

Promote waste reduction and diversion

DIVERT RECYCLABLE AND ORGANIC WASTE FROM LANDFILLS FOR ALTERNATIVE MANAGEMENT OR REUSE

Description and purpose of strategy: Waste reduction and diversion through reuse and recycling can support a local circular economy, reduce the need for new raw materials, and reduce environmental impacts. Diverting organic waste from landfills also reduces emissions of methane, a potent greenhouse gas (GHG).

Content of fact sheet: Information on economic and equity implications, best practices, and the state of practice of diverting materials from landfills in the short term and eliminating the sending of waste to landfills in the long term. Actions within this strategy include expanding pay-as-you-throw trash programs; expanding compost collection programs; and promoting overall waste reduction through reuse, at-home composting, and increased recycling.

Implementation support: This fact sheet expands upon strategies and actions from the Climate Actions Database, which can be found at: capecodcommission.org/climate.

BENEFITS

- Greenhouse gas (GHG) emissions reductions or sequestration
- Health improvement from reduced pollutants
- Increased recreation
- Lower maintenance/operational costs
- Environmental enhancement/protection
- Less damage to infrastructure
- Higher property values
- Increased resilience
- Job and economic growth

COSTS

- Higher capital costs
- Higher maintenance costs
- Higher operational costs
- Additional time for municipal staff to implement

KEY FINDINGS



Equity: Unlike many landfills and waste management facilities in the U.S., most landfills on the Cape are not located near vulnerable communities. However, reducing waste sent to landfills—as well as ensuring all residents and visitors have access to proper waste disposal and recycling facilities—could contribute to positive environmental and health outcomes for nearby communities.



Financial benefits: Changing waste management practices to increase recycling and organic waste management would require near-term costs related to operational changes, connecting to recycling markets and processing facilities, and building new facilities, depending on the program(s) implemented.



Non-market benefits: Waste reduction results in improved health, reduced emissions from waste management and processing, and improved environmental quality, including reduced risk of contamination and exposure to pollution and GHG emissions, all with associated equity benefits.



GHG reductions: While waste reduction and diversion are effective at reducing GHG emissions from waste, waste-related emissions are a small percentage (3%) of total community-wide GHG emissions. Even with the additive benefits of compost production from diverted organic waste, the potential GHG reduction impact is low.



Ease of implementation: Collection of organic waste and recyclables may be relatively easy (if not already in place) but management may be more challenging, requiring new facilities for composting or anaerobic digestion of organic waste and identification or creation of markets for end products such as compost. For non-organics, material recovery facilities and aggregating, sorting, and processing facilities could be built.

BENEFIT COST ANALYSIS

Waste reduction and diversion generates public benefits that include cost savings, reduced GHG emissions, improved environmental quality for communities adjacent to waste processing facilities, and keeping materials in the economy longer. Locally, about half of GHG emissions from waste are generated by closed landfills, primarily from the decomposition of organic matter. This section presents estimated benefits and costs of two existing residential waste diversion programs: a pay-as-you-throw program and compost pickup.

Pay-As-You-Throw Program

Residential pay-as-you-throw (PAYT) programs can reduce waste disposal by incentivizing residents to reduce the amount of waste they send to landfills. As of July 2022, PAYT programs have been established in 155 Massachusetts municipalities, including three on the Cape—Brewster, Sandwich, and Wellfleet. All three of these towns have drop-off programs, meaning residents must transport their waste to a transfer station for disposal (elsewhere in the state, some PAYT programs feature curbside pickup). Other Cape towns use sticker programs, for which residents paid an average of \$106.27 per year in 2019/2020 ([Geosyntec, 2021](#)); PAYT would replace those programs. Under a PAYT program, residents pay by the amount of waste disposed of, typically using pre-printed trash bags in various sizes and costs. Access to recycling is often included. The price of the bags and other costs such as access fees varies from municipality to municipality; however, an analysis of statewide PAYT programs shows that PAYT programs reduce waste disposal by 25%–50% ([MassDEP, 2021](#)). This represents a potentially significant savings to municipalities in disposal costs and offers a fair cost structure based on the amount of waste disposed of as opposed to a flat annual fee.

In the near term, PAYT programs may cost residents more than an annual sticker program, but cost municipalities less due to higher revenues from program fees and lower disposal costs as less waste goes to landfills. However, costs associated with traditional waste management practices are likely to increase as space for landfills becomes limited and environmental regulations on landfills become more stringent. The cost for residential stickers increased an average of 9.2% between 2017 - 2021 ([Geosyntec, 2021](#)). A waste reduction economy can also decrease disposal costs, generate opportunities for small businesses supporting zero-waste alternatives and hosting refill, repair, and reuse opportunities.

Compost Pickup Program

Residential compost pickup programs, such as the program run by Black Earth, can increase the diversion of organic waste by making it easier for residents to participate. The analysis below presents the county-wide impacts of the program if adopted by half of residents who currently participate in sticker programs. About 30,000 of the current 85,000 tons (36%) of municipal solid waste generated in Barnstable County each year are organic waste that could be composted instead of being added to landfills. It is estimated that participation in the composting program would cost about \$131 per year per household based on current pricing for the Black Earth program. The exact costs and benefits depend on contracts, tipping fees, and other aspects that could vary by municipality and are likely to change in coming years as tipping fees increase. Based on the U.S. Environmental Protection Agency's (EPA) Waste Reduction Model (WARM), benefits from the scenario could result in about 6,600 metric tons of CO₂ equivalent of avoided emissions annually ([EPA, 2022](#)), assuming 15,000 tons of organic waste (half of the 30,000 tons of available organic waste) are diverted from landfill to composting.

Other Waste Reduction Efforts

Municipalities can also help residents and businesses reduce the amount of waste that is sent to landfills through outreach and education on opportunities for building material reuse, at-home composting, and increasing recycling efforts. Many resources are available to support activities that can add up to real impacts in reducing our reliance on expanding landfill capacity.

EQUITY

Nationally, landfills and other waste facilities in the U.S. have been disproportionately located in low-income communities and communities of color. Due to the location of landfills on the Cape—with only one next to an environmental justice community, according to the Massachusetts' identified [environmental justice populations](#)—there are very limited disproportionate community impacts from landfills locally. However, generally diversion of waste from landfill facilities could reduce the burden from landfill-related impacts like pollution and associated health risks (e.g., through reduced emissions and reduced water pollution from polluted runoff from landfills). Diversion of waste from landfills could thus result in [positive environmental](#) and health outcomes for adjacent communities.

Additionally, waste diversion through recycling, reuse, and composting could generate new local employment opportunities for individuals and communities throughout the Cape. Municipal waste facilities, recycling efforts, and other circular economy employment can maximize benefits through gainful, safe, and stable employment. The availability of incentives or training programs for vulnerable populations could increase access to these jobs.

Optimizing Equity During Implementation

Municipalities should consider equity implications when investing in new alternative waste management facilities or investing in changes to existing facilities to avoid impacts to vulnerable communities such as pollution, noise, and odors. They should also consider indirect operational practices such as waste hauling traffic and take steps to eliminate vehicle idling at transfer stations.

Vulnerable communities often have less access to recycling programs; efforts to divert waste need to ensure proper access to both waste management and diversion facilities. The use of vouchers for waste services, establishing accessible hours for waste management facilities, and incentives for vulnerable populations can increase access and share benefits of waste diversion with historically excluded communities. For example, in Oak Bluffs, residents 60 years and older are charged a reduced fee of \$10 per year per sticker ([Geosyntec, 2021](#)). Adapting educational materials about recycling services, rules, and goals to reflect the language and cultural needs of the communities is essential.

In communities that experience a high fluctuation in seasonal tourism, additional equity implications may stem from improper disposal of waste by visitors and associated challenges and costs for municipal waste operations. Considering incentives that promote proper waste disposal and recycling from short- and long-term visitors (e.g., access to recycling stickers and receptacles) could help overcome these challenges and decrease potential pollution, improper waste disposal, and resulting community impacts.

STATE OF PRACTICE

General State of Practice

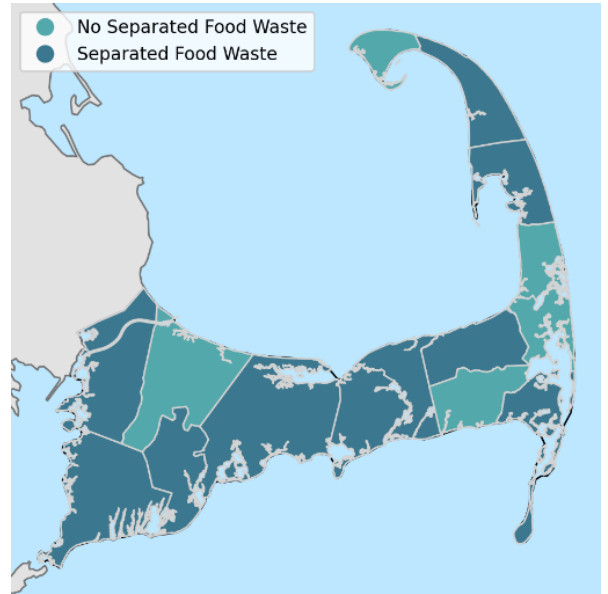
The state Solid Waste Master Plan is updated every 10 years. The latest plan includes information on statewide [waste reduction](#) and diversion policies; technical assistance; and funding available to cities, towns, and businesses. Statewide policies that enable recycling and diversion activities include [waste bans](#) and [caps on commercial organic and food waste](#) meant to reduce disposal, capture resources, reduce reliance on landfills and incinerators, and boost recycling. In 2014, the Massachusetts Department of Environmental Protection (MassDEP) implemented regulations that ban disposal of food and other organic wastes from businesses; in 2022, this ban was updated to lower the limit from 1 ton per week to 0.5 tons per week for commercial and institutional food waste generators and also add mattresses and textiles to the list of materials banned from disposal or transport for disposal in Massachusetts. The food waste ban aims to encourage diversion of 35% of food waste from disposal. The latest Solid Waste Master Plan strives to divert 30% of the waste stream from disposal to recycling and reuse by 2030 and 90% by 2050; it also aims to reduce solid waste to 4.0 million tons in 2030 and to 570,000 tons in 2050 ([MassDEP, 2021](#)). The reuse economy in Massachusetts is estimated to generate \$7.3

billion in sales every year ([Eassa et al., 2021](#)). As of July 2022, 155 municipalities have implemented PAYT programs ([MassDEP, 2022](#)).

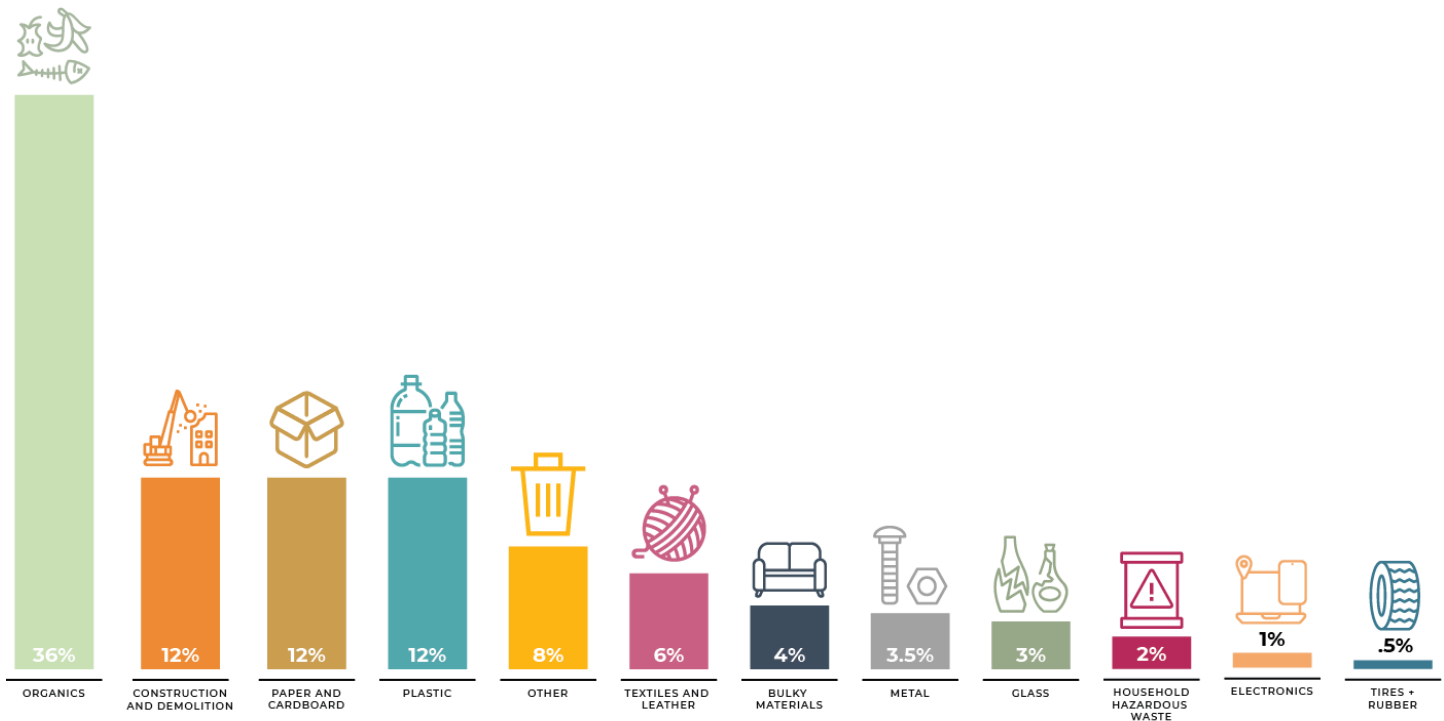
Cape Cod Context

There is only one active landfill on the Cape, in Bourne. Of the other towns, about half send their waste to the Covanta SEMASS waste-to-energy facility and half send waste to off-Cape landfills. As noted above, 85,000 tons of municipal solid waste are generated on Cape Cod each year, about 30,000 tons of which are organics that could be separated for on-Cape composting ([Geosyntec, 2021](#)). On average, the waste stream doubles between May and September due to seasonal tourism ([Tetra Tech, 2021](#)).

The Cape Cod Regional Policy Plan aims to reduce waste and waste disposal by promoting waste diversion and zero-waste initiatives. Related services already available on Cape Cod vary by municipality and local capabilities. Several municipalities on the Cape have composting programs, including [Barnstable](#), [Dennis](#), and [Mashpee](#). Many towns are serviced by businesses that support waste reduction and diversion activities, such as Black Earth Composting for food waste, [Habitat for Humanity](#) for building materials, and recycling services (e.g., [Harvey Waste and Recycling](#), [Republic](#), [Nauset Disposal](#)).



COMPOSITION OF CAPE COD'S MUNICIPAL SOLID WASTE



CASE STUDY: DIVERSION OF RESIDENTIAL ORGANIC WASTE

Food waste collection programs on the Cape started in 2013, when Compost With Me began collecting residential food scraps from about 100 households in Falmouth, diverting about 1,600 pounds of residential food scraps from the waste stream each week. Black Earth Compost, a full-service compost company based in Manchester-by-the-Sea, acquired the company in 2020 and has expanded service to other towns, offering drop-off locations as well as residential pickup service. For example, it has partnered with Bourne's integrated solid waste management facility, providing composting carts at the facility for residents' food waste and scraps. From there, Black Earth typically hauls the food waste off-Cape, though discussions are ongoing about establishing a regional food waste composting facility.



IMPLEMENTATION

The following actions should be considered to further the expansion of waste reduction and diversion activities on Cape Cod. Note that they require a high degree of partnership, community participation and awareness, and collaboration with external business partners to succeed.

- **Partner with composting companies.** Municipalities can partner with composting companies to launch or expand compost collection programs.
- **Establish compost drop-off locations.** Centralized collection centers, where residents can bring food waste for composting by a composting company, can make it easier to participate in composting programs. Involving local businesses, especially the hospitality sector and landscaping companies, and leveraging community events like farmers markets for drop-off centers during the visitor season can increase participation.
- **Promote participation in compost collection.** In addition to centralized collection centers, curbside compost pickup services offer convenience to residents, visitors, and local businesses. Some compost companies offer pilot programs to test viability before fully committing to a program.
- **Transition to a PAYT program.** Municipalities can consider drop-off or curbside PAYT programs, which may be operated through purchase of designated trash bags or stickers that are placed on trash bags.
- **Expand and promote community recycling programs.** The State of Massachusetts has resources to support municipalities with planning, financing, and technical assistance to implement, enforce, and leverage waste bans (mattresses, organics, metals, and others). The state also supports at-home composting bins and water collection and makes information on recycling opportunities available online.

REQUIRED EXPERTISE

Internal: Town planner, grant writer, department of public works staff

External: Waste management businesses, community drop-off locations

Additional resources for waste reduction, diversion, and management, including assistance with implementation and equity considerations, are provided in the following table.

FINANCIAL AND TECHNICAL SUPPORT

Pay-A-You-Throw (PAYT)/Save-Money-And-Reduce Trash (SMART)	Provides information about successes and documented savings that Massachusetts cities and town have achieved by implementing PAYT/SMART programs.
Recycling & Reuse	Resources for learning how to throw away less, recycle more, and donate items that others can use.
Solid Waste Infrastructure for Recycling Grant Program	Provides funding of \$275 million through fiscal year 2026 for Solid Waste Infrastructure for Recycling grants authorized under the Save Our Seas 2.0 Act. Part of Justice40. Funds are available to <u>political subdivisions</u> (like municipalities), <u>states</u> , and <u>tribal and intertribal consortia</u> .
Consumer Recycling Education and Outreach Grant Program	Provides funding of \$75 million from fiscal year 2022 to fiscal year 2026 for grants to fund recycling education and outreach.
Woods Hole Boat Shrink Wrap Recycling Program	Free recycling for boat plastic wraps sponsored by Woods Hole Sea Grant and Barnstable County; AmeriCorps Cape Cod; and Bourne, Chatham, Dennis, Eastham, Falmouth, or Wellfleet.
MassDEP Recycling Dividends Program	Payment to municipalities that implement programs and policies to maximize reuse, recycling, and waste reduction.

ADDITIONAL INFORMATION

Commercial Food Material Disposal Ban	Information on MassDEP regulations that ban disposal of food and other organic wastes from businesses and institutions that generate more than half a ton of these materials per week.
EPA's National Recycling Strategy	Strategy designed to increase equitable access to recycling services, reduce environmental impacts on underserved communities, and stimulate economic development.
Massachusetts 2030 Solid Waste Master Plan	Establishes the Commonwealth's policy framework for reducing and managing solid waste that is generated, reused, recycled, or disposed of by Massachusetts residents and businesses.