



The Zero Waste Solution

How 21st Century Recycling and Trash Reduction
Can Protect Public Health and Boost Connecticut's Economy

ConnPIRG
Education Fund

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Can Protect Public Health and Boost Connecticut's Economy



Jordan Schneider,
Frontier Group

Abe Scarr,
ConnPIRG Education Fund

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Executive Summary

Connecticut burns more of its waste than any other state in the country, generating more than half a million tons of toxic ash every year. Connecticut's recycling rate, currently at 24 percent, has been stagnant for years, and the state has continued to generate more trash per person over time. The state produces more trash than it can incinerate or landfill, and as a result, we export up to 386,000 tons of municipal solid waste (MSW) to other states for disposal every year.

Fortunately, nearly all of our trash could be reused or recycled, and policymakers can greatly increase recycling and keep trash out of incinerators and landfills by doing simple things like enforcing recycling laws already on the books, updating the Bottle Bill, and eliminating wasteful packaging. These and other common-sense policies will save money and help the state transition to a "zero waste" future.

Connecticut burns more of its trash than any other state in the country, generating more than half a million tons of toxic ash every year, which threatens public health.

- Connecticut burns nearly 1,200 pounds of MSW per person per year.
- Each year, waste incineration produces about 550,000 tons of ash that contains toxic pollutants such as mercury compounds and dioxins. These pollutants contaminate air and water and accumulate in the food chain, exposing humans to an increased risk of cancer, neurological damage and developmental disorders.

Connecticut generates about 400,000 more tons of trash than it can dispose of within its borders each year.

- Connecticut's annual solid waste exports to other states have increased thirteen-fold since 1994.
- Relying on out-of-state disposal carries inherent financial and legal risks, including the potential for sharp price increases in fuel costs or disposal fees, the possibility of sudden policy changes in other states to limit imports, and

legal liability for improperly managed disposal sites.

By reducing, reusing and recycling more of its waste, Connecticut can create a long-term solution to its waste management problems that not only protects public health and the environment, but also creates millions of dollars in economic benefits.

- Connecticut businesses could earn millions of dollars by recycling more materials and selling them as commodities. For example, the 15,600 tons of #1 PET or PETE plastic containers that the state threw away in 2009 would have been worth between \$4.4 million and \$12.5 million in 2011.
- Municipal governments could have saved \$45-\$90 in avoided disposal costs for each ton of material recycled rather than thrown away in FY 2010.
- In 2012, recycling activity in Connecticut generated about \$746 million for the state economy and resulted in employment of more than 4,800 people, according to the Connecticut Economic Resource Center. Expanding recycling would create new economic opportunities.

Connecticut has adopted a statewide goal of diverting 58 percent of its waste from landfills and incinerators by 2024. State and local leaders can help achieve this goal by following the best practices of other cities and counties with successful recycling programs. In general, these programs follow a set of common-sense principles:

1. Reduce our production of waste.

- **Ban certain unrecyclable materials.** Banning materials that cannot

be reused, recycled or composted prevents them from ever entering the waste stream. Dozens of cities in California have banned Styro-foam take-out food containers at restaurants.

- **Buy environmentally friendly and recycled products.** The state should lead the way in purchasing products that are made of recycled materials. The state could set requirements for state agencies to purchase recycled-content products, or require the use of remanufactured goods, such as retreaded tires, in state contracts.
- **Extend responsibility for recycling to product manufacturers.** The sale of wastefully packaged products with hazardous or difficult-to-recycle components increases the financial and environmental burden on the state for waste management. The state should expand its product stewardship laws to give manufacturers greater responsibility over the ultimate fate of their products.

2. Encourage reuse of materials.

- **Build infrastructure for recycling organic material.** The state should facilitate construction of organic composting and anaerobic digesting facilities. Once this infrastructure is developed, the state should extend its current requirement for institutions and other large producers of food waste to compost or recycle to homes and small businesses, as well.
- **Build recycling infrastructure for construction and demolition materials.** The state should

facilitate construction of processing and recycling centers for construction and demolition materials.

Once this infrastructure is in place, municipalities should set recycling requirements for construction and demolition projects.

- **Facilitate the development and expansion of recycling businesses and markets in Connecticut and the region.** Increases in recycling will go hand-in-hand with the expansion of markets for recycled material and recycling-related businesses. Governor Malloy recently announced the creation of the Recycling Market Development Council. The council is a good first step and should focus on both in-state and regional market development opportunities.

3. Expand and enforce existing recycling laws.

- **Periodically expand the list of statewide mandated recyclables.** The overall composition of MSW can change over time, so the state should periodically update its list of mandated recyclables to ensure that recycling rates remain high.
- **Implement unit-based pricing.** Under these programs, residents and businesses that generate less waste don't pay as much for disposal. This pricing system is already helping to drive recycling rates in cities such as Portland and Stonington.
- **Enforce residential curbside recycling.** Municipal governments should improve efforts to educate residents about curbside recycling programs. Local governments

should also enforce recycling ordinances by levying fines for contamination of garbage with recyclables, or refuse to collect waste that is contaminated with recyclables.

- **Enforce recycling mandates and disposal bans at incinerators.** Incinerator operators should be accountable for complying with requirements for regular reporting to the Department of Energy and Environmental Protection about the origin and quantity of recyclable materials in the loads delivered by trash haulers. Failure to comply with these requirements or to reject loads with excessive amounts of recyclables should result in fines.
- **Expand the Bottle Bill to include all containers.** Connecticut's Bottle Bill helps capture 56-70 percent of all currently eligible containers, removing them from the waste stream. The state should expand the Bottle Bill to all beverage containers.

4. Reduce the cost and administrative burden of waste management on municipalities.

- **Regionalize collection systems and require municipal participation.** The state should create regional recycling districts—served by regional infrastructure—that coordinate with existing waste management authorities to improve collection and recycling rates for recyclable materials. Municipal participation in these districts should be mandatory.

5. Discourage incineration.

Incineration threatens public health and wastes resources. As we increase

recycling, incineration rates will necessarily decrease. The state should develop a plan to transition away from incineration as a waste management strategy. Policymakers should not privilege waste-to-energy electricity by classifying it as a renewable resource eligible for tax credits. This will create a direct disincentive for recycling and impede the growth of truly renewable energy industries, such as wind and solar.

6. Make zero waste a statewide public policy goal. Connecticut currently has a goal of diverting 58 percent of our waste from landfills and incinerators by 2024. However, communities such as San Francisco and Nantucket Island have shown that it is possible to reduce solid waste by 80-90 percent through waste reduction and recycling programs. Connecticut should strengthen its waste diversion goal to at least 80 percent by 2030 and give the goal the force of law by making the goal statutory.

Introduction

As the nascent environmental movement of the 1960s started to shed light on the enormous impact that we have on the natural world around us, the scale of our solid waste problem was cast in sharp relief. Up until that time, cities and towns in both Connecticut and across the United States burned their trash in large, open pits or shunted it off into unlined municipal dumps—each contributing ever-increasing amounts of air, soil and water pollution as populations and economies continued to grow.

Connecticut took action to mitigate these problems by banning open burning and requiring landfills to have sanitary linings and other pollution control measures. As a result, many landfills that did not meet stricter sanitation standards were shut down, significantly reducing available landfill space in Connecticut, and policymakers quickly recognized the need for other practical, reliable options for waste disposal. As the legislature enacted specific solid waste management policies for the first time in 1973, it established first and foremost that all such policies and practices should “preserve and enhance the environment of the state.”¹

It was in the spirit of this law that the state established “resources recovery” as the preferred disposal option to landfilling, with an emphasis on burning trash to generate electricity. The state’s decision to reduce trash volumes through incineration did extend the life of the state’s remaining landfills by several decades, eliminating the need to build more of them, and it generated electricity. And the state did establish that this disposal option was only to be employed *after* waste reduction, reuse and recycling strategies, which would reduce the overall amount of waste going to the incinerator in the first place.

Yet, four decades after the legislature’s initial action, Connecticut now burns more of its trash than any other state in the country, wasting valuable resources and generating millions of tons of toxic ash that threatens public health. The decision to focus on incineration has hamstrung recycling efforts. Because incinerators are large investments that take many years to pay off, the state authorized 20 to 30-year contracts that required municipalities to supply incinerators with steady flows of garbage—creating a direct disincentive for recycling. This direct disincentive is a

major reason why Connecticut's recycling rate has remained at a dismal 24 percent since the mid-1990s.

At the same time, Connecticut is generating more trash per person than in previous decades, which means that our disposal rates are at all-time highs. Cities and towns are again running out of places to put their trash—because even ash landfills are filling up—and more of them are now paying haulers to take longer trips to out-of-state landfills.

The good news is that nearly all of Connecticut's waste can be reused or recycled. With the long-term contracts between municipalities and incinerators now expiring, the state has a golden opportunity to

transform our waste management systems to recycle more, waste less and protect public health.

Other communities, such as Nantucket Island to San Francisco, have shown that it is possible to reduce trash volumes by 80 to 90 percent through recycling and waste reduction strategies—including extended producer responsibility programs, unit-based pricing for garbage collection, or bans on unrecyclable wastes.²

In this report, we will examine the components of Connecticut's waste stream, as well as how the state can follow the best practices of other cities to move the state toward a zero waste future.

Connecticut's Garbage Dilemma

Connecticut's recycling rate has been stagnant for decades, but the amount of trash the state generates has increased over time. Connecticut is overly reliant on a dirty, wasteful, and unsustainable form of waste disposal—incineration—to deal with that increasing flow of trash. Incineration has hindered development of robust recycling and waste reduction programs in the state, and Connecticut now burns more of its trash than any other state in the country, threatening public health and wasting millions of tons of reusable and recyclable material.³

Connecticut Has More Trash to Manage than in Previous Decades

The amount of municipal solid waste (MSW) generated in Connecticut has increased significantly in the last two decades. In FY 2010, Connecticut generated about 3.1 million tons of MSW, up from about 2.9 million tons in FY 1993.⁴ However, the recycling rate in the state has remained relatively stagnant, increasing only slightly from 21 percent in 1993 to 24 percent in 2003—where it has remained ever since.⁵ As a result, the amount of

solid waste requiring disposal each year increased by 300,000 tons between 1993 and 2003, representing an additional 220 pounds each year for every man, woman and child in Connecticut.⁶ The amount of solid waste requiring disposal has likely decreased with the overall drop in waste generation between FY 2008 and FY 2010 but may increase again as the economy recovers.⁷

Solid waste creates hazards for public health. Municipal solid waste often contains toxic chemicals or other hazardous substances that may pollute the air, water and soil surrounding incinerators and dump sites. For example, 50,700 tons of electronic waste were either burned or landfilled in Connecticut in 2009.⁸ Electronic waste, such as computer and television monitors, DVD players, and cell phones, contain toxic chemicals and heavy metals such as lead, cadmium, mercury, brominated flame retardants, and PVC plastics, which release carcinogenic dioxins when burned.⁹ Connecticut now has a law requiring producers to take back and recycle some of these electronic devices, but even small quantities of these substances

in electronic waste (or “e-waste”) still pose a significant threat to public health.¹⁰ Connecticut also threw out nearly 13,000 tons of household hazardous wastes in the general waste stream.¹¹

While today’s landfills and incinerators are outfitted with more pollution control devices than they were decades ago, problems with air, water and soil contamination persist. For example, the Department of Energy and Environmental Protection’s (DEEP’s) Bureau of Air Management took 48 formal and informal actions against four of Connecticut’s six incinerators for air quality infractions between 1990 and 2009.¹²

Increasing volumes of solid waste and a stagnant recycling rate mean that more harmful substances are being disposed of than in previous years.

Connecticut Is Running Out of Options for Solid Waste Disposal

In Connecticut, landfill space is virtually non-existent, and as trash generation continues to outpace recycling and waste diversion, municipalities face dwindling options for disposal.

Since the early 1990s, almost all local landfills have reached capacity and closed or were shut down by the DEEP for not meeting environmental standards. Only one in-state landfill for municipal solid waste remains in operation, but the DEEP estimates that it will reach capacity and close by 2015.¹³ After 2015, all MSW will either be shipped out of state or burned at one of the state’s six incinerators.

Neither incineration nor exportation provides a sustainable, long-term solution for waste management. Incineration endangers public health and is insufficient to dispose of Connecticut’s waste, forcing the state to export increasing amount of solid waste to other states each year. Shipping waste out-of-state exposes municipalities to numerous financial and legal risks.

Connecticut Relies Heavily on Incineration

Connecticut has relied heavily on incineration as a waste disposal strategy since the 1970s, when the state decided to prioritize incineration as a preferred disposal method to landfilling. Both of these disposal methods are supposed to fall below waste reduction, reuse and recycling strategies in the DEEP and the Environmental Protection Agency (EPA) hierarchies of preferred waste management alternatives. However, in practice, incineration has become the most prominent waste management strategy in the state, with more than 62 percent of all waste going to incineration facilities.¹⁴ (See Figure 1.) That’s nearly 1,200 pounds of municipal solid waste (MSW) burned per person per year.¹⁵ This rate is far higher than in other states in the Northeast, such as Massachusetts (37 percent) and far more than the national average of 7.4 percent.¹⁶ (See Figure 2.)

The prevalence of incineration in Connecticut is due to several decisions by policy-makers:

- The creation of the Connecticut Resources Recovery Authority (CRRA), a statewide entity charged with helping establish municipal recycling, disposal, and waste-to-energy systems and facilities. CRRA used its bonding authority to build four of the state’s six incinerators.
- The CRRA’s creation of long-term (20 years or more) contractual agreements with 106 of Connecticut’s 169 municipalities to supply its incinerators with a steady stream of garbage. As of 2008, a total of 121 municipalities had long-term contracts with CRRA and non-CRRA incinerators.¹⁹
- The establishment of long-term contracts obligating electricity providers

Figure 1. Disposal of Municipal Solid Waste in Connecticut, FY 2010¹⁷

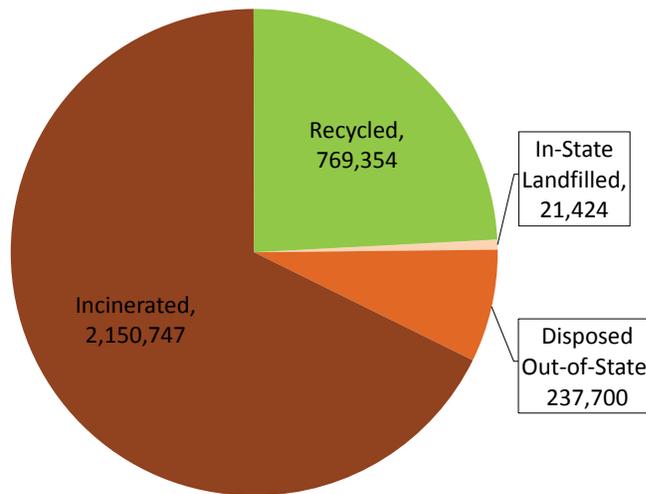
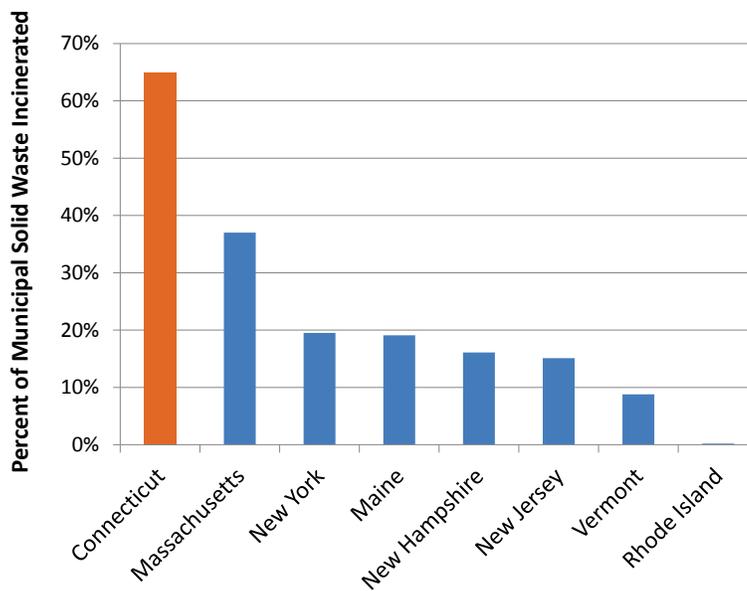


Figure 2. Percentage of Municipal Solid Waste Stream Incinerated by State, 2006¹⁸



to buy incinerator-generated electricity at above-market electricity prices.²⁰ These contracts—required by state law—were designed to help finance the incinerators.

These contracts have ensured the financial viability of the state’s incinerators

for three decades. Unfortunately, they have also created direct disincentives to recycle—since municipalities are contractually obligated to supply incinerators with a certain amount of solid waste each year. Today, many of these contracts are expiring, and municipalities have the opportunity to change the way they manage their waste.

Incineration Threatens Public Health

When solid waste is burned, exhaust gas is released into the atmosphere, and though it undergoes some pollution control, it still contains heavy metals such as cadmium, lead and mercury; soot and smog components such as sulfur dioxide, nitrogen oxides, carbon monoxide and particulate matter; and carcinogens such as dioxins and furans.²¹

Some of these pollutants may stay in the atmosphere and contribute to health-threatening soot and smog pollution, which causes respiratory and cardiovascular problems in humans. Others, such as mercury and dioxin, settle into soil and water, where they can be absorbed into the food chain. These hazardous substances can also become highly concentrated in the ash residue produced by incinerators. All ash residue in Connecticut is currently landfilled.²² Precipitation seeping through leaks or tears in landfill linings can carry these pollutants into groundwater.

Of all the pollutants emitted by incinerators, the two of greatest concern for human health are dioxin and mercury. Because mercury and dioxin accumulate in the environment, even small releases of these pollutants are harmful.

Dioxins

Incinerators are a leading source of environmental dioxins in the United States.²³ Dioxins are a group of persistent toxic chemicals that are released into the air by manufacturing and industrial processes that use or burn chlorine. Plastics such as polyvinyl chloride (PVC) contain chlorine compounds that create dioxins when burned in incinerators.

Dioxins are the most potent known human carcinogens, and unlike other chemicals which have a negative effect only in doses above a certain level, dioxins do not have a threshold below which they are

known to be safe.²⁴ Even doses as low as one thousandth of one millionth of a gram can be hazardous.²⁵

Dioxins have been linked to cancer and numerous other health impacts, including reproductive and developmental problems, increased heart disease and diabetes, and a weakened immune system.²⁶

Animal studies have shown that dioxin can lower sperm counts and delay testicular descent in males, and increase the risk of endometriosis and failed pregnancies in females.²⁷ Children exposed to dioxin may suffer from delayed development, learning disabilities and IQ deficits.²⁸ The impacts of dioxin exposure are particularly severe when exposure occurs *in utero* or during childhood.²⁹

Airborne dioxin settles onto soil and plants. Animals that eat those plants accumulate dioxin in their bodies; people are exposed to dioxin when they eat meat, eggs, and dairy products.³⁰

Current average levels of dioxin in humans are at or near the levels that have been demonstrated to cause problems in animals. According to the Environmental Working Group, the excess cancer risk from dioxin in levels already present in the general public is approximately 320 to 1,200 per million people, far higher than EPA's acceptable risk level of one in one million.³¹

Mercury

Mercury is a highly toxic, bioaccumulative metal. The incineration of products that contain mercury vaporizes the metal and sends it into the atmosphere, where it is dispersed by the wind before being deposited onto soil or water hours or months later. Mercury that settles out of the air and finds its way into water presents the greatest threat to human health because it becomes concentrated in the food chain—particularly in fish. The bioaccumulation of mercury through the food chain means that very small releases of mercury ultimately become dangerous to humans.³²

Together, the state's six incinerators emitted more than 48 pounds of mercury pollution into the air in 2012—far more than the .33 pounds emitted by the state's only coal-fired power plant in Bridgeport Harbor.³³

Mercury can have a variety of health effects but its most potent effect—and the effect most likely to occur at the lowest doses—is neurotoxicity, causing damage to the nervous system, particularly for developing fetuses.³⁴ Methylmercury, an organic form of mercury that is easily absorbed by animals, is readily transported across the placental barrier, meaning that a pregnant woman's lifetime exposure to mercury exposes her fetus as well.³⁵ Mercury has also been found in breast milk, presenting another route of exposure for infants.³⁶

The health impacts of fetal exposure to mercury are well-documented. Children born to mothers exposed to mercury during pregnancy can exhibit a wide variety of neurological problems, including delayed onset of walking and talking, impaired motor function, decreased attention spans, and reduced neurological test scores.³⁷ Other health effects of mercury exposure may include damage to the immune, cardiovascular and reproductive systems.³⁸

Fish consumption is the most important pathway for mercury exposure in humans. Mercury from the atmosphere is deposited into waterways, where it is converted by aquatic organisms into its organic form, methylmercury. The aquatic food chain is typically made up of many levels—ranging from tiny plankton through small fish and up to the larger fish that humans typically consume. At each step of the food chain, methylmercury becomes increasingly concentrated in animal tissue, such that large fish can accumulate significant amounts within their bodies—enough to cause health problems for the birds and mammals (including people) that consume the fish.³⁹

For fish to be safe enough for the average American woman to eat two six-ounce meals of fish per week, mercury concentrations must be no greater than 0.13 parts per million.⁴⁰ Connecticut has significant mercury pollution, which is reflected in the number of fish species that are unsafe for human consumption. The state's Department of Public Health warns residents to limit their consumption of bullheads, catfish, large- and smallmouth bass, striped bass, carp, bluefish and eels from the Housatonic and Connecticut rivers, Long Island Sound and connected rivers, and several ponds and lakes throughout the state.⁴¹

Connecticut can reduce the amount of mercury that persists in the environment by removing products containing mercury from the waste stream—both by improving recycling and stopping the manufacture and use of products containing mercury.

Incineration Doesn't Provide a Long-Term Waste Management Solution

Incineration reduces the weight and volume of MSW, but it does not eliminate the problem of disposal. Connecticut's incinerators produce 550,000 tons of ash residue every year.⁴² This ash contains hazardous substances and therefore requires disposal at special ash landfills. The state has one ash landfill currently in operation at Putnam, but the DEEP estimates it could reach capacity as early as 2018.⁴³

Even if ash disposal capacity were greatly expanded in Connecticut, the state would still have to ship hundreds of millions of pounds of MSW out of state because annual trash generation outpaces incineration capacity. The state is producing about 400,000 tons more MSW than its six incinerators can process on an annual basis.⁴⁴ As a result, Connecticut municipalities have increased garbage exports to other states by thirteen-fold—from 27,000

tons in 1994 to 386,000 tons in 2006.⁴⁵ Without improvements to recycling and other waste reduction strategies, the DEEP estimated that, based on waste generation in 2008, this annual “capacity shortfall” at incinerators could reach 1.5 million tons by 2024.⁴⁶

Relying on Waste Exports is Risky for Connecticut Municipalities

For municipalities, relying on exports of MSW for out-of-state disposal can result in significant risks. For example, out-of-state landfills can raise prices without notice or place fees on imported waste. Out-of-state landfills may also close, increasing transportation costs to other landfills or incinerators that are farther away.

A 2010 report for the Connecticut General Assembly listed the following concerns as primary reasons for the state to work toward a self-sufficient waste disposal system:⁴⁷

- **Loss of control.** Relying on out-of-state disposal exposes municipalities

to sudden price shocks in fuel costs or disposal fees, or the possibility of sudden policy changes—such tax increases or additional fees—in other states designed to limit imports.

- **Transportation costs.** Because solid waste is usually transported out-of-state in long-haul trucks, fluctuations in the price of fuel can significantly impact disposal costs.
- **Liability.** Some out-of-state landfills may not be properly operated, or they may be subject to less stringent enforcement or permitting laws, leaving Connecticut vulnerable to liability concerns. For example, during the construction of the Bridgeport incinerator in the mid-1980s, Connecticut shipped less than 100 tons of waste to a New Jersey landfill that was later declared a hazardous waste site; according to the General Assembly report, financial responsibility is still being determined.⁴⁸

Connecticut Has Great Untapped Potential for Recycling

To create long-term sustainability for waste management in Connecticut, the state must reduce the amount of waste it produces. About 48 percent of all recyclable “blue bin” materials, 43 percent of all recyclable beverage containers, and 31 percent of recyclable paper and packaging products remain in Connecticut’s waste stream to be burned or buried at out-of-state landfills, according to a report for the Governor’s Modernizing Recycling Working Group.⁴⁹ Reuse and recycling strategies will help divert more of the state’s trash from disposal, allowing municipalities to hedge against volatility in disposal costs and availability, while saving money and stimulating the economy.

Each year, Connecticut pays to dispose of millions of tons of valuable materials. For example, in FY 2010, Connecticut disposed of more than 2.4 million tons of waste, of which about 723,000 tons were recyclable paper, plastic, metal and glass.⁵⁰

There are not enough data available to estimate the total value of all of the recyclable materials Connecticut throws away each year. However, it is clear that recycling just a fraction of these materials

could help Connecticut residents earn millions on the commodity market. For example, the 15,600 tons of #1 PET or PETE plastic containers that the state threw away in 2009 (excluding beverage containers covered under the Bottle Bill) would have been worth between \$4.4 million and \$12.5 million in 2011.⁵¹ In 2012, the 4,700 tons of aluminum beer and soda cans thrown away in 2009 would have been worth \$5.8 million.⁵²

On top of these earnings on the commodity markets, local governments can save money in avoided disposal costs for every ton of materials they recycle instead of throw away. According to the Legislative Program Review and Investigation Committee’s 2010 report, each ton of solid waste that is recycled can save municipal governments between \$45 and \$90 per ton in disposal costs.⁵³ Based on this estimate, if cities and towns had recycled the 730,000 tons of recyclables thrown away in FY 2010, they would have saved between \$32 million and \$65 million.⁵⁴

Increasing recycling would also help create jobs and enhance economic opportunity in the state. Although recycling

in the state is underdeveloped, in 2012, recycling generated over \$746 million in sales activity in the state—and more than \$5.17 billion since 2006.⁵⁵ According to the Connecticut Economic Resource Center, recycling activity in 2012 also supported more than 4,800 jobs in recycling and recycling-reliant industries.⁵⁶

Connecticut has an enormous opportunity to improve recycling to achieve more of these benefits. The state has established a goal of doubling its current diversion rate to keep 58 percent of MSW out of landfills and incinerators by 2024, and because most of the state's waste system is handled at the local and regional level, municipalities will lead the way.⁵⁷ By looking to the best practices established in other cities that divert more than 70 percent of their waste from disposal each year, state and local leaders can bring the state's waste management practices into the 21st century.

Connecticut Can Seize Opportunities to Reduce Solid Waste

In general, Connecticut's MSW can be divided into three broad categories: residential, commercial (which includes institutional and industrial waste), and construction and demolition (C&D). Each sector generates unique types of waste. For example, households generate more yard waste than the other sectors, and single-family residences produce more than multi-family residences. The composition of commercial waste depends on individual businesses; for instance, commercial retailers produce lots of cardboard waste, and offices produce mostly paper waste. Construction and demolition (C&D) waste comprises brick, asphalt, concrete wood, drywall, and other building materials, as well as dirt, gravel and sand.

To keep more of these materials out of landfills and incinerators, Connecticut must improve its recycling programs and infrastructure, as well as launch programs to reduce waste. In this section, we review the current components of Connecticut's waste stream and highlight how the state can follow the best practices of other cities to increase diversion.

What Connecticut Throws Away

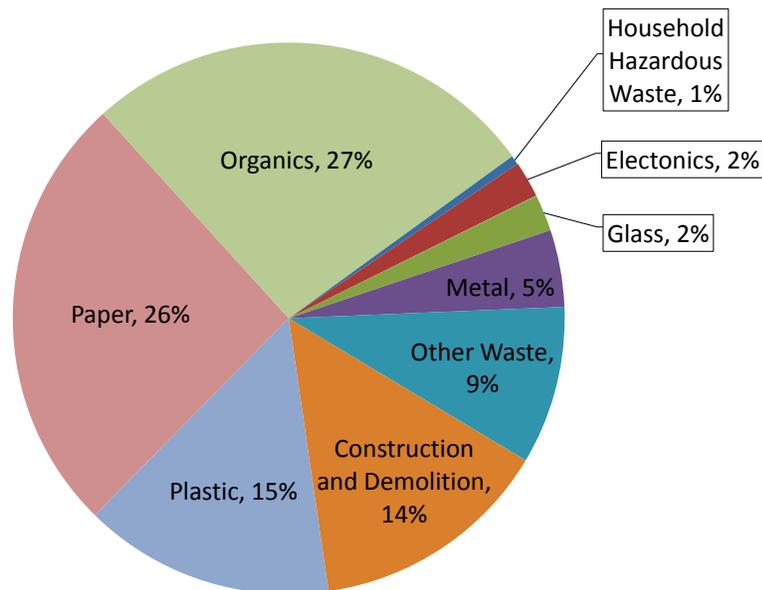
A 2010 study for the Department of Energy and Environmental Protection shows that the top four categories of material disposed of as municipal solid waste are food, yard and other organic waste (26.7 percent), paper (25.9 percent), plastics (14.7 percent), and construction and demolition material (14.1 percent).⁵⁸ The remaining 18.6 percent includes metal, glass, household hazardous waste, electronics and other waste.⁵⁹ (See Figure 3.)

Food, Yard and Other Organic Waste

The largest component of the state's overall waste stream is organic material. Organic waste consists of material such as food waste, leaf and yard waste, manure, and other organic matter, such as sawdust, hair, or hemp rope.⁶¹ Nearly all organic material can be "recycled" by being composted or processed in an anaerobic digester. Composting organic waste reduces its volume and captures nutrients that can be used to create fertilizer. Alternatively, anaerobic digesters help capture methane from decomposing organic material, and methane can be burned to generate electricity.

In Connecticut, more than half of the organic waste that is thrown away is food waste.⁶² This category includes food scraps from the residential and commercial sectors and processed residues from canneries or wineries.⁶³ Households contribute 57 percent of this food waste, while the rest comes from restaurants, grocers and large institutions. Although the state is currently

Figure 3. Composition of Connecticut's Municipal Solid Waste, 2009⁶⁰



pursuing plans to build at least one anaerobic digester, there are virtually no food waste recycling infrastructure or recycling programs in the state.⁶⁴ As a result, households and businesses throw away 320,000 tons of food waste that could otherwise be composted at home or processed at a regional or municipal composting center to create fertilizer or energy.

Leaf and yard waste is the second-largest component of the state's organic waste stream. In contrast to food waste recycling, leaf and yard waste composting infrastructure exists in the state. In part, this is because leaves are part of the state's mandatory recycling list, and grass clippings were banned from incinerators and landfills in 1998.⁶⁵ Many towns therefore have drop-off sites for residential yard waste, which is then transported to a composting facility, or towns provide curbside pick-up.⁶⁶ Still, more can be done. The state still throws away about 172,000 tons of leaves and grass clippings each year.

Food and yard waste make up as much as 490,000 tons of Connecticut's garbage each year—about 14 percent.⁶⁷ By focusing on increased composting in these areas, the state could reduce its overall waste tonnage (thus saving municipalities on disposal costs) while taking advantage of a significant new source of municipal compost and energy.

Paper

Paper makes up about 26 percent, by weight, of solid waste in Connecticut.⁶⁸ Paper is also one of the most commonly recycled materials in Connecticut, partly because two kinds of paper (newsprint and corrugated cardboard) have been a part of the state's mandatory recycling list since 1991.⁶⁹ In 2012, two new kinds of paper products—boxboard and magazines—were added.⁷⁰ As a result, Connecticut recovers about half of recyclable papers from the waste stream each year—but it still disposes of about 361,000 tons, accord-

ing a report by DSM Environmental Services, a consulting firm working with the Governor's Modernizing Recycling Working Group.⁷¹ To put this number into perspective, recycling this amount of paper instead of throwing it away would have eliminated the need for Connecticut to export any waste in 2006.⁷²

Connecticut could improve paper recycling rates by improving collection and processing infrastructure for single-stream recyclables—both for homes and businesses—and by expanding the list of targeted paper grades required for recycling. According to DSM, these two measures could help the state recover an additional 119,000 tons of paper per year.⁷³

Plastic

Plastic represents 14.7 percent of Connecticut's statewide MSW—about 350,000 tons of material.⁷⁴ It is particularly important that Connecticut improve plastic recycling because plastics do not break down in landfills the same way paper or organic waste does, and burning some types of plastic in incinerators results in the creation of dioxin, a potent human carcinogen. In addition, the creation of new plastic is resource- and energy-intensive, requiring extraction of petroleum and processing with toxic chemicals.⁷⁵

The plastics that Connecticut throws away include bottles and containers bearing the numbers 1-7 in the triangular recycling symbol; food-grade and non-food grade expanded polystyrene ("Styrofoam"); durable plastic items such as children's toys, furniture, mop buckets, etc.; commercial and industrial packaging film; grocery and merchandise bags; and other "contaminated" film such as garbage bags and food wrappers.⁷⁶

Some of these materials are non-recyclable or not commonly recycled, such as contaminated film and Styrofoam. However, PET and HDPE plastic containers (marked with #1 and #2) are the most

commonly recycled plastics and make up about 12 percent of all of Connecticut's plastic waste. (See Appendix, Table A.3.) PET and HDPE plastics can be melted down and the resin used to make items such as bottles for cleaning products and non-food items, egg cartons, fibers and textiles, lumber substitutes, base cups for soft drink bottles, flower pots, toys, pails and drums, traffic barrier cones, bottle carriers, and trash cans.⁷⁷

By disposing of this material instead of recycling it, the state is wasting money and resources. For example, 10,000 tons of Bottle Bill material—covered by Connecticut's five-cent deposit on certain beverage containers—were thrown away in 2010.⁷⁸ Connecticut also disposes of more than 86,000 tons annually of durable plastic items that could provide a significant new source of marketable plastic resins in Connecticut.⁷⁹

Construction and Demolition Debris

Construction and demolition (C&D) debris makes up more than 14 percent of the overall waste stream.⁸⁰ The largest components of this portion of the waste stream are treated wood, untreated wood and carpet.⁸¹ Other materials in this category include asphalt, brick and concrete, asphalt roofing, drywall/gypsum board and carpet padding.⁸²

The state disposes of about 340,000 tons of construction and demolition waste, but recycles less than 10,000 tons—about 3 percent.⁸³ However, DEEP estimates of the amount of C&D waste thrown away and recycled in Connecticut are inexact, since the agency only includes waste that passes through Connecticut facilities, and most C&D waste is transported directly from municipalities or generation sites to out-of-state landfills.⁸⁴

That means that Connecticut is exporting the bulk of its recyclable C&D waste. That includes 63,600 tons of untreated

wood and 83,100 tons of carpet that could be reused to provide materials for new buildings.⁸⁵ Together, untreated wood and carpet represent about 40 percent of all C&D waste. (See Appendix, Figure A.4.)

Metals, Glass and Other Waste

The remainder of Connecticut's MSW can be grouped into five broad categories: metals, glass, electronics, household hazardous waste and miscellaneous waste.⁸⁶ (See Appendix, Figure A.5.)

More than 107,000 tons of metal waste is thrown away in Connecticut each year, almost all of which is recyclable.⁸⁷ In particular, aluminum and steel cans fetch high commodity prices; in 2012, clean, dry aluminum cans were worth \$1,220 per ton, and steel cans were worth \$375/ton.⁸⁸

In Connecticut, the largest potential area of glass recycling is in glass beverage containers. Of the 51,000 tons of glass thrown away in Connecticut in 2010, nearly 39,000 tons were glass beverage containers, including 7,000 tons of containers covered by the Bottle Bill.⁸⁹

Connecticut disposed of about 13,000 tons of hazardous household waste in 2010.⁹⁰ Household hazardous waste includes all types of fluorescent light bulbs and fixtures; lead acid batteries; household batteries; paint; needles and syringes; vehicle fluids; empty hazardous material containers; pesticides and fertilizers; and household or commercial products labeled "toxic," "corrosive," "poisonous," "flammable," etc.⁹¹ This waste is difficult to recycle safely, but laws requiring manufacturers to take back hazardous items to safely dispose of or recycle them can help keep them out of the waste stream.

Electronics made up about 50,700 tons of Connecticut's total MSW in 2010.⁹² About half of this waste consists of TV and computer monitors. (See Appendix, Table A.5.) Diverting more electronic waste from disposal is important because

it often contains toxic chemicals that can leach from landfills or produce toxic air pollution when burned in an incinerator. The state recently launched an e-waste recycling program, which the Governor's Modernizing Recycling Working Group has estimated will divert about half of all electronic waste from disposal.⁹³

Other waste includes "bulky items," such as furniture and mattresses; non-carpet textiles, such as clothing, fabrics, curtains, and stuffed animals; restaurant fats, oils, and grease; small fragments of paper, plastic and glass and dirt; and other miscellaneous waste.⁹⁴ Together, these materials make up about 221,000 tons of solid waste.⁹⁵ (See Appendix, Table A.5.) Some items in this category, such as mattresses, have been targeted for product stewardship programs that would require manufacturers to help cover the costs of recycling them.

Connecticut Can Follow Best Practices to Reduce Waste

Connecticut can reduce waste generation and recover far more recyclable materials through simple measures such as enforcing current recycling laws, improving single-stream recycling, and eliminating wasteful packaging. These and other common-sense policies are helping some cities across the United States divert more than 70 percent of their garbage from disposal. State and local leaders can help Connecticut keep more garbage out of incinerators and landfills by following best practices pioneered by these cities.

America's Best Waste Reduction Programs

In Connecticut, the largest opportunities to reduce waste are in composting food and yard waste, recycling of paper

and plastics, and recovery of construction and demolition materials. These are also the dominant waste streams targeted by successful recycling and waste reduction programs in both Connecticut and across the United States. In 2011, waste management authorities in Mecklenburg County, North Carolina, studied how 24 cities and counties improved their residential, commercial and C&D programs to achieve high diversion.⁹⁶ In Connecticut, the DEEP published an “honor roll” of municipalities with top-notch recycling and waste reduction programs, many of which have increased recycling rates in these cities above the statewide average.⁹⁷ The most successful programs in both Connecticut and across the country share similar characteristics:

Residential Programs

Mandatory recycling programs

Mandatory recycling helps ensure high participation in recycling programs. For example, In Tyngsborough, Mass., mandatory recycling increased the number of households participating in the program by 85 percent.⁹⁸ Connecticut has had mandatory recycling of certain items since 1991, which has ensured that the majority of households and businesses participate.⁹⁹

Despite high participation in the state’s mandatory recycling program, Connecticut leaves many opportunities to recycle on the table because its list of required recyclable items is relatively limited. Up until 2012, the state’s list of mandatory recyclables only included 10 items.¹⁰⁰ Towns in Connecticut that have provided opportunities to recycle more items in addition to the state’s list have much higher recycling rates than the state average. For example, Granby, Litchfield and Manchester all have recycling rates above 36 percent, and they recycle materials such as plastics #1 and #2, aseptic packaging, antifreeze, textiles, brush/woodchips, electronics, magazines and discarded mail, fluorescent

lamps/ballasts, and eyeglasses.¹⁰¹ In 2012, the state followed suit and added several of these items, including #1 and #2 plastics and magazines, to its list of mandated recyclables.¹⁰²

Single-Stream Collection of Recyclables

Single-stream collection can be an important tool to achieving high recycling rates. Some cities with single-stream collection divert more than 60 percent of their residential waste from disposal, such as in Greensboro, N.C., or Fresno, Calif.¹⁰³ In contrast to dual-stream or multi-stream collection, in which different recyclables are separated into multiple bins, single-stream collection allows all recyclable materials to be placed in the same bin.

Single-stream commingled collection is typically easier for residents—which can increase total materials collected—and may result in several cost advantages for municipalities. For example, haulers can use automated collection trucks, which can grab, lift, and empty recycling bins mechanically, and which are generally more cost-effective than manual collection.¹⁰⁴ In addition, transporting everything in a single compartment can help eliminate the need for multiple trucks to run the same route, or for trucks equipped for multi-stream collection to leave their routes with half-full loads when one compartment fills faster than the other.¹⁰⁵

Generally, single-stream processing centers can also process more types of material than dual-stream processing centers, meaning that municipalities using single-stream centers can collect more types of materials at the curb. When one dual-stream processing center in Hartford switched to single-stream recycling in FY 2009, the facility saw a 40 percent jump in materials processed.¹⁰⁶

However, without good education programs and enforcement strategies, higher collection rates under single-stream recycling do not necessarily translate into

higher recycling rates. Without good education, recyclables collected at the curb are more likely to be contaminated with non-recyclable materials or residues, which can result in entire loads being rejected from processing centers, depressing recycling rates. Additionally, automated collection of single-stream materials can hinder effective monitoring and enforcement of recycling ordinances.

Unit-based pricing

Many cities and counties charge households based on the amount of waste they throw away. These programs—known as unit-based pricing, “save money and reduce trash” (SMART), or “pay-as-you-throw” (PAYT)—give residents the option to use a smaller garbage bag or container, for which they pay less.¹⁰⁷ A handful of Connecticut municipalities have implemented SMART programs.¹⁰⁸ Most of these municipalities require residents to purchase stickers to place on each garbage bag that is picked up. In Putnam, for example, stickers for 13 to 20-gallon bags cost \$.50, and stickers for 30 to 35-gallon bags cost \$1.00.¹⁰⁹

In most of the rest of the state, municipal trash collection is paid for through property taxes.¹¹⁰ This means that there is no price signal that encourages households to generate less waste and recycle more; it also means that households that generate little waste are subsidizing garbage collection for households that generate lots of waste.¹¹¹

In Connecticut, some towns with high recycling rates already have some form of PAYT or unit-based pricing. In Stonington, recycling is free for private residences, but there is a per-bag fee for trash.¹¹² Stonington’s recycling rate is nearly 36 percent.¹¹³ Portland (33 percent recycling rate) has established unit-based pricing for residents who drop off their trash at transfer stations.¹¹⁴ Mansfield has had unit-based pricing since 1991 for all residential services—multi-family, single-family and

transfer station drop-off, according to the town’s recycling coordinator.¹¹⁵

Food waste collection

Food waste collection is a hallmark of cities with overall diversion rates over 60 percent, such as Fresno (75 percent), San Francisco (77 percent), and Toronto (67 percent).¹¹⁶ These and other high-diversion cities generally require all households to recycle food waste, which is sometimes allowed to be commingled with yard waste. Some cities also require food waste collection for multi-family housing units. Seattle and Toronto, for example, offer residents of multi-family housing a free kitchen carry-out bucket for food scraps.¹¹⁷ These cities employ a three-cart system in which residential households receive a third “green bin” for separated or commingled food/yard waste in addition to their recycling and waste bins. Alameda County, Calif., (69 percent overall diversion rate) makes its garbage container the smallest of the three.¹¹⁸

In Connecticut, several cities listed on the DEEP’s “honor roll” for their recycling programs encourage some form of home composting of food waste, but generally have no large-scale collection programs because the state lacks food waste composting infrastructure.¹¹⁹ Middletown, Mansfield, Manchester, New Britain and Granby have all distributed or sold free or reduced-price home composting bins to residents; in Granby more than 25 percent of households have these bins.¹²⁰ Redding has a designated drop-off area for residents for compostable materials, and residents are invited to come back for finished compost, according to the DEEP.¹²¹ In Mansfield, all schools compost their food scraps.¹²²

Disposal bans

Some municipalities reinforce their recycling programs with waste bans. Connecticut has a disposal ban on grass clippings at landfills and incinerators and leaves must

be composted, which keeps the yard waste portion of the waste stream to about 1.4 percent.¹²³ Seattle also has a disposal ban on yard waste, and garbage is not collected if yard waste, food waste, or recyclables are found inside. Seattle's recycling rate for curbside pick-up is 70 percent.¹²⁴ Fresno requires weekly collection of single-stream recyclables, and applies fines for contamination of garbage with recyclables. Fresno achieves a diversion rate for curbside waste of 74 percent.¹²⁵

In Connecticut, cities and towns have the authority to enforce disposal bans and recycling mandates, but some are better at enforcement than others. Of the towns currently listed on the DEEP's "honor roll" for exceptional recycling programs, several have strong enforcement mechanisms. For example, in Somers, transfer station operators reject incoming loads of garbage that are not properly separated.¹²⁶ Mansfield haulers do not pick up trash that contains recyclables, and the city fines residents after three written warnings for continued violations.¹²⁷

Bi-weekly garbage collection and weekly recyclables and compost collection

To encourage households to keep more recyclable and compostable material out of the trash, some cities, such as Portland, Ore., only collect garbage every two weeks, but pick up recycling and combined food/yard waste every week, resulting in a curbside recycling rate of 51 percent.¹²⁸ Greensboro, N.C., picks up single-stream recyclables twice per week and garbage once per week. It also offers weekly loose leaf pick-up and achieves a curbside diversion rate of 61 percent.¹²⁹

Commercial Programs

Waste from the commercial sector can make up as much as 50 percent of all municipal solid waste.¹³⁰ In order to address specific waste streams from these sectors,

many cities have mandated recycling for specific materials and placed bans on non-recyclable materials.

Mandatory recycling

Mandatory recycling for large waste-producers in other states helps divert specific materials from the waste stream. For example, a significant portion of food waste in most communities comes from the commercial sector. In Connecticut, about 43 percent of all food waste generated in 2009 came from restaurants, grocers and large institutions. (See Appendix, Table A.1.) To address food waste from businesses, Portland, Seattle and San Francisco mandate recycling for large producers of food waste. San Francisco reports that 95 percent of restaurants participate in its food waste recycling program, and Seattle diverted 44,000 tons of food waste in 2010.¹³¹ In 2011, Connecticut passed a law requiring large producers of food waste located within 20 miles of a composting facility to recycle their food waste as more composting facilities are constructed and come online.¹³²

Mandatory recycling can help divert other business-specific waste, as well. In Connecticut, businesses generate most cardboard/kraft paper waste (about 74 percent). (See Appendix, Table A.2) Seattle prohibits disposal of paper and cardboard in trash and offers free recycling to businesses that contract for trash pick-up with the city, resulting in a recycling rate of 58 percent.¹³³ Portland, Oregon, also requires recycling of paper and containers, resulting in a commercial recycling rate of 64 percent.¹³⁴ Fresno mandates recycling for businesses if 50 percent or more of their waste stream is made up of recyclables.¹³⁵

In Connecticut, businesses are required by law to recycle all 14 items on the statewide recycling list. However, very few municipalities provide pick-up or drop-off services for businesses.¹³⁶ While large businesses are typically able to take

advantage of economies of scale and create cost-effective contracts with private haulers, small businesses have limited options for cost-effective collection of recyclables, which limits their participation, according to the General Assembly's Legislative Program Review and Investigations Committee.¹³⁷

Waste bans

Some wastes are difficult or impossible to recycle, and some cities have taken steps to ban their use in order to remove them from the waste stream. For example, expanded polystyrene, or "Styrofoam," is very difficult to recycle; therefore San Francisco, Oakland, and Portland have all banned its use in take-out containers for restaurants.¹³⁸

Construction and Demolition Programs

Construction and demolition activities generate large amounts of waste. In contrast to residential and commercial waste, C&D waste is relatively homogenous and presents opportunities to recover large amounts of raw materials, given efficient recycling systems. C&D recycling programs in high-diversion communities share some common characteristics:

Recycling Requirements and Disposal Bans

Boulder, Colo., requires construction projects to recycle 50 percent of construction materials, and 65 percent of demolition materials, resulting in an overall diversion of 83 percent of C&D materials in 2010.¹³⁹ In King County, Wash., all job sites must have separate containers for recyclables and

non-recyclable material. By reinforcing this policy with a disposal ban on all C&D waste at landfills, the county diverts 90 percent of C&D waste from disposal.¹⁴⁰ Orange County, N.C., requires recycling of clean wood and scrap metal (it also bans disposal of these materials). The volume of C&D waste found in the county's waste stream dropped 50 percent after the ordinance was enacted and it continues to fall.¹⁴¹

Economic Incentives

In San Jose, builders are required to divert 50 percent of C&D waste from disposal. To achieve this goal, the city requires builders to pay a deposit at the outset of a project that is fully refundable if the builder provides documentation from a recycling facility showing that the diversion requirement was met. This program has resulted in the diversion of nearly all C&D waste that is separated at the source, and an average diversion rate of 55 percent of mixed materials. In 2008, the city diverted 866,000 tons of C&D material—more than twice the total amount burned or buried in Connecticut in 2010.¹⁴² Alameda County, Calif., has a rebate program offering cash incentives to builders that purchase recycled content building materials.¹⁴³

Goal-setting at Certified C&D Recycling Centers

Some cities require certification of C&D processing facilities and set recycling or diversion goals for them. For example, San Jose has 21 city-certified facilities that must divert at least 50 percent of all the waste they receive. San Francisco has a minimum recycling rate of 65 percent at these facilities.¹⁴⁴

Policy Recommendations

Because of increasing trash generation and stagnant recycling rates over the last few decades, Connecticut now produces far more trash than it can burn or bury each year, forcing cities and towns to export more trash to other state and to continue to rely on incineration, which wastes valuable resources and threatens public health with toxic air and water pollution.

Most of what Connecticut residents throw away can be reused or recycled, and there are new opportunities emerging to transform the way the state has traditionally handled its solid waste.

Connecticut has adopted a statewide goal of diverting 58 percent of its waste from landfills and incinerators by 2024. State and local leaders can help achieve this goal by following the best practices of other cities and counties with successful recycling programs.

1. Reduce our production of waste. Cutting the amount of waste we produce is the best way to reduce the cost and public health impacts of waste disposal. That's why the state lists source reduction as the highest preferred method of solid waste

management, followed immediately by recycling. There are several policy tools public officials can use to help the state reduce our production of waste and ensure that more of it is able to be recycled:

- **Ban certain unrecyclable materials.** Banning materials that cannot be reused, recycled or composted prevents them from ever entering the waste stream. Dozens of cities in California, as well as Portland and Seattle, have reduced the presence of expanded polystyrene (“Styrofoam”) in waste by banning Styrofoam take-out food containers at restaurants.¹⁴⁵
- **Buy environmentally friendly and recycled products.** The state should lead the way in purchasing products that are made of recycled materials, which reduces the need for manufacturers to use virgin materials and helps build demand for recycled materials. Connecticut could set requirements for state agencies to purchase recycled-content products and materials, as federal agencies are currently required to do.¹⁴⁶ The state could also

require the use of remanufactured goods, such as retreaded tires, in state contracts.

- **Extend responsibility for recycling to product manufacturers.** Manufacturers have a tremendous power over the ultimate fate of their products. The sale of wastefully packaged products with hazardous or difficult-to-recycle components increases the financial and environmental burden faced by Connecticut residents for waste management. To encourage greater producer responsibility, the state should expand its product stewardship laws, which currently cover some electronics and latex and oil-based paints, to mattresses, carpet, batteries, pesticides and fertilizers, and packaging.

2. Encourage reuse of materials.

- **Build infrastructure for recycling organic material.** The state should facilitate construction of organic composting and anaerobic digesting facilities to keep organic material out of the waste stream. The state can do this by simplifying the permitting process for recycling/composting facilities, and by providing loans or tax credits to assist in their construction. Once this infrastructure is developed, the state should extend its current composting or recycling requirements for institutions and other large producers of food waste to homes and small businesses, as well.
- **Build recycling infrastructure for construction and demolition materials.** The state should help facilitate construction of processing and recycling centers for construction and demolition materials. In addition to

loans, tax abatements or other incentives to help construct these facilities, the state could issue bonds for construction, which would be paid back through medium- or long-term contracts in which municipally-contracted haulers take all C&D materials to a particular facility. Once this infrastructure is in place, municipalities should set recycling requirements for construction and demolition projects.

- **Build local and regional “swap” centers for used products.** Many products can be reused without being remanufactured, such as books, dishes, eyeglasses, clothing, furniture, appliances and children’s toys. Towns such as Litchfield, Mansfield, Middletown, Redding, Somers, Windsor Locks, Salisbury and Sharon all operate swap centers.¹⁴⁷

- **Facilitate the development and expansion of recycling businesses and markets in Connecticut and the region.** Increases in recycling will go hand-in-hand with the expansion of markets for recycled material and recycling-related businesses. Governor Malloy recently announced the creation of the Recycling Market Development Council. The council is a good first step and should focus on both in-state and regional market development opportunities.

3. Expand and enforce existing recycling laws.

- **Periodically expand the list of statewide mandated recyclables.** The overall composition of MSW can change over time, so the state should periodically update its list of mandated recyclables to ensure that diversion

rates remain high. Connecticut's list of mandatory recyclables was only updated once between 1991 and 2012, when it was finally modified to include #1 and #2 plastic containers—two decades after they became a significant part of MSW.¹⁴⁸ Expanding the statewide list of mandatory recyclables can help reduce variations in municipal recycling laws that can confuse residents and drive down recycling rates.

- o **Implement unit-based pricing.** Under these programs, residents and businesses that generate less waste don't pay as much for disposal. This pricing system is helping to drive recycling rates in cities such as Portland and Stonington.¹⁴⁹
- o **Enforce residential curbside recycling.** Municipal governments should improve efforts to educate residents about curbside recycling programs. Too often, confusion about local and state recycling laws results in the disposal of recyclables. Local governments should also enforce recycling ordinances by levying fines for contamination of garbage with recyclables, or refuse to collect waste that is contaminated with recyclables. In Mansfield, haulers leave garbage contaminated with recyclables on the curb, and residents are fined after receiving three written warnings.
- o **Enforce recycling mandates and disposal bans at incinerators.** Incinerator operators should be accountable for complying with requirements for regular reporting to the DEEP about the origin and quantity of recyclable materials in the loads delivered by trash haulers. Failure to comply with these requirements or to reject loads with excessive amounts of recyclables should result in fines.

- o **Expand the Bottle Bill to include all containers.** Connecticut's Bottle Bill helps capture 56-70 percent of all currently eligible containers, removing them from the waste stream.¹⁵⁰ The state should expand the Bottle Bill to all beverage containers.

4. Reduce the cost and administrative burden of waste management on municipalities. By regionalizing parts of municipal waste collection and recycling systems, the state can boost recycling rates across the state.

- o **Regionalize collection systems and require municipal participation.** The state should create regional recycling districts—served by regional infrastructure—that coordinate with existing waste management authorities to improve collection and recycling rates for recyclable materials. Municipal participation in these districts should be mandatory. This would allow municipalities to share resources more effectively, and it would help the state collect better data on recycling rates.

5. Discourage incineration. Incineration threatens public health and wastes resources. As we increase recycling, incineration rates will necessarily decrease. The state should develop a plan to transition away from incineration as a waste management strategy. Policymakers should not privilege waste-to-energy electricity by classifying it as a renewable resource eligible for tax credits. This will create a direct disincentive for recycling and impede the growth of truly renewable energy industries, such as wind and solar.

6. Make zero waste a statewide public policy goal. Connecticut currently has a goal of diverting 58 percent of our waste from landfills and incinerators by 2024. However, communities such as San

Francisco and Nantucket Island have shown that it is possible to reduce solid waste by 80-90 percent through waste reduction and recycling programs.¹⁵¹ Connecticut

should strengthen its waste diversion goal to at least 80 percent by 2030, and give the goal the force of law by making the goal statutory.

Appendix:

Municipal Solid Waste Tonnages Contributed by Residential and Commercial Sectors

Table A.1. Residential and Commercial Organic MSW, Statewide, 2009 (Tons)¹⁵²

Waste Category	Households	Industrial/ Commercial/ Institutional	Total
Food Waste	183,100	138,400	321,500
Leaves & Grass	142,400	30,000	172,400
Prunings & Trimmings	41,400	10,200	51,600
Branches & Stumps	4,100	6,000	10,100
Manures	3,900	1,500	5,400
Remaining Organics	53,100	22,100	75,200
Total	428,100	208,100	636,200

Figure A.1. Composition of Organic MSW, Statewide, 2009

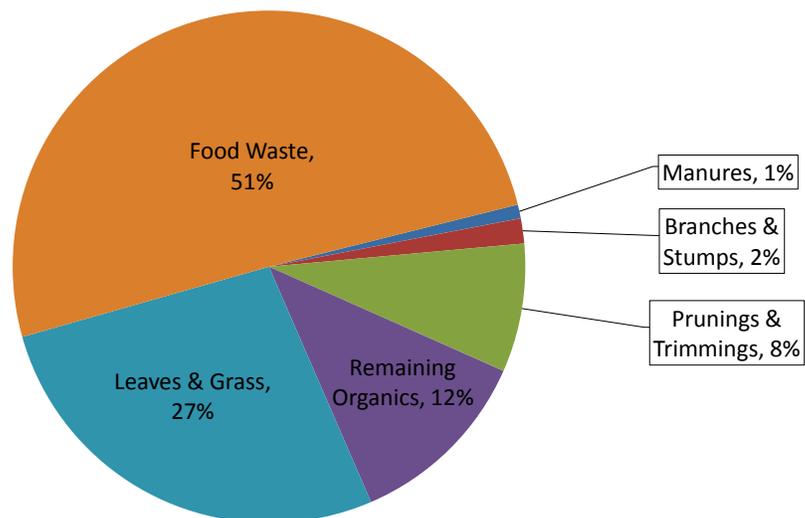


Table A.2. Residential and Commercial Paper MSW, Statewide, 2009 (Tons)¹⁵³

Paper Type	Households	Industrial/ Commercial/ Institutional	Total
OCC/Kraft Paper	35,700	102,600	138,200
Cardboard from Overseas	4,700	5,600	10,400
High Grade Office Paper	19,400	21,800	41,200
Magazines/Catalogs	21,800	8,800	30,600
Newsprint	30,900	16,600	47,500
Phone Books and Directories	4,200	3,600	7,800
Other Recyclable Papers	55,600	29,900	85,500
Compostable Paper	131,400	63,800	195,200
Remainder/Composite Papers	32,100	27,800	59,800
Total	335,800	280,500	616,200

Figure A.2. Composition of Paper MSW, Statewide, 2009

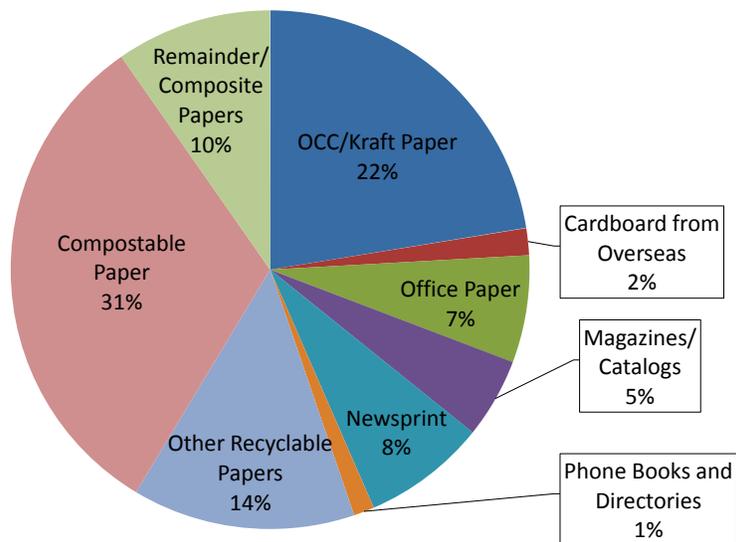


Table A.3. Residential and Commercial Plastic MSW, Statewide, 2009 (Tons)¹⁵⁴

Plastic Type	Households	Industrial/ Commercial/ Institutional	Total
PET Bottles/Jars (#1)	7,800	4,800	12,500
PET Other Containers (#1)	2,100	1,000	3,100
Bottle Bill Beverage Containers	2,900	7,800	10,700
HDPE Bottles (#2)	6,700	4,100	10,800
HDPE Other Containers (#2)	2,000	2,400	1,400
Plastic Containers #3-#7	7,000	4,500	11,500
Non-Food Grade Styrofoam	1,200	18,900	20,100
Food-Grade Styrofoam	10,200	5,900	16,000
Durable Plastics	37,800	46,500	86,300
Film	5,700	7,700	13,300
Grocery Bags	9,000	2,800	11,800
Other Film	51,900	31,600	83,500
Plastic Pallets	1,400	5,600	7,000
Remaining Plastics	2,700	31,300	58,300
Total	172,600	176,900	349,500

Figure A.3. Composition of Plastic MSW, Statewide, 2009

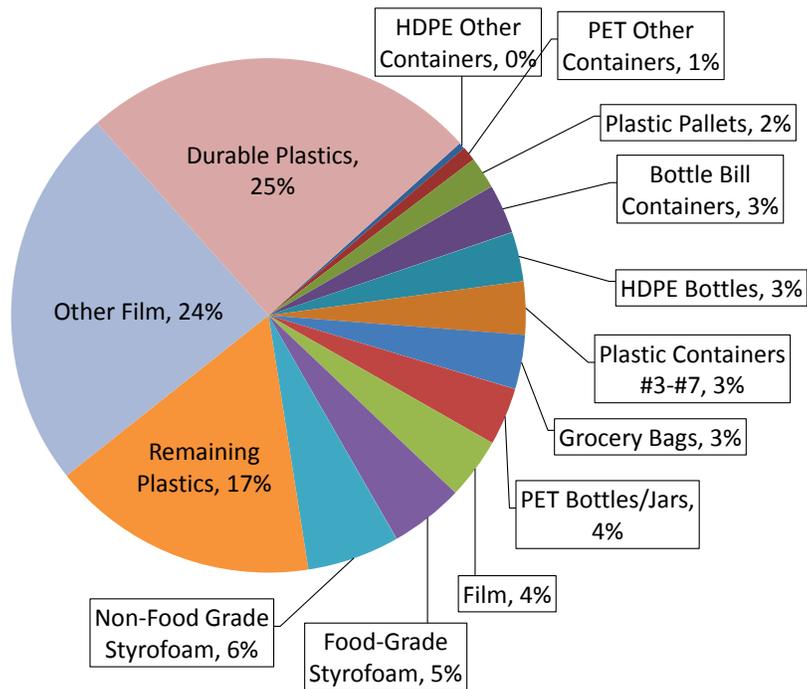


Table A.4. Residential and Commercial Construction and Demolition MSW, Statewide, 2009 (Tons)¹⁵⁵

C & D Waste Type	Households	Industrial/ Commercial/ Institutional	Total
Asphalt, Brick and Concrete	700	2,100	2,800
Wood-Treated	51,200	60,200	111,400
Wood-Untreated	7,200	56,300	63,600
Asphalt Roofing	700	5,400	6,100
Drywall/Gypsum Board	9,000	6,300	15,300
Carpet	53,000	30,100	83,100
Carpet Padding	5,000	12,900	17,900
Remaining C&D	14,300	20,400	34,600
Total	141,100	193,800	334,800

Figure A.4. Composition of Construction and Demolition MSW, Statewide, 2009

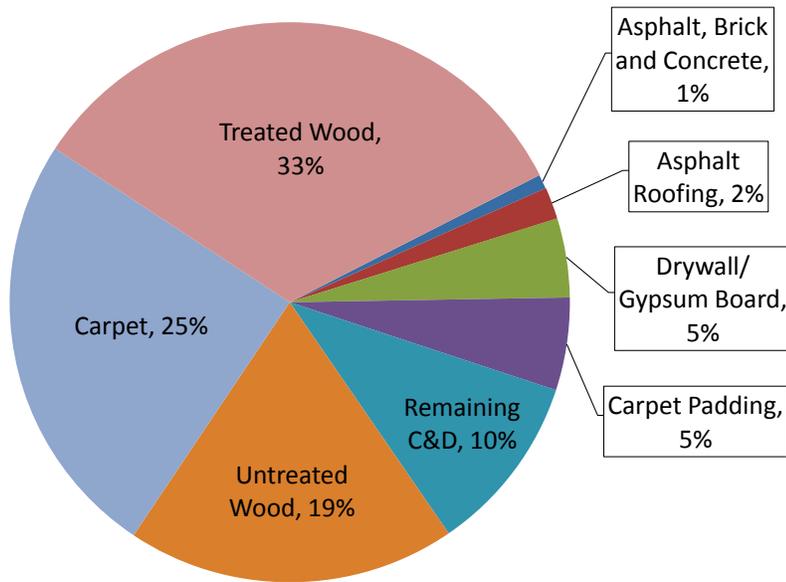
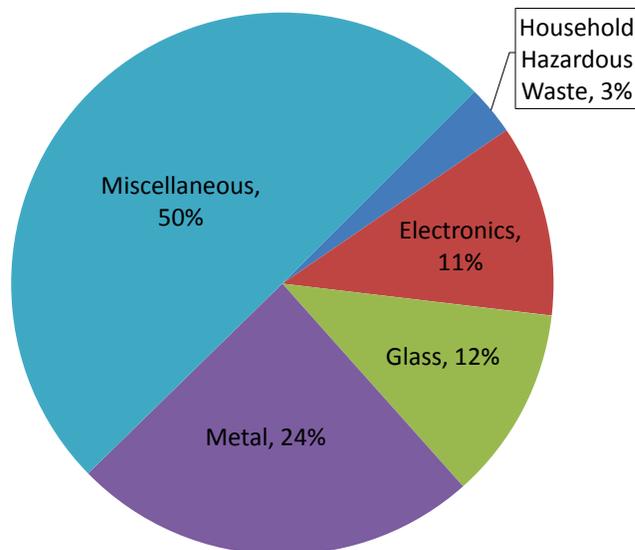


Table A.5. Residential and Commercial Glass, Metal, Electronic, Household and Miscellaneous MSW, Statewide, 2009 (Tons) ¹⁵⁶

Waste Type	Households	Industrial/ Commercial/ Institutional	Total
Metal	61,000	46,500	107,500
Glass	29,900	21,100	51,100
Household Hazardous Waste	5,100	7,800	13,000
Electronics	26,800	23,900	50,700
Miscellaneous	134,300	86,400	220,700
Total	257,100	185,800	443,000

Figure A.5. Composition of Glass, Metal, Electronic, Household and Miscellaneous MSW, Statewide, 2009



Notes

1 Legislative Program Review and Investigations Committee, Connecticut General Assembly, *Municipal Solid Waste Management Services in Connecticut*, January 2010.

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