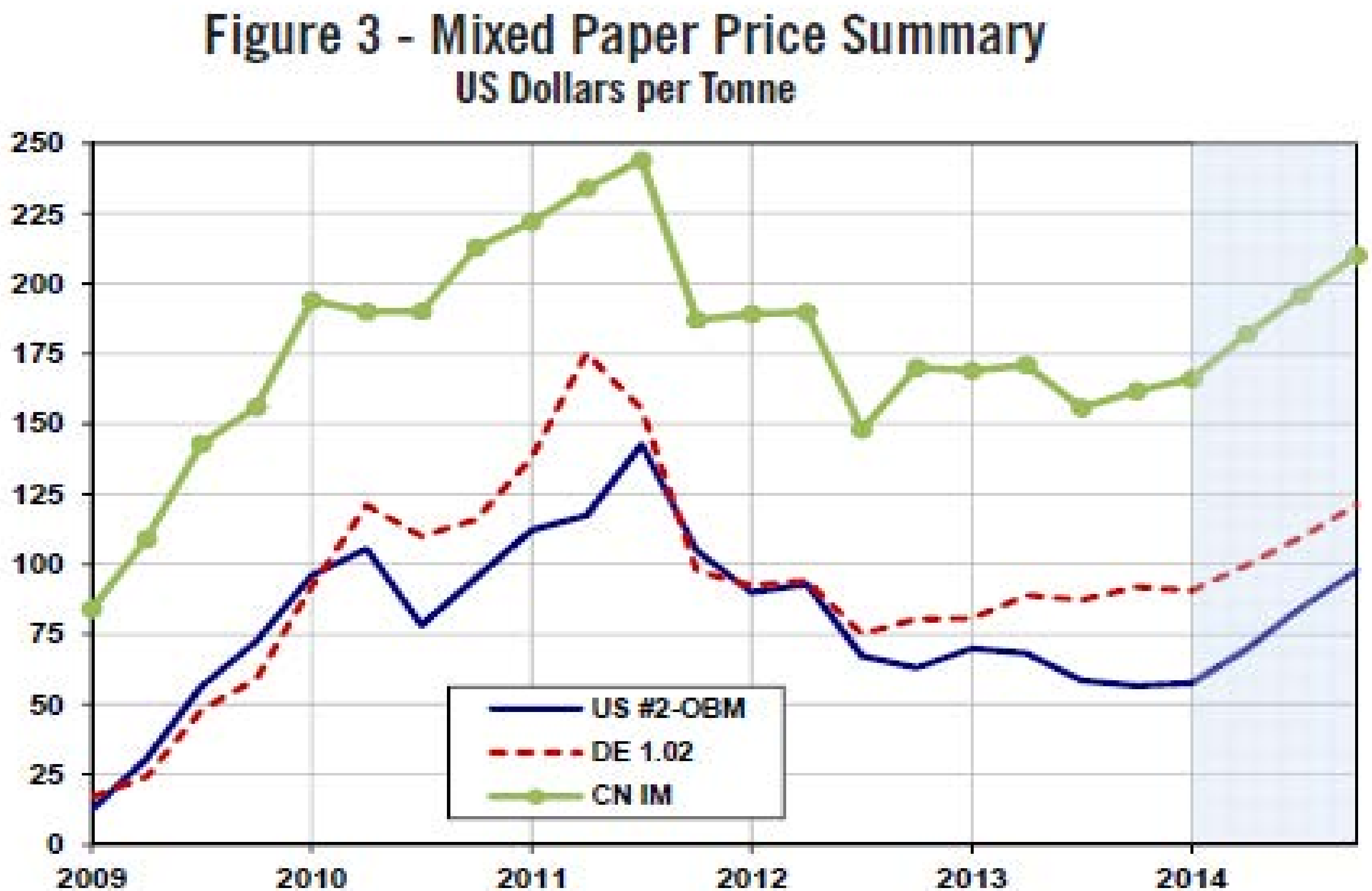
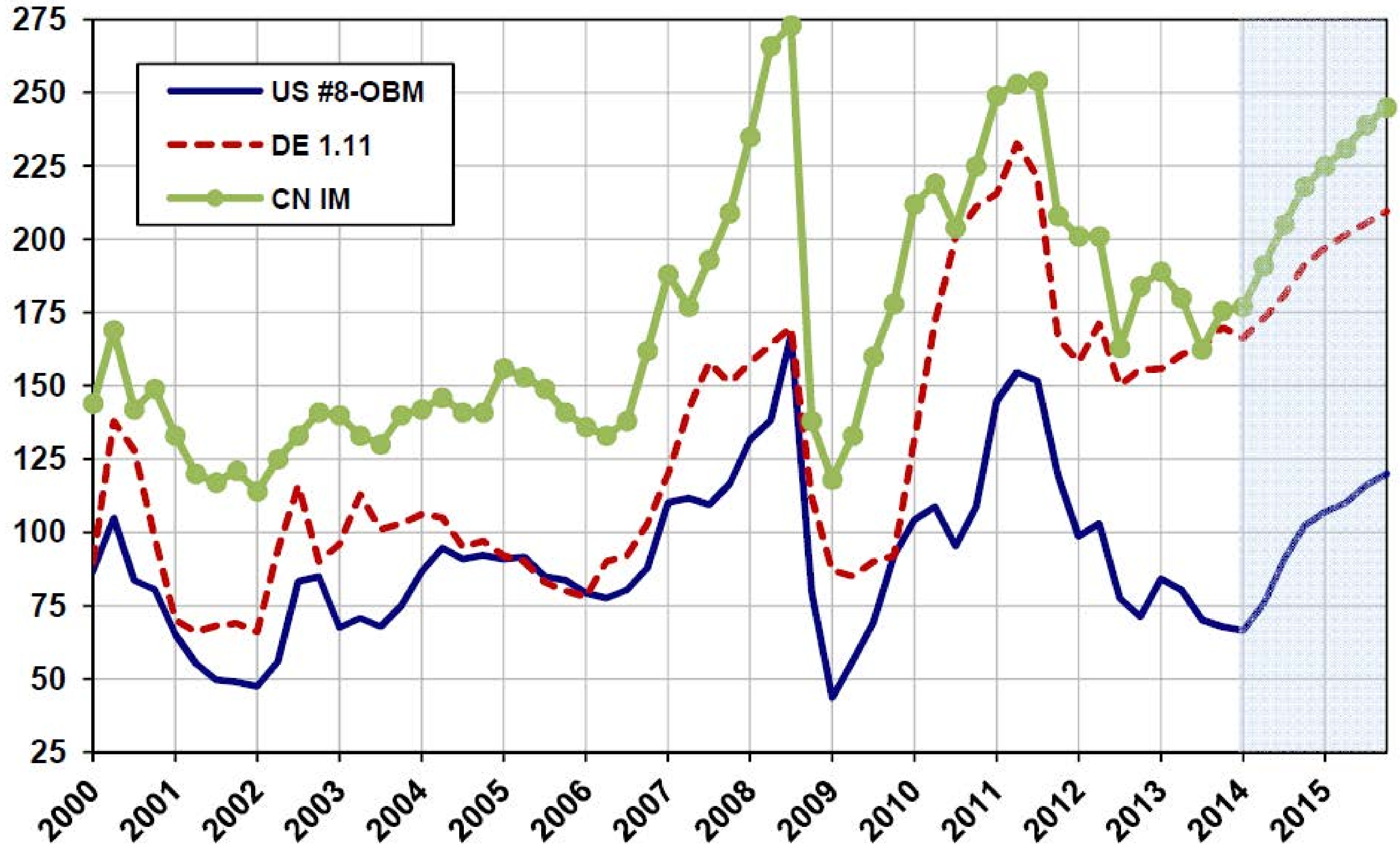


Figure 3 - Mixed Paper Price Summary
US Dollars per Tonne
250
225
200
175
150
125
100
75
50
25
0
2009
2010
2011
2012
2013
2014
US #2-OBM
DE 1.02
CN IM

Figure 8
Historical and Forecast Prices for ONP
US Dollars per Tonne

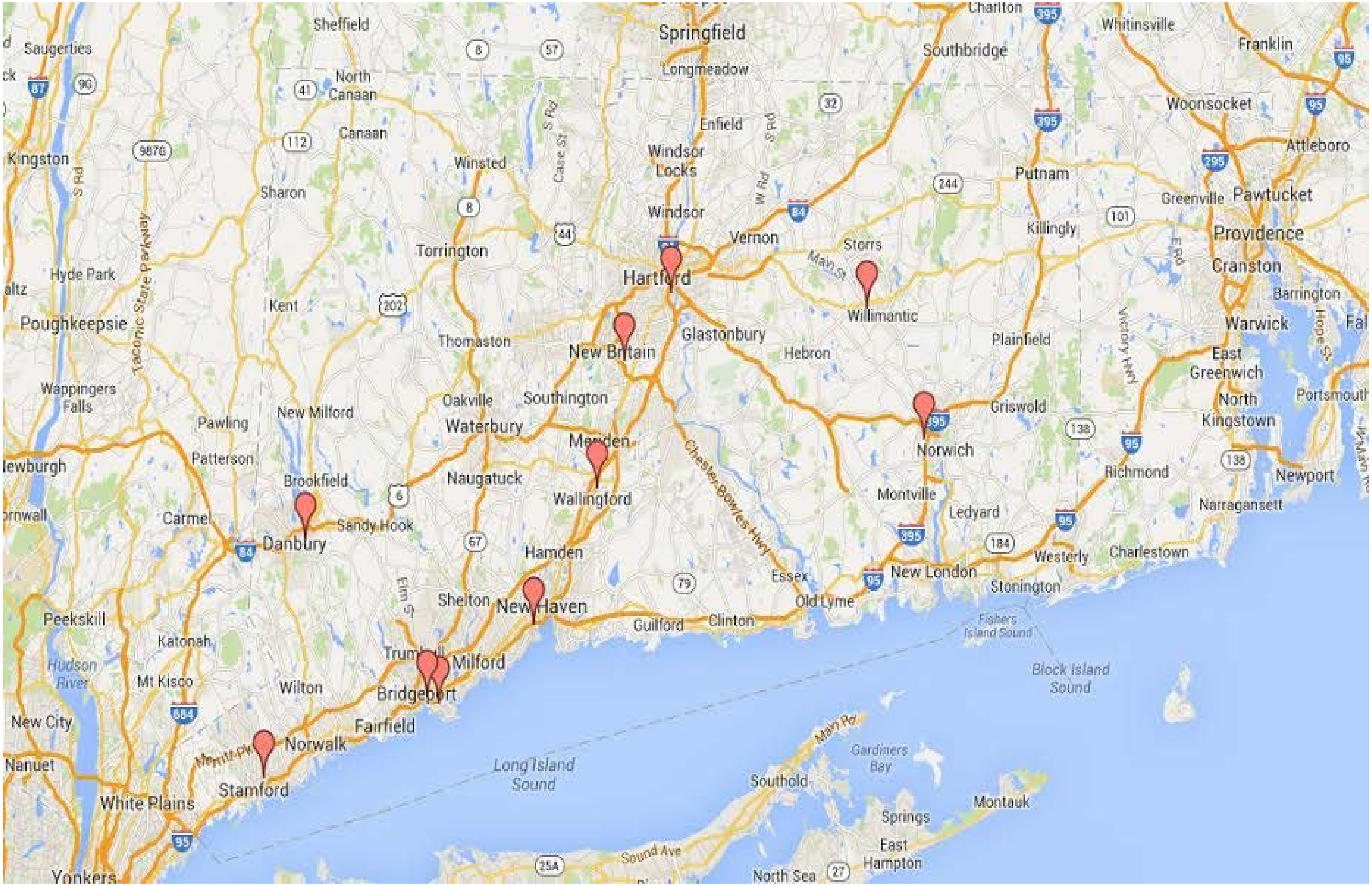


US #8 is the average FOB price of ONP #8 in US market.

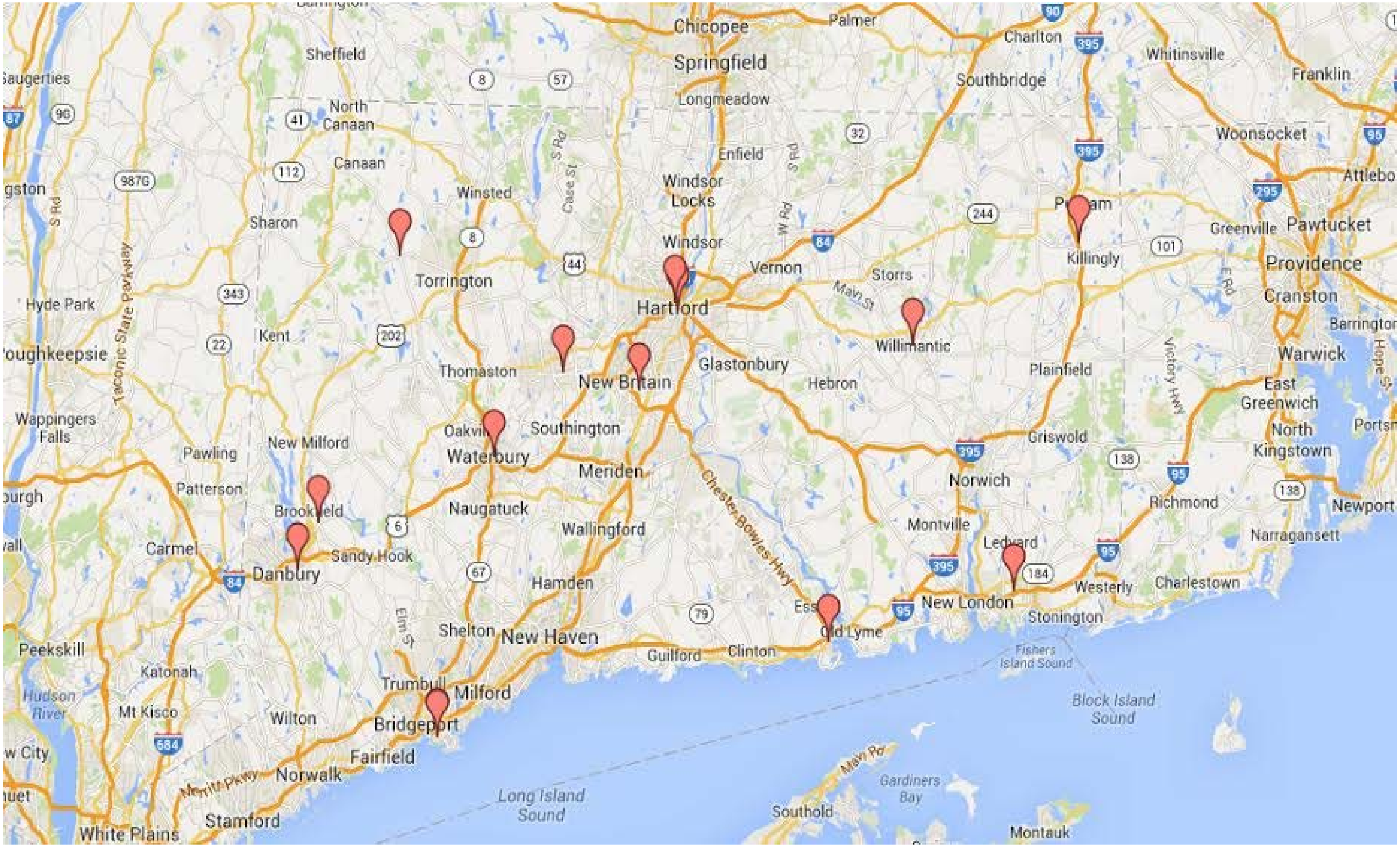
DE 1.11 is the domestic free delivered price of ONP1.11 in German market.

CN IM is the monthly average delivered CIF price of ONP to main ports in China sourced from US.

Connecticut Waste Paper Processors



Connecticut Intermediate Processing Centers



Fiber Forecast

- **US boxboard markets continue to face challenges in 2014**
- By Ken Waghorne

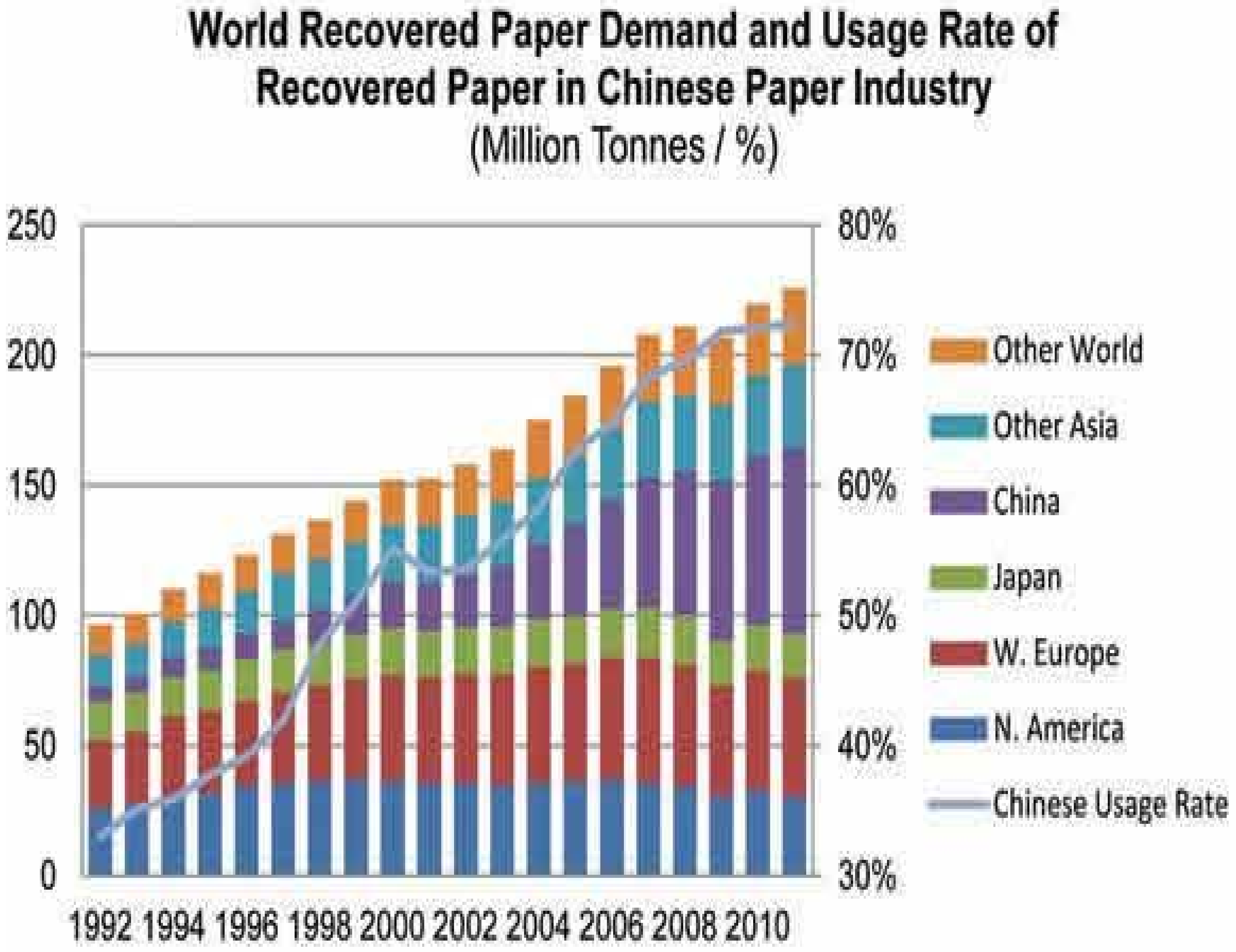
  BEDFORD, MASSACHUSETTS, March 21, 2014 (RISI) - Entering 2013, the biggest question for the boxboard market was whether producers would be able to withstand the disruption on the trade front that appeared to be imminent given the looming overbuild in Chinese boxboard capacity. However, the answer by the end of the year was that the onslaught was not quite as bad as feared. Bleached board backorders began to rise in the spring, following the closure of International Paper's smallest machine at their Augusta, Georgia, mill. Unmade orders continued to rise during the summer, and remained strong enough late in the year that most producers independently announced their intentions to raise SBS prices starting in March 2014.

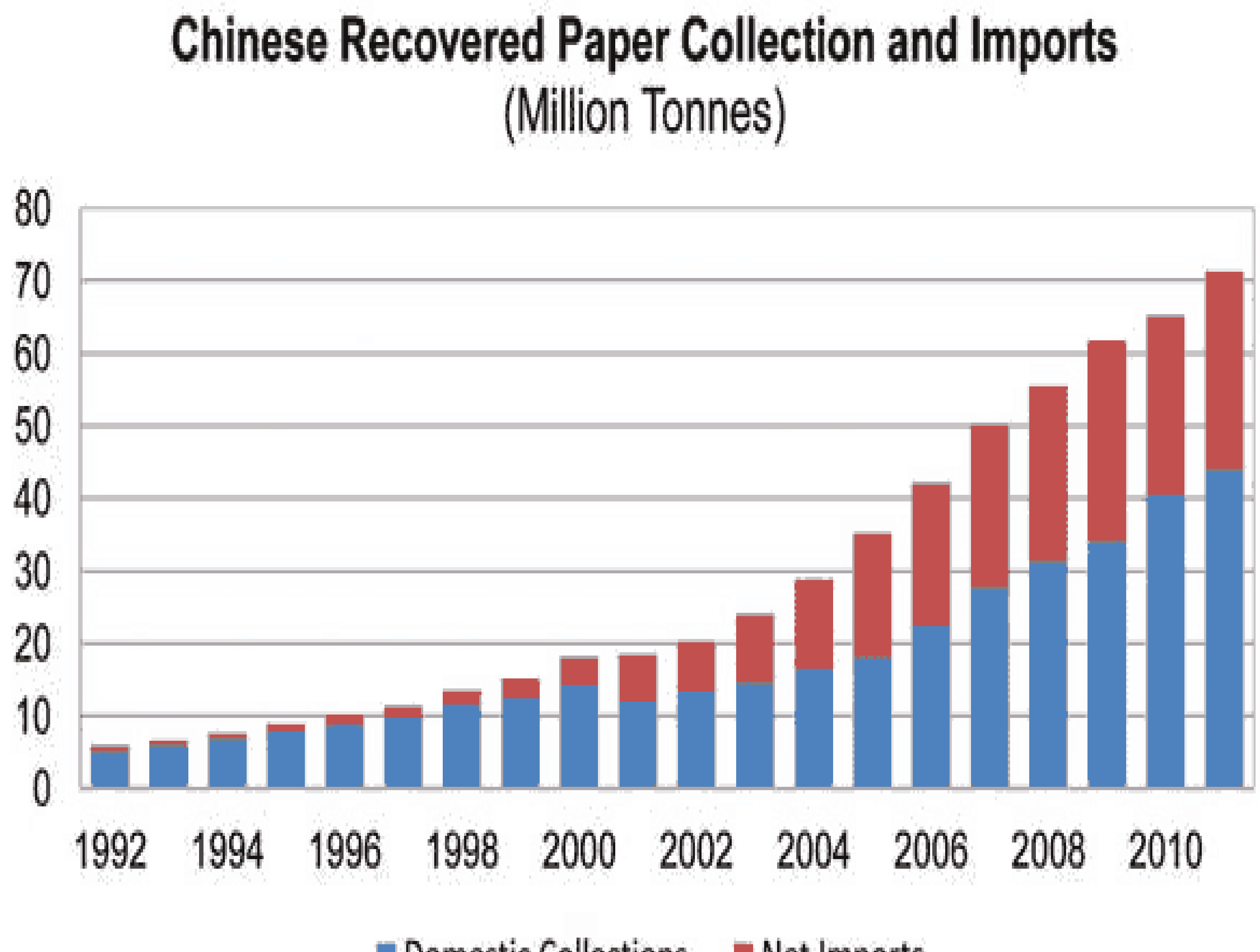
- One of the reasons for this is that exports were surprisingly strong during 2013. Exports of clay coated bleached board totaled about 900,000 tonnes in both 2010 and 2011, but fell to 800,000 tonnes in 2012. This decline was spread among most of the major markets, and expectations were that this trend would continue in 2013. However, as illustrated in the chart below, Mexico was the only major destination where exports declined during the year. Exports to the rest of Latin America, Canada, Europe, Asia and the rest of the world increased, pushing total exports up to 842,000 tonnes for the year.
- The resilience of the bleached board export markets during the last year has raised some hopes that the US SBS market could eke its way through the turmoil from the excess Chinese capacity expansion relatively unscathed.

- *However, our work on RISI's latest five-year forecast indicates the downward pressure on the market is far from over. Our new forecast calls for total exports to fall 200,000-300,000 tonnes below the 2013 level by 2016 as the demand/capacity imbalance in China continues to expand. Even with this projected decline in US exports, global boxboard exports are expected to remain well in excess of import demand, leading to downward pressure on export prices.*

Next 5 Years

- **“Chinese recovered paper imports to decline over next 5 years; Continued expansion of domestic collection; decelerating recovered paper demand growth and rising prices of imports likely to drive decline.”**


World Recovered Paper Demand and Usage Rate of Recovered Paper in Chinese Paper Industry
(Million Tonnes / %)
250
200
150
100
50
0
80%
70%
60%
50%
40%
30%
1992 1994 1996 1998 2000 2002 2004 2006 2008 2010
Other World
Other Asia
China
Japan
W. Europe
N. America
Chinese Usage Rate

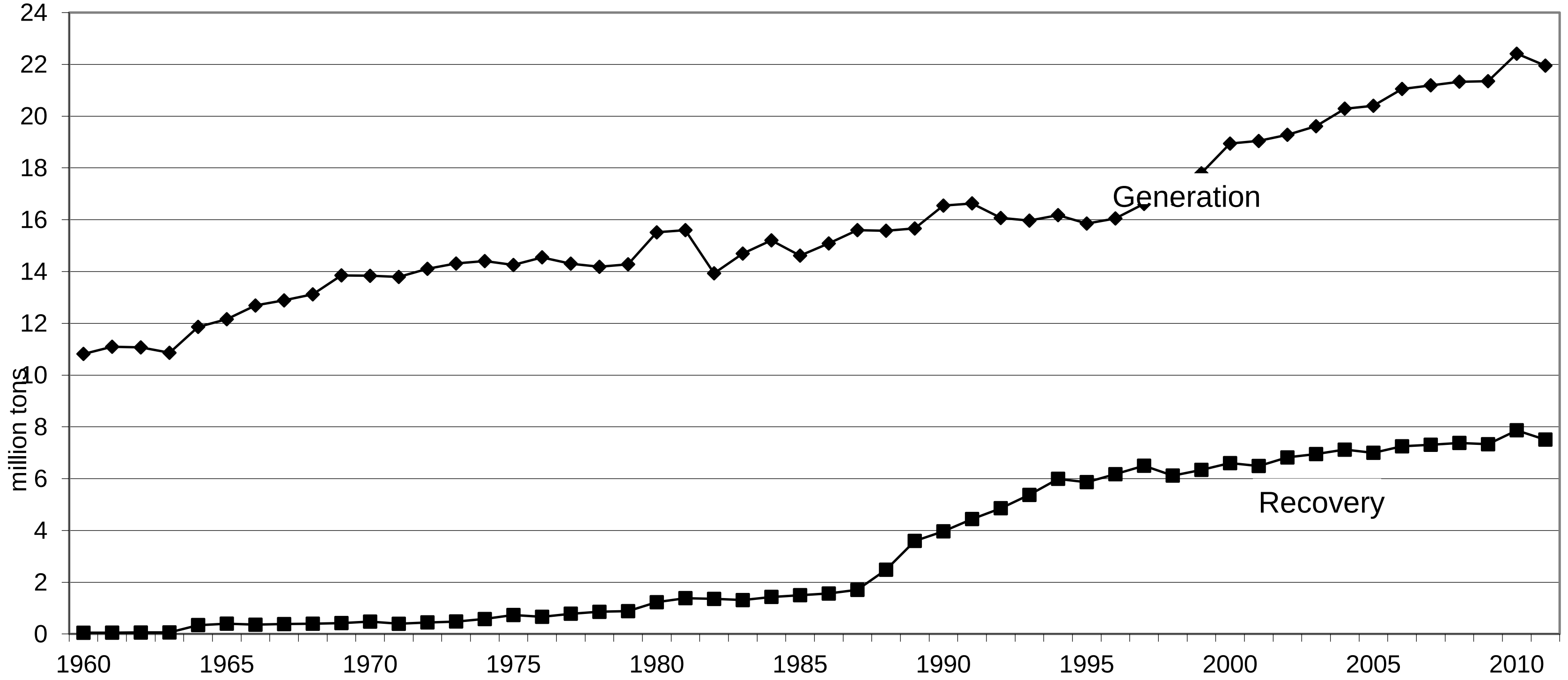

Chinese Recovered Paper Collection and Imports
(Million Tonnes)
80
70
60
50
40
30
20
10
0
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
Domestic Collections
Net Imports

It’s Not Just Scrap

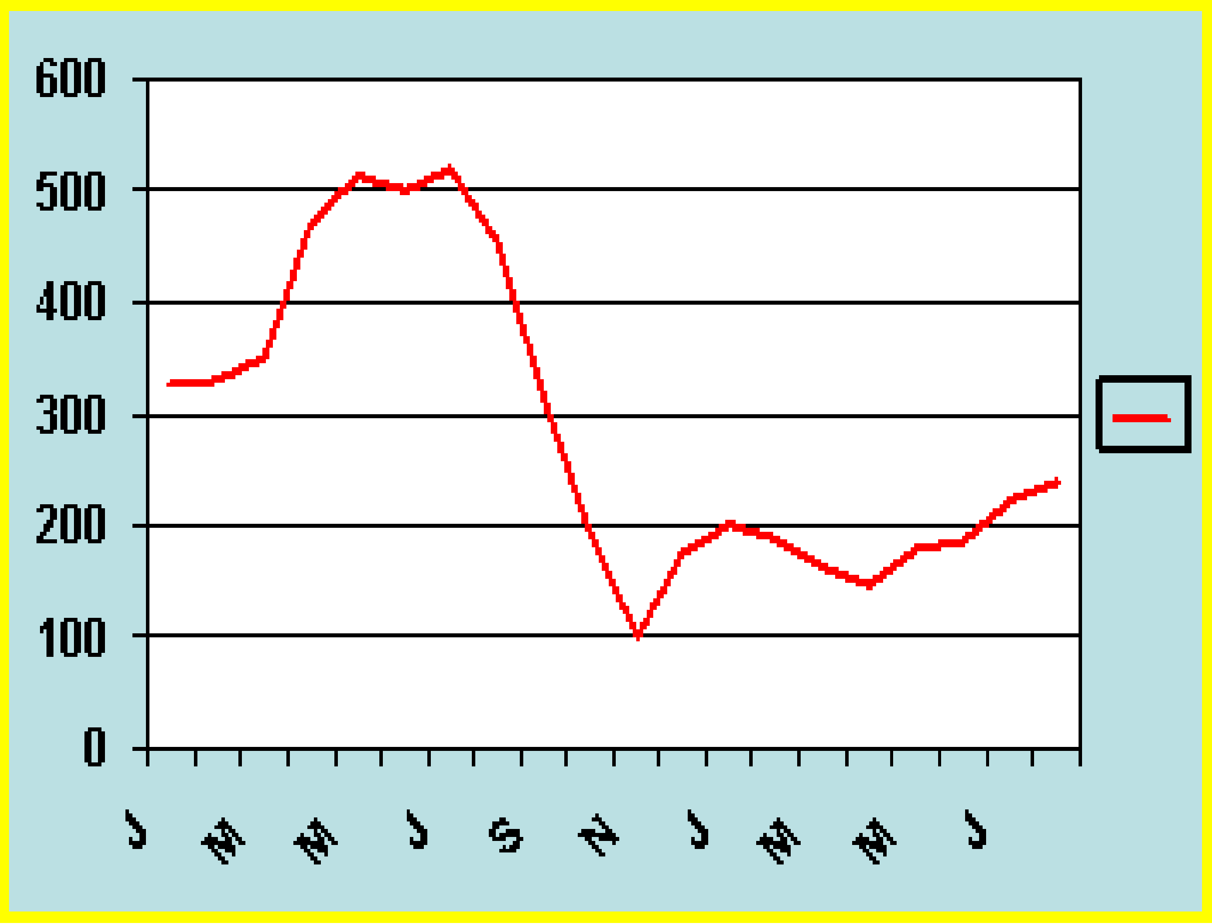
Anymore

NRRA

Metals generation and recovery 1960 to 2011



Ferrous scrap prices (No. 1 HMS)



Resource Recycling
Portland, Oregon

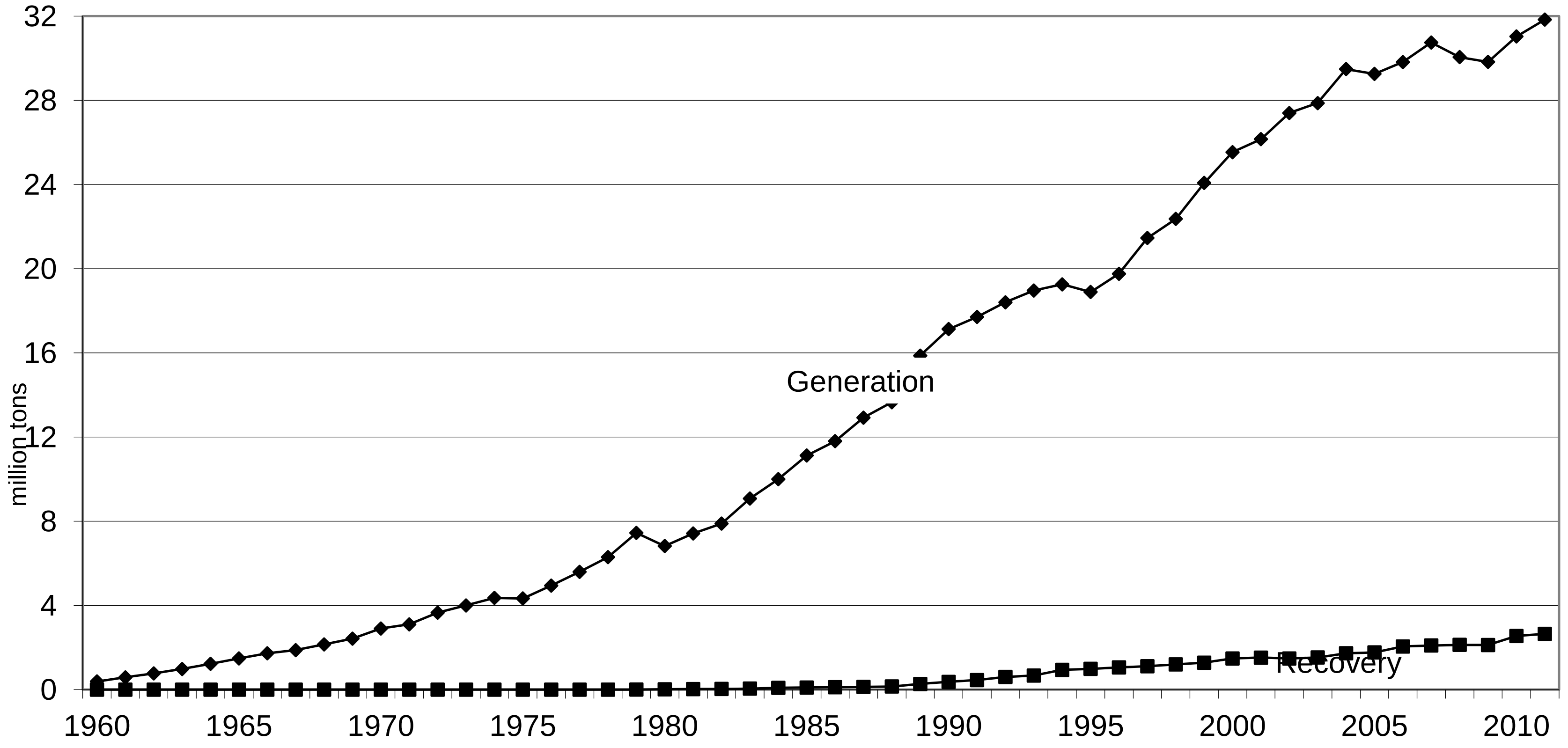
Working Together to Make Recycling Strong!

“The Graduate”

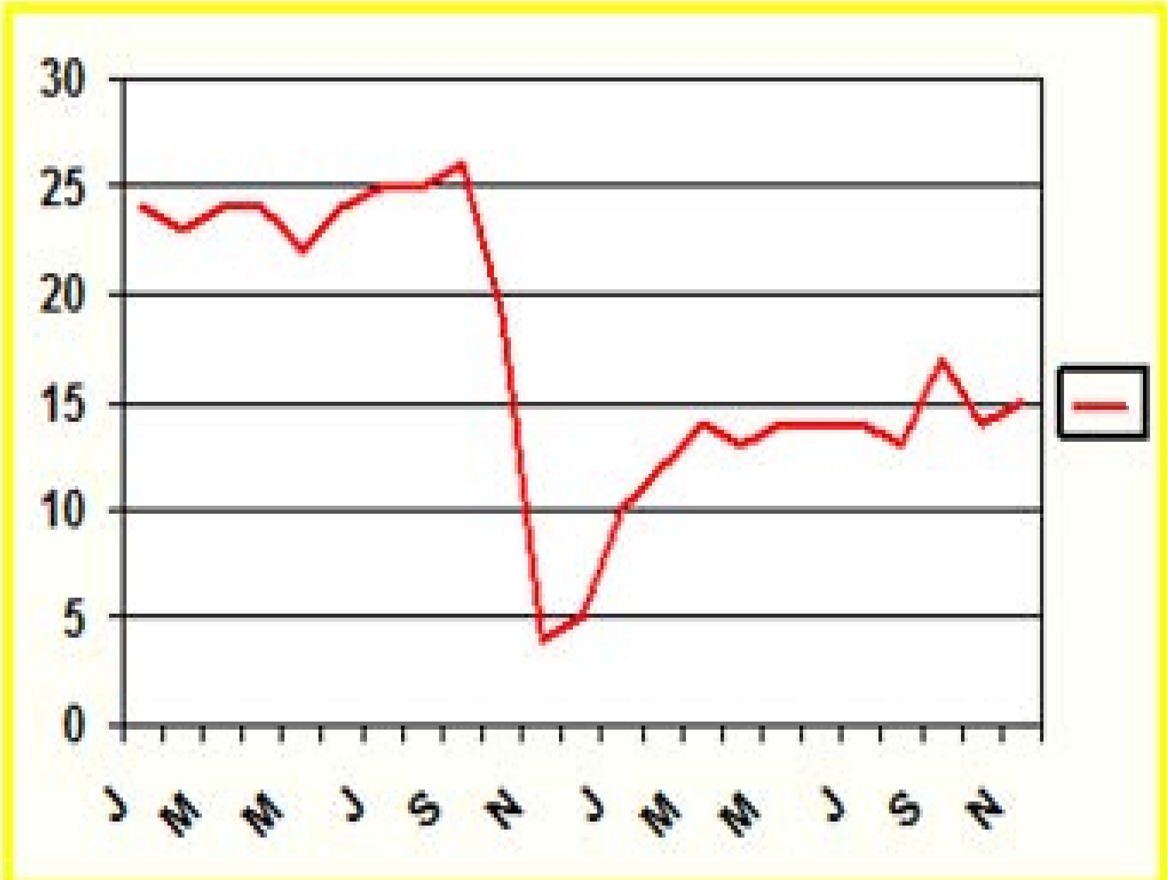
Plastics

Dustin Hoffman!

Plastics generation and recovery 1960 to 2011



PET bale prices



Resource Recycling
Portland, Oregon


Surlyn

Zero Sort - Single Stream

What Lies Ahead?

NRRA

At CRRA's recycling center, containers like plastic bottles and aluminum cans are sorted and baled, then shipped to processors who turn them into new products.

Average Commodity Revenue

ACR	SAMPLE		
Commodity	Percentages	Selling Price	Average Commodity Revenue
O N P #8	53.85%	$175.00	$94.24
O C C/Kraft - Cardboard	15.11%	$125.00	$18.89
ONP #6	0.00%	$85.00	$0.00
White Ledger	0.00%	$320.00	$0.00
Coated Book	0.00%	$220.00	$0.00
Mixed Paper / Magazines	5.32%	$105.00	$5.59
Glass - Flint	0.00%	$0.00	$0.00
Glass - Green	0.00%	$0.00	$0.00
Glass - Amber	0.00%	$0.00	$0.00
Glass - Mixed	12.70%	($10.00)	($1.27)
Plastic - PET	1.78%	$420.00	$7.48
Plastic - HDPE Natural	0.53%	$780.00	$4.13
Plastic - HDPE Pigmented	0.97%	$550.00	$5.34
Plastic - Mixed	0.28%		$0.00
Aluminum	0.22%	$1,890.00	$4.16
Aluminum Foil	0.00%		$0.00
Ferrous Metals / Tin Cans	2.06%	$205.00	$4.22
Residue	7.18%	($66.00)	($4.74)
Totals	100.00%		$138.03

Formula Pricing: 50/50 Revenue share over ACR of 70	
Average Commodity Revenue	$138.03
Threshold	$70
Shared Revenue	$68.03
50% shared Revenue to Muni	$34.01
Tip Fee ($10)	
Rebate	$24.01

	Today's Market	Average Market Prices
ACR-Single Stream	$ 130	$ 85
Processing fee	$ 70	$ 70
Revenue Share to/(from) Districts	(130-70) x .50% = $30.00	(85-70) x .50% =$7.50
Tons/ month	85	85
$ to/(from) Districts Annual	2550	637.50
Tons/ year	1000	1000
$ to/(from) Districts	$30,000	$7,500

Transportation @ 40/ton	($40,000)	($40,000)
Net of Transportation	($10,000)	($32,500)
Net per ton Revenue / Cost	($10)	($32.50)

AVERAGE COMMODITY REVENUE -TOTAL COST S/STREAM			
One example 4/29/2014			
	% of Ton	Market Value	Per Ton Value
OCC	55%	$110.00	$60.50
MIXED PAPER	5%	$40.00	$2.00
GLASS	12%	($15.00)	($1.80)
PLASTIC	6%	$600.00	$36.00
ALUMINUM	1%	$1,200.00	$12.00
METAL	2%	$200.00	$4.00
RESIDUE	19%	($66.00)	($12.54)
	100%		$100.16
PROCESSING FEES			($80.00)
NET PER TON			$20.16
50/50 REV SPLIT PER TON			$10.08
TIP FEE			($35.50)
TRANSPORTATION AVERAGE PER TON			($40.00)
NET ALL IN			($65.42)

Its all about the cost of Transportation

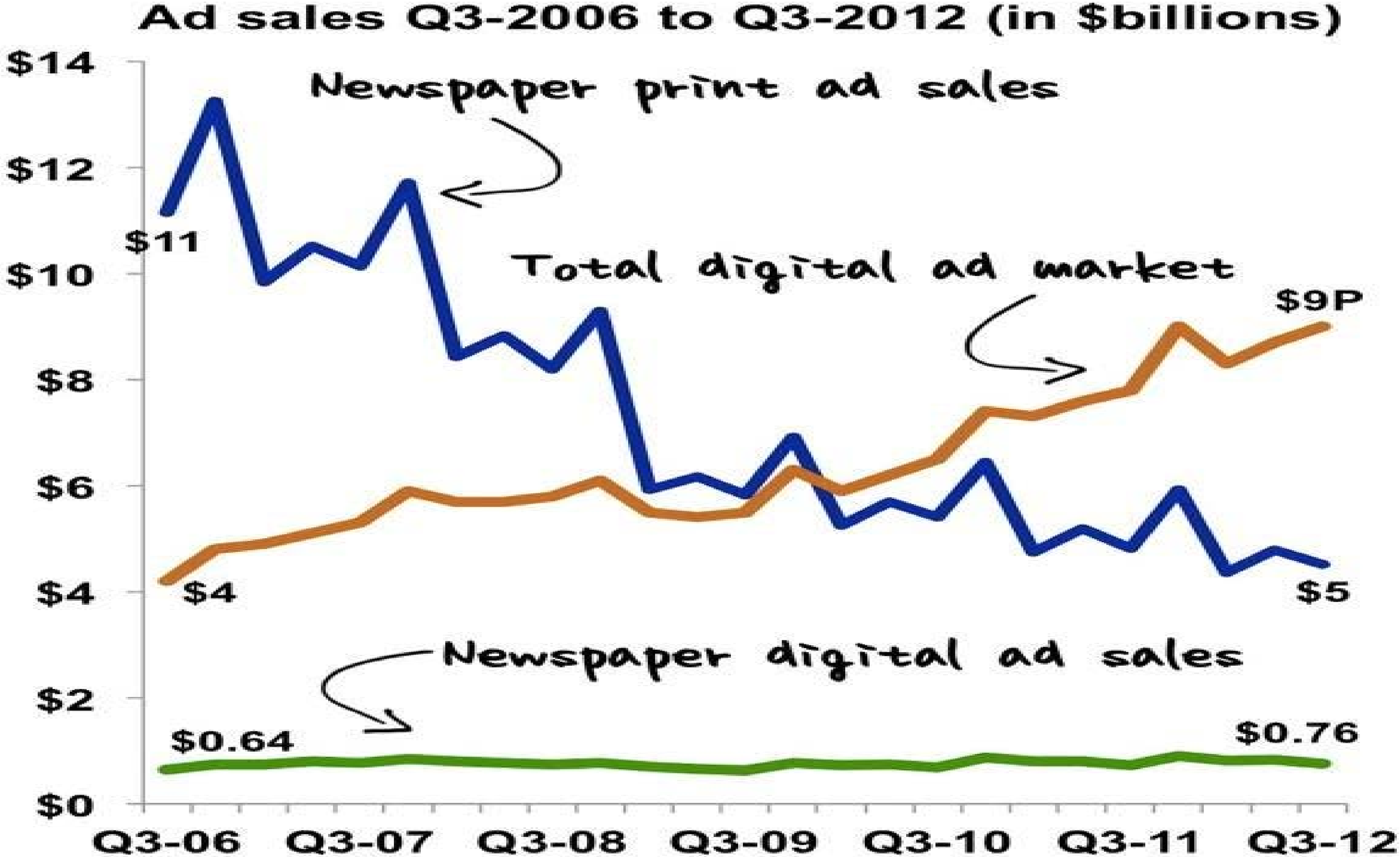
Single Stream Spot Pricing * rough guide only

- So.Portland,ME–Ecomaine:$10 Charge-Del
- Charlestown, MA – Casella:$ 5 Paid FOB
- Billerica – WM: $30 Charge-Del
- Westborough,MA Harvey: $10 Paid FOB
- Hartford – CRRA: $10 Paid - Del
- Willimantic,CT.WilliWaste: $ 3-22 Paid- Del
- Shelton, Ct – $20 Paid - Del
- Albany, NY-County Waste: $20 Paid - Del
- Richmond, VA – (Baled) $10 Paid FOB
- USA – Murphy Rd, CT - $ 0 - Del

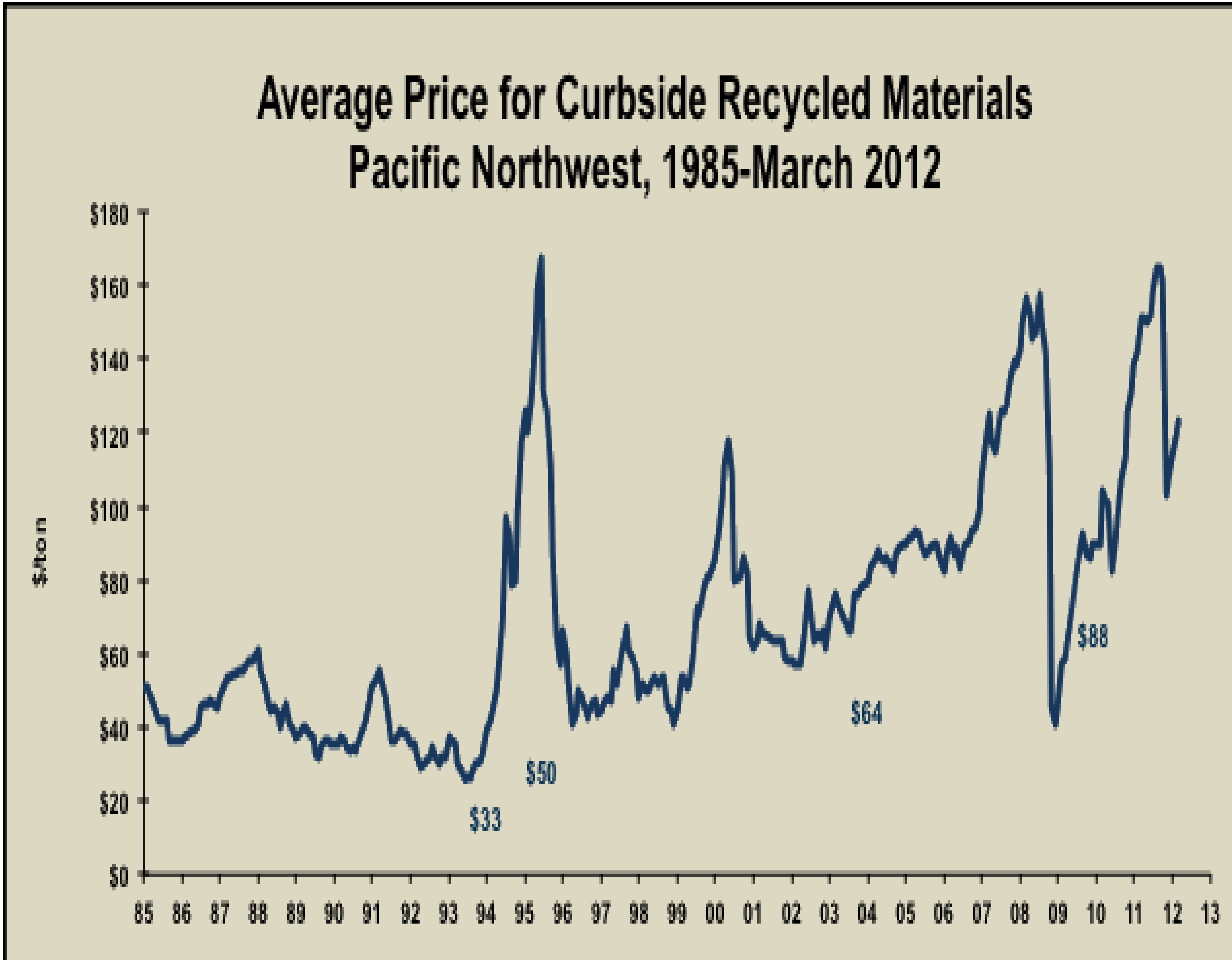
Single Stream Contract Pricing

- Typical Bid Contracts or RFP’s
- Tied to Index– Uncoupled in August 2012
- Guaranteed Minimum Floor $0-$5-$7.50
- Revenue Share
- Never a Charge for Material
- Hauling Separate or Fixed – CPI? Fuel ?
- Rental Containers/Compactors?

Sobering trend



Sources: Newspaper Association of America and Internet Advertising Bureau



Average Price for Curbside Recycled Materials
Pacific Northwest, 1985-March 2012
$/ton
$180
$160
$140
$120
$100
$80
$60
$40
$20
$0
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00 01 02 03 04 05 06 07 08 09 10 11 12 13
$33
$50
$64
$88

Red or Black?

1. Will the odds always favor the house?

2. How can we Level the field?

Same Formula as MSW and May be Intertwined

1. Know the Markets
2. Negotiate from Strength
3. Collaborate Whenever Possible
4. Reduce the risk
5. Create certainty and high grade products
6. Create Jobs in the process

NRRA MARKET GUIDE

Monthly Guide

Market Summary

OCC- Back Down the Seesaw. Time to Move Scrap Metal!
*Please Note: Current market pricing - THIS IS ONLY A GUIDE - subject to change and subject to rental and / or haul fees; Always call to confirm pricing. NRRA works with multiple vendors and pricing will vary.

				DIRECTION
Fibers:				
#8 Newspaper Baled		(44,000 lbs. target)	\$60 - \$65.00	NC
#8 Newspaper Baled - insulation		(44,000 lbs. target)	\$60 - \$65.00	NC
#8 Loose	delivered		\$25.00-\$65.00	DN \$5
Mixed Paper	Baled	(44,000 lbs. target)	\$20.00 - \$40.00	DN \$5
Mixed Loose	delivered		\$20.00 - \$35.00	DN \$5
OCC Baled-		(44,000 lbs. target)	\$115.00-\$125.00	DN \$15
OCC Loose -		delivered	\$65.00-\$110.00	DN \$15
Plastics:				
PET Baled		(35,000 lbs. target)	\$.13 - \$.17/lb.	N/C
HDPE Natural Baled		(35,000 lbs. target)	\$ 33 - \$.40 / lb.	UP \$.03
HDPE Colors Baled		(35,000 lbs. target)	\$.24 - \$.305lb.	UP \$.015
HDPE "Z" Mixed Baled		(35,000 lbs. target)	\$.24. - \$.305 /lb.	UP \$.02
#1 - #7 -		(30K - 40K lbs. target)	\$.05 - \$.07/lb.	UP \$.04
#3-#7 - NEW MARKET		Call For Specs	\$.02 - \$.06	
Rigids			\$.005-\$.03/lb	NC

Scrap Metal:

Scrap Metal - $5/gt more if delivered		$210/gt	UP $35
Scrap Metal - bulk (Zone 1 locations)		$175/gt	UP $35
Scrap Metal - bulk (Zone 2 locations)		170/gt	UP $35
Scrap Metal - bulk (Zone 3 locations)		$150gt	UP $35
Steel Cans Baled -	(40,000 lbs. target)	$245 - $260 /gt	NC
Steel Cans Baled	(light loads - delivered)	$155 - $175/gt	UP $10
Steel Cans Loose	delivered	$155 - $175/gt	UP $10
Aluminum Cans Baled (UBCs only)	(40,000 lbs. target)	$.63lb -$.67lb	NC
Aluminum Cans Baled (UBCs only)	(light loads-del)	$.48 - $.60	NC
Aluminum Cans Loose	delivered	$.45 - $.58	NC
Vegetable Oil	$1.01/ gal. NC		
Batteries (lead)	$.27 -.30 /lb. NC		
Freon Recovery ---WINTER SPECIAL	25 unit min.	($8) per unit	NC
Glass PGA	delivered	($23/ton)	NC
Glass - clear or brown	delivered	$15.00 / ton	NC
Fluorescent Bulbs		(.06/ft.)	NC
CFL's/Unit	(.40/ea.) NC		
Electronics - CRT TVs & Monitors	plus transport	($.145 - $.21 lb.)	NC

Working Together to Make Recycling Strong!

NRRA

Charges per Ton

Commingle-loose w/glass:del ($25.00 - $45.00) NC

Single/Stream/Loose/Baled:del (-$53)-(+$10)DN $13

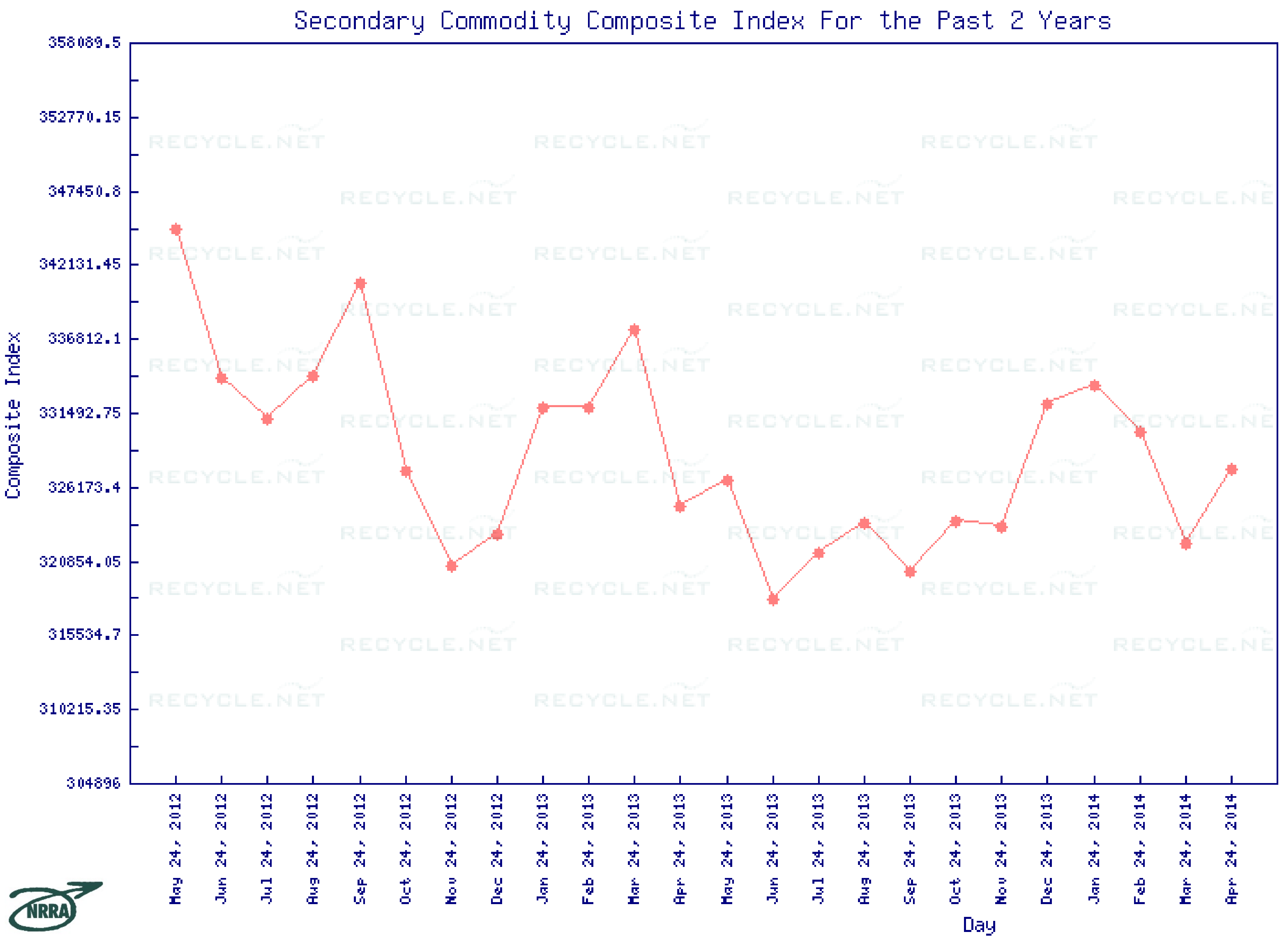
- MSW delivered ($40 - $95.00) NC
- C&D delivered ($47.50 - $74.00) NC
- New pricing for "clean wood spec" call for info.

Secondary Commodity Composite Index

The Secondary Commodity Composite Index tracks the changing \market prices across the spectrum of the recycling industry. This index is comprised of 11 industry sectors. The sectors include ferrous metals, non-ferrous metals, exotic metals, waste/scrap paper, plastics, textiles, tire/rubber, electronics, recovered minerals, curbside materials, waste energy and automobile related scrap.

The Secondary Commodity Index
www.secondarycommodity.com

SECONDARY COMMODITY COMPOSITE INDEX 328,404.38	82.51 0.03%
1. SCRAP METALS COMPOSITE INDEX	94,801
2. EXOTIC & PRECIOUS SCRAP COMPOSITE INDEX	14,944.55
3. WASTE PAPER COMPOSITE INDEX	34,409.45
4. RECYCLED PLASTICS COMPOSITE INDEX	30,780
5. AUTOMOTIVE RECYCLING COMPOSITE INDEX	32,087.85
6. ELECTRONICS RECYCLING COMPOSITE INDEX	56,464
7. CURBSIDE RECYCLING COMPOSITE INDEX	13,264.25
8. TEXTILE RECYCLING COMPOSITE INDEX	8,640
9. WASTE TO ENERGY COMPOSITE INDEX	8,101
10.TIRE & RUBBER RECYCLING COMPOSITE INDEX	9,447.28
11. INDUSTRIAL MINERAL RECOVERY COMPOSITE INDEX	25,465



Secondary Commodity Composite Index For the Past 2 Years
Composite Index
358089.5
352770.15
347450.8
342131.45
336812.1
331492.75
326173.4
320854.05
315534.7
310215.35
304896
May 24, 2012
Jun 24, 2012
Jul 24, 2012
Aug 24, 2012
Sep 24, 2012
Oct 24, 2012
Nov 24, 2012
Dec 24, 2012
Jan 24, 2013
Feb 24, 2013
Mar 24, 2013
Apr 24, 2013
May 24, 2013
Jun 24, 2013
Jul 24, 2013
Aug 24, 2013
Sep 24, 2013
Oct 24, 2013
Nov 24, 2013
Dec 24, 2013
Jan 24, 2014
Feb 24, 2014
Mar 24, 2014
Apr 24, 2014
Day
RECYCLE.NET
NRRA


16,000
15,000
14,000
13,000
12,000
11,000
3 YEAR CHANGE 27.72%
2011
-2.31%
2012
+9.97%
2013
+22.59%
2014
-0.66%

Jobs

Jobs

Jobs

- More Jobs, Less Pollution: 2008
- Growing the Recycling Economy in the U.S.
- Tellus Institute with Sound Resource Management

Table 5
Job Production Estimates by Management Activity - MSW
(Jobs per 1000 Tons)

	DIVERTED WASTE					DISPOSED WASTE		
	Collection 2008	Collection 2030	Processing	Manufacturing	Reuse/ Remanufacture	Collection	Landfill	Incineration
	Jobs per 1000 tons	*Jobs per 1000 tons*	*Jobs per 1000 tons*	*Jobs per 1000 tons*	*Jobs per 1000 tons*	*Jobs per 1000 tons*	*Jobs per 1000 tons*	*Jobs per 1000 tons*
MATERIALS								
Paper & Paperboard	1.67	1.23	2.00	4.16	N/A	0.56	0.10	0.10
Glass	1.67	1.23	2.00	7.85	7.35	0.56	0.10	0.10
Metals								
Ferrous	1.67	1.23	2.00	4.12	20.00	0.56	0.10	0.10
Aluminum	1.67	1.23	2.00	17.63	20.00	0.56	0.10	0.10
Other Nonferrous	1.67	1.23	2.00	17.63	20.00	0.56	0.10	0.10
Plastics	1.67	1.23	2.00	10.30	20.00	0.56	0.10	0.10
Rubber & Leather	1.67	1.23	2.00	9.24	7.35	0.56	0.10	0.10
Textiles	1.67	1.23	2.00	2.50	7.35	0.56	0.10	0.10
Wood	1.67	1.23	2.00	2.80	2.80	0.56	0.10	0.10
Other	1.67	1.23	2.00	2.50	N/A	0.56	0.10	0.10
Other Wastes								
Food Scraps	1.67	1.23	0.50	N/A	N/A	0.56	0.10	0.10
Yard Trimmings	1.67	1.23	0.50	N/A	N/A	0.56	0.10	0.10
Misc. Inorganic Wastes	1.67	1.23	0.50	N/A	N/A	0.56	0.10	0.10

Figure 11
U.S. Jobs by MSW Management Activity, 2008
(Total jobs=665,971)

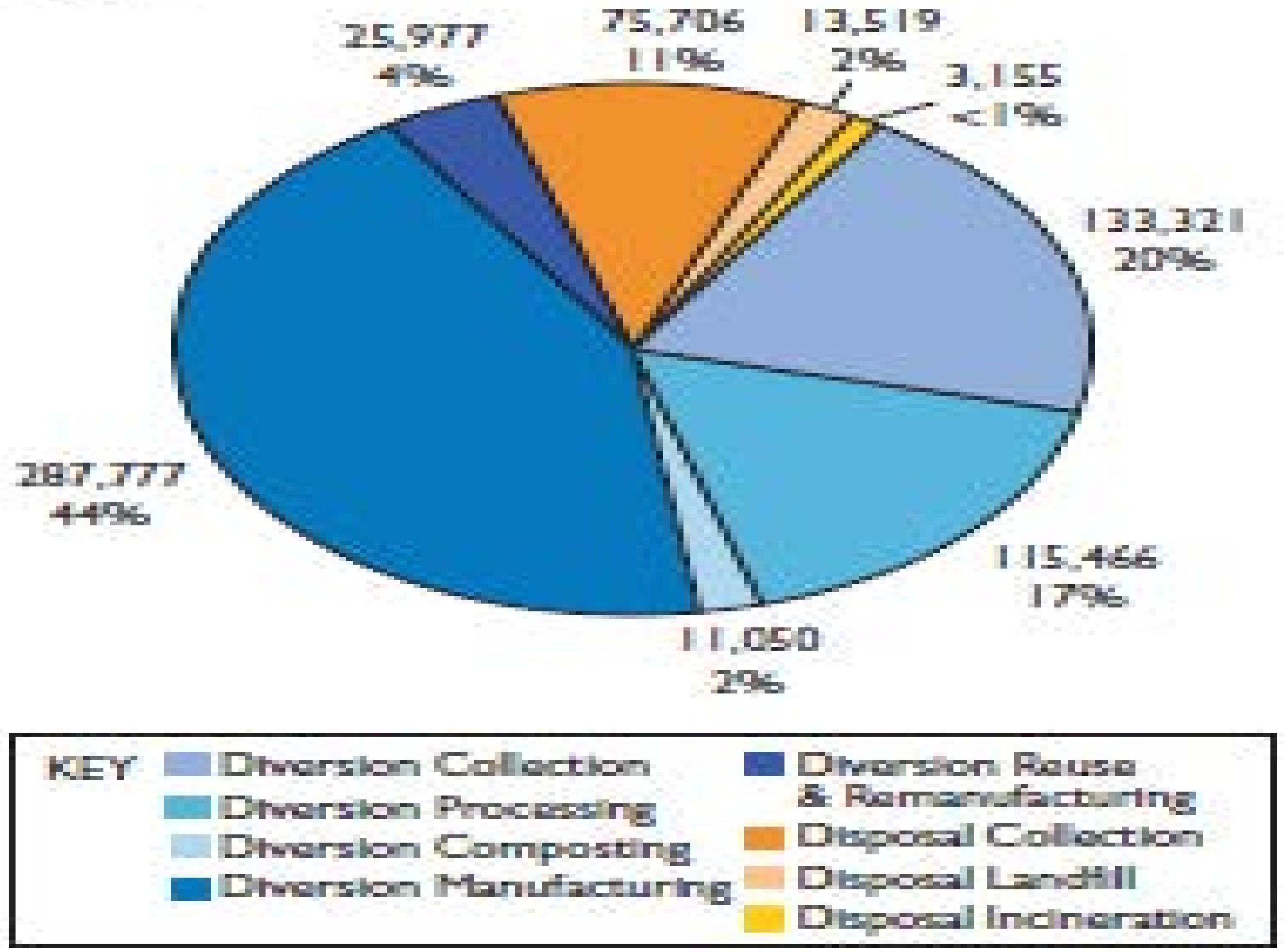


Figure 5

U.S. MSW Management, 2030 Base Case

(1000 tons)

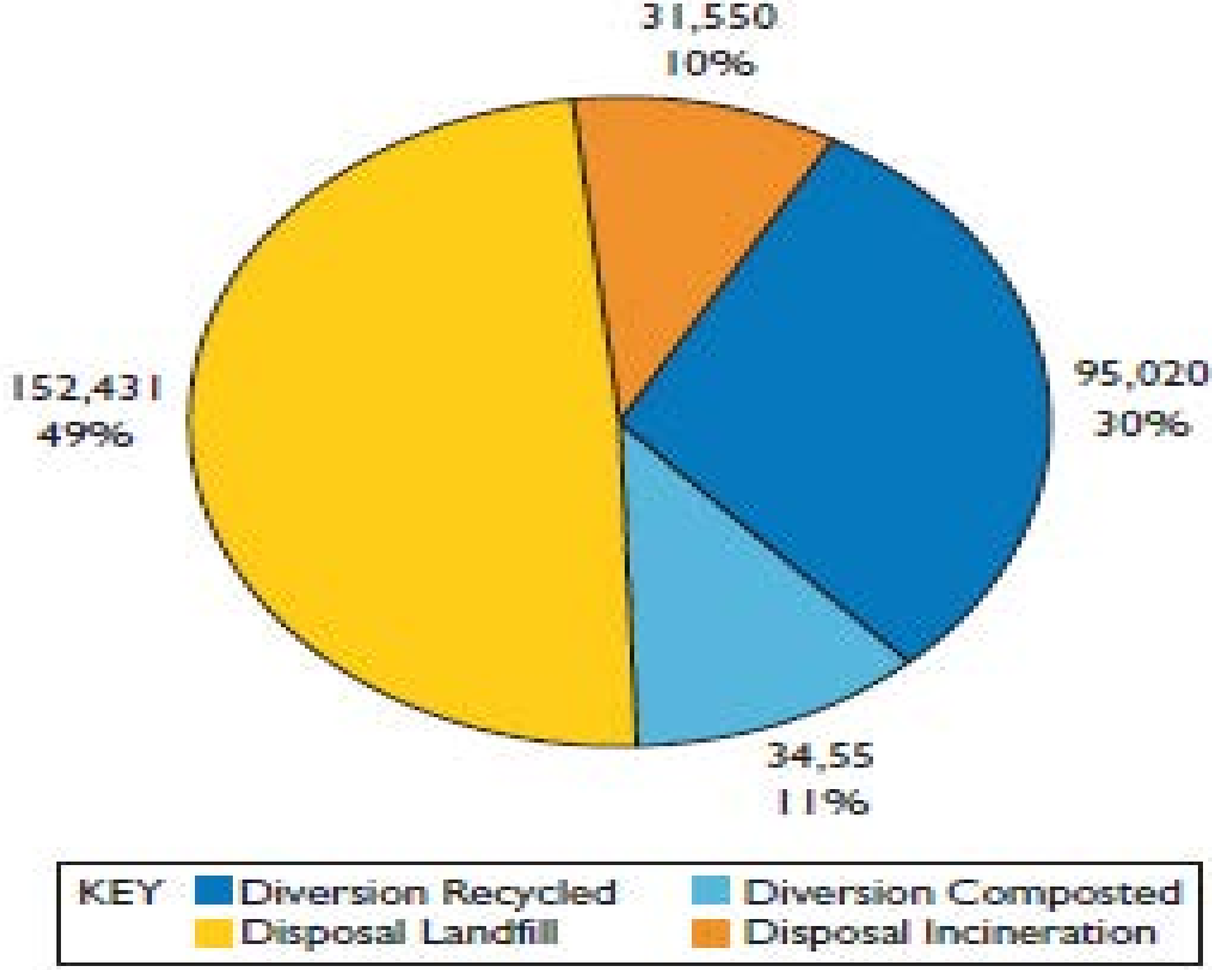


Figure 7
U.S. MSW Management, 2030
Green Economy Scenario
(1000 tons)

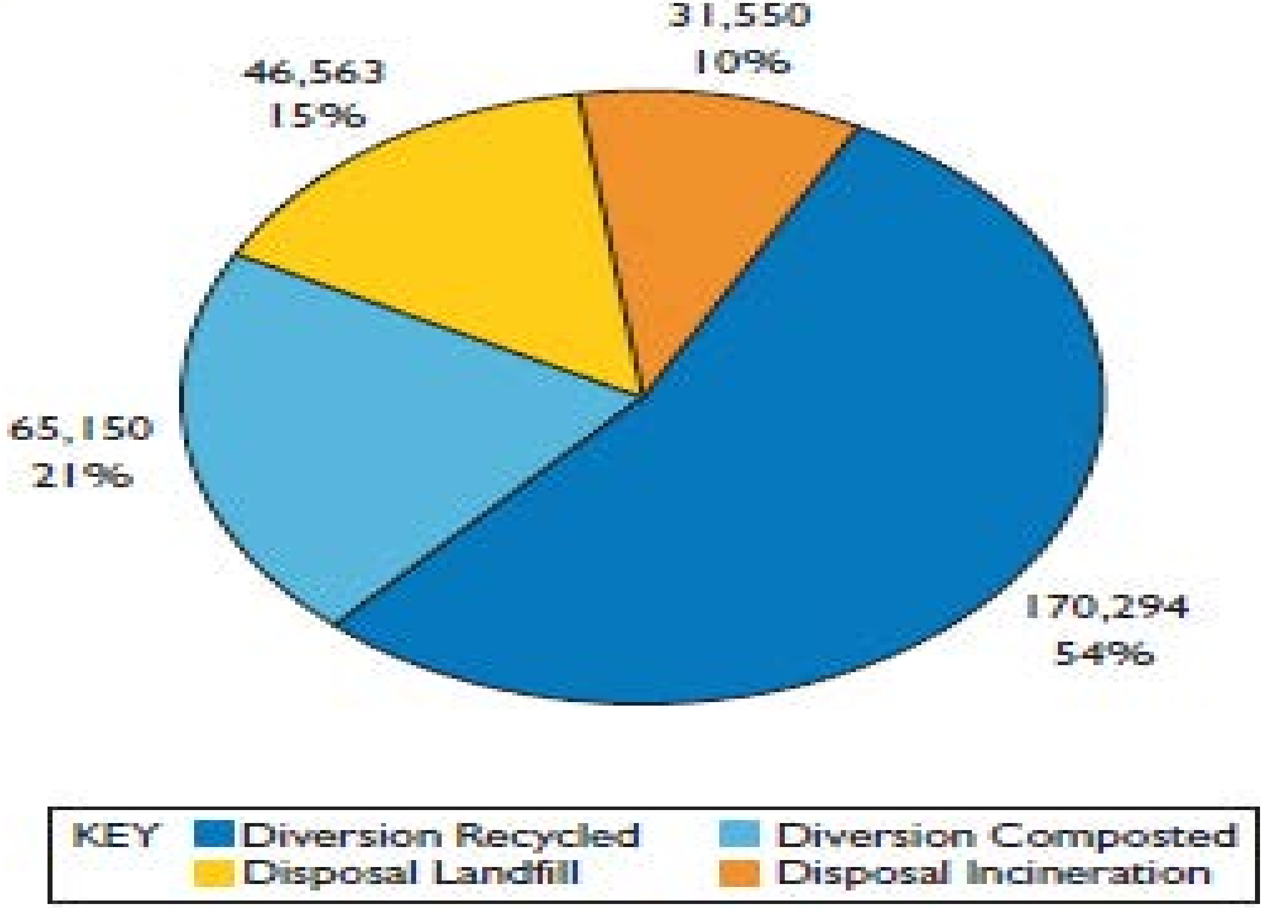
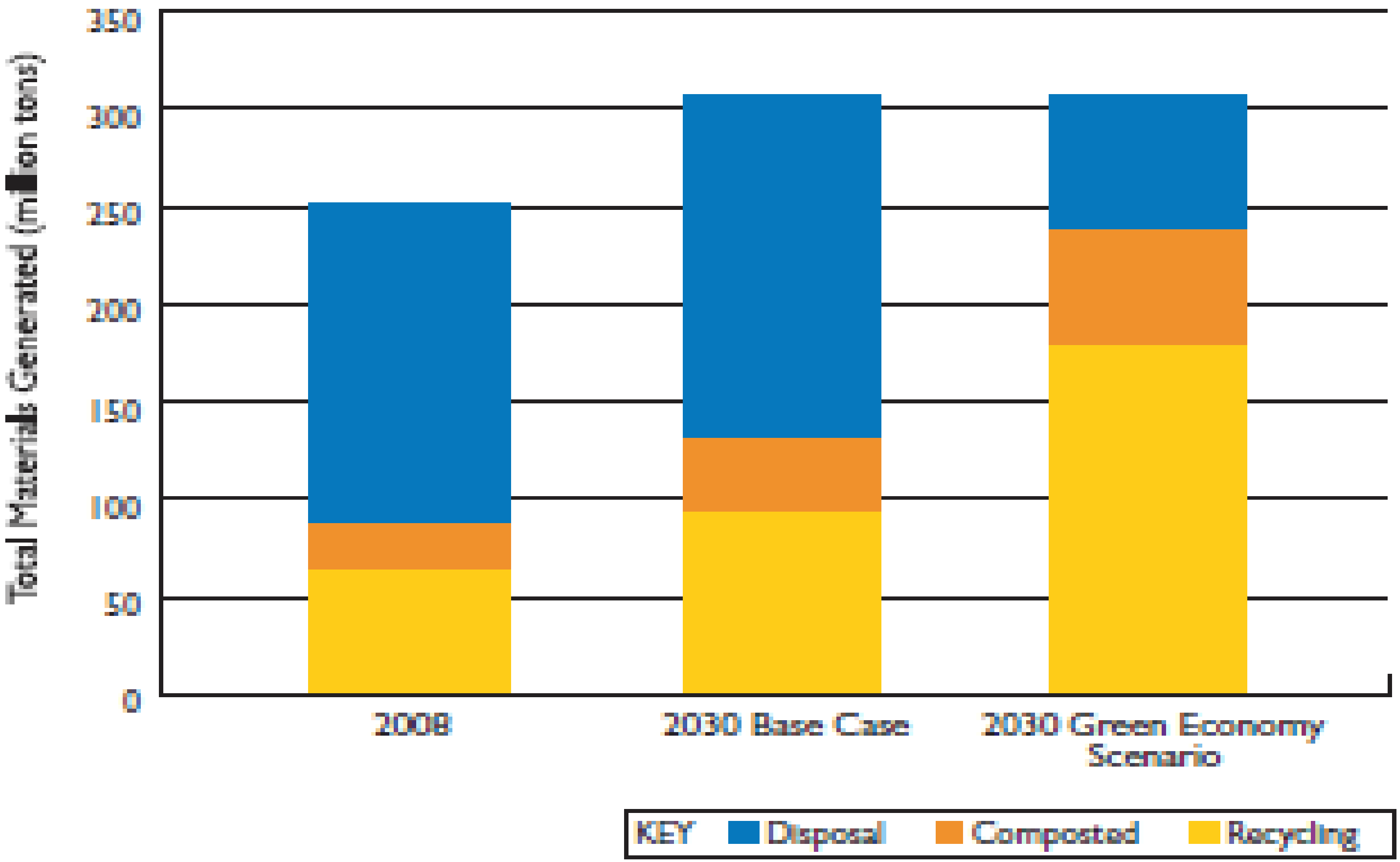


Figure ES-1

U.S. MSW Waste Flows



Job Creation Opportunities from Deconstruction: An Alternative to Demolition and C&D Landfilling

Each year hundreds of thousands of residential and commercial buildings are demolished in the U.S., with the vast majority of the demolition waste disposed in landfills. While certain high-value materials such as metals are sometimes removed prior to demolition, particularly from commercial buildings, generally the entire building is taken down and landfilled as undifferentiated C&D waste. Following preparatory work to remove hazardous materials such as asbestos and to disconnect utilities, demolition is usually a fast process in which a site with a home or small building can be cleared for new structures in one or two days. Larger buildings may require the use of a wrecking ball or other heavy equipment but the aim is the same: remove the structure as quickly as possible. The speed and ease of readying a site for a new use is a key advantage of demolition.

C&D

Construction & Demolition Debris

Name of Company	**3 Year**		**5 Years**		**7 Years**		
	C & D Haul	**C & D Disposal Fees**	**C & D Haul**	**C & D Disposal Fees**	**C & D Haul**	**C & D Disposal Fees**	**Rental Fees**
A	**$125.00**	**$76.00**	**CPI**	**CPI**	**CPI**	**CPI**	**$50.00**
B	**$280.00**	**$72.00**	**CPI**	**CPI**	**CPI**	**CPI**	**$100.00**
C	**$185.00**	**$72.00**					**$0.00**
D	**$225.00**	**$69.00**					**As needed**
E	**$150.00**	**$76.00**	**PPI**	**PPI**	**PPI**	**PPI**	**$0.00**
F	**$140.00**	**$72.00**	**CPI**	**CPI**	**CPI**	**CPI**	**$50.00**

Disposal fees are based on per ton.

Figure 6
U.S. C&D Management, 2030 Base Case

(1000 tons)

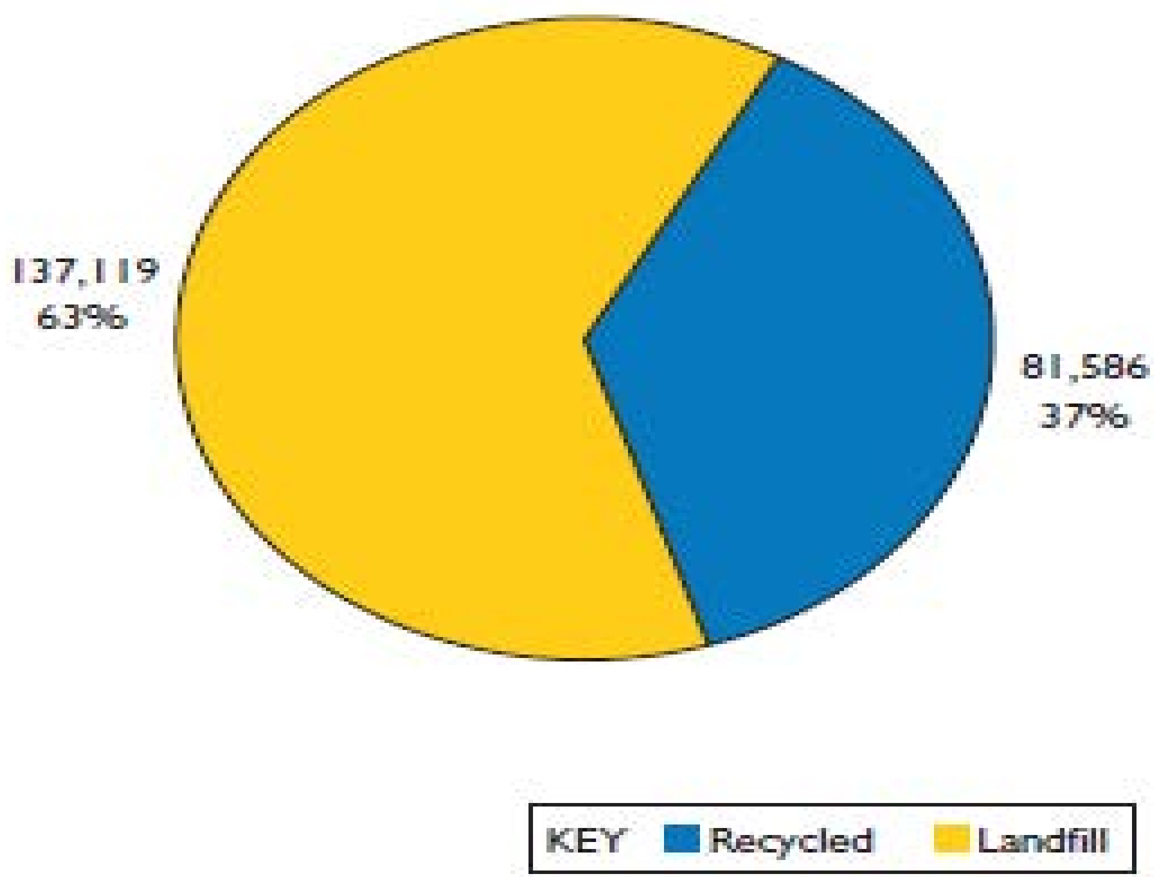


Figure 9

U.S. C&D Management, 2030 Green Economy Scenario

(1000 tons)

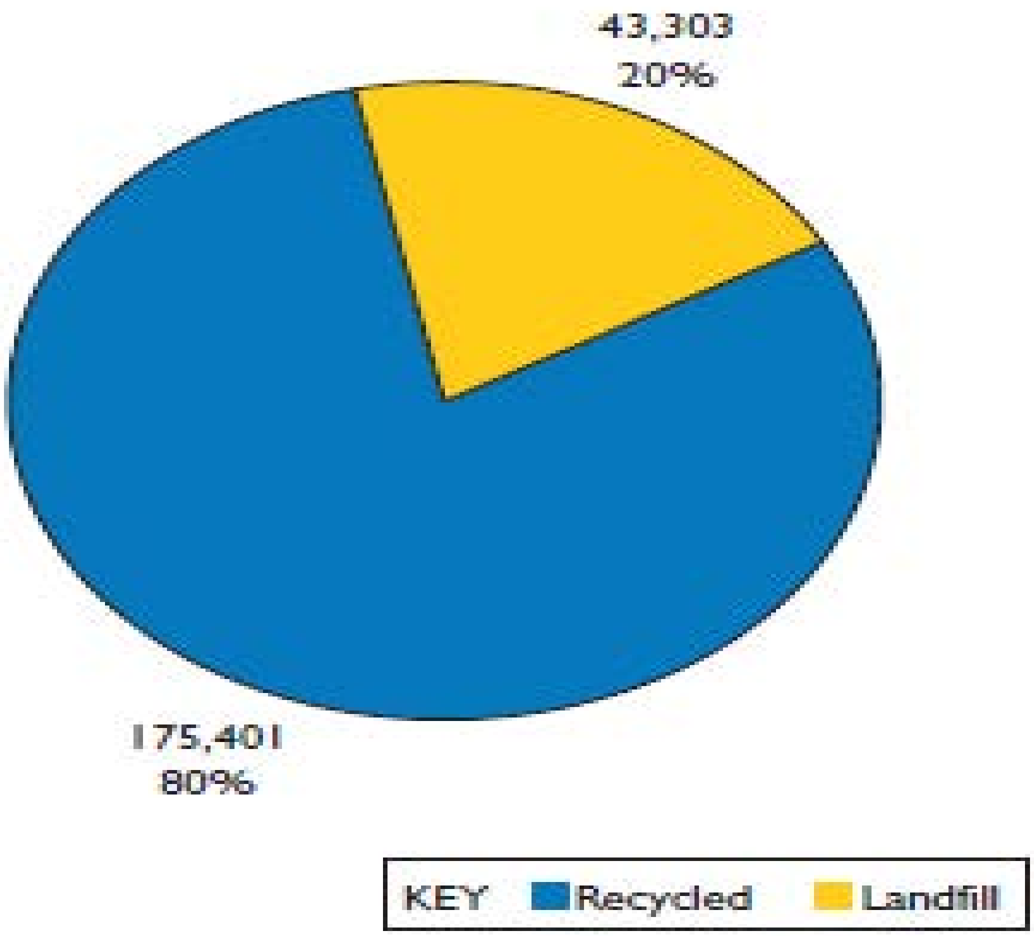


Figure 10
U.S. C&D Waste Flows

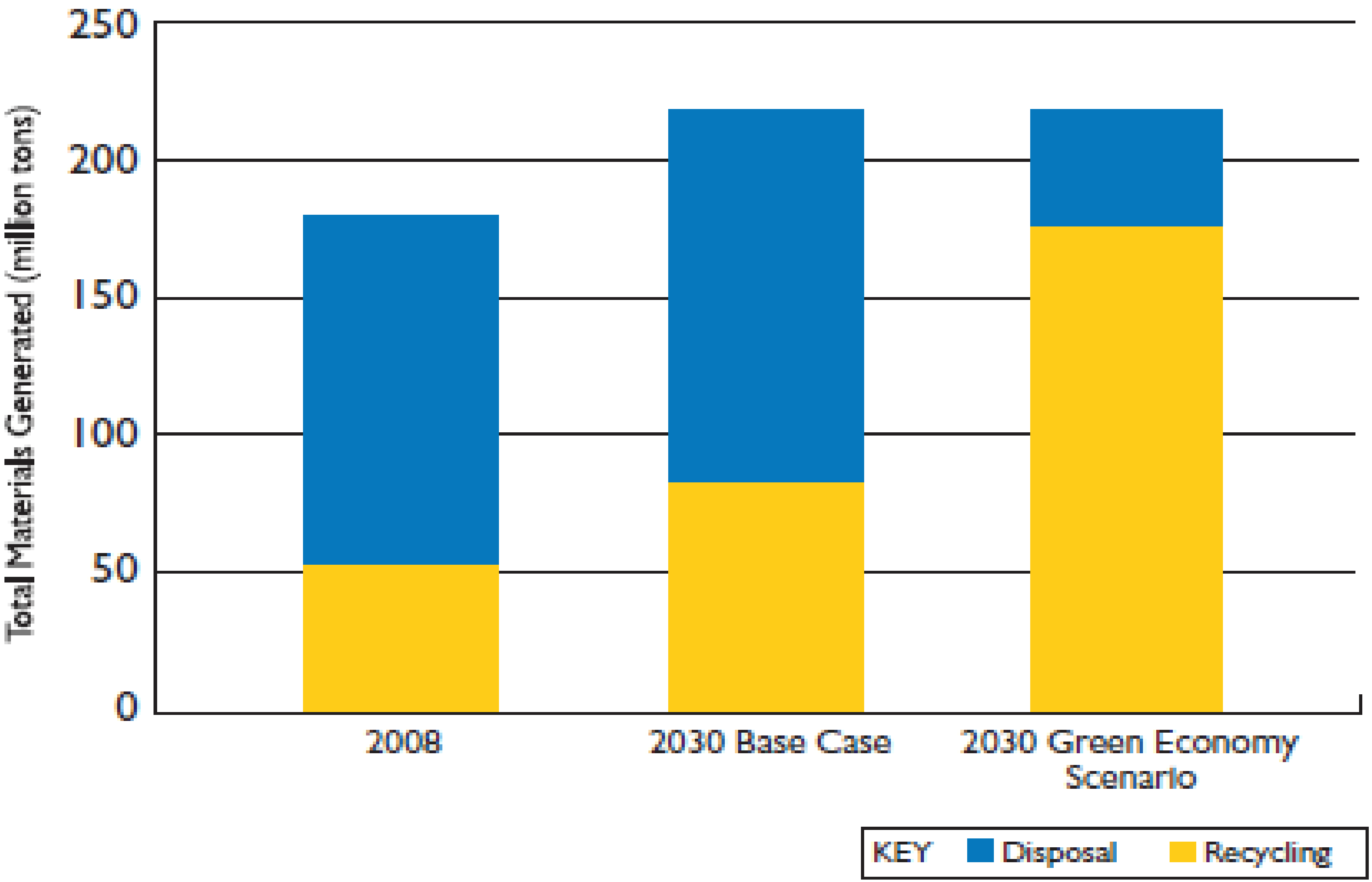
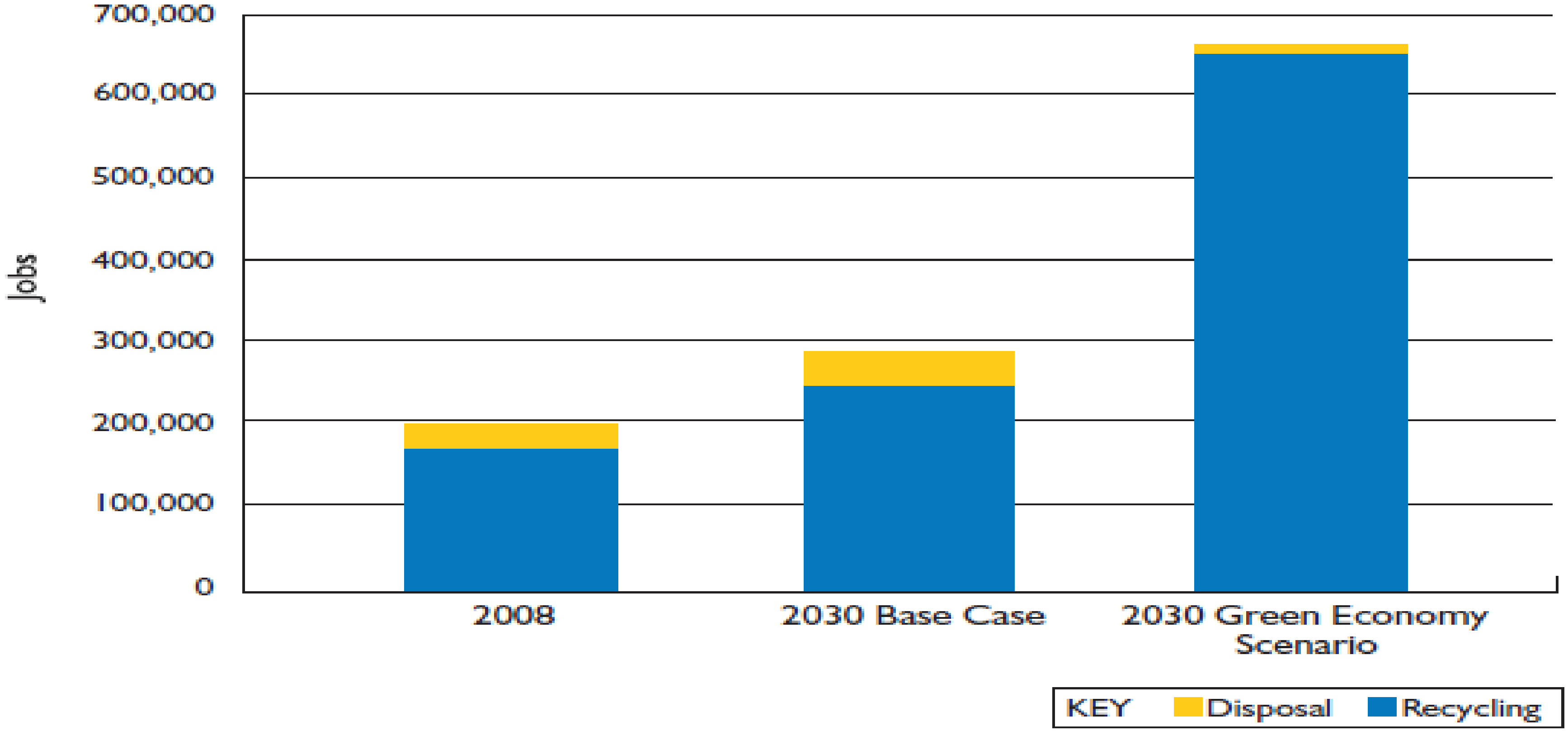


Figure 18
U.S. Jobs by C&D Waste Flow



In summary, the Green Economy Scenario for the C&D waste stream results in more than 380,000 more jobs than the Base Case Scenario in 2030. This comparison is summarized in Figure 18.

Construction & Demolition Material Processing Facilities

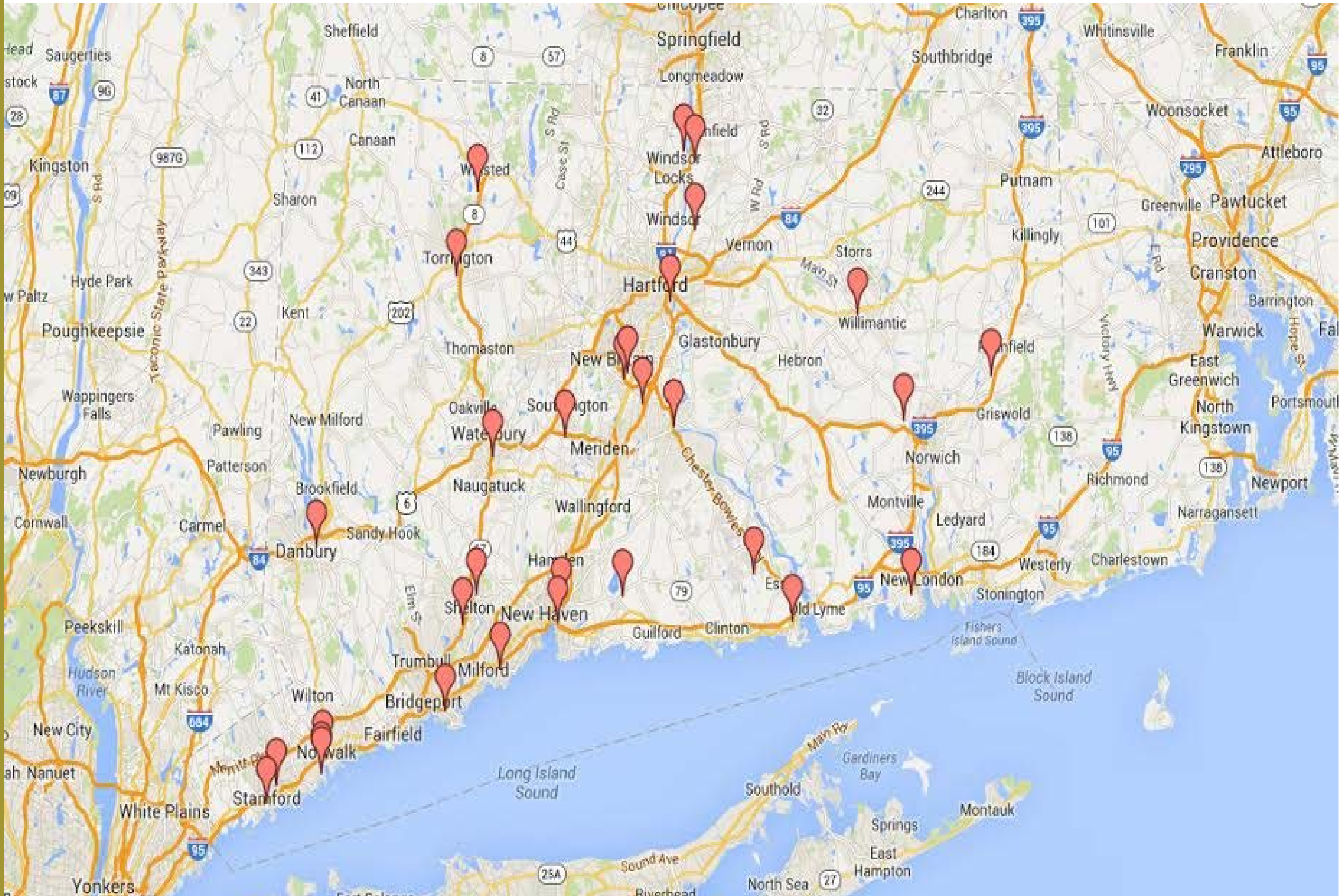


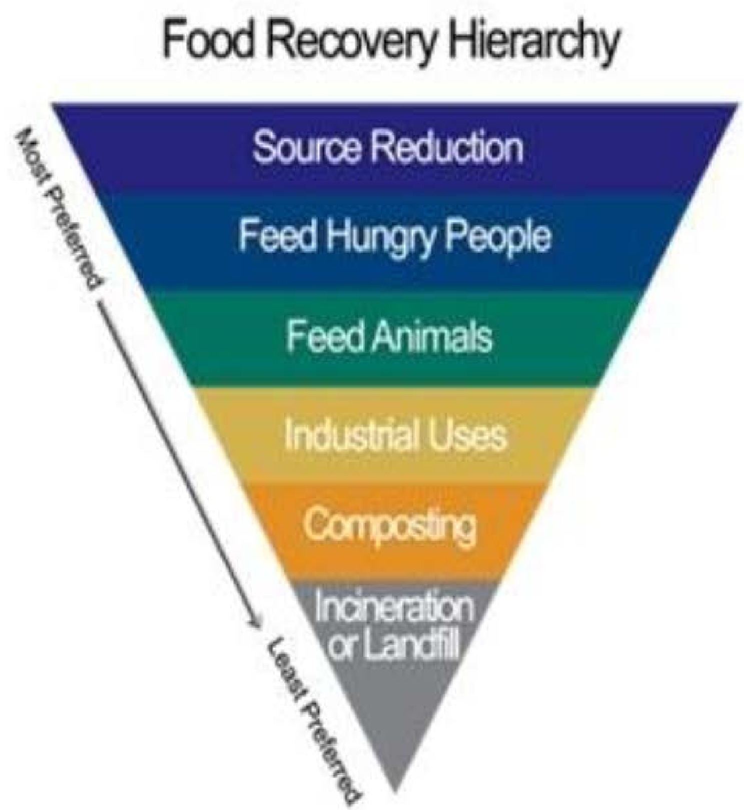
Table 6
Total MSW and C&D Job Impacts
(Number of Jobs)

	2008	2030 BASE CASE	2030 GREEN ECONOMY SCENARIO
MSW Diversion	573,591	841,940	1,649,569
MSW Disposal	92,380	103,760	33,886
C&D Diversion	161,154	246,149	652,157
C&D Disposal	33,699	37,022	11,692
Total Jobs	**860,825**	**1,228,870**	**2,347,305**

“Organically Grown Money”

NRRA

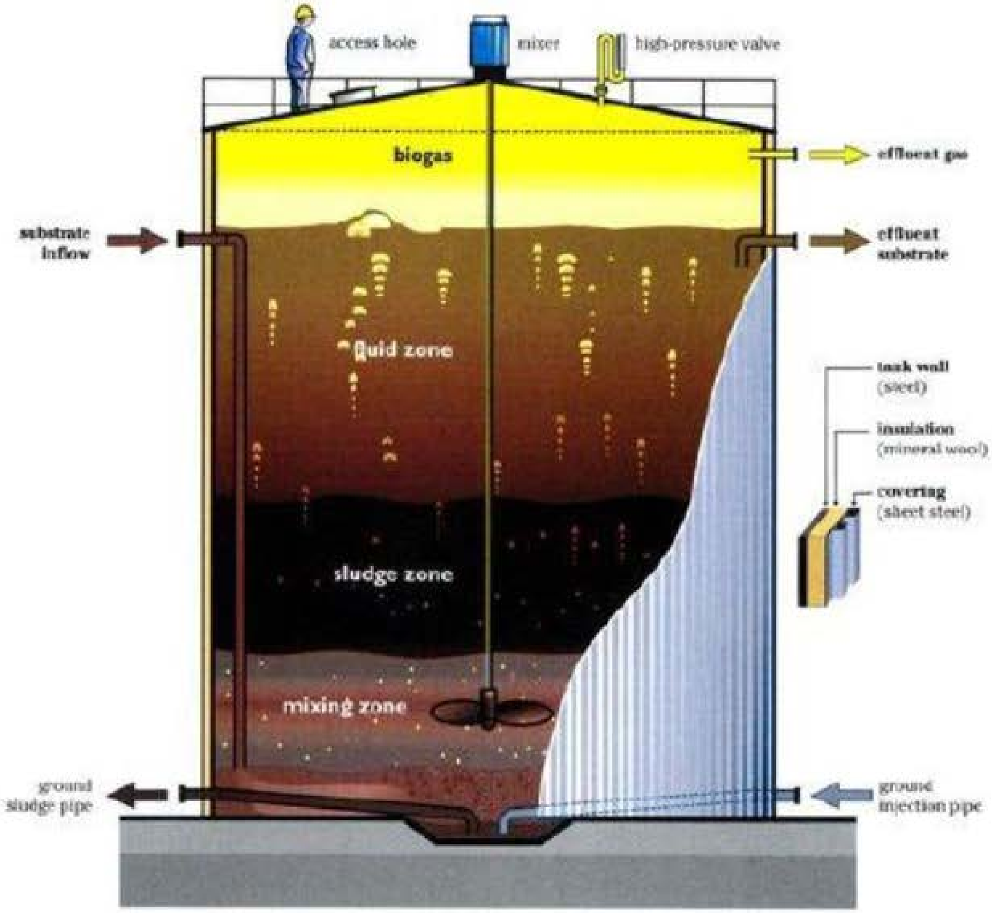
Higher and Better Uses

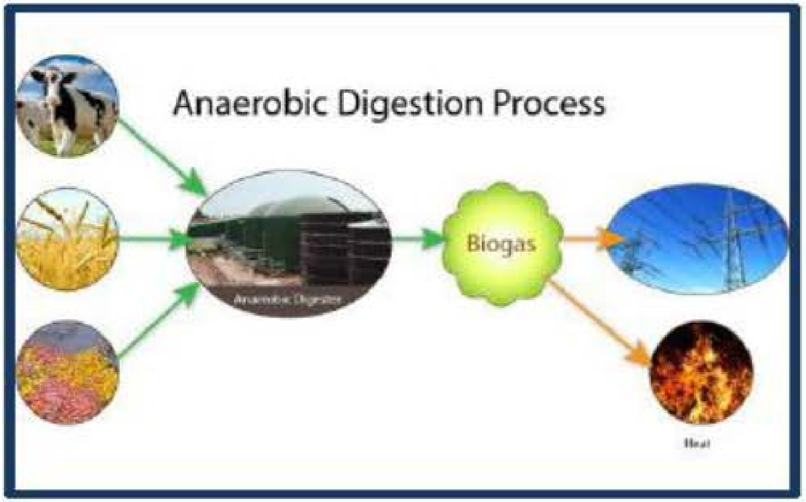


San Francisco Food Bank
Edible Food Redistribution

Feeding Food To Animals

Anaerobic Digestion



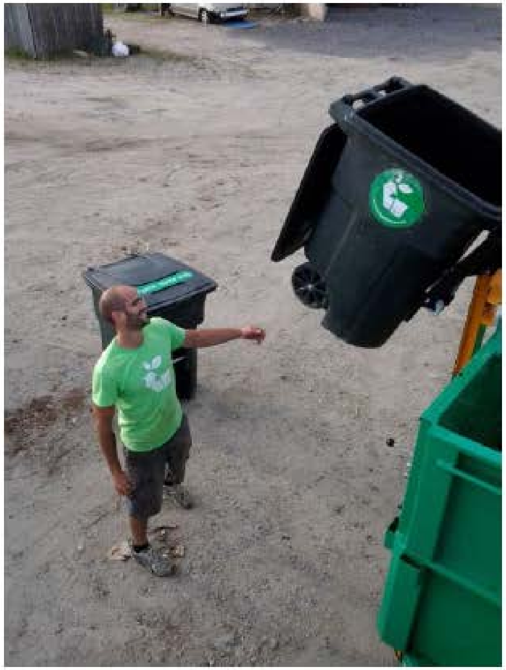


Composting

Land Application

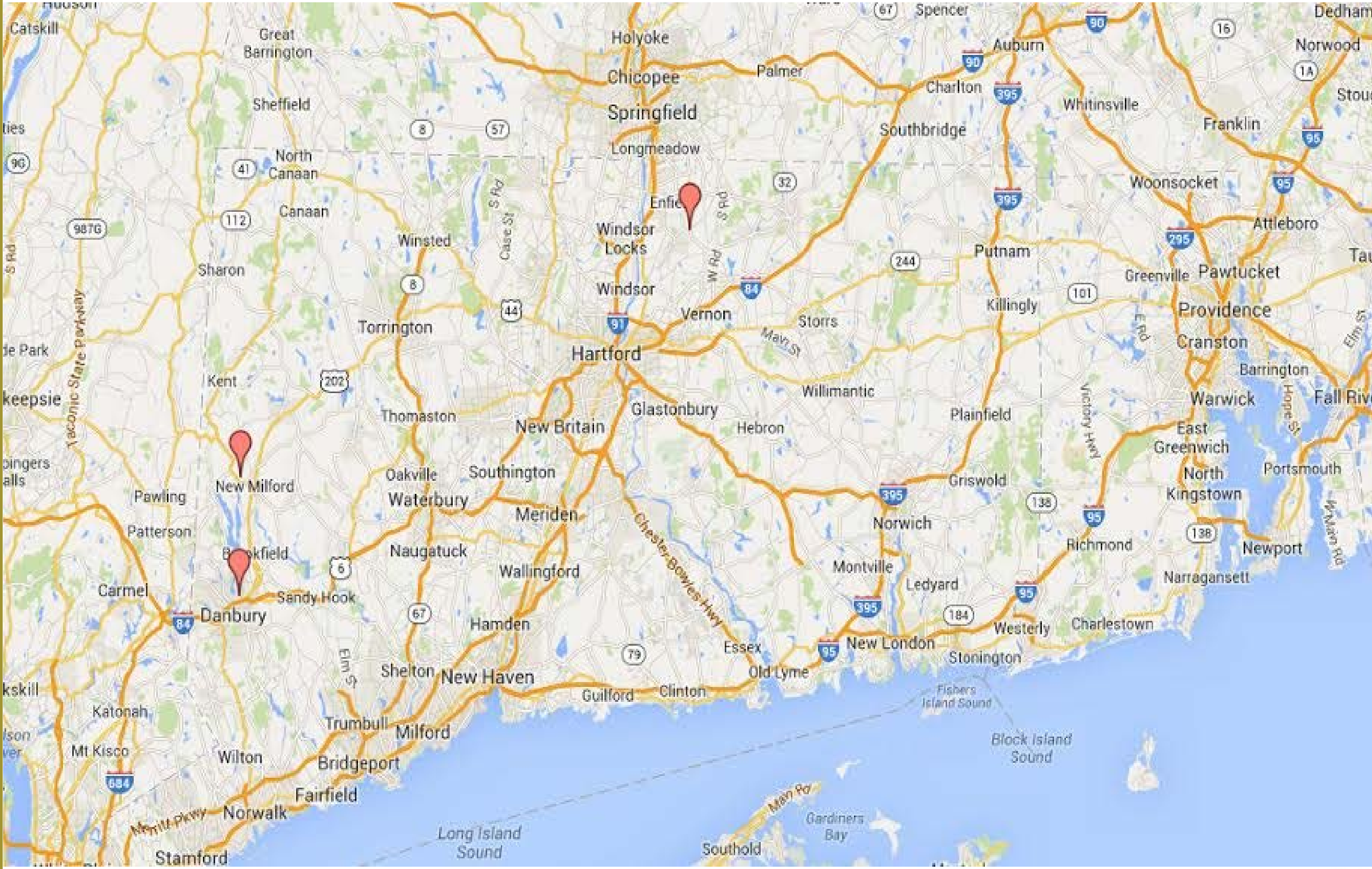
Buckets are picked weekly…

Toters-available for Apartment Complexes and Big Events



Collected Food Delivered to Benson Farms

Volume Reduction Composting Facilities & Small Scale Composting Facilities



Food Waste

- Generation of food waste was estimated to be 36.3 million tons in 2011, up from 35.7 million tons in 2010 **(14.5% of total MSW generation)**Total recycling equals 1.4 million tons, up from 970,000 tons of food waste and other organic materials composted in 2010, for a **recovery rate of 3.9%, up from 2.7% in 2010**
- 21.3% of MSW discarded is food waste

Recycling - Gambling or Good Business?
Risk or Reward?

A. Good for the Planet

B. Complex and Volatile Markets

C. Huge MSW Budget Benefits

D. Jobs

NORTHEAST RESOURCE RECOVERY ASSOCIATION

We serve the entire **NORTHEAST** and are the **RESOURCE** for all your municipal recycling and waste stream needs.

Our mission is the **RECOVERY** of all materials.

We are an **ASSOCIATION** of members helping members.

Become an NRRA Member Today and Let Us Help You Manage Your Entire Waste Stream to Help You Save Money

Call 800-223-0150 OR Email: info@nrra.net

Northeast Resource Recovery Association
2101 Dover Road (NH Route 4), Epsom, NH 03234
(800) 223-0150 Fax: (603) 736-4402
info@nrra.net www.nrra.net

Why We Come to Work Everyday

Why is it Important?