Anaerobic Digestion of Food Waste Prevents Greenhouse Gas Emissions and Produces Energy – A Perfect Solution for Municipalities across the US

Tag Words: Anaerobic Digestion, Rutgers University, Middlesex County, waste, food waste, waste water treatment plants, organic waste, landfill, methanogenesis, CNG, methane, energy, clean energy, recycling, composting

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Video Link: https://www.youtube.com/watch?v=TlBUKgW5_Dk

Summary

Tremendous amounts of organic waste end up in US landfills every year. Processing the organic waste into electricity or compressed natural gas for transportation fuel by anaerobic digestion would prolong the useful life of landfills and provide valuable energy. We provide justification for the installation of an anaerobic digester at the local wastewater treatment facility.


Landfilling organic waste is common in the US. Even “state-of-the-art” landfills that have double liners, gas collection systems and leachate collection systems, negatively impact the environment. Leachate from landfills contains pollutants, such as heavy metals, which can impact groundwater and surface waters. Other pollutants are found in leachate like dissolved organic matter, inorganic macrocomponents and xenobiotic organic compounds. At first, all of these pollutants have a strong presence in the leachate, then they gradually decrease in concentration. Ammonia’s concentration is one, however, which remains strong (Kjeldsen et. al). Ammonia can lead to eutrophication, soil acidification and fertilization (Colorado State). This in itself is a concern, especially due to ammonia’s longstanding presence in leachate. Each pollutant in leachate has its own environmental impact with ammonia being one with a severe cause for concern.

One of the most problematic byproducts of landfills is the release of methane. Some landfills have taken steps to capture the methane. However, it is not possible to capture all or, in most cases, a significant amount of the methane from a landfill. Methane escaping into the air means more of the already prominent greenhouse gas entering the atmosphere. A study of a retired landfill demonstrated the highest methane oxidation rates in topsoil (Whalen et. al). Methane is an especially important gas to consider because it traps about 25 times as much heat as carbon dioxide (Lavelle, 2012).

Landfills also have a lifespan. Once that time is up, it can/should no longer be used. Filling and closing of landfills then opening new ones uses up valuable land. It is an inefficient process. In
Salem County, 31 more acres had to be added to a landfill in 2012 because the site only had an estimated 1 year left. With this addition, the landfill was given a life expectancy of 20 more years (Williams, 2012). This situation is a red light in the discussion of landfill efficiency. With increasing waste production, landfills will be used up more quickly than ever.

Despite these issues, landfills have remained the method of choice for solid waste disposal. Landfill technology has developed in recent years, reducing and, in some cases, eliminating some of the environmental challenges while improving efficiency. Furthermore, landfills are already installed. Given that these sites currently exist and can continue to be used, is an incentive to continue on with their use and maintenance. Given that there is a solution to waste management now (landfill), many would argue that there is no need to revolutionize solid waste disposal in the US. Worldwide, however, the generation of waste is increasing. It is important, therefore, to limit what goes into landfills keeping them functional for as long as possible.

Changing what we do with Organic Waste

Hundreds of thousands of tons of organic waste end up in US landfills every year. In much of Europe, organic waste is generally not landfilled but converted to energy by a process known as anaerobic digestion. Anaerobic digesters utilize the microorganisms in the organic waste to convert it into energy; The anaerobic digestion of biomass makes both environmental and economic sense. This paper will discuss how anaerobic digestion might be implemented locally at Rutgers University or at the Middlesex County waste treatment facility in NJ by comparing the costs and benefits against their current policies and looking at comparable facilities that have already implemented anaerobic digestion.

How Anaerobic Digesters work (JT, DP)

Anaerobic digestion occurs in four phases. The entire process actually requires multiple types of microbes to carry out the different functions. The first phase which is aerobic (in the presence of oxygen), bacteria break down the complex macromolecules in the food waste into smaller, easier to digest pieces. This is called hydrolysis. The second phase is anaerobic (without oxygen present) is called acidification. Different bacteria now take the small molecules from phase one and transforms them into organic acids. In phase three, other bacteria takes the products from phase two to make acetate, a simple two carbon molecule, and carbon dioxide which are necessary for methanogenesis. In the final phase, another type of microorganism called an archeon anaerobically uses the carbon dioxide and acetate to make the final gas product which is usually 60% methane and 40% carbon dioxide. This is the gas that can then be made into compressed natural gas (CNG) (citation). Although this process can happen in a landfill among other places, doing it in a digester facility is a much better alternative; not just because it is better for the environment and economically profitable, but also because it requires less space and is more energy efficient than other commonly used methods such as harvesting landfill gas. Due to the controlled environment inside the digester, there is a higher yield of methane in the gas. Also, the process does not smell in the digester since it is a contained space and there is no oxygen. It is also much faster than harvesting landfill gas since it is harder to create and maintain an anoxic environment outside.
The microbial process of anaerobic digestion consists of fermenting organic compounds (from food waste, etc) into usable biogas (which contains methane, carbon dioxide and other gases). Biogas can be combusted for energy as well as compressed for transportation fuel, providing a renewable and powerful energy source.

Anaerobic digestion is performed by microorganisms which can survive in the absence of oxygen (some must live in an anoxic environment, while others can adapt to either). Anaerobic digestion is performed through a variety of biochemical mechanisms by a wide range of species working in sync to ferment the organic input.

![Diagram of anaerobic digestion](http://www.wtert.eu/default.asp?Menue=13&ShowDok=12)

The first step in the process is hydrolysis, which makes large organic compounds (such as fats, carbohydrates, proteins, and cellulose) water soluble. This is performed by “exoenzymes” that are carried by various species of protists, fungi, and bacteria. This produces fatty acids, glycerol, sugars, and amino acids. Polysaccharides, such as cellulose, are degraded by the bacterium species *Cellulomonas*, using a saccharolytic enzyme (like cellulase) to produce a simple soluble sugar. Proteins can be broken down to amino acids by a protease supplied by *Bacillus* bacteria. Long-chain lipids are broken down into fatty acids by lipases that *Mycobacterium* species produce.

The next step is acidogenesis, which refers to the process of metabolizing the soluble compounds produced by hydrolysis into smaller organic acids, carbon dioxide and hydrogen gas. The major acidic compounds produced include propionic acid, acetic acid, and butyric acid. Ethanol and methanol (alcohols) are also produced as a byproduct in this stage. This process is performed by anaerobic bacterial species, such as *Clostridium perfringens*.

The next step is acetogenesis, the conversion of the products of acidogenesis (propionic acid, butyric acid, acetic acid) into acetic acid, carbon dioxide and hydrogen gas. The partial pressure of hydrogen gas in this stage is crucial, as the conversion of acidogenic products to acetic acid
will only occur at a particular hydrogen pressure. This process is carried out by acetogenic bacteria such as *Acetobacterium*, which form a symbiotic relationship with methanogenic bacteria.

The final product is methanogenesis - carried out by methanogenic Archaea (obligate anaerobes) such as *Methanococcus* and *Methanobacteria*, which form a symbiotic relationship with acetogenic bacteria. This forms methane gas from carbon dioxide, hydrogen, methanol, and formate. This is the final biogas that can be combusted and used to power many types of energy-using sources.

**Thinking Locally…**

In Middlesex County, NJ, solid waste (more than 7 million tons per year) is sent to a landfill in Sayreville NJ. There are five types of waste that are approved to go to the landfills. They are Types 10, 13, 23, 25, and 27. Type 10 is municipal waste collected from residences, businesses, and institutions. Type 13 is construction/bulky waste. Type 23 is vegetative waste like branches and grass (leaves are not permitted in landfills). Type 25 is food processing waste from packing plants, and type 27 is non-hazardous industrial waste. Any waste deemed to be hazardous is not processed by the county’s normal waste treatment facility. Of these five types, only certain wastes from type 10 and most from type 25 can be used in an anaerobic digester to convert to energy. Type ten is also the largest (over 550,000 tons of type 10 of 759,000 tons waste total in Middlesex in 2010) of the five. Type 25 is very small in comparison at less than 600 tons in 2010. Because type 10 is so mixed and makes up so much of the total waste, it is very difficult to estimate how much of that is food waste that can be processed by anaerobic digestion (Brennan et al).

We know that Rutgers University dining services alone produces 18,000 tons of just food waste per year and they pay $120,000 to a pig farmer to get rid of their food waste. Every day, Rutgers University stores the waste from all four of their dining halls in 55 gallon drums before being picked up by the pig farmer. They take great care to separate their organic waste and then squeeze out ~80% of the water for maximal efficiency. While some could argue this is a cost effective and environmentally responsible practice because the waste is being recycled/repurposed instead of being dumped in a landfill, it still comes at a significant cost to the environment (pigs contribute to greenhouse gasses) and does not extract the energy from the biomass. If Rutgers owned and operated their own anaerobic digester, it would definitely be cheaper in the long term since they would not have to haul their waste elsewhere to be processed and they would be reaping the benefits of the energy produced.

Installing a municipal anaerobic digester to service the whole county that Rutgers University could use is another option. This is also a good idea because Rutgers would likely prefer not to pay for the upfront cost of and have the responsibility of the installation and maintenance of an anaerobic digester. Rutgers University, or any other large producer of organic waste, is not in the business of waste to energy and may view this as being outside their mission. Currently, the fee Middlesex County charges to remove solid waste is $9.92 per ton and has been rising over a dollar per year for the past five years. At this rate, it would be more expensive than $120,000 per year to haul Rutgers’ food waste to a county anaerobic digester facility if there was one. Overall
though, the more localized anaerobic digestion becomes, the less expensive it will be. Not having
to haul waste across states, but instead to truck to local plants to be put into a digester would give
large producers more incentive to dispose of their waste in an environmentally and economically
responsible manner. This would also give waste management companies more reasons to reduce
shipping costs (Solid Waste Haulers).

Middlesex County Utilities Authority (MUCA) is where most of the waste from the county is
treated along with the sewage. The facility and landfill are located in East Brunswick, NJ. In
addition to this, they own a second landfill in Edison. Both of their landfills are enclosed and are
used for their “Landfill Gas-to-Energy” project. They collect the methane gas coming off of the
landfill to generate 16 megawatts of electrical energy. This energy is then used to power most of
MUCA’s facilities. All things considered, this is not a bad way of dealing with the county’s
waste. They enclose their facilities so the waste is contained and does not smell. The energy they
generate is almost enough to sustain MUCA which saves them and the taxpayers money. There
is however, room for improvement. A relatively small anaerobic digester, capable of processing
50 tons per day of waste, will produce 53.4 megawatt hours: over three times the amount
produced by their current method. This is because an anaerobic digester is simply more efficient.
Capturing gas off of a landfill is essentially the same principal as anaerobic digestion.
Microorganisms buried in the landfill where there is no oxygen break down the simple molecules
produced by the aerobic organisms on the surface to produce the methane gas. This is less
effective though than a dedicated anaerobic digester where the oxygen, microorganisms, and
waste content are strictly monitored and a maximum yield of methane can be obtained.

**Economics and Anaerobic Digestors (JT)**

While anaerobic digester units will end up paying for themselves in the long run, their
installation is not cheap. Depending on how much input one anticipates the units to process, they
can cost from several to tens of millions of dollars. As a general rule, based off of information
from companies that sell the digesters, a unit that can handle 25,000 tons per year costs about $6
million which would include the anaerobic digester installation. It is difficult to determine the
exact number of years that it would take to pay off with the energy produced. Since their energy output can be either compressed natural gas (CNG), electricity, or both, there is no one parameter to compare to the cost of building it (Organic Waste to CNG). A 17,000 tons per year digester recently installed at the Michigan State University cost them about $5 million and they anticipate it will pay for itself in 15 years (2). This is still only a rough estimate though for the cost of anaerobic digestion on a general scale. With this said, it is guaranteed that they will generate profit, either through gas or electricity, sooner or later. It is just a matter of the specifications of individual facilities.

**Locations for Anaerobic Digesters (JT, DP, and RM)**

In dedicating a location to building the anaerobic digester, it would be extremely useful to pair the construction of the digester in tandem with a wastewater treatment plant, as the runoff of liquid produced by the anaerobic digestion process must be properly handled and treated to be returned to the environment. The closest wastewater treatment plant to New Brunswick, according to the NJDEP, is located in Sayreville, NJ. Plans would need to be made in order to ensure enough land space to connect the two facilities together as well as make sure that all wastewater from the digester can be properly shipped to the treatment plant in tandem. Another thing to keep in mind is the space and accessibility around the digester unit. A good aspect of using anaerobic digestion as a solution is that you can always build more units (anaerobic digesters) if the existing one(s) are not enough to handle all of the waste. When choosing a site to build, one should plan accordingly so there will be space available in the future to construct more is needed. As for accessibility, the site needs to be somewhere where trucks and other large scale transportation vehicles can easily get to. That way, it is not only more effective, but cheaper as well, since it will not cost as much for shipping since all of the wastewater will be going to one place.

Purchasing and installing anaerobic digesters come with an upfront cost. They will run on only organic matter and will only accept a certain capacity of waste. These issues raise a question of practicality. This can be examined through case studies of anaerobic digesters that are currently operational. Michigan State University, for example, installed a digester on their campus to convert 16,800 tons of organic waste into 2.8 million kilowatt hours of electricity annually plus CNG and compost. This digester powers itself with 20% of the energy produced while the other 80% is used on campus. After the 15 years estimated pay off period, the digester will prove only profitable as it turns organic waste into valuable energy. Anaerobic digestion is, therefore, certainly practical and worthwhile.

From an environmental perspective, anaerobic digesters are seen in a very positive light. Not only are they utilizing waste which would otherwise pack into landfills, but they are producing energy and reducing our reliance on non-renewable energy sources. There is, however, a harmful byproduct produced by digestion. Toxic effluents are produced by anaerobic digestion (Djelal et. al.) and this presents some cause for concern. Effluents can cause soil and water pollution and must be treated to eliminate that risk. Risk from this effluent can be eliminated through water treatment. Studies have determined that activated sludge treatment is particularly successful in reducing the toxicities caused by untreated effluent. Connecting an anaerobic
digester to a water treatment facility, such as the one in Sayreville, NJ, produces a practical solution to this problem.

**Cost Benefit Analysis of Anaerobic Digestion (JT)**

Before installing a digester unit anywhere, the approximate amount of food and agricultural waste it must handle should be known in order to appropriate the size the unit. The more waste, the bigger the unit that will be needed. Rutgers University separates and generates ~50 tons per day, or 18,000 tons per year. To estimate the amount of food and agricultural waste generated by Middlesex County as a whole, however, is a much harder task.

In 2007, Rutgers University conducted a study analyzing the biomass energy potential of New Jersey. They narrowed down more specific types of organics produced in the county and determined that two main categories, recycled waste (municipal solid waste, food waste, and other recyclables) and other (landfill gas and wastewaer biogas) were suitable for anaerobic digestion that would generate energy. Just the solid waste, food waste, and landfill gas added up to around 222,000 tons per year.

Estimating the amount of organic waste in the county as a whole is easier said than done. It makes sense to look at the biggest producers of waste suitable for anaerobic digestion. Besides Rutgers University generating 18,000 tons of food waste per year, there are at least two other large producers of food waste in the county. One is Bayshore Recycling, a processing plant which produces about 52,000 tons of food waste per year. The other is Converted Organics, which generates about 26,000 tons per year. Just these three locations produce 96,000 tons of anaerobically digestible waste per year (Solid Waste Management Plan).

Unfortunately, digesters are not cheap. Although they will pay themselves off over time, the initial cost of installation and upkeep can be prohibitive. Once the amount of input going into the digester in known, the next step is to approximate how big a digester you would need to handle all of it and how much that would cost. The equation for doing so goes as follows: tons of waste per year x .25 (25% is usually solid waste) x 0.9 (90% of that is believed to be volatile) x 12 (to convert to cubic feet of gas). About 60%, give or take depending on the exact composition, of the gas is the desired product - methane. Thus, one ton of material equals 1.62 cubic feet of methane or 10 kbtu’s. According to Anaergia, a company that sells digesters, an anaerobic digester that is capable of processing 25,000 tons per year and producing 250 mmbtu’s of energy costs approximately $6 million. Another company, Zero Waste, is an American based corporation that also sells digesters. Their “basic package” is a four digester system that can have an input of up to 4,500 tons per year. Like Anaergia, the largest size the sell can handle 24,000 tons per year and costs $4.75 million (Organic Waste to CNG).

The pricing and capacity for these two companies are comparable. Using their figures and the estimations of waste produced in the county, it is possible to then estimate the cost of installing one. Rutgers would need a digester that could take 18,000 tons per year which equates to about $4.38 million. Zero Waste sells a unit that can take 19,000 per year that costs $3.9-4.1 million. Anaergia would put in a 1 megawatt facility, costing $6 million. An anaerobic digester that could service the major food waste producers of Middlesex County with its estimated 96,000 tons per
year would cost about $23 million. To build one that could service all of the food waste in the county, assuming it could all be separated, would cost more.

**Is Installation of an Anaerobic Digester worth it? (JT)**

Taking this analysis into consideration defines the practical limitations of implementing anaerobic digestion on a large scale in Middlesex County. The cost is simply too high to install a digester that can process all organic / food waste from the entire county. Despite the fact that in the distant future it would pay itself off, there is just no feasible way for the county to pay tens of millions of dollars for it to happen. Building on this, it is also impossible to know exactly how much waste the county generates. There are simply too many sources to attain an accurate measure of how much waste there is that would be suitable for anaerobic digestion. Additionally, the waste that is collected now is not source separated, so this would need to change as well. Any digester to be installed on a municipal scale would have to take these things into consideration.

A possible solution then would be to have a digester unit installed that would only service a small part of the community. First, a spot would have to be chosen. Pictured below is MUCA’s waste water treatment plant in Sayreville. Though it would have to be developed, they do have the land adjacent to their current facilities to build more than one digester. The road (towards the bottom) where trucks would come in is also close by. As for the input, it is estimated that the three largest food waste producers in the community (Rutgers, Bayshore Recycling, and Converted Organics) produce 96,000 tons of waste per year. Even still, this incurs a large, prohibitive cost. One possible way to go about it would be to only build one relatively small digester at a time, say ~25,000 tons per year at ~ $5 million. The big waste producers that already ship their waste through MUCA and perhaps Rutgers could supply the feedstock for the digester. The county would reap the benefits of the unit (CNG and/ or electricity) and would most likely use them to power their operations. Since the digester is small, it could be run on sort of a trial basis where if its results satisfy MUCA, they can install more as they see fit. This way, anaerobic digestion can be introduced on a municipal level without having to spend too much money.

**Effects on current Facility (JT)**

Installing an anaerobic digester adjacent to a waste water treatment plant should not greatly affect the current operations of the WWTP. Other than actually building the digester unit, everything else at MUCA would operate at it always has. The biggest difference would be that some waste instead of going to the landfills would be shipped to waste water treatment plant where the digester is. They would not have to necessarily change any of their prices for waste pickup services and on top of it would make money from the products of the digester. The producers who are sending the waste would not have to change anything at all as they are still having it collected by the same company.
**Other Solutions (DP)**

Apart from using the pig farmer and using the anaerobic digester, there are other options that the university could potentially use to deal with the enormous amounts of food waste. It is possible to construct a large-scale incinerator and burn organic and inorganic waste. While this will destroy a large mass of waste that would otherwise occupy a landfill (and be decomposed to methane eventually), the products of combustion cannot be reused for positive energy renewal in the same vein that biogas and digestate can. Other possible solutions include composting or donations to other agricultural establishments.

**Community Action: Proposal for an Anaerobic Digester at MUCA (RM, JT)**

In order to achieve the goal of installing an anaerobic digester, we would appeal first to the Middlesex County Utilities Authority Leadership. Given that the MCUA is the group in charge of solid waste disposal and wastewater treatment in Middlesex County, they would be the ones making a decision on whether or not to install a digester. An appeal to this group should include the cost-benefit analysis mentioned above before anything else. A group would only make such a big financial decision knowing that it is a economically viable and worthwhile. The proposal would also have to include details about how much would be going into this digester, its projected outputs, and where it would go. We have researched the amount of organic/food waste produced in the county and have found it is way too much to handle. We then thought to only build a digester for the waste made by the large producers in the county. This too showed to be too much, in the range of tens of millions of dollars. Our proposal is now to just build one basic unit on the land they already have. It would be projected to pay for itself in probably less than 10
years. On top of this, it would be more efficient than their current policy of just collecting gas off the landfills. The point would be to convince them with one digester that having multiple ones would be even more beneficial. It is an investment that would only be made after careful consideration of the product’s benefits and how long it would take to pay for itself. Ultimately, the digester will turn a profit for the group; this is a cornerstone of the proposal.

Image, is of course, important to any group. Waste management groups are constantly fighting to maintain a “green” and “eco-friendly” image. Their tasks are often viewed as environmentally unsound. Middlesex County Utilities Authority has already undertaken and advertised projects that propose a “green” initiative. These projects help citizens view the Authority as environmentally-friendly and forward thinking. Installing an anaerobic digester would be a huge step forward for the group. It would only bolster MCUA’s commitment to environmental excellence. Anaerobic digestion’s positive impact on the Middlesex County Utilities Authority’s image will provide them with a closer connection to customers. If having the one digester unit can get more people in the county in board and more receptive towards MUCA, they might be able to get the backing and resources necessary to implement anaerobic digestion on a larger scale.

**Conclusion (RM, JT)**

Anaerobic digesters pose an environmentally friendly solution to organic waste disposal. Installation of a digester in Middlesex County will provide not only a source of renewable energy but an improved image of the county. Initial cost, though seemingly daunting, will be paid for by the energy produced through anaerobic digestion. We hope that the construction of the first one will start a chain reaction, so to speak, where MUCA will not only see the benefits and want to install more, but the people of the county, the state and municipalities in other states will perceive waste as a commodity too valuable to waste. Overall, the country would benefit from the introduction of anaerobic digesters to waste treatment operations.

**References:**


Letters to the Editor:

Letter to the editor: The Asbury Park Press

At Rutgers University, 18,000 tons of food waste is generated every year. This massive amount of waste is ground up into a paste-like material, frozen, and sent to a pig farmer for $120,000 each year. The dining halls alone generate this massive amount of waste, and the total waste produced by Middlesex County is immeasurable. As opposed to being returned to biomass, an alternative use for this food waste is through the production of usable, energy-efficient biogas through anaerobic digestion.

This process involves the breakdown of organic waste into components that microorganisms can digest and convert into methane, hydrogen gas and carbon dioxide. These gases are usable as fuel, and the resulting digestate solid can be used as fertilizer. In order for this renewable energy method to be instated, however, an anaerobic digester facility must be built. In order to maximize the potential of this digester, it should be placed in conjunction with a municipal wastewater treatment plant. The worries about a smell coming from the reactor need not be attended: the lack of oxygen in the digestion process yields no foul odors.

The University of Michigan, a school similar in size to Rutgers, has implemented one that, according to calculations, will pay itself off in less than 20 years and will also bring in a profit. Gloucester County is planning on constructing an anaerobic digester that will function within a 12-mile radius of its placement. An anaerobic digester at Rutgers University or anywhere else in the Middlesex County will vastly improve the waste removal system at the school and will add another positive contribution to the school’s vast array of green initiatives.

David Pirovich
Rutgers University
New Brunswick, NJ

Sent to The Daily Targum:
Rutgers is one of the largest food waste producers in Middlesex County. Dining services alone produce over 50 tons per day (18,000 tons per year) of solid waste. To get rid of it all, we pay $120,000 per year to have it shipped to a pig farmer. The Middlesex County solid waste treatment facility put all of their waste into a landfill where the gas coming off of it is slowly collected for energy production over time. A better way to get rid of this waste both environmentally and economically is anaerobic digestion. In an anaerobic digester unit, organic waste is broken down by microorganisms into natural gas in an oxygen free environment. This gas can then be used to power vehicles or to generate electricity. Because the digester works without oxygen, it does not smell either. Processing waste this way yields a much higher amount of natural gas than collecting it off of a landfill due to the controlled environment. Using anaerobic digestion has not caught on in the United States but has already been implemented on a large scale in Europe. The University of Michigan, which is comparable in size to Rutgers, has installed a unit on their campus to eliminate the waste they generate. On a municipal scale, Gloucester County in southern New Jersey has plans to build one capable of servicing a 12 mile radius. Although these machine are expensive, they will pat themselves off in a couple of years and make hundreds of thousands of dollars in profit. If one were to be put in either at Rutgers or in Middlesex County waste treatment, Rutgers could send their waste there for a low rate instead of having to pay the pig farmer and the county would make money. Either way, everyone saves money and it is better for the environment. As Rutgers has pioneered many things in the past, anaerobic digestion is something we should look into for the future.

- Jeff Thomas SEBS, Class of 2014. 908-892-6456

Sent to the Newark Star Ledger eletters@starledger.com

Dear Editor,

I am writing in regards to New Jersey’s solid waste disposal methods, particularly those in Middlesex County. Middlesex; home to Rutgers University’s New Brunswick Campus, produced hundreds of tons of food and agricultural waste. This waste is dealt with in traditional manners. It is piled into landfills to break down without any benefit. With much consideration I have concluded that we should be making this waste work for us. This sounds impossible, but with an anaerobic digester, it is anything but.

Anaerobic digesters break down organic waste to produce natural gas or energy. Those digesters that are already set and functional pay for themselves through energy production. It is through this method that we can make our waste work for us.

Overall, an anaerobic digester should be installed to removing one source of waste from landfills while creating valuable energy. It would be a positive for the community, the environment and the government.

Thank you,
Rachel McGovern