Solid Waste and Recycling

Background

A solid waste is defined in New Jersey's Solid Waste Regulations[1] as any garbage, refuse, sludge, or any other waste material. Exemptions are made under the regulatory definition, including certain source separated recyclable materials and materials approved for beneficial use, among others. N.J.A.C. 7:26-1.6 and 1.7 provide additional details. The definition of solid waste includes a wide variety of materials that have served or can no longer serve their original intended use that are discarded, intended to be discarded, accumulated in lieu of being discarded, or burned for energy recovery. Solid waste includes residential, commercial, and institutional solid waste which is identified as municipal solid waste. Solid waste also includes items such as construction and demolition debris and bulky waste including appliances and furniture. Certain solid wastes are classified as hazardous wastes and are subject to more stringent management requirements.[2] Certain other materials are exempted from the solid waste definition pursuant to New Jersey's Recycling Regulations if separated from waste materials and managed pursuant to applicable rules through approved recycling facilities. For example, tree branches, limbs, trunks, brush and wood chips that will be received, stored, or processed in accordance with the regulations are exempt from solid waste requirements.[3] N.J.A.C. 7:26A-1.4 provides additional information on exemptions under the recycling regulations. As of January 2021, 7:26A-1.4 is being modified to make the exemptions more practical and useful to more people, as well as more enforceable.

Historically, solid waste was disposed of with relatively unsophisticated methods, including the use of local dumps where waste often was stored for long periods of time in the open air and periodic open burning was practiced to reduce volume. At one time, New Jersey had more than 400 landfills in operation. Many of these old landfills were small, privately-operated sites, and some were poorly managed. In addition to landfills, waste was incinerated, both at relatively large central facilities and at numerous small facilities such as apartment houses. This incineration was essentially uncontrolled, i.e., no technology was used to minimize emissions of particles, acid gases or other pollutants.

With the advent of new pollution-control laws, the practice of waste disposal changed. New Jersey began regulating the handling of waste in 1970. At that time and up until the early 1980s, New Jersey received large amounts of waste from other states. It is estimated that more than 12 million tons of waste per year, much of it from New York and Pennsylvania, were deposited in New Jersey. By the late 1980s, state regulations required the closing of many landfills and incinerators, causing the amount of waste disposed of in New Jersey to decline to less than 6 million tons per year. In the late 1980s and early 1990s, a new generation of municipal solid waste incinerators featured greatly improved emissions controls. During this period, new state-of-the-art landfills replaced older facilities. Also, by the mid-1990s, due to the New Jersey Statewide Mandatory Source Separation and Recycling Act of 1987, recycling of many items, including leaves, glass and metal containers, and many types of paper increased substantially.

(Getty Images, 2021)

Today, the DEP's solid waste management regulations include environmental controls for waste management practices; planning and financing of facilities and systems for waste reduction; recycling; resource recovery, destruction and disposal; and economic regulation and integrity review of the entities involved in waste management. More specifically, in order to dispose, broker, manage, process, or commercially haul solid waste material in New Jersey, the company must obtain an A -901 license which requires a background investigation and approval, along with a Certificate of Public Convenience and Necessity. Additionally, on January 21st, 2020,

the scope of A-901 license requirements was expanded to include the management of Soil and Fill Recyclable Materials through the passage of the "Dirty Dirt" Bill. This amendment to N.J.S.A. 13:1E-127.1 requires the registration and A-901 licensure of any entity that provides soil and fill recycling services including, but not limited to the collection, transportation, disposal, brokerage, treatment, processing, storage, sale or disposition of soil and fill recyclable material to ensure that only companies and individuals who possess the requisite integrity, reliability, expertise, and competency can commercially manage solid and hazardous waste in New Jersey.

New Jersey has been delegated responsibility from EPA for implementing the hazardous waste management program. These regulations parallel the federal hazardous waste regulations that were established through the Resource Conservation and Recovery Act of 1976 and the Hazardous and Solid Waste Amendments of 1984. They provide for the identification of waste classified as hazardous; the registration of hazardous waste generators, transporters, and treatment, storage and disposal facilities; the establishment of the cradle-to-grave manifest tracking system for all hazardous waste shipments; as well as environmental controls on hazardous waste management facilities.

The DEP receives information from disposal facilities on the amounts of wastes disposed, and from municipalities on the amounts of materials recycled. Additional data are also collected from industry sources.

Goals

The DEP has consistently sought to achieve goals of recycling 50 percent of the municipal solid waste stream, and 60 percent of the overall waste stream, as set forth in the Mandatory Source Separation and Recycling Act, enacted in 1987 (N.J.S.A. 13:1E-99.11 et seq.).

Status and Trends

In 2018, the most recent year for which we have complete data, New Jersey generated 23 million tons of solid waste and recycled 13.3 million tons, which is 58 percent of the total amount generated from municipalities and all other sources. This compares to an annual average of 16.5 million tons of solid waste generated in the 1990s, with 58 percent of that total being recycled. Of the 9.7 million tons of solid waste that was not recycled in 2018, 5.7 million tons were disposed of in-state while the remaining 4 million tons were disposed of out-of-state (See Figure 1).

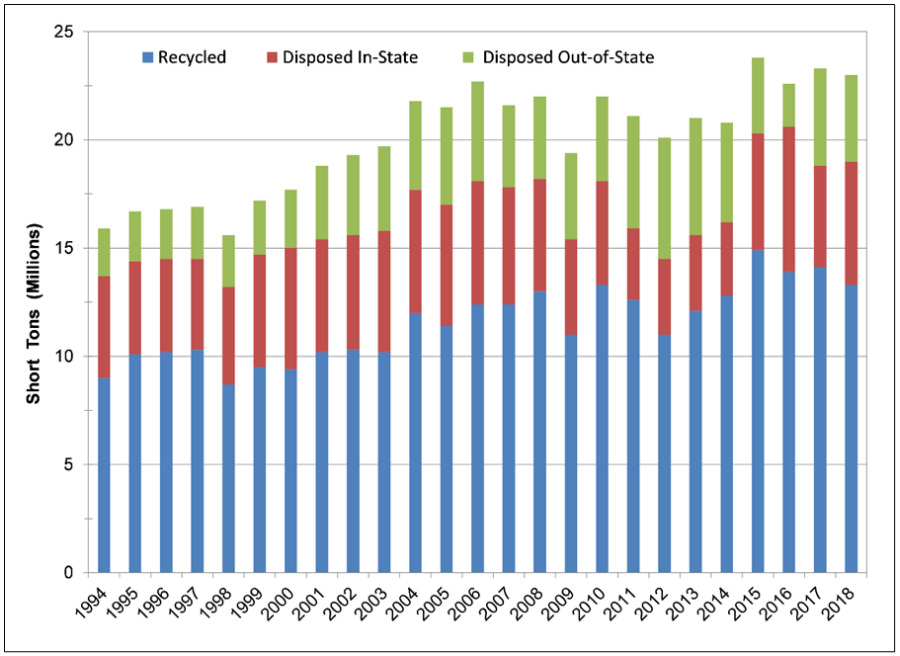

Figure 1. Fate of solid waste generated in New Jersey.

Recycled material includes not only glass, cans, plastic, and newspapers from municipal waste, but also scrap iron, concrete, wood, and other items from commercial waste if source separated and reused. At the time when the Mandatory Source Separation and Recycling Act was passed, many county and municipal recycling programs were already collecting plastics, tin and bimetal cans, white goods (e.g. refrigerators), used motor oils, yard waste, and other materials. The 2018 recycling rate of 58% of all solid waste material falls short of the targeted rate of 60%. Municipal solid waste generated totaled 9.8 million tons, of which 3.8 million tons, or 39%, were recycled (Figure 2). This rate remains below the targeted 50% recycling rate for municipal solid waste. Recycling of municipal solid waste has averaged 41% over the last five years.

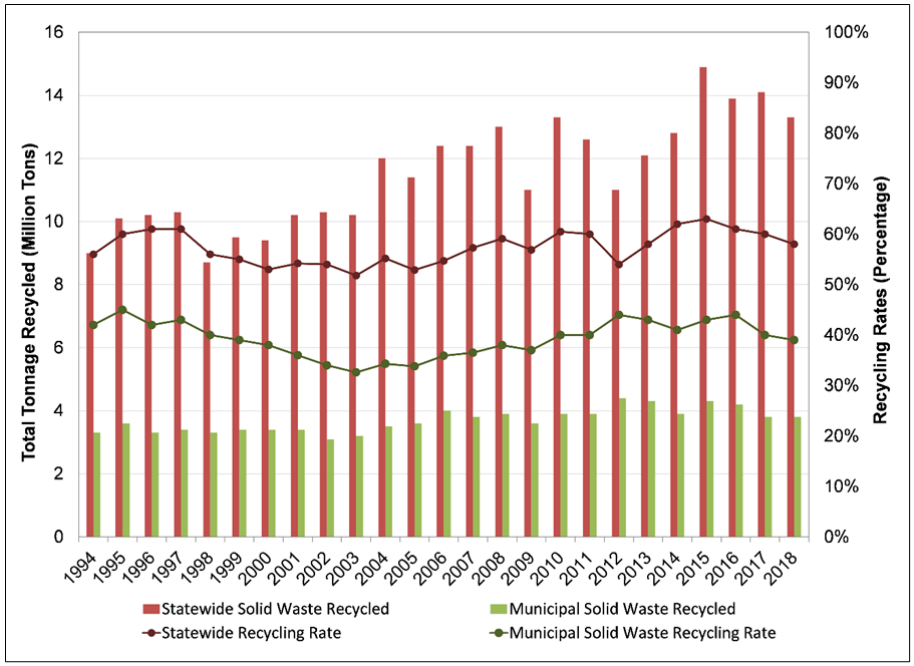

Figure 2. Total annual tons of municipal and statewide solid waste recycled and corresponding annual rates of recycling.

In 2008, the Recycling Enhancement Act was passed. This law assesses a tax of three dollars per ton on all solid waste accepted for disposal or transfer at a solid waste facility and any waste that is transported out of state either directly or through transshipment. This Act calls for 60% of the recycling tax fund to be used for recycling grants to municipalities, and 25% of the fund going to aid counties in preparing, revising, and implementing their solid waste management plans. An additional 5% is provided to the counties for public education and education programs concerning recycling, up to 5% of the fund can be directed to research and education, and 5% is directed to NJDEP for the State recycling program planning and administrative oversight.

While the statewide recycling rate has been in the same range from the 1990s through the present, there is a statistically significant long-term trend of increasing amounts of solid waste generated per person (Kendall-tau correlation $\tau = 0.757$, p-value < 0.001; Figure 3). Unless an increasing percentage of this waste is recycled, this trend means that more waste must be disposed of in landfills or Resource Recovery Facilities (incinerators).

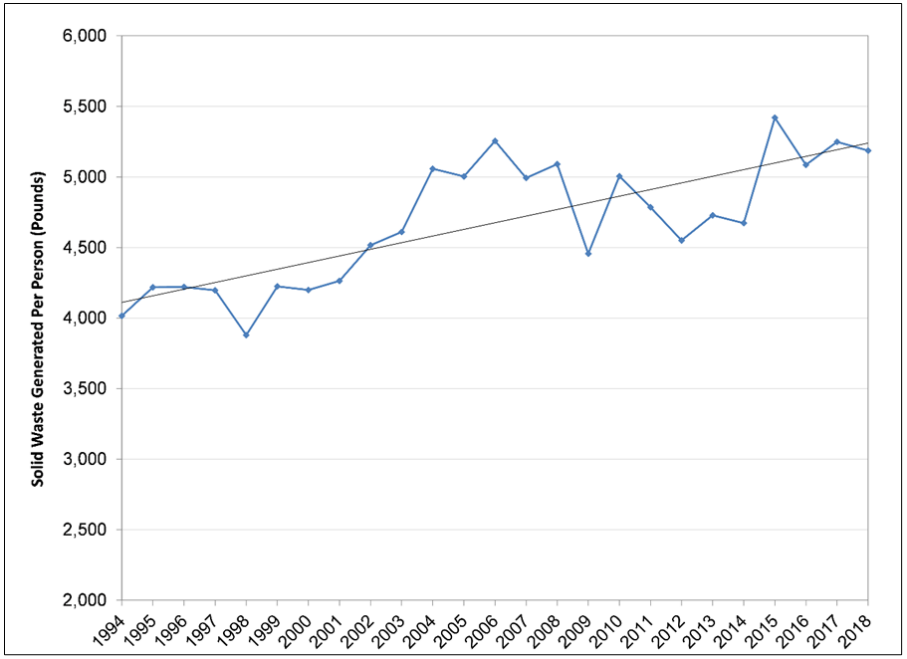

Figure 3. Annual per capita solid waste generation (pounds).

As an additional component of New Jersey's recycling efforts, the Electronic Waste Recycling Act became effective January 13, 2008. There have been several amendments to the Act, one of which changed the name to the Electronic Waste Management Act. The latest amendment was on January 9, 2017. The Act established a recycling system for the safe and environmentally sound management of certain end-of-life electronic devices and components. It requires original equipment manufacturers to pay a registration fee to the Department and establish a collection, transportation, and recycling system, either independently or jointly, for the recovery of computers and televisions. The registration fees are used to fund the administration of the program by the Department, which determines manufacturers' collection obligations and goals, and reviews the

manufacturers' registrations, renewals, collection plans, and semiannual reports. The Act also established a disposal ban effective January 1, 2011, which was the date by which manufacturers must implement their collection plans. In support of this legislation, the Department developed and adopted rules and regulations to assist in the implementation of the program. These included amendments to the Solid Waste rules at N.J.A.C. 7:26 and the Recycling Rules at N.J.A.C. 7:26A-1 and the adoption of new rules for the Electronic Waste (e-waste) Management Program at N.J.A.C. 7:26A-13. The Department is drafting revisions to the rules and regulations to address the 2017 amendments to the law. The amount of e-waste recycled each year since 2011 is highlighted in Figure 4 below.

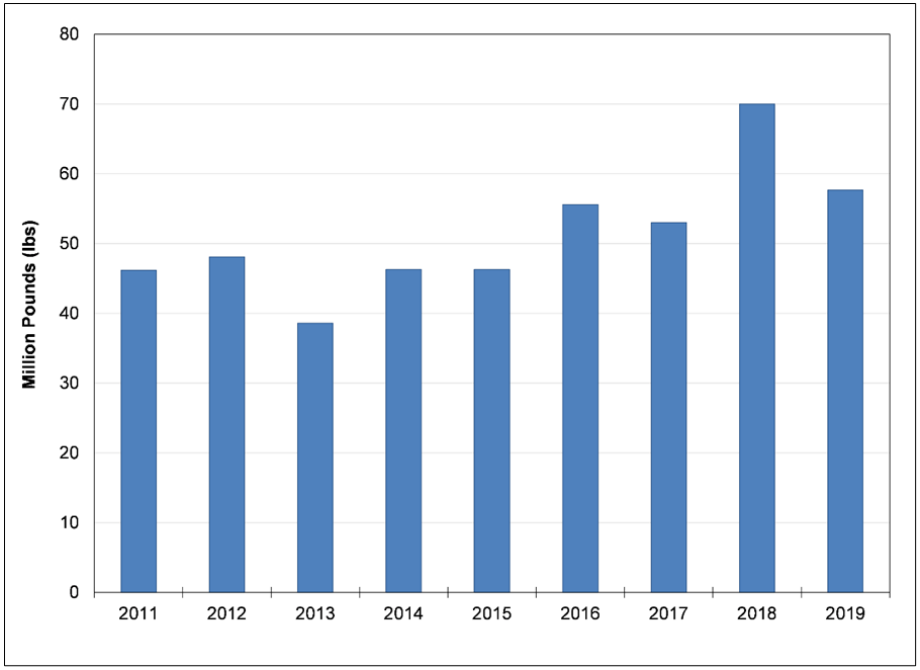

Figure 4. Amount of recycled electronic waste (millions of pounds) as reported by manufacturers.

The amendments to the Electronic Waste Management Act that were adopted on January 9, 2017 provide the Department with additional authority and tools to ensure that manufacturers are responsible for their market share in weight based on actual weight of all covered electronic devices collected in a program year.

The Department is also seeking to reduce the amount of food waste that is sent to landfills. In 2018, approximately 63 million tons of food waste were generated nationally with 56% disposed of in landfills.[4] In New Jersey, two laws concerning food waste were passed since 2017. P.L. 2017 c.136[5] was signed into law on July 21, 2017 and established a goal of reducing food waste by 50%, based on 2017 food waste estimates, by the year 2030. This bill directed the Department to develop a plan including administrative and legislative changes necessary to achieve the reduction goal. The Division of Solid and Hazardous Waste (DSHW) estimates that in 2017, approximately 22% of all household, commercial and institutional waste generated in New Jersey was food waste. This equates to 1.46M tons of food waste or roughly 325 pounds of food waste per person per year.

On April 14, 2020, P.L. 2020 c.24[6] an act concerning food waste recycling and food waste-to-energy production was signed into law. This law requires entities that generate a projected volume of 52 tons or more of food waste per year, with certain exemptions, to source separate and recycle their food waste. The recycling, when required, can either be done on-site or sent to a food waste recycling facility within the State authorized to accept, store, process, or transfer food waste or compostable material. Generators must comply with these requirements by October 2021 and the Department shall write rules and regulations necessary to implement the law.

Public Education

NJDEP contracts with Recycle Coach to provide a knowledge and education resource to NJ municipalities. Recycle Coach is a free app for residents in NJ to learn about recycling in their municipality. The app allows residents to search for details on materials that are recyclable in their area. The Recycle Coach app also provides other information about recycling material like blog articles and news stories. Municipalities, counties, and the State can use this program to send out messages to all users who have notifications turned on. Residents can get reminders to set out their bins the night before collection and can receive alerts when collection is going to be postponed due to weather events.

The DSHW, in coordination with the Air Quality and Environmental Sustainability Program, hosts online webinars focusing on food waste reduction and recycling. In September 2020, in celebration of Food Waste Prevention Day, a webinar was held to provide food waste reduction tips to attendees of the webinar. Speakers presented a variety of topics from food waste in schools, to composting, to donations of surplus food. Future webinars are planned to focus on recycling once food waste has already been generated. This will include targeting generators that may need to comply with the new food waste recycling law by bringing in speakers from the State's two authorized food waste recycling facilities to discuss their processes.

Outlook and Implications

The Recycling Enhancement Act reestablished a source of funding for recycling in New Jersey. The reestablishment of a funding source for recycling is especially significant, as inadequate funding had been considered one of the key reasons behind New Jersey's lower recycling rates in the past.

The last few years have presented challenges to recycling both locally and globally. With the implementation of China's National Sword Policy, which put strict requirements on plastic scrap imports entering the country, many municipalities lost the ability to send these materials to China's end market. Once a profitable enterprise, suddenly municipalities were faced with escalating costs to manage waste considered recyclable generated in their jurisdiction. Since recycling is the law in New Jersey, municipalities were stuck paying for these materials to be taken away. Luckily, because of the Recycling Enhancement Act's municipal tonnage grant program, municipalities in the State had a lifeline to receive funding to maintain operational costs for recycling programs. Due to the nature of how recycling data is collected, the impact of China's National Sword policy is apparent in 2018 recycling data and is expected to impact data for 2019, as well.

Looking ahead, amendments to the Basel Convention went into effect at the start of 2021. The Basel Convention is an international treaty, governed by the United Nations, signed by more than 180 countries which dictates the transboundary shipments of plastic scrap materials to member countries. As of February 2021, The U.S. is not a member country and the EPA is anticipating far-reaching impacts similar to what was faced when China implemented National Sword. In short, the treaty limits shipments of plastic scrap to member countries so any non-member countries that wish to export their plastic scrap to member countries must have a separate bilateral or multilateral agreement with those countries. Since an overwhelming majority of countries have signed onto this agreement, the U.S. must negotiate with member countries to work out an agreement. There are still many unknowns regarding the specifics of the Basel Convention but DSHW is determined to mitigate negative impacts when and where possible with the help of EPA and other States in the region.

The Department is engaged in various endeavors to improve recycling in the State. The following are some examples of such efforts:

A portion of the Recycling Enhancement Act's funding allocations at N.J.S.A 13:1E-96(5)(a) establishes no more than 5% of the annual balance of the fund to the Department to provide grants to institutions of higher education in NJ for recycling demonstration, research or education, including professional training. Two projects that were funded in 2019 include a municipal solid waste composition study and a recycling market feasibility study. The municipal solid waste study will provide data on the amount of recyclables in municipal solid waste that are currently being disposed of in landfills or Resource Recovery Facilities. The recycling market feasibility study will determine the benefits of using qualitative standards for materials collected and recycled in municipal recycling programs when marketed to end users (if qualitative standards are not met, the material cannot be sold on the market). Treating recycled materials as regular commodities, such as oil, grain and metals, could result in improved recycling as generators would have a financial incentive to recycle materials that meet the qualitative standards.

P.L. 2020 c.24 directs the Department to establish a Food Waste Recycling Market Development Council. The Council is responsible for submitting a report to the State Legislature within 18 months after the effective date. The report shall contain details on existing markets for products from food waste recycling facilities, the feasibility of providing preferences for products from such facilities, and how to stimulate the use of such products in the State procurement process. The Council may also make recommendations on changes needed to State statutes, rules, or regulations to stimulate the market for products from food waste recycling facilities, food waste composting facilities, and anaerobic and

aerobic digestion facilities that accept food waste material. The Council's research will identify uses of products generated from food waste recycling facilities in the hopes to stimulate markets so that food waste recycling remains a competitive industry in the State.

Enacted on January 21, 2020, P.L. 2019, c. 439 directed the Department to establish a Recycling Market Development Council. The Council is responsible for generating a report to be submitted to the State Legislature within one year of the effective date of the law. The report shall consist of existing markets for recyclable materials, best management practices to reduce contamination in the recycling stream, details on how to stimulate the use of collected recyclables, and methods to improve the competitiveness of the State as an exporter of recyclable materials. The Council may also make recommendations on changes needed to State statutes, rules, or regulations. The Council comes at a critical time as it is expected to identify ways to boost recycling in the State by focusing on end markets that will utilize state generated recyclables in new products thereby stimulating the use of materials generated in State.

More Information

More information is available on the Department's recycling program, including guidance for manufacturers, retailers, and consumers at https://www.nj.gov/dep/dshw/recycling/.

The solid waste generation and recycling data are compiled annually by the DEP's DSHW, Bureau of Planning and Licensing and is available at https://www.nj.gov/dep/dshw/recycling/stats.htm. Information concerning this data can be obtained by contacting the Bureau of Recycling and Hazardous Waste Management at (609) 984-3438.

References

[1]See N.J.A.C. 7:26-1, et seq.

[2]See N.J.A.C. 7:26G-1, et seq.

[3]See N.J.A.C. 7:26A-1, et seq.

[4]United States Environmental Protection Agency. (2020). *Advancing Sustainable Materials Management: 2018 Fact Sheet, Assessing Trends in Materials Generation and Management in the United States.* EPA 530-F-20-007. Washington, D.C. November 2020. https://www.epa.gov/sites/production/files/2020-11/documents/2018_ff_fact_sheet.pdf, Accessed 1/4/2021.

[5]https://www.nj.gov/dep/dshw/food-waste/

[6]https://www.nj.gov/dep/dshw/food-waste-recycling-law/