ARCHAEA ENERGY

Renewable Energy. Redefined.

THE ENVIRONMENTAL BENEFITS OF ASSAI

AN RNG PROJECT AT KEYSTONE SANITARY LANDFILL

Assai RNG Facility at Keystone Sanitary Landfill

Operated by Archaea Energy, Assai provides an environmental solution for both landfill owners and the community

Recordbreaking development timeline	▪ Constructed, commissioned, and completed in <2 years, materially faster than average industry timeline
Unparalleled scale	▪ Inlet capacity of 22,500 scfm makes Assai the highest capacity operational RNG facility in the United States
Positive environmental impact	▪ Expected to reduce CO_2 emissions by over 200 thousand metric tons annually and significantly reduce air pollutants, many by over 90%
Strong initial operating performance	▪ Achieving target uptime and methane recovery since early March, utilizing full flows from Keystone landfill, with gas flows from Alliance landfill added in May
Underpinned by fixed-price contracts	▪ Long-term, fixed-price contracts with Énergir, FortisBC, and University of California
Recent landfill expansion to increase LFG volumes	▪ In June 2021, Keystone was awarded an expansion by the Pennsylvania Department of Environmental Protection

The Basics of RNG

Where Does RNG Come From?

- When organic material decomposes in anaerobic conditions, gas (often referred to as biogas) is produced
- Landfill biogas is composed of approximately:
  - 50% CH_4 (Methane)
  - 35% CO_2
  - 15% O_2, N_2 and VOCs
- **Landfills produce predictable gas flows, with increasing production through landfill closure and relatively constant productions rates and composition for 30-years post closure**
- Agricultural manure also produces biogas with much higher methane content but with significantly lower gas volumes

Biogas Can Generate Electricity Or Be Upgraded to RNG

- Using proven technology, biogas is processed onsite to remove impurities and can then be used to generate green electricity
- Biogas can be further processed to remove primarily CO_2 and remaining contaminants to increase the methane content and reach pipeline specifications for natural gas
- Resulting product is referred to as **Renewable Natural Gas (RNG)**

Archaea sells RNG to multiple types of buyers for various uses

RNG Has Multiple Uses

CNG  H_2

Vehicle Fuel

- RNG can be used for many purposes including consumer use, CNG for transportation, or electricity. It can also be combined with other proven technology to produce green hydrogen
- Because RNG is created from an organic source, in addition to the underlying commodity value, RNG produces Environmental Attributes which can be monetized
- RNG is becoming part of the US and worldwide green supply chain with an increasing number of entities looking to enter long-term contracts to buy RNG

Why RNG Has Massive Sustainability Impacts

Emissions into Energy

Potential sources of organics used to produce **RNG** include:

Food Waste

66.5 million tons / year

Wastewater

17,000 facilities

Agriculture Waste

8,000 large farms & dairies

Landfill Gas

1,750 landfills

Trillion pounds of food is squandered globally each year

U.S. retailers & consumers discard 133 billion pounds of food annually

…While Replacing Carbon Intensive Fuels

Using **100% RNG**

in vehicles can reduce GHG emissions by more than **80%**

Using **20% RNG-blend**

Provides a GHG reduction of between **26-30%**

RNG

from some sources are carbon negative, meaning that they sequester GHG during the fuel lifecycle

Natural Gas Provides

90% *Lower NOx emissions with new "near-zero" engine*

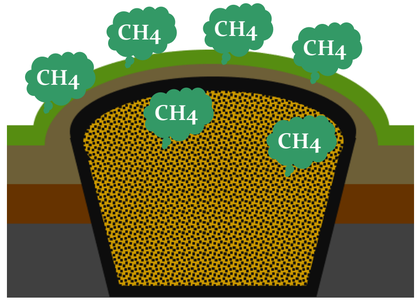
99% *SOx reduction*

Compared to diesel

Source: The Coalition for Renewable Natural Gas.

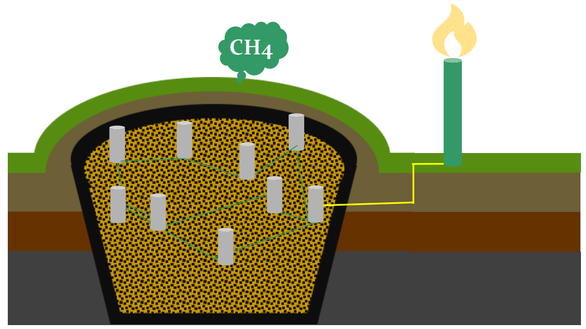
Archaea RNG | Reducing Greenhouse Gas Emissions

Landfill without gas collection system



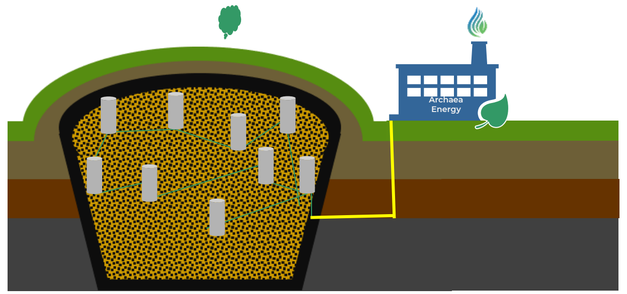
- **Methane is vented**
- **25x more destructive than CO_2**

Landfill with gas collection system and flare



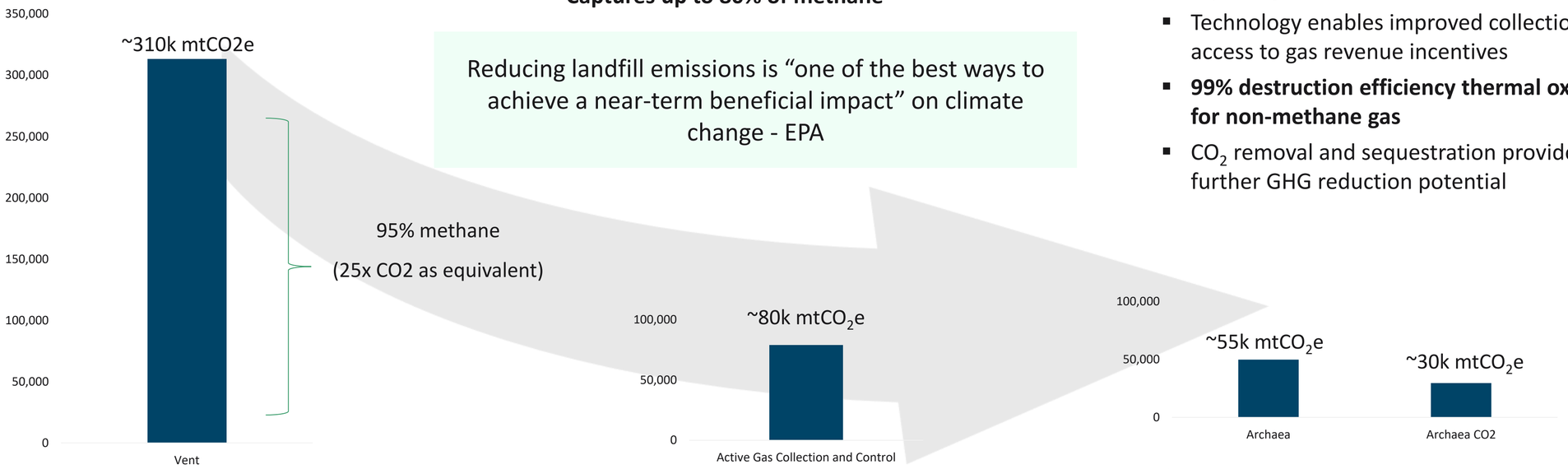
- **Most methane captured but not utilized**
- Vertical wells drilled into landfill with blower
- Flare with 97%+ destruction efficiency
- **Captures up to 80% of methane**

Landfill with gas collection system & Archaea RNG Project



- **Landfill as a renewable resource**
- **90%+ of Landfill gas captured**
- Gas cleaned to pipeline-quality RNG, replacing fossil fuels
- Technology enables improved collection & access to gas revenue incentives
- **99% destruction efficiency thermal oxidizer for non-methane gas**
- CO_2 removal and sequestration provide further GHG reduction potential

Reducing landfill emissions is “one of the best ways to achieve a near-term beneficial impact” on climate change - EPA



Illustrative example provides representative results for a typical mid-sized landfill. Values are not specific to any one facility

250k $mtCO_2e$/year Reduction in GHG Emissions

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