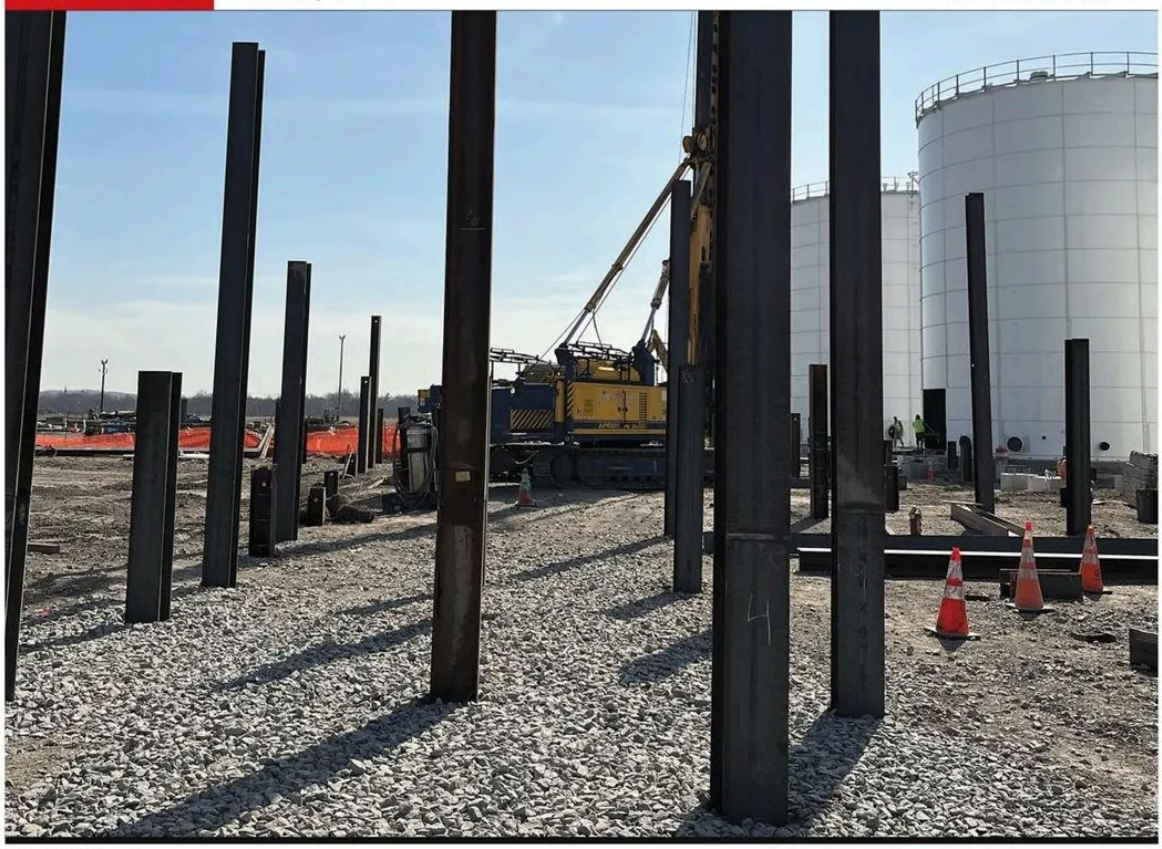

THE CONSTRUCTION RESOURCE FOR OVER 150 YEARS
ENR
Engineering News-Record
JUNE 9, 2025 • enr.com
ALSO INSIDE
TOP 100 PROJECT DELIVERY FIRMS
(P. 53)
GARBAGE IN, FUEL OUT
NEW JERSEY DIGESTER FACILITY CONVERTS REGIONAL FOOD WASTE TO FERTILIZER AND RENEWABLE NATURAL GAS
(P. 24)
A bnp PUBLICATION

Contents

June 9, 2025 Volume 294 • Number 11



BROWNFIELD SITE The eight steel digesters' concrete foundations are part of the final stage in remediating a former chemical manufacturing site.

SPECIAL REPORT

TACKLING FOOD WASTE

24 Construction of a large anaerobic digester project in Linden, N.J., is underway, addressing the growing trash problem throughout the New York metropolitan area. The project will convert the organic waste to renewable natural gas and soil amendments.

Cover photo by D. Olsen; photo above by Pam McFarland for ENR

SPECIAL REPORT

TOP 100 PROJECT DELIVERY FIRMS

53 Firms move to build more momentum around alternative project delivery as owners look for help navigating a market roiled by federal policy changes.

54 **Overview**

59 **Top 100 Design-Build Firms**

60 **Top 100 Construction Management-at-Risk Firms**

NEWS

Business

10 **Federal Transportation Policy:** DOT moves to weaken its DBE program

12 **Energy Policy:** Trump fossil-fuel power push expands

13 **Transportation:** Judge rules New York City congestion pricing can continue, for now

13 **Companies:** ACS data center development plan moves ahead

17 **Legal:** Massachusetts contractor pays $11 million to settle illegal dumping charges

17 **Safety & Health:** Third fatality recorded at Hyundai's $7.6-billion Georgia metaplant

19 **Materials:** Microsoft opts to buy 622,000 tons of low-carbon cement

20 **Transportation:** Connecticut DOT deal hastens historic preservation reviews

Engineering News-Record bnp media

ENR ENGINEERING NEWS-RECORD (ISSN: Print 0891-9526) is published 24 times annually, 2X per month, except 1X in Jan and 3X in Mar, by BNP Media II, LLC., 550 W Merrill St., Suite 200, Birmingham, MI 48009-1443. Telephone: (248) 362-3700, Fax: (248) 362-0317. Annual rate for print: US $149.99, Canada $169.99 and Foreign $199.99. Annual rate for Digital: $99.99. Single Copy sales: $12.00. Printed in the U.S.A. Copyright 2025, by BNP Media. All rights reserved. The contents of this publication may not be reproduced in whole or in part without the consent of the publisher. The publisher is not responsible for product claims and representations. Periodicals Postage Paid at Birmingham, MI and at additional mailing offices. **POSTMASTER:** Send address changes to: ENGINEERING NEWS-RECORD, P.O. Box 1514 Lincolnshire, IL 60069. **Canada Post:** Publications Mail Agreement #40612608. GST account: 131263923. Send returns (Canada) to IMEX Global Solutions, P.O. Box 25542, London, ON N6C 6B2. **Change of address:** Send old address label along with new address to ENGINEERING NEWS-RECORD, P.O. Box 1514 Lincolnshire, IL 60069. **For subscription information or service, please contact Customer Service at:** Local Phone: 847-559-7398 Toll-Free: 844-652-8994 Fax: 847-291-4816.



WASTE NOT

N.J. ANAEROBIC DIGESTER PLANT TRANFORMS FOOD WASTE INTO RENEWABLE NATURAL GAS

BY PAM MCFARLAND



LITTER New York City's trash problem and "war on rats" led to a new waste containerization rule, with city food waste now a key feedstock for an innovative renewable gas production plant set to complete in New Jersey (right).

PHOTO (LEFT) BY SAMUEL RIGELHAUPT/SIPA USA, SIPA VIA AP IMAGES; (LOWER RIGHT) D. OLSEN

It's no secret that New York City, like many densely populated urban areas throughout history, has a trash and rodent problem. Mountains of bloated trash bags —many containing food waste that attract rats burrowing and gnawing through them—are a blight on sidewalks all over the city.

The problem is more than an aesthetic or public health issue. Significant quantities of food, as well as cooking greases, fats and oils, are thrown out rather than consumed. According to ReFED, a U.S.-based non-profit that tracks food waste across the U.S., decomposition of organic trash on streets or in landfills releases methane into the atmosphere, a major contributor to climate change.

Surplus food across the nation is responsible for nearly 4 million metric tons of methane emissions annually, about 14% of the U.S. total, and equivalent to what 26 million cars emit. More than 380 billion tons of surplus food is wasted each year across the country, about 1.4% of U.S. GDP in 2023, according to ReFED.

Developers of a new facility under construction in Linden, N.J., aim to make a dent in the U.S. food waste problem and in the level of trash arriving at regional landfills, some now close to capacity. The $440-million Linden Renewable Energy Project, with energy holding company South Jersey Industries as majority-owner, will divert food, scraps, oils and greases from those landfills and capture methane inside large anaerobic digesters to create 3,783 million BTUs per day of pipeline-quality renewable natural gas that will be used by its subsidiary Elizabethtown Gas, which serves 300,000 industrial, commercial and residential customers in seven New Jersey counties.

COVER STORY
WATER REPORT

The plant will avoid the equivalent of about 120,000 metric tons of carbon dioxide annually. The project is not a first-of-its-kind technology-wise, but its backers say it will be possibly the largest food waste-to-renewable natural gas facility in the U.S. by its anticipated completion in early 2026, when operating at full capacity.



WASTE NOT



Being built on a 21-acre brownfield site in an industrialized area of northern New Jersey, the facility also will produce 230 cu yd per day of fertilizer, with liquid digestate to be filtered through a membrane bioreactor before being sent for further treatment at a nearby wastewater treatment plant. A fuel cell from Bloom Energy will supply 3.4 MW of electricity to provide about 60% of the facility's electrical load.

The project team also includes energy infrastructure developer RNG Energy Solutions and decarbonization-focused investment firm Captona as owners; Quanta Services subsidiary Phoenix Power Group as EPC contractor; and Veolia and Air Liquide to provide technology process design and services. Veolia, South Jersey Industries, Captona and RNG Energy Solutions will operate and maintain the plant.

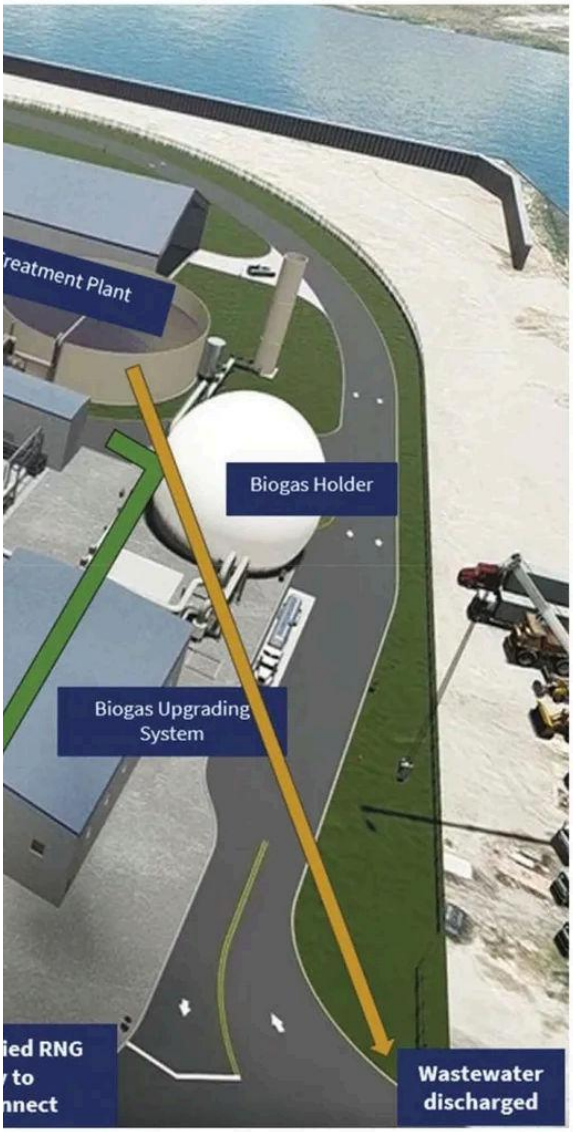
Andy Shea, chief operating officer of RNG Energy Solutions, which developed the project, says the project defies categorization. "Is this an aerobic digester project? Is it a resource recovery project? Is it a gas plant? Is it a power plant? Guess what, it's all of the above."

COVER STORY
WATER REPORT

'Top Down, Bottom Up'

Once the project is operating, trucks and barges will haul organic waste that has been pre-processed at various waste transfer stations throughout the New York City metro area—most with depackaging equip-

RENDERING COURTESY OF LINDEN RENEWABLE ENERGY



ROUND THE CLOCK
The project site includes two pasteurization holding tanks that will be heated to destroy pathogens, as well as a large hydrolysis buffering tank, able to provide a steady flow of feedstock during slow periods. The team says preprocessed organic waste will reach the site daily by truck and by water transport.

BIRDSEYE VIEW
The Linden, N.J., project site is in close proximity to water access and gas distribution lines, says its team.

ment from Tiger Depack. The slurry will then be run through degritting systems, a hydrolysis process and into pasteurizing holding tanks before the digesters.

Eight bolted steel anaerobic digestion tanks, each 50 ft tall and 77 ft in dia, are being constructed from the "top down, bottom up," says John DeSena, president of Phoenix Power Group. The concrete digester foundations will serve as part of a pile cap, the final stage of remediating what had been a chemical manufacturing site, under state and U.S. Environmental Protection Agency requirements.

Workers are installing tank rings around the perimeter of the foundation of each tank, and will place the roof on top of the ring. "We jack up [the roof] in stages by sections," DeSena says. "You raise the roof, then you go ring by ring, bolting as you go up."

Project developers searched long and hard for a suitable project site. In many formerly industrialized areas in the New York region and beyond, prime locations are at a premium. "A lot of effort" went into finding a good location, says Captona project manager John Maher. It is close to natural gas distribution lines and is accessible to water, which will enable waste delivery by barge in addition to 80-100 daily truckloads. Because the site, which sits on a peninsula, is both low in elevation and close to a well-traveled waterway for industry goods transport, dredge material was used to raise ground elevation by 8 ft. This was done not only as part of site remediation but also to protect the facility from anticipated sea-level rise in coming years.

"BIOGAS IS NO LONGER A NICHE TECHNOLOGY."

PATRICK SERFASS, EXEC DIR., AMERICAN BIOGAS COUNCIL

Biogas and RNG: An Opportunity Market

Patrick Serfass, executive director at the American Biogas Council, sees waste-to-energy projects as a growth market for investors, developers, builders



PHOTO BY D. OLSEN









TOP, BOTTOM LEFT AND CENTER PHOTOS BY PAM MCFARLAND FOR ENR; RIGHT: LINDEN RENEWABLE ENERGY

FROM THE GROUND UP
Digesters now under construction are seen, top, and bottom, center and right. EPC contractor Phoenix Power Group President John DeSena, left, says the union project will have up to 250 workers at peak.

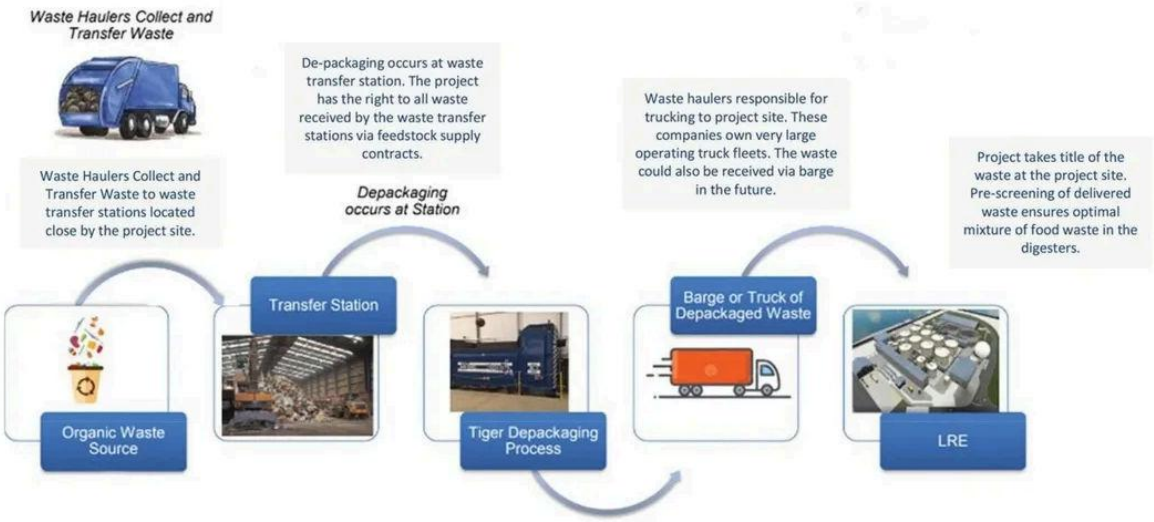
and designers—whether the feedstock is sourced from organic food waste, agricultural manure or wastewater. Last year, 125 new biogas projects came on line, totaling $3 billion in capital expenditures. "Biogas is no longer a niche technology," he says.

Anaerobic digesters have been in use since the mid-19th century, although typically with agricultural manure or wastewater (see story, page 32). Renewable natural gas projects, spurred at least in part by federal and state renewable fuel standards, have been developed for decades. But food waste-to-energy plants are a relatively new phenomenon. The first one in the U.S. was built as a small pilot in the early 2000s by East Bay Municipal Utility District in Oakland, Calif. Although its service area had been heavily industrialized, requiring high treatment capacity, gentrification led to "significant excess capacity," says Alicia Chakrabarti, its manager of wastewater environmental services. "So we started looking at different high-strength wastes, including food waste," she says.

The pilot was successful, and the utility continues to take in approximately 10 tons daily of food waste each workweek from the Central Costa Solid Waste

COVER STORY
WATER REPORT

ORGANIC WASTE SUPPLY PROCESS



Authority. But the district does not further refine the biogas to pipeline standards.

"We've been at it for a long time, and we think it's a nice solution for organics, but it can be very expensive to do all the work you need to get solid food waste into something that's going to work well in a liquid system," Chakrabarti says.

Other projects are cropping up in different parts of the U.S. Since 2023, Midwestern supermarket chain Mariano's, a subsidiary of Kroger, has partnered with Chicago-based nonprofit Green Era Campus to reduce food waste from local stores by diverting it to a 55,000-sq-ft anaerobic digester facility. Like the Linden facility, it produces renewable natural gas as well as fertilizer, although on a much smaller scale.

THE LINDEN PROJECT "IS A VERY SOLUTIONS-BASED STRATEGY FOR US."

KYLE NOLAN, COO, SJI RENEWABLE ENERGY VENTURES

In April, the nonprofit announced it had diverted 1 million lb of food waste in one year, the equivalent of removing methane from 116 cars. The digester gas generated about 1,000 million BTUs of renewable gas fuel, enough to power 270 homes for a month, according to Green Era Campus.

Entities in Philadelphia, Miami and elsewhere have considered similar projects. What makes the Linden facility unique, the project team says, is its size and scale. Just the tanks alone will collectively require about 300,000 lb of steel, and foundation concrete will be sourced from three different batch plants, DeSena says.

Policy Incentives

An important driver to accelerate the development of waste-to-renewable natural gas projects will be state and municipal policies that require food waste recycling, DeSena says. Eleven states have enacted laws that require it, but they are usually not rigorously enforced, which makes them much less effective than they could be, he adds.

"There isn't anything out there that's really rewarding developers that are interested in building food waste recycling infrastructure," he says.

Still, RNG Energy's Shea says that both state and municipal laws with provisions related to organic waste recycling in New York and New Jersey were a major driver for the Linden project. "There are a lot

ILLUSTRATION COURTESY OF LINDEN RENEWABLE ENERGY

FARM WASTE: GO-TO FOR RENEWABLE GAS



BRANCHING OUT South Jersey Industries' Oakridge Dairy anaerobic digester project in Connecticut will produce 60,000 MMBtu of renewable natural gas per year, enough to offset environmental impact of 867 passenger vehicle cars, the firm says.

Using anaerobic digesters to convert waste in agricultural manure to renewable natural gas is a growing biogas sector niche and a $37.6-billion industry, says the American Biogas Council. The trade group said it sees record investment in waste-to-renewable natural gas projects.

In 2024, 125 new projects came on line, totaling $3 billion in capital expenditures. There are more than 600 anaerobic digesters on U.S. farms. With 11,000 livestock farms across the country, developers could gain a solid foothold in renewable natural gas production from organic waste.

SJI Renewable Energy Ventures, the non-utility unit of South Jersey Industries, has more than 20 renewable natural gas projects planned or in development at large U.S. dairy farms. Brightmark RNG Holdings LLC, a joint venture of oil giant Chevron U.S.A. and investor Brightmark Fund Holdings LLC, has 15.

The anaerobic facilities not only cut methane emissions, but the digestion process also breaks down nutrients in manure. That reduces nitrogen and phosphorus but maintains nutrients that are beneficial for plant growth. Runoff from digested soil amendments reduce nitrogen and phosphorus entering water bodies such as Chesapeake Bay.

Harry Campbell, Chesapeake Bay Foundation science policy and advocacy director in Pennsylvania, says that while private firms can help implement large-scale treatment technologies using a regional approach, states and the federal government are also key to supporting farm digester projects.

"It's hard to underestimate ... benefits associated with the federal farm bill ... because these technologies [can be] pretty expensive," he says. "They are systems that require intricate design and implementation and can be quite costly."

But that assistance could be at risk. The latest budget reconciliation bill in Congress could pull back $754 million in technical assistance funding. "That certainly could impact the number of contracts that are awarded," he says. ■

By Pam McFarland

of things like legislation and food waste separation laws across the country that are cropping up, but then the question becomes, what are you going to do with it?," says Kyle Nolan, vice president and COO of SJI Renewable Energy Ventures, SJI's non-utility subsidiary. "So [the Linden project] is a very solutions-based strategy for us in terms of both the energy industry and the way in which our society is dealing with waste."

The project team owner, collectively, is Linden Renewable Energy, made up of SJI, Captona and RNG Energy Solutions, with the latter serving as developer. It's not unusual for a renewable natural gas facility to have multiple financing and delivery partnerships. "We're really happy to have [RNG Energy Solutions] stay on and guide us through the construction, and later, operation of the facility as well," Maher says.

Becky Luna, a senior vice president at Carollo Engineers, which has been active in the renewable natural gas market, says a variety of different financing mechanisms have evolved from the traditional design-bid-build model for projects. "I would say the most common type is P3 private finance," she adds. A typical project might look more like one that

PHOTO COURTESY OF SJI



"WE JACK UP [THE ROOF] IN STAGES BY SECTIONS... THEN YOU GO RING BY RING, BOLTING AS YOU GO UP."

JOHN DESENA, PRESIDENT, PHOENIX POWER GROUP

is design, build, finance, operate and maintain, overseen and executed by multiple firms, Luna says. Putting together a contractual agreement is complex with so many different entities involved, she adds. "It's just not the typical delivery method."

PHOTO COURTESY OF RNG ENERGY



PREPROCESS
The team will use Italian-designed Tiger Depack machines to preprocess food waste into a slurry that will be transported to the Linden site.

Environmental Benefits

Darby Hoover, senior research specialist for environmental health and nature at the Natural Resources Defense Council, says municipal landfills are the third-largest anthropogenic source of climate pollution, with food waste representing the largest proportion of waste going into landfills. "So if we can get food out of the landfills, we curb that methane generation dramatically," she says.

But Hoover has some caveats. Most digesters will run more efficiently with a steady throughput of feedstock, but those baked-in assets ultimately will only continue the use of natural gas, even if derived from different sources than conventional gas. A way around that is to ensure that digesters can be fed in batches, or to build holding tanks—as the Linden plant does—to ensure that a plant operator is not scrambling to find feedstock.

"You want to build [a plant] with an idea of how much waste you realistically are going to put in. If you have continuous throughput required, you've got to have a guaranteed and steady stream of feedstock, and that can counter waste prevention efforts," she says. Moreover, simple composting also diverts waste from landfills and is less energy intensive than an anaerobic digester RNG facility, Hoover notes.

Angel Veza, ReFED's director of innovation initiatives, adds that reducing the amount of waste consumed in the first place would also help reduce methane emissions. "When you waste less food, that's a one-two punch, because you can reduce it both upstream in the production of food and then in its disposal," he says. "But with methane emissions, if we were to only look at that as our objective metric, the act of diverting food from landfills [using digesters] becomes the priority, because we're a long way away from preventing the amount of food waste that we need to have meaningful impact right now."

The project, begun in early 2024, is about 60% complete, says RNG Energy's Shea. He is hopeful it begins to reduce both food waste and the rat population in New York City, which has continued to flourish. "The challenge has always been that we don't have that many facilities that take in food waste," Shea contends. The broader New York City metro area generates roughly 2.5 million tons of waste per year, he adds. With the new facility gulping down 500,000 tons of food waste each year, "Is it the tip of the iceberg? No. We're taking a big chunk out of it," Shea says. "But there's a lot more that can still be recovered." ■