



Department of  
Environmental  
Conservation

# New York State Solid Waste Management Plan

**BUILDING THE CIRCULAR ECONOMY  
THROUGH SUSTAINABLE MATERIALS MANAGEMENT**

Kathy Hochul, Governor | Basil Seggos, Commissioner



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**FRONT COVER**

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**Photo 1: Postconsumer paint collection (credit: PaintCare)**

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# List of Abbreviations

<b>AOC</b>	Alternative operating cover
<b>BUD</b>	Beneficial use determination
<b>C&amp;D</b>	Construction and demolition
<b>CSMM</b>	New York State Center for Sustainable Materials Management
<b>CLCPA</b>	New York State Climate Leadership and Community Protection Act
<b>DAC</b>	Disadvantaged community
<b>DEC</b>	New York State Department of Environmental Conservation
<b>DOCCS</b>	New York State Department of Corrections and Community Supervision
<b>SED</b>	New York State Education Department
<b>DAM</b>	New York State Department of Agriculture and Markets
<b>DOB</b>	New York State Division of Budget
<b>DOH</b>	New York State Department of Health
<b>DOT</b>	New York State Department of Transportation
<b>DTF</b>	New York State Department of Tax and Finance
<b>ESD</b>	New York State Empire State Development
<b>EPA</b>	United States Environmental Protection Agency
<b>EPR</b>	Extended Producer Responsibility
<b>GHG</b>	Greenhouse gases
<b>HHW</b>	Household hazardous waste
<b>LSWMP</b>	Local Solid Waste Management Plan
<b>MSW</b>	Municipal solid waste
<b>MWC</b>	Municipal waste combustion
<b>MWRR</b>	Municipal waste reduction and recycling
<b>NYSP2I</b>	New York State Pollution Prevention Institute
<b>OGS</b>	New York State Office of General Services
<b>OSC</b>	Office of the New York State Comptroller
<b>OPRHP</b>	New York State Office of Parks, Recreation and Historic Preservation
<b>PEJA</b>	Potential environmental justice area
<b>PFAS</b>	Per- and polyfluoroalkyl substances
<b>PFOA</b>	Perfluorooctanoic acid
<b>PFOS</b>	Perfluorooctane sulfonic acid
<b>RHRF</b>	Recyclables handling and recovery facility
<b>SWMF</b>	Solid waste management facility
<b>WRRF</b>	Water resource recovery facility

# Glossary of Terms

Note: the definitions used here are for the ease of the reader and may not be equivalent to the regulatory definitions found in 6 NYCRR Part 360.

**Biosolids:** the accumulated semi-solids or solids resulting from the treatment of wastewaters at sewage treatment plants

**Construction and Demolition (C&D) Debris:** all waste and recyclables resulting from construction, remodeling, repair, and demolition of structures, buildings, and roads, including excavated materials used as fill

**Disadvantaged Communities (DACs):** communities that bear burdens of negative public-health effects, environmental pollution, impacts of climate change, and possess certain socioeconomic criteria, or comprise high concentrations of low- and moderate-income households. Members of Disadvantaged Communities include individuals from either of the following groups:

- Individuals residing in locations that meet both of the following criteria:
  - Census block groups are in the top quartile of HUD census tracts meeting the annual income threshold of 50% Area Median Income, and
  - Location is identified as a [Potential Environmental Justice Area](#), as defined by the New York State Department of Environmental Conservation; or
- Individuals residing in a [New York State Opportunity Zone](#).

**Extended Producer Responsibility (EPR):** a mandatory or legislated form of product stewardship that places the primary financial and managerial obligation for the environmentally responsible end-of-life management of a product on its producer/manufacturer. EPR shifts the financial burden away from municipalities and taxpayers, and often provides incentives to producers to incorporate environmental considerations into the design of their products.

**Leachate:** any solid waste in the form of a liquid, including any suspended components, that results from contact with waste.

**Municipal Solid Waste (MSW):** all waste and recyclables from single-family and multi-family homes (often referred to as “residential waste”); commercial establishments, including all offices, stores, shops, restaurants, or businesses of any nature (often referred to as “commercial waste”); and waste generated by institutions, including any schools, government buildings, prisons, nursing homes, hospitals, or other similar facilities (often referred to as “institutional waste”)

**Industrial Waste:** non-hazardous waste and recyclables generated by manufacturing or industrial processes

**Planning Unit:** a county; two or more counties acting jointly; a local government agency or authority established pursuant to State Law for the purposes of managing solid waste; any city in the county of Nassau; any of the above in combination with one or more neighboring cities, towns, or villages; or two or more cities, towns, or villages, or any combination of them, that the New York State Department of Environmental Conservation (DEC) determines to be capable of implementing a regional waste management program. In order for a county to be a planning unit, it must include all cities, towns, and villages within its borders.

**Potential Environmental Justice Areas (PEJAs):** minority or low-income communities that may bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and tribal programs and policies

**Product Stewardship:** the act of minimizing the environmental, health, safety, and social impacts of a product throughout its life cycle through a shared responsibility approach. While the producer of the product may have the greatest ability to minimize adverse impacts, other stakeholders, such as distributors, retailers, and consumers, also play an important role. Product stewardship can be either voluntary or required by law

**Throughput:** the amount of waste processed by a solid waste management facility

**Total Waste Stream:** all solid waste (including materials that are recycled) as defined in New York State regulations, which excludes hazardous waste. It includes municipal solid waste, construction and demolition (C&D) debris, non-hazardous industrial waste, and biosolids

# Message from Commissioner Basil Seggos

Under Governor Kathy Hochul, New York is aggressively advancing implementation of the nation-leading Climate Leadership and Community Protection Act (CLCPA). In New York State, waste is the fourth-largest contributing sector when considering greenhouse gas (GHG) emissions, representing 12% of annual emissions—only slightly less than the electricity sector, at 13%.

To address climate change in the waste sector, New York is encouraging a culture that advances sustainable materials management and supports a continuous cycle of use and reuse.

The 2023 *New York State Solid Waste Management Plan* (Plan) is designed to guide collective efforts to reduce waste and the burden on communities from waste disposal, as well as to mitigate the emissions driving climate change. The Plan outlines strategies and methods to build a circular economy, a more resilient supply chain, and a less wasteful future.

From eliminating bioaccumulative toxins from products to ensuring effective reuse and recycling, a circular economy requires laws, policies, robust programs, and participation in each step along the supply chain. The implementation of New York's Solid Waste Management Plan benefits communities throughout the state by reducing pollution and creating jobs and economic opportunities.

Reducing landfilled waste is a critical strategy to help meet New York State's climate goals. To achieve the State's waste-reduction target, bold action is required, espe-

cially by advancing comprehensive Extended Producer Responsibility laws and expanding New York's successful Food Donation and Food Scraps Recycling Law.

Building a circular economy includes encouraging the design of products for durability, reuse, remanufacturing, and recycling, as well as utilizing renewable resources and supporting a more sustainable food system. A circular economy helps conserve natural resources, reduce energy consumption, prevent pollution, reduce GHG emissions, and protect the health of our communities, with a concerted focus on addressing unacceptable disproportionate burdens on disadvantaged communities and potential environmental justice areas.

To help New York State achieve our ambitious climate goals, I look forward to working with our legislative leaders, local government partners, businesses and industries, and New Yorkers across the state to implement the plan's recommendations to reduce waste and build the state's circular economy through sustainable materials management.

This plan is the result of thousands of hours of staff time, which included hosting 14 stakeholder meetings across the State to receive feedback on issues of concern and gain insight from over 425 attendees, analyzing waste data and trends, and conceptualizing a circular economy for New York State. I give my thanks to all those who have participated in this process.

**Basil Seggos**  
Commissioner  
February 2023





# 1. Executive Summary

To protect communities and mitigate the worst effects of climate change, the 2023 *New York State Solid Waste Management Plan* (Plan) builds upon sustained efforts to reduce waste and advance the state’s transition to the circular economy, helping to change New Yorkers’ understanding of waste and their relationship to it. A circular economy carefully divests from disposal and instead supports processes, activities, and systems that make effective use of materials and prevent environmental degradation and economic loss by keeping valuable materials circulating in the economy. This Plan is intended to guide actions over the next decade, from the beginning of 2023 to the end of 2032, and builds upon the State’s 2010 *Beyond Waste* Plan.

Circular economy strategies include designing for durability, reuse, remanufacturing, repairing, and recycling, as well as utilizing renewable resources and supporting a more sustainable food system. Circular economy solutions conserve natural resources, reduce energy consumption, prevent pollution, reduce GHG emissions, and protect human health and the environment. In addition to resource conservation, a circular economy benefits industry by creating new job opportunities through a new business model and ensuring materials with value stay in the economy, providing value instead of being disposed.

The New York State Department of Environmental Conservation (DEC) estimates at least 80% of the material currently sent to landfills or combustion facilities has monetary value, either directly as material that could be used to produce goods or has other beneficial uses, or indirectly through the creation of recycling sector jobs.

This Plan takes a statewide view of complex materials management practices and trends occurring today and provides direction for New York State’s waste reduction, reuse, recycling, collection, transportation, and disposal investments, policy, and practices. The Plan also includes a summary of the data relating to the current impacts of waste management on Disadvantaged Communities (DACs) and Potential Environmental Justice Areas (PEJAs) throughout the state to help identify disproportionate burdens and allow for meaningful analysis and policy options to address these circumstances.

**A circular economy is a model of production and consumption that involves sharing, leasing, reusing, repairing, refurbishing, and recycling existing materials and products for as long as possible.**

This Plan sets forth six major Focus Areas:

- Waste Prevention, Reduction, and Reuse
- Recycling and Recycling Market Development and Resiliency
- Product Stewardship and Extended Producer Responsibility
- Organics Reduction and Recycling
- Toxics Reduction in Products
- Design and Operation of Solid Waste Management Facilities and Related Activities

Each Focus Area has a set of 2–10 identified Goals, for a total of 31.

Each Goal has a set of 1–17 identified Action Items, for a total of 168.

Together, these Action Items are designed to move New York State to an 85% total waste stream recycling rate by 2050.

## Characterizing Waste in New York State

The Plan discusses the total waste stream in New York State, which includes all solid waste except hazardous waste. The total waste stream includes municipal solid waste (MSW) (trash from homes, offices, businesses, restaurants, stores, schools, etc. (commonly referred to as residential, commercial, and institutional waste)); construction and demolition (C&D) debris (including all wasted construction materials from new building construction, demolition, road construction, and construction excavation materials); non-hazardous industrial waste; and biosolids. Compilation of the data to perform the analyses in this Plan takes a significant amount of time and effort to ensure the accuracy of the data. Therefore, data from 2018 is the latest available data and was used to provide the basis for planning and projections for this Plan.

Since 2008, the state’s recycling rate has grown from approximately 36% to 43% of the total waste stream; however, when only MSW is evaluated, it has remained relatively flat, decreasing by 1% from 2008 to 2018. However, the total recycling rate increased because of the significant increase in the recycling rate for C&D debris over that same period, increasing from 55% in 2008 to 64% in 2018.

## Recycling Rate for the Total Waste Stream Generated in New York

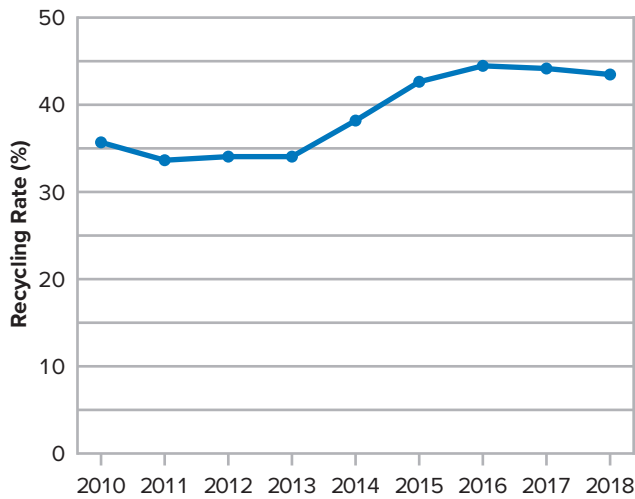


Figure 1.1. Recycling rate for the total waste stream generated in New York from 2010–2018

## Recycling Rates for Waste Generated in New York by Waste Type

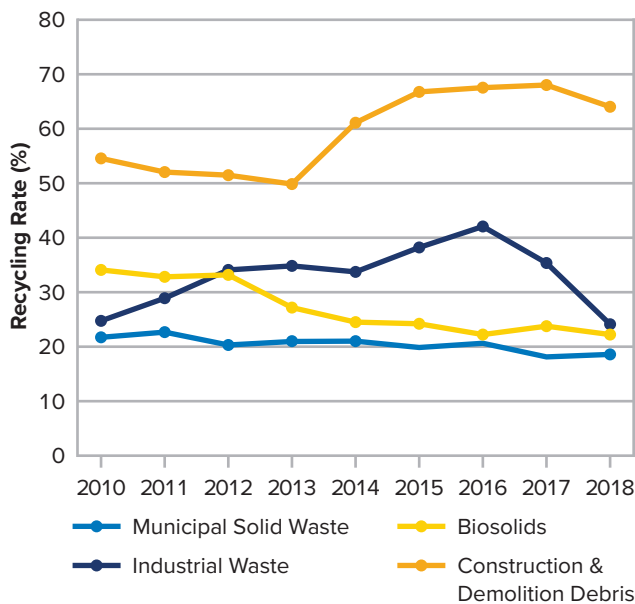


Figure 1.2. Recycling rates for waste generated in New York by waste type from 2010–2018

For MSW, management practices used and the disposal rate per person in 2018 are depicted in the following figures. The Plan discusses the multiple reasons for stagnation in disposal rates for MSW, including the increase in consumer consumption, reduced lifespan of consumer goods, market volatility, weak markets for some materials, and more.

## 2018 Management of Total Waste Stream Generated in New York

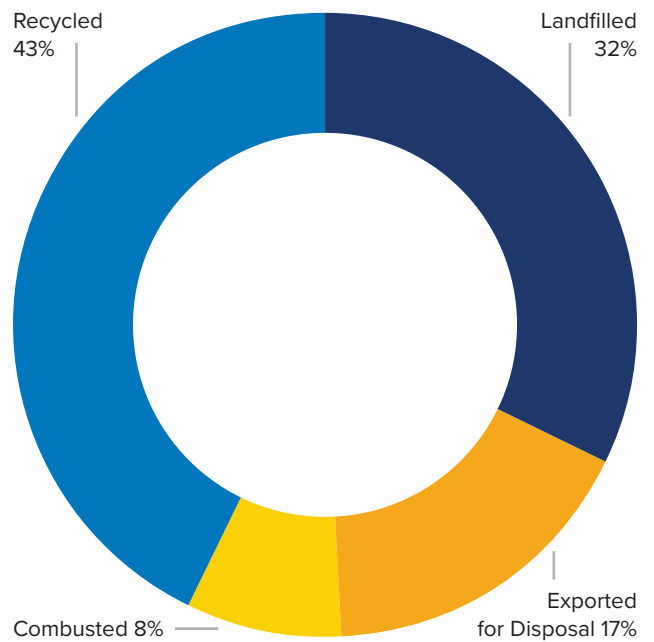


Figure 1.3. 2018 Management of total waste stream generated in New York

## MSW Disposal Rate (lbs/person/day)

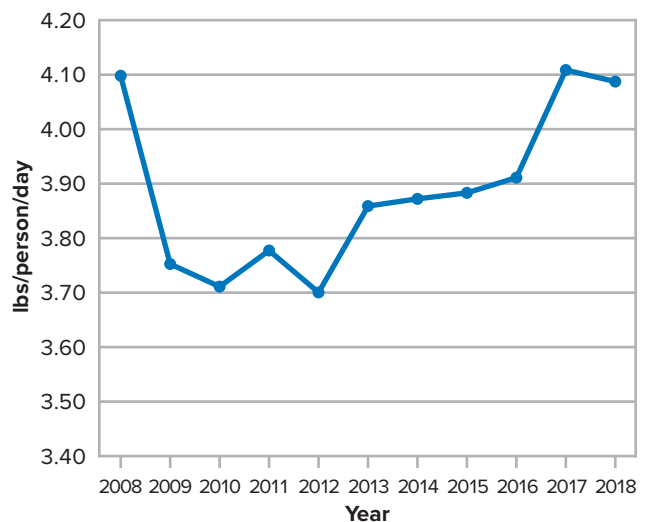


Figure 1.4. MSW disposal rate (lbs/person/day) from 2008–2018

## Key Accomplishments since 2010

- “Recycle Right NY” campaign;
- \$131.9 million in State grants under the Municipal Waste Reduction and Recycling (MWRR) program;
- 53 new green-procurement specifications established under the GreenNY initiative;
- \$20 million investment by DEC to establish materials management research centers at SUNY College of Environmental Science and Forestry (ESF), University at Buffalo (UB), New York State College of Ceramics at Alfred University, and Stony Brook University;
- Increase in the redemption rate under the Returnable Container Act, commonly known as the Bottle Bill, from 61% to 70% in 2021;
- Passage of restrictions on plastic bags and expansion of film plastic recycling requirements – Bag Waste Reduction Act and Plastic Bag Reduction, Reuse and Recycling Act;
- Passage of the [Expanded Polystyrene Foam Container and Polystyrene Loose Fill Packaging Ban](#);
- Passage of product stewardship and Extended Producer Responsibility (EPR) laws: Electronic Equipment Recycling and Reuse Act; Rechargeable Battery Law; Mercury Thermostat Collection Act; Postconsumer Paint Collection Program; Drug Take Back Act; and Carpet Collection Program;
- Passage of the [Food Donation and Food Scraps Recycling](#) Law;
- More than \$11 million in DEC funding for food donation and food scraps recycling;
- Passage of Consumer Protection Laws: Restricting the amount of 1,4-Dioxane in cleaning products, cosmetics, and personal care products; Child Safe Products Act; PFAS in food packaging; aqueous film-forming foam (AFFF) containing PFAS; PFAS in apparel; restricting the sale of furniture, mattresses and electronic displays containing flame retardants; and requiring disclosure of flame retardants used in electronic displays;
- Comprehensive revisions to State’s solid waste regulations (Part 360 series);
- 1,921 inactive landfills identified; 1,884 inspected and ranked, and 899 with groundwater investigations identified; and
- During 2017 and 2018, and again in the spring of 2022, C&D debris enforcement initiatives resulted in over 550 violations found.



## Vision

New York’s waste management vision for 2050:

- Landfilling is reduced by 85% by 2050.
- The circular economy is realized.
- Collaboration and innovation are commonplace.
- “Waste” is a concept of the past.
- Climate change mitigation is fully implemented.
- Shared responsibility is a given.
- Equitable, inclusive, and accessible waste reduction and reuse efforts are widespread.
- Responsible and resilient markets thrive.



Community compost site at Columbia Street Farm in Brooklyn, NY

## Recommendations

The Plan outlines Action Items necessary to achieve the reduction in disposal needed and the other components of the vision. Although all actions are important, the most impactful new initiatives will require legislative changes. To achieve the vision outlined in this Plan, there will need to be a combination of bold new legislation to help provide the framework for transformational change, and consistent commitment from everyone—State and local governments, planning units, the private sector, product manufacturers, distributors, retailers, educators, and all New Yorkers. Partnership is key to achieving the vision for 2050.

Of the legislative recommendations, the following are priorities:

- Developing Extended Producer Responsibility (EPR) for paper and packaging, and ultimately, framework legislation that allows the addition of other products;
- Expanding and amending the existing Food Donation and Food Scraps Recycling Law to include smaller food scraps generators and eliminate the mileage limit for organics recycling facilities; and
- Requiring a per-ton disposal disincentive surcharge on all waste landfilled or combusted in New York State and all waste generated in New York State being sent for landfilling or combustion out-of-state, to provide financial support for reduction, reuse, and recycling projects.

Other legislative recommendations that will assist in reduction and recycling efforts include:

- Extended Producer Responsibility/Product Stewardship for textiles; shoes; furniture; climate impacting materials; gas cylinders; e-cigarettes/vaping devices; solar panels; wind turbine blades; electric vehicle batteries; household hazardous waste; and mattresses;
- Proposals that assist consumers to repair damaged products first instead of purchasing new products, encouraging repair, and reducing e-waste;
- Incentives for reusable and refillable products;
- Ban on the disposal of unsold retail goods;
- Single-use product restrictions;
- Standards for deconstruction materials and recovered aggregate;
- Minimum recycled content requirements;
- Expansion of the Battery Recycling Law; and
- Restrictions on harmful chemical use in consumer products.

## 2. Introduction

The linear “take, make, toss” model of use and consumption is outdated and fails to put New York on the path to achieve the State’s climate goals, safeguard the environment, and protect communities. In natural ecosystems, all inputs and outputs are used within the system and there is no waste. If materials considered to be waste are looked at more holistically—rather than as worthless by-products of “business as usual,” the waste is valued as a resource, propelling a more circular approach to resource stewardship.

New York State’s approach to material management aligns and supports the greenhouse gas reduction recommendations in the Scoping Plan developed to implement the CLCPA. Diverting waste from landfills and renewing a resilient and recycled supply chain is integral to achieving the State’s climate CLCPA requirements to reduce greenhouse gas emissions, while also promoting a just and equitable transition to a carbon-constrained economy.

### Circular Economy

A circular economy supports processes, activities, and systems that make effective use of materials and prevent environmental degradation and economic loss by keeping valuable materials circulating within the economy.

According to the Ellen MacArthur Foundation, which works to accelerate the transition to a circular economy, the circular economy is based on three principles:

- Design out waste and pollution;
- Keep products and materials in use; and
- Regenerate natural systems.

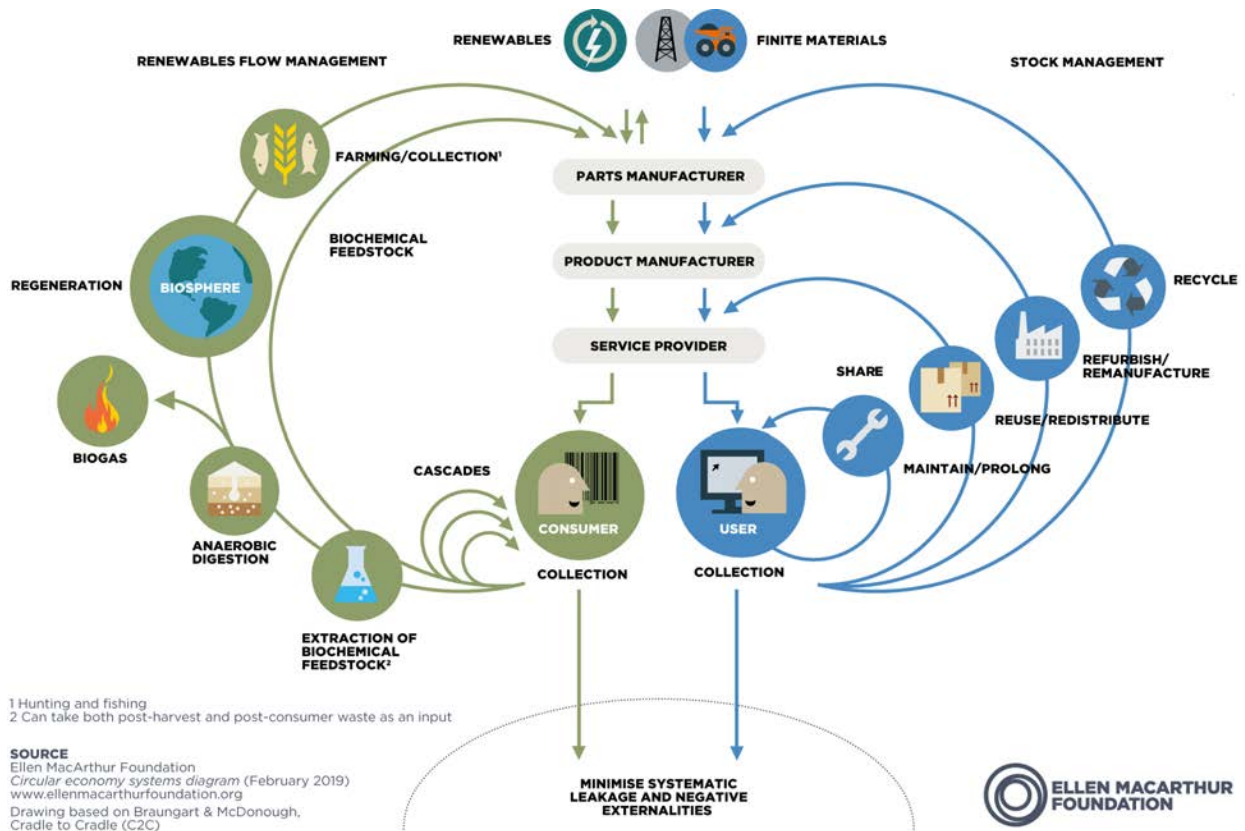


Figure 2.1. Circular economy systems diagram

As demonstrated in Figure 2.1, circular economy strategies include designing for durability, reuse, remanufacturing, and recycling, as well as utilizing renewable resources and supporting a more sustainable food system. Circular economy solutions conserve natural resources, reduce energy consumption, prevent pollution, reduce GHG emissions, and protect human health. In addition to resource conservation, the circular economy also benefits industry by creating new job opportunities through a new business model and ensuring materials with value stay within the economy, continuing to provide value instead of ending up in landfills or combustors.

The waste of valuable resources is a problem for which the solution is within society's control. The current "take, make, toss" model of use and consumption drives the single-use culture that is prevalent throughout society. From single-use items such as utensils, food wrappers, and takeout containers to containers for household items such as soaps, shampoos, and cleaning products, an enormous array of single-use packaging and single-use items exists across all areas of life. The "take, make, toss" model also applies to durable goods, which are items such as furniture, sports equipment, and tools. These types of items are typically intended to have a longer lifespan than single-use products, but currently, these types of materials do not have adequate avenues for keeping them in circulation. The first step in rethinking the management of discarded

materials is to prevent materials from being discarded in the first place. Addressing the “take, make, toss” model includes replacing single-use systems with reuse systems. An example of this is reusable container systems aimed at reducing the amount of waste that comes from takeout containers. These types of programs are already being piloted in Europe, South America, and the United States, including in New York State. There are both “B2C” (business to consumer) and “B2B” (business to business) container and packaging reuse models operating in New York State. Some New York State businesses developing reuse systems for food service containers are [Redish, Deliver Zero](#), and [Cup Zero](#). Businesses such as [Returnity](#) provide reuse services for shipping and delivery. Businesses also engage in other reuse models in food service, such as [Just Salad](#), and reuse models in grocery and personal care products, such as [Honest Weight Food Co-Op](#) and [The O Zone](#).

The key is to view discarded materials not as problems, but as assets with value and longevity, and to prioritize reuse over the purchase and use of raw materials. Policy solutions can help accelerate this shift, valuing creativity and innovative thinking to avoid and prevent waste at the source to better utilize resources, and assure a level playing field sector-wide.

A circular economy creates new opportunities, spurs innovation, and propels New York State competitively into the future. Instead of disposal and combustion, New Yorkers can reuse, repair, and repurpose to make a profit out of material that would be wasted otherwise, in turn creating something to use and benefit from again. The circular economy is happening now. New York State will move forward with building a resilient future that will work for everyone in the long term.

Sustainable materials management is good for New York, communities, the environment, and the economy. But it will take everyone—state and local governments, planning units, the private sector, product manufacturers, distributors, retailers, educators, and consumers—to make the concept of waste a thing of the past.

DEC estimates at least 80% of the material currently sent to landfills or for combustion still has monetary value either directly as material that could be used to produce goods or other beneficial uses or indirectly through the creation of recycling sector jobs. Often, the demand for these materials is misaligned within the supply chain, meaning that the supply is not readily available in the quality, condition, and location where and when it is demanded.

To protect the environment, retain opportunities for future generations, and maintain New York’s status in the global economy, the State needs to advance a more holistic concept of waste and use resources to their maximum benefit to reduce disposal burdens on communities and conserve natural resources.

This Plan provides a path to help New York State realize a circular economy and its associated benefits. This path will require legislation, outreach and education, equity considerations, funding, and programmatic improvements.

## Plan Format

New York State's *Solid Waste Management Plan* takes a statewide view of the complex materials management practices and trends occurring today and provides direction for New York State's waste reduction, reuse, recycling, collection, transportation, and disposal investments, policy, and practices. Solid waste management is hyperlocal and every municipality in New York State has a slightly different practice for collection, financing, and processing. This Plan supports local solid waste management planning units continuing to lead local efforts to achieve waste reduction and recycling goals by articulating the current status of solid waste in New York State today, discussing policy changes, and identifying critical solid waste policies and infrastructure investments needed to recover and repurpose raw materials for a more resilient supply chain to power a more circular economy.

To best present this information and the interrelated complexities, the Plan is divided into several components to help readers with various areas of expertise and levels of interest to easily navigate to the most relevant information.

The body of the Plan:

- Provides background information on current solid waste management in New York State;
- Identifies a number of issues, challenges, and opportunities including climate, throw-away culture, global markets, information sharing and technology, equity issues, ecosystem impacts, and emerging contaminants sampling and research;
- Discusses the values and visions with regards to materials management in New York State and the guiding principles that will provide the direction and structure to get us there; and
- Lists six Focus Areas and a detailed roadmap of the actions that must be taken to achieve the waste disposal reduction goals through 2050.

For ease of reading and navigation, more detailed information and data are located in a series of appendices to this Plan. In this way, the body of the Plan serves as the focal point, specifically identifying where more information can be found in related appendices for interested readers. The appendices include a historical summary of waste management in New York in Appendix A; a summary of programmatic initiatives that have been implemented since 2010 in Appendix B; detailed and comprehensive data on solid waste management facilities and practices in Appendices C and D; summaries of the planning units and local government programs and the flow of waste across the state in Appendices D–F; data related to waste management facilities with respect to potential environmental justice areas and disadvantaged communities in Appendix G; projections on waste quantities and characteristics in Appendix H; and a guide to applicable State statutes and policies in Appendix I.



### 3. Background on Waste Management in New York State

Developing recommendations to move the state toward a more circular economy requires an examination of the state's waste characterization and waste management so that areas of success and areas requiring improvement can be clearly identified. Waste management in New York State involves several different types of waste streams and categories of waste, which together make up the total waste stream. DEC puts significant effort into providing an analysis of these major waste streams to not only provide transparency in the numbers, but to also help guide planning and resource commitments to have the greatest impact. Compilation of the data to perform the analyses in this Plan takes a significant amount of time and effort to ensure the accuracy of the data. Therefore, data from 2018 is the latest available and was used to provide the basis for planning and projections for this Plan. We expect the data for 2019 and 2020 to show a dip in recyclables recovered and processed in 2019 due to a combination of the recycling materials market ramifications of China's National Sword policy on the global market for paper and plastic materials coupled with the effects of COVID-19 on both waste-generation patterns and recyclables processing. We also expect to see that the effects COVID-19 had on the economy reflected in a temporary reduction of waste generation in certain sectors. Additionally, we expect to see COVID-19 had an altering effect on both the waste composition and the percentages of waste decreasing in the commercial sector while increasing in the residential sector. Much of these temporary adjustments are expected to have stabilized in 2021 and 2022, but future analysis and waste composition data that is being collected through a project with SUNY Stony Brook, discussed in more detail in Appendix B, will help with the evaluation of anomalies due to COVID-19 and the lasting waste-composition trends. Waste management in New York State involves several different types of waste streams and categories of waste, which together make up the total waste stream.

#### Quick Facts: Total Waste Stream

The total waste stream includes municipal solid waste (MSW), construction and demolition (C&D) debris, non-hazardous industrial waste, and biosolids.

- The total waste stream generation was 42.2 million tons in 2018.
- Of the 42.2 million tons of total waste stream generation, MSW accounted for 45%, C&D debris 46%, non-hazardous industrial waste 5%, and biosolids 4%
- The recycling rate for the total waste stream has increased from about 36% in 2008 to 43% in 2018.
- The management of the 2018 total waste stream included disposal through a combination of landfills in New York State (32%), export for disposal (17%), and combustion in New York State (8%), for a combined total of 57%, with the remaining 43% recycled.

#### Quick Facts: Municipal Solid Waste

MSW comprises all waste that is generated by residents, whether in single-family or multi-family residences; commercial establishments, including all offices, stores, shops, restaurants, or businesses of any nature; and waste generated by institutions, including

any schools, government buildings, prisons, nursing homes, hospitals, or other similar facilities.

- The MSW stream generation prior to recycling was 17.9 million tons in 2018.
- Of the 17.9 million tons of MSW generation, residential waste accounted for 54% and commercial/institutional waste for 46%.
- The MSW portion of the total waste stream is often the only portion of waste people think of, but it is actually less than half (45%) of the total waste stream, with residential waste accounting for less than a quarter (24%) of the total waste stream.
- The state remained essentially at the same disposal rate of pounds of MSW per person per day in 2018 (4.09) as it was in 2008 (4.10).
- The MSW stream by weight in New York State comprises paper, which is the largest category (32%), followed by food scraps (17%), plastics (14%), yard trimmings (7%), metals (7%), textiles (5%), glass (4%), wood (3%), and miscellaneous (10%).
- In 2018, MSW was managed by disposal through a combination of landfills in New York State (39%), export for disposal (27%), and combustion in New York State (15%) for a combined total of 81%, with the remaining 19% recycled.

#### Quick Facts: Construction and Demolition Debris

C&D debris includes all wasted construction materials from new building construction, demolition, road construction, and construction excavation materials.

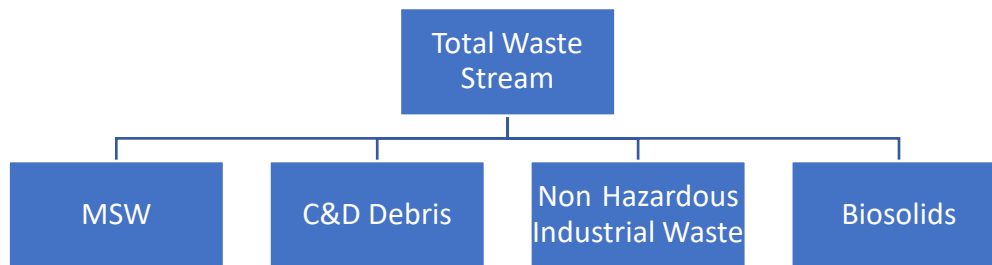
- The total C&D debris waste stream generation prior to recycling was 18.4 million tons in 2018.
- DEC estimates that the largest component of C&D debris is concrete/asphalt/rock/brick (35%), followed by soil/gravel (27%), wood (15%), metal (6%), roofing (5%), drywall (2%), cardboard (2%), plastic (1%), and other (7%).
- The recycling rate for the C&D portion of the total waste stream was much higher than the MSW stream, starting at 55% in 2008 and steadily increasing to 64% in 2018.
- In 2018, the management of C&D debris included disposal through a combination of landfills in New York State (26%), export for disposal (9%), and combustion in New York State (1%), with the remaining 64% recycled.

Together, these data points, along with the comprehensive data and analyses that follow below and in Appendix C, help to highlight the current status of materials management in New York State. This comprehensive data allows for the identification of areas to improve the future of materials management in New York State and move the state toward a more circular economy.

For detailed information on solid waste management facilities, waste quantities, waste composition, waste projections, and regional waste management, see Appendices C through H of this Plan.

## Total Waste Stream

The total waste stream includes municipal solid waste (MSW) (trash from homes, offices, businesses, restaurants, stores, schools, etc. (commonly referred to as residential, commercial, and institutional waste)); construction and demolition (C&D) debris (including all wasted construction materials from new building construction, demolition, road construction, and construction excavation materials); non-hazardous industrial waste; and biosolids.



*Figure 3.1. Types of waste that compose the total waste stream*

### **Total Waste Stream Generation**

In this Plan, the term “total waste stream” includes all four of the waste categories shown in Figure 3.1. The total waste stream generation was 42.2 million tons of waste in 2018. Compilation of the data to perform the analyses in this Plan takes a significant amount of time and effort to ensure the accuracy of the data. Therefore, data from 2018 is the latest available and is used as the base data for planning and projections.

The MSW portion of the waste stream is often the only portion of waste people think of, but it is actually less than half (45%) of the total waste stream. It is actually slightly less than C&D debris, which constitutes 46% of the waste stream; non-hazardous industrial waste is 5%; with biosolids constituting 4%. The breakdown of the total waste stream for New York State is found in Figure 3.2.

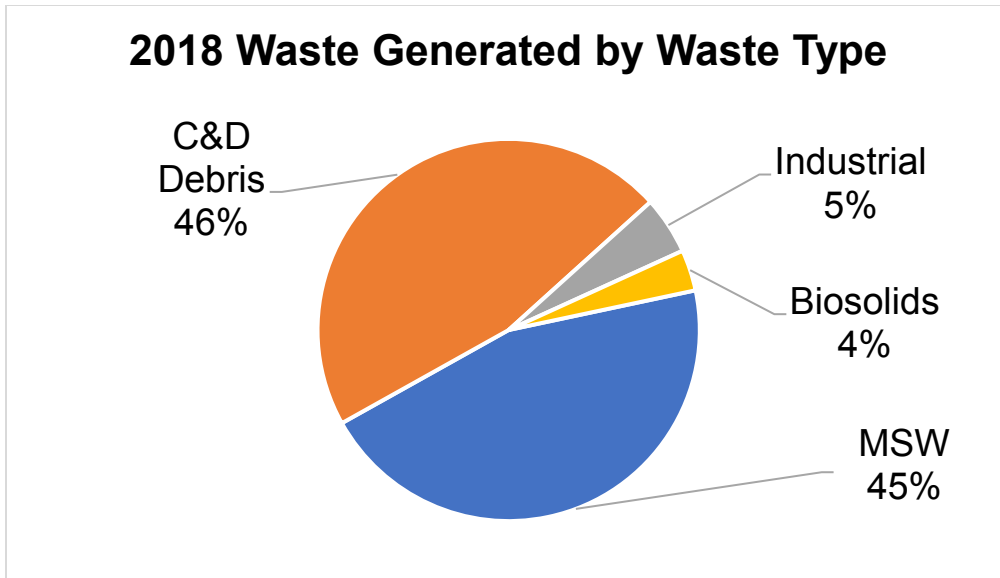


Figure 3.2. 2018 Waste generated by waste type in New York

#### **Total Waste Stream Recycling Rates**

The recycling rate for the total waste stream increased from about 36% in 2008, to 43% in 2018.

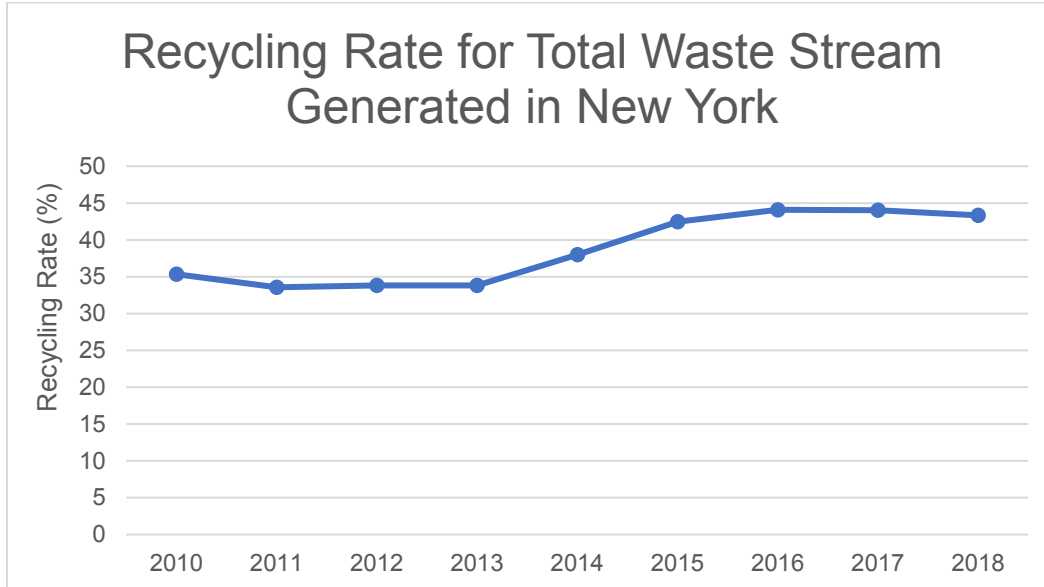


Figure 3.3. Recycling rates for the total waste stream in New York from 2010–2018

However, there is more detailed information to consider when evaluating the four primary components of the total waste stream (MSW, C&D debris, industrial waste, and biosolids) separately. While, as noted above, the total waste stream recycling increased from 2008 to 2010, the MSW recycling rate remained relatively stable and even dipping slightly in 2007 and 2008. However, during that same period, the C&D debris recycling rate rose considerably from 55% in 2008 to 64% in 2018. The significant increase in C&D debris recycling is the driver behind the increase in the overall total waste stream recycling rate.

When recycling rates for the four major waste stream components are viewed separately, the impacts of each major waste stream component on the overall recycling rate become clearer. The following figure shows the recycling rates by waste stream.

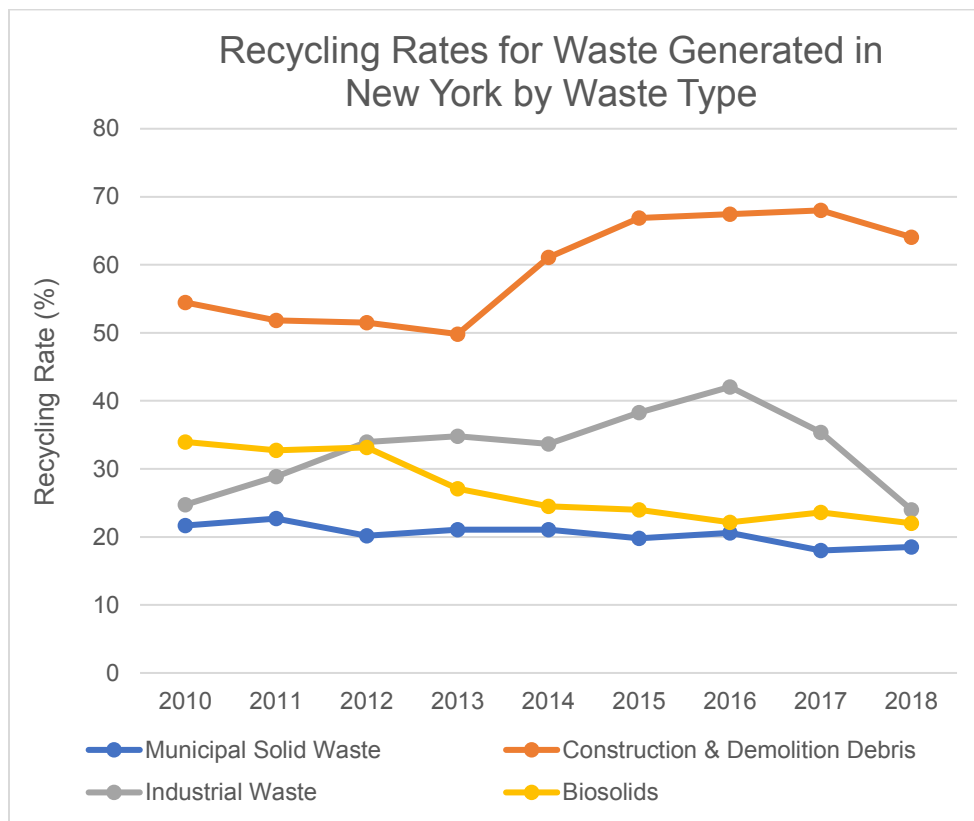
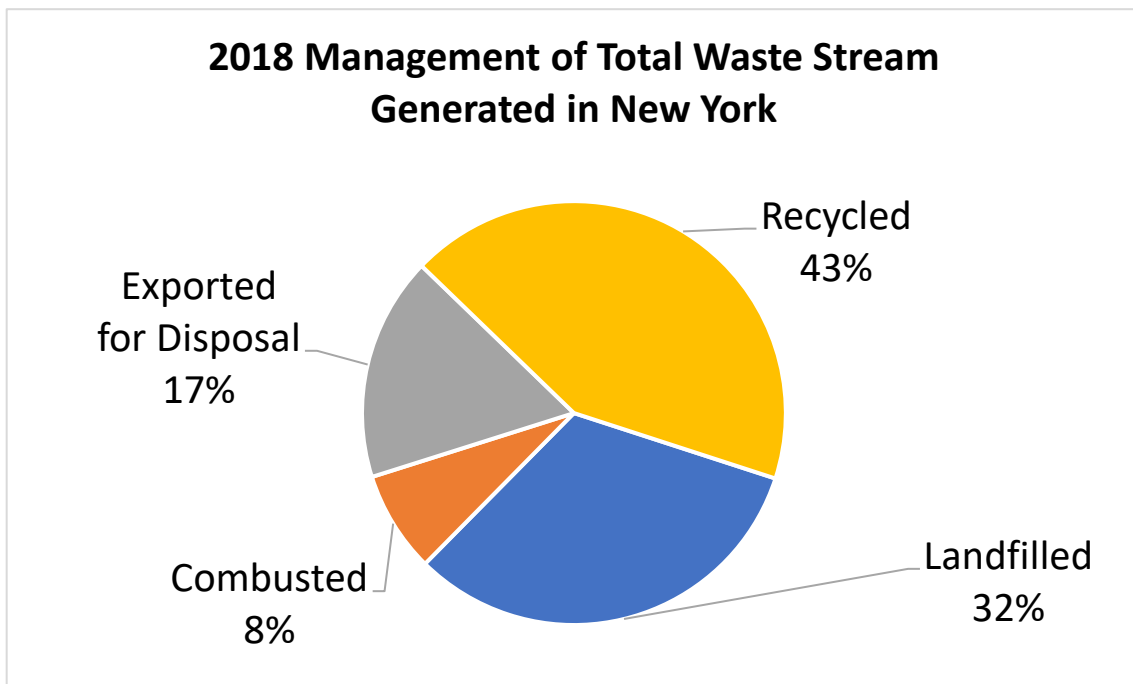


Figure 3.4. Recycling rates for waste generated in New York by waste types from 2010–2018

### Overall Total Waste Stream Management Methods

As shown in Figure 3.5, the management of the 2018 total waste stream included disposal through a combination of landfills in New York State (32%), export for disposal (17%), and combustion in New York State (8%), for a combined total of 57%, with the remaining 43% recycled.

More waste is exported from New York State than is imported; however, waste generated outside of the state is consistently imported for disposal in landfills and processing in municipal waste combustors. Between 2010 and 2018, the total waste stream imported into New York State was relatively consistent, ranging from 1.9 million tons per year to 2.3 million tons per year, with the exception of 2011, with 2.7 million tons per year. This is less than one-third of the amount of the total waste stream generated in New York State exported for disposal. A more detailed presentation of the information related to waste imported into New York State is included in Appendix C.



*Figure 3.5. 2018 Management of total waste stream generated in New York*

## Municipal Solid Waste (MSW)

### **MSW Generation**

The MSW generated prior to recycling was 17.9 million tons in 2018. As noted previously, MSW comprises all waste generated by residents, whether in single-family or multi-family residences; commercial establishments, including all offices, stores, shops, restaurants, or businesses of any nature; and waste generated by institutions, including any schools, government buildings, prisons, nursing homes, hospitals, or other similar facilities. In New York State it is estimated that residential waste accounts for 54% of MSW and commercial/institutional waste constitutes the remaining 46%.

### **MSW Disposal Rate**

The state remained essentially at the same disposal rate of pounds of MSW per person per day in 2018 (4.09) as it was in 2008 (4.10). After an initial decline in the disposal rate, resulting in a drop of 10% in 2012, the disposal rate for MSW steadily rose, returning to the initial rate. The following figure summarize the disposal rates from 2008 to 2018.

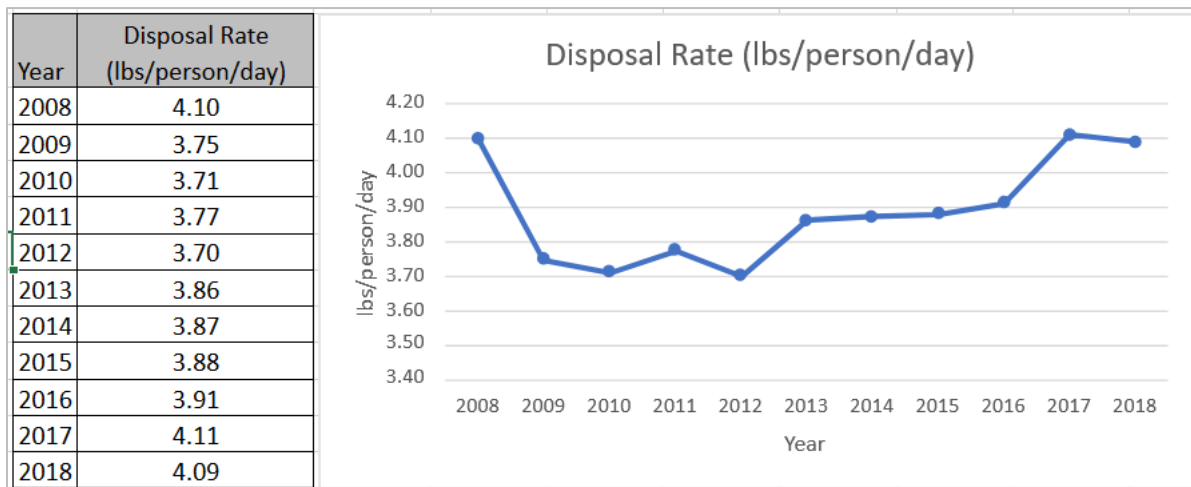


Figure 3.6. MSW disposal rate per person per day in New York from 2008–2018

## **Economic Effect on MSW Generation**

Historically, waste generation typically tracks the economy. The state gross domestic product grew by 35% from 2008 to 2018. That growth would generally lead to a higher waste-generation rate. In New York State, the per capita MSW generation, which includes recyclables, decrease 2.5% in that same period, from 5.15 pounds per person per day in 2008 to 5.02 pounds per person per day in 2018. The generation rate has been relatively stable over that 10-year period, even during the growth in state gross domestic product. In addition to the gross domestic product, other factors apply, such as the character of the waste stream (more plastic containers instead of glass bottles, etc.) and waste reduction efforts. It's a positive sign related to true progress in reducing overall waste generation. It's also a reminder that generation rate and disposal rate should be considered when evaluating solid waste management data. Simply looking at the disposal rate over a period of time may not give a true picture of waste reduction, reuse, and recycling efforts, when due to economic circumstances, the overall generation rates would have instead been expected to have increased over that period. Waste data can be tricky to interpret in isolation and from one source to another, such as one state to another. It's important to evaluate all the data as part of any planning effort.

## **MSW Waste Composition**

The waste composition varies between the various generating sources as well as in different areas of the state, such as rural, suburban, or urban areas. The aggregated data for all MSW in New York State provides an approximate breakdown of urban 54%, suburban 30%, and rural 16%. A detailed discussion of these differences in waste composition is included in Appendix H.

Figure 3.7 contains a breakdown of MSW by weight in New York State. The paper category is the largest (32%), followed by food scraps (17%), plastics (14%), yard trimmings (7%), metals (7%), textiles (5%), glass (4%), wood (3%), and miscellaneous (10%). These rates may be somewhat different than data from other sources, such as the United States Environmental Protection Agency (EPA), because these have been evaluated and prepared taking into consideration the demographic characteristics of New York State, including the substantial urban population. Waste composition is not static. As consumer products and lifestyles change, so will the character of MSW. Paper and paperboard use decreases as electronic mail becomes widespread and the number of newspapers that are printed drops significantly, but food packaging use increases as lifestyles lean toward increased take-out or delivery meals. Materials management systems must be nimble and must be able to adjust to these changes.



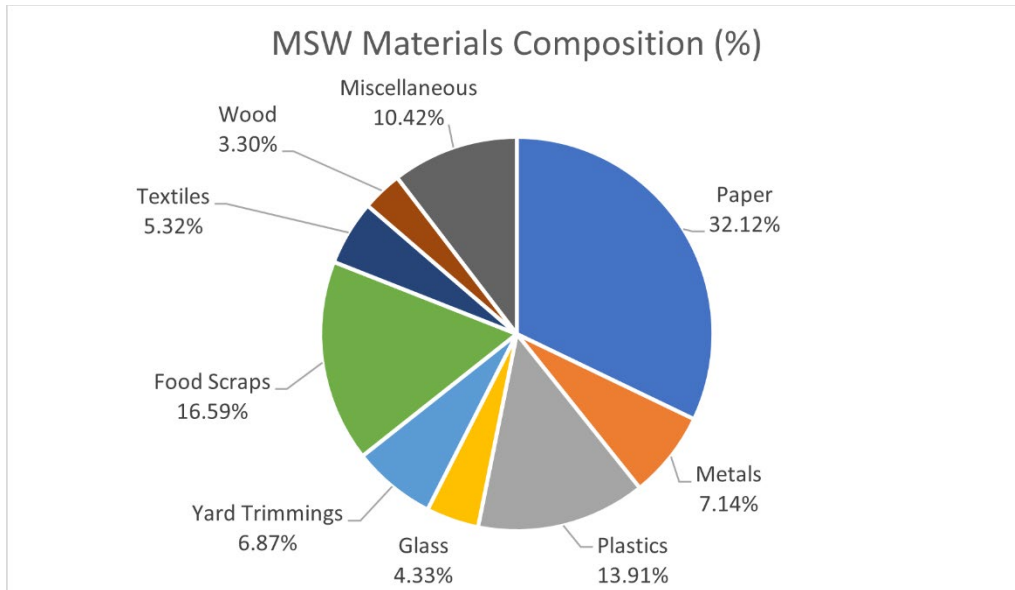


Figure 3.7. MSW composition in New York

### **MSW Recycling Rate**

The target metric for the *Beyond Waste* Plan issued in 2010 was for MSW, and the goals were for the disposal rate of pounds of MSW per person per day, and DEC will continue to use that established metric as the most accurate and meaningful metric to measure the ultimate goal of reducing waste disposed. However, for comparison purposes, using a recycling rate for MSW, the recycling rates ranged from 20% in 2008, nearing 23% in 2011, and declining to 18.5% (rounded to 19%) in 2018. This information is depicted in Figure 3.8. Both the disposal rate and the recycling rate follow a similar pattern, showing a brief improvement but a relative stagnation overall.

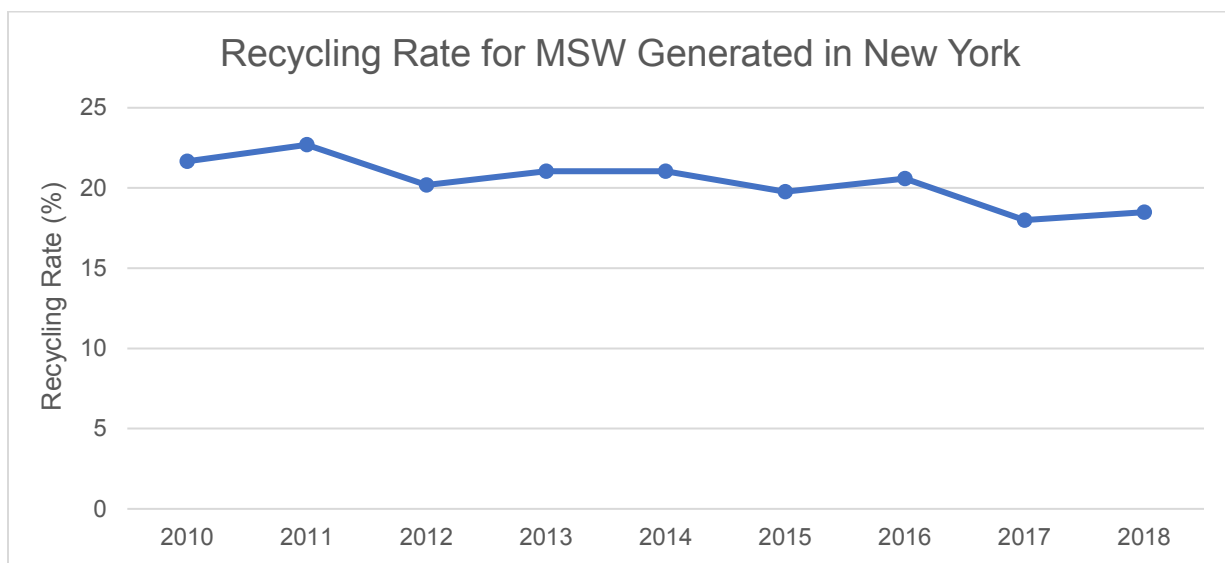
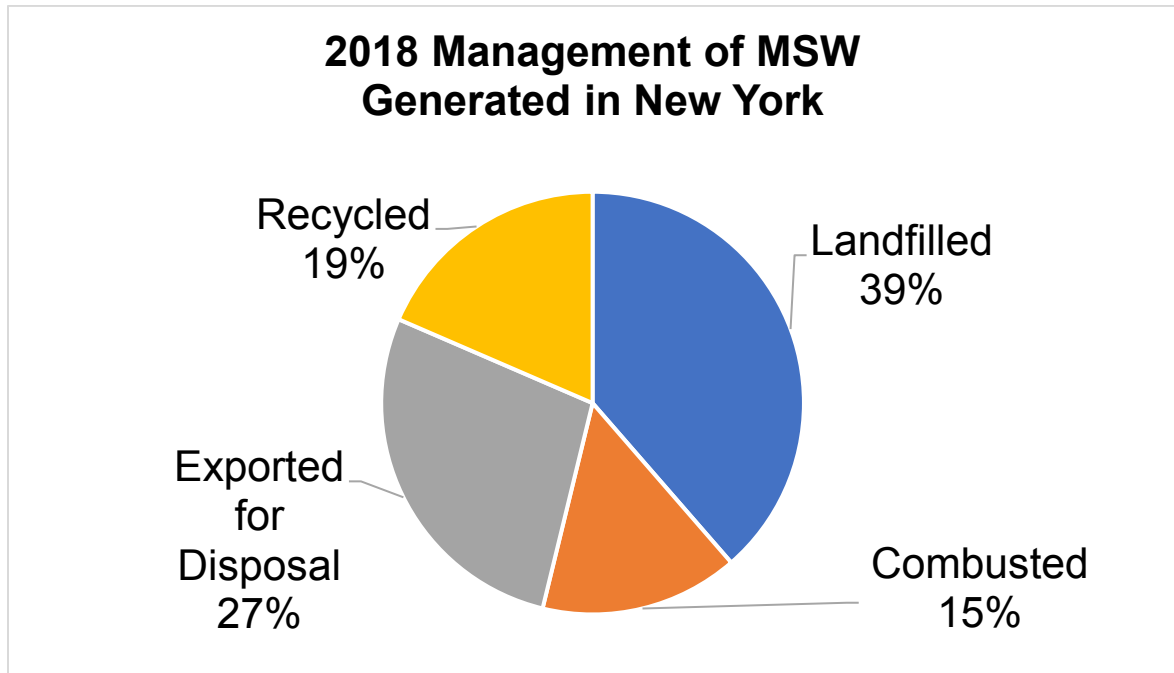


Figure 3.8. Recycling rate for MSW generated in New York

## Overall MSW Management Methods

In 2018, MSW was managed by disposal through a combination of landfills in New York State (39%), export for disposal (27%), and combustion in New York State (15%), for a combined total of 81%, with the remaining 19% recycled. This breakdown is shown in Figure 3.9.



*Figure 3.9. 2018 management of MSW generated in New York*

## Municipal and Private Roles in MSW

The traditional picture of the local government collecting waste and managing it at local municipal facilities has changed. In the past 30 years, operation of much of the landfill and municipal waste combustor (MWC) capacity in New York State has shifted from municipalities and planning units to private companies. By number, landfills owned by municipalities are still the largest, with 19 of the 25 active landfills in the state. However, the capacity of municipal landfills is dwarfed by the capacity of private landfills. Four of the larger municipally owned landfills are operated by private companies under long-term operational agreements. By capacity, the privately owned and operated landfills and the privately operated/municipally owned landfills accounted for 82% of the working MSW landfill capacity in 2018. This represents a complete reversal of the ownership and operation roles over the past 30 years. For MWCs, it is even more dramatic, with only 1 of the 10 MWCs owned and operated by a municipality. Ninety-eight percent of the working MWC capacity in 2018 was owned or operated by private companies. This information is presented in more detail in Appendix D.

Collection of waste and recyclables in most areas of the state, especially the urban and suburban areas, from multi-family residences with more than four units, such as apartment complexes, condominiums, etc., as well as essentially all commercial waste is handled by private waste companies that contract directly with the property owner. The significant exception, and an anomaly in the United States, is New York City. The New York City Department of Sanitation provides municipal collection for all single-family and multi-family residential waste, regardless of the number of units, for both waste and recyclables. As depicted in Figure 3.10, for New York State as a whole, 60% of the residents are provided direct municipal curbside collection services. The remaining 40% of residents are divided between 25% of the property owners procuring collection services directly with private waste collectors and the other 15% handled by municipalities contracting private waste collection services on behalf of residents.

Because New York City represents about 44% of the state's population and it provides a unique level of municipal service to multi-residential residences, it is useful to analyze the information without New York City. Without the New York City data, 45% of New York State's residents are covered under collection services contracted directly with private waste collectors, 29% of residents receive direct municipal curbside collection services, and the remaining 26% of the population is covered by municipalities contracting private waste collection services on behalf of residents.

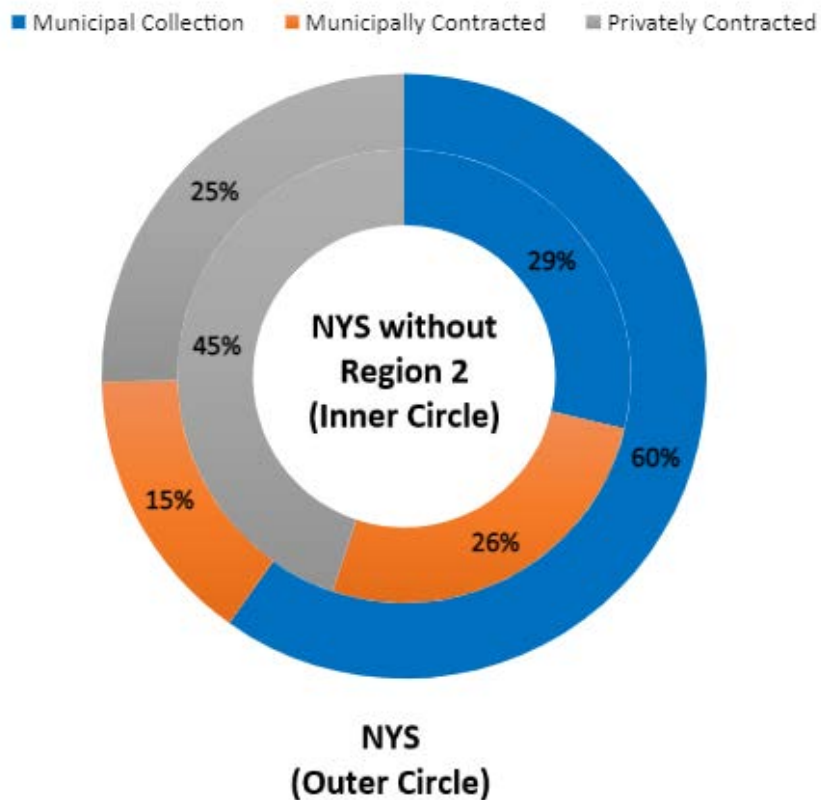


Figure 3.10. Distribution of the methods used for the collection of residential MSW for New York and for each of the DEC Regions

Because essentially all commercial waste is collected by private waste collectors, and MSW comprises 54% residential waste and 46% commercial waste of the MSW collected for New York State as a whole, approximately 32% of all MSW is collected through direct municipal curbside collection services. Without New York City data included, approximately 16% of all MSW is collected through direct municipal collection.

## C&D Debris

### C&D Debris Generation

The total C&D debris waste stream was 18.4 million tons in 2018. C&D debris is the largest component of the total waste stream at 46%. C&D debris includes all wasted construction materials from new building construction, demolition, road construction, and construction excavation materials. This provides for a wide range of distinct streams of material. After MSW, C&D debris is the largest component of discarded materials, constituting 27% or approximately 6.6 million tons annually.

### C&D Debris Waste Composition

DEC estimates that the largest component of C&D debris is concrete/asphalt/brick/rock (35%), followed by soil/gravel (27%), wood (15%), metal (6%), roofing (5%), drywall (2%), cardboard (2%), plastic (1%), and other (7%). Additional detailed waste characterization data is included in Appendix H.

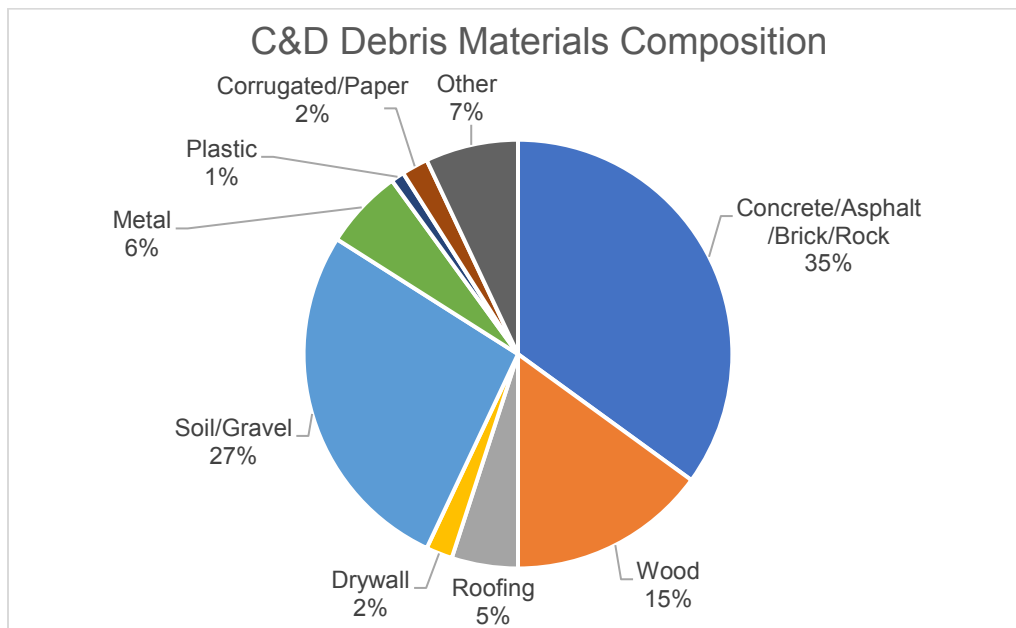


Figure 3.11. C&D debris materials composition

## C&D Debris Recycling Rate

As shown in Figure 3.12, the recycling rate for C&D debris is much higher than the recycling rate for MSW, starting at 55% in 2008 and steadily increasing to 64% in 2018.

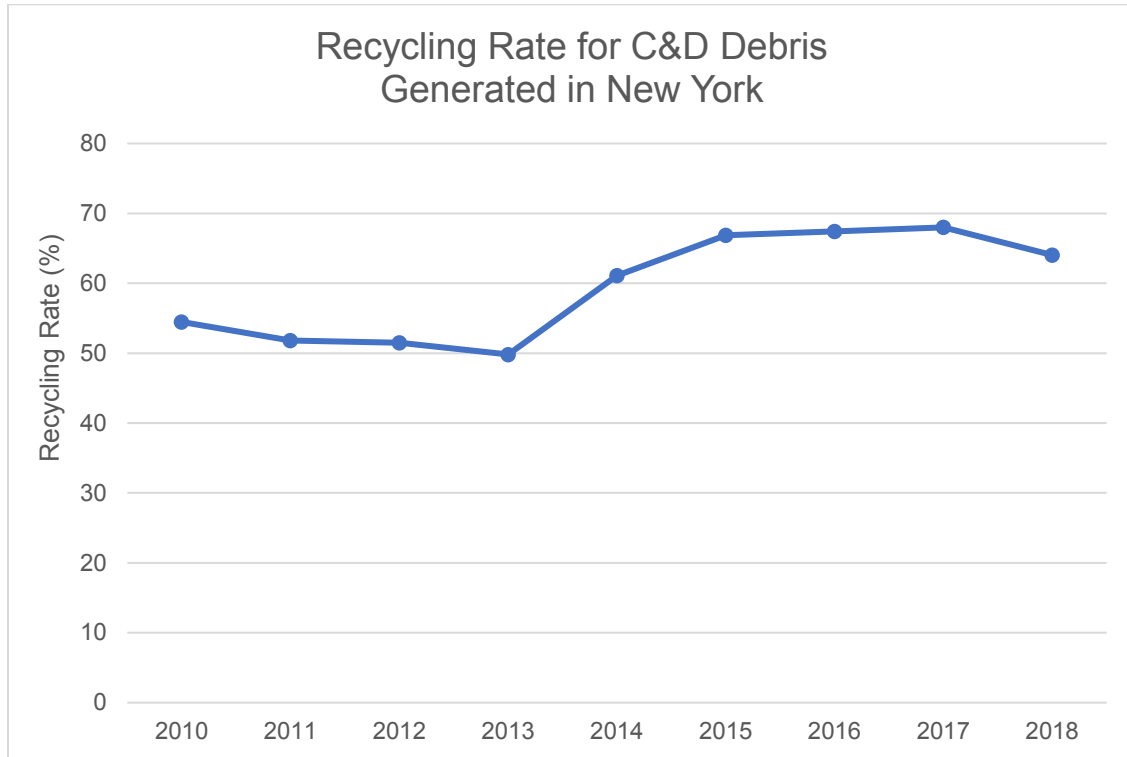


Figure 3.12. Recycling rate for C&D debris in New York

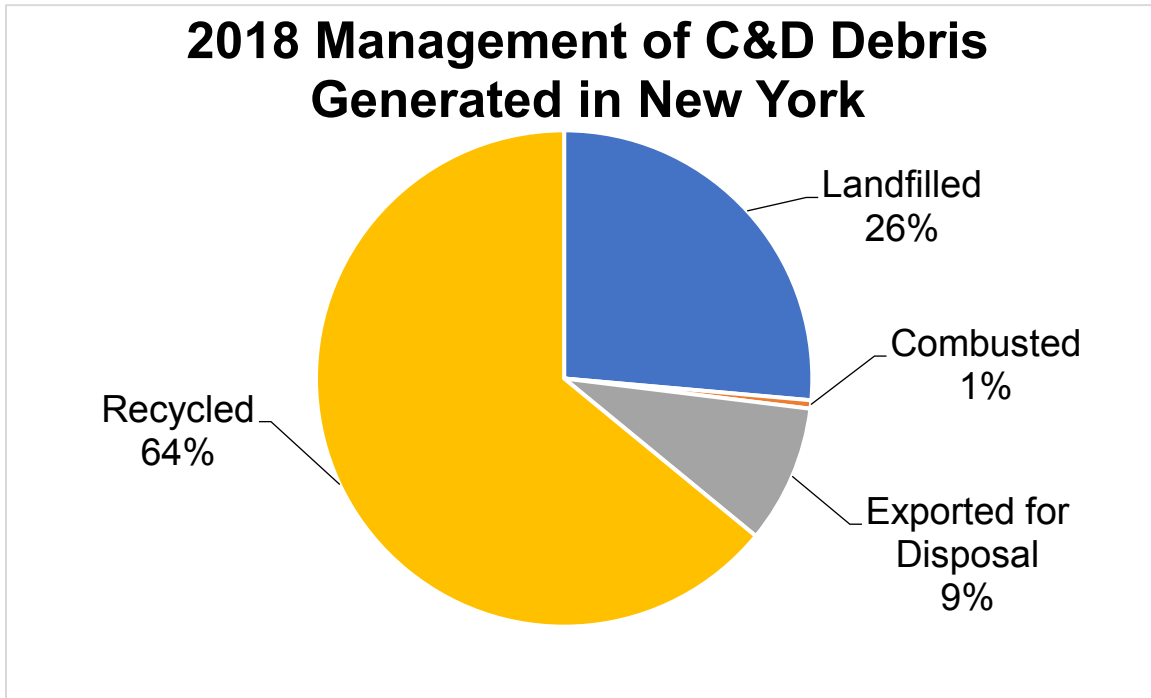
There are likely many contributing factors to this increase in C&D debris recovery, including:

- DEC's focus on proper C&D debris management with the coordinated enforcement efforts against illegal disposal in 2016, 2017, and 2022, discussed in more detail in Appendix B;
- Enhancing Part 360 regulations, effective in late 2017, providing regulatory changes allowing for more paths to recover and recycle clean C&D debris; and
- Better data reporting from facilities on fill material, road construction material, and beneficially used materials.

It is expected that the recycling rates will continue to rise, even as the amount of material continues to increase. Further detail and discussion related to the regulatory changes and the coordinated and focused enforcement efforts are included in Appendix B. A more detailed discussion of C&D debris processing facilities is included in Appendix D.

## Overall C&D Debris Management

As outlined in Figure 3.13, the management of C&D debris includes disposal through a combination of landfills in New York State (26%), export for disposal (9%), and combustion in New York State (1%), with the remaining 64% recycled.



*Figure 3.13. 2018 Management of C&D debris generated in New York*

## Industrial Waste

### Industrial Waste Generation

The industrial waste category is about 5% of the total waste stream, accounting for 1.9 million tons of waste annually, and includes discarded materials generated by manufacturing or industrial processes, such as paper mill residues, food processing waste, liquid wastes (acids, leachate, etc.), and foundry sands. It does not include hazardous waste generated from industrial processes, such as chemical manufacturing. The determination of whether a material is hazardous is outlined in the Part 370 series regulations.

### **Industrial Waste Recycling Rate**

It is challenging to obtain recycling data on this waste stream because it may be sent directly from the generator to another industry for use as a feedstock and this data is not required to be reported to DEC. Also, if waste from an industry is transported directly out of state for disposal, without going through a transfer facility, that data is not readily available to DEC. Therefore, it is likely that the recovery and the total generation in this category is underreported in this Plan.

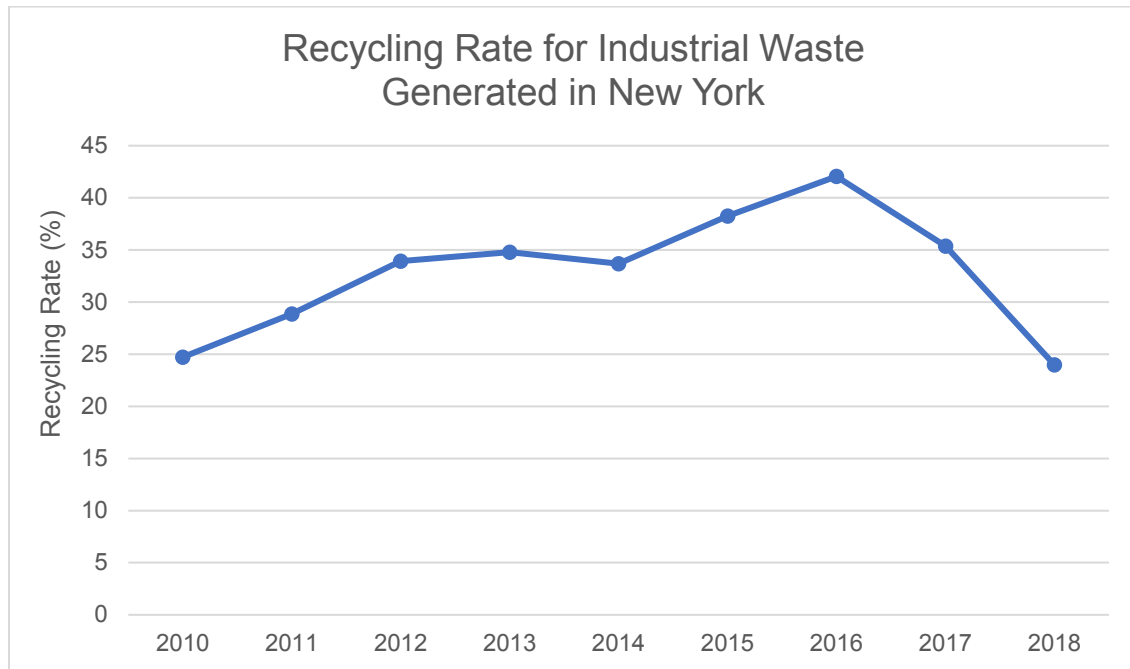


Figure 3.14. Recycling rate for industrial waste generated in New York

### **Overall Industrial Waste Management**

Management of the industrial waste stream includes disposal through a combination of landfills in New York State (50%), export for disposal (15%), and combustion in New York State (6%), for a combined total of 71%, with the remaining 29% recycled.

### **Beneficial Use of Industrial Waste**

A significant portion of the case-specific Beneficial Use Determination (BUD) program allows for the use of some waste as by-products to substitute for raw materials or commercial products. These are often components of the industrial waste stream. Beneficial use is not always considered to be recycling, but it is a preferable alternative to waste disposal or combustion. The structure of the program includes two types of approval: predetermined beneficial uses and case-specific beneficial uses. Predetermined beneficial uses are established in Subdivision 6 NYCRR Section 360.12(c) and identify the specific ways that certain wastes can be utilized.

Predetermined beneficial uses are analogous to exemptions in other program areas, in that the approval is established in regulation, and in most cases, no additional DEC authorization or reporting is required. Case-specific beneficial uses are not explicitly identified in regulation; however, the information that is required for a determination is established in Subdivision 6 NYCRR 360.12(d). Case-specific beneficial use determinations are issued for a maximum five-year term and require annual reporting of the amount of material beneficially used, analytical data (if required), and any other information required by DEC. The following figure depicts the types of materials and amounts that were included in case-specific BUDs from 2010–2022.

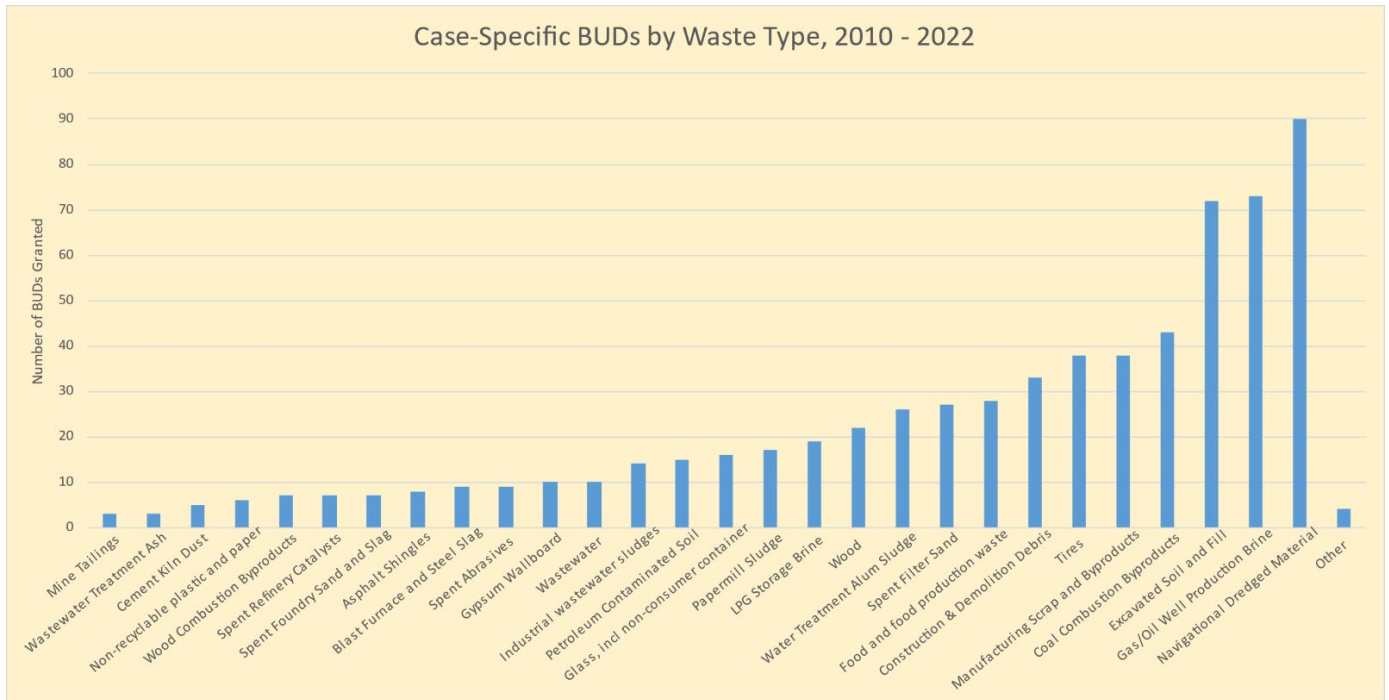


Figure 3.15. Case-specific BUDs from 2010–2022

## Biosolids

### **Biosolids Generation**

New York State is served by more than 600 water resource recovery facilities (WRRFs), that treat approximately 2,400 million gallons of wastewater per day. Sometimes referred to as publicly owned treatment works (POTWs), WRRFs generate approximately 375,000 dry tons or about 1.3 million total tons of biosolids annually.

Biosolids are nutrient-rich organic materials that can be recycled and utilized as a soil amendment when properly treated and processed. Biosolids treatment and quality standards have been developed to promote the safe use of this material. Public health



and the environment are protected by controlling pollutant limits and reducing the pathogenic content of the material that is beneficially used.

### **Biosolids Recycling Rate**

DEC supports the beneficial use of biosolids; however, landfilling continues to be the most common management method for biosolids. Beneficial use, through methods such as land application, composting, and heat drying, steadily decreased since 2008 from nearly 47% to 22% in 2018.

Biosolids management practices have changed over the last 30 years. Trends show a steady increase in the use of landfills for biosolids disposal. This is primarily due to relatively low tipping fees at landfills in the state. DEC will continue to support local efforts to increase biosolids recycling as a means to provide nutrients and organic matter to soils and to reduce the landfilling of biosolids that can contribute to GHG emissions. [Learn more about how biosolids are managed in New York State.](#)

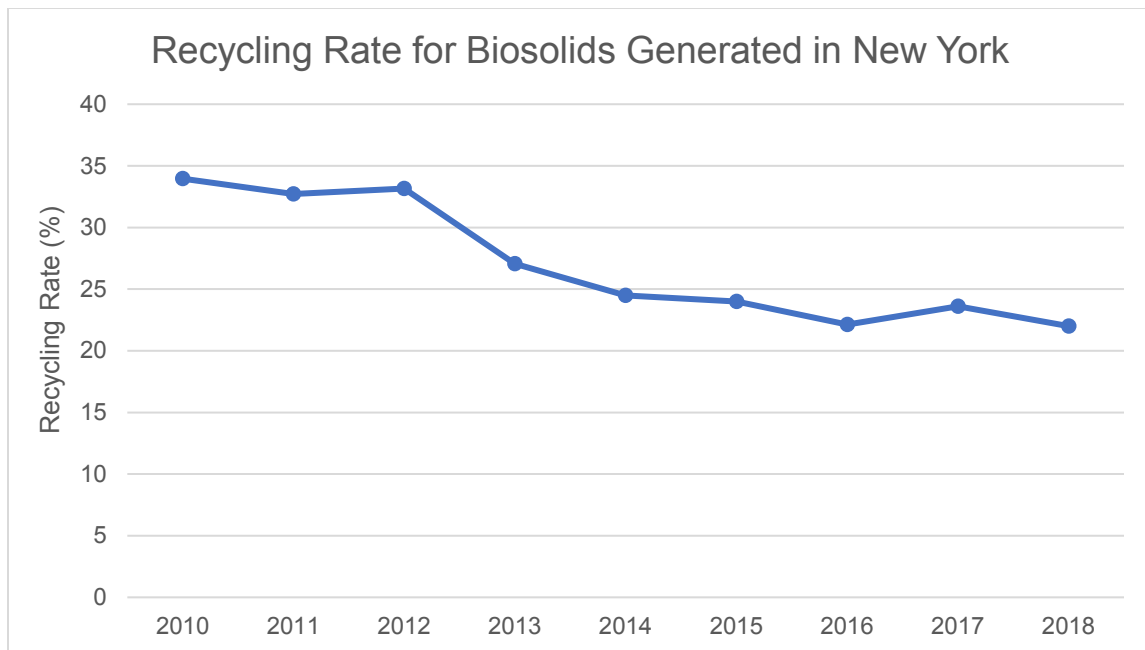


Figure 3.16. Recycling rate for biosolids generated in New York

### **Overall Biosolids Management**

Management of biosolids includes disposal through a combination of landfills in New York State (38%), export for disposal (19%), and combustion in New York State (21%) for a combined total of 78%, with the remaining 22% recycled.

## Solid Waste Management Facilities

The regulation and oversight of solid waste management facilities is discussed in more detail in Appendix D. The regulatory framework of exemptions, registrations, and permits for the authorization of activities at solid waste management facilities is provided in 6 NYCRR Part 360.

### **Facilities Summary**

The following is a summary of the Part 360 series, *Solid Waste Management Facilities* discussed throughout the State's *Solid Waste Management Plan*. The number of solid waste management facilities in the state varies constantly as individual facilities open for business or cease operations. Table 1 and Table 2 provide a snapshot of the full list of active facilities as of June 2022.

*Table 1. Type and number of permitted solid waste management facilities in New York (June 2022)*

<b>Type of Permitted Solid Waste Management Facility</b>	<b>Number of Facilities</b>
Transfer Facility	189
C&D Debris Processing and Recovery	93
Composting	66
Recyclables Handling and Recovery	64
Used Oil	26
Landfill - MSW	25
Biosolids Storage and Land Application	22
Household Hazardous Waste Collection	17
Regulated Medical Waste	15
Nonspecific Facility	14
Combustion/Thermal Treatment	11
Landfill - C&D Debris	11
Used Cooking Oil and Yellow Grease Processing	11
Waste Tire Handling and Recovery	11
Landfill - Industrial Waste Monofill	9
Mulch Processing	6
Landfill – Long Island (limited to MWC ash and C&D debris only)	5
Anaerobic Digestion	4
Research Development and Demonstration	1
Other Organics Processing	1
<b>TOTAL</b>	<b>601</b>

Table 2. Type and number of registered solid waste management facilities in New York (June 2022)

Type of Registered Solid Waste Management Facility	Number of Facilities
C&D Debris Handling and Recovery	464
Vehicle-Dismantling Facility	460
Transfer Facility	318
Recyclables Handling and Recovery	316
Organics Storage/Land Application	188
Composting	154
Scrap Metal Processor	126
Motor Vehicle Repair Shop	53
Mulch Processing	29
Waste Tire Handling and Recovery	26
Regulated Medical Waste	16
Mobile Vehicle Crusher	14
Combustion/Thermal Treatment	4
Land Reclamation/Grade Adjustment	2
Research Development and Demonstration	2
Source Separated Organics Processing	2
Used Cooking Oil and Yellow Grease Processing	2
Used Oil - Collection Center	2
Anaerobic Digestion	1
Animal Feed Production	1
<b>TOTAL</b>	<b>2,180</b>

### **MSW Landfill Disposal Capacity**

While the 25 MSW landfills in the state have available permitted disposal capacity, several factors must be taken into consideration when calculating the available remaining disposal capacity. Limitations at the local municipal level may restrict the acceptance of waste from areas outside of the municipality where the landfill is located. Additionally, landfills must operate within their permit limits, limiting the amount of waste that can be disposed of on an annual basis. An analysis of existing data indicates that the 25 MSW landfills have a combined landfill capacity life of between 16 and 25 years based on several factors. If the amount of waste that was accepted in 2018 is used (instead of the amount allowed in the landfill permits), the full remaining landfill capacity life of all the MSW landfills would be used in 25 years. If the full amount allowed by permit for each landfill is used instead, the remaining landfill capacity life is 19 years. If local restrictions on waste acceptance are also included in the calculation, the remaining landfill capacity life is 16 years. This is discussed in more detail in Appendix D.

## **Solid Waste Facilities and Potential Environmental Justice Areas and Disadvantaged Communities**

DEC evaluated the locations, size, and type of solid waste management facilities and their location in both [Potential Environmental Justice Areas \(PEJAs\)](#) and [Disadvantaged Communities \(DACs\)](#). A more detailed presentation of the data, along with maps depicting the locations of facilities with respect to PEJAs and DACs are provided in Appendix G. While there are many differences in the size and characteristics of solid waste management facilities and their potential long- and short-term impacts on nearby residents, the following is a summary of the information.

### Statewide

- From a population perspective, approximately 46% of the population lives in a PEJA and 36% of the population lives in a DAC.
- Based on the total number of all solid waste management facilities, 25% of solid waste management facilities are located in a PEJA and 33% are located in a DAC.
- Based on the facility throughput, 37% of the total waste stream was managed at facilities in a PEJA and 57% of the total waste stream was managed at facilities located in a DAC.

Evaluating the data further with respect to the influence of New York City facilities yields the following information.

### New York City

- From a population perspective, approximately 72% of the city's population lives in a PEJA and 50% of the city's population lives in a DAC.
- Based on the total number of all solid waste management facilities, 77% of solid waste management facilities are located in a PEJA and 83% are located in a DAC.
- Based on the facility throughput, 66% of the total waste stream was managed at facilities located in a PEJA and 88% of the total waste stream was managed at facilities located in a DAC.

There are no landfills or MWCs operating in New York City. The largest contributor in New York City, for both number of facilities and total throughput, is C&D debris handling and recovery facilities. The second largest in number of facilities, but low in throughput, are vehicle dismantling facilities. Third in number of facilities and a close second in throughput are transfer facilities. Recyclables handling and recovery facilities are a distant fourth in number of facilities and a distant third in throughput.

Table 3. Number of solid waste management facilities in DACs and the quantity of waste handled by those facilities

	Statewide		Disadvantaged Communities				
	Total Number of Facilities	2018 Total Throughput in Tons (capacity)	Percentage of Population	Number of Facilities	Percentage of Total Number of Facilities	2018 Throughput in Tons (capacity)	Percentage of Total Throughput Handled by Facilities in DACs
NYC	185	13,350,665	49.7%	154	83.2%	11,779,718	88.2%
Outside NYC	2618	41,142,922	25.0%	759	29.0%	19,307,772	46.9%
Total NYS	2803	54,493,587	35.7%	913	32.6%	31,087,490	57.0%

Table 4. Number of solid waste management facilities in PEJAs and the quantity of waste handled by those facilities

	Statewide		Potential Environmental Justice Areas				
	Total Number of Facilities	2018 Total Throughput in Tons (capacity)	Percentage of Population	Number of Facilities	Percentage of Total Number of Facilities	2018 Throughput in Tons (Capacity)	Percentage of Total Throughput Handled by Facilities in PEJAs
NYC	185	13,350,665	71.5%	142	76.8%	8,801,808	66.0%
Outside NYC	2618	41,142,922	25.8%	563	21.5%	11,447,172	28.0%
Total NYS	2803	54,493,587	45.8%	705	25.2%	20,248,980	37.0%

## Regional Waste Management Variability

New York State is a large, diverse state. There are densely populated urban areas and sparsely populated, very rural areas. Waste management practices vary just as widely across the state. Appendix E contains a full description of how the four major categories of waste described above are managed in each region of the state and each planning unit, as well as the flow of waste across the state and to MSW landfills and MWCs. The following table summarizes waste management by DEC Region.

Table 5. Waste management by DEC Region

DEC Region	Population	MSW Disposal Rate (lbs./person/day)	Recycling Rate (%)*			Waste Composition (%)*			
			MSW	CDD	Total Waste	MSW	CDD	IND	BIO
1	2,832,331	4.50	20%	60%	43%	41%	58%	-	1%
2	8,390,081	3.54	19%	66%	43%	46%	52%	1%	1%
3	2,322,431	4.06	22%	61%	38%	57%	40%	1%	2%
4	925,618	4.02	28%	66%	40%	51%	38%	9%	2%
5	581,970	3.75	21%	4%	22%	54%	20%	15%	11%
6	537,866	3.24	20%	1%	12%	51%	34%	12%	3%
7	1,165,354	3.35	22%	25%	21%	51%	38%	6%	4%
8	1,326,787	3.61	19%	38%	26%	46%	42%	6%	6%
9	1,420,330	4.31	20%	65%	32%	49%	32%	14%	5%

MSW – municipal solid waste

CDD – construction and demolition debris

IND – non-hazardous industrial waste

BIO – biosolids

## 4. ISSUES, CHALLENGES, AND OPPORTUNITIES

A growing number of issues have propelled waste management practices front and center on the world stage and into mainstream culture. New York State is uniquely situated to advance the circular economy and sustainable materials management. There are many opportunities to achieve lower disposal rates and higher recycling rates by adopting policies and funding programs that transform unwanted consumer goods and packaging into recovered raw materials for a resilient local supply chain.

### Climate

In 2019, New York passed the [Climate Leadership and Community Protection Act](#) (CLCPA) with some of the most ambitious climate requirements in the country. The CLCPA became effective on January 1, 2020. Among other things, the CLCPA directs DEC to establish GHG emission limits, requiring a 40% reduction in statewide GHG emissions from 1990 levels by 2030 and an 85% reduction by 2050.

The Waste Sector is a sizable contributor to GHG emissions. Responsible for 12% of statewide GHG emissions, the Waste Sector is behind Buildings (32%), Transportation (28%), and very close to Electricity (13%).

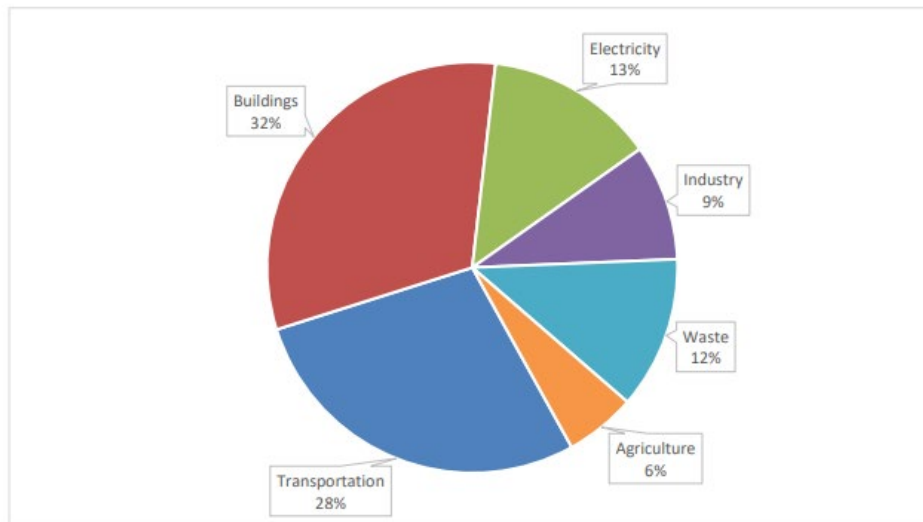


Figure 4.1. 2019 New York GHG emissions by CLCPA Scoping Plan sector

The Waste Sector includes emissions primarily associated with landfills, waste combustion, and wastewater management. Of the total Waste Sector contribution, landfills account for 78%, waste combustion accounts for 7%, and wastewater treatment accounts for 15%. Most of these emissions represent the long-term decay of organic materials buried in a landfill, which will continue to emit methane at a significant rate for more than 30 years. Waste emissions represent both the landfilling of waste in New York State and the exporting of waste to landfills in other states. For additional

information on GHG emissions in New York State, see the [2021 Statewide GHG Emissions Report](#).

With 17% of MSW in New York State coming from food waste, sustainable materials management strategies, such as food waste prevention, food donation, and composting, can play a major role in decreasing GHG emissions and rebuilding healthy soils that decrease erosion and store carbon, by preventing food waste in the first place and diverting organic material from disposal. Climate change also presents business risks, such as disruption of production, increased costs for equipment, insecurity of supply, damage to facilities and logistics, and shifting market preferences. Sustainable materials management strategies can reduce these risks by creating resilience instead of inaction. Implementing waste prevention strategies and increasing the reuse and recycling of materials will allow businesses to be less reliant on raw materials that are vulnerable to climate risks.

The Climate Action Council developed a Scoping Plan in 2022 to address how New York State will achieve the emissions reductions outlined in the CLCPA. Many of the broader initiatives to be undertaken related to waste found in the Scoping Plan are also found in this Plan. This *Solid Waste Management Plan* provides greater detail on the proposed initiatives and projected results. The initiatives laid out in this Plan are consistent with the overarching requirements and time frames established in the CLCPA.

Although the CLPCA is limited to addressing emissions that occur within the state, New York State needs to go above and beyond its goals related to emissions from waste and consider the role that all New Yorkers play in an interconnected, global system in which the emissions associated with the production of products New Yorkers utilized within the state are contributing to climate impacts elsewhere in the world. Growing waste streams from switching to renewable energies and green transportation, such as batteries, solar panels, and wind turbines, must also be addressed. Circular economy solutions such as waste reduction, reuse, recycling, and composting can play a vital role in fighting climate change, and New York State will lead the way not just by focusing on renewable energy, but also on transforming the way products and materials are used and waste is prevented in order to avoid GHG emissions, not just within New York State but around the world.

### [Throw-Away Culture](#)

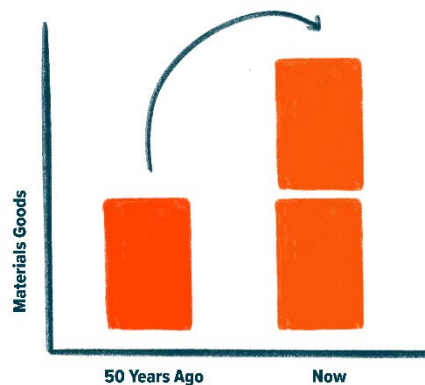
Throw-away and convenience cultures have risen to new heights with an uptick in online ordering, convenience packaging, and planned obsolescence. Many products and single-use packaging are designed to be used for a short time—often only once—and discarded. Products are increasingly designed without durability, reuse, or repair in mind, to perpetuate a cycle of waste and consumption. Packaging continues to evolve in shape, size, material composition, and other design features. Although these design features are considered an innovation from a product packaging point of view, new packaging features can pose challenges for recycling facilities that cannot recover and



market many of these new types of packaging that have not been designed to be compatible with recycling facility infrastructure. New Yorkers, especially the younger residents, have begun to realize that these practices of the past are not sustainable or worthwhile and are pushing manufacturers to rethink these product models. For example, globally, approximately 42% of non-fiber plastics have been used for product packaging, much of which is single-use and designed to be used once and discarded. Although a lot of progress has been made to reduce waste, simultaneously, as Figure 4.2 below shows, the average U.S. person now consumes twice as much as they did 50 years ago, and in many cases, keeps material goods for a shorter amount of time before recycling or disposal.



**THE AVERAGE U.S. PERSON NOW  
CONSUMES TWICE AS MUCH AS  
THEY DID 50 YEARS AGO.**



Source: Taylor, Betsy and Tifford, Dave. (2000). Why Consumption Matters

Figure 4.2. U.S. consumer consumption

The [fast fashion](#) trend has continued to surge with clothing sales doubling while clothing utilization—the number of times a piece of clothing is worn—has decreased by 36%, indicating that people are buying more clothing and keeping each item for less time. The fast fashion model for textiles has negative environmental and societal impacts. [DEC estimates](#) that approximately 1.4 billion pounds of clothing and textiles are disposed of in the state each year. Globally, GHG emissions from textile production total 1.2 billion metric tons of CO<sub>2</sub> equivalent, more than emissions from international flights and maritime shipping combined. In the United States, textile waste is one of the fastest growing waste streams with the average person throwing away 81 lbs. of clothing each year. Approximately 15% of post-consumer textiles are recycled, resulting in 85% of our used clothing and other textiles being disposed of. Decreasing the amount of textiles going to landfills and MWCs can conserve natural resources; reduce toxins from pesticides, herbicides, dyes, and other chemicals used in textile production; reduce GHG emissions, and help address other environmental and social issues. According to

the EPA, diverting a year's worth of textiles from disposal is equal to removing 7.3 million cars off the road.

## Global Markets

The recycling system across New York State and the United States now sets quality and contamination reduction as a priority, in large part due to lessons learned from global recycling market disruptions in 2018. The overall recycling system has adjusted to those circumstances, placing a higher emphasis on higher quality, cleaner materials.

The lessons learned from managing the impacts of China's National Sword policy cannot be lost, as they are a valuable reminder for recycling program management. In January 2018, China determined that many of the recyclables coming from the U.S. and other developed countries, such as the United Kingdom, Canada, and Australia, were too contaminated with non-recyclable material that decreased the value of recyclables and contributed to pollution. This policy set a contamination limit of 0.5% on incoming recyclable paper and plastic—a number unattainable by most recycling facilities. China's National Sword policy affected recycling markets across the globe, leading to initial negative consequences for recycling programs in New York State and around the world as almost a third of collected recyclable materials in the U.S. were being exported at the time. Following China's National Sword policy, other nations followed suit and instituted restrictions on the quality or quantity of recyclables imported into their countries.

Although the export of recyclables from New York State was less than in other parts of the U.S., the state was not insulated from the disruptions of recycling markets. China's National Sword policy made it clear—New York State must help reduce contamination in the recycling stream, find new outlets and uses for recyclable materials, and help find solutions to support recycling efforts on a local and regional scale in order for recycling to remain resilient in the face of global market disruptions. Amid the crisis, DEC met with stakeholders across the state to collect feedback about the impacts of the National Sword policy and develop possible solutions to mitigate negative impacts, improve recycling, and ensure that New York State's recycling systems would be more resilient in the future. DEC also invested over \$20 million in recycling and market research with several SUNY universities to help navigate the next steps for New York State.

In addition to the disruption caused by the National Sword policy, in 2020, the world faced a global pandemic caused by the COVID-19 virus, adding another layer of complexity to the global recycling markets and further negatively affecting the movement of recyclables and other materials. Recycling markets began to adjust and improve into 2021.

## Information Sharing and Technology

Global interconnectivity has never been more apparent than it is today. The exponential growth in technology used for information sharing seen since the release of the *Beyond Waste Plan* in 2010 has brought about significant changes in how people communicate and share ideas. The COVID-19 pandemic accelerated the use of technology for communication even further, as people around the globe were required to rapidly transition to other means of work, which spurred an uptick in the use of and innovations in digital communications that allowed people to share ideas and information on a scale not seen before. The increased use of digital communication methods and the ability to reach a wider audience has also changed the way people think about waste management. Social media platforms, apps, and web-based organizations have played a major role in organizing citizens behind concerns around waste management, and apps allow everyone to feed into worldwide data collection about litter and waste. This increased connectivity enabled by digital means has also helped spur new opportunities for the sharing economy, which opens opportunities for improved access to the sharing of goods, services, and food that improve efficiencies and quality of life while supporting waste reduction and reuse.

However, with these changes comes the growth of electronics and portable devices, which brings waste management implications along with it. The Global E-waste Statistics Partnership's *Global E-Waste Monitor* report from 2020, a comprehensive report about the world's e-waste, reports a record 53.6 million metric tons of e-waste generated worldwide in 2019, up 9.2 million metric tons in 5 years. Without significant changes, e-waste generation is estimated to reach 74.7 million metric tons worldwide by 2030, almost double the 2014 figure. These staggering numbers demonstrate the growth of electronic devices and the urgent need for New York State to employ circular economy strategies to reduce e-waste generation locally and impact e-waste globally, especially since some discarded products are exported from high-income countries to low- and middle-income countries. This *Solid Waste Management Plan* will address how technology can be used to increase awareness about sustainable materials management, improve outreach and education, and keep valuable materials in circulation while also ensuring that the technology that now connects us all on a global scale is managed properly at the end of its useful life and is reused, repaired, and recycled to the fullest extent possible.

## Equity Issues

Waste is also an environmental justice issue, particularly for people who have been disproportionately impacted by either discriminatory waste disposal practices and siting of waste management facilities or the lack of equitable waste management services. By implementing sustainable materials management strategies that reduce waste generation or prevent material from heading for disposal, impacts to communities from waste can be mitigated. Communities that have been disproportionately impacted must be supported and able to meaningfully participate in the decision-making process about waste and sustainable materials management that will help communities thrive.

Sustainable materials management is not only good for the environment, but also necessary for people, especially those in communities that are most vulnerable and historically have been disadvantaged. The ability to expand local options, such as community composting, must be explored, as these activities encourage more community engagement and potential employment opportunities, and help prevent negative impacts to the community from waste management practices. This is a critical issue for DEC and it begins with an honest and direct evaluation of the current status of waste management in DACs and PEJAs. That evaluation becomes the basis for implementing programs and policies that can effect positive change. A discussion of the current status of SWMFs in DACs and PEJAs was included in Section 3 of the Plan; however, more detailed data and maps illustrating the relationship between solid waste management facilities and disadvantaged communities are included in Appendix G.

## [Ecosystems Impacts](#)

### **Marine Debris**

A report from the World Economic Forum titled *The New Plastics Economy* indicated that at the current rate of plastic generation and leakage into the environment, there will be more plastic in the ocean than fish by weight by 2050.

### **Persistence of Plastic in the Environment**

Microplastics from products and raw materials, and microfibers from textiles are being found in freshwater—including bottled drinking water—as well as in soil, the air, and the deepest parts of the oceans. Larger macro-plastics also affect New York State communities in the form of litter and negative impacts on wildlife and ecosystems. Various accounts of bird and marine animal necropsies turning up plastic in the stomach and digestive tracts, and famous images of adult albatross at Midway Atoll feeding chicks plastic pieces have captured the attention of the world. Since the release of the *Beyond Waste* Plan in 2010, New York State has led the way with new laws that seek to reduce problematic single-use plastics, such as plastic carryout bags, and expanded polystyrene foam containers and loose fill packaging, and will continue working to address emerging issues related to plastic pollution.

### **Raw Material Extraction and Habitat Loss**

Habitat loss is currently one of the greatest threats to biodiversity and ecosystems, threatening 85% of all species on the International Union for Conservation of Nature's [Red List of Threatened Species](#), the most comprehensive source on extinction-risk status for animals, fungi, and plant species worldwide. While many factors contribute to habitat loss, the unsustainable consumption of natural resources, waste, pollution, and agriculture for food production play a role.

## **Conservation Benefits of a Circular Economy**

Circular economy strategies that reduce the need to harvest virgin natural resources, reduce waste, prevent pollution, and prevent and reduce food and agricultural waste can greatly contribute to reducing the negative impacts on the environment and communities that are associated with waste.

New York State must implement new and innovative materials management solutions to create transformative change to prevent waste and the associated pollution and resource consumption that negatively impacts people, fish, wildlife, and the environment.

## **Emerging Contaminants Sampling and Research**

### *Prevention of Emerging Contaminants*

Emerging contaminants such as 1,4-Dioxane and [per- and polyfluoroalkyl substances \(PFAS\)](#) are found in many consumer products and persist in industrial discharges, and wastes. DEC is working to limit the environmental exposure of these chemicals.

Preventing these chemicals in the environment and supply chains is a specific focus for materials management.

- *Disclosure and Consumer Notification*  
As required by law, DEC is implementing a program that requires the disclosure of ingredients in children's products and cleaning products.
- *Restrict*  
DEC is implementing programs to restrict the concentration of 1,4-Dioxane allowable in cleaning, personal care, and cosmetic products.
- *Safely Replace*  
DEC participated in an interagency effort to evaluate PFAS-free fire-fighting foams that ultimately determined that effective PFAS-free foams are currently available for use.
- *Research Alternatives*  
Through its partnership with the New York State Pollution Prevention Institute (NYSP2I), DEC has advanced research to understand sources of emerging contaminants at both the consumer and industrial levels and assessed the viability of preferable alternatives.

### *Recycling of Biosolids*

Biosolids are the residuals from WRRFs. Since emerging contaminants such as PFAS are found in household products and some industrial discharges, they are found in biosolids and effluent. Actions to reduce the content in consumer products and use in industry will also reduce the concentration of PFAS in biosolids. The recycling of biosolids through land application and other means can be a source of PFAS in the

environment. The EPA is completing a comprehensive risk assessment to determine an environmentally protective limit for biosolids recycling. Also, DEC is providing funding to SUNY ESF to determine the concentration of PFAS in recycled biosolids in New York State and to identify any industrial sources so they can be addressed.

### **Emerging Contaminant Sampling at Solid Waste Management Facilities**

Because emerging contaminants are often found in MSW and C&D debris, they will also be found in landfills and landfill leachate. In order to ensure that these contaminants are properly contained, the 2017 revisions to the Part 360 series regulations added requirements for active landfills to include PFAS and 1,4-Dioxane to their sampling plans for both leachate and groundwater monitoring. In 2018, DEC conducted sampling of leachate at most landfills in the state to better understand the concentrations of those contaminants. Results of this leachate sampling effort showed the following averages and ranges:

PFOS (ng/L):	229 (97–982)
PFOA (ng/L):	832 (490–3,766)
1,4-Dioxane (µg/L):	97 (0–490)

ng/L = nanograms per liter    µg/L = micrograms per liter

The ubiquitous presence of PFAS compounds in consumer and commercial products for decades, and continuing today, leads to issues in all environmental media (air, water, and land) and DEC programs. DEC continues to tackle this issue on multiple fronts, from remediation of contaminated sites to implementing laws that restrict the use of these compounds in consumer products. It is a complex issue and one that will take a concerted effort to address over the coming years.

## 5. VALUES AND VISION

Values and a vision guide the principles underpinning this Plan and align with the goals and recommendations of the Plan.

### Values

Values are the guiding principles that provide direction and structure for the steps taken by DEC to reach the visions for 2032 and 2050 and underlying Goals in this Plan, which are also integral to meeting the Climate Act goals outlined above. The values statements for this Plan reflect the existing values of DEC and serve to guide the Division of Materials Management and the agency in embodying these values in its work in materials management in New York State.

#### **Serve as Stewards of the Environment**

- Reduce waste and its impacts on the environment through waste prevention and sustainable management practices.
- Conserve and protect the resources used to manufacture new products, including raw materials, by maximizing the use of recyclable materials.
- Mitigate the impacts of climate change through sustainable materials management strategies, such as waste reduction and recycling (including organics recycling).

#### **Strive for Full Public Participation, Fairness, and Environmental Justice**

- Ensure that all New York State residents can fully participate and engage in materials management planning in their communities.
- Strive to eliminate the barriers some New York State residents may face in accessing information about and participating in waste reduction, reuse, repair, and recycling.
- Encourage partnerships and collaboration with community organizations, particularly those in communities of disproportionate impact, in materials management planning.
- Strive to reduce the disproportionate burdens faced by DACs and PEJAs related to waste management facilities.

#### **Foster the Development of a Robust and Dynamic Sustainable Materials Economy**

- Consider the environmental costs of production into the monetary value of materials and products.

- Capture the economic value of materials by using them for their highest and best use, and support recycling market development and viability through forward-thinking, creative, and flexible policies and strategies.
- Prioritize investment in infrastructure and innovative design to improve market resiliency and increase diversion options.

## Vision

The vision represents where New York State should be in 2050. It is bold and should be bold if New York State is to achieve the transformational changes that are needed to address the global concerns today. Small improvements are no longer sufficient to make the strides necessary to protect the environment.

### **Landfilling Is Reduced by 85% by 2050**

Landfills are only a place for materials that cannot be recycled, and there are very few materials that meet that criterion for landfilling. Reduction, reuse, and recycling are the most common methods for materials management and landfills are only utilized for 20% or less of the materials generated. Products are designed and manufactured with reduction, reuse, and recycling as integrated principles of their design.

### **The Circular Economy Is Realized**

This Plan envisions the future of sustainable materials management in New York State through 2032, with a full planning horizon through 2050. The initiatives and Goals listed in [“The Future of Materials Management in New York State”](#) chapter serve as guidance for achieving this vision.

### **Collaboration and Innovation Are Commonplace**

New York State’s materials management system embraces and fosters partnerships between private industry, public entities, and community organizations to support DEC’s efforts in fostering an environment of innovation, cooperation, and creativity to achieve environmental sustainability and economic vitality.

### **“Waste” Is a Concept of the Past**

New York State manufacturers, businesses, and residents fully understand the social, environmental, and economic consequences of waste. The concept of waste is reimagined, and waste is no longer considered inevitable. Rather, the inherent value is recognized in products and materials that are designed for reuse, repair, remanufacturing, and recycling rather than simply disposable products. This view of waste supports a universal shift away from linear systems of consumption and disposal to more circular systems.



### **Climate Change Mitigation Is Fully Implemented**

New York State fully recognizes and embraces the climate change mitigation benefits of sustainable materials management policies and strategies and leverages them to achieve the State's progressive GHG emissions reduction targets. The GHG emissions reduction benefits of waste reduction, reuse, and recycling are acknowledged and reflected in materials management strategies. Organics diversion, waste reduction, reuse, and recycling dramatically reduce the amount of material that is landfilled, which will reduce the amount of the potent GHG methane leaking from landfill systems.

### **Shared Responsibility Is a Given**

The responsibility for managing materials encompasses producers and users throughout a product's entire life cycle. Costs of materials management are no longer externalized to taxpayers and municipalities. Producers are responsible for the entire product life cycle. A sophisticated and sustainable materials management system exists and considers waste reduction, reuse, and recycling at every stage of product design, production, and distribution. Manufacturers and producers design products for durability, reuse, and repair. Citizens are able to exhaust opportunities to reduce, reuse, repair, and recycle before disposing of materials.

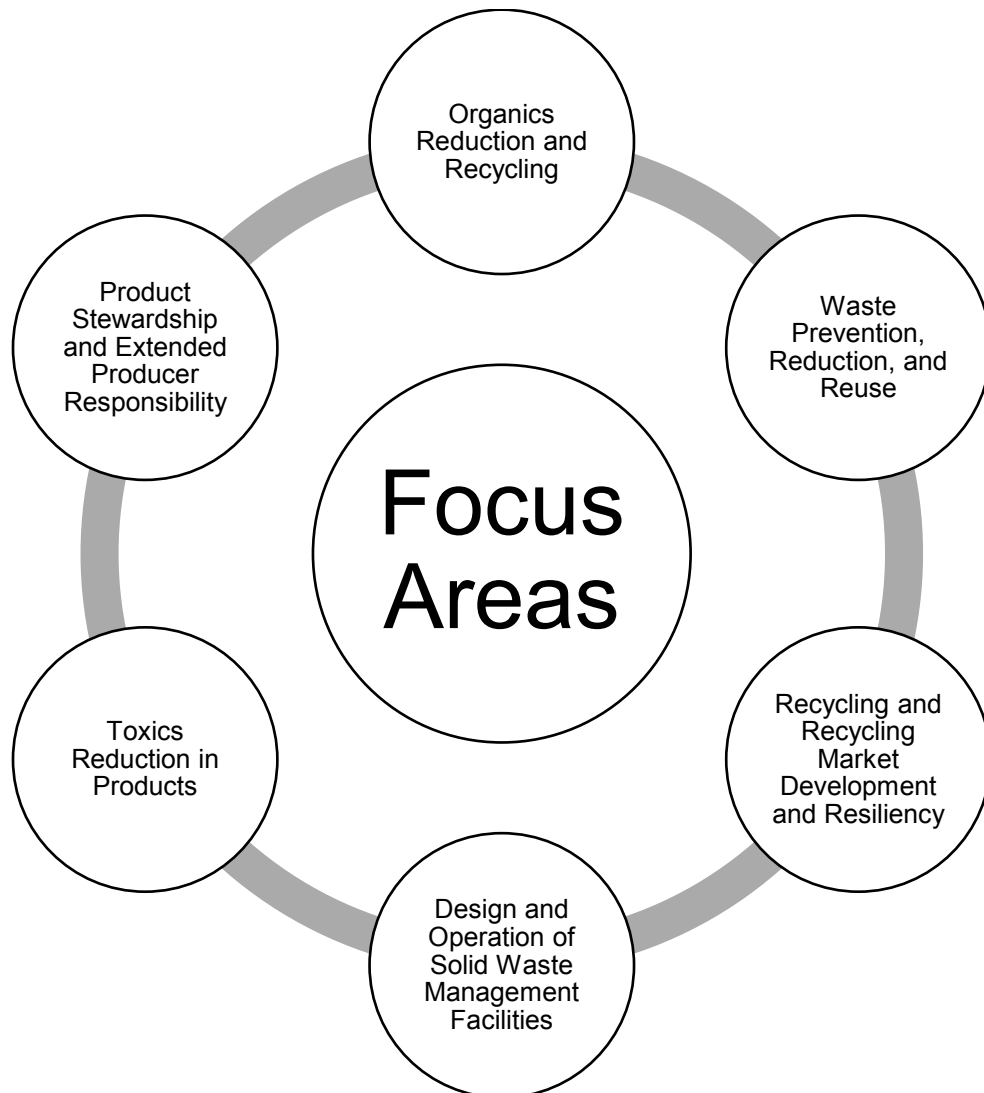
### **Equitable, Inclusive, and Accessible Waste Reduction and Reuse Efforts Are Widespread**

The shift to a reuse culture and a sharing economy has been characterized by equity and accessibility. All New Yorkers have access to durable, reusable goods and the tools and knowledge needed to reduce their household waste. Recovery and reuse efforts are made more inclusive and serve lower-income and disadvantaged residents of New York State.

### **Responsible and Resilient Markets Thrive**

Policies, recommendations, research, and other strategies encouraging innovative design, market development, education, and stewardship programs have created a circular supply chain in New York State that incorporates both producer and consumer responsibility. Organics recycling and traditional recycling markets in New York State have become more resilient to pressures and swings from national and global market disruptions by developing more local and regional opportunities for materials management. Sustainable materials management policies support the creation of jobs and new opportunities for economic growth by retaining the value of materials, keeping that value within the supply chain, and presenting new business models.

## 6. The Future of Materials Management in New York State



### Focus Areas, Goals, and Action Items

How New Yorkers utilize resources will be fundamental to a prosperous future for the environment and the economy. For New York State to remain competitive and ensure resiliency, sustainable materials management strategies must be employed. The Goals and supporting Action Items for New York State laid out in this Plan are part of a larger national and world vision for a sustainable future where the value of resources is maintained within a circular economy, GHG emissions are reduced, and the environment and its resources are preserved for future generations. This Plan seeks to achieve this vision through the following Focus Areas and their Goals and Action

Items/recommendations over the 10-year planning period (2022–2032) and the full planning horizon through 2050.

Most of the Focus Areas in this plan include Goals and Action Items that will have positive climate impacts. For solid waste management, methane emissions from landfills are the largest source of GHG emissions in New York State. Methane is generated in landfills from the anaerobic degradation of organics. Reducing the amount of organics that are landfilled, as outlined in the [Organics Reduction and Recycling Focus Area](#), will reduce GHG emissions and support the State’s emission reduction goals. In addition, reducing and recycling non-organic materials decreases GHG emissions through a reduction in the extraction and processing of raw materials, either in New York or elsewhere. Many of the Focus Areas in this Plan include action items addressing the reduction and recycling of these materials, further working to achieve the State’s GHG emissions reduction goals. As discussed earlier, many of the broader initiatives to be undertaken related to waste are addressed in the Climate Action Council’s Scoping Plan. This Plan supports the Scoping Plan by supporting the actions needed to address GHG emissions in this sector. Both plans complement each other. However, this *Solid Waste Management Plan* provides greater detail on proposed initiatives and projected results that are consistent with the overarching requirements and time frames established in the CLCPA.

An overarching theme throughout the Focus Areas is outreach and education for materials management-related topics. Outreach and education are important strategies to ensure that all New York State residents have the information and tools they need to comply with laws and regulations pertaining to preventing and managing waste and to empower individuals to fully participate in sustainable materials management to protect their communities, their health, and the environment. Participating in sustainable materials management practices is a way for residents to make an immediate positive difference in the environment, making accessible outreach and education in this topic area even more critical.

Actions to take to ensure outreach and education efforts are equitable and accessible, and that all New York State residents have access to quality materials management education include:

- Building relationships with community-based organizations and local groups in rural and/or underserved communities;
- Identifying barriers and developing solutions related to accessing information;
- Developing necessary outreach materials in the diversity of languages spoken in New York State; and
- Ensuring that relevant diversity, equity, and access training is available to DEC staff who provide materials management outreach and education.

Disadvantaged communities also often host solid waste infrastructure that disproportionately impacts community health from increased truck traffic, air emissions, water discharges, nuisance odors, and other impacts. To help address these issues,

DEC can improve transparency and public access to solid waste management facility location information, documents, and public data about the environmental quality of specific sites across the state. Through outreach, education, and transparency, DEC can inspire and support residents and advance equity, access, and justice through sustainable materials management in New York State.

While this Plan will address all major components of the total waste stream (MSW, C&D debris, industrial waste, and biosolids), there is a significant focus on initiatives targeted at the MSW stream. The MSW stream reduction in disposal rate and recycling rate have been relatively stagnant for nearly two decades despite the funding and programs that have been implemented targeted toward this portion of the waste stream. A substantial portion of the MSW stream is composed of recyclable material; achieving this Plan's ambitious landfill diversion goals is feasible through comprehensive programs targeting the following materials that are a part of the MSW stream:

- Organics (23% of the MSW stream/more than 4.1 million tons)
- Paper (32% of the MSW stream/more than 5.7 million tons)
- Plastics (14% of the MSW stream/more than 2.5 million tons)
- Metals (7% of the MSW stream/more than 1.25 million tons)
- Textiles (5% of the MSW stream/900,000 tons)

Coordinated programs focused on the larger components in the MSW stream, combined with technical and fiscal support to those who provide the services, will have the greatest impact. There will need to be a combination of bold new legislation to help provide the framework for transformational change and consistent commitment from everyone—state and local governments, planning units, the private sector, product manufacturers, distributors, retailers, educators, and all New Yorkers—to work together to realize the vision and Goals of the Plan and achieve circular material recovery and recycling.

### [Implementation of Focus Area Goals](#)

A roadmap for the implementation of the Goals identified in this section includes a series of Goals, Action Items, time frames, and stakeholders involved. Each Focus Area is divided into specific Goals and the Action Items required to achieve those Goals. The successful implementation of the identified goals is dependent on both legislative and programmatic action. Legislative action means passing new legislation, or, in some instances, amending existing laws. Items identified under each Goal as “Legislative” means a particular action cannot be fully realized and implemented without legislative action. Items identified under each Goal as “DEC” are actions DEC can take that are not dependent upon legislative action, although in some instances, legislative action may be found to be beneficial as DEC moves through steps to implement these actions.

Together the two categories of legislative and programmatic action strive to move New York State toward a more circular economy.

## Waste Prevention, Reduction, and Reuse

Waste prevention, reduction, and reuse not only keep valuable materials from being disposed of, but also minimize or eliminate materials from requiring processing or management at all. Waste reduction focuses on the prevention or reduction of solid waste generation through changes in consumer and business behavior; changes in products, packaging, and purchasing; repair; and reuse.

Reuse and recycling should be maximized when the generation of waste cannot be prevented or reduced. It is important that these materials are integrated into the circular economy and utilized in the development of new products.

<b>Goal: Increase opportunities for New York State residents and institutions to participate in waste prevention, reduction, and reuse.</b>			
<b>Action Items</b>	<b>Implementation Lead</b>	<b>Time to Implement</b>	<b>Other Key Stakeholders</b>
<b>Reuse and Repair</b>			
Support proposals that assist consumers to repair damaged products first instead of purchasing new products, encouraging repair, and reducing e-waste.	Legislative	3 years Propose – 2024 Begin – 2027	DEC, manufacturers, environmental organizations, retailers, municipalities, consumers, repair organizations and businesses
Encourage the use of materials exchanges and sharing platforms through development of resources and facilitate the development of avenues for material reuse and product-sharing opportunities for used goods.	DEC	5 years Begin – 2023	Municipalities, industry
Support colleges and universities within New York State in efforts associated with the reuse of materials.	DEC	5 years Begin – 2024	Colleges and universities
Maintain partnerships within the SUNY system to create reduction and reuse guidance documents and tools for use by the general public and schools.	DEC	Ongoing	SUNY ESF
Partner with the New York State Department of Education and Department of Health to develop and promote sharing table and donation guidance for K–12 schools.	DEC	Ongoing	DOH, SED

<b>Reduction and Prevention</b>			
Educate students on the connections between waste and the environment through a partnership with the New York State Department of Education to develop curriculum around materials management.	DEC	5 years Begin – 2023	SED, school districts
Encourage local planning units to partner with schools in their jurisdiction to implement integrated waste reduction and reuse programs.	DEC	Ongoing	Municipalities, school districts, SED
Create guidance for the public that supports and encourages the use of reusable and refillable containers and packaging in accordance with state and federal food safety guidelines.	DEC	Ongoing	Food service operators and establishments, retailers, food stores, DOH, DAM, CSMM

<b>Goal: Support waste prevention, reduction, and reuse within the commercial and industrial sectors in New York State through education, engagement, and policy</b>			
<b>Action Items</b>	<b>Implementation Lead</b>	<b>Time to Implement</b>	<b>Other Key Stakeholders</b>
<b>Reuse and Repair</b>			
Support proposals that incentivize reusable and refillable solutions across the full spectrum of the packaged goods sectors, such as reuse system options that promote the primary consumer-facing reuse models—refill at home, return from home, refill on the go, and return on the go. Examples that fit into these models include reuse systems for takeout containers and shipping packaging and bulk refill of household goods.	Legislative	7 years Propose – 2024 Begin – 2029	DEC, manufacturers, producers, environmental organizations, industry organizations and associations, retailers, food service establishments, municipalities, consumers
Support and promote initiatives that facilitate reuse infrastructure development for businesses.	DEC	5 years Begin – 2025	ESD, business councils, environmental organizations, municipalities, industry organizations and associations, retailers, food service establishments
Support and promote initiatives that identify and develop opportunities for waste prevention and reuse programs in specific industrial sectors.	DEC	5 years Begin – 2024	Industry, environmental organizations, municipalities, NYSP2I

Work with colleges and universities within New York to research the viability of reusable shipping and packaging materials as a waste prevention strategy by engaging with retailers to determine interest in utilization of these options, barriers to incorporation of these products into their shipping operations, and strategies for incorporation into product shipping.	DEC	5 years  Begin – 2024	Colleges and universities, shipping companies, industry, manufacturers, environmental organizations, retailers, municipalities, consumers
Participate in workgroups with national organizations working toward waste reduction solutions to assist with dissemination of information and technical assistance to commercial and industrial sectors.	DEC	Ongoing	Industry, environmental organizations
Create guidance for food service operators, retail food stores, and other establishments to support and encourage reusable and refillable containers and packaging and reduce single-use containers and packaging.	DEC	Ongoing	Food service operators and establishments, retailers, food stores, DOH, DAM, CSMM
Assess and explore how policy can advance circularity in furniture waste reduction through information gathering via avenues such as stakeholder and industry meetings with commercial and industrial sectors to understand current practices and identify policy and practices that could assist with closing the loop.	DEC	4 years  Begin – 2023	Furniture manufacturers, retailers, OGS, environmental organizations, municipalities, consumers
Support projects and programs that enhance secondary markets, donations, and exchanges for useable products, such as textile goods and furniture, as well as industrial by-products.	DEC	Ongoing	Municipalities, industry, donation and reuse organizations, recyclers, consumers
<b>Reduction and Prevention</b>			
Support prohibitions of the disposal of textiles that can be reused or recycled and encourages transparency in the supply chain about resource consumption, GHG emissions, and social issues relating to textile production and disposal. DEC estimates that approximately 1.4 billion pounds of clothing and textiles are disposed of in the state each year. In addition to environmental concerns, the apparel and textile industries are also known for below-standard, dangerous, and unsafe working conditions. Supporting this type of legislation will help address these issues.	Legislative	5 years  Propose – 2024  Begin – 2029	DEC, textiles industry, recycling industry, retailers, donation and reuse organizations and businesses, environmental organizations, municipalities, consumers

Support initiatives that ban or prevent unsold retail goods, including textiles, from going to disposal.	Legislative	5 years Propose – 2024 Begin – 2029	DEC, textiles industry, manufacturers, retailers, donation and reuse organizations and businesses, environmental organizations, municipalities, consumers
Identify New York industrial sectors and develop targeted educational programs to support waste reduction and reuse in those areas.	DEC	5 years Begin – 2024	Industrial sectors, municipalities, ESD, NYSP2I
Promote the economic benefits of reduction and reuse in education and outreach efforts to encourage businesses and institutions to make choices aligned with waste reduction and reuse.	DEC	5 years Begin – 2023	Businesses, institutions, manufacturers
Through existing or future opportunities with colleges and universities within New York, study the issue of unsold retail goods in New York State and develop approaches to prevent the disposal of these unsold goods. This will include researching current production practices and tracking technologies across the value chain, assessing industry and stakeholder needs, and the development of tools that will reduce waste and increase materials exchange and end uses for unsold goods.	DEC	5 years Begin – 2023	Colleges and universities, retailers, manufacturers, donation and reuse organizations
Engage in a “rethink waste” campaign aimed at waste generators and manufacturers in various sectors to encourage source-separation, storage, and partnering with off-site processors or reuse and donation businesses and organizations to divert beneficial and usable streams from disposal.	DEC	3 years Begin – 2023	Manufacturers, municipalities, recyclers, donation and reuse organizations
Provide guidance and support to commercial and institutional entities interested in conducting waste audits.	DEC	Ongoing	Businesses, institutions, municipalities
Support efforts to reduce textile shedding and migration of microfibers into the environment by conducting research with colleges and universities within New York State, developing best practices and educational materials to help reduce the negative impacts of these fibers, and identifying target audiences for these resources.	DEC	3 years Begin – 2024	Colleges and universities, textile industry, plastic manufacturers, environmental organizations, municipalities, operators of WWRFs



<b>Goal: Foster community resiliency by developing programs, supporting communities and organizations, and supporting proposals and initiatives that prevent and reduce waste and promote reuse.</b>			
<b>Action Items</b>			<b>Other Key Stakeholders</b>
<b>Reuse and Repair</b>			
Support proposals, to restrict, and certain single-use products in New York to prevent problematic waste and institutions to purchase and use reusable products.	Legislative	3 years Propose – 2024 Begin – 2026	Retailers, manufacturers, environmental organizations, municipalities, consumers
Support proposals enhancing implementation of and compliance with the New York State Bag Waste Reduction Law including clarifying the definitions of plastic carryout bag and reusable bag, unifying the Plastic Bag Reduction, Reuse, and Recycling Law with the Bag Waste Reduction Law to clarify film plastic collection requirements for covered retailers, and proposals aimed at further reducing paper carryout bag distribution.	Legislative	3 years Propose – 2023 Begin – 2024	DEC, bag manufacturers, retailers, consumers
Support the advancement of community level reuse and repair programs and the existing network of Repair Café initiatives, to increase product lifespan	DEC	Ongoing	Municipalities, repair services, reuse and repair organizations and businesses
Establish a targeted grants funding program to support reuse.	DEC	5 years Propose – 2024 Begin – 2028	Reuse sector, municipalities
<b>Reduction and Prevention</b>			
Participate in workgroups with local organizations working toward waste reduction solutions to assist with dissemination of information and technical assistance to local communities.	DEC	Ongoing	Municipalities, environmental organizations

Assess and explore how to increase opportunities for furniture and home furnishing reuse for communities.	DEC	3 years Begin – 2024	Furniture manufacturers, retail, municipalities, donation organizations, OGS
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## Recycling and Recycling Market Development and Resiliency

Recycling is subject to changes in markets, technology, and global policy, which can lead to challenges with business and process consistency. An effective recycling system should be designed and operated and financed in a way that can provide stability and resiliency in the face of changes in markets, policy, and technology as well as environmental threats such as climate change. The following Goals and Actions are intended to help support stable recycling systems.

<b>Goal: Support residential recycling through education, outreach, and the advancement of policies.</b>			
<b>Action Items</b>	<b>Implementation Lead</b>	<b>Time to Implement</b>	<b>Other Key Stakeholders</b>
Support proposals, such as EPR for paper and packaging, that motivate producers to reduce the amount of paper and packaging material entering households.	Legislative	5 years Propose – 2023 Begin – 2027–2029	DEC, producers, manufacturers, environmental organizations, municipalities, consumers
Support proposals, such as the development of an interagency Bottle Bill task force, that will reduce fraud in the Returnable Container Act.	Legislative	3 years Propose – 2023 Begin – 2025	DEC, DTF, DAM, DOB, OSC
Support infrastructure development to increase access to reuse and recycling opportunities for traditional and non-traditional recyclables at multi-family housing units and residential campuses through technical assistance, education, and funding.	Legislative	5 years Propose – 2025 Begin – 2027	DEC, OGS, ESD
Increase research collaborations and expand upon existing partnerships to improve residential recycling education.	DEC	Ongoing	Municipalities, recycling organizations, CSMM
Increase partnerships with community organizations to increase the public’s knowledge of correct disposal and recycling practices through community education programs and social media campaigns.	DEC	Ongoing	Municipalities, recycling organizations, businesses, CSMM
Continue working with the NYS Center for Sustainable Materials Management to further support and expand upon the Recycle Right NY campaign.	DEC	Ongoing	CSMM

Increase outreach to households to improve awareness of existing product-specific recycling opportunities, for items such as electronics, batteries, paint, etc.	DEC	Ongoing	Municipalities, recycling organizations, CSMM
Emphasize outreach efforts by local planning units in review of Local Solid Waste Management Plans (LSWMPs) and biennial updates.	DEC	Ongoing	Planning units, municipalities
Expand funding and promotion of MWRR grant opportunities to improve municipal recycling physical infrastructure and municipal education, promotion, planning, and coordination programs. Where possible, prioritize new grant funding opportunities for projects located in DACs and/or that have positive climate change outcomes.	DEC	3–5 years  Funding Increase Request – 2024  Promotion efforts – Ongoing	Legislature, municipalities
Improve the implementation of the Returnable Container Act (Bottle Bill), by creating a public data system of all the beverages where a deposit has been initiated.	DEC	3 years  Funding Request – 2024  Begin – 2025	Legislature, deposit initiators, redemption centers, DTF, DAM, DOB, OSC
Improve the implementation of the Returnable Container Act by advancing regulations that clarify key requirements.	DEC	3 years  Propose – 2023  Begin –2025	Deposit initiators, redemption centers, DTF, DAM

<b>Goal: Support commercial, industrial, and institutional waste generators to improve recycling practices through education and technical assistance.</b>			
<b>Action Items</b>	<b>Implementation Lead</b>	<b>Time to Implement</b>	<b>Other Key Stakeholders</b>
Support proposals, such as EPR for paper and packaging, that motivate producers to reduce the amount of paper and packaging material entering businesses and institutions.	Legislative	5 years  Propose – 2023  Begin – 2027–2029	DEC, producers, manufacturers, environmental organizations, municipalities, consumers

Develop and distribute technical guidance documents, resources, and tools about alternative business practices, technologies, and options related to recycling.	DEC	3 years Begin – 2024	Municipalities, recycling organizations, CSMM
Encourage and educate about existing predetermined beneficial uses of materials such as glass for cement and aggregate, ash reuse, and other beneficial uses for material traditionally considered waste products which are currently authorized. Identify procedures by which generators or users can petition for case-specific beneficial use determinations.	DEC	3 years Begin – 2023	Municipalities, recycling facilities, glass industry, construction industry
Support innovation in traditional waste product alternative uses to retain value and divert waste.	DEC	Ongoing	Municipalities, recycling organizations, CSMM

**Goal: Partner with K–12 schools, colleges, and universities to educate, engage, and empower students to develop better recycling habits and enhance school recycling programs.**

Action Items	Implementation Lead	Time to Implement	Other Key Stakeholders
Support colleges and universities, including through working with SUNY ESF and the Center for Sustainable Materials Management, in improving their recycling programs through the development of guidance, education material, and technical support.	DEC	Ongoing	Municipalities, colleges and universities within New York State, CSMM, recycling organizations, recyclables processors
Encourage local planning units to partner with schools in their jurisdiction to implement integrated recycling programs.	DEC	Ongoing	Planning units, school districts

**Goal: Reduce waste disposal through innovative policy approaches.**

Action Items	Implementation Lead	Time to Implement	Other Key Stakeholders
Support a disposal disincentive surcharge (fee per ton) on all waste landfilled or combusted in New York State and all waste generated in New York State being sent for landfilling or combustion out-of-state to provide financial support for reduction, reuse, and recycling projects.	Legislative	3 years Propose – 2024 Begin – 2027	Municipalities, waste industry, businesses, consumers

Support proposals for a minimum level of recycled content in certain products and packaging to support end markets.	Legislative	6 years Propose – 2023 Begin – 2029	Municipalities, waste industry, businesses, consumers
Support policy approaches that increase the capture and use of building deconstruction materials and recovered aggregate for a variety of applications. This may include government requirements (e.g., procurement standards, bid specifications, etc.) to include recycled or reused deconstruction materials.	Legislative, DEC	5 years Propose – 2024 Begin – 2026	OGS, ESD, municipalities, general contractors, construction industry
Support policy approaches that incentivize public-private partnership for recycling facility development.	Legislative, DEC	5 years Propose – 2025 Begin – 2030	Municipalities, ESD, recycling facilities, construction industry
Promote source separation and recycling in the transportation sector (i.e., public and private paved surface construction and maintenance).	DEC	Ongoing	DOT, municipalities, construction industry
Partner with colleges and universities within New York to provide technical information to product designers and manufacturers to educate them on packaging and product design that is compatible with recycling systems in North America.	DEC	3 years Begin – 2024	Colleges and universities, CSMM, product packaging manufacturers, recycling industry

<b>Goal: Increase knowledge of and pathways for increased textile and furniture circularity.</b>			
<b>Action Items</b>	<b>Implementation Lead</b>	<b>Time to Implement</b>	<b>Other Key Stakeholders</b>
Support EPR for the management of clothing, shoes, other textiles, and furniture.	Legislative	5 years Propose – 2024 Begin – 2029	DEC, textiles industry, manufacturers, retailers, environmental organizations, municipalities, waste management industry, consumers
Promote existing procurement guidelines and necessary updates to encourage and	DEC	5 years	OGS, textiles industry, textiles retailers

support sustainable textile purchasing and textile recycling by state agencies.		Begin – 2024	
Work with colleges and universities within New York to better understand textile donation and recycling rates and current limitations in order to create a roadmap to increase textile diversion and recycling in New York and reduce exports and disposal.	DEC	3 years Begin – 2024	Colleges and universities, textiles industry, CSMM, textile donation, recycling, and reuse organizations

<b>Goal: Utilize collaborative partnerships to research and promote recycling strategies and strengthen information-sharing networks for recycling.</b>			
<b>Action Items</b>	<b>Implementation Lead</b>	<b>Time to Implement</b>	<b>Other Key Stakeholders</b>
Maintain partnerships with colleges and universities within New York to create guidance documents and tools to create recycling education programs informed by science for use by the general public, businesses, government, schools, and other organizations.	DEC	Ongoing	Colleges and universities, municipalities, businesses, institutions, consumers, school districts
Facilitate relationships among recycling coordinators from planning units in each DEC Region by coordinating the formation of regional materials management working groups to encourage information sharing, collaboration, and problem-solving for regional materials management challenges.	DEC	Ongoing	Planning units, municipalities, CSMM
Continue to work with NYSP2I to provide outreach, education, and technical assistance across all sectors to utilize raw materials more efficiently, utilize manufacturing by-products on-site, and identify reuse opportunities for manufacturing by-products.	DEC	Ongoing	NYSP2I

<b>Goal: Support efforts in New York and the Northeast to build capacity for processing secondary material commodities collected for recycling.</b>			
<b>Action Items</b>	<b>Implementation Lead</b>	<b>Time to Implement</b>	<b>Other Key Stakeholders</b>
Support colleges and universities within New York in researching recycling market challenges, plastics recycling, and glass processing innovations for New York State.	DEC	Ongoing	CSMM, Center for Glass Innovation, Center for Plastic Recycling Research and Innovation, NYSP2I

<b>Goal: Encourage the development and expansion of recycling markets by demonstrating the state’s ability to “lead by example.”</b>			
<b>Action Items</b>	<b>Implementation Lead</b>	<b>Time to Implement</b>	<b>Other Key Stakeholders</b>
Support the GreenNY Council to advance greater purchasing of products with recycled content as well as the purchase of recycled products (compost, etc.) by state agencies.	The GreenNY Council	Ongoing	DEC
Support the GreenNY Council in their work with individual state agencies on conducting waste audits and other materials management improvements.	The GreenNY Council	Ongoing	DEC
Support the GreenNY Council in their effort to ensure all state agency operations have strong recycling and organics diversion programs.	The GreenNY Council	Ongoing	DEC



## Product Stewardship and Extended Producer Responsibility

Key strategies to achieving the 2032 and 2050 vision and Goals of the Plan are product stewardship and Extended Producer Responsibility (EPR), to minimize the environmental impacts from the improper end-of-life disposal of products and packaging. Product stewardship is a shared responsibility approach that can be either voluntary or required by law. EPR is a mandatory type of product stewardship requiring the passage of legislation to ensure a manufacturer’s responsibility for its products extends to postconsumer management of those products. EPR policy shifts the financial and managerial responsibility (with government oversight) of end-of-life products upstream to the manufacturer and away from the public sector and consumers. EPR programs can also be structured to provide incentives to manufacturers to incorporate environmental considerations into the design of their products and packaging. The effects of comprehensive product stewardship and EPR can thread across waste prevention, waste reduction, reuse, and recycling, depending on the product or commodity. When manufacturers are required to move away from disposal and toward recycling management, it drives future product and commodity decisions toward waste prevention, reduction, and reuse ideals as part of the product or commodity design, as well as designing for better recyclability for any materials that may remain at the end of life. Accordingly, while product stewardship and EPR is an important stand-alone Focus Area presented here, these strategies will also be referenced below in both the Waste Prevention, Waste Reduction, and Reuse Focus Area, as well as the Recycling and Recycling Market Development and Resiliency Focus Area as the policy impacts are vital components of those Focus Areas as well.

<b>Goal: Promote the development and passage of EPR legislation for packaging and paper products.</b>			
<b>Action Items</b>	<b>Implementation Lead</b>	<b>Time to Implement</b>	<b>Other Key Stakeholders</b>
Support broad packaging and paper product legislation to include all types of packaging and all paper products by all generators, to have the greatest effect on waste reduction, reuse, and recycling possible.	Legislative	5 years  Propose – 2023  Begin – 2027–2028	DEC, producers, manufacturers, environmental organizations, municipalities, retailers, consumers

<b>Goal: Work to improve the state’s existing product stewardship and EPR programs.</b>			
<b>Action Items</b>	<b>Implementation Lead</b>	<b>Time to Implement</b>	<b>Other Key Stakeholders</b>
<b>Electronic Equipment Recycling and Reuse Act</b>			
Support overall improvements to e-Waste program performance, for example, by moving away from a target-based collection approach to a consumer-convenience model.	Legislative	3 years  Propose – 2024  Begin – 2027	DEC, covered electronic equipment manufacturers, collectives, e-waste recyclers, e-waste consolidation facilities, e-waste collection sites, out-of-state collectors, retailers, municipalities, consumers
Provide outreach to the regulated community and consumers regarding the manufacturers’ requirements of recently adopted Part 368 regulations for electronic waste (e-waste) collection, recycling, and management and how the regulations provide for the free and convenient collection of e-waste from consumers in New York State.	DEC	Ongoing	Covered electronic equipment manufacturers, collectives, e-waste recyclers, e-waste consolidation facilities, e-waste collection sites, out-of-state collectors, retailers, municipalities, consumers
<b>Rechargeable Battery Recycling Law</b>			
Support amendments to the Rechargeable Battery Law to require the collection and recycling of additional consumer battery types (e.g., alkaline, electric and hybrid vehicle batteries, etc.) to an already successful EPR program.	Legislative	3 years  Propose – 2024  Begin – 2027	DEC, rechargeable battery manufacturers, retailers, consumers

Increase program compliance monitoring and enforcement in accordance with existing statute to improve manufacturer engagement, retailer participation, and consumer convenience.	DEC	Ongoing	DEC, producer responsibility organizations, rechargeable battery manufacturers, retailers of rechargeable batteries and rechargeable battery-containing products, consumers
<b>Mercury Thermostat Collection Law</b>			
Support amendments to the existing law to extend the program beyond the January 1, 2024 sunset date and to improve overall program performance.	Legislative	2 years  Propose – 2023  Effective – 2024	DEC, thermostat manufacturers, contractors, environmental organizations
<b>Postconsumer Paint Collection Program</b>			
Amend the Part 373 Universal Waste regulations and the Part 360 series regulation to help streamline the management of postconsumer paint in New York.	DEC	1 year  Underway  Effective – 2024	Paint industry, PaintCare, municipalities, paint retailers, environmental organizations
Promulgate regulations to implement the Postconsumer Paint Collection Program Law and to improve overall program performance.	DEC	3 years  Propose – 2025  Effective - 2027	Paint industry, PaintCare, municipalities, paint retailers, environmental organizations
Prioritize development of a recycled-content paint specification under Executive Order 4 to help promote and support the paint recycling infrastructure in New York State.	DEC	2 years  Begin – 2023  Effective – 2025	OGS, paint manufacturers

<b>Pharmaceutical Take Back Act</b>			
Continue to assist the Department of Health (DOH) in ensuring the state’s drug take back program is as convenient as possible to state residents.	DOH	Ongoing	DEC
<b>Carpet Collection Program</b>			
Work with the regulated community to develop and implement the newly enacted Carpet Collection Program, which requires carpet producers to either individually or collectively establish an acceptance program for end-of-life carpet by July 1, 2026 in a manner free and convenient to NYS consumers.	DEC	Ongoing	Carpet producers, artificial turf producers, producer responsibility organization(s), retailers, installers, consumers, municipalities, recyclers, carpet stewardship advisory board members

<b>Goal: Promote the development and passage of EPR framework legislation, as well as EPR legislation for priority products.</b>			
<b>Action Items</b>	<b>Implementation Lead</b>	<b>Time to Implement</b>	<b>Other Key Stakeholders</b>
Support creation of a consistent framework for new EPR programs. The “framework” EPR legislative approach would establish a comprehensive process for recommending, developing, proposing, and passing new EPR laws that follow best practices (e.g., producer responsibility and engagement, sustainable program funding, sufficient consumer convenience, government compliance oversight, and comprehensive consumer education and outreach, etc.).	Legislative	5 years  Propose – 2025  Begin – 2026	DEC, product manufacturers, environmental organizations, municipalities, retailers, consumers

<p>Support EPR requirements specifically targeting products with the greatest GHG impacts, products that will drive the renewable economy to reach CLCPA emissions reduction goals, and/or products that pose significant end-of-life management challenges due to their size, composition, or toxicity, etc., and for which there are limited opportunities available for proper end-of-life management. Potential products beyond the packaging and paper product identified above to target for EPR legislation include, but are not limited to, mattresses, tires, solar panels, wind turbine blades, vaping devices, all batteries, refrigerant-containing appliances, compressed gas cylinders, and HHW.</p>	<p>Legislative</p>	<p>5 years</p> <p>Propose – 2023–2027</p> <p>Begin – 2025–2032</p>	<p>DEC, product manufacturers, environmental organizations, retailers, municipalities, consumers</p>
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## Organics Reduction and Recycling

Organic waste represents about one-third of MSW, including food scraps, soiled paper, yard trimmings, and wood. For food purveyors, such as grocery stores or restaurants, organic waste can constitute more than two-thirds of their waste. In addition to the organic waste in MSW, other organic waste materials generated include biosolids from water resource recovery facilities and food processing waste. The reduction and recycling of these materials diverts them from landfilling, where they produce methane, and produces a rich soil product for improving soils. For excess edible food, donation provides a means to assist those in need.

<b>Goal: Prioritize wasted food reduction, food donation, and food scraps recycling programs and initiatives in the commercial, industrial, and institutional sectors.</b>			
<b>Action Items</b>	<b>Implementation Lead</b>	<b>Time to Implement</b>	<b>Other Key Stakeholders</b>
Support expansion to the existing Food Donation and Food Scraps Recycling law to include smaller food scraps generators and eliminate the mileage limit for organics recycling facilities.	Legislative	2 years  Propose – 2024  Begin – 2026	DEC, food scraps generators, food donation organizations, organics recycling facilities, waste transporters, environmental groups
Continue to develop food waste reduction education and outreach specific to the business sector.	DEC	Ongoing	NYSP2I, food scraps generators
Provide additional financial assistance for food banks and emergency food relief organizations to address capacity, transportation, and other needs to capture more food for donation.	DEC	5 years  Begin – 2023	Food donation providers
Encourage partnerships between retailers and food donation organizations.	DEC	Ongoing	Feeding NYS, food retailers
Provide financial assistance and education and outreach to schools to combat food waste.	DEC	5 years  Begin – 2026	School districts, DOH
Support food waste reduction and education strategies for school meals.	DEC	Ongoing	Feeding NYS, DOH, school districts

<b>Goal: Support the continued development of the organics recycling industry in New York State.</b>			
<b>Action Items</b>	<b>Implementation Lead</b>	<b>Time to Implement</b>	<b>Other Key Stakeholders</b>
Allow composting facility operation on municipal park lands.	Legislative	2 years Propose – 2024 Begin – 2026	DEC, OPRHP, municipalities
Establish a requirement for a good faith effort from all state agencies to sustainably manage organic material from their properties	Legislative	5 years Propose – 2024 Begin – 2026	DEC, OGS, all State agencies
Promote additional recycling of all organics, including food processing waste and biosolids.	DEC	Ongoing	Food processors, WRRFs
Provide additional financial assistance for organics recycling infrastructure and outreach, for both public and private facilities.	DEC	3 years Begin – 2025	ESD, municipalities, private facilities
Provide training for yard trimmings compost operators to encourage the addition of food scraps into their operations.	DEC	3 years Begin – 2025	Industry associations
Promote the recycling of food scraps at water resource recovery facilities and yard trimmings composting facilities by providing demonstrations, trainings, and other forms of technical assistance.	DEC	Ongoing	WRRFs
Provide guidance on starting a composting operation for source separated organics.	DEC	2 years Begin – 2025	Municipalities, private facility operators
Provide guidance on starting a food scraps drop-off program that identifies regulations and factors to consider.	DEC	2 years Begin – 2025	Municipalities, private facility operators
Provide financial assistance for local, nonprofit, and small-scale organics collection and processing systems.	DEC	4 years Begin – 2027	Municipalities, nonprofit groups

Partner with the United States Composting Council (USCC) and Compost Research and Education Foundation (CREF) to bring USCC and CREF events and trainings to the State such as the annual Compost Conference and the Compost Operations Training Course.	DEC	3 years Begin – 2023	USCC, CREF
Publish information on successful models for organics collection programs inclusive of multi-family buildings and public housing.	DEC	3 years Begin – 2023	Organizations involved with multi-family building recycling operations

<b>Goal: Empower residents of New York State to properly manage excess food, reduce wasted food, and recycle their food scraps.</b>			
<b>Action Items</b>	<b>Implementation Lead</b>	<b>Time to Implement</b>	<b>Other Key Stakeholders</b>
Develop household food waste prevention materials and educate residents on how to save money while reducing wasted food.	DEC	4 years Begin – 2023	
Partner with Cornell Cooperative Extension and community-led organizations to facilitate master composter classes and composting workshops for residents.	DEC	4 years Begin – 2024	Cornell Cooperative Extension
Provide financial assistance to expand food scraps drop-off programs and local-scale processing opportunities (e.g., farmers' markets, community gardens, transfer facilities, etc.).	DEC	4 years Begin – 2026	
Continue to provide financial assistance to municipalities to expand residential food scraps collection services.	DEC	Ongoing	Municipalities
Assess the accessibility of composting opportunities and resources available for residents, especially in PEJAs and DACs and promote the development of community accessible composting opportunities (community composting, food scraps drop-off programs, residential collection, etc.).	DEC	Ongoing	Affected communities



<b>Goal: Improve and expand markets for products made from organics materials such as compost and digestate.</b>			
<b>Action Items</b>	<b>Implementation Lead</b>	<b>Time to Implement</b>	<b>Other Key Stakeholders</b>
Partner with New York State Department of Agriculture and Markets and industry associations to explore ways to increase the use of compost in the agriculture industry.	DEC	4 years Begin – 2024	DAM
Partner with DOT and industry associations to explore ways to increase the use of compost in large transportation and public works projects.	DEC	5 years Begin – 2024	DOT, construction contractors
Promote the sharing of information between municipalities concerning successful organics management models and programs.	DEC	Ongoing	Municipalities
Partner with compost facility operators and other interested parties to develop guidance on biodegradable products.	DEC	5 years Begin – 2024	Biodegradable packaging producers, biodegradable certification entities
Explore methods to use additional products locally, such as local compost networks with food growers, municipal tree programs, stormwater resiliency projects, individuals, etc.	DEC	5 years Begin – 2025	
Fund additional research to expand markets for compost, digestate, etc.	DEC	5 years Begin – 2025	Academic institutions involved in product use

**Goal: Engage the farming and agriculture community in food donation, recycling organic waste, and using waste-derived organics products.**

Action Items	Implementation Lead	Time to Implement	Other Key Stakeholders
Explore methods (outreach, research, etc.) to emphasize the role waste-derived organics products, such as compost or digestate, can play in improving soil health and resiliency.	DEC	3 years  Begin – 2023	DAM, Cornell University, New York Farm Bureau
Engage farm groups and others to find ways to increase the use of organics on farms.	DEC	Ongoing	DAM, Cornell, New York Farm Bureau
Promote the development of composting facilities on farms that accept off-site organics and the development of anaerobic digestion capacity on farms.	DEC	Ongoing	DAM, Cornell, New York Farm Bureau, Cooperative Extension, Soil and Water Conservation Districts
Explore the increased use of food scraps for animal feed.	DEC	3 years  Begin – 2023	DAM, Cornell, New York Farm Bureau
Enhance current efforts to donate excess edible food from farms.	DEC	3 years  Begin – 2023	DAM, Cornell, New York Farm Bureau, Feeding NYS

## Toxics Reduction in Products

As new products, packaging, and services emerge, there are inevitably toxic materials and contaminants that must be addressed rapidly in order to prevent or mitigate damage or harm to people and the environment. Toxic materials are intentionally added to new products as ingredients that give the product a desired property. In addition, toxics may be found as contaminants derived from chemical reactions, residue on manufacturing equipment, or from recycled content feedstocks. The following goals focus on addressing toxic materials and contaminants in products. Steps taken to achieve the goals listed under this Goal will drive the market toward products that are safer and more appropriate for reuse, remanufacturing, and recycling.

<b>Goal: Leverage partnerships to expand knowledge of harmful chemicals in products to promote their reduction and to enhance materials reuse and recycling</b>			
<b>Action Items</b>	<b>Implementation Lead</b>	<b>Time to Implement</b>	<b>Other Key Stakeholders</b>
Partner with NYSP2I to identify ways toxics can be reduced in manufactured materials, broadening options for beneficial use upon the end of their useful life especially in agricultural or construction uses.	DEC	5 years  Begin – 2023	NYSP2I
Identify and work with industry sectors to find innovative approaches to reduce hazardous chemicals use and waste generation.	DEC	5 years  Begin – 2023	NYSP2I, manufacturers
Partner with the colleges and universities in New York to better understand the presence of toxic materials, such as PFAS, in products and to enhance DEC’s implementation of programs that restrict their use or require their disclosure.	DEC	5 years  Begin – 2023	Colleges and universities, NYSP2I, DOH
Partner with colleges and universities in New York to identify preferable alternatives to the use of toxic chemicals, such as PFAS, in products.	DEC	5 years  Begin – 2023	Colleges and universities, NYSP2I, DOH
Implement statutory restrictions on PFAS in apparel, provide guidance to affected entities to ensure industry compliance, and educate the public on the necessity for this action.	DEC	5 years  Begin – 2023	Textile and apparel manufacturers, distributors, retailers, consumers, environmental organizations

Provide outreach on and enforce the requirements of Subpart 368-2 that establishes standards for the labeling of mercury-added consumer products.	DEC	Ongoing	Manufacturers of mercury-containing products, distributors, consumers, environmental groups
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<b>Goal: Support legislation, policy, and initiatives that reduce the presence of toxic materials and contaminants in products.</b>			
<b>Action Items</b>	<b>Implementation Lead</b>	<b>Time to Implement</b>	<b>Other Key Stakeholders</b>
Support initiatives that ban materials and chemicals that are a growing concern for people and the environment.	Legislative	5 years Propose – 2023  Begin – 2026	DEC, DOH, environmental organizations, manufacturers, consumers
Support implementation of chemical restrictions in a way that acknowledges scientific consensus and existing standards and better enables a circular economy.	Legislative	5 years Propose – 2023  Begin – 2025	DEC, DOH, environmental organizations, manufacturers, consumers
Develop and advance regulations that require greater disclosure of ingredients in products.	DEC	3 years  Begin – 2023	Product manufactures, environmental organizations, DOH, manufacturers, consumers
Support efforts to restrict the presence of toxic materials and contaminants in the products New York State purchases.	OGS	Ongoing	DEC, DOH, environmental organizations, manufacturers, consumers
Increase support for research and assessment of plastic pollution and microplastics/microfibers.	DEC	5 years  Begin – 2024	Plastics industry, environmental organizations
Develop regulations to guide the disclosure of chemicals present in children’s products and advance an online system to make this information available to the public.	DEC	Ongoing	Manufacturers, environmental organizations, DOH, consumers
Convene the Children’s Product Safety Council and consider their recommendations on chemicals that should be restricted from children’s products.	DEC	5 years  Begin – 2023	Product Safety Council, DOH

Develop regulations to guide the disclosure of ingredients in cleaning products and advance an online system to make this information available to the public.	DEC	Ongoing	Manufacturers, DOH, environmental organizations, consumers
Participate in the Interstate Toxics in Packaging Clearinghouse to assure compliance with the restrictions on lead, cadmium, mercury, and hexavalent chromium in packaging.	DEC	Ongoing	Toxics in Packaging Clearinghouse and member states
Provide outreach and education material to make affected entities aware of the restrictions on PFAS in food packaging.	DEC	Ongoing	OGS
Develop regulations to guide the restriction of 1,4-Dioxane in cleaning, personal care, and cosmetic products.	DEC	Ongoing	DOH, manufacturers, environmental organizations, consumers
Develop regulations to guide the restriction of applicable flame-retardant chemicals in upholstered furniture, mattresses, and electronic displays.	DEC	Ongoing	DOH, manufacturers, environmental organizations, consumers

## Design and Operation of Solid Waste Management Facilities and Related Activities

Solid waste management facilities are critical to the proper management of waste generated in the State. A variety of facilities are needed to receive wastes, from organics recycling facilities and recyclables handling and recovery facilities to landfills and combustion facilities. Others are needed to provide intermediate services such as collection and transfer. All these facilities must be operated in a way that is protective of human health and the environment. To ensure that these facilities operate in an environmentally sound manner, appropriate regulatory controls are required.

<b>Goal: Maintain regulations governing the design and operation of solid waste management facilities to ensure that those facilities are protective of groundwater and other environmental</b>			
<b>Action Items</b>	<b>Implementation Lead</b>	<b>Time to Implement</b>	<b>Other Key Stakeholders</b>
Amend solid waste facility regulations based on new legislation, continuing evaluation of technical standards and criteria, and feedback from the regulated community. Updated regulations will implement new laws related to paint recovery, food scrap recovery, and improved materials management procedures at mulch and C&D debris facilities on Long Island. Amendments will also allow for greater reuse of concrete, asphalt, rock, and brick, while increasing regulatory control on contaminated soil, enhancing design requirements for solid waste landfills, and easing regulatory requirements some municipal facilities in order to encourage greater collection of recyclables.	DEC	Ongoing	Regulated community, public, environmental groups, professional organizations
Incorporate climate impact criteria and related design and operating requirements into solid waste facility regulations to facilitate achievement of GHG reduction goals.	DEC	3 years Begin – 2023	Regulated community, public, environmental groups, professional organizations

<b>Goal: Encourage increased reuse of C&amp;D debris, including excavated material.</b>			
<b>Action Items</b>	<b>Implementation Lead</b>	<b>Time to Implement</b>	<b>Other Key Stakeholders</b>
Develop new outreach and education efforts focused on excavated material and new regulatory changes related to reuse of excavated material in order to maximize reuse of the material and reduce both legal disposal and illegal dumping.	DEC	4 years  Begin – 2023	Regulated community, construction industry
Establish methods for collecting data on C&D debris generation and management, including identification of regional characteristics and opportunities for increased diversion from disposal.	DEC	5 years  Begin – 2023	Regulated community, construction industry

<b>Goal: Enforce solid waste regulations to enhance compliance.</b>			
<b>Action Items</b>	<b>Implementation Lead</b>	<b>Time to Implement</b>	<b>Other Key Stakeholders</b>
Increase electronic reporting to facilitate timely data reporting, data evaluation, compliance determinations, and enforcement.	DEC	3 years  Begin – 2023	Regulated community
Increase the use of drones and other new technologies to assess facility performance.	DEC	3 years  Begin – 2023	Regulated community
Develop policy to implement the requirement in Part 360 that mandates that solid waste management facilities (SWMFs) effectively control nuisance odor.	DEC	1 year  Begin – 2023	Regulated community, public, environmental groups
Implement new policy for streamlining review of most typical case-specific beneficial use determination petitions. This policy will provide petitioners with application criteria and will speed review by establishing standard review criteria that will be implemented by regional program staff.	DEC	1 year  Begin – 2023	Regulated community

<b>Goal: Provide technical assistance to solid waste management facilities to improve operations.</b>			
<b>Action Items</b>	<b>Implementation Lead</b>	<b>Time to Implement</b>	<b>Other Key Stakeholders</b>
Develop guidance to help facilities remain in compliance with the regulatory criteria and to improve operations.	DEC	4 years Begin – 2023	Regulated community
Contact facilities and others to determine what types and means of assistance are needed.	DEC	5 years Begin – 2023	Regulated community
Facilitate cooperative discussions between facilities to solve common problems.	DEC	5 years Begin – 2023	Regulated community

<b>Goal: Minimize GHG emissions from solid waste management facilities.</b>			
<b>Action Items</b>	<b>Implementation Lead</b>	<b>Time to Implement</b>	<b>Other Key Stakeholders</b>
Incorporate improved methane monitoring technologies into facility operations and existing monitoring programs for landfills, anaerobic digesters, etc. Identify mitigation measures that landfill operators must implement in order to eliminate fugitive emissions.	DEC	5 years Begin –2023	Regulated community
Implement design and operational practices for further emissions reduction.	DEC	5 years Begin – 2023	
Amend regulations as needed to enhance GHG emission monitoring and leak reduction.	DEC	5 years Begin – 2024	
Implement policies, procedures, and regulatory revisions to apply CLCPA evaluation requirements to solid waste management facility permitting activities. Investigate mitigation methods at landfills that would reduce the impact on CLCPA goals, including identification of methane-generating wastes and pre-processing to reduce potential for GHG emissions or redirection of those wastes to alternative facilities (e.g., organics composting, MSW composting, anaerobic digestion, etc.) where GHG emissions are reduced.	DEC	Ongoing	



<b>Goal: Investigate innovative means of reducing environmental impacts from solid waste management activities.</b>			
<b>Action Items</b>	<b>Implementation Lead</b>	<b>Time to Implement</b>	<b>Other Key Stakeholders</b>
Support changes and evaluate funding mechanisms to support purchasing and use of on-site organics processing equipment (e.g., small-scale anaerobic digesters, etc.) at apartment buildings, convention centers, restaurants, schools, and other locations that generate significant amounts of food scraps and other organic wastes.	Legislative	5 years  Propose – 2024  Begin – 2026	Climate Action Council, DEC, ESD, organic waste generators, building/facility owners
Support efforts to require solidification of industrial, commercial, or remedial wastes that contain PFAS compounds prior to disposal in solid waste landfills.	Legislative, DEC	1–5 years  Propose – 2024  Begin – 2028	Waste generators, DEC, solid waste landfills
Investigate available technologies for solidification of landfill leachate and feasibility of requiring landfills to solidify leachate for landfill disposal, which would reduce loading of contaminants, including emerging contaminants, in WRRFs and reduce contamination of downstream materials, such as biosolids.	DEC	2 years  Begin – 2023	Regulated community, WRRFs
Investigate alternative management methods for ash generated by MWCs, including initial separation of bottom ash from fly ash and air pollution control equipment residues, in order to maximize reuse opportunities especially related to bottom ash.	DEC	3 years  Begin – 2023	Regulated community, construction industry, municipal highway departments, DOT
Investigate opportunities for new case-specific beneficial use determinations to be added to Part 360 in future rulemakings, especially for materials such as ash, slag, glass, and other materials that could provide significant waste diversion if clear reuse options and materials sources and markets could be established.	DEC	5 years  Begin – 2023	

<b>Goal: Improved data collection and analysis processes and methodologies related to solid waste management.</b>			
<b>Action Items</b>	<b>Implementation Lead</b>	<b>Time to Implement</b>	<b>Other Key Stakeholders</b>
Identify and categorize commercial and industrial infrastructure in New York utilizing records from other state agencies and/or Standard Industrial Classification (SIC) codes or other system classifications.	DEC	3 years  Begin – 2023	
Investigate and utilize innovative methods and web-based tools (e.g., surveys, electronic data requests, etc.) to collect information on waste generation, reduction, reuse, and recycling from commercial and industrial generators and generators of C&D debris.	DEC	Ongoing	
Identify methods of extrapolating data reported by portions of the commercial and industrial waste sectors in order to estimate total generation and diversion in each sector.	DEC	3 years  Begin – 2023	
Implement electronic annual reporting options for solid waste management facilities.	DEC	3 years  Begin – 2023	
Implement electronic annual reporting options for waste transporters.	DEC	3 years  Begin – 2023	
Identify discrepancies or data gaps in data collected from solid waste management facilities and design methods to improve data collection and validation.	DEC	2 years  Begin – 2023	
Implement methods of differentiating and analyzing data related to recyclables handling and recovery facilities based on facility design (e.g., dual stream, single stream, drop-off, etc.)	DEC	1 year  Begin – 2023	

<b>Goal: Support improvements to grant programs for municipal waste reduction and recycling</b>			
<b>Action Items</b>	<b>Implementation Lead</b>	<b>Time to Implement</b>	<b>Other Key Stakeholders</b>
Support new funding for municipal landfill closure and landfill gas management grant program. Existing waiting list projects require total funding of approximately \$10 million, and applications for 6 of the 10 current waiting list projects have waited more than 10 years for reimbursement. At current funding levels, it will take more than 36 years to reimburse municipalities for their investments in landfill cover and gas management systems.	Legislative	1 year  Propose – 2024  Begin – 2025	DEC, municipalities
Explore opportunities to convert current program to a direct funding system if disposal surcharge legislation is enacted.	Legislative	5 years  Propose – 2025  Begin – 2028	DEC, municipalities
Continue to investigate improvements and modifications to the MWRR grant programs. Significant improvements to the MWRR grant regulations were implemented in 2017, but additional streamlining and program improvements may be available that will speed up review times and reduce wait times for reimbursement to municipalities.	DEC	Ongoing	Municipalities

<b>Goal: Implement legislative changes related to local solid waste management planning and evaluate potential modifications and improvements to local solid waste management planning (LSWMP) processes and procedures.</b>			
<b>Action Items</b>	<b>Implementation Lead</b>	<b>Time to Implement</b>	<b>Other Key Stakeholders</b>
Support requirements for municipalities to develop and implement LSWMPs, or to become affiliated with planning units with approved LSWMPs.	Legislative	5 years  Propose – 2024  Begin – 2027	Municipalities
Identify legislative opportunities that impact LSWMP requirements and apply them to program procedures and prepare draft rulemaking to implement changes as necessary	DEC	5 years  Begin – 2023	Municipalities
Evaluate internal procedures utilized to implement program and apply adjustments to improve delivery of program and to support local planning efforts.	DEC	Ongoing	Municipalities

Apply particular focus on planning units that have not pursued new or updated plans and on municipalities that are unaffiliated with a planning unit and have not completed a CRA.	DEC	3 years Begin – 2023	Municipalities
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<b>Goal: Improve implementation of Site Investigation and Mitigation programs.</b>			
<b>Action Items</b>	<b>Implementation Lead</b>	<b>Time to Implement</b>	<b>Other Key Stakeholders</b>
Support funding under Article 27, Title 12 to reimburse municipalities that have implemented mitigation and remediation at solid waste sites that have impacted drinking water sources, and prepare plans for a grant program that would provide for distributing these funds.	Legislative	5 years Propose – 2025 Begin – 2027	Municipalities
Evaluate new opportunities to provide funding for municipal programs that collect and dispose of waste tires.	Legislative	5 years Propose – 2025 Begin – 2030	Municipalities
Continue to implement Inactive Landfill Investigation (ILI) program and implement revised procedures to program implementation as necessary.	DEC	Ongoing	Landfill owners
Issue ILI annual report every July as required by Article 27 Title 12.	DEC	Ongoing	
Establish policy for identifying, investigating, and mitigating illegal waste tire disposal sites, establishing standard procedures for identifying illegal disposal sites and establishing time frame for mitigation, provide options for self-mitigation by property owners, establish standard consent order language that allows site access for DEC contractors to mitigate sites if landowners fail to do so, and provide methods for documenting completion of mitigation activities.	DEC	1 year Begin – 2023	Regulated community
Review results from research conducted under memoranda of understanding with SUNY universities for program and regulatory adjustments that would enhance diversion and reuse of waste tires.	DEC	2 years Begin – 2023	
Work with New York Farm Bureau and other interested groups to investigate strategies and potential programs to reduced waste tire use on farms and for processing of waste tires currently used on farms.	DEC	3 years Begin – 2023	New York Farm Bureau, farming community

## 7. Waste Projections and Goals 2023–2032

The Implementation of Focus Area Goals section lays out an array of 168 Action Items that must be tackled during the planning period of this Plan, from 2023–2032. These Action Items include a combination of proposed legislative actions and DEC programmatic actions. They also require strategic partnerships with key stakeholders. If those actions are completed and the programs fully implemented, the goals for reduction in landfilling of waste found in the draft Scoping Plan of the CLCPA can be achieved by 2050. Many of the Action Items require both an action, such as a piece of legislation, but also robust implementation of an ongoing program that will have impacts beyond 2032 and 2050. Table 6 below provides targets for waste projections and projected recycling rate goals for each of the main categories of the total waste stream until 2050. The projections for recycling rates from 2023–2050, found in Table 7, are based on time of implementation outlined for the Action Items and an assessment of how each Goal will affect waste reduction, reuse, and recycling and the reduction in disposal and combustion. By the end of 2032, it is projected that the recycling rate for the total waste stream will be 60%, and it will increase to 85% by the end of 2050.

For MSW alone, New Yorkers sent 4.09 pounds of MSW per person per day, or 0.75 tons per person per year, to disposal facilities in 2018. The Plan seeks a progressive reduction in the amount of MSW disposed, to reach the ultimate goal of reducing disposal to 0.72 pounds per person per day by 2050. See Table 7 for incremental goals during the period for the reduction in disposal of MSW. The goal applies to the State as a whole; each planning unit must develop its own baseline and progressive goals and actions, and the amount achieved will vary from one planning unit to another. Additional details and supporting information for the waste projections and goals are included in Appendix H.

Table 6. New York waste projections from 2023–2050

New York State Waste Projections 2023 - 2050									
		2018	2023	2025	2027	2030	2032	2040	2050
MSW	Tons Generated	17,889,980	17,889,980	17,889,980	17,889,980	17,889,980	17,889,980	17,889,980	17,889,980
	Tons Diverted	3,399,096	3,935,796	4,651,395	5,724,794	7,155,992	9,123,890	11,628,487	15,206,483
	Recycling Rate (%)	19%	22%	26%	32%	40%	51%	65%	85%
CDD	Tons Generated	18,360,987	18,360,987	18,360,987	18,360,987	18,360,987	18,360,987	18,360,987	18,360,987
	Tons Diverted	11,751,032	12,301,861	13,219,911	13,770,740	14,321,570	14,688,790	15,056,009	15,606,839
	Recycling Rate (%)	64%	67%	72%	75%	78%	80%	82%	85%
Industrial	Tons Generated	1,932,296	1,932,296	1,932,296	1,932,296	1,932,296	1,932,296	1,932,296	1,932,296
	Tons Diverted	560,366	618,335	695,627	869,533	1,062,763	1,255,992	1,449,222	1,642,452
	Recycling Rate (%)	29%	32%	36%	45%	55%	65%	75%	85%
Biosolids	Tons Generated	1,372,854	1,372,854	1,372,854	1,372,854	1,372,854	1,372,854	1,372,854	1,372,854
	Tons Diverted	302,028	425,585	453,042	480,499	507,956	535,413	617,784	782,527
	Recycling Rate (%)	22%	31%	33%	35%	37%	39%	45%	57%
Bulk/Heavy Metals	Tons Generated	2,692,161	2,692,161	2,692,161	2,692,161	2,692,161	2,692,161	2,692,161	2,692,161
	Tons Diverted	2,369,102	2,369,102	2,396,023	2,422,945	2,422,945	2,476,788	2,503,710	2,557,553
	Recycling Rate (%)	88%	88%	89%	90%	90%	92%	93%	95%
Total Waste Stream	Tons Generated	42,248,278	42,248,278	42,248,278	42,248,278	42,248,278	42,248,278	42,248,278	42,248,278
	Tons Diverted	18,381,623	19,650,678	21,415,997	23,268,511	25,471,226	28,080,873	31,255,212	35,795,853
	Recycling Rate (%)	44%	47%	51%	55%	60%	66%	74%	85%

Table 7. Projected MSW recycling rate and per capita waste disposal from 2018–2050

MSW					NYS Population	
	Tons Generated	Tons Diverted	Recycling Rate (%)	Per capita Waste Disposal (lbs/person/day)		
2018	17,889,980	3,399,096	19%	4.09	2018	19,530,351
2023	17,889,980	3,900,016	22%	3.91	2023	19,628,003
2025	17,889,980	4,561,945	26%	3.71	2025	19,667,259
2027	17,889,980	5,760,574	32%	3.37	2027	19,706,593
2030	17,889,980	7,191,772	40%	2.97	2030	19,765,713
2032	17,889,980	9,159,670	51%	2.42	2032	19,805,244
2040	17,889,980	11,664,267	65%	1.71	2040	19,963,686
2050	17,889,980	15,224,373	85%	0.72	2050	20,163,323

## 8. Conclusions

This latest version of the *New York State Solid Waste Management Plan* builds upon the solid waste management plans before it, learning from both the successes and the challenges of implementation. While adapting to the obstacles and frustrations that inevitably come with the implementation of a wide-ranging, far-reaching, long-term plan for comprehensive solid waste management planning, it is important to remember New York State's significant achievements over the past 35 years since the Solid Waste Management Act was passed in 1988, transforming from a solid waste management system where less than 3% of the waste stream was recycled to more than 43% of the total waste stream being recycled. There were over 1,800 individual unlined landfills across the state compared to today's system of 25 MSW landfills and 10 MWCs. There was no structural system for comprehensive solid waste management for the State; however, today's system of 69 planning units manages 42 million tons of waste annually and recovers over 43% through a combination of private and public efforts. It is an important reminder of what can be achieved—because New York State is being called upon to collectively move forward once again. Climate change presents a critical impact on the environment, and waste management plays a significant role in helping address the challenges of addressing climate change. Waste management accounts for 12% of the GHG emissions in New York State, on par with the transportation sector. New York State has the tools today to reduce emissions in the waste sector.

This Plan is a guide for legislative action, local solid waste planning decisions, industry practices, university research, and industry innovations to support systems, policies, and practices that will slash GHG emissions today from the waste sector for a more climate secure future, all while conserving valuable natural resources and building a more robust and resilient supply chain for the products used every day.

This Plan sets forth six major Focus Areas:

- Waste Prevention, Reduction, and Reuse
- Recycling And Recycling Market Development and Resiliency
- Product Stewardship and Extended Producer Responsibility
- Organics Reduction and Recycling
- Toxics Reduction in Products
- Design and Operation of Solid Waste Management Facilities and Related Activities

Each Focus Area has a set of 2–10 identified Goals, for a total of 31.

Each Goal has a set of 1–17 identified Action Items, for a total of 168.

Together, these Action Items are designed to move New York State to an 85% total waste stream recycling rate by 2050.

DEC cannot do this alone, and the Action Items indicate the legislative changes needed to successfully implement the Plan. One of the lessons learned from implementation of the last *State Solid Waste Management Plan* is that while projected reductions in the waste stream and increased recovery rates may theoretically be possible, the biggest and boldest actions that have the broadest and most transformative impacts require legislative action.

The three most important Action Items and transformative legislative actions needed are:

- Develop and promote broad packaging and paper product legislation to include all types of packaging and all paper products by all generators, to have the greatest effect on waste reduction, reuse, and recycling possible;
- Expand and amend the existing Food Donation and Food Scraps Recycling law to include smaller food scraps generators and eliminate the mileage limit for organics recycling facilities; and
- Require a per ton disposal disincentive surcharge on all waste landfilled or combusted in New York State and all waste generated in New York State being sent for landfilling or combustion out-of-state to provide financial support for reduction, reuse, and recycling projects.

All three of these recommendations are included in this Plan and in the Climate Action Council's Scoping Plan. Legislative action on packaging and paper EPR, expanding the Food Donation and Food Scraps Recycling Law, and enacting a surcharge on landfilled waste are critical to realize a more sustainable, climate secure, and less wasteful future.

### [Extended Producer Responsibility for Packaging and Paper Products](#)

The importance of an inclusive and expansive packaging and paper product EPR law is critical to help shift the inherent system uncertainties of the existing recycling programs for MSW. Packaging and paper products account for approximately 40% of the MSW stream. A comprehensive EPR program for these materials will be truly transformative as it will drive a fiscal reconfiguration for the entire recycling system. That, in turn, will drive the technical collection and processing reconfigurations that are needed for the entire system. Those changes will in turn drive market demand and stabilization for the industry and insulate municipalities from their current unpredictable and unstable middleman status and return them instead to entities providing municipal services. The system will lead to new practices by manufacturers and product design decisions. The legislative and fiscal responsibility for the management of their products will lead manufacturers to changes in product design or composition that will reduce waste at its source and make products more readily recyclable.



## Expand and Amend the Existing Food Donation and Food Scraps Recycling Law

The current law only addresses the largest commercial generators and has a very small mileage limit to an organics recycling facility for applicability. Food scraps account for approximately 17% of the MSW stream and are a disproportionate contributor to GHG if landfilled instead of reduced or diverted and recycled. The law must be amended to include smaller food scraps generators, including a transition to residential generators, and must eliminate the mileage limit to organics recycling facilities. The mileage limit simply does not match how waste is managed in the state now. The average transportation distance for waste management is currently close to 60 miles and will only increase as the current disposal capacity further concentrates on larger facilities. Much of this waste stream should never become waste in the first place and redirection of wholesome edible food to the food-insecure is by far the most important component of the law and to society in general. The food that cannot be redirected for consumption is readily recyclable and has the greatest impact on GHG emissions if landfilled. There are no societal, humanitarian, or environmental downsides to this action. It is simply common sense and economics. An increase in organics diversion spurs the construction of facilities to manage this waste, lowering the economic costs of recycling and making food donation second nature to businesses and food scraps just another recyclable to manage.

## Disposal Disincentive Surcharge

A per ton disposal disincentive surcharge on all waste landfilled or combusted in New York State and all waste generated in New York State being sent for landfilling or combustion out-of-state would have a two-fold impact on waste management. First, it would increase the cost of waste disposal, thereby incentivizing the reduction and recycling of waste. Second, it is intended for the per ton charge collected to provide direct municipal financial support by being redistributed entirely to municipalities that have approved LSWMPs for their waste reduction, reuse, and recycling costs. This surcharge, even at only a minimal \$5 per ton, could not only help disincentivize disposal, but also generate \$133 million per year in its initial years. Over 30 states already use some form of this successful fee structure. It is time for New York State to act.

While New York State faces significant challenges, this Plan will make a difference. With the support of the people of New York and full legislative commitment, the challenges will turn into opportunities and opportunities into achievements.

Thirty years ago, most households had one trash container in the house and a few garbage cans to drag to the street each week. Today, most households separate recyclables every day and roll at least two containers out each week—one for waste and one or more for recyclables. This is a fundamental societal change that has occurred in just the last few decades, and it happened because state law mandated it and created a funding program to help initiate it. Most New Yorkers support recycling, but this fundamental societal change only happened because New York's Legislature

required separation of recyclables from waste at the curbside. Around the same time, bottles and cans littered roads and streets, and those containers that did not end up on the roadside went into the trash. Today, most households separate their bottles and cans and redeem them to collect their deposits. Unforeseen new subsystems developed, from schools providing container bags that send the deposits directly to their coffers, to people in large cities sustaining themselves by collecting bottles and cans around town. Ultimately this transformation only happened because the Legislature passed the Returnable Container Act, fundamentally changing the way bottles and cans are managed and valued in New York. Perhaps the most amazing part of these transformations is how little disruption they caused. People recognized the progress that the changes represented, and they adapted.

New York State is taking the opportunity to build a nation-leading sophisticated sustainable materials management system. New Yorkers want to reduce, reuse, and recycle, but they need systems to be established in which they can easily do those things. The three priorities identified above provide the foundation to modernize reduction and recycling circular systems.