RENEWABLE NATURAL GAS

Renewable natural gas (RNG) from biomass helps to meet America's growing demand for a low-carbon, affordable and reliable fuel. RNG is fully compatible with conventional natural gas and the existing pipeline infrastructure.

RNG

RNG is made by capturing and refining biogases released from decomposing organic waste material. RNG is considered a carbon neutral fuel, with even greater benefits when it is produced from organic waste that would otherwise decay and create methane emissions.[1] Since RNG is ready to use in existing natural gas infrastructure, it can be injected into pipelines to immediately begin reducing natural gas carbon content.

Agriculture accounts for 36% of methane emitted annually in the U.S.[2]

FEEDSTOCKS AND PROCESSES

RNG is derived from various biogenic feedstocks, including wastewater sludge, animal manure, food waste, agricultural residues, forest product residues, municipal waste and energy crops. Three processing systems can produce RNG:

1. Anaerobic digestion uses microbes to break down organic matter and converts the resulting organic acids into methane gas.

2. Thermal gasification is a high-temperature process that completely dries biomass, converting it into gas and char.

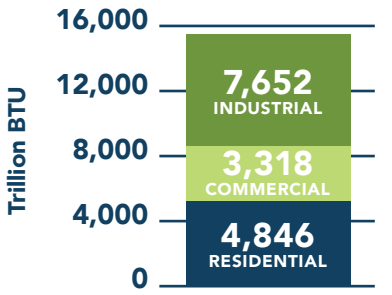
3. Power-to-gas technologies use electrolysis to convert renewable electricity into hydrogen or methane for natural gas pipeline injection.

IMPACT OF RENEWABLE NATURAL GAS

RNG is interchangeable with conventional natural gas and can be used in residential, commercial, industrial and transportation applications. Use of RNG can make meaningful progress toward decarbonization.

RNG production could be enough to cover 59% of industrial or 93% of residential natural gas demand.[3]

RNG RESOURCE POTENTIAL



RNG IN THE TRANSPORTATION SECTOR

Using RNG in the transportation sector has the dual benefit of reducing greenhouse gas emissions and significantly improving air quality.

Compared to diesel, RNG can reduce 95% of GHG emissions on a lifecycle basis[4]

NEXT STEPS FOR RNG

Demand for RNG is growing as industries can use this fuel to reduce emissions across their entire supply chain. RNG will play an important role in decarbonization strategies across the United States, but resources are likely to be limited compared to the demand for carbon-neutral fuels.

1. SoCalGas, What is Renewable Natural Gas?
2. U.S. EPA, Methane Emissions in the United States: Sources, Solutions, & Opportunities for Reductions, 2019
3. American Gas Foundation, Renewable Sources of Natural Gas: Supply and Emissions Reduction Assessment, 2019
4. U.S. EPA, Greenhouse Gas Equivalencies Calculator, 2022