

Fueling Economic Growth with Renewable Natural Gas

The United States has abundant domestic energy sources, both traditional and renewable. Harnessing them is enabling job creation and economic development across the country. One resource that will be important in accelerating growth and progress toward energy security and environmental goals is renewable natural gas (RNG) made from decomposing organic waste.

What is RNG?

RNG is a hydrocarbon primarily composed of methane, just like geologic natural gas extracted from beneath the earth's surface. The main difference is RNG is made from the biogases emitted as organic waste decomposes. It requires no drilling because it's not a fossil fuel; it's a totally renewable fuel.

Since it's nearly identical chemically to geologic natural gas, RNG burns cleanly and improves air quality. It can be distributed via same pipeline network as geologic natural gas, and can be used in the same ways and in the same equipment to generate electricity, heat homes, create durable plastics and power vehicles.

But unlike geologic natural gas, producing and using RNG captures and uses biogases from decomposing organic wastes that would otherwise go directly into the atmosphere, so it emits much less greenhouse gas over its lifecycle. The more RNG is produced and carried by natural gas infrastructure, the more it contributes to positive impacts and sustainability goals of the natural gas industry as a whole.



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Where is RNG?

Everywhere. Anywhere decomposing farm and food waste, yard waste, municipal wastewater and other organic wastes are found, their biogases can be captured and made into RNG.

The US generates over 70 million tons of organic waste per year across every city, town, and rural county in America, including in 1,750 large landfills, 8,000 large farms and dairies and 17,000 wastewater treatment facilities. Food processors, municipalities and other organic waste generators are increasingly building specialized anaerobic digesters to convert organic waste into RNG and nutrient-rich compost. Developing these local RNG sources is like discovering an inexhaustible gas well in a community's backyard.

What are RNG's Economic Impacts?

The RNG industry is rapidly growing — creating thousands of permanent non-exportable jobs in both urban and rural areas. There are more than Fifty Three (53) operational projects in the US using proven technology to capture, refine and transport



RNG. Forty Three (43) inject it into the natural gas pipeline system. Thirty Seven (37) are in the transportation sector, where RNG is used to displace diesel and gasoline to power heavy-duty vehicles. Fifteen (16) produce RNG for heat and power generation. Domestic production is ramping up fast, from the equivalent of 20 million gallons of petroleum fuel in 2013 to almost 90 million gallons in 2015. By 2018, RNG will displace more than 250 million gallons.

RNG is already a billion-dollar industry. RNG project investments over the past five years total more than \$368 Million – a number on pace to double by the end of 2017. Since 2014, RNG has been responsible for creating 4,000 direct and indirect jobs. Forty (40) new RNG transportation projects are slated to come on-line by 2020 generating additional investment of \$640 million and another 7,000 direct and indirect jobs.

What is RNG's Potential?

RNG is established as a significant part of the US energy mix, and poised to grow fast. State and city policies that recognize the economic and environmental value of RNG are expanding production across the US. The federal Renewable Fuel Standard (RFS) has helped drive rapid uptake of RNG as transportation fuel. Last year, some 20% of natural gas used in transportation was waste-derived RNG. In California, RNG's share exceeds 50% driven in large part by the state's low carbon fuel standard.

Overall potential production of domestic RNG is vast. There are more than 500 untapped landfills in the US whose biogases could be captured and refined into RNG, and even greater production potential in yard waste, wastewater and agricultural organics. Developing just a portion of these resources could support some 40 new RNG projects a year over the next decade, generating about \$6.5 billion in investment and 70,000 jobs, in urban and rural areas.

Renewables are the fastest growing segment of the energy industry. Solar PV is often cited as the trend leader, growing globally at an average annual rate of 42% over the last five years. It's a young industry, but domestic RNG is growing at the same rate, thanks to a combination of proven technologies, smart policies and growing recognition of the opportunities that come with turning organic wastes into energy.

Those factors will continue to drive RNG's expansion in the years ahead. That in turn will result in increased economic growth, many more thousands of permanent, non-exportable jobs, greater US energy security and resiliency, reduced emissions and enhanced sustainability in the natural gas industry.

