

# Recycling Jobs

Unlocking the Potential for Green Employment Growth





Compiled by GAIA (Global Alliance for Incinerator Alternatives).

GAIA is a worldwide alliance of more than 650 grassroots groups, non-governmental organizations, and individuals in over 90 countries whose ultimate vision is a just, toxic-free world without incineration.

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**COVER: Protest against the Detroit Incinerator, June 2010 (Photo: Zero Waste Detroit); Union recycling workers (Photo: Teamsters).**

## Table of Contents

<b>Introduction</b>	<b>1</b>
<b>1. How many jobs are there potentially?</b>	<b>2</b>
National data and analysis tell us	2
Local and state data on current jobs	3
What are recycling jobs?	3
Environmental benefits of recycling, reuse, and organics management	6
A note on terminology, measurements, and reporting of recycling	7
<b>2. What sectors have significant potential for job growth?</b>	<b>8</b>
Residential recycling	8
Commercial recycling	10
Manufacturing with recycled content	11
<b>3. What market categories have significant potential for job growth?</b>	<b>13</b>
Organics	13
Reusable Products and Materials	16
Construction Materials (from construction, deconstruction, and demolition)	18
<b>4. What are the keys to unlocking recycling job creation?</b>	<b>21</b>
Policies and Best Practices	21
A. Federal keys for unlocking recycling job creation	21
Leadership from the Administration and EPA	21
Correcting subsidies for disposal (incinerator and landfills)	22
B. State keys for unlocking recycling job creation	24
State recycling goals and standard measurements	24
Correcting state subsidies for incinerators and landfills	24
Incinerator bans or moratoria (Rhode Island, Massachusetts, and Delaware)	26
Organics	26
Bottle bills	27
Disposal bans for recyclable, compostable, or problematic materials	28
Recycling mandates	29
Extended producer responsibility (EPR)	29
Increasing recycling, composting, and anaerobic digestion infrastructure	31
Increasing in-state recycling manufacturing and reuse businesses	31
Funding sources to support infrastructure and programs	31
Increasing reuse	32
Local authority to regulate waste facilities	32
Climate policies, energy policies, and job creation policies	32
State plans	32
C. Local keys for unlocking recycling job creation	33
Creating the political support for change	33
Correcting disposal subsidies and creating local financing systems	34

Responsible recycling	35
Adopting a zero waste goal or high recycling goal, with a plan	35
City recycling mandates	36
Construction and demolition drivers	36
Physical infrastructure	36
The right incentives: unit based pricing	38
Local organics policies include	38
Technical assistance to business	38
Creating opportunities for reuse	38
Translocal organizing and sharing best practices	39
Engaging the community	39
Leading by example	39

# Recycling Jobs: Unlocking the Potential for Green Employment Growth

## Introduction

Recycling, reuse, and organics management offer enormous potential for job creation throughout the U.S. While there is no one-size-fits-all approach for all communities on recycling, reuse, and organics management, there is a menu of proven strategies that can be aligned to local circumstances, resources, and values. Moreover, a good recycling plan does not have to be implemented all at once. Cities with exemplary waste practices have often scaled up their programs over time, increasing both the participation (single-family dwellings, businesses, multi-family dwellings) and the types and quantities of materials recovered.

Recycling, reuse, and composting are critical elements of zero waste, which also includes waste reduction, changes in consumption habits, and industrial redesign. The goal of zero waste is to protect and recover scarce natural resources by ending waste disposal in incinerators, dumps, and landfills. The premise is that if a product cannot be reused, composted, or recycled, it should not be produced in the first place. Practicing zero waste means moving toward a world in which all materials are used to their utmost potential, in a system that simultaneously prioritizes the needs of workers, communities, and the environment. It is much like establishing zero defect goals for manufacturing, or zero injury goals in the workplace.

Waste and recycling provide opportunities for civic engagement and community organizing: recycling and waste impacts everyone in some way, and many people in the general public have ideas for how to improve these practices in their home, work, neighborhood, and city. It's critical to move this interest to systems at the city level and beyond. Conversely, organizing is necessary to ensure that recycling fulfills its full potential for the climate, environmental justice, healthier environments, stronger local economies, job creation, and good livelihoods.

Recycling industries are especially robust routes to diversified local job creation because these jobs encompass a spectrum of positions from entry-level to management, and include not only collection and sorting of recyclables, but also jobs up and down the supply chain from the processing of recyclables to manufacturing with recycled materials to retail sale of refurbished materials.

At the same time, job quality must be prioritized in these industries. Recycling workers deserve respectful treatment by private and government employers, and by governments contracting with recycling companies, for the important role workers play in making recycling successful.

The expansion of recycling and good jobs in the recycling sector can happen at the city level, in large institutions (hospitals, colleges/universities, industrial parks, etc.), and at the state level, where financial and regulatory conditions that favor or disfavor recycling are often established. This document seeks to highlight the diversity of successful recycling, reuse, and composting approaches as that are also jobs, pollution, climate, and sustainability solutions.

## 1. How many jobs are there potentially?

### National data and analysis tell us:

According to recent data analysis in the *More Jobs, Less Pollution* report from the Tellus Institute, achieving a 75% diversion rate for municipal solid waste (MSW) and construction and demolition debris (C&D) by 2030 would **generate 2,347,000 total direct jobs**—1.1 million more than a “business-as-usual” base case scenario, and nearly 1.5 million more jobs than were in the sector in 2008.

People tend to view recycling jobs as recyclables collection and sorting, but this is only one part of the sector. Growth in U.S. recycling will create a range of entry-level, skilled, and green-collar jobs in an array of sectors such as manufacturing, trucking, and quality control. In addition to direct jobs, many related indirect jobs are created by recycling. Recycling-based economic development turns discards from expensive community liabilities into resources for local businesses and entrepreneurs.

Every community in the U.S. produces discards, therefore creating local recycling jobs growth is possible nearly everywhere. In this sense, recycling is not a sector that is geographically limited, and provides useful opportunities in both urban and rural communities (although the strategies and economics are different in each type of setting).

Some types of jobs, such as the collection and processing of recyclables, recovery of organics/composting, and building deconstruction are necessarily *local* jobs that cannot be exported, ensuring that investment into these industries will benefit the local economy.

While recycling-based manufacturing jobs are not inherently local, policies that favor local processing and manufacturing can help to keep these jobs in the U.S. and in a particular state or community.

*“...if we would insist on a recycling rate in our country at 80, 85, 90%... recycling in and of itself would become a supply chain in our country, a very domestic one.”*

*- U.S. EPA Director Lisa Jackson*

## Local and state data on current jobs:

California	<b>115,000</b> jobs in recycling <sup>1</sup>
Illinois	<b>40,000</b> jobs in recycling, another 71,000 induced and indirect jobs <sup>2</sup>
New York	<b>32,200</b> jobs in recycling <sup>3</sup>
Minnesota	<b>18,000</b> jobs in reuse <sup>4</sup>
North Carolina	<b>15,000</b> jobs in recycling <sup>5</sup>
Massachusetts	<b>13,900</b> jobs in recycling <sup>6</sup>
San Francisco	<b>1,000</b> union jobs in collecting, sorting recyclables and compostables <sup>7</sup>

## What are recycling jobs?

As described above, there are many different types of jobs in recycling. The *More Jobs, Less Pollution* report considered jobs in the following industries.

1. Recycling industries—including collection and processing of recyclables to make them available for use in new industrial processes. These include:

- Municipal residential recycling collection
- Private recycling collection
- Compost/organics processors
- Recyclables materials wholesalers
- Plastics reclaimers
- Materials Recovery Facilities, or MRFs, where recyclables are sorted and prepared for sale

2. Manufacturing with recycling materials, including industries that purchase secondary materials from the recycling industries

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<sup>1</sup> California Employment Development Department, “California’s Green Economy” presentation, March 2011. Available at <http://www.labormarketinfo.edd.ca.gov/article.asp?articleid=1229>

<sup>2</sup> DSM Environmental, *2010 Recycling Economic Information Study Update for Illinois*, 2010.

<sup>3</sup> Northeast Recycling Association, *Recycling Economic Information Study*, 2009.

<sup>4</sup> Minnesota Pollution Control Agency, *A Study of the Economic Activity of Minnesota’s Reuse, Repair, and Rental Sectors*, November 2011.

<sup>5</sup> NC Recycling Business Assistance Center, *Employment Trends in North Carolina’s Recycling Sector - 2010*, 2010.

<sup>6</sup> Northeast Recycling Association, *Recycling Economic Information Study*, 2009.

<sup>7</sup> Communication with City of San Francisco, 2012.

- Glass container manufacturing plants
- Glass product producers
- Nonferrous secondary smelting and refining mills
- Nonferrous product producers
- Nonferrous foundries
- Paper and paperboard mills/deinked market pulp producers
- Paper-based product manufacturers
- Pavement mix producers (asphalt and aggregate)
- Plastic product manufacturers
- Rubber product manufacturers
- Steel mills
- Iron and steel foundries
- Green building industries, such as FSC and LEED certified builders and manufacturers
- Other recycling/ processors/ manufacturers

3. Reuse and remanufacturing industries—including those industries that directly reuse or

- Tire retreaders
- Wood products reuse
- Materials exchange services
- Other reuse

The following chart shows the number of jobs for handling different materials in different industrial activities.<sup>8</sup> **In all cases recycling creates many more jobs per ton than disposal.**

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<sup>8</sup> This chart is from the *More Jobs, Less Pollution* report (Tellus Institute, 2011). Sources for the jobs figures used in the report include Institute for Local Self-Reliance, Container Recycling Institute, Northeast Recycling Coalition, and EPA.



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
<b>MATERIALS</b>								
<i>Paper &amp; Paperboard</i>	1.67	1.23	2.00	4.16	N/A	0.56	0.10	0.10
<i>Glass</i>	1.67	1.23	2.00	7.85	7.35	0.56	0.10	0.10
<b>Metals</b>								
<i>Ferrous</i>	1.67	1.23	2.00	4.12	20.00	0.56	0.10	0.10
<i>Aluminum</i>	1.67	1.23	2.00	17.63	20.00	0.56	0.10	0.10
<i>Other Nonferrous</i>	1.67	1.23	2.00	17.63	20.00	0.56	0.10	0.10
<i>Plastics</i>	1.67	1.23	2.00	10.30	20.00	0.56	0.10	0.10
<i>Rubber &amp; Leather</i>	1.67	1.23	2.00	9.24	7.35	0.56	0.10	0.10
<i>Textiles</i>	1.67	1.23	2.00	2.50	7.35	0.56	0.10	0.10
<i>Wood</i>	1.67	1.23	2.00	2.80	2.80	0.56	0.10	0.10
<i>Other</i>	1.67	1.23	2.00	2.50	N/A	0.56	0.10	0.10
<b>Other Wastes</b>								
<i>Food Scraps</i>	1.67	1.23	0.50	N/A	N/A	0.56	0.10	0.10
<i>Yard Trimmings</i>	1.67	1.23	0.50	N/A	N/A	0.56	0.10	0.10
<i>Misc. Inorganic Wastes</i>	1.67	1.23	0.50	N/A	N/A	0.56	0.10	0.10

**Spotlight on Austin, Texas**

Austin, Texas has a 30% recycling rate, but is committed to reaching 75% recycling by 2020 as part of its new zero waste . The city expects to create 1,000 new jobs in the process. About 400 of these jobs will be at two new recycling sorting facilities, and the rest in manufacturing with recycled content, in reuse, and in composting. The city department Austin Resource Recovery is hiring an economic development officer, and is currently in negotiations with

plastics pelletizers, plastics manufacturers, and glass manufacturers to locate new manufacturing facilities in Austin at an eco-industrial park. The city is also helping to develop a mattress recycling operation, is investing in a new compost facility, and is working with reuse businesses to help them become city contractors and expand their operations. Austin Resource Recovery requires that all jobs created with city support pay a living wage of at least \$11/hour plus benefits, and plans to raise this by 2015. The program will cost money to launch (as do, of course, trash collection and disposal) which will be covered by revenue from commodities sales and a new rate structure for residents. Key local results include more jobs in the Austin area, with related economic benefits. Thanks to the advocacy of Texas Campaign for the Environment and other organizations in the Central Texas Zero Waste Alliance, and the city's efforts to hold over 100 community meetings about how to reach zero waste, there is widespread political and community support for Austin's zero waste plans.<sup>9</sup>

### **Environmental benefits of recycling, reuse, and organics management**

In addition to creating employment, reuse, recycling, and composting provide numerous environmental benefits, including climate change mitigation and toxics reduction. These benefits mean there is a role in recycling advocacy for organizations and individuals concerned about pollution, environmental health, and environmental justice; sustainability and energy and resource conservation; and climate change.

In broad terms, recycling, reuse, and organics management:

- Reduce the demand for extraction of virgin resources such as metals, wood, and oil. Natural resource extraction is energy intensive and has heavy environmental, health, and social tolls, including contributing to climate change
- Require less processing in preparation for manufacturing than virgin resources, again reducing energy, environmental, and social burdens
- Reduce the amount of waste going to landfills, which reduces environmental, health and social impacts. Particularly of note is avoidance of creation of methane, a potent greenhouse gas that results especially from disposal of organic waste in landfills
- Reduce the amount of waste going to incinerators, which are inefficient energy producers and release a variety of toxic discharges and greenhouse gas emissions
- Build healthy soils when organic discards are manufactured into compost and returned to the soil. Compost—a rich humus and soil amendment—adds needed organic matter to soil, sequesters carbon in soil, improves plant growth, reduces water use by 10%, reduces reliance on chemical pesticides and fertilizers, and helps prevent nutrient-run-off and soil erosion

### **A note on terminology, measurements, and reporting of recycling**

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<sup>9</sup> Personal communication with Robert Gedert, Director of the Austin Resource Recovery Department, Robin Schneider, Executive Director of Texas Campaign for the Environment, and the [Austin Resource Recovery Master Plan](#), 2011.

There is a great deal of variation in measurements, terminology, and reporting of recycling data and information. Although the following map comparing state recycling rates, in reality these are apples and oranges comparisons: the definition of recycling itself varies across states, as do measurement methods, such as tonnage reporting requirements for local jurisdictions, recycling facilities, landfills, and incinerators. For example, some states include commercial waste in municipal calculations, and some states include commercial waste in industrial waste calculations. The EPA's methodologies (which are currently being revised) are also insufficient and do not, for instance, account for construction and demolition (C&D) debris. The EPA calculated the national recycling rate at 34% in 2010,<sup>10</sup> but another accounting estimates that a much higher amount of waste is generated each year and that only 24% is recycled.<sup>11</sup>

Furthermore, the terms "recycling rate" and "diversion rate" can have different meanings. California, for example, has a legislative definition of "diversion" which includes many activities that are actually waste disposal. The state's official diversion rate is 65%, but a newly calculated statewide "recycling" rate (which includes no activities related to disposal) is 49%.<sup>12</sup>

In this document "recycling rate" and "diversion rate" are used to mean the percentage of all municipal and commercial (including construction and demolition) discards that are reused, recycled, and composted.

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<sup>10</sup> U.S. EPA, *Municipal Solid Waste Generation, Recycling, and Disposal in the United States: Facts and Figures for 2010*, December 2011. [www.epa.gov/wastes](http://www.epa.gov/wastes)

<sup>11</sup> Van Haaren, Themelis, Goldstein, "The State of Garbage in America," *Biocycle Magazine*, October 2010.

<sup>12</sup> CalRecycle, "California's New Goal: 75% Recycling," May 2012.

## 2. What sectors have significant potential for job growth?

The sectors of **residential recycling**, **commercial recycling**, and **recycled-content manufacturing** underpin the current recycling system, along with industrial recycling activities (much of which operates without government tracking and little influence). This section focuses on the first three sectors because they can be readily influenced by local and state governments, and can each grow significantly. Together these sectors include supply and market demand of recycled materials.

### Residential recycling

Curbside recycling collection has grown dramatically in recent decades, from 25 cities in 1983 to over 12,500 today. A newer addition to curbside collection programs is food scrap collection, which is now in more than 160 U.S. communities.

There is still great opportunity for improvement and for jobs creation in new curbside programs, as well as growth and jobs creation at sorting facilities and compost facilities to handle higher volumes. To the right is a chart of the contents of is in municipal solid waste. Staff members from cities with leading recycling policies like San Francisco, CA and Austin, TX are convinced that 90% of this is reusable, recyclable or compostable.

Some cities provide waste and recycling collection as municipal services and have direct control over programs. For those cities with private sector collections, cities can control waste reduction by exerting their power over waste and recycling service providers.

Cities already have control over companies providing recycling and waste hauling services through local health and safety statues. Cities also control the way the public pays for collection (rates, taxes, property taxes), municipal franchise agreements, and local ordinances governing disposal and waste hauling. A key to a zero waste future is for municipalities to restructure how cities use their power to divert resources from the waste stream into the economy. Cities often spend a great deal of money subsidizing disposal, but can shift towards recycling, reuse, and composting by realigning the economic incentives that frequently benefit disposal over resource recovery.

MSW Generation in the U.S. – 2008

MATERIALS	1000S OF TONS	SHARE OF TOTAL MSW
<b>Materials in Products</b>		
Paper & Paperboard	77,420	31%
Glass	12,150	5%
<b>Metals</b>		
Ferrous	15,680	6%
Aluminum	3,410	1%
Other Nonferrous	1,760	1%
Plastics	30,050	12%
Rubber & Leather	7,410	3%
Textiles	12,370	5%
Wood	16,390	7%
Other**	4,500	2%
<b>Total Materials in Products</b>	<b>181,140</b>	<b>73%</b>
<b>Other Wastes</b>		
Food Scraps	31,790	13%
Yard Trimmings	32,900	13%
Misc. Inorganic Wastes	3,780	2%
<b>Total Other Wastes</b>	<b>68,470</b>	<b>27%</b>
<b>Total MSW Generated</b>	<b>249,610</b>	<b>100%</b>

Source: More Jobs, Less Pollution, page 14

Government contracts and permits for recycling and waste collection and services are a powerful tool. Cities have a range of different contract structures for hauling, recycling sorting, disposal, and other services.

Cities which do not contract for waste or recycling hauling services, or provide municipal services, have power through the policies they enact governing private sector activities. Boulder County, Colorado, for instance, requires any business collecting trash to also collect recycling and organics (including food debris) from every account holder. The ordinance also requires pay-as-you-throw (PAYT) unit-based pricing for trash collection to incent recycling and composting.

These relationships between cities and private recycling industry provide opportunities not only to increase recycling, but to ensure *responsible recycling*, which includes the fair and respectful treatment of recycling workers.

Combining curbside programs with strong outreach can increase recycling in the space of a few years. A 2009 article on the cities with the lowest recycling rates listed Oklahoma City (3%), Indianapolis (4%), San Antonio (4%), Philadelphia (8%), and Houston (9%).<sup>13</sup> By early 2012, San Antonio, Texas (the seventh largest U.S. city) reached a recycling rate of 29%, and has a goal of 60% recycling by 2020. It will also be among the first cities in Texas to collect food scraps.<sup>14</sup>

Rural areas also have opportunities to increase recycling and create jobs. For example, Logan County, Ohio (population 40,000) has achieved a 47% residential recycling rate. Including the commercial sector, the county's overall recycling level is 66%. The county provides curbside collection in the largest town and drop-off sites for waste and recycling across the county, where vending machines sell \$2 bags for trash, and recycling can be dropped off for free. Enforcement with video cameras and follow-up calls to residents (including the threat of fines) has significantly raised the recycling rate. A planned compost facility is expected to create 15 new permanent jobs.<sup>15</sup>

Cities often have a challenge with apartment buildings, also called "multifamily." Recycling and composting rates tend to be much lower in apartment buildings than in single family homes, for a number of reasons including higher turn-over rates, lack of space for sorting within apartments, lack of space in common areas for large bins, and the diversity of languages spoken. Recycling outreach and education efforts focused on apartment residents can make a difference, which is well worth the effort, as increased recycling from apartment buildings offers significant opportunity for increased materials and jobs. San Francisco recently launched an innovative outreach effort specifically targeted at increasing apartment recycling.

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<sup>13</sup> Jen Quraishi, "Recycling: Curb your Enthusiasm," *Mother Jones*, June 2009.

<sup>14</sup> Presentation by Dave McCarey, director of the Solid Waste Management Department, San Antonio, at SWANA Zero Waste Conference in Austin, Texas, February 2012. The director gave a starting recycling rate of 7% in 2007, which differs from the rate in the above Mother Jones article.

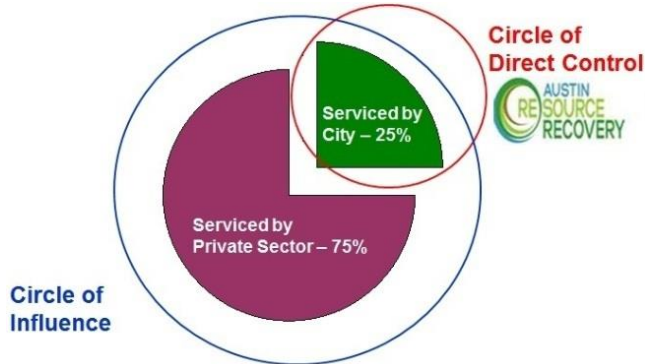
<sup>15</sup> Personal Communication, Alan Hale, Director of Logan County Solid Waste District, Ohio, 2012.

While a comprehensive zero waste plan is a powerful strategy, there are many policies that cities can employ in the interim to increase recycling and recycling jobs, and many lessons to learn from other cities.

## Commercial recycling

City governments have the power to drive recycling and composting in the commercial sector through policies such as: unit-based pricing and differential rates for recycling and composting; rate rebates for subscribing to recycling and composting collection; requirements that businesses subscribe to recycling and composting services; requirements that businesses separate discarded materials; and requirements that private haulers offer recycling services. These policies are variations on a theme, and would not all be implemented together.

For example, the city of Austin, Texas runs collection services for residences in the city, but private companies provide services to all other sectors. The chart below from the city of Austin illustrates the percentage of accounts serviced by the city, versus the much larger commercial sector. Austin is exerting its influence over the commercial sector with its Universal Recycling and Composting Ordinance, currently requiring all apartment buildings, office buildings, and institutional properties in the city to recycle. The city will soon add to this policy by requiring the same entities to separate food scraps and compostable paper (food soiled paper), which account for 30% of Austin's disposal.<sup>16</sup>



Many large corporations like Anheuser-Busch, Hewlett-Packard, Interface (carpeting), Vons-Safeway, and Xerox have adopted zero waste goals in order to save money, increase efficiency, reduce greenhouse gases, reduce corporate liability for waste, and gain a marketing edge.<sup>17</sup> These corporations recognize the savings potential of their zero waste efforts, but more can be done by cities and states to influence the commercial sector, including small and medium businesses, to follow suit. Institutions like hospitals, universities, and government agencies provide opportunities to increase recycling, and a number of organizations support such sustainability initiatives.

<sup>16</sup> City of Austin, Texas, "Austin Resource Recovery Master Plan," December 2011.

<sup>17</sup> Grassroots Recycling Network, <http://www.grrn.org/page/zero-waste-business-profiles>, 2010

State and local government can require recycling and composting (such as California's new requirement for businesses over a certain size to subscribe to recycling services), as well as provide the right incentives to encourage businesses to increase their participation in recycling/zero waste efforts, including differential pricing for recycling and composting (compared to trash), technical assistance, and public recognition to reward success.

## Manufacturing with recycled content

Manufacturing with recycled content is the single largest category of jobs, although reuse and repair operations create more jobs per ton. Currently a significant percentage of U.S. recyclables are exported overseas, but the right mixture of incentives could increase recycled-content end-product manufacturing domestically. There is no single policy that will result in more materials being recycled in the U.S., but a multi-pronged policy approach is needed to support domestic production. (This is discussed in more detail in the section addressing policy.)

### Manufacturing snapshots:

Over 200 manufacturers in the **Southeastern U.S.** use recycled feedstock to make new goods. Together, **these recycled content manufacturers employ more than 47,525 people** and have sales volume of more than \$29.4 billion.

With the commitment of its mayor, the **City of Reading, Pennsylvania** is starting a publicly-run recycling program that will be staffed by new city employees, and is committed to using recycled resources to boost its challenged economy. Reading plans to be the site of a new type of paper recycling mill that will use high-grade recycled paper and recycled cotton to produce stationery, copy paper, envelopes and file folders for local and regional markets. **The plant is expected to create 100 jobs at \$14 per hour, plus an additional 20 jobs in distribution and warehousing.** United Community Services, the city's workforce development agent, plans to identify, recruit, and screen workers.<sup>18</sup>

At the same time, it is important to note that demand and supply interact to form a broader context in which recycling collection and delivery services operate.

Manufacturers represent the demand side of the recycling system and are a critical component to maximizing job creation, and strong demand for recycled content from manufacturers can help avoid an uneven growth of recycling supply (e.g. stuff to be recycled into new products). For example, the number of factories that can recycle PET (plastic number 1) in the U.S. is growing, and there is now capacity to recycle more PET than is expected to be collected this

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<sup>18</sup> Personal communication, Neil Seldman, Institute for Local Self-Reliance, 2012.

year (which is only a portion of PET).<sup>19</sup> This will likely raise prices for PET bales, sending signals to recycling collection companies to find ways to increase their PET collections. The challenge is to keep both sides responsive to economic signals so that they pull each other forward, instead of backsliding when there is too great an unbalance of supply or demand.

In the case of paper, consumer campaigns that call for paper productions with recycled content can create demand-side pressures, which then translate into better markets for paper bales from recycling collectors, which should lead to increased collection of paper. For example, after pressure from environmental organizations, Disney Corporation instituted a new policy to maximize the use of recycled paper in its products, which will impact nearly 25,000 manufacturing facilities around the world.<sup>20</sup>

One challenge in this arena is to ensure that incineration subsidies for “biomass” and wastes (like paper) do not skew the supply and demand system in such a way that recycling is undermined or undervalued. This is a current problem in Europe, which is why the U.K. paper industry is calling for a phase out of subsidies for incineration, because these subsidies change prices enough to pull raw materials away from the paper industry.<sup>21</sup>

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<sup>19</sup> Mike Verespej, PET recycling rate inches up, while recycling capacity continues to expand, *Plastics News*, October 10, 2012.

<sup>20</sup> Andrew Gumbel, “Disney breaks ties with paper makers over Indonesian rainforest concerns,” *The Guardian*, October 11, 2012.

<sup>21</sup> UKWIN, Confederation of Paper Industries call for phasing out of incineration subsidies, September 25, 2012, <http://ukwin.org.uk/2012/09/25/confederation-of-paper-industries-call-for-phasing-out-of-incineration-subsidies/>



### 3. What market categories have significant potential for job growth?

This section focuses on three categories of materials that can be recycled: organics (food and yard scraps), reusable products, and construction materials. Organics and construction materials are some of the largest components of the waste stream and are highly recyclable, thus offering important potential job growth. Reuse is included in this section because reuse activities provide more jobs per ton of materials than recycling activities.

The evidence that end markets are economically viable is another reason for highlighting these categories. For example, the section includes a look at the response of construction materials markets to Massachusetts recycling requirements. The demand side of reuse markets consists of consumers at second hand stores, rather than manufacturers, and reuse sales have been growing nationally in recent years. This section includes snapshots of reuse activities in different parts of the country.

Markets for compost from organics exist but are more challenging, partly because they vary regionally due to different uses of compost, including agriculture and landscaping. The section describes strategies to encourage demand for compost through forward-thinking policies, such as government landscaping use or subsidizing agricultural use of compost (which can be justified as saving water and saving energy for irrigation, among other benefits). Organics markets also provide a prominent example of the way in which initial public support for establishing systems can provide significant environmental and jobs benefits over the long run.

#### Organics<sup>22</sup>

##### Opportunities

Organic materials—yard trimmings, wood products, and food scraps—make up about one-third of the trash set out in the U.S. While 58% of yard trimmings are recovered for composting (due in great part to bans on landfilling yard debris in many states), the recovery level for food scraps remains low at 2.8%<sup>23</sup>; sadly, much of what we discard is edible food. At the same time, U.S. soils are eroding, losing nutrients, and polluting waterways with excess fertilizers and sediment when it rains. Many of these problems can be mitigated by expanding the use of compost, which adds needed organic matter to soil, sequesters carbon in soil, improves plant growth, reduces water use, avoids landfill methane and waste incinerator emissions, reduces chemical pesticide and fertilizer reliance, and helps prevent nutrient run-off and soil erosion.

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<sup>22</sup> This section on organics is excerpted and summarized from “Pro-Active Organics Recovery Strategy,” written for this project by Brenda Platt, Director, Composting Makes \$en\$e Project, Institute for Local Self-Reliance, 2012.

<sup>23</sup> U.S. EPA, Office of Resource Conservation and Recovery, *Municipal Solid Waste Generation, Recycling, and Disposal in the United States, Tables and Figures for 2010*, December 2011. Available online: [http://www.epa.gov/osw/nonhaz/municipal/pubs/2010\\_MSW\\_Tables\\_and\\_Figures\\_508.pdf](http://www.epa.gov/osw/nonhaz/municipal/pubs/2010_MSW_Tables_and_Figures_508.pdf)

Unlike recycling, composting is inherently local and part of the natural ecosystem. Recovered organics cannot be shipped abroad to be made into compost; compost happens locally with myriad benefits to the local economy and environment. According to the Institute for Local Self-Reliance, **on a per-ton basis, composting sustains four times the number of jobs as landfill or incinerator disposal.**<sup>24</sup> In addition to direct jobs at composting sites (such as skilled equipment operators for windrow turners, front-end loaders, grinders, and screeners), indirect jobs are supported in the use of compost, which also tends to take place regionally.

The compost itself has many applications: agricultural and horticultural, landscape and nursery, vegetable and flower gardens, sod production and roadside projects, wetlands creation, soil remediation and land reclamation, sports fields and golf courses, and sediment and erosion control. Jobs are sustained in each phase of the organics recovery cycle. **Markets for quality compost are growing thanks to the expansion of sustainable practices** associated with green infrastructure such as storm water management, green roofs, rain gardens, erosion and sediment control, and low-impact development. Growth in demand for compost can also be attributed to a strong green building movement helped along by the U.S. Green Building Council and its LEED certification.

### **A snapshot of a diverse organics recovery infrastructure**

Composting is not yet standard operating procedure throughout the U.S. Where it exists, systems tend to be centralized, relying on large-scale collection to out-of-town large-scale regional facilities. Efforts are being made to prioritize reducing waste, rescuing edible food, and decentralized composting, before turning to centralized systems. Backyard and onsite composting allows for more resilient communities and reduced government and business costs.

**Food Rescue**, the donation of edible food to local food banks, soup kitchens, pantries, and shelters, is a higher and better use for unwanted food discards than composting.

**Backyard Composting** can reduce and avoid collection of a portion of residential waste, especially when combined with pay-as-you-throw trash systems. Promoting grasscycling is a complementary strategy to reduce the amount of yard trimmings set out at curbside; grass clippings on the lawn provide nutrients.

**Community Composting**<sup>25</sup> is essentially community groups, social enterprises, and individuals producing compost from yard trimmings and food scraps and using it in their communities.

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<sup>24</sup> In the 1990s, ILSR documented comprehensive job-to-ton factors based on several research projects it was conducting. For composting, ILSR contacted 53 composters who were handling 662,625 tons per year and employing 266 full-time equivalent workers. In contrast, the 114 disposal facilities documented processed 26,665,713 tons per year and employed 2,816 FTE. Thus, on a per-ton basis, composting employed four times more workers than disposal. The data are summarized in: Brenda Platt and Neil Seldman, Institute for Local Self-Reliance, *Wasting and Recycling in the United States 2000* (Washington, DC: 2000), p. 27.

<sup>25</sup> The full document by Brenda Platt, "Pro-Active Organics Recovery Strategy," includes more information about community composting and its benefits.

**Onsite Composting** can also take place at institutional venues, such as hospitals, schools, and prisons. Small-scale in-vessel composting systems can compost anywhere from a few pounds to over 60 tons a day. Some systems are fully automated and use biofilters to reduce or eliminate odors. Benefits include avoided transportation costs and access the finished compost for landscaping and other uses.

**Residential Curbside Collection for Off-Site Composting** is the most common approach to residential organics recovery. The typical program in the US is voluntary; residents often pay an additional fee. While ambitious programs require larger capital investments, this does not necessarily mean higher net costs if opportunities for savings are exploited.

One benefit of composting is that it is compatible with anaerobic digestion, another microbiological process that breaks down organics materials in the absence of oxygen to produce a biogas, with properties similar to natural gas. (Composting is an aerobic process.) The digestate—or solids—remaining after anaerobic digestion can be composted. Indeed, a number of North American cities, including Toronto, Seattle, San Jose, and San Francisco, are now pursuing hybrid composting and anaerobic digestion systems. These hybrid systems are widely implemented in Europe, but Europe has specific policies that facilitate the development of such facilities including bans on landfill disposal of biodegradable materials and feed-in tariffs, which offer long-term contracts to renewable energy producers (vital to attracting financial investors). Anaerobic digestion systems are enclosed or “in-vessel,” which typically means that their capital costs are higher than most composting systems. As a result, digestion systems may not always make sense for every community but some sort of composting almost always will. There are many composting systems readily available—in-vessel, open windrow, aerated static piles—and many technology vendors.

Model programs include that of the **City and County of San Francisco**, a compulsory program that has a 78% diversion rate and a 46% participation rate for apartment buildings. It serves both the commercial and residential sectors. Organics are collected weekly, as are recyclables and trash. Participation is incited by pay-as-you-throw trash fees, as well as enforcement mechanisms ranging from fines to property liens for non-payment of service accounts.

The **City of Toronto** has a mandatory “Green Bin” residential organics collection program with the cost of organics collection and processing about half as much as garbage disposal costs.<sup>26</sup> The single-family household participation rate is 90%, and efforts are underway to include apartments, condominiums, and co-ops. Organics are collected weekly, with single-stream recyclables and residual waste on alternating weeks. Less frequent trash collection has resulted

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<sup>26</sup> “Greater Toronto at Full Steam with Residential Organics Programs,” *BioCycle*, August 2010, p. 38.

in increased rates of organics recovery.<sup>27</sup> Collection workers reject improperly sorted materials, leaving explanatory notes.<sup>28</sup>

The **City of Austin** has adopted a highest and best use philosophy for the collection of residential food scraps,<sup>29</sup> recognizing the benefits of a decentralized composting infrastructure as it addresses the community's interest in enriching the region's soil, strengthening sustainable food production and completing the food cycle.<sup>30</sup> It is expanding its home composting incentive program and establishing composting trainings. It acknowledges that the greatest impact in terms of increasing organic materials diversion can be had through new policy, including the diversion of organic materials by residential and commercial generators and at city offices and facilities, and at all special events.

### **Drivers to expand organic materials recovery**

Key drivers for expanding organics material recovery include: feeding the hungry; enriching and building healthy soil; strengthening sustainable food production and completing the food cycle; increasing demand for green infrastructure; creating green jobs and sustaining local manufacturing businesses; reducing solid waste management costs; curbing landfill methane emissions; producing renewable energy via anaerobic digestion; and increasing regulations at the local and state levels.

### **Reusable Products and Materials**

Nearly every town and city has at least one second-hand store selling used clothes, furnishings and other items. Large nonprofit entities like Goodwill (with over 2,650 stores), the Salvation Army, and St. Vincent de Paul are the most well-known, but there are also many independent nonprofits and for-profit businesses. Stores focusing on used building materials are also found across the country, like the 825 Habitat for Humanity ReStores in the United States and Canada.

Net sales at second-hand stores increased by 12.7% from 2008 to 2009, which is notable at a time when the overall retail market declined by 8.3%.<sup>31</sup> Savers, a for-profit chain of thrift stores, has opened 60 stores since 2009 and now has nearly 300 stores in the United States and Canada.<sup>32</sup> Reuse also means jobs: a 2012 Minnesota study found 18,000 workers in the state's

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<sup>27</sup> Anderson et al., pp. 37-38

<sup>28</sup> *Biocycle*, August 2010, p. 39.

<sup>29</sup> City of Austin, Resource Recovery Department, The Austin Resource Recovery Master Plan, 2011, p. 107. Available online:

[http://www.austintexas.gov/sites/default/files/files/Trash\\_and\\_Recycling/MasterPlan\\_Final\\_12.30.pdf](http://www.austintexas.gov/sites/default/files/files/Trash_and_Recycling/MasterPlan_Final_12.30.pdf)

<sup>30</sup> Ibid, pp. 105-106.

<sup>31</sup> National Association of Resale & Thrift Shops (NARTS), Resale Thrives in a Slow Economy, February 10, 2012.

<sup>32</sup> Savers.com; *Christian Science Monitor*, "A middle class thrift store: Only their retailer knows for sure," October 16, 2010.

reuse sector, and an additional 27,000 workers in the automobile reuse sector.<sup>33</sup> However, overall this is a sector that needs much more data collection, including deeper analysis of how much stuff is being reused across the country.

The following three case studies provide a snapshot of the employment impacts of reuse, and each could be expanded in many cities across the country.

### **Eugene, Oregon: jobs creation through reuse<sup>34</sup>**

In the local economic crisis caused by the collapse of Eugene, Oregon's timber industry in the 1980s, reuse, refurbishing, and repair helped fill the jobs void. St. Vincent De Paul (SVDP) of Eugene has expanded its own operations and recruited new related businesses in the city, creating over 400 jobs, including 100 new positions since the recession. Notably, SVDP of Eugene is committed to creating good jobs: wages start at \$14 per hour and include health insurance. Managers are hired from within the organization, providing opportunities for workers who started at entry level to advance.

Each SVDP is an independent organization, and SVDP of Eugene has been one of the most innovative organizations in the national reuse industry. The many businesses created by SVDP include a mattress refurbisher that strips covers off mattresses, applies a new cover to each mattress, and sells the final product. SVDP has contracts with used furniture dealers from as far away as Europe, and has created a business to repair and refurbish furniture for sale in the U.S. The appliance repair shop fixes a wide range of appliances and sells them with a lifelong guarantee.

SVDP obtains used items from other businesses across the country and abroad, but the amount of items that could be captured means that there is much opportunity for this industry to grow in other cities and regions without competing with each other for items. There are significant but unmeasured quantities of used furniture, appliances, and other products that could be repaired or refurbished for resale—creating jobs in the process. The Institute for Local Self-Reliance has partnered with SVDP to assist entrepreneurs and organizations in other parts of the country starting similar endeavors.

### **Bridgeport, Connecticut: Mattress Refurbishing and Recycling<sup>35</sup>**

A mattress recycling and refurbishing enterprise is starting up in late June 2012 in Bridgeport. Twenty workers will process 100,000 mattresses and box springs annually. This will reduce transfer station and landfill costs, while making good end products available to consumers at pennies on the dollar compared to new mattresses from formal retail stores. The plant is owned by the Greater Bridgeport Community Development Corporation, which used a \$100,000 Community Development Block Grant to leverage additional capital.

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<sup>33</sup> Minnesota Pollution Control Agency, A Study of the Economic Activity of Minnesota's Reuse, Repair, and Rental Sectors, November 2011.

<sup>34</sup> Personal communication, Neil Seldman, Institute for Local Self-Reliance, 2012.

<sup>35</sup> Personal communication, Neil Seldman, Institute for Local Self-Reliance, 2012.

## **Textile Reuse and Recycling**

Textile reuse and recycling has significant growth opportunities: U.S. households throw away an 13 million tons of clothes each year, making textiles 10% of residential waste, but only 15% of textiles are recycled or reused.<sup>36</sup> The potential for growth also exists because the supply of used textiles does not keep up with growing domestic and global demand. Textile reuse provides 37 times more jobs than landfilling or incinerating the material.<sup>37</sup>

One of many used textiles companies is USAgain, which has placed public collection bins for used apparel in more 15 states. The company collected 30,000 tons in 2011. After collection, the materials are bundled before being sold to sorting companies. USAgain employs 220 people as drivers and handlers. Textile sorting companies employ many more. The clothes and shoes are then sold to thrift stores, as well as to businesses that make new products such as insulation (for housing, appliances and automobiles).<sup>38</sup>

## **Construction Materials (from construction, deconstruction, and demolition)**

If the EPA counted construction and demolition (C&D) debris as part of municipal solid waste (MSW), C&D would make up 40% of the total. This is a significant and highly reusable and recyclable materials stream, with excellent job creation potential for deconstruction, reuse, and recycling sorting.

### **Deconstruction**

Although 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 (or sometimes hauled away and sorted at a C&D recycling facility). While demolition has the advantage of speed, it generates significant waste that can be costly to landfill. In contrast, deconstruction involves taking a building apart while carefully preserving valuable elements—including windows, doors, flooring, appliances, bathroom fixtures, brick, stone, and wood—for re-use and recycling. Carefully planned deconstruction projects have achieved upwards of 90% landfill diversion rates.

While deconstruction has been a marginal activity for some time, the sustainability and green building movements have revived interest in this historically long-standing practice, particularly since the U.S. Green Building Council's LEED building certification program offers a number of

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<sup>36</sup> U.S. EPA, Office of Resource Conservation and Recovery, *Municipal Solid Waste Generation, Recycling, and Disposal in the United States, Tables and Figures for 2010*, December 2011. Available online: [http://www.epa.gov/osw/nonhaz/municipal/pubs/2010\\_MSW\\_Tables\\_and\\_Figures\\_508.pdf](http://www.epa.gov/osw/nonhaz/municipal/pubs/2010_MSW_Tables_and_Figures_508.pdf)

<sup>37</sup> Brenda Platt, *Weaving Textile Reuse into Waste Reduction*, Institute for Local Self-Reliance, 1997.

<sup>38</sup> Personal communication, Mattias Wallander, USAgain, 2012.

credits for reusing recovered materials.<sup>39</sup> The work generally occurs on-site and is relatively labor-intensive, which enables the creation of green jobs. There is a need for more data, but the Institute for Local Self-Reliance has established that deconstruction could create as many as 200,000 full-time equivalent jobs a year nationally.<sup>40</sup> The Deconstruction Institute estimates that “deconstruction of a 2,000 square foot home will create 38 more worker-days at a living wage than would demolition,”<sup>41</sup> and has an online benefit calculator to illustrate the benefits of building deconstruction relative to demolition.

The economics of deconstruction vary by project. The higher labor costs and longer time that deconstruction requires can be offset to some degree depending on a number of factors, including the degree to which the recovered materials can be reused in a new structure on-site, the regional market for reclaimed materials, the potential of donating materials to local nonprofits for income tax write-offs, and the avoided costs of landfill or incinerator tipping fees. The existence of markets for the recovered materials is an important component of a successful deconstruction program. According to ILSR, there are more than 400 deconstruction businesses in the U.S., which led to the establishment of the Building Materials Reuse Association, a trade group for the industry.

One of the biggest opportunities to increase the practice of deconstruction is through local ordinances that prioritize deconstruction over recycling in C&D permits. Seattle, Kansas City, and Chicago are developing these types of policies.<sup>42</sup>

A new deconstruction training program by the Building Materials Reuse Association in partnership with Seattle Public Utilities and Iowa Central Community College provides a curriculum, instruction and certification for entry level jobs in this industry.<sup>43</sup> Deconstruction faces challenges particularly around data, and there is a need for job-related data as well as good tracking of construction and demolition debris. More information about trends will help this industry grow and assist in the development of new policies.

### **The Massachusetts disposal ban on construction and demolition materials<sup>44</sup>**

Massachusetts has implemented one of the most successful statewide C&D recycling programs in the U.S. and has developed one of the best C&D recycling infrastructures in the country. In an effort to reach the state goal of reducing non-municipal solid waste by 88% by 2010, the Massachusetts Department of Environmental Protection (MassDEP) instituted a disposal ban on select C&D materials (asphalt paving, brick, concrete, metal and wood) in July 2006. This ban is still the only such statewide ban on disposing unprocessed C&D waste in the country.

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<sup>39</sup> Personal communication, Anne Nicklin, Executive Director, Building Materials Reuse Alliance, [bmra.org](http://bmra.org), 2012.

<sup>40</sup> Neil Seldman and Mark Jackson, Deconstruction Shifts From Philosophy to Business, *Biocycle*, July 2000.

<sup>41</sup> Deconstruction Institute, [www.deconstructioninstitute.com/calc3.php](http://www.deconstructioninstitute.com/calc3.php)

<sup>42</sup> Personal communication, Anne Nicklin, Executive Director, Building Materials Reuse Alliance, [bmra.org](http://bmra.org), 2012.

<sup>43</sup> Personal communication, Anne Nicklin, Executive Director, Building Materials Reuse Alliance, [bmra.org](http://bmra.org), 2012.

<sup>44</sup> Summarized from a case study on page 24 of *More Jobs, Less Pollution*, by Tellus Institute, 2011.

MassDEP estimates that about 80% of its 3.8 million tons of C&D waste was diverted in 2010. This very successful ban was developed over a four year process with significant stakeholder input, through a phased-in ban of specific materials, rather than a ban of all unprocessed C&D debris. The targeted materials were identified because recycling and reuse markets existed for them, and businesses also made additional investments in facilities to recycle and/or reuse the materials. MassDEP provided financial and technical assistance to develop infrastructure for diversion through reduction, reuse, and recycling. By 2010, Massachusetts had more than 15 C&D processing and/or recycling facilities—including the first gypsum recycling facility in the U.S. While the job creation has not been quantified, numerous jobs are supported in operating facilities, processing materials, and manufacturing products from recycled C&D materials.

MassDEP has documented a number of case studies demonstrating the waste diversion and economic benefits of the ban. For example, Clarke Corporation, a wholesale distributor of kitchen appliances, renovated and expanded its distribution center in Milford—with 98% of the C&D waste generated on-site being recycled or reused, resulting in a cost savings of \$259,043. Similarly, recycling during the commercial demolition of the MIT Media Lab in Cambridge resulted in 96% waste reduction and a cost savings of \$17,684.



## 4. What are the keys to unlocking recycling job creation?

### Policies and Best Practices

Broadly, these priority strategies drive innovation and growth:

- Enacting deposits, disposal bans, recycling mandates and other policies to push a broad swath of materials towards reuse, recycling, and composting
- Requiring and incentivizing the use of recycled content in manufacturing
- Correcting waste disposal subsidies to create opportunities for investments in recycling infrastructure and programs, and level the playing field for recycling and composting to fairly compete with disposal industries such as incinerators and landfills

### A. Federal keys for unlocking recycling job creation

#### Leadership from the Administration and EPA

Compared to 15 years ago, the EPA provides less national-level support for recycling, reuse, and composting. The Obama Administration and the EPA should provide more public leadership on these issues than they do, and could convene federal agencies to examine how to support the infrastructure and industries that make recycling happen.

There is no national diversion or recycling goal, and the federal government does not engage much with local waste and recycling issues other than to regulate waste disposal facilities, and on a much smaller scale to provide grants. Instead, it is up to states to provide leadership.

The federal government has set some policies for its own waste and recycling practices. A 2009 Executive Order sets a 50% waste diversion goal by 2015, encourages composting, and encourages a reduction of paper use and chemical use and pollution prevention goals for the executive branch. The same Executive Order requires that the executive branch use office paper with 30% post-consumer recycled content, and there are also procurement policies for purchasing electronics. Federal procurement policies have helped to boost the recycling industry, including manufacturing, in the past, and new policies with more ambitious goals could have this impact again.

It is interesting to note that there is growing support for zero waste in EPA regional offices. For example, Regions 1 (Northeast) and 9 (Southwest and California) are currently funding the development of tools to help local governments create zero waste policies and programs, and to procure contracts for zero waste goals. The EPA Region 1 Zero Waste Community Plans eGuide will include plan components and tools specific to New England communities and is expected to be completed in 2013. The EPA Region 9 Zero Waste Contracting eGuide will include 10 public-private partnership case studies, procurement best practices, and contract best practices.<sup>45</sup>

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<sup>45</sup> Personal communication with contractors on these EPA projects, June 2012.

## **Correcting subsidies for disposal (incinerators and landfills)**

Over 66% of the nation's discards continue to be buried and burned, despite the economic development benefits (among many others) of recycling, reuse, and composting. One of the primary factors is public subsidies presently provided to disposal industries—taxpayer and ratepayer funding that undermines the growth of the recycling, reuse, and composting sectors in the U.S. These subsidies represent billions of dollars in capital costs, debt service payments, tax breaks, low-interest loans, loan guarantees, electricity and fuel credits, as well as structural subsidies such as tipping fees, put-or-pay contracts and other disposal fees. Rather than using public money to subsidize waste disposal, a correction of public policy to removing these subsidies would greatly benefit recycling, reuse, and composting.

Broadly, there are a range of direct and indirect subsidies that create unfair market barriers to recycling. These can be divided into three categories:

- a. Virgin materials subsidies
- b. Energy subsidies
- c. Waste disposal subsidies

A 1999 report found that U.S. federal subsidies for the extraction, manufacture and disposal of virgin materials amounted to between \$3 and \$5 billion annually. Such subsidies, including the externalized environmental costs of virgin materials extraction, serve to significantly lower the cost of virgin materials use, creating a competitive advantage over reused and recycled materials.<sup>46</sup> A similar 1999 report titled “Welfare for Waste” identified over \$2.6 billion in direct federal subsidies to the timber, mining and energy sectors for the extraction of virgin materials.<sup>47</sup>

In recent years, with the emergence of new “renewable energy” policy incentives and subsidies, landfill and incinerator companies have sought to capitalize on these opportunities by marketing themselves as “waste-to-energy” and “landfill-gas-to-energy” facilities. Many of these subsidies were either created or expanded under the 2009 stimulus package (American Recovery and Reinvestment Act, ARRA), which provided \$1.64 billion in stimulus funding to renewable energy, including \$800 million to advanced biofuels.<sup>48</sup>

The following are the most direct, and most substantial federal energy policies that encourage the operations and expansion of incinerator and landfill gas facilities.<sup>49</sup>

- Renewable Fuel Standards (RFS)
- Federal Renewable Electricity Production Tax Credit (PTC)
- Business Energy Investments Tax Credit (ITC)

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<sup>46</sup> National Recycling Coalition, *Leveling the Playing Field for Recycling: A Policy Report on Virgin Material Subsidies*, September 1999

<sup>47</sup> GRRN, *Welfare for Waste: How Federal Taxpayer Subsidies Waste Resources and Discourage Recycling*, 1999.

<sup>48</sup> GAIA, *Burning Public Money for Dirty Energy: Misdirected Subsidies for “Waste-to-Energy” Incinerators*, 2011.

<sup>49</sup> *Ibid.*

- U.S. Department of Treasury - Renewable Energy Grants
- Advanced Manufacturing Tax Credit (MTC)
- Renewable Energy Production Incentive (REPI)
- Energy Efficiency and Conservation Block Grant Program (EECBG)
- Clean Renewable Energy Bonds (CREB's)
- Qualified Energy Conservation Bonds (QECCB's)
- U.S. Department of Energy - Loan Guarantee Program
- U.S. Department of Agriculture - Rural Energy for America Program (REAP) Grant
- U.S. Department of Agriculture - Biorefinery Assistance Program

Such federal subsidies are not accessible to recycling and composting industries, and put recycling, reuse, and composting at a disadvantage against their competitors in the waste disposal industry.

## B. State keys for unlocking recycling job creation

There is no centralized national database for all current recycling and waste policies at the state level; the last EPA report on this topic is from 1998. The EPA recognizes how important this information is, and is currently creating a new online resource of state program information and identifying success stories. Each of the 10 regional offices is working with state solid waste programs to compile this information.

### State recycling goals and standard measurements

Setting a state recycling goal gives motivation to pursue action. Ideally a goal includes a **requirement** to meet a certain recycling level, and has an **enforcement** mechanism to ensure the goal is met at the local and/or state level. Requiring local jurisdictions to meet a goal is likely more effective than a standalone statewide goal.

Many states have such goals. California's AB 939 from 1989 requires every jurisdiction to prove to the state that it is achieving 50% *diversion* from landfills, and jurisdictions can be fined significantly for failing to have an adequate solid waste plan and for failing to implement the plan (note that in California, "diversion" includes some activities we would not consider recycling, such as using recovered materials as landfill cover). California now has a statewide 75% *recycling* goal, thanks to 2011's AB 341. Other examples of high goals include New Jersey's 50% recycling goal for municipal solid waste and 60% recycling goal for total solid waste, and Delaware's 55% recycling goal. Massachusetts' specific goals, which are laid out in its draft 2010 Massachusetts Solid Waste Master Plan: "A Pathway to Zero Waste," are to reduce waste by 30% by 2020 and by 80% by 2050. The most recent compilation of state recycling goals is from 2004.<sup>50</sup>

Methodologies for measuring recycling rates and even tons disposed vary widely among states. Most states don't even require waste management companies and local governments to report the number of tons disposed annually.<sup>51</sup> **There are many states that could use a combination of a recycling goal and informed reporting methodology to support recycling and allow impacts to be measured.** The EPA's approach is also not ideal because it does not measure construction and demolition tons disposed or recycled, although it is currently considering including that in its annual estimates of national waste and recycling.

### Correcting state subsidies for incinerators and landfills

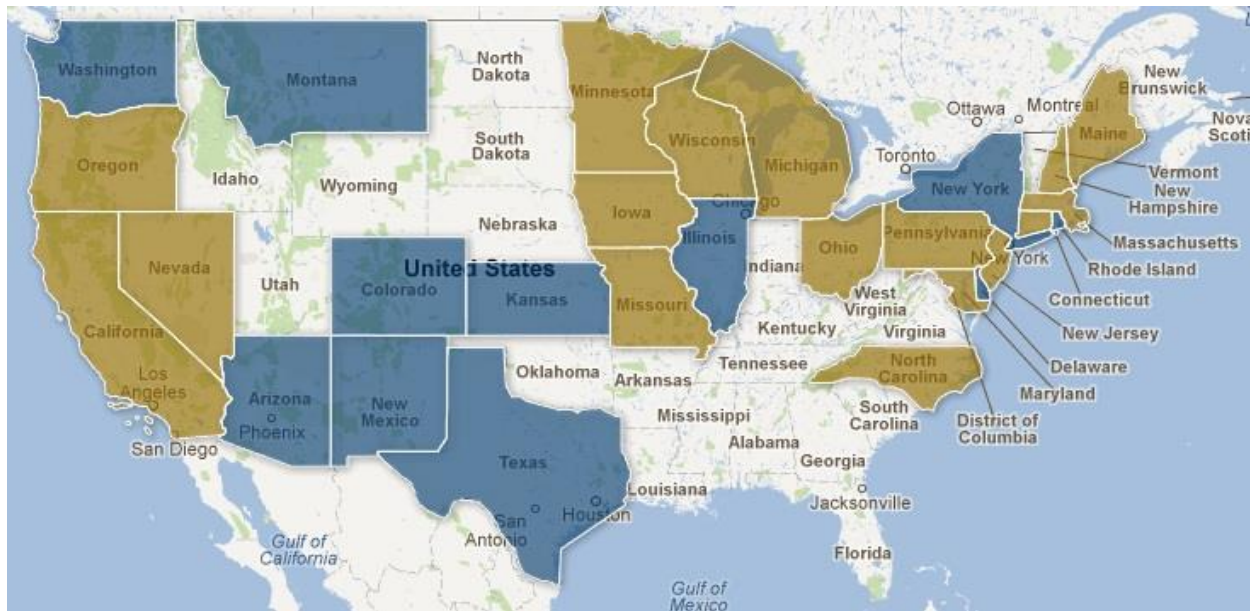
In the absence of federal climate legislation, state renewable portfolio standards (RPS) are leading regulatory programs that mandate the production of "renewable energy." Taxpayer and ratepayer subsidies make it possible for the mandates to be fulfilled by providing the funding to build and operate new renewable energy generating sources.

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<sup>50</sup> Available in a document from New York City, with source data from the American Forest & Paper Association: <http://www.nyc.gov/html/nycwasteless/downloads/pdf/pmrnyc06.app1.pdf>

<sup>51</sup> Van Haaren, Themelis, Goldstein, "The State of Garbage in America," *Biocycle Magazine*, October 2010.

The RPS is one of the biggest drivers of new alternative energy facilities, where qualifying facilities are authorized to sell electricity and “renewable energy credits” (RECs), with each qualifying facility being awarded one REC per unit of electricity produced each year, or where renewable energy sources are able to sell electricity at a higher rate. Landfills and incinerators have been marketing their energy generation capacity, and lobbying state policymakers to be included in the RPS—despite being highly inefficient, costly, and carbon-intensive energy technologies. At current market rates, the sale of RECs could amount to hundreds of millions of dollars for all the eligible waste disposal facilities each year.<sup>52</sup>



### States with Renewable Portfolio Standards

States in the lighter gray include some amount of incineration in RPS (including Hawaii, not pictured), states in darker gray exclude incineration from RPS

Inclusion in state RPS also creates a doorway for incinerators and landfills to avoid greenhouse gas emissions caps in emerging climate legislation—controls that would otherwise drive up the operating costs of these carbon-intensive facilities (30% more carbon intensive than coal power).<sup>53</sup>

As of July 2010, 29 states have a mandated RPS, and 7 more have “goals,” which are currently voluntary but may become legally binding in the future. Of these 29 state standards, 26 include landfill gas to energy facilities and 17 include incinerators (waste-to-energy). Public opposition has been successful at keeping incinerators from being included in some states, including in New York, where a coalition of environmental groups, zero waste advocates and other public

<sup>52</sup> GAIA, Burning Public Money for Dirty Energy: Misdirected Subsidies for Waste to Energy Incinerators, 2011.

<sup>53</sup> EPA Air Emissions Data, 2012, , <http://www.epa.gov/cleanenergy/energy-and-you/affect/air-emissions.html>

interest organizations prevented Covanta, the largest U.S. incinerator company, from convincing the NY Public Service Commission to include them in the state RPS.<sup>54</sup>

In addition to the state RPS, there are also other state grants, loans and incentives for biomass incinerators, where organic waste incineration is often included in the state RPS definitions of biomass.

### **Incinerator bans and moratoria (Rhode Island, Massachusetts, and Delaware)**

Rhode Island has a direct ban on incineration, and Delaware has a *de facto* ban by limiting the building of incinerators within a certain distance of schools. Massachusetts has a state moratorium on the construction of new waste incinerators. In the recent (2009) fight to keep their 20-year-old state moratorium in place, advocacy groups in MA convinced Governor Deval Patrick to use this announcement to make a stronger commitment to recycling, composting, and other zero waste policies. This engagement has allowed for critical discussions about the efficacy and timelines of such policies in serving to meet the Commonwealth's recycling targets, as well as a stated goal to phase out incinerators and landfills on the state's path to zero waste. While organizing for such moratoria has not been tried widely in other states, such efforts present an opportunity to increase both public support and policymaker commitment to investments in recycling and composting infrastructure and plans.

### **Organics**

State level policies to increase composting and create jobs include:

- bans of yard trimmings and commercially generated organic materials to landfills and incinerators
- technical assistance and grant programs to divert food scraps from public facilities and loan programs for private facilities
- financial assistance to haulers to initiate organics collection efforts
- support to residential organics collection efforts
- bans of conventional plastic bags used for yard trimmings collection and incenting compostable bag use for yard trimmings and backyard composting bins
- state agency adoption of yard waste reduction practices and encouraging adoption by residences, businesses, and institutions
- required inclusion of yard trimming and food residual recycling in county recycling plans

The demand for compost can be encouraged by:

- increased funding to cooperative extensions to develop compost usage and benefit education programs for homeowners and landscapers in counties/municipalities
- increased agency funding to develop compost usage database for technical information on crop yield increases and disease suppression, sediment loss reduction and erosion prevention, and acid mine drainage remediation due to compost use

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<sup>54</sup> Associated Press, "Firm withdraws request for trash-burning subsidy," *Wall Street Journal*, December 9, 2011 <http://online.wsj.com/article/AP3c8827b97f7a4f69a73dbd4b4b6f2e19.html>

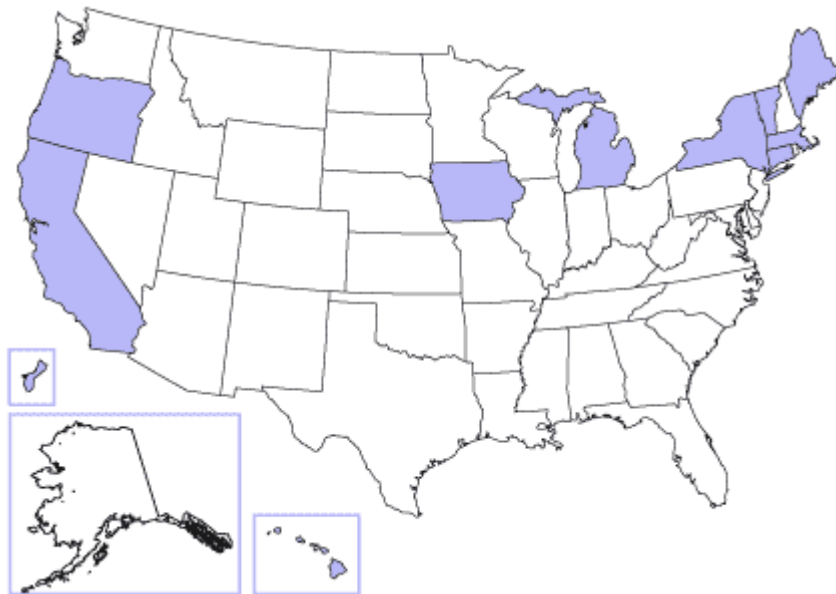
- requiring state agencies to procure compost for landscaping and other needs

Statewide economic incentives to benefit organics include:

- municipal pay-as-you-throw solid waste program requirement
- Industrial Revenue Bond programs for composting facility construction capital
- economic development authorities including compost facility sites
- incenting agricultural usage of compost by allowing income tax deductions for purchase price and income tax credits for reductions in nitrous oxide GHG emissions

## Bottle bills

“Bottle bills” are laws requiring a minimum refundable deposit on drink containers like soft drinks, beer, and other beverage containers in order to ensure a high rate of recycling or reuse. Ten states have bottle bills or similar programs (California, Connecticut, Guam, Hawai'i, Iowa, Maine, Massachusetts, Michigan, New York, Oregon, Vermont). Many of these bills do not cover water bottles and other noncarbonated beverages. These ten states recover 76% of the beverage containers collected in the US, and the remaining 25% is collected in the other 40 states.



**States with Bottle Bills<sup>55</sup>**

While the beverage container industry strongly opposes bottle bills, there is growing support for bottle bills from recycling companies and manufacturers that use recycled content. In the preparation for this report, we spoke to a number of recyclables processing companies that handle beverage containers. They said that bottle bills are the single most significant policy that would benefit their businesses. These companies process glass, plastic, and aluminum and sell

<sup>55</sup> Bottlebill.org website, maintained by the Container Recycling Institute.

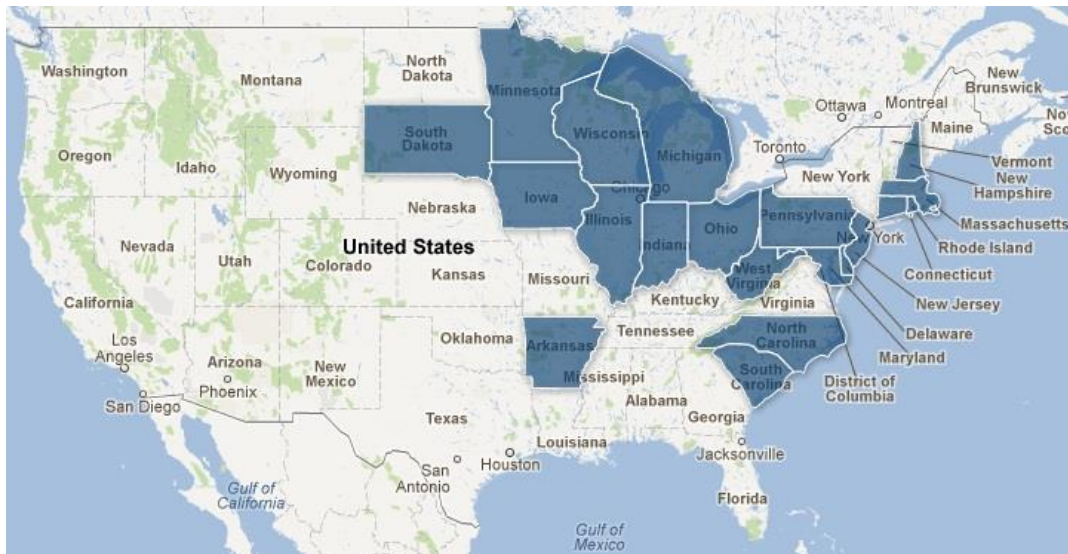


them to manufacturers, and cannot find enough material to meet the demand of manufacturers.

A new report on job creation in states with bottle bills finds that these deposit systems provide 11-38 times more jobs for handling beverage containers than curbside collection systems.<sup>56</sup> The primary driver of direct jobs is the increased amount of bottles getting collected for recycling, and since bottle bills recover three times more material than curbside recycling, many more jobs are created to handle the increased volume of containers. The secondary driver of jobs are that bottle bill systems usually have redemption centers to collect bottles and deliver them to materials recovery facilities (MRFs), and deposit return systems provide 1.5 to 4 times more jobs than curbside systems to collect containers.

### Disposal bans for recyclable, compostable, or problematic materials

All states have landfill disposal bans on at least one type of material. The rationales for such bans range from keeping toxic materials like lead batteries and electronic waste out of landfills, to encouraging recycling and composting, to keeping other problematic materials like tires out of landfills.



States with landfill bans for yard debris

Keeping organic matter (food and yard debris) out of landfills and incinerators is important for reducing greenhouse gases associated with waste disposal and for creating composting infrastructure. Eighteen states currently have a **ban on sending yard trimmings** to landfills. Unfortunately this type of ban was recently repealed in four other states and is now under attack in Michigan by Waste Management and Republic Services, the two largest U.S. landfill companies, because they want these materials flowing into their landfills to maintain corporate profits. These companies argue that organic material will create more landfill gas for methane recovery systems. This push for landfill gas is caused by the perverse incentive of classifying

<sup>56</sup> Container Recycling Institute, *Returning to Work: Understanding the Domestic Jobs Impacts from Different Methods of Recycling Beverage Containers*, December 2011.



landfill gas as a renewable energy source. **Yard waste bans are some of the most effective recycling policies nationwide.**

Vermont recently passed one of the most far-reaching disposal bans, banning recyclable materials and organic materials from landfills starting in 2015. To keep organics out of landfills, the state will ban large businesses and institutions from landfilling food residuals starting in 2014, yard trimmings will be banned as of 2016, and residential food scraps will be banned as of 2020.<sup>57</sup>

As already noted, Massachusetts has a **ban on landfilling unprocessed C&D materials** which has driven business growth across the state. Massachusetts is also currently considering a **ban on commercial food waste** to landfills, starting with largest generators of food waste, and working down to smaller sources. Massachusetts already **bans the disposal of recyclables**, and the state environmental agency has new authority to enforce these bans at transfer stations and disposal facilities.

North Carolina **bans plastic bottles from the landfill**, and recycling of those containers has increased by 50% since the law was passed in 2009.<sup>58</sup>

### **Recycling mandates**

This approach is similar to disposal bans for recyclables or specific materials. New Jersey, New York, and Rhode Island are among the states that require source separation of recyclables from waste, and California has a new mandatory commercial recycling law. However, without outreach and enforcement, these policies may not be very effective.

### **Extended producer responsibility (EPR)**

EPR is a policy approach that makes manufacturers responsible for the management of products at the “end of life,” or when they are discarded. Historically, local governments bear the financial and physical burden of managing these discards. The tool of EPR should serve the goal of highest and best use of materials, and should drive the redesign of products, minimize toxicity of products, maximize the recycling of products, and require reuse and recycling over disposal.

EPR policies in U.S. states have largely focused on the most challenging components of the waste stream. Current EPR laws cover electronics, paint, mercury-containing thermostats, carpet, and others, and have been enacted in 33 states for a total of 72 laws (see map on following page).

In the past year there has been increasing advocacy from a beverage company and environmental advocates calling for packaging EPR (including many materials that are currently targeted for recycling programs). Bottle bills are a form of EPR for packaging (see bottle bill

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<sup>57</sup> Associated Press, “Vermont Governor signs statewide recycling bill,” *Bennington Banner*, June 8, 2012.

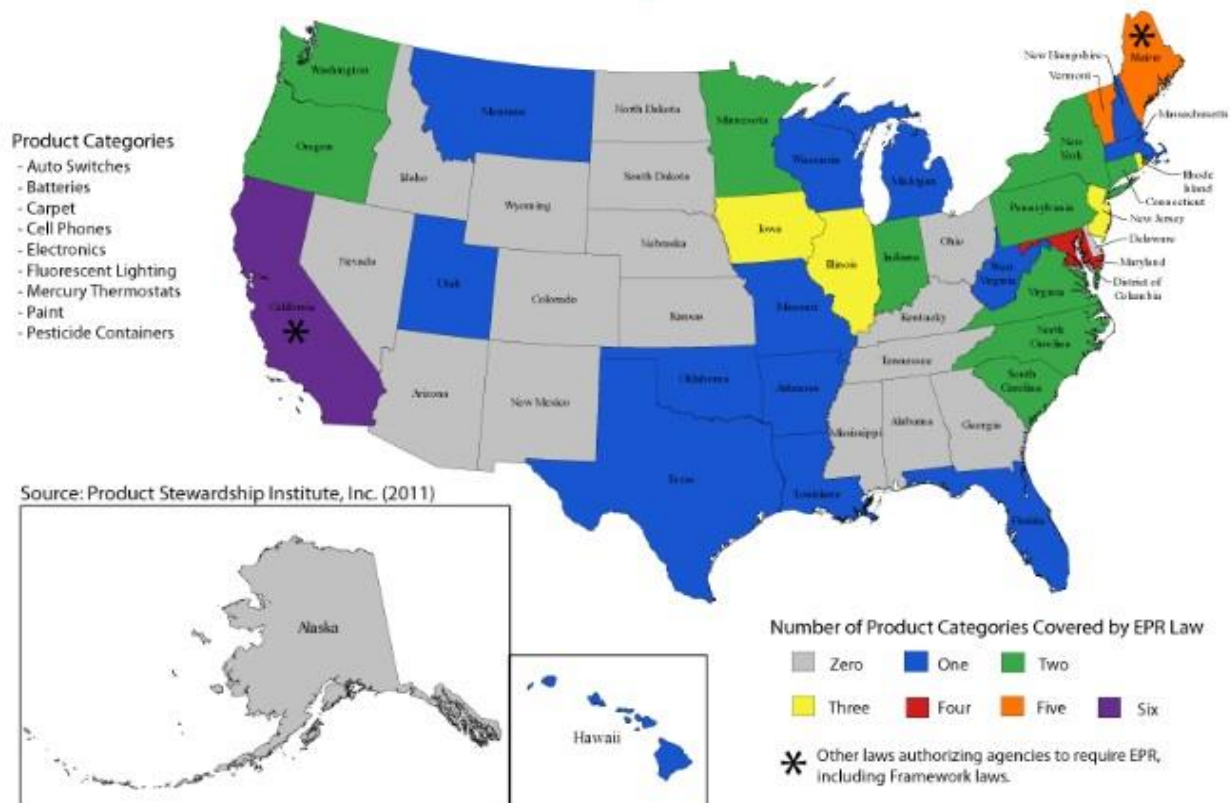
<sup>58</sup> *Waste and Recycling News*, “Landfill ban not altogether nuts,” March 15, 2012.

section). In the German EPR for packaging program, called Green Dot, producers pay into the curbside recycling system according to how recyclable their products and packaging are (with non-recyclable items being charged the most, and recyclables the least). In the new packaging EPR policies in British Columbia, councils of producers (such as beverage container manufacturers) are together developing collection programs that may build on existing programs, or may be entirely different.

As discussion about EPR for packaging grows, local governments, the recycling industry, and environmental advocate are seeking to understand what principles should be included in such policies and how current programs, businesses, and jobs would be impacted.

### Extended Producer Responsibility State Laws

as of January 2012



Source: Product Stewardship Institute, Inc. (2011)

This map comes from the Product Stewardship Institute.<sup>59</sup>

### Increasing recycling, composting, and anaerobic digestion infrastructure

<sup>59</sup> Product Stewardship Institute, 2012, <http://productstewardship.us/displaycommon.cfm?an=1&subarticlenbr=280>

Some states are working to streamline regulatory processes to make it easier to build new recycling and composting facilities. While increased infrastructure is necessary, it is also important to also have strong enough regulatory oversight of such facilities to ensure that facilities are built in appropriate locations, operate responsibly and are good neighbors, and provide strong health and safety protections for workers. Many states offer grants and other financial incentives and assistance to build recycling, composting, and anaerobic digestion infrastructure.

### **Increasing in-state recycling manufacturing and reuse businesses**

The greatest potential to create new jobs through zero waste programs is in manufacturing with recycled content. Many states have programs to provide business assistance and financial incentives (including grants, loans and tax breaks) to manufacturers using recycled content, in order to foster growth of this sector. State procurement policies and recycled content requirements also drive manufacturing.

A related tool is **requiring minimum recycled content** to obligate manufacturers of certain items, such as newsprint and glass, to use a certain percentage of recycled content in new products. **Procurement policies** are also important demand-side tools. States can use their purchasing power to support recycling by requiring that state agencies purchase items with a certain percentage of recycled content, and prioritize refurbished or remanufactured products such as furniture and electronics. This policy is also called Environmentally Preferable Purchasing (EPP) and can be mandated by legislation, executive order (as in Massachusetts and other states), or agency regulations. Last year the Oregon legislature considered a different type of in-state manufacturing driver, in a bill that would have required all state agencies to find in-state markets for all of the recyclables generated by state agencies.

### **Funding sources to support infrastructure and programs**

Outreach and enforcement—and the funding to make those possible—are essential components of effective policies. A common source of revenue for agencies overseeing waste and recycling is a fee (or tax) that is added to tipping fees. This means that each ton of garbage flowing into a landfill or incinerator generates funds for the state. This is also a way to discourage disposal, but if programs are very effective, the amount of waste can go down enough to impact the funding. Thirty states have such surcharges, ranging from \$0.25 to \$8.25 per ton (the highest is in West Virginia). New Jersey's tip fee tax also applies to recycling facilities, which guarantees a stream of funds. Many local governments and agencies also have tip fee charges/taxes.

Bottle bills provide another opportunity for funding: in some states a portion of the unclaimed deposits stay with the state, and either go to the general fund or are used to fund environmental and recycling programs.

## **Increasing reuse**

There is little data about the overall impact of the reuse sector, but states can play a role by generating more economic impact studies like the recent Minnesota reuse study, which demonstrates the current and potential impact of reuse as a job creator and economic driver. State agencies may be able to undertake this type of work on their own, or may need a legislative push to do so. The outcomes of research like this could open the door for policy to drive growth of the reuse sector and jobs creation. State agencies can participate in the development of standards to quantify the environmental, economic, social benefits of the reuse sector.<sup>60</sup>

## **Local authority to regulate waste facilities**

Unless a state explicitly gives permission to local governments, local governments do not have the ability to set regulations that are stricter than state regulations. However, states can grant this authority to local governments. In states with this local authority, local governments can tighten regulations to reduce the chances of incinerators and landfills being built, hold facilities to stronger emissions limits, and in other ways have a stronger authority over what happens to discards in the community.

## **Climate policies, energy policies, and jobs creation policies**

Climate protection and energy conservation/renewable energy policies may provide opportunities to support zero waste policies and job growth. For example, California's AB 32 climate legislation action plan includes mandatory commercial recycling. Biogas (or anaerobic digestion) is eligible for incentives in many state energy policies. (Note that it is important to distinguish between feedstocks for biogas, which can range from taking source separated organics discards to taking waste from unsustainable feed lots). These same policies frequently also provide subsidies and incentives for waste disposal, both landfills and incinerators, so they are important policies to track at the state level.

## **State plans**

Engagement in the revision of a state's solid waste master plan (SWMP) presents an opportunity to influence the policies and direction of a state, and introduce new concepts. A 2011 overview of the SWMPs in 10 North Eastern states illustrates how wide-ranging these plans can be.<sup>61</sup>

Other state planning processes provide similar opportunities. California's new 75% recycling goal has led to the drafting of a plan to reach 75% recycling, and the CalRecycle agency is currently soliciting public responses and holding workshops on elements of the plan. The goal is expected to create 60,000 new jobs in the state, and the planning document covers a wide range of policy changes.<sup>62</sup>

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<sup>60</sup> Personal communication, MaryEllen Ettiene, Reuse Alliance, June 2012.

<sup>61</sup> Northeast Recycling Council, Comparison of the Solid Waste Master & Management Plans in the NERC States, August 2011.

<sup>62</sup> CalRecycle, "California's New Goal: 75% Recycling," May 2012.

## C. Local keys for unlocking recycling job creation

### Creating the political support for change

There are many reasons why waste issues become important to local governments and residents. Political drivers include controversy to incinerators and landfills, opportunities for job creation and local business growth, climate change and climate action plans, and financial burden of disposal on the public, among others.

The times when waste issues rise to the forefront of local discussions provide key opportunities to shift local policies in the right direction, for example through committing to zero waste or high recycling and composting rates, new infrastructure, new financial systems to incent recycling, and other policies.

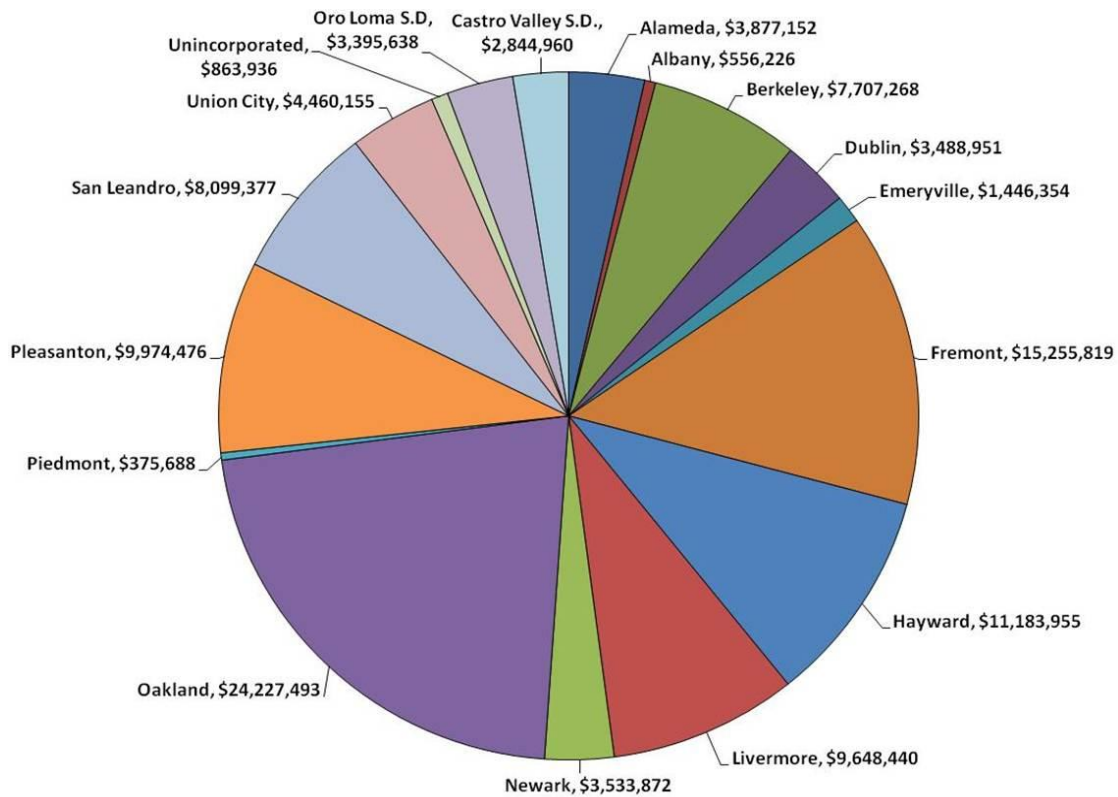
This is most starkly observed when incinerators and landfills are proposed, which often create grassroots movements for safer and more economical approaches that have other benefits including job creation. When these movements have capacity to maintain the political pressure towards better systems, the likelihood of success is higher.

Awareness about how much value is being wasted can be a motivating factor to create political support for change. Alameda County, California has a 70% diversion rate (using the California diversion counting methodology), which might make it hard to convince local governments to take further steps. The Alameda County Waste Management Authority calculated the value of recyclables sent to the landfill each year (over \$100 million worth of commodities, see chart on the next page)<sup>63</sup> to convince cities to adopt a strong mandatory recycling ordinance for the commercial sector. This ordinance overlays the new California mandatory recycling law, by adding specifications about which materials must be recycled and by requiring the level of recycling services that must be obtained. The county expects to create up to 1,500 local jobs as a result of the mandatory recycling ordinance.<sup>64</sup>

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<sup>63</sup> Data and chart provided by Gary Wolff, Executive Director, Stopwaste.org (the Alameda County Waste Management Authority), calculated in 2011

<sup>64</sup> Stopwaste.org, "News Release: Mandatory Recycling and Single-Use Bag Ban adopted for Alameda County. Initiatives designed to reduce waste and litter, stimulate the local economy and create jobs," January 25, 2012, <http://www.stopwaste.org/home/index.asp?page=33&recordid=294>



**Estimated Value of Commodities Landfilled in 2008, Alameda County, CA**

### Correcting disposal subsidies and shifting local financing systems

The 1999 *Welfare for Waste* report stated that U.S. taxpayers paid over \$36 billion per year for waste disposal practices such as landfills and incinerators.<sup>65</sup> The bulk of these structural subsidies are formed by the tipping fees and waste contracts that local governments arrange with the landfill operators, incinerator operators, and waste haulers. Today these costs are presumably higher due to the increase in waste disposal tonnage and higher facility fees.

In addition to these fees, U.S. cities with incinerators often assume the risk of long-term debt associated with construction and upgrading (capital costs). Two stark examples are Detroit, Michigan, where the city paid over \$1.2 billion for the construction and operating costs of its incinerator over a twenty year period, and also paid nearly \$1 billion on debt service payments stemming from the loans associated with these costs. Harrisburg, Pennsylvania declared bankruptcy in 2011 due to a \$330 million municipal bond for upgrades to its incinerator, a debt with annual interest payments higher than the entire city budget.<sup>66</sup>

<sup>65</sup> GRRN, *Welfare for Waste: How Federal Taxpayer Subsidies Waste Resources and Discourage Recycling*, 1999

<sup>66</sup> GAIA, *Burning Public Money for Dirty Energy, Misdirected Subsidies to Waste to Energy Incinerators*, 2011

There are other cases where cities like Detroit have been forced to scrap recycling programs or remove funding from them in order to pay for their waste disposal debts and service fees.<sup>67</sup>

Fortunately, this is where local environmental justice groups and zero waste advocates have worked together most effectively to shift local financing of waste disposal towards investments in recycling and composting. For example, the Zero Waste Detroit coalition has managed to stop a number of recent tax credit applications by the incinerator company and pushed the city to start Detroit's first curbside recycling project. In South Carolina, local groups convinced the Charleston County authorities in 2009 to end their incinerator contract in favor of a strong recycling program.

Avoided disposal costs from tip fees at landfills and "put-or-pay" contracts<sup>68</sup> with incinerators can save cities money, and the biggest opportunity to reduce costs is when an increase in recycling is accompanied by a reduction in waste overall. Other forms of financing programs and infrastructure include additional fees on every ton of waste going to a landfill or incinerator (state, county, and local government can each establish additional tip fees), fixed charges for rate payers, sales taxes or product fees that feed back to waste and recycling agencies, fixed fees on all haulers, or hauler fees when a contract or franchise (exclusive contract) is in place.

### **Responsible recycling**

Creating jobs is a high priority, but it is also important that the jobs exemplify "responsible recycling"—that they be quality, safe jobs that avoid the kinds of negative practices noted in some locations in the disposal and recycling sectors, such as reliance on temporary workers, exemption of sorting facility personnel from living wage laws, and significant health and safety risks. Cities are well positioned to address these concerns through their relationship with recycling providers. Key points that cities can address include labor peace, setting wage floors, mandating local hiring, health insurance for employees, and workplace safety and health standards. As in other professions, union representation makes a difference in many aspects of job quality.

### **Adopting a zero waste goal or high recycling goal, with a plan**

Setting the direction with benchmarks is crucial for long-term success. A zero waste goal allows a city to continue to improve. Many communities adopting zero waste planning have set a series of progressively higher goals as well as waste reduction strategies. The goal of zero waste is also to reduce waste, but this does not significantly compete with jobs creation. So many more jobs can be created by increasing recycling and composting that even if the amount of waste were reduced significantly along with better recycling and composting rates, there would still be more jobs in such a system than in the current system, where so many valuable

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<sup>67</sup> Ibid.

<sup>68</sup> Put or pay contracts require cities to deliver a set amount of trash to an incinerator or landfill, and if they can't deliver that much (either because waste generation goes down or because recycling goes up), they are contractually obliged to pay the company for the difference.

resources are buried and burned with only minimal jobs sustained by disposal. In addition, many strategies that reduce the waste stream at the source—such as reusable diaper services, tire retreading operations, refillable bottles, and washable school lunch trays—can be job creators compared to their single-use counterparts.

Developing a plan is a critical next step that allows community engagement and an opportunity to assess and plan specific steps for the future. Community engagement—building support and recruiting champions for new programs and better performance—is an important piece of a successful plan. A planning phase should include assessments of the number of jobs that will be created, and future policies that may be needed to meet the goals.

### **City recycling mandates**

As of 2005, Seattle requires that recyclables be kept out of garbage bins, and garbage bins will not be collected if the driver sees more than an estimated 10% recyclables in the bin. The citywide recycling rate has gone from 38% to 54% since this mandate was put in place. The city added mandatory composting of food and yard waste in 2009, and the recycling rate for the residential sector is 70%. Although there is a threat of fines, Seattle has not fined many households.<sup>69</sup>

After Seattle's success with mandatory recycling, San Francisco passed a similar requirement in 2009. Even before the law went into force, recycling and composting rates in the commercial and residential sectors started to improve. The city now is at a 78% diversion rate, and has focused on education and technical assistance instead of penalties.<sup>70</sup>

### **Construction and demolition drivers**

An effective strategy for increasing the amount of construction and demolition recycling and reuse are local ordinances that require construction and demolition sites to recycle a set percentage of their waste, such as 50% or 75%. Frequently cities require permit-holders to put up a bond, which will be returned if they demonstrate how the required rate was met. There is a growing number of cities with such requirements.

### **Physical infrastructure**

Local governments that are successful with recycling, composting, and reuse have access to infrastructure due to state policies or local markets, or have used strategies to direct the public and private sectors to develop the necessary infrastructure.

Physical infrastructure should include universal access to recycling and composting collection services for residential, apartment, commercial, and institutional sectors, and equally accessible and convenient as services for waste collection. In many places this would consist of curbside collection for all residences, although in rural settings drop-off sites for all services are more

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<sup>69</sup> Vince Bond, "Mandatory recycling laws grow in popularity," *Waste and Recycling News*, May 28, 2012.

<sup>70</sup> More information about this program in *On the Road to Zero Waste: Successes and Lessons from around the World*, GAIA, 2012, pages 14-21.



appropriate. Local governments sometimes provide city services or contracted services for apartment, commercial, and institutional sectors, but in the frequent cases that they do not have such direct control, local governments can still exert their influence over access to services, for example by requiring service providers to provide recycling and composting collection to all garbage account holders.

Physical infrastructure includes processing capacity for recyclables and organics:

- **Recyclables processing facilities** (often called material recovery facility, or MRF) to sort and prepare recyclables for sale in the marketplace.
- **Composting infrastructure** for a decentralized and diverse system. A benefit of composting is its ability to function effectively at a wide range of scales and sizes: small backyard bins, on-site institutional systems, community composting, farm-based operations, as well as large low-tech and high-tech regional facilities. Communities embracing such an infrastructure will be more resilient and will better reap the economic and environmental benefits that organics recovery has to offer.<sup>71</sup> Centralized compost facilities process organics into soil amendment, which can also be sold to farmers, gardeners, and for other ground cover purposes. There are many different techniques used to minimize odors, increase air flow through piles or rows, and filter air through layers of biological materials to minimize emissions. Some facilities are even enclosed instead of in the open air.
- **Anaerobic digestion** of organics from residential and commercial sources is common in other regions of the world, but just in development in the U.S. Digestion creates biogas for energy, and the digested solids can be composted.
- **Resource Recovery Parks (RRPs)** at waste drop off sites provide a way for businesses and individuals dropping off waste to first unload reusable or repair able items (such as appliances, mattresses, clean wood, and other construction materials), recyclables, and compostable materials. RRP tend to be located before the waste drop off area, which allows pricing to influence where people choose to drop off things: the public is usually allowed to drop off at the RRP for little to no cost, but charged to drop off waste.
- Related to RRP are drop-off sites for materials that are **hard to recycle**, such as plastics that don't work in curbside collection programs, electronics, bicycles, books, and much more. EcoCycle's Boulder, Colorado facility is aptly named CHaRM: Center for Hard to Recycle Materials.
- **Construction and demolition facilities** should facilitate recovery of reusable materials, and then the sorting of recyclable materials. These may operate similar to a recyclables MRF with conveyor belts to manually sort out different materials.

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<sup>71</sup> Personal communication, Brenda Platt, Director, Composting Makes \$en\$e Project, Institute for Local Self-Reliance, 2012.

## **The right incentives: unit based pricing**

**Pay as you throw**, or unit-based pricing, is now used in over 7,000 U.S. communities. This is a highly successful approach that creates the right financial structure to encourage recycling, reuse, waste reduction, and composting.

Some municipalities with higher recovery rates are facing a new challenge when they hit a revenue ceiling that does not cover operating costs. The biggest costs of trash, recycling, and composting are related to collection systems, and these costs do not go down when materials go to the recycling or composting bin instead of the garbage bin. So as more people shift to the smallest bin, and thus the pay the lowest rates, the system may not recover its costs. This can be addressed with a refined PAYT approach that includes a base package rate for all services (recycling, organics, garbage), with additional rates to have larger garbage cans.<sup>72</sup>

### **Local organics policies include:**

- establishing an edible food donation program
- promoting backyard composting and grasscycling, and a master composting training program
- weekly curbside collection programs that run year round and target a wide range of yard debris and food scraps
- requiring landscapers to recover yard trimmings for composting
- banning yard trimmings from waste transfer stations, landfills, and incinerators
- drop-off sites for materials not collected at curbside
- preferred purchasing of locally-produced compost
- public agency adoption of yard waste reduction practices and encouragement of their adoption by residences, businesses, and institutions
- composting food residuals and using compostable food service ware at public events or publicly sponsored events

### **Technical assistance to business**

Some local governments provide technical assistance to businesses to help them increase diversion, either directly or by contract with a consultant. The Alameda County Waste Management Authority has found that technical assistance to restaurants costs about \$10 per ton of new diversion. The city of San Francisco has a contract to increase diversion from 60 to 80 businesses per month, and has found that new diversion costs less than \$20 per ton.<sup>73</sup>

### **Creating opportunities for reuse**

Cities can help the reuse sector flourish by including these businesses in educational materials to the public, using standard economic development support strategies, and providing access to materials beyond the items people bring to businesses and drop off locations. The City of Berkeley, California allows the city's largest reuse business, Urban Ore, to salvage reusable

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<sup>72</sup> PAYT resources include <http://www.paytnow.org/>, an EPA funded program.

<sup>73</sup> Data provided by Ruth Abbe, HDR, 2012.

items from the transfer station floor. Experienced staff watch loads as they are dropped off, pull out valuable items including building materials, and bring them to their large store. Transport and landfill fees costs the city \$126 per ton of waste, so each ton of waste avoided saves the city money.<sup>74</sup>

### **Translocal organizing and sharing best practices**

Cities and states that are achieving high recycling rates and creating quality recycling jobs have much to share. Organizations documenting best practices include the EPA and regional EPA offices; nonprofits and for-profits; industry associations; and government associations. These stories need to be more widely shared, and there is a need to more directly share knowledge, experiences, and best practices among relevant decision makers in different cities.

### **Engaging the community**

Community engagement is an important approach during the development of plans and programs. Involving the community means local government and consultants will hear what the community values, to ensure that those values are represented in the plan so that there is strong and lasting community support for the city's goals and programs. Strong community support can also mean more buy-in from elected officials. As an example, Austin, Texas held over 100 community meetings in the development of its zero waste plan, which enjoys widespread community and political support.

### **Leading by example**

Many cities across the country require recycling or zero waste infrastructure for public events, which is an excellent way to get the word out to the community and reinforce what they do at home and at work.

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<sup>74</sup> Personal communication, Mary Lou Van Deventer, Urban Ore, 2012.