

American Biogas Council Reports Record Investment in Biogas Systems

February 14, 2025

By Shelley Mann

U.S. biogas industry grows by \$3B in 2024, a record 40 percent increase.

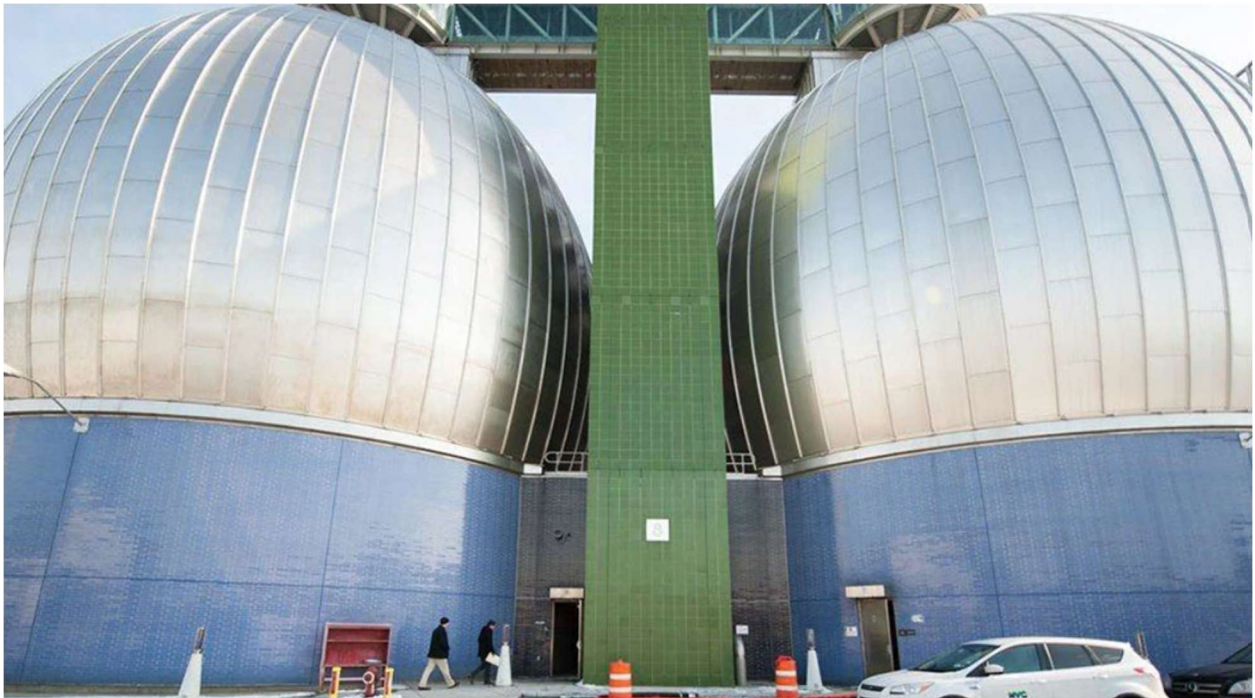


Photo courtesy of American Biogas Council

The American Biogas Council (ABC) has released new data showing that 2024 was another record year for the industry. In the 12 months ending in December, 125 new biogas projects came online, representing over \$3 billion in new U.S. investments.

New projects in 2024 exceeded new projects in 2023 by 17 percent, while total investment in those projects increased by 40 percent compared to investment in projects opened in the previous year.

Biogas projects convert manure, wastewater, food waste and captured landfill gas into renewable natural gas (RNG), renewable electricity, heat and natural fertilizer, ABC says. Overall, these sectors of the industry produced over 10 percent more biogas in 2024 than in any prior year, according to the report.

Last year's new projects bring the total number of biogas facilities in the U.S. to nearly 2,500. These facilities produce nearly 1.4 million standard cubic feet per minute (scfm) of biogas, a reliable source of dispatchable renewable energy, ABC says.

This ongoing flow of energy can produce the equivalent of 15,000 football fields of solar panels, or enough electricity to power 2.4 million homes for a year, or the fuel equivalent to eliminating 2.6 million gasoline cars from the road. Biogas has a carbon intensity of 50 percent to 700 percent less than fossil fuels because biogas projects capture methane emissions that would otherwise be emitted and then use those emissions to displace more emissions from fossil fuels and chemical fertilizers.

"The biogas industry keeps hitting new growth records every year because, as an energy source, biogas just makes sense. It provides much-needed clean electricity, cuts pollution and emissions from transportation and provides heat-producing fuel for industries, all while managing millions of tons of waste from farms and cities alike," says American Biogas Council Executive Director Patrick Serfass. "In a time when demand for domestic energy is increasing significantly, fertilizer markets are constrained by the Ukraine conflict and America is striving for energy and industrial dominance, the value of 24/7/365 energy and locally produced, natural fertilizer from biogas projects is undeniable."

Landfill gas (LFG) projects, which capture the biogas produced as organic material decomposes in landfills, yield the lion's share of biogas in the U.S.—72 percent of total biogas output—despite comprising of fewer facilities than the wastewater and agriculture sectors, according to ABC.

The biogas industry added 24 new LFG projects in 2024, bringing the total number of LFG facilities to 580, an increase of 4.3 percent overall. The new projects represent \$1.4 billion investment, or 47 percent of the total capital that biogas developers invested in 2024 projects. The added projects grew the LFG sector's output by more than 12 percent in 2024, increasing to about 980,000 scfm.

In recent years, new LFG projects have been more likely to upgrade their biogas to RNG, but 77 percent of projects overall produce electricity, according to the report.

Agriculture projects

While landfill gas production saw a big jump in 2024, the agriculture sector created nearly four times the number of new projects—93 farm projects compared to 24 landfill

projects—and the total number of farm biogas projects surpassed the total landfill gas projects for the first time ever, according to the report.

The new farm-based projects represent \$1.37 million in capital investment (mostly in rural communities) and 24 percent more projects than came online in 2023. Overall, biogas projects in the agriculture sector grew by almost 18 percent, ABC says, from 522 to 615 total projects with new agriculture projects contributing 21,000 scfm of additional biogas output.

Also new for 2024, more hog farms came online than in previous years, adding 29 facilities, or 31 percent of all new farm projects. More than ever, farmers across the country are finding more efficient ways to utilize the manure their animals produce, ABC says.

In terms of end use for their biogas, 95 percent of new biogas projects that went live in 2024 use their biogas to make RNG. RNG projects on farms now surpass biogas-to-electricity projects in the sector by about 3 to 2, according to the report.

Wastewater sector evolves

The wastewater sector didn't see the same aggressive growth in 2024 but still has the most biogas facilities—47 percent of all systems—and the most longevity, ABC says. The oldest operational biogas systems in the U.S. were built in the 1920s at wastewater plants that used anaerobic digestion to reduce the volume of sludge they must handle while cleaning sewer water.

Food waste-only systems are the least numerous, likely because they're the most complex, but still added three new projects in 2024, bringing the total to 114, according to the report. While standalone food waste facilities bring up the rear in project counts, about 200 agriculture and wastewater biogas facilities in the U.S. take in food waste and anaerobically digest it along with manure or wastewater biosolids. The food waste sector is poised for stronger growth in 2025, ABC says, with 16 projects currently under construction.

RNG continues to grow

Of the 125 new biogas projects that came online in 2024, 119 (95 percent) were built to upgrade their biogas to RNG, ABC reports. This dominance of RNG in new projects has existed since about 2018, spurred by California's Low Carbon Fuel Standard program and the federal Renewable Fuel Standard, which reward renewable fuel producers that reduce transportation emissions and air pollution. However, while RNG is the growth sector, electricity still dominates the industry. More than 77 percent of biogas projects and 60 percent of total biogas output goes to make renewable power, the organization says.

State-level growth

Biogas projects operate in every U.S. state. Organic waste is where the people and animals are and every state has organic waste that needs to be recycled. With the growth in agriculture projects in 2023 and 2024, many agriculture-heavy states have attracted the most local investments.

The location of yet-untapped landfills also drives the location of capital invested. Last year, California, Illinois, South Dakota, Pennsylvania and Virginia saw the most dollars invested, based on projects that came online. In 2023, the five states that saw the most capex come online were Michigan, Indiana, Virginia, Ohio, and Texas.

Americans send more than 1.4 billion tons of manure, 33 million tons of inedible food waste and 1 million tons of wastewater biosolids (sludge) to landfills each year, according to ABC. In addition, 470 landfills currently flare gas that could be captured.