



The Potential of Renewable Natural Gas in Canada

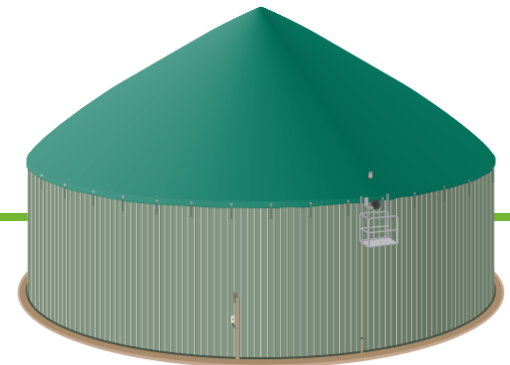
BioCleantech Forum
Nov 3, 2016 in Ottawa



Building the Biogas Sector With You

What is Biogas/RNG?

- **Biogas** is a renewable source of methane gas
- **Anaerobic digestion** is the biological process of breaking down organic matter to create biogas
- **Renewable Natural Gas** is a carbon neutral, upgraded form of biogas
- **Digestate** is a nutrient rich bi-product resulting from the anaerobic digestion process



Biogas Sources



Agriculture



Landfill Gas



**Residential
Source
Separated
Organics**



**Commercial
Source
Separated
Organics**



**Wastewater
Treatment**

Biogas/RNG in Canada

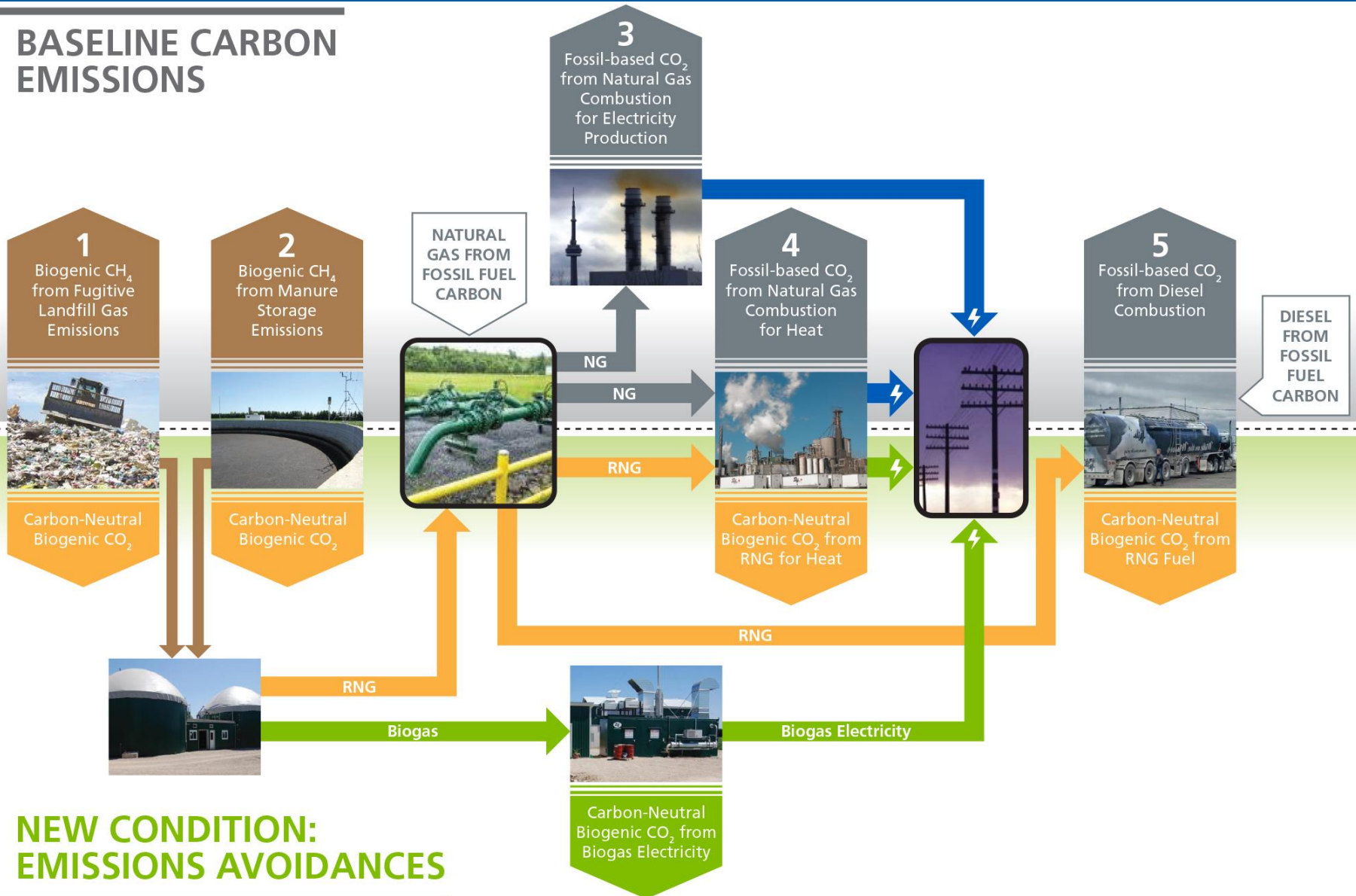


GHG Emissions Reduction

- Biogas reduces CO₂ and CH₄
- Canada can achieve GHG reductions through methane displacement and methane abatement from upstream sources from all biogas sources
- The ultimate RNG potential equates to a potential GHG reduction of up to 25 Mt CO_{2e} per year or capable of reaching over 10% of Canada's GHG reduction target

Biogas GHG Emission Avoidance

BASELINE CARBON EMISSIONS



US-Canada Climate Action

- US-Canada Joint Statement on Climate, Energy and Arctic Leadership:
 - Commitment to reduce methane emissions by 40-45 percent below 2012 levels by 2025 from the oil and gas sector, and explore new opportunities for additional methane reductions



GHG Abatement Opportunities

- Recognize RNG emission reductions from:
 - direct displacement
 - methane abatement
 - 7% of all methane emissions from manure management
 - 20% of methane emissions landfill gas recovery
- Offset credits part of WCI with protocols in development

Biogas & RNG Benefits

- Methane abatement
 - methane capture and utilization to energy from livestock, residential and commercial food waste, and municipal landfills
- Renewable energy opportunities
 - renewable heat, electricity, pipeline quality gas for transportation, household heating, industrial, commercial and institutional processes
- Waste management solutions
 - diversion of organic materials from landfill, maximizing energy and nutrient value
- Green jobs and economic development
 - 1,800 separate construction projects
 - \$7 billion capital investment, \$21 billion economic spin off to the Canadian economy

RNG – A Winning Solution

- Biogas supports a low carbon economy in Canada with proven, cost-effective technology
- Biogas offers Canada a multi-faceted solution to:
 - Mitigating methane emissions
 - Effectively utilizing carbon sources and recycling nutrients
 - Generating renewable energy
 - Protecting our air, water and soil resources
 - Creating new and expanded economic opportunities

VALUE OF BIOGAS 2017:

OPPORTUNITIES FOR...

VALUE OF
BIOGAS
WEST

January 27, Abbotsford, BC

VALUE OF
BIOGAS
EAST

March 24, Greater Toronto Area



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