

Using the food wasted in New York City

October 9, 2018 by Steve Cohen, Earth Institute, Columbia University

Knowing that people in our own city are hungry and that children go to sleep without enough to eat is a moral outrage in a place as rich as this. One third of the garbage in the city's waste stream is food waste. There are many groups working to recover and distribute food so some of what we discard goes to feed people, but inevitably, we will be adding food to our waste stream. The question then becomes: How do we turn food waste from garbage into a resource?



One way is composting. In Mike Bloomberg's final State of the City address in 2013, he termed food waste New York City's "final recycling frontier." He proposed a city-wide plan of curbside organic waste collection, a program that is still in the process of rolling out. The basement of my apartment building includes a few of the city's sealed brown compost cans, and a growing number of the city's residents now have access to the new organic waste recycling system.

According to Emily S. Rueb of the New York Times:

"About 14 million tons of waste are thrown out each year. It costs the city almost \$400 million annually just to ship what it collects from homes, schools and government buildings (by rail, barge or truck) to incinerators or landfills as far away as South Carolina. (In addition, dozens of private companies put trucks on the road to take away refuse from office buildings and businesses.) The largest single portion of the trash heap is organics, or things that were once living. That apple core, that untouched macaroni salad, that slice of pizza and the greasy paper plate it was served on are heavy with moisture, which makes shipping expensive. As they decompose, they release methane, a greenhouse gas."

While the curbside organic collection program began in 2013, New Yorkers have been composting their food waste for decades. Back in 1993, the New York City Department of Sanitation's Bureau of Waste Prevention, Reuse, and Recycling created the NYC Composting Project. From 1993-2013, over 200 community composting sites were

established, which either received support or were fully funded by New York's Sanitation Department. At community composting sites, residents can bring organics, food scraps, and yard waste that are turned into fertilized soil.

In addition to expanding community composting, the City planned on starting industrial composting at the Hunts Point Food Distribution Center. At the end of the Bloomberg administration and continuing seamlessly into the de Blasio years, the city expanded its efforts to increase organics collection through grants to start community composting projects and expansion of organics collection at greenmarkets. In May of 2012, there was a pilot composting project at 68 schools, and by 2014, the school composting program was in 400 schools across all five boroughs. Curbside collection started in May of 2013 in Staten Island. Although the program was voluntary, about four months later the program's high participation rates led to the mayor's decision to expand curbside organic pick-ups throughout the city.

The de Blasio administration recognizes that food and organic waste is a critical part to reaching the city's goal of eventually achieving zero waste. The curbside organics collection pilot program is no longer an experiment and is expanding into Manhattan and parts of the Bronx. By the end of this year, the city hopes that all community board districts will have curbside collection. Even those without curbside collection can drop off their organics at drop off sites. These drop off and community composting sites accounted for 1,200 tons being diverted last year.

The city has been encouraging composting in some new and creative ways. In 2016, New York City began providing compostable plates, forks and spoons at schools. While not all schools have access to composting, as the program expands the schools will be able to compost these materials. During the switch, schools also eliminated all Styrofoam.

Once all the residential and school food waste is collected by the Department of Sanitation, it is sent to a transfer station where machines sort out all the contamination. It is then sent to one of six places. Four of the places are traditional composting sites which are operated by contractors: Waste Management Varick in Brooklyn, American Recycling in Queens, Metropolitan Recycling in the Bronx, or the Staten Island Composting Facility. Compost collected on Staten Island goes directly to the facility there where it is composted on-site.

Some of the collected food waste is sent to the Newtown Creek Wastewater Treatment Plant in Brooklyn. At this treatment plant, the food is combined with traditional sludge from the wastewater treatment process in order to be digested and to create methane. About 40 percent of the methane produced is used to run the plant, and the remaining methane produced is currently being burned off. However, Newtown Creek Plant is partnering with National Grid in order to process the extra methane into biogas that can

be used in pipelines for both businesses and residents. The plant processes about 250 tons of food waste a day but has the capacity to process 500 tons per day.

The sixth contractor is with American Organic Energy which is in Yaphank, NY. The 62-acre property is about 60 miles east of Manhattan. As of 2017, American Organic Energy received 23,000 tons of food waste from Manhattan each year. While the company currently composts food waste, they are building an anaerobic digester that will convert the food waste into biogas and fertilizer. Through this expansion, American Organic Energy could process 1,000 tons of food waste a day. That is the future of effective food waste management. This technology closes the loop from food production to consumption and back to production as it creates soil that is fertile enough to grow food. In an article written about this facility in 2017, the New York Times' Elizabeth Royte observed that:

"Many innovative municipalities, in an effort to keep organic material out of dumps—where it generates methane, a greenhouse gas—already separate food from garbage and send it to old-fashioned compost facilities. There, workers pile the waste in linear heaps called windrows, mix it with leaves and grass clippings and let oxygen-dependent microbes transform the gunk into lovely dark fertilizer. But the more material you compost, the more space...you need to process it. It can get a little smelly, too, which is yet another reason New York City, which generates about one million tons of organic waste a year, will probably never host giant compost farms. But anaerobic digestion, in which food is broken down by microbes inside tall, airtight silos, has a real shot at scaling near densely populated areas. The footprint of such plants is relatively small, and their odors are mechanically contained, if they are operated properly. Digesters do cost more to build and run than compost sites, but they more than make up for that by generating two separate revenue streams: fertilizer and biogas, which is chemically similar to natural gas and can be burned to make heat and electricity..."

There comes a point when the technology needed for more effective waste handling becomes cost-effective. In New York City, it seems that we are at the point where the cost of a food waste processing plant is worth the investment. While it does not have the benefit of directly feeding hungry people, it could lower the cost and environmental impact of fertilizer, possibly lowering some food costs. More importantly, it is a living, breathing and practical example of the circular economy and yet another way to move away from our throw-away culture.

New York's food waste program is not perfect and I am certain there will be glitches along the way, but it is an excellent example of the steady progress that we are making to create a sustainable New York City. Other examples include: the investment we continue to make in our water supply system, the effort to rebuild our subway, the Vision Zero program to reduce traffic accidents, the impressive increase in bike ridership, the move toward a more energy efficient and renewable resource-based energy system, and the post-Sandy program to build a more resilient shoreline. Progress may be slow, but I see more success than failure.