**A Case For Developing A**

**Sustainable Organic Material Management Plan**

**For The State of New Jersey**

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**Abstract:** According to USEPA, municipal waste landfills are the third-largest source of human-related methane emissions in the United States, accounting for approximately 15.1 percent of these emissions in 2018. Nearly a quarter of what is disposed of in landfills is food waste. Food waste reduction and recycling represent a significant climate mitigation strategy to reduce organic waste by diverting edible food to those in need, creating renewable energy and producing compost to replenish depleted soils, thus increasing their ability to draw down and store carbon. This White Paper makes the case for developing a sustainable organic material management plan for the State of New Jersey. An “Organic Material Workgroup” is recommended to be formed under the umbrella of the New Jersey Climate Change Alliance. A Steering Committee will guide the development of sub-committees to focus critical analysis of the need for additional planning, public education, regulatory reform, legislative enactment and other measures to maximize food waste reduction and recycling. Dedicated subcommittees will develop specific recommendations related to food waste reduction, food management in schools, small scale composting and large scale composting. Core organizations engaged on the Steering Committee will be the New Jersey Climate Change Alliance, Sustainable Jersey, the Association of New Jersey Recyclers and the New Jersey Composting Council.

**Introduction:** Some 33 years ago New Jersey embarked on a sweeping experiment in being the first State in the Country to adopt a “Mandatory Source Separation and Recycling Act.” Most recent DEP statistics show the State achieving a 60% total waste stream recycling rate and a 40% municipal waste stream recycling rate – among the highest recovery rates for any State in the US. We have grown from mandating 3 materials for recycling back in 1987 to an average of 16 in County Recycling Master Plans today. Statutory goals were established for recycling in 1993. While the State has on numerous occasions met or exceeded the 60% total waste stream recycling rate goal, the 50% municipal waste stream goal has never been attained.

Waste composition studies in New Jersey and other states clearly show that the largest component of what is left in municipal waste after 33 years of mandatory recycling is organic food waste. The New Jersey Department of Environmental Protection (NJDEP) broadly estimates that 22% of the municipal waste stream is made up of food. National statistics compiled by the Natural Resources Defense Council (NRDC) regarding food waste estimate that 40% of all food produced in the United States goes to waste. At the State level, available statistics are equally alarming. While New Jersey is one of the wealthiest states in the country, ranking second in median family income, nearly 11% of our population is food insecure, and 15% of children under 18 are food insecure – a dire situation already exacerbated by COVID 19. NJDEP further reports in its 2019 Draft Food Waste Reduction Plan the following estimates:

Producing food from farm to table utilizes:

• Over 16% of the total U.S. energy budget;

• Over 50% of U.S. land; and

• Up to 67% of freshwater consumed in the United States;

Given this enormous utilization of resources it is shocking to note that:

•Americans are throwing away over $218 billion of food each year;

• Food waste is responsible for at least 2.6 percent of U.S. greenhouse gas emissions and large amounts of fertilizers are expended in the process;

• Most of the uneaten food is disposed of in landfills, contributing to 15% of U.S. methane emissions from organic matter.

Our sister states in the Northeast are considerably ahead of New Jersey in having engaged in comprehensive food waste recycling efforts through the passage of “disposal ban legislation” dating back to 2012 in Vermont, 2013 Connecticut and 2014 Massachusetts and Rhode Island and 2019 New York State. The Cities of New York and Philadelphia also have ongoing food waste recycling programs. Food waste reduction has also been embraced as an important public policy initiative in these States/cities.

**Where Does New Jersey Stand?** While behind in addressing food waste management, we are very rapidly catching up to our sister cities and states. Significant legislation is now in place along with excellent baseline work completed by the NJDEP to set the table for the development of a comprehensive master plan or implementation plan to pursue sustainable organic material management. Briefly:

* In July 2017 the New Jersey Food Waste Reduction Act (S3027) was passed which established a Statewide goal of reducing food waste by 50% by 2030. The Act also charged NJDEP with developing a detailed implementation plan. Link to S3027: https://www.njleg.state.nj.us/2016/Bills/AL17/136\_.PDF
* In May of 2019 Governor Phil Murphy signed into law a package of 10 bills he termed "first step measures" toward reducing the number of hungry and food insecure people in New Jersey, as follows:
* A4702 "Hunger-Free Campus Act" which requires the Secretary of Higher Education to establish grant program to address food insecurity among students enrolled in public institutions of higher education; appropriated $1 million.
* A4704 directed the Department of Agriculture to establish a food desert produce pilot program.
* A4708 established the position of Farm Liaison in the Department of Agriculture.
* A4703 required the State’s Chief Technology Officer to establish an "Anti-Hunger Link" for all State websites, providing information on emergency food services.
* A4705 established the New Jersey Food Waste Task Force to make recommendations concerning food waste in New Jersey.
* A4707 directed the Department of Agriculture to establish a public awareness campaign for food waste.
* AJR172 designated the Thursday of the third week of September of each year as "Food Waste Prevention Day" in New Jersey.
* AJR60 designated November of each year as "Food Pantry Donation Month" in New Jersey.
* AJR174 which urges large food retailers in the State to reduce food waste.
* AJR175 which urges the State Chief Innovation Officer to prioritize enhancement of NJOneApp to include all State anti-hunger programs.
* In August of 2019 NJDEP released its Draft Food Waste Reduction Plan and conducted three regional public hearings to take comment. The Department has embraced a “sector based approach” to gear food waste reduction toward feeding hungry people. The Plan is currently being finalized and the draft can be found at:

 https://www.nj.gov/dep/dshw/food-waste/food\_waste\_plan\_draft.pdf

* In November 2019, the Departments of Environmental Protection, Agriculture, Education, Health and the Office of the Secretary of Higher Education released two excellent “School Food Waste Guidelines” – a K – 12 Edition and Higher Education Edition. These “how to guides” address both food waste reduction and recovery as well as food waste recycling. https://www.nj.gov/dep/seeds/sfwg/docs/K-12.pdf https://www.nj.gov/dep/seeds/sfwg/docs/HighEd.pdf
* In early 2020 NJDEP created a dedicated Food Waste website through its Division of Solid & Hazardous Waste. This link provides comprehensive guidance on food waste reduction and recycling in the residential, business, education, manufacturing and retail sectors and can be found at: https://www.nj.gov/dep/dshw/food-waste
* Finally, in April 2020 Governor Murphy signed into law New Jersey’s version of Statewide disposal ban legislation in the form of A2371/S865. This law will require large generators of food waste (52 tons per year or 1 ton per week) to source separate and compost or otherwise recycle their food waste, provided there is a facility located within 25 road miles and the cost is less than what they currently pay for disposal. It is estimated that a significant number of large generators will be covered under the law including supermarkets, restaurants, food processors, food manufacturers, hospitals, prisons, nursing homes, hotels/motels, resorts/casinos and colleges and universities. The bill becomes effective in October of 2021 and also creates a Market Development Council and imposes procurement or purchasing requirements of compost product by State agencies. A copy of A2371/S865 can be found at: <https://www.njleg.state.nj.us/2020/Bills/S1000/865_R1.PDF>

**What’s The Vision?** Despite the passage of the abovementioned legislation and development of plans and educational tools, it is clear that New Jersey is still in its infancy in working to frame and implement a sustainable organic material management master plan. Very clearly there are existing hurtles that serve as significant obstacles to moving forward. However, it is not difficult to present a vision of what a long term, sustainable program might look like! We need to ask the question……***How Can We***………..???

* **Food Waste Reduction** and feeding hungry people is “Job #1” in line with USEPA’s National “Food Recovery Hierarchy.” DEP has prepared a draft implementation plan but needs assistance in moving the plan forward. ***How Can We*** dispel misconceptions of liability associated with food donation across all generator sectors, connect the dots between the extensive network of non-profit organizations collecting and distributing food to soup kitchens, food banks, churches and the like and use IT tools to perform a gap analysis of identify underserved cities, towns and neighborhoods?
* **Backyard Composting** has been a waste reduction strategy in the New Jersey’s Statewide Solid Waste Management Plan for nearly 40 years. ***How can we*** work through County and Municipal Recycling Coordinators and programs like Sustainable Jersey to bring backyard composting education full throttle to make it commonplace all across the State where this practice is feasible and makes sense.
* **Community Gardens** are a wonderful resource to grow healthy produce in urban areas and for composting appropriate “greens and browns” to create compost soil amendment needed for soil health and sustainable crop growth. Currently, regarding such small-scale composting at community gardens, NJDEP regulations are badly broken! Technically, a neighborhood Community Garden requires a Class C Recycling Center approval which requires a highly technical application submission and full-blown DEP permit. There are no small-scale facility provisions. The fees alone as astronomical! Just to apply for a permit costs $11,582, annual operating fees and compliance monitoring fees total $17,000 per year. Even a Research, Development and Demonstration application costs $10,000! ***How Can We*** assist DEP in developing a General Permit, Permit-By-Rule or outright permit exemption to foster an explosion of new Community Gardens in every appropriate urban and suburban setting across the State? This would eliminate the need for DEP technical review, and the associated unworkable fees.
* **Food Waste Management in Schools** represents another critical sector and challenge in sustainable organic material programs. Here, both food waste reduction strategies and the provision for on-site composting need attention and regulatory reform. In round numbers, New Jersey has 2,500 k-12 public schools and nearly 600 school districts. This universe is substantially larger when parochial and charter schools are added in. Enormous amounts of unopened and untouched food and beverages are thrown out daily in schools, particularly from government assistance programs which are so important to the provision of nutritional choices for students. ***How Can We*** figure out how this unopened and untouched food can be collected and either redistributed within the school or donated to off-site food distribution centers? Similarly, ***How Can We*** identify funding options and incentives and put in place effective regulatory reforms such that every school with a cafeteria has manual or mechanical equipment to compost food waste? By example, for over 10 years Chatham High School has operated a mechanized “Rocket” (in-vessel) composter. Chatham operates on-site gardens managed by students and custodial staff. They grow some of their own produce, use it in the cafeteria, compost appropriate food scraps and use the compost to enrich the soil in their gardens, thus implementing sustainable organic material management. From a regulatory standpoint, an in-vessel composter can be used in a specific school without needing a DEP approval. However, all the regulatory bells and whistles go off should a school take food waste from another school in the same district – it becomes a “commercial facility.” ***How Can We*** assist NJDEP in drafting an exemption where a single, in-vessel composter can be purchased and used to accept and process material from all the other schools in town? We have outstanding K-12 and Higher Education food waste guidance documents from NJDEP already in place to make the above happen – let’s use them and implement programs across the board!
* **Municipal Composting** - NJ municipalities are setting up programs on their own, to begin to process and or act as transfer stations for food waste. This includes West Orange which is accepting food waste at their DPW to be processed at a larger facility. Jersey City also offers a drop off program at community gardens and additional public locations, processing a small amount and getting the rest transferred to another facility. ***How Can We*** utilize the infrastructure of existing DPW recycling and leaf composting operations/facilities in municipalities and allow towns to provide support for food waste reduction and diversion goals. This can be achieved through curbside and or drop off programs working with small scale in-vessel or Gore covered facilities. Additionally, this infrastructure can be used to provide small scale transfer stations using best practices in handling organic waste, before being transferred to larger facilities.
* **Small Scale Outdoor Windrow Composting** operations have existed, both commercial and municipal, for many decades. According to the DEP website New Jersey has 38 operating Class C or organic composting facilities processing leaves, grass and, in some limited cases food waste outdoors, using windrow technology. A great example is the Ag Choice facility in Andover Township, Sussex County. The facility started out as a pilot project taking 10,000 cubic yards of food waste and other organic material per year. After 8 years of operation (and no DEP violations) Ag Choice now accepts 38,000 cubic yards per year and has a staff of 15. So ***How Can We*** assemble a stakeholder group to review the existing regulatory framework for small scale compost facilities and outline changes that would foster well-designed and properly run facilities in more rural areas where outdoor windrow composting makes sense. This work would be done in concert with NJDEP as a helpful process to identify needed reforms.
* **Large Scale Food Waste Digestion Facilities** exist in New Jersey, but only two are currently in operation. Trenton BioGas operates an NJDEP permitted 450 ton per day (TPD) anaerobic digestion facility for source separated food waste on Duck Island in Trenton. The facility opened in late 2019. Waste Management Inc. (WMI) opened a 500 TPD Class C processing facility in Elizabeth in 2018. In an unprecedented arrangement, WMI operates a macerator (or very large blender) to convert food waste to a liquid slurry. This slurry is then pumped into tanker trucks and is transported to the Rahway Valley Sewerage Authority wastewater treatment plant where it is injected into an existing, capitalized secondary digester. Here the digester capacity is better used to generate and capture renewable natural gas which is cleaned and fed into pipelines for use. It is also hoped that biosolids (sludge) quality improves with the addition of the food waste which will enhance opportunities for beneficial use management applications.

NJDEP estimates that 22% of municipal solid waste (MSW) disposed of in either a landfill or incinerator in New Jersey for calendar year 2017 (most recently available) was food waste. Therefore, an estimated 1.3 million tons of food waste was disposed of in 2017 in New Jersey. DEP also reports that 161,218 tons of food waste was recycled leading to grand total of 1.46 million tons of food waste generated in 2017. If we assume that food waste processing facilities accept material 5 days per week (260 days per year), we arrive at a statewide generation rate of 5,615 TPD. Existing large-scale facilities (Trenton BioGas and WMI) total 950 TPD which represents 17% of processing capacity need. So ***How Can We*** utilize the enactment of New Jersey’s disposal ban legislation through A2371/S865 to design a campaign to attract the best available technology vendors to seriously consider developing large scale facilities in New Jersey? Under Governor Murphy’s leadership, the Department of State offers its Business Action Center services for business attraction. The New Jersey Board of Public Utilities also offers incentives through its Clean Energy Program which may be applicable in the area of biopower. The BPU website lists as eligible projects wastewater treatment plants capturing anaerobic digester gas, as well as food manufacturers, supermarket or animal farms using aerobic digesters to gasify organic waste. What other State or Federal incentive programs exist to help attract the best and brightest public or private food waste digestion technology to the Garden State?

* **Co-Digestion Facilities** were already mentioned with respect to the existing WMI operation in Elizabeth which sends liquified food waste slurry to the Rahway Valley Sewerage Authority for processing in their secondary wastewater treatment plant digester. It is estimated that food waste digestion results in three-times the amount of biogas generation when compared to biosolids or animal manure. ***How Can We*** coordinate with NJDEP and the large public utility wastewater treatment plants to assess whether the co-digestion model can be expanded elsewhere in the State or Region? Co-digestion can represent a “win-win” proposition where efficient source separated food waste processing through maceration/blending can be matched with existing, capitalized environmental infrastructure (secondary wastewater treatment plant digesters) to recycle food and create renewable natural gas!
* **Leaves and Grass:** While this writing is clearly centered upon food waste recycling, we need to also have leaves and grass on our radar! The New Jersey Legislature was very progressive in banning the disposal (via landfill or incinerator) of leaves when the Mandatory Source Separation and Recycling Act was passed in 1987. The NJDEP also launched its “Grass – Cut It And Leave It” program as a key element of a Statewide waste reduction strategy dating back even earlier with the publication of the 1983 Statewide Solid Waste Management Plan. ***How Can We*** reissue “Grass – Cut It And Leave It” public education programs through the excellent network of County and Municipal Recycling Coordinators to help ensure that leaves and grass are not making their way to landfills where they contribute to methane gas production and climate change impacts?

**Workgroup Proposal to Effect Change:**  As referenced in the Abstract to this White Paper, an “Organic Material Workgroup” is proposed for creation under the umbrella of the New Jersey Climate Change Alliance. The Alliance is a network of diverse organizations that share the goal of advancing science-informed climate change strategies at the state and local levels in New Jersey, both with regard to adapting to changing climate conditions and addressing the emissions that cause climate change. A Steering Committee will first be assembled with representation from existing member organizations of the Alliance, specifically Sustainable Jersey, the Association of New Jersey Recyclers, the New Jersey Compost Council and Bayshore Recycling. Other member organizations will also be invited to participate. The Steering Committee will develop a sub-committee structure which may include specific focus on the following areas:

* Food Waste Reduction
* Food Waste Management in Schools
* Small Scale Composting Systems
* Large Scale Composting Systems

While the Steering Committee will ultimately establish the sub-committee structure and individual scopes of work, the following represents a menu of focus areas for consideration:

* Review of existing plans, laws, rules and regulations applicable in New Jersey;
* Review of existing plans and programs at the Federal level, and in particular, work done regarding food waste management as part of USEPA’s “Sustainable Materials Management Program Strategic Plan: 2017 – 2022” https://www.epa.gov/sites/production/files/2016-03/documents/smm\_strategic\_plan\_october\_2015.pdf
* Research on successful programs in other States, particularly neighboring New England States that have had more advanced food waste management programs;
* Framing of the universe of concern for each focus area, the entities involved, the opportunities for program expansion and benefits in terms of climate mitigation metrics;
* Identification of gaps in information needed to advance sustainable programs and emission reduction;
* Identification of obstacles impeding progress in sustainable organic material management;
* Review of existing incentive programs (both financial and regulatory) that can advance food waste reduction and recycling;
* Review of existing and effective public education programs and tools available which are so important to broad engagement by all sectors engaged in food management and, most importantly, the general public;
* Development of recommendations for needed regulatory reform;
* Development of recommendations for needed legislative enactment;
* Identification of implementation plans and schedules.

Broad participation is anticipated and desired on both the Steering Committee and sub-committees. Once sub-committees are identified and formed, decisions regarding outreach to organizations to invite to participate will be made by sub-committee Chairs. Considering the broad scope of this proposed initiative, candidate organizations include the following, which in no way is intended to be an all-inclusive list:

* New Jersey Department of Environmental Protection
* New Jersey Department of Agriculture
* New Jersey Department of Human Services
* US Environmental Protection Agency Region II
* Environmental Justice Community
* Urban and Suburban Community Garden Managers
* Association of Counties
* Association of New Jersey Environmental Authorities
* Association of New Jersey Environmental Commissions (ANJEC)
* League of Municipalities
* New Jersey School Boards Association
* New Jersey Education Association
* New Jersey Food Council
* New Jersey Restaurant Association
* Food Manufacturers and Processors
* Rutgers University
* Rowan University
* Princeton University
* Kean University
* Community Colleges Operating in-vessel composters
* Material Hauling Sector:
* National Waste & Recycling Association
* Organic Diversion
* Central Jersey Waste/Solterra
* Existing Facilities Sector:
* Waste Management, Inc.
* Trenton BioGas
* Ag Choice
* Environmental Group Sector:
* Clean Ocean Action
* Clean Water Action
* Composting Vendor Sector:
* Tidy Planet (Rocket Composters)
* FOR Solutions (Kean University and Princeton University systems)
* GORE Composting Systems
* Sustainable Generation
* EcoRich