

A YEAR OF *REAL* THINKING 2008 AND THE FOOD WASTE RECYCLING STATE OF THE STATE

SOLID WASTE RESOURCE RENEWAL GROUP AT RUTGERS NJAES
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It was the year when we asked ourselves “What is *real*?” Oil went from \$140 per barrel to \$40 per barrel, leaving us wondering what its *real* value was. A lot of money turned out to be imaginary, including, unfortunately, the life savings of the people and charities invested in Bernard Madoff’s Ponzi scheme. Even recyclables like bottles and paper seemed to lose value.

In a year of the unreal, the Solid Waste Resource Renewal Group (SWRRG) made *real* progress towards a local industry based on the very *real* food waste produced by the nation’s most densely populated state. SWRRG’s initiative seeks to involve all New Jersey food waste generators—which is all of us—in creating this industry, which will produce jobs, capital, and greenhouse gas reductions using something we all throw away. The very *real* products of this industry will be things which we all need—fuel, fertilizer and products to sustain the soil which sustains all life. The first of our industry’s new large scale food waste recycling facilities, Converted Organics, started converting food waste to organic fertilizer in Woodbridge.

Many of you joined us as we continued our successful county based series of Food Waste Recycling Forums—with our forum in Hudson County on January 8, 2009, we are past the half way mark. Join us again for our first “wasteshed” forum on January 30, 2009, at the Hyatt Regency Princeton as the Hyatt becomes the first waste generator certified by our sister organization, Food and Organics Recycling for New Jersey (FOR NJ).

Yes, a lot has happened in a year. This is our “Year in Review” for Food and Organics Recycling. The first part talks about how to get involved, and the second about events and achievements, during the year and planned. The third part updates you on facilities and haulers helping to bring food waste recycling to the state. Please let us know about anything we missed.

GETTING INVOLVED

SWRRG’s food waste recycling initiative has always been *really* participatory—indeed, we could not move forward without all our partners, new and old. So we’ll give you some ideas about how to participate to think about as you read through the year’s events and accomplishments.

- ⇒ Get involved with planning the Investment Forum (read about it below).
 - Are you a new facility seeking to enter the New Jersey food waste recycling market? You can be featured at the Investment Forum
 - Are you an investor or other member of the financial community? You can help us plan for what you want to hear at the Investment Forum.
 - Are you from a municipality? You can help us explore partnership options between facilities and communities—e.g. community benefits agreements, community support of clean, valuable recycling facilities.

- Are you from a county or the state? You can help explore the advantages of creating financial incentives such as tax incentives, to attract new local food waste recycling businesses.
- Are you a generator? You can help us explore generator incentives, such as climate change credits, and how generator support can convince investors that a facility is viable.
- ⇒ Help plan a county food waste recycling forum or a local watershed forum (read about them below).
- ⇒ Help get out the word about a new industry which creates essential products from food waste.
- ⇒ Become a sponsor for one or more of our events.

FOOD WASTE FORUMS

During 2008, we *really* took the show on the road. In March we were hosted by Ocean County. In April we were treated to the entire 7th grade of Lavallette School and their recycling presentation, because schools need to create a recycling program for bottles and cans, paper and cardboard, before they can move to food waste recycling (I successfully nominated Lavallette School for a statewide recycling award after the forum). Nick Smith-Sebasto made his debut, introducing his successful on-site composting program at Montclair State University—which provides a *real* and immediate alternative for those who want to manage their waste on site. FOR NJ, which was founded in 2007 by Jen McDonnell and myself, added an active advisory committee, including Winnie Fatton, of the Municipal Land Use Center of The College of New Jersey, who organized the student contest which provided FOR NJ's logo. Jacquetta Davis began leading the FOR NJ educational certification program.

In April we also went to Bergen County, and in June to Atlantic County. In late June, we had our second food waste and school recycling forum, taking the show to Montclair State, where Nick showed off the composter. In July, Sodexo cemented their successful partnership with us, when Steve Boyle invited us to do the Camden County Food Waste Forum at Virtua's health and education center in Voorhees. October saw us visiting the lovely Monmouth University for the Monmouth County Forum; at the end of that month, the Somerset County Business Partnership hosted the Somerset County forum, as part of a week of annual events.

Along the way, I was joined by dedicated experts volunteering their time to help introduce forum attendees to how to do a waste audit, economics of food waste recycling, case studies, facilities here or in development, when and how to switch to compostable liners or tableware, and using the USEPA WasteWise program to business advantage. Particular thanks go out to Lorraine Graves, Mike Manna, John Connolly, Jen McDonnell, Steve Mojo, and Tom Costantino. All the while, representatives of the facilities here or under development updated us on their products, their process, and their progress.

On January 8, 2009, we started the year on the campus of St. Peter's College in Jersey City for our 11th forum. It is a measure of the attention that food waste recycling has engendered that it was a librarian who first contacted SWRRG to host the Hudson County Forum. Mark Graceffo is a member of St. Peter's Green Campus Committee, which is helping to bring sustainability to the campus. Hudson County's Recycling Coordinator, Mary Ellen Gilpin, has also helped plan the forum, and Sodexo will once again donate the food. We were pleased to have Dan Smith of Liberty Science Center join us for a presentation on vermicomposting, working with Abbott District Schools, and working to get us all back into a relationship with the Earth, not being apart from nature and its laws.

We could not have continued the forum series without support from the Region 2 of the United States Environmental Protection Agency, Premier Food Waste Recycling, TerraCycle, Trenton Fuel Works,

AgChoice, Bayshore Recycling, Converted Organics, Ellen Vastola, United Trucking, PMC Sales, Public Service Enterprise Group, Peninsula Compost, and of course, the Rutgers New Jersey Agricultural Experiment Station.

BUILDING A WASTESHED—AND MOVING FOR NJ FORWARD

Food waste recycling tipping rates are cheaper than those for trashing the waste, especially because food waste is such a heavy and dense part of the waste—but the economics don't *really* work if the hauler has to drive around the state to fill up a truck. The hauling costs get too costly, and savings can be lost.

SWRRG has long suggested that waste generators create their own wastesheds. Indeed, it was knowing that it might be difficult for one generator alone to convince its neighbors to join a food waste recycling route, that led myself and Mike Manna, of Environmental Resources, a long time SWRRG partner, to first dream up the county based forum series, hoping to catalyze the process of generators beginning to think about creating a wasteshed.

Then, a new membership organization was born, a sister to SWRRG. Food and Organics Recycling for New Jersey (FOR NJ) is “a trade, professional and stakeholder organization that promotes the expansion of markets for recycled organic products, connects interested parties, and enlists public support for food and organics composting and recycling as appropriate responses to various environmental and sustainability issues.” FOR NJ, which works seamlessly with SWRRG, offers opportunities for more individual stakeholder involvement, and has immediately drawn great interest. Special interest was drawn by a new certification program, which would allow the successful entity to be identified either as a certified FOR NJ generator, hauler, recycler/composter or school/educator.

Generators have been particularly interested. One of the requirements for certification as a FOR NJ Food Waste Generator is creation of a wasteshed. This has led to an exciting first—a wasteshed-creation forum hosted by Hyatt Regency Princeton to complete its FOR NJ certification. The forum, to be held on January 30, 2009, will feature a case study by the Hyatt on moving to food waste recycling—including highly efficient recovery of food from room service. Other speakers will introduce various ways of creating a wasteshed—by a generator, by a hauler, or by a municipality or county, along with meeting other FOR NJ certification requirements.

THE INVESTMENT FORUM

Midway through the county food waste recycling forums, with generators and governments excited about getting new facilities and a new industry, it is time to set the date for our Investment Forum.

The Investment Forum seeks to bring investors—both private ones, from the financial community, and governmental ones who can provide financial and other incentives—together with those seeking to bring a food waste recycling facility to our state. Our facilities are expected to manufacture things crucial to our lives, right here—but in the current financial climate, it is all the more important that we demonstrate the *real* value of getting involved in our new industry.

Please look for ways to support us as we plan this important event.

UPDATE ON OUR STALWART FACILITIES AND HAULERS

We continued to work with a variety of haulers and facilities which are already in the state, or have identified sites and begun permitting. Listed here first will be the haulers and facilities in the process of becoming available for those seeking to have waste recycled off site. A second part of this list will detail on-site options. A third, and separate list, will identify the exciting new options which are seeking to settle in our food waste dense state, some of which we expect to participate in our Investment Forum.

Premier Food Waste Recycling

Premier Food Waste Recycling is a hauling company which currently hauls food waste from New Jersey supermarkets and other food waste generators to compost facilities or pig farms in Pennsylvania. Premier will soon be hauling food waste from many new generators to Converted Organics. Premier worked with Michael Manna, a food waste recycling expert, to develop a collection container system which will site either a compactor or wheeled carts at the generator, depending on the needs of the latter. For those using the cart system, Premier invested in trucks which would allow the carts to be tipped by a mechanical arm, which reduces labor costs and possible risk of employee injury. Premier has purchased equipment which can easily tip the contents of wheeled carts of various different sizes into its trucks.

Terracycle

Tom Szaky and Jon Beyer developed their system for worm composting of food waste while in college, and began using the resulting vermicompost to make a liquid plant fertilizer, which is now sold in Home Depots and other stores across North America. The company largely purchases worm compost to brew its tea, rather than composting itself. Because Szaky and his company TerraCycle are committed to recycling wherever possible, they package their products in reused plastic soda bottles, collected through school recycling drives. The product is meant to show “the power of worm poop.”

The company is also producing a variety of other recycled or local products, including deer repellent and bags made from reused juice pouches and shopping bags. Urban graffiti artists paint the sides of flowerpots for sale.

Ag Choice

Ag Choice is a small compost facility in Andover, which composts food waste along with horse manure. The facility was developed to help horse farmers with their growing problem of preventing pollution from uncontrolled horse manure. Ag Choice uses techniques and materials developed by the Midwest Bio-Systems (MBS) and Advanced Composting Systems (ACS) to produce a “humidified compost” containing humus and humic acids. Using the compost promotes plant root development, and ultimately, better tasting and more nutritious food or healthier golf course grass. Windrows are constructed of old compost, woodchips, water soaked round bales, manures and other wastes. Clay is layered upon the waste mixture to reduce odors, capture additional microbes, and promote formation of humus. Windrows are covered with specially designed mesh covers to keep rainwater from leaching through the piles, keep existing moisture in, and block UV rays. Participating farmers are left with 15 cubic yard containers to fill up as needed, to be picked up by Ag Choice.

Ag Choice has been slowly adding supermarkets to its customer base, and hopes to take coffee grounds and bread from convenience stores in its service area. It has recycled 900 tons of food waste during the duration of this project.

United Trucking

United Trucking and its affiliate Motion Trucking, Inc., have provided hauling and disposal services for food waste, MSW, demolition, soil and recyclable materials for the past 19 years, operating approximately 50 trucks daily. United Trucking has begun hauling food waste to Converted Organics, working to maximize organic diversion and optimize collection for its customers.

Converted Organics

Converted Organics has started receiving some source-separated organic food waste—mostly liquid—to be processed into high-quality organic biostimulants (natural soil amendments or fertilizer products). The facility expects to be able to accept all food waste as of January 2009. The process includes microbes, oxygen and heat, in stainless steel digesters, to convert food wastes to an all-natural product in 72 hours. The facility expects to process up to 150,000 tons of food waste per year at full capacity.

Food products that can be processed are solid and liquid organic wastes from a variety of sources, including produce handlers, food processors, supermarkets, farmers' markets, restaurants, hospitals, and airlines. By using organic materials for its products, Converted Organics produces a fertilizer that is safer for people, animals and the environment—and replaces petroleum products, used to produce conventional fertilizers.

Trenton Fuel Works

Trenton Fuel Works is planning to convert a never-used sewer plant in Trenton for production of either a patented fuel blend for flexible fuel vehicles or a cellulosic biodiesel for use in trucks, buses, and farm equipment. The plant will make its products from not only food waste, but any manures, yard waste, grass clippings, leaves, or non-recyclable paper. Trenton Fuel Works is the first US commercialization of a patented, EPA award winning, biofuels technology that thermochemically converts organic waste into renewable and environmentally friendly products. TFW expects to handle about 110,000 tons of food waste per year. If this facility is successful, other plants will be in development in the years ahead.

TFW has arranged with Fuel Bio of Elizabeth, New Jersey to help distribute any biodiesel produced by TFW.

Peninsula Compost

Peninsula Compost is a Delaware-based company that processes food and yard waste into compost. Peninsula Compost is hoping to build a facility in Burlington Township, NJ in the future. In the meantime, it has received all permits for and is planning to start construction in March 2009 on a facility in nearby Wilmington, Delaware which would be of the same size as the New Jersey one, and which would serve generators in southern New Jersey. Peninsula Compost is expecting to accept about 100,000 tons of food waste a year and 60,000 tons of carbon material. In only an 8 week process their facility can mix the materials and produce quality compost. The company will cover the waste on their facility with water proof materials to prevent any water from seeping in and to prevent odor from escaping.

Peninsula Compost has worked intensively with its host communities and individual neighbors in the process of developing both facilities. In Wilmington, it entered an innovative Community Benefits

Agreement with the neighboring community, which has been the subject of a SWRRG case study, and highlighted at SWRRG presentations.

Onsite Option—Montclair State University

In September 2007, Dr. Nick Smith-Sebasto began composting prep and post consumer food waste from the kitchen/conference center in MSU's LEED certified University Hall in an in-vessel BW Organics model 512 composting system. Since November 2007, he has also composted prep food waste from the kitchen in MSU's student center. Sodexo, the food service operator for the MSU campus, has been a willing partner. Sodexo staff separate food waste into either five or ten gallon buckets; either Dr. Smith-Sebasto or his students transfer food waste to the composter along with either wood chips (from a high end furniture maker—including furniture made for celebrities) or shredded cardboard. Since September 2007, Dr. Smith-Sebasto's composter has already diverted nearly 50,000 pounds of food waste, at a cost substantially cheaper than that of trashing the same food waste, and without the need for truck transport of any waste. The compost can be used in landscaping on campus; during a tour of the composter, one visitor took a bag home to his wife as an anniversary present. As an additional benefit, the composter has eliminated a rat problem behind University Hall—since the composter eliminates the all you can eat rat buffet which the dumpsters formerly provided. Dr. Smith-Sebasto is providing guidance to several businesses and schools/higher education institutions seeking to install a BW Organics composter.

Onsite Option—Lavallette School

Lavallette School installed a large tumbler/drum composter and began composting some of their cafeteria waste this year. Dorothy Lawrence, an Ocean County Master Gardener/Master Composter, trained the school in using the composter. Although the composter is in vessel, no meat or dairy is composted. The composting program joins an award winning school recycling program, described briefly below.

With the support of the principal and school district, Lavallette School's Head Custodian George Solly, Judy Merritt, the Spanish Teacher, Jill Lorenz, the Science Teacher and student Environmental Club members developed a hands on recycling system for mixed paper, cardboard, batteries, bottles, cans, printer cartridges and cell phones. Paper, bottles and cans are recycled twice a week by the sixth and seventh graders before their school day begins. Print cartridges and cell phones are also collected and sold to a private company on a bi-monthly basis. Computers have been recycled for four years. Each seventh grade class trains the incoming sixth graders to recycle in order to perpetuate the recycling program. Students work with Mr. Solly, Ms. Merritt and Jill Lorenz who oversee them.

Key to the success of the program was the educational power point written collaboratively by Mr. Solly, Ms. Merritt, Ms. Lorenz and the sixth grade class of 2006-2007 who are now in seventh grade. Each student was responsible for the content of at least one slide in the presentation. The power point was presented to each class of the school, as well as all staff members, to inaugurate the recycling program in the school in September, 2006.

NEW ON THE SCENE: EXCITING NEW RECYCLING OPTIONS

- ⇒ Arrow Bio is a system which does not require source separation of food and other organic wastes. The system separates not only organic waste but other recyclable items such as recyclable plastic or metal from MSW. The system has an optional advance separation process for recyclable paper, if desired to get "optimal value" out of that material. Alternatively,; paper left in the MSW to be sorted by the Arrow Bio System is recycled along with other organics, which are converted

- through anaerobic digestion to biofuels and other products. In light of current worldwide paper recycling market values, the latter may become increasingly attractive.
- ⇒ Fuel Bio had begun manufacture of biodiesel, primarily from soy oil, in Elizabeth, New Jersey, but had to temporarily cease production when the price of soy oil became too costly, due to indirect impacts of corn being diverted to ethanol production. Since then, the plant has expanded, and is using, among other raw materials, waste chicken fat. The plant has also collaborated with one of our established partners, Trenton Fuel Works, to sell its cellulosic biodiesel, once production starts.
 - ⇒ Scott MacKay of Sustainable Energy Holdings, a company out of Alberta, Canada would like to work with groups of municipalities to divert food waste to anaerobic digestion, and use the resulting biogas to generate electricity for use in the sending municipalities. Other products can be compost and fertilizer.
 - ⇒ Lifecycle Renewables describes itself as “a renewable energy generator offering efficient, carbon neutral power generation in a decentralized model.” Waste food oil is collected, purified, and fed to a generator for generation of electricity. Oil generators can indeed feed their own oil into the generator and produce their own electricity. The generators envisioned would typically produce enough electricity for a large single facility. The carbon benefits are partially accomplished through replacement of carbon based fuel for generating electricity.
 - ⇒ Owl Power is a similar technology, using smaller sized generators. They have generators running in Mass currently. The smallest they can go are 5kw and those use around 85 gallons of used oil/week. These are great for shaving peak demand or as backup power generators. They can also do combined heat and power.
 - ⇒ Renewable BioSystems is a system which extracts oil from food waste, for use in either creating biodiesel or generating electricity, making it highly complementary to not only the two oil to electricity systems described just above, but also to most of the food waste recycling systems currently in development or described here. Thus, Converted Organics, Peninsula Compost and Trenton Fuel Works could all benefit from a process which removes oil up front—since in all these processes, oil is harder to process, and may slow things down.

This list does not include several systems/facilities for which some exploratory actions have been taken, but which are not yet ready to be identified. We will continue to work with these facilities, and feature them at future SWRRG events, because the work they are doing is making a *real* difference.