



Conversion Technology E-Newsletter - January 2017
01/23/2017

EVENTS

U.S. Composting Council Conference & Tradeshow

January 23 -26, 2017

Los Angeles, CA

For more information on this event, please visit the website:

<http://compostingcouncil.org/compost2017/>

VerdeXchange Conference

January 29-31, 2017

Los Angeles, CA

For more information on this event, please visit the website:

<http://www.verdexchange.org/>

Alternative Technology Advisory Subcommittee Meeting (ATAS)

February 16, 2017

Alhambra, CA

For more information on this event, please visit the website:

<http://dpw.lacounty.gov/epd/tf/meetings.cfm>

Zero Waste Symposium 2017

February 21, 2017

San Diego, CA

For more information on this event, please visit the website:

<http://zerowastesandiego.org/zw-symposium-2017/>

Rethink Methane

February 21-22, 2017

Sacramento, CA

For more information on this event, please visit the website:

<http://rethinkmethane.org/>

NEWS

Iowa State to Manage Waste Conversion Projects as Part of New Manufacturing USA Institute

Manufacturing USA is a network of research institutes founded to foster innovative manufacturing technologies through public-private partnerships. Iowa State will be bringing their biorenewable technologies expertise to manage the tenth Manufacturing USA institute, and manage the pilot plants biorefinery efforts. The Department of Energy's approval includes \$8 million in support and development of the institute. Two of the highlighted projects from the application include (1) a new pyrolysis system that introduces a small amount of air to the reaction to partially burn some of the biomass as a source of heat for the reactor, and (2) anaerobic digestion of grassy biomass and wet wastes to produce carboxylic acids that can be then converted into industrial chemicals and fuels such as gasoline. To read more click [here](#).

Biofuel Made from Human Excrement has Become Easier to Produce

Human waste has not been a good source of biofuel because sewage sludge is too wet to carry out the usual processes. Drying the material would be an extra step that would cost more money. However, researchers at the Pacific Northwest National Laboratory (PNNL) have developed a new process to treat human waste called hydrothermal liquefaction (HTL). This new process mimics geological conditions to create a biocrude oil similar to petroleum. Wastewater treatment plants across the country treat approximately 34 billion gallons of sewage a day, which if treated via HTL, could produce the equivalent of about 30 million barrels of oil per year. A single person could be able to generate 2-3 gallons of biocrude per year. PNNL has licensed this method to a private company and hopes to have demonstration plants in design phase across several locations British Columbia, Canada by the end of 2017. To read more click [here](#).

Kenyas Croton Tree Touted as New Biofuels Crop

Eco Fuels Kenya was founded in 2012 and hopes to bring in a new era of sustainability to Kenya by transforming the nuts of the ubiquitous croton tree into biofuel, poultry feed, and fertilizer. Despite the fact that Kenya imports all of its oil, the East African nation is apprehensive to dive head first into the promise of the croton nut biofuel industry. In 2000, the Kenyan government invested in the Central American native jatropha plant only to result in poor yields affecting the farm economy in the process. However, the biofuels industry in Kenya shows signs of positive growth proceeding in such a way to minimize the risks that were taken with jatropha crops, with the croton tree breathing new life into the biofuel industry. To read more click [here](#).

Stockholms Ingenious Plan to Recycle Yard Waste

About ten years ago, Björn Embrén led the charge on a Swedish urban soil management process called the *Stockholm Solution* that would turn local green waste into heat and hot water. The process synergized Stockholm's parks department, waste disposal service,

energy providers, and urban gardeners to recycle yard waste. Closing the circle would be achieved when the resulting biochar is used in local urban gardens and public green areas. The pilot plant alone resulted in enough sustainable energy to provide heat and hot water for 80 apartments, according to the article. California officials have shown interest in the projects use of biochar as a means of reducing the need for irrigation in the drought-heavy state. To read more click [here](#).



Conversion Technology E-Newsletter - February 2017
02/23/2017

EVENTS

Spring Southern California Waste Management Forum

March 8, 2017

Downey, CA

For more information on this event, please visit the website:

<http://www.scwmf.org/web/forum-events/spring-conference/>

Alternative Technology Advisory Subcommittee Meeting (ATAS)

March 16, 2017

Alhambra, CA

For more information on this event, please visit the website:

<http://dpw.lacounty.gov/epd/tf/meetings.cfm>

CEAC Spring Conference

March 22-24, 2017

San Diego, CA

For more information on this event, please visit the website:

<http://www.ceaccounties.org/meetings-and-events/conferences/ceac-spring->

SWANapalooza

March 27-30, 2017

Reno, NV

For more information on this event, please visit the website:

<https://swana.org/Events/SWANapalooza.aspx>

BioCycle East Coast 17

April 4-7, 2017

Baltimore, MD

For more information on this event, please visit the website:

<http://www.biocycleeastcoast.com/>

NEWS

Agilyx Announces Plans for Polystyrene Recycling Through Pyrolysis

Previously known for converting plastics to crude oil, Oregon based Agilyx Corp has secured project financing for a pyrolysis facility capable of processing up to 10 tons of polystyrene scrap per day. The process used is able to return polystyrene to a liquid styrene monomer product that can be returned back into the manufacturing cycle. According to Agilyx CEO, Ross Patten, this facility will be the first of its type in the world and will be able to handle as much as 5% contamination without affecting the quality of the finished product. Patten adds that the facility may be expanded to process 25 tons per day and maybe even 50 tons per day and hopes to eventually sell different modules to different regions across the country. To read more click [here](#).

Does Gasification Have Unrealized Potential for the MSW Space?

The process of gasification is a complex one full of regulatory roadblocks and logistic challenges that make it a difficult technology to promote as commercially viable. However, the process may be able to address the needs of areas of lower population density. While gasification emits fewer emissions, it also produces less energy than incineration. Smaller cities would be able to take advantage of small modules that would convert municipal solid waste to energy and divert trash away from the landfill. Larger cities and more densely populated regions typically have less landfill space presenting even more logistic challenges, for now, for even large companies to present gasification as an economically viable alternative to incineration. To read more click [here](#).

Africas First Grid-Connected Biogas Plant Powers Up

The Gorge Farm Energy Park, located in Naivasha, Kenya produces its own electricity and heat using biogas generated from the farms own crop residue. In fact it produces a surplus of electricity, and has become Africas first biogas facility to sell surplus electricity back into the national grid. However, there are some concerns of whether current tariffs will attract enough investors to more biogas projects as this technology is relatively new in the continent. There have also been concerns over how much raw material is needed to produce substantial energy output. The industry assures that 1% of organic material and crops in Kenya would produce enough energy to match the current capacity of the country. To read more click [here](#).

SoCalGas Pilot Biogas Project Selected by US Energy Department for Funding

It was announced that the Central Contra Costa Sanitary District, located near Oakland, California, will host a pilot system developed by Southern California Gas Co. (SoCalGas) that will receive up to \$1.2 million from the US Energy Department. Hydrothermal processing technology will be used to convert wastewater solids into biocrude and methane gas with the help of water, heat, and pressure. The DOE is expected to fund half of the design and planning and the other half will be funded by a consortium led by the Water Environment and Reuse Foundation of which SoCalGas is a participant of. SoCalGas will help with overseeing the project and helping obtain necessary state and federal regulatory approvals and incentives. To read more click [here](#).



Conversion Technology E-Newsletter - March 2017

03/15/2017

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<https://swana.org/Events/SWANApalooza.aspx>

BioCycle East Coast 17

April 4-7, 2017

Baltimore, MD

For more information on this event, please visit the website:

<http://www.biocycleeastcoast.com/>

International Biomass Conference and Expo

April 10-12, 2017

Minneapolis, MN

For more information on this event, please visit the website:

<http://biomassconference.com/ema/DisplayPage.aspx?pageId=Home>

NEWS

Organics May Offer Most Growth Potential for Creating Renewable Energy from Waste

Creating energy from waste has been a part of the waste industry for decades, but has yet to live up to its economic potential. However, while several factors seem to be limiting growth at the moment for thermal conversion, there is still great interest in creating energy from landfill gas and anaerobic digestion. While there is potential in waste-to-energy technologies there are still some obstacles to overcome such as public perception and low landfill tip fees. Areas where landfilling waste is not cheap could be good areas to take these technologies. Co-digestion is being eyed by the waste industries of many cities as a key to food waste diversion programs. With interest in new technologies and new public policies in place, the future looks bright for organics to bring waste industries into the fold of clean energy markets. To read more, click [here](#).

Report Analyzes the Use of Biogas-Derived Electricity to Power Electric Vehicles

The Vehicle Technologies Office of Oak Ridge National Laboratory (ORNL) and Bioenergy Technologies Office (BETO) published a report analyzing the potential implications of an electric vehicle purchase incentive with renewable fuel credits. The Environmental Protection Agency can track how much renewable fuel is generated and used, and is using that information to consider who to give credit to for biogas derived electricity that is used for electric vehicles. The report by ORNL and BETO show that this credit could reduce the purchase price of electric vehicles positively affecting the market. The data that is collected by the EPA could also be used to analyze what conditions would best advance both biogas production and deployment of electric vehicles. To read more, click [here](#).

Maximizing the Revenue in a Bio-based Economy

Imperial College London's Dr. Roberto Rinaldi leads a joint team of researchers from the Max Planck Institute to discover more economic ways to convert plant dry matter to useful products that could replace petroleum-based products. One example is pyrolysis bio-oil that is produced from the thermal processing of waste biomass. Valuable organic compounds called alkylphenols can be separated from the pyrolysis bio-oil and can potentially replace compounds that are currently being produced from petroleum in materials such as agrochemicals, surfactants, and lubricant or polymer additives. Currently, the process to extract alkylphenols is expensive but Dr. Rinaldi's research aims to create a simpler and more efficient means of separating the compound from pyrolysis bio-oil. To read more, click [here](#).

Challenges Remain for Bringing Wisconsin Biogas to the Market

Focus on Energy is a utilities program in Wisconsin that promotes statewide energy efficiency and renewable resource projects. They recently issued a Request for Proposals (RFP) of biodigester projects for up to \$20 million in funding. This RFP, due in May of this

year, is aimed towards farm areas where manure affects local water quality and the market for manure digesters faces some challenges. Focus on Energys ten-year program for incentivizing biogas energy is coming to a close soon, meaning electricity sold back into the grid will be scaled back to standard market rate. Biogas cannot be injected into utility gas pipelines due to, among other reasons, assurance issues of quality control, and while interstate lines are an option there is not a large enough network to make this a viable option. While the biogas market in Wisconsin faces challenges, cooperation between elected officials, farmer, institutions, and the like will help ensure a place for biodigesters in the energy landscape. To read more, click [here](#).

REG Biomass-Based Diesel Sales Top 2 Billion Gallons

Renewable Energy Group Inc. (REG) took 18 years to sell its first billion gallons of biofuel and only 33 months to exceed that this past January. Domestic success and expansion into the European market were key in this milestone. REG Geismar, the companys biorefinery facility located in Geismar, Louisiana, successfully managed to operate at full production capacity after improvements made in response to two incidents in 2015. At a nameplate capacity of 75 million gallons per year, the facility has been continuously running at or above 100% capacity since October 2016. REG also acquired Petrotec, a leader in used cooking oil to biodiesel producer in Continental Europe. The acquisition brings REG into Europe and increases their worldwide capacity to 500 million gallons per year placing them in a position for international trade. To read more, click [here](#).



Conversion Technology E-Newsletter - April 2017

04/26/2017

ANNOUNCEMENTS

President Donald Trump issued [Executive Order 13777](#), the order establishes the policy of the United States to alleviate unnecessary regulatory burdens placed on the American people. It requires each agency to create a Regulatory Reform Task Force to evaluate existing regulations and to identify regulations that could be modified, replaced or repealed to make them less burdensome. EPA is seeking public comment and engaging in outreach to help them determine these regulations. The comment period is open through May 15, 2017. Go to the docket at [EPA-HQ-OA-2017-0190](#) for additional information.

EVENTS

Green California Summit and Expo

April 26-27, 2017

Sacramento, CA

For more information on this event, please visit the website:

<http://www.green-technology.org/gcsummit17/>

Waste Expo 2017

May 8-11, 2017

New Orleans, LA

For more information on this event, please visit the website:

<http://www.wasteexpo.com/we17/Public/Enter.aspx>

Next Generation Transit Operations

May 16, 2017

SoCalGas Webinar

For more information on this event, please visit the website:

https://www.gladstein.org/gna_webinars_videos/next-generation-natural-gas-for-transit-operations/

Southern California Waste Management Forum Annual Business Meeting

May 17, 2017

Yorba Linda, CA

For more information on this event, please visit the website:

<http://www.scwmf.org/web/forum-events/business-meeting/>

Renewable Natural Gas Symposium

May 17, 2017

Riverside, CA

For more information on this event, please visit the website:

<http://www.cert.ucr.edu/events/rng2017.html>

SB 1383 Workshops

May 17 and 25, 2017

Sacramento and Oceanside, CA (respectively)

More information about the workshops will be added when available on the following website:

<http://www.calrecycle.ca.gov/Climate/SLCP/>

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<http://dpw.lacounty.gov/epd/tf/meetings.cfm>

NEWS

Southington Food-To-Energy Plant Fired Up For Full Operation in May

Southington will be the first location of Connecticut's first two biodigester facilities according to Dennis Schain of the state's Department of Energy and Environmental Protection. Quantum and Turning Earth will be in charge of these food-to-energy plants. The Quantum facility started accepting food waste in December of 2016 to prime the bacteria that produces the biogas, and expects to be fully operational by May 2017. This plant aims to accept 40,000 tons of food waste a year from the local food industry. The Turning Earth facility is 37 acres and anticipates annually taking in 54,000 tons of food waste and 25,000 tons of green waste and turn it into 14 megawatts of electricity and approximately 45,000 tons of organic compost. Some of this electricity and compost will be used for an onsite greenhouse that will grow 1.5 million heads of lettuce per year. These two facilities are the first of what Connecticut hopes to be many food-to-energy plants to help meet a state mandate requiring 60% of all organic food waste to be recycled by 2024. To read more, click [here](#).

New York Cuts Commercial Food Waste Diversion Requirement from FY18 Budget

Governor Andrew Cuomo of New York proposed the Food Recovery and Recycling Act to the state's budget in January 2017. The plan would require commercial operations that

generate more than two tons of food waste per week to divert it for recycling. However, the budget negotiations surpassed the deadline by nine days with the Governors Food Recovery and Recycling Act getting scrapped along the way. However, the budget did allocate \$2 million for local governments for food donation and recycling programs. The Department of Environmental Conservation gave \$2 million to food bank infrastructure, \$4 million for large generators with organics diversion, and awarded \$3.7 million in grants to through Climate Smart Communities, assisting municipalities develop the infrastructure necessary for organics diversion. The Food Recovery and Recycling Act would have helped increase the numbers already participating in organics diversion in New York. To read more, click [here](#).

Solid Organic Waste Conversion in Small Communities

A study commissioned by Alberta Innovates was carried out to determine which solid organic waste conversion technologies had the most potential for small to medium communities. While there are approximately 700 facilities that provide conversion technology services, these facilities were concentrated in more heavily populated areas. This study is intended to determine not just which types of conversion technologies would help smaller communities, but which existing facilities would be able to provide that service to them. The five technologies that were researched include: (1) anaerobic digestion the use of bacteria in an oxygen-free environment to convert biodegradable materials into biogas, (2) gasification a thermochemical process that operates at high temperatures, (3) pyrolysis another thermochemical process but at intermediate temperatures, (4) torrefaction - similar to pyrolysis but at lower temperatures (200-320C), and (5) hydrothermal carbonation a thermochemical process involving water and operating at intermediate temperatures and high pressure. According to the study, the most promising conversion technology for Albertas small to medium communities is anaerobic digestion. Using the results of this study, Alberta hopes to not only invest in conversion technologies and facilities that provide them to smaller communities but acknowledges that there is potential in conversion technologies that have yet to be discovered. To read more, click [here](#).

Making Trash into Treasure to Drive the Circular Economy

As part of the City of Edmontons environmental strategic plan, The Way We Grow, Mayor Don Iverson aims to decrease greenhouse gases by promoting recycling, reuse, backyard composting, safe disposal of hazardous material, and recently conversion technologies. An initiative started in 2014 led to Enerkem Alberta Biofuels: a commercial-scale waste-to-biofuels facility that converts non-recyclable and non-compostable waste into biofuels and biochemicals. These biofuels and biochemicals are then sold back into the market, resulting in a developing, circular economy. The nurturing of innovative technologies not only increase the ongoing effort to divert waste away from landfills, but contribute to and grow the economy while even further reducing greenhouse gases in Edmonton. To read more, click [here](#).



Conversion Technology E-Newsletter - May 2017

05/18/2017

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SoCal SWANA Chapter Workshop

June 8, 2017

Buena Park, CA

For more information on this event, please visit the website:

<http://socalswana.org/events/socal-swana-chapter-workshop-june-8/>

BioEconomy 2017

July 11 12, 2017

Arlington, VA

For more information on this event, please visit the website:

<https://energy.gov/eere/bioenergy/bioeconomy-2017-domestic-resources-vibrant-future>

NEWS

LAX to Pilot Organic Waste Recycling Program

The Los Angeles Bureau of Sanitation (LASAN) have teamed up with Los Angeles World Airports (LAWA) to install a food waste recycling pilot program at Los Angeles International Airport (LAX). Food waste will be collected from a group of a handful of participating food establishments and transported off-site to LASANs Hyperion treatment plant to be converted into natural gas. The Organics Waste Recycling Pilot will run for 90 days after which LAWA will evaluate the results of the program. LAWA CEO Deborah Flint expects the program will become a part of the wide variety of environmentally-conscious programs now underway at LAX and Van Nuys. President Sean Burton of the Los Angeles Board of Airport Commissioners is optimistic that it will open the door to expand efforts into other terminals. To read more, click [here](#).

Impact Bioenergy Producing Two New Anaerobic Digestion Systems

Impact Bioenergy in Seattle has developed two new anaerobic digestion (AD) systems for a corporate campus catering operation and a small farm that produces chicken, eggs, and pork. According to Jan Allen, Impact Bioenergy CEO, the demand for these digesters are at an all-time high and Impact is paced to book out into March 2018. Impact is looking to tap into the foreign markets by creating offshore fabrication sites and evaluating capital partners. To address domestic needs, there are several systems of on-site AD that they offer. Some projects that have been successfully put into operation are craft food and beverage producers, dairy and food processing plants, wholesale and retail food services, farm-to-fork producers, fork-to-farm services, and resiliency services. In March of 2017, Impact made an arrangement with Lease Corporation of America to allow customers to use their AD systems without making upfront expenditures necessary. To read more, click [here](#).

Canadian City Ready to Launch Anaerobic Digestion and Composting Facility

It has taken eight years of planning and construction but the City of Surrey and Orgaworld Canada Limited are set to open an anaerobic digestion (AD) facility that is expected to convert up to 127,000 tons of food waste and yard trimmings into renewable natural gas (RNG) and high quality compost. The facility contributes to a goal set by the Canadian Gas Association to have 5% RNG derived from AD and gasification of forestry and agricultural waste in the national pipeline distribution by 2025 and 10% by 2030. Orgaworld guarantees production of a minimum of 100,000 gigajoules with Surrey guaranteeing to deliver at least 64,000 tons of residential organics annually. These

organics are specifically collected such that no pet waste, sanitary products, or diapers are allowed, and any bags used must be paper as even compostable plastics are not allowed. The facility is under negative air pressure which helps limit the odors to the contracted limit of one unit per million. To read more, click [here](#).

Supermarket Chain Transforms Old Onion Rings (And Other Expired Goodies) Into Electricity

According to the Environmental Protection Agency, the most common material to reach landfills and incinerators is food waste. Old food was typically thrown away, which meant potential profit was being discarded as well. One New England supermarket chain called Stop & Shop looks to take some of that money back by sending old and expired food from over 200 stores to an anaerobic digester instead of the landfill. The resulting biogas is then used to power Stop & Shops distribution center where all the food waste is collected. This system currently contributes 1 megawatt of power to one million square foot distribution center, with a maximum output that could fulfill approximately 40% of the centers needs. According to Dana Gunders of the Natural Resources Defense Council, grocers looking to divert food waste away from landfills is a nationwide trend. Converting old and expired food into useful energy provides a cost-efficient option to what has, until recently, been considered by the industry as acceptable losses. To read more, click [here](#).

More Efficient Way to Make Oil from Dead Trees

Mountain pine beetles introduce a fungus and their eggs into trees, which can kill the host tree within a few weeks of the initial attack. The actions of this species of beetle results in more than 40 million acres of forest in the western United States being destroyed. The dead wood cannot be harvested for lumber because the wood stains and cracks as a result of the beetle infestation. However a team from the University of Washington (UW) refined a faster form of pyrolysis, aptly named fast pyrolysis, that converts larger pieces of dead wood into bio-oil. The researchers from the UW were aiming to reduce the costs of processing the infested wood, while making the resulting bio-oil more commercially viable. The university along with other outside researchers are looking to add catalysts to upgrade the bio-oil into transportation fuels and other high-value chemicals. Infested wood tends to be dried out allowing UW to skip a step for their system which can process log sized pieces of wood. Normally the material had to be chipped into 1-2 mm length pieces and dried out before undergoing pyrolysis. UWs method could potentially allow for mobile pyrolysis units so that dead wood can be processed on site making it much more efficient and cost effective. To read more, click [here](#).



Conversion Technology E-Newsletter - June 2017

06/07/2017

ANNOUNCEMENTS

Call for Speakers Southern California Waste Management Forum 2017 Annual Conference. The Forums annual conference will be on November 8, 2017 at the Sheraton Fairplex in Pomona, CA. The topics to be addressed at this years conference will include, but not limited to: Organics Composting and Processing Solutions; Organics Education and Compliance; International Perspectives on Solid Waste Management; Energy Recovery from Solid Waste. Information about the Forum and the Annual Conference can be found on the Forums website at: www.scwmf.org. The deadline for abstracts is June 14, 2017. If you are interested in serving as a speaker, submit an abstract (500 words or less) or Power Point of your presentation, and a brief professional biography to: info@scwmf.org.

The California Department of Resources Recycling and Recovery (CalRecycle) released the application for the States Food Waste Prevention and Rescue Grant Program. Applications are due Tuesday, July 18, 2017. For more information on the eligibility, criteria, funding, timeline, and more, click [here](#).

The U.S. Departments of Energy and Agriculture recently announced plans for funding up to \$9 Million available for Biomass Energy Research and Development. Concept papers are due July 7, 2017, and full applications are due September 22, 2017. For more information, click [here](#).

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Arlington, VA

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<https://energy.gov/eere/bioenergy/bioeconomy-2017-domestic-resources-vibrant-future>

2017 U.S. Product Stewardship Forum

July 25-26, 2017

Boston, MA

For more information on this event, please visit the website:

http://www.productstewardship.us/page/2017_PSI_Forum

CRRA Annual Conference & Tradeshow

August 20-23, 2017

San Diego, CA

For more information on this event, please visit the website:

<http://www.crra.com/conference>

Waste Conversion Technology Conference

August 21-23, 2017

San Diego, CA

For more information on this event, please visit the website:

<http://wasteconversionconference.com/agenda/>

Resource Recycling Conference

August 28-30, 2017

Minneapolis, MN

For more information on this event, please visit the website:

<http://rrconference.com/>

NEWS

CR&R Invests \$50 Million Turning Waste Into Energy

CR&R is an integrated waste management company based in Orange County, California that boasts that their new renewable energy project is one of the largest and most advanced anaerobic digestion facilities in North America. The project will convert green waste and food waste into biogas and compost soil amendments. The process will also use recycled water from the local wastewater treatment plant. The plant is projected to process 335,000 tons of solid waste per year resulting in 4 million gallons of natural gas and 250,000 tons of digestate that can be used as soil amendments. CR&R's fleet can

use 3 million gallons of the natural gas leaving 1 million gallons that can be resold to the community, according to the senior regional vice president at CR&R, Alex Braicovich. CR&R is the first company to contract with SoCal Gas and has installed 1.3 miles of pipeline to connect with them. The facility is being built on an existing CR&R 50-acre material recovery and transfer station in Perris and will serve the southwest portion of Riverside County. For more information, click [here](#).

Study Quantifies Benefits of Pyrolysis Technologies

Argonne National Laboratory recently conducted a study on pyrolysis technologies that convert post-consumer plastics into fuels. Specifically, the study looked at greenhouse gas benefits and the consumption of water and energy. The researchers found that ultra-low sulfur diesel derived from post-use plastics are substantially beneficial when compared to the same fuel obtained from conventional sources. According to the study ultra-low sulfur diesel derived from the pyrolysis of post-consumer plastics results in a reduction of greenhouse gases by 14%, water usage by 58%, and energy usage derived from fossil fuel by 96%. Argonne's study shows that plastics-to-fuel technology is a viable option to derive ultra-low sulfur diesel while reducing landfill waste and greenhouse gases while conserving water and energy. The study notes that benefits of greenhouse gas reduction depend on the treatment method used on the co-products of pyrolysis, particularly the handling of fuel gas. Regardless, ultra-low sulfur diesel from plastics at minimum can result in carbon neutral diesel with the potential to offer a modest greenhouse gas reduction. For more information, click [here](#).

Alternative Thermal Conversion Technologies Creep Forward

Cleveland based Vadxx Energy is one of the few companies in the U.S. offering working models of commercial-scale conversion technology projects. Vadxx uses pyrolysis to convert plastic waste into diesel fuel and targets local diesel markets. Currently, the company processes 25,000 tons of plastic a year converting that to 60,000 barrels of diesel. Other companies have attempted to go full-scale to convert plastics to make fuels but have run into challenges such as securing the right feedstock and outlets for products. Europe and Asia have seen some success in their markets mainly driven by the limited landfill space and high tipping fees, but it is slowly catching on in the U.S. Technological and economic barriers have slowed down and even shut down some companies according to Bruce Clark of SCS Engineers. He also suggests that there is potential for military to run these facilities, which can become a good proving ground to one day scale up to serve cities. While it is slow to develop in the U.S., companies like Covanta and Enerkem show that thermal-based conversion technologies still have much promise. For more information, click [here](#).

Study Finds New Potential for Cold Anaerobic Digestion Process

Researchers from Concordia University in Canada partnered with Bio-Terre Systems to develop a new type of anaerobic digestion that can work in low-temperature environments, as low as 20C (68F). Though still in the early stages of research, there is

potential for this process to use less energy while producing similar yields as traditional anaerobic digestion. The research used a semi-continuous feed process on material extracted from treated effluent after digestion and found that the biogas generated is of similar quality to traditional methods of anaerobic digestion. Concordia hopes that their research can be replicated on a larger scale, which can greatly reduce operating costs associated with heating requirements for existing digesters. If this can be scaled up to the commercial level it will be a big help for facilities and operations looking to reduce operation and energy costs, particularly in colder parts of the world where heating demands are high. For more information, click [here](#).

The Business Turning Sewage Sludge into Fuel

France based company, Cryo Pur aims to process biogas produced from anaerobically digested sewage into liquefied natural gas (bio-LNG). The first step in this process is to purify the biogas by removing hydrogen sulfide, water, and other pollutants. Next, the purified biogas is cooled to -120C, with the separation and liquefaction of carbon dioxide taking place. The resulting biomethane is then compressed and stored in specialized cryogenic chambers. Cryo Pur claims the biomethane resulting from this process is 99.7% pure and has the same quality as natural gas. The U.S. Department of Energy has even described biomethane as being pipeline-quality and fully interchangeable with conventional natural gas. Cryo Pur has been working in a facility in Paris with other industrial partners to produce a working demonstration of this technology. According to Cryo Pur CEO and founder, Denis Clodic, for every 2 metric tons of biogas the process can yield approximately 1 metric ton of liquid biomethane, an amount that can be used in long haul trucks to make long distances in the range of 1,500 km. For more information, click [here](#).



Conversion Technology E-Newsletter - July 2017

07/18/2017

ANNOUNCEMENTS

Eight national business groups that jointly represent thousands of businesses within renewable energy technologies released a statement outlining their plans for the nation's power grid. These organizations call for a sustained, positive effort to build a grid infrastructure that takes advantage of the latest technologies available. These eight groups highlight mutual support for market structures that appropriately value new and existing technologies, tax policy continuity and parity for all renewable technologies, and the expansion and modernization of the electrical grid to support the proper operation and integration of clean power sources. These new standards can offer the country economic savings, improved reliability, greater access to electric power, environmental improvement, and more diverse choices for consumers and producers of electrical power. The organizations that have joined on this declaration are the American Biogas Council (ABC), the American Council On Renewable Energy (ACORE), the American Wind Energy Association (AWEA), the Biomass Power Association (BPA), the Energy Recovery Council (ERC), the Geothermal Energy Association (GEA), the National Hydropower Association (NHA), and the Solar Energy Industries Association (SEIA). To read the full declaration click [here](#).

EVENTS

Alternative Technology Advisory Subcommittee Meeting (ATAS)

July 19, 2017

Alhambra, CA

For more information on this event, please visit the website:

<http://dpw.lacounty.gov/epd/tf/meetings.cfm>

2017 U.S. Product Stewardship Forum

July 25-26, 2017

Boston, MA

For more information on this event, please visit the website:

http://www.productstewardship.us/page/2017_PSI_Forum

CRRA Annual Conference & Tradeshow

August 20-23, 2017

San Diego, CA

For more information on this event, please visit the website:

<http://www.crra.com/conference>

Waste Conversion Technology Conference

August 21-23, 2017

San Diego, CA

For more information on this event, please visit the website:

<http://wasteconversionconference.com/agenda/>

Resource Recycling Conference

August 28-30, 2017

Minneapolis, MN

For more information on this event, please visit the website:

<http://rrconference.com/>

Stakeholder Workshop for SB 1383 Short Lived Climate Pollutants (SLCPs) Riverside

August 31, 2017

Riverside, CA

For more information on this event, please visit the website:

<http://www.calrecycle.ca.gov/Actions/PublicNoticeDetail.aspx?id=2159&aiid=1965>

ISWA's World Congress & WASTECON 2017

September 25-27, 2017

For more information on this event, please visit the website:

<https://swana.org/events/wastecon.aspx>

2017 Syngas Technologies Conference

Wednesday, October 15-18, 2017

For more information on this event, please visit the website:

<http://www.gasification-syngas.org/events/2017-conference/>

NEWS

Biogas RNG Outpacing Even Solar in Growth Potential

Patrick Serfass, Executive Director of the American Biogas Council, credits the growth of Renewable Natural Gas with the abundance of potential energy sources in the US. Specifically, Serfass refers to the tons of food waste generated annually, manure generated, and the trillions of gallons of wastewater generated daily, that would otherwise be handled and disposed of at high costs. However, more than 2,200 biogas facilities across the US are aimed at turning those handling and disposal costs into profits, cleaner

air, and new jobs. The biogas industry simultaneously meets the needs of handling the countrys large waste stream and providing farmers with fertilizers. The next step of biogas is to clean it so that it can be pumped directly into the countrys existing natural gas pipelines for distribution. While growth potential is currently present in the biogas RNG industry, the recent cuts to federal programs related to renewable energy make the future growth of biogas RNG somewhat uncertain. To read more, click [here](#).

How New York Is Turning Food Waste into Compost and Gas

Approximately 14 million tons of waste in New York City are thrown out each year at a cost of \$400 million dollars annually just to ship what is collected to incinerators and landfills. This does not include the private companies that handle waste from office and business buildings. The largest portion of the waste is organics, which prompted former Mayor Michael Bloomberg to declare food waste as the final recycling frontier. Kathryn Garcia boldly claimed on her first day as sanitation commissioner that her agency would lead the nation in organics recycling. A program was developed to more efficiently collect organics that would be separated by the citizens of New York City, which has been difficult to get large commercial buildings on board with. Most of the citys organics will head to private facilities within the city to eventually be composted, but NYC is looking at Quantum Biopower to install digesters as it will physically take up less space than composting fields and will create energy. A testing program that began five years ago, in a wastewater treatment plant in Brooklyn has increased its biogas production by as much as 17 percent according to the Department of Environmental Protection. But none of this is usable for energy yet and is burned off. National Grid would like to eventually see usable biogas fuel the very trucks that haul the organics to these plants and warm the houses from which the waste is collected. To read more, click [here](#).

Water Environment Federation and American Biogas Council Partner on Organic Waste Conversion

The American Biogas Council (ABC) is partnering up with Washington-based Water Environment Federation (WEF) to expand conversion technology across the US. The country has over 2,200 operating biogas facilities, 1,300 of which are located at water resource recovery facilities. WEF reports that there are almost 4,000 such facilities where new biogas systems can be installed to help provide renewable fuel source. Both ABC and WEF signed a new memorandum of understanding clearly stating their goal to promote resource recovery, specifically from biogas systems at water facilities. This memorandum of understanding formalizes both organizations support of the beneficial use of biogas, digested materials, and biosolids, the use of proven technologies that facilitate energy and nutrient recovery, encouraging state and federal legislation that promotes the use of biogas as a renewable energy source, and the continued research in regards to biosolids management. To read more, click [here](#).

Philadelphia Soliciting Ideas to Digest Pre-Processed Food Scraps

Philadelphia Mayor Jim Kenney established a zero waste goal by 2035 to divert 228,000 tons of food waste away from landfills. Mayor Kenney tasked his Zero Waste and Litter Cabinet to develop a detailed plan by September. The City of Philadelphia reaffirmed that food waste diversion is critical to its zero-waste goal but this is a non-binding step toward potential co-digestion. The Philadelphia Water Department recently issued a Request for Information for two of its water pollution control plants to accept pre-processed, liquefied material. It will likely start with a demo before it is decided to scale up. The aforementioned facilities already co-digest aircraft deicing fluid through a partnership with Philadelphia International Airport and are set up to capture biogas for on-site use. To read more, click [here](#).

Stony Point: \$700M Trash Plant Fuels Optimism and Criticism

The town of Stony Point in Rockland County, New York has been planning to install a gasification plant for years and has made a deal with Los Angeles based New Plant Energy to move ahead with the proposal. The two-phase project intends to process at least 4,500 tons of garbage a day from municipalities in New York City and Westchester, but none from Rockland itself. This project is expected to result in 200 round-trips by garbage trucks to haul material to the facility, that plans to use a steam reformation system, rather than incineration. Half the material will be converted into solid recovered fuel and the rest will be converted into sulfur-free diesel fuel in a projected total of 20 million gallons of diesel fuel per year. While the gasification plant is projected to bring jobs and tax revenue back to the manufacturing town, there is concern among the residents of the neighboring town of Haverstraw. Haverstraw Supervisor Howard Phillips raised concerns about increase in traffic, proximity to residential neighborhoods, and air emissions released from the plant. To read more, click [here](#).



Conversion Technology E-Newsletter - August 2017

08/10/2017

EVENTS

Stakeholder Workshop for SB 1383 Short-Lived Climate Pollutants (SLCP) Sacramento

August 16, 2017

Sacramento, CA

For more information on this event, please visit the website:

<http://www.calrecycle.ca.gov/Actions/PublicNoticeDetail.aspx?id=2158&aiid=1964>

Alternative Technology Advisory Subcommittee Meeting (ATAS)

August 17, 2017

Alhambra, CA

For more information on this event, please visit the website:

<http://dpw.lacounty.gov/epd/tf/meetings.cfm>

CRRA Annual Conference & Tradeshow

August 20-23, 2017

San Diego, CA

For more information on this event, please visit the website:

<http://www.crra.com/conference>

Waste Conversion Technology Conference

August 21-23, 2017

San Diego, CA

For more information on this event, please visit the website:

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August 28-30, 2017

Minneapolis, MN

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<http://rrconference.com/>

Stakeholder Workshop for SB 1383 Short Lived Climate Pollutants (SLCPs)

Riverside

August 31, 2017

Riverside, CA

For more information on this event, please visit the website:

<http://www.calrecycle.ca.gov/Actions/PublicNoticeDetail.aspx?id=2159&aiid=1965>

ISWA's World Congress & WASTECON 2017

September 25-27, 2017

Baltimore, MD

For more information on this event, please visit the website:

<https://swana.org/events/wastecon.aspx>

2017 Syngas Technologies Conference

October 15-18, 2017

Colorado Springs, CO

For more information on this event, please visit the website:

<http://www.gasification-syngas.org/events/2017-conference/>

BioCycle REFOR17

October 16-19, 2017

Portland, OR

For more information on this event, please visit the website:

<https://www.biocycle.net/conferences/event-calendar/>

U.S. Biogas 2017

October 25-26, 2017

San Diego, CA

For more information on this event, please visit the website:

<http://events.newenergyupdate.com/biogas/>

NEWS

Boise, Idaho, Anaerobic Digester to Process Multiple Streams to Increase Efficiency

Boise Biogas is planning to install an anaerobic digestion (AD) system that will produce pipeline gas for local distributors and fertilizer for local farmers. This system will be fed by various feedstocks. Originally, Boise Biogas intended to generate electricity to run its equipment, but a surplus of organics ending up on landfills and dairy farms needing assistance for manure management provided a unique opportunity. The planned system aims to take out as many solids as possible while also recycling treatment water. The process is intended to be enclosed from the drop-off until the byproducts are removed from the digester to control any odors and emissions. The key is to find a way to manage

the multiple feedstocks as slight variations can greatly change how the AD system must operate. To read more, click [here](#).

California City and Waste Hauler Propose Biomass Facility

The City Council of Napa, California, and Napa Recycling and Waste Services have proposed two biomass facilities that will divert wood waste from landfills to generate power by gasification. Truck fleets would also be converted from diesel to compressed natural gas and sorting equipment would need to be improved. It is projected that the plants would cost a total of \$12.6 million to build and will generate approximately 15,000 megawatt-hours per year, enough electricity for 2,200 households. Ten percent of the power would be used by Napa Waste and Recycling with the rest sold to the Pacific Gas and Electric Co., resulting in a \$1.75 million increase in revenue. Additionally, Napa Waste and Recycling can also sell the biochar as fertilizer or as a water filtering agent, creating \$1.37 million revenue per year. The City of Napa's Department of Public Works stated that the plants would turn a profit of \$5.1 million in its first 20 years. In addition, the City also projects an increase to residential rates of 9.5 percent over two years if the proposal passes. To read more, click [here](#).

Anaerobic Digestion Plants Now Power Over a Million UK Homes

The July 2017 report of the Anaerobic Digestion & Bioresources Association (ADBA) shows that AD in the United Kingdom (UK) has increased in capacity by 18 percent over the last year. Charlotte Morton, Chief Executive of ADBA, elaborates that anaerobic digestion has reached a milestone in the UK, as it can now power over a million homes in the region. Additionally, she points out that despite the increase in capacity there is still a lack of support for AD in terms of long-term policy, particularly in heat and transport. There are plans to add 437 AD plants in the UK, but without strong support, they are unlikely to come to fruition. There are currently 13 AD plant projects on hold, as a result of delays in passing legislation for the Renewable Heat Incentive. Approximately 50 to 80 plants were commissioned in 2016, but it is projected to fall as low as 19 this year, due to the uncertainty in policy. To read more, click [here](#).

Study: Anaerobic Digestion Could Reduce Microplastics in Sludge

There is a new study that was published in Environmental Science & Technology that suggests that anaerobic digestion may reduce the amount of microplastics in sewage sludge. Digesting microplastics out of sewage sludge is attractive, because it is a mitigation step, rather than a cleanup step. Though consumers are depending less on microbeads, a large source of microplastics in the water cycle, it is still important to mitigate the amount that does end up in sludge. The implications of this study would mean that cities that plan to use anaerobic digestion to co-digest food waste and sewage at wastewater treatment plants may end up with less plastics in their biosolids; less plastics in biosolids means it will be a higher quality product that can be sold for agricultural purposes, among other things. However, more studies must be made, as this particular

studys scope was limited to having looked at seven wastewater treatment plants in Ireland and a lack in pre-treatment testing. To read more, click [here](#).

Merchant Biogas Plant Services Food Waste Generators

Quantum Biopower, LLC, is a food waste AD development company, based in Southington, Connecticut, that privately financed its first AD facility. The financial risk to permit such a facility was a calculated one on the owners part, banking on the fact that the regulatory ban on disposal of food waste would work in their favor. It took approximately two years for Quantum to obtain critical permits from the Connecticut Department of Energy and Environmental Protection. Revenue from this facility will be derived from tip fees, sale of electricity, compost, fertilizer products, and Renewable Energy Credits generated from the biogas. Initially, this facility was going to repurpose forest by-product materials through gasification and pyrolysis, but instead decided to go with a low solids AD technology. This posed the challenge of setting the standard for food waste and biosolids codigestion in Connecticut. Quantum added a food waste decontamination step to maximize the range of food waste that could be processed. The liquid food waste is then digested and processed into biogas, and the digestate is processed for compost and fertilizer. Quantum projects that the facility will capture 5,000 tons per year of carbon dioxide once it processes 40,000 tons of food waste per year. To read more, click [here](#).

What the Anaerobic Digestion Industry can Learn From Solar Standardization

The AD market in the U.S. is primed for growth with the landfill industry in decline and food waste diversion regulation on the rise. The technology exists and is proven to work, and there is a foundation for the industry to prosper. However, potential investors are wary, despite the number of projects and pilot programs currently under development. Though there are parallels between the European and U.S. biogas markets, the skepticism of these investors is more comparable to the early days of the solar industry 20 years ago. Standardization will do much in the way to quell risks in the eyes of investors, especially when done on the same level as the solar industry. Laws that promote food waste diversion from landfills have also helped development of AD projects, setting the scene for a prosperous market. A well-developed commercial structure, proven technologies and process, and a strong operator, will go a long way in gaining the confidence of future investors for a budding industry. To read more, click [here](#).



Conversion Technology E-Newsletter - September 2017
09/21/2017

EVENTS

Alternative Technology Advisory Subcommittee Meeting (ATAS)

September 21, 2017

Alhambra, CA

For more information on this event, please visit the website:

<http://dpw.lacounty.gov/epd/tf/meetings.cfm>

ISWA's World Congress & WASTECON 2017

September 25-27, 2017

Baltimore, MD

For more information on this event, please visit the website:

<https://swana.org/events/wastecon.aspx>

Renewable Energy from Waste Virtual Conference

October 3-4, 2017

<http://www.rewconference.com>

2017 Syngas Technologies Conference

October 15-18, 2017

Colorado Springs, CO

For more information on this event, please visit the website:

<http://www.gasification-syngas.org/events/2017-conference/>

BioCycle REFOR17

October 16-19, 2017

Portland, OR

For more information on this event, please visit the website:

<https://www.biocycle.net/conferences/event-calendar/>

U.S. Biogas 2017

October 25-26, 2017

San Diego, CA

For more information on this event, please visit the website:

<http://events.newenergyupdate.com/biogas/>

Stakeholder Workshop for SB 1383 Short-Lived Climate Pollutants (SLCP)

October 30, 2017

Sacramento, CA

<http://www.calrecycle.ca.gov/Actions/PublicNoticeDetail.aspx?id=2187&aiid=1995>

Southern California Waste Management Forum

November 8, 2017

Pomona, CA

<http://www.scwmf.org/web/forum-events/conference/>

RNG Conference 2017

November 27-30, 2017

Dana Point, CA

<https://www.eventbrite.com/e/rng-2017-conference-registration-33943436733>

NEWS

Cornell Engineers Transform Food Waste Into Green Energy

With food waste being the largest component contributing to municipal landfills in the United States, researchers at Cornell University may have found a way to turn that food waste into energy more efficiently. Hydrothermal liquefaction (HTL) subjects food waste to high heat and high pressure resulting in crude bio-oil that can be further refined into biofuel. The by-product is aqueous food waste and can be anaerobically digested extracting nearly all the energy from the remaining feedstock. Anaerobic digestion (AD) alone could take up to a few weeks to turn the food waste into energy. The research shows that the aqueous by-product of HTL makes it easier for the microbes to break down than raw biomass. A combination of HTL and AD is not only more efficient but makes the process much faster. To read more, click [here](#).

Biofuel Breakthroughs Bring Negative Emissions A Step Closer

Recent breakthroughs in biofuels research have made negative emissions closer to reality with the help of algae. As an example, algal blossoms that can occur in polluted rivers and lakes are relatively inefficient at taking in carbon dioxide. However, researchers have found a way to genetically modify algae to double the carbon drawdown rate. Researchers at Washington State University have even developed a way to grow algae in a fraction of the time. Algae can then be used to make up the biomass feedstock for pyrolysis to create energy. The remaining byproduct, called char or biochar, can be used as a soil additive to return the carbon back into the soil. The market for biochar as a soil additive has not sufficiently developed. Thus, the pyrolysis of algae is more economical to produce biofuel. But if biochar as a soil additive is better refined, the market may develop to make it viable to produce both biofuel and biochar. To read more,

click [here](#).

Can Congress Cut Food Waste? It Depends on the Success of this Bill

The Food Recovery Act (HR 3444), first introduced by Representative Chellie Pingree at the end of June looks to establish a national standard as to how the U.S. handles food waste. Two of the requirements that could result from the bill would be that anyone seeking a grant or loan for an anaerobic digestion (AD) project would have to submit an agreement to adhere to EPA food management standards and a plan on how to handle digestate byproduct of the AD process. The bill would also encourage schools to purchase ugly food, which are nonstandard looking produce. Not only are these fruits and vegetables being diverted from landfills, but this will help teach a younger generation to appreciate unconventional looking produce. Date labels expressing use by dates could finally be standardized on a national level, and the Department of Agriculture may change the way it awards loans and grants as a result of the Food Recovery Act. To read more, click [here](#).

From Food Waste to Energy: How Potato Peelings Are Powering Buildings in SE Wisconsin

Two years ago, Sendiks Food Market in Mequon would easily fill eight 30-yard bins with food waste monthly. However, that amount has decreased to just one 30-yard bin a month because of the Grind2Energy food waste recycling system. Food scraps are fed into the system and ground into a slurry that is shipped off-site to the Milwaukee Metropolitan Sewage District South Shore Site where it is anaerobically digested. The digesters are located underground at the site and can hold up to three million gallons. The methane produced by these digesters are then converted into energy, making up to 75% of the plants total energy needs, which helps lower energy costs and in turn help to lower taxes according to public information manager, Bill Graffin. After the digestion process is over, the digestate left behind is then sold to be used as a nutrient-rich fertilizer. According to Grind2Energy, one pound of food waste can power a 10W LED bulb for 17 hours, and one tank of slurry like the one Sendiks uses can power a single-family home for 70 days. To read more, click [here](#).



Conversion Technology E-Newsletter - October 2017
10/23/2017

EVENTS

U.S. Biogas 2017

October 25-26, 2017

San Diego, CA

For more information on this event, please visit the website:

<http://events.newenergyupdate.com/biogas/>

Stakeholder Workshop for SB 1383 Short-Lived Climate Pollutants (SLCP)

October 30, 2017

Sacramento, CA

<http://www.calrecycle.ca.gov/Actions/PublicNoticeDetail.aspx?id=2178&aiid=1987>

Stakeholder Workshop for SB 1383 Short-Lived Climate Pollutants (SLCP)

November 2, 2017

Southern California, specific location TBD

<http://www.calrecycle.ca.gov/climate/slcp/>

Southern California Waste Management Forum

November 8, 2017

Pomona, CA

<http://www.scwmf.org/web/forum-events/conference/>

Alternative Technology Advisory Subcommittee Meeting (ATAS)

November 16, 2017

Alhambra, CA

For more information on this event, please visit the website:

<http://dpw.lacounty.gov/epd/tf/meetings.cfm>

RNG Conference 2017

November 27-30, 2017

Dana Point, CA

<https://www.eventbrite.com/e/rng-2017-conference-registration-33943436733>

NEWS

Three Experts, Three Methods: The Debate Over Food Waste Processing

When it comes to food waste, the EPA's Food Recovery Hierarchy lists all the different ways it can be handled from producing less food and feeding the hungry to landfilling. Waste Dive interviewed three industry experts to explore the options and effectiveness of anaerobic digestion (AD), composting, and incorporating food scraps at wastewater treatment facilities. Patrick Serfass of the American Biogas Council boasts the potential of AD facilities to scale up and efficiently produce renewable natural gas. The U.S. Composting Council's Frank Franciosi boasts that composting is a better option in areas where food waste collection and processing is necessary but not dependent on profitability. Jon Koch, the Director of the Water Pollution Control Plant in Muscatine, Iowa explains that adding food scraps to an existing wastewater treatment plant will produce energy from an already existing and necessary process. To read more, click [here](#).

Brown County Bioenergy Project Receiving \$15 Million State Grant

The Public Service Commission of Brown County approved a grant to fund construction of a bioenergy system that will create renewable natural gas (RNG) from dairy farm manure and other waste. BC Organics of Dynamic Concepts in Waukesha will take the lead on the project. The \$15 million dollar grant is part of Wisconsin's Focus on Energy program, which is funded from contributions from the state's investor-owned utilities. This project is a response to a request from proposals from developers interested in RNG derived from anaerobic digester systems while benefiting agriculture, water quality, and public health. Various state and local agencies still need to approve the project, though it received strong support from state officials. The project will be located near a landfill owned by Brown County and nine farms in the state have committed to using the digester. The system is expected to start operating by January 2019. To read more, click [here](#).

Revamped Fremont Biodigester Expected to Power 2,500 Homes Annually

The Fremont Regional Digester in Fremont, Michigan initially opened in 2012 only to close in 2015. It was recently bought by Generate Capital Inc. from San Francisco who invested in and revamped the project, which is expected to be fully operational this fall after a test start-up was completed this past July. It is expected to divert 165,000 tons of organic waste per year to produce enough electricity to power 2,500 homes annually. Much of the feedstock will be provided by local food processors and agribusinesses according to Daniel Meccariello, chief operating officer of Dynamic Systems Management who is contracted to manage the Fremont Regional Digester. The leftover digestate will then be used as organic fertilizer at local farms. To read more, click [here](#).

AOE & Other Anaerobic Digester Facilities Protect Environment By Transforming Organic Waste Into Fertilizer

Every year, New York City businesses alone send approximately 650,000 tons of food waste to landfills. The scale of food waste is so large that a demonstrable decline in its numbers is not in the foreseeable future. While New York City is aggressively expanding its commercial and residential food waste programs, most municipalities have yet to even begin. American Organic Energy (AOE) is a company based in Yaphank, New York that specializes in converting food waste into renewable energy via anaerobic digestion. New York Governor Andrew Cuomo credits AOE as a model to be followed. AOE aims to divert 180,000 tons of food waste, 30,000 tons of FOG (fats, oils, grease), and 10,000 tons of green waste from the landfills of New York annually. The new AOE facility is expected to generate enough biogas to create nearly 50 million kilowatt-hours of electricity per year, which can be used to power the facility, its fleets, or sold back to the utility companies. The leftover digestate will be incorporated into nutrient-rich water as a partnership endeavor with Miracle-Gro to produce organic nitrogen fertilizer. To read more, click [here](#).

Washington State University, Pacific Northwest National Library Convert Biofuel Waste into Commodity

Converting algae to biofuels begins by applying high temperature and high pressure to the algae in a process called hydrothermal liquefaction (HTL), which was developed by Pacific Northwest National Library (PNNL). This process produces wastewater that contains a lot of carbon and nutrients, but Washington State University (WSU) has developed a possible option to break down this residue. By adapting anaerobic microbes, the material is converted into biogas without the use of harsh chemicals. Solids that are left behind can also be applied as fertilizer, or recycled back into the HTL process. Converting the waste product of HTL into a usable commodity helps algal biorefineries with a solution to one of its largest issues. The results were promising enough for WSU to partner with PNNL to perform a similar strategy with conversion of sewage sludge to fuel. To read more, click [here](#).

Rhode Island Anaerobic Digester Could be Model for Region

The largest digester in New England is a commercial scale anaerobic digester in Johnston, Rhode Island and has yet to be completed. In 2014, the state of Rhode Island passed a compost law requiring large institutions to divert organic waste to a farm, food pantry, compost facility, or anaerobic digester as long as such a facility exists within 15 miles. Blue Sphere Corp. is an Israeli-based company that has been planning for this facility since 2012. The biogas that will be produced will fuel one of the facility's two generators for a capacity of 3.2 MW. Power will also be purchased by National Grid under a 15-year power-purchase deal. The remaining digestate will be sold off as a soil amendment. Blue Sphere already has contracts to take organic waste from food manufacturers and hopes to attract seafood processors in the rest of the state as well as Massachusetts. The 2014 law expands in 2018 to include smaller institutions that produce 54 tons of food waste a year. To read more, click [here](#).



Conversion Technology E-Newsletter - November 2017
11/28/2017

EVENTS

Alternative Technology Advisory Subcommittee Meeting (ATAS)

December 21, 2017

Alhambra, CA

For more information on this event, please visit the website:

<http://dpw.lacounty.gov/epd/tf/meetings.cfm>

**Southern California Solid Waste Association of North America (SWANA)
Founding Chapter Workshop**

January 18, 2018

Ontario, CA

For more information on this event, please visit the website:

<http://socalswana.org/events/socal-swana-chapter-workshop-january-18-2018/>

NEWS

Enerkem's Edmonton Waste-to-Biofuel Facility Receives Registration Approval From U.S. Environmental Protection Agency (EPA) to Sell its Ethanol Under the U.S. Renewable Fuel Standard

Earlier this year, Enerkem expanded its Edmonton plant to produce 13 million more gallons of ethanol per year. This facility has just received approval from the U.S. Environmental Protection Agency (EPA) to sell ethanol in the United States under the U.S. Renewable Fuels Standards (RFS). By 2022, it is expected that 16 billion gallons of biofuels are to be blended into the conventional transportation fuel pool as a part of the 2007 Energy Independence and Security Act. The registration process for EPA approval is meant to meet the stringent regulatory requirements of the RFS program. This approval registers Enerkem for Renewable Identification Numbers (RIN) credits which can be purchased by refiners to comply with the RFS program. It has been established by the EPA that the cellulosic biofuels that Enerkem intends on selling reduce greenhouse gas emissions by at least 60% when compared to gasoline. To read more, click [here](#).

Household Digester Creates Biogas from Food Waste for Cooking

HomeBiogas is a kickstarter firm that developed a biodigester for home use two years ago. It took just 24 hours for that project to meet its crowdfunder goal and HomeBiogas has recently developed another domestic biodigester for leftover food waste. The project, dubbed HomeBiogas 2.0, is currently launched on kickstarter and boasts that it works two times faster than its predecessor and even comes with a ready-to-use stovetop. Leftover organic waste up to 1.5 gallons per day can be deposited into the biodigester and converted into enough biogas to power the accompanying stovetop for up to three hours daily. The solid digestate can then be used as fertilizer. Typically home food waste is thrown into a composter, which demands constant upkeep, may develop odors, and attract pests. HomeBiogas says installation is simple and the biogas is fed directly to the stovetop through its patented mechanical pressure mechanism. The company hopes this domestic biodigester will create opportunities to provide clean energy and natural fertilizer in underserved communities and developing nations. To read more, click [here](#).

Nebraskas Newest Power Plant Will Use Wood, Other Waste, as Fuel

A power plant planning to utilize gasification of wood products and other waste has been announced by the Nebraska Forest Service (NFS). According to the NFS forest products program leader, the new facility that will be located in South Sioux City will be a great help to the state's foresters. Despite a lot of active management, there are still wood resources like eastern red cedar causing problems in grasslands and forests with nowhere else to take it. Nebraska's sawmill industry mostly creates wooden pallets, which develop wood waste that can also feed into this planned power plant's feedstock. The gasification system will be a welcome addition to the state's foresters who only have a few boilers that can take so much wood waste. Not only will the large supply of wood waste be dealt with, but the city will be able to get 57% of its energy from renewable sources once the power plant is operational. To read more, click [here](#).

The Rise of Biofuels in the Age of Electric Vehicles

Recent trends show that despite the popularity of electric vehicles, there is a present and growing demand for the biofuel industry to thrive on. A process for producing biodiesel, called the Fischer-Tropsch method, was initially utilized to produce liquid fuels from coal or natural gas. However, there is development of the process that uses biomass as feedstock to convert green waste into syngas and automotive fuels. An additional step in the process, in which Fischer-Tropsch wax is produced, can also produce a higher yield with cleaner emissions. The benefits of pyrolysis not only close the loop in the waste-to-fuel industry, but the byproduct of biochar can also contribute to agriculture as it had in the past with the Amazon as a soil amendment. One possible avenue that may open things up for the biofuel industry is a process that can adapt components of both bio-oil recovery and biochar production as a soil amendment. Investments must be continually made in the science, technology, and markets of biofuel for its economy to stand on its own feet. To read more, click [here](#).

Why the Time is Right for Aviation Biofuels to Take Off

The International Air Transport association projects that number of air travelers will almost double in 2035 from 3.8 billion to 7.2 billion in 2016. So while aviation currently produces 2% of human induced carbon dioxide emissions, there is potential for it to grow which makes the present day a crucial turning point to switch to sustainable fuels. Projections also suggest that even if just 5% of commercial aviation fuel were sustainable fuels, the overall industrys carbon footprint could drop by 4%. Because these sustainable fuels are competing with an incumbent system, it is expected to see the setbacks that biofuels have been experiencing. However, unlike solar and wind power which took 50 years to compete with the incumbent system, biofuels are quickly gaining the support from national and local governments and multi-stakeholder groups. The industry is primed for the growth and success of biofuel infrastructure with investor confidence increasing and demand growing as conversion technologies continue to stabilize and become more sophisticated. To read more, click [here](#).

Sending Recycling to Waste-to-Energy in Honolulu Could Save Millions, Audit Shows

One of the disadvantages of being a small archipelago in the middle of the Pacific Ocean is the high cost of dealing with waste. For Hawaii, sending materials to a landfill or importing materials from the mainland to recycle is getting expensive. The uncertainty in the recycling market also exacerbates the issue. Honolulu City Auditor wrote a report detailing that \$7 million dollars could be saved by sending more material to the city-owned waste-to-energy facility, H-Power. The costs to process recyclable materials have increased while the value of recyclable materials has decreased. As a result, Hawaii County and other jurisdictions are moving to ban certain materials such as expanded polystyrene to help decrease waste and litter. While the numbers seem to support the moves that the Honolulu government are making, it remains to be seen if they can get the same support from the general population. To read more, click [here](#).

New York Starts Gasification Pilot Project

Clarkson University and One World Clean Energy, a Kentucky-based energy provider aiming to provide sustainable energy to underdeveloped communities, have teamed up to convert one ton of waste per day (along with some leachate) into renewable energy. The waste will undergo gasification and the syngas produced will be used to create heat energy and electricity. The system to be installed will come from One World Clean energy and will have a capacity of 100 tons of mixed waste per day. The project will be located in a transfer station that processes approximately 50 tons of waste per day. The pilot facility is part of a new research program and will be operated by students of Clarkson University. As part of the research program, data will be collected for the development and commercial stages of the project with the potential to become a new disposal option in the county. To read more, click [here](#).



Conversion Technology E-Newsletter-December 2017
12/21/2017

EVENTS

Alternative Technology Advisory Subcommittee Meeting (ATAS)

January 18, 2018

Alhambra, CA

For more information on this event, please visit the website:

<http://dpw.lacounty.gov/epd/tf/meetings.cfm>

**Southern California Solid Waste Association of North America (SWANA)
Founding Chapter Workshop**

January 18, 2018

Ontario, CA

For more information on this event, please visit the website:

<http://socalswana.org/events/socal-swana-chapter-workshop-january-18-2018/>

Compost 2018, USCC Conference & Tradeshow

January 22-25, 2018

Atlanta, GA

For more information on this event, please visit the website:

<https://compostconference.com/>

Verde Xchange Conference 2018

January 28-30, 2018

Los Angeles, CA

For more information on this event, please visit the website:

<https://www.verdexchange.org/>

ReThink Methane Symposium 2018

February 6-7, 2018

Sacramento, CA

For more information on this event, please visit the website:

<http://rethinkmethane.org/>

NEWS

Ridding the Oceans of Plastics by Turning the Waste Into Valuable Fuel

Sailor, James Holm, and organic chemist, Swamintathan Ramesh, have joined forces to design a mobile reactor that can convert plastic waste into fuel. With billions of pounds of plastic waste floating around the oceans, Holm formed Clean Oceans International, a nonprofit organization dedicated to cleaning up plastic pollutants by creating a market for it. Dr. Ramesh provided a means to do so by developing a catalyst system that results in diesel fuels directly, without further refining. The process runs at lower temperatures than other pyrolysis reactions, is cost-effective, and is compact enough to fit in a 20-foot shipping container or on the back of a flatbed truck. The next step is to show that the technology can create useable drop-in diesel. A demonstration is scheduled for the City of Santa Cruz who is interested in addressing the City's plastic waste issue while creating fuel for its vehicles. To read more, click [here](#).

Ionic Gasifier Opens Up Door to Small-Scale Waste to Energy

Cogent Energy Systems from Virginia believes they have developed a new ionic gasification technology that could be the answer for waste-to-energy done on a smaller scale. Dr. Peter Kong of Idaho National Laboratory developed a concept based on modular hybrid plasma technology that may allow for biomass, and potentially any waste, to be converted into usable products at a small scale. The result is an ionic gasification process that involves direct-contact processing of the waste in an active plasma field at temperatures ranging from 3,000 to 10,000 degrees Celsius. Cogent Energy's engineering partner, Hanover, recently secured a grant from the US Navy to create a small-scale waste-to-energy system using this technology. This system is intended to cleanly convert 3.5 tons of mixed waste per day into syngas. Initially, the company focused on developing waste-to-electricity technology and has recently expressed interest in exploring what gasification technology has to offer. The installation with the US Navy is expected to be proven within the next 18 months, and Cogent is looking at commercial application to process medical waste in the US and Canada. To read more, click [here](#).

California Partnership to Develop Organics-to-Energy System

Lystek International Ltd. was unanimously approved for a \$1.5 million grant through the Electric Program Investment Charge (EPIC) mandate from the California Energy Commission in November. EPIC focuses on funding for creating new, clean energy solutions in the marketplace and fostering regional innovation. Lystek will be partnering up with the Goleta Sanitary District and UC Santa Barbara to demonstrate source separated food waste can be pre-treated and processed to produce high-quality biogas. Potentially other organic waste streams can be used as feedstock destined to become biogas which will ultimately be used for electricity generation. The biosolids resulting from the process can be further treated and turned into biofertilizer to be introduced into the agricultural market. Lystek will be responsible for constructing and operating the demonstration unit, which will be hosted on a site run by Goleta who will also provide

logistical support. UC Santa Barbara will provide the feedstock by collecting food waste from cafeterias, and may offer volunteers from its student and faculty bodies. To read more, click [here](#).

Coffee-enhanced Fuel Set to Power London Buses

London currently consumes an average of 2.3 cups of coffee a day, which can soon contribute to the energy supply for its buses including the iconic red double-deckers. British startup company Bio-bean started converting coffee waste grounds into fuel for the past four years and have been raising awareness to bring that process into the bus industry that comprises of a fleet of 9,300 buses, only 2,000 of which use alternative energy. Bio-bean founder Arthur Kay aims to divert coffee grounds from London-based coffee shops and into a factory in Cambridgeshire where it is processed. The extracted oil is then sent to Argent Energy who mixes the coffee oil with a range of animal or vegetable fuels to create a mix made up of 80% traditional diesel and 20% biofuel. It is estimated that replacing traditional fuel with this mixture can reduce carbon emissions from busses by 10% to 15% without having to modify engines or increase the fleets usual expenditure, according to Bio-Bean. To read more, click [here](#).

Vermont College to Run on Manure and Food Waste

Partnered up with the Goodrich Family Farm in Salisbury, Middlebury College will be fueled by renewable natural gas (RNG) converted from the largest digester in the state of Vermont. In addition to the family owned farm, Middlebury will also be partnering with Vanguard Renewables from Wellesley, Massachusetts, and Vermont Gas. Vanguard Renewables will construct, own, and operate the digester facility on the grounds of the Goodrich Family Farm. The feedstock will be made up of cow manure (100 tons per day) and food waste (165 tons per day) via anaerobic digestion and will travel to the colleges main power plant by pipeline. Middlebury will be purchasing a bulk of the output from this facility. According to Middleburys executive vice president for finance and administration, David Provost, the college had reached its goal of carbon neutrality in 2016 and wants to continue shrinking its carbon footprint with the help of this digester. The remaining digestate will be processed into high-quality liquid fertilizer to be used by the dairy farm and reduce its reliance on chemical fertilizers. Goodrich Family Farm will also be receiving free heat and an annual lease payment for hosting the digester facility. To read more, click [here](#).

West Hartford Launches Curbside Food Waste Recycling Program

Over a 15-week period, approximately 130 homeowners from West Harford, Connecticut will take part in an experiment to help recycle food waste. These residents will separate organic food waste into an odor-resistant and dishwasher-safe kitchen caddy that can be emptied into a special brown bin. The food waste is then collected every Thursday and taken to a recycling center in Southington where it will be anaerobically digested and the methane produced will be used to create electricity. If this pilot program, which ends on January 4, 2018, is successful it may pave the way for municipalities across the entire

state of Connecticut. The program will be paid for by the owner of the digestion facility Quantum Biopower, waste contractor Covanta, and waste hauler Paines, Inc. at no cost to the residents or the city. John Phillips of West Hartford Public Works is cautiously optimistic noting that a similar pilot program in Bridgeport, Connecticut was not so successful. However, other local towns such as South Windsor have already started looking into food waste diversion programs while trying to avoid the pitfalls in Bridgeport, which were largely due cost-effectiveness. To read more, click [here](#).

Microdigester Opens New Opportunities for Small-Volume Organics Waste Generators

CCI Bioenergy is a biogas project developer from Ontario, Canada that typically produces large-scale anaerobic digesters, but has developed a process that can process between one and five tons of organic material per day. The microdigester is approximately the size of a shipping container and intended for generators that do not have an economically feasible option to take their organic waste to larger operators. President of CCI BioEnergy, Kevin Matthews, says the company will launch one of these systems in spring of 2018 at the Ontario Water Centre and is currently attempting to close on a deal with a goat cheese manufacturer and a university in Toronto that deals with food concessions. For Ontario Water Center, the biogas that is produced from this microdigester is destined to one of two places: (1) to fuel a boiler that heats their greenhouse, or (2) to fuel the facility's vehicle fleet. The plan moving forward for CCI BioEnergy is to develop systems for different sectors in the industry and demonstration projects for various host entities such as universities, dairy farms, and supermarket chains. To read more, click [here](#).