



Biogas and Renewable Natural Gas: State of the Industry

Recycling Council of Alberta
Sept 29, 2016 in Jasper



Building the Biogas Sector With You



Overview

- Introduction
- Biogas and Renewable Natural Gas
- Key market and policy drivers
- Canadian landscape
- Closing the Loop
- Closing thoughts



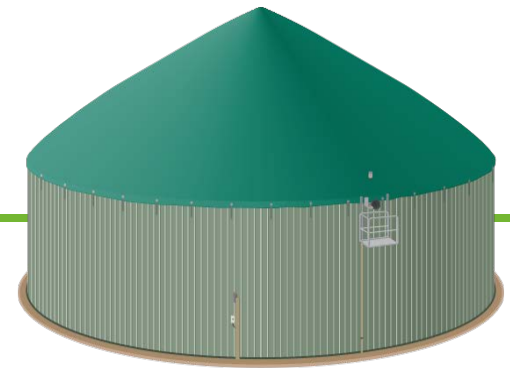
Canadian Biogas Association

- **Mandate**
 - The collective voice of the biogas industry promoting development of biogas to its fullest by capturing and processing organic materials through anaerobic digestion to maximize the utility and value inherent within that material
- **Roles**
 - Education and outreach
 - Advocacy and policy
 - Research

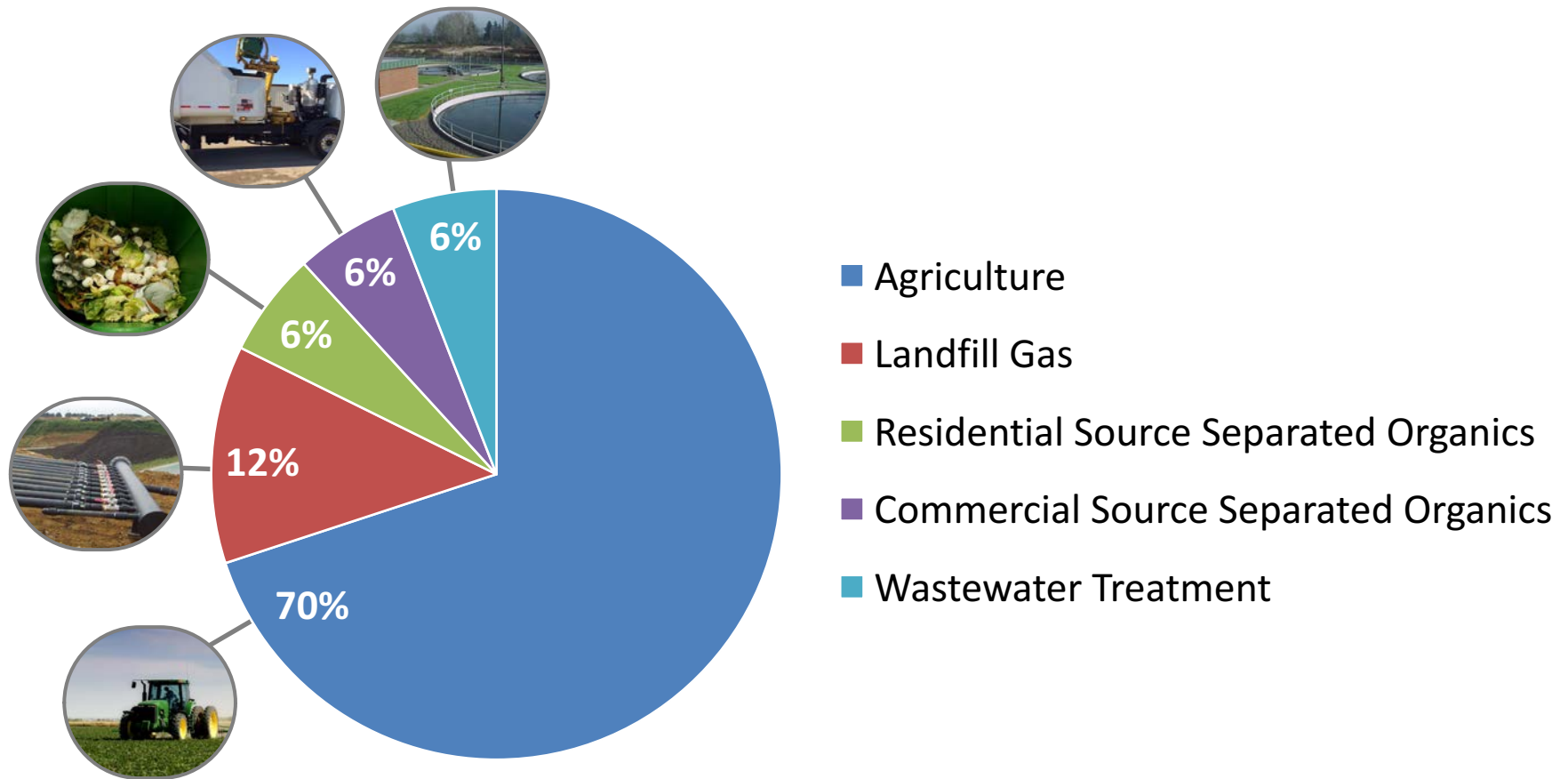


What is Biogas/RNG?

- **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

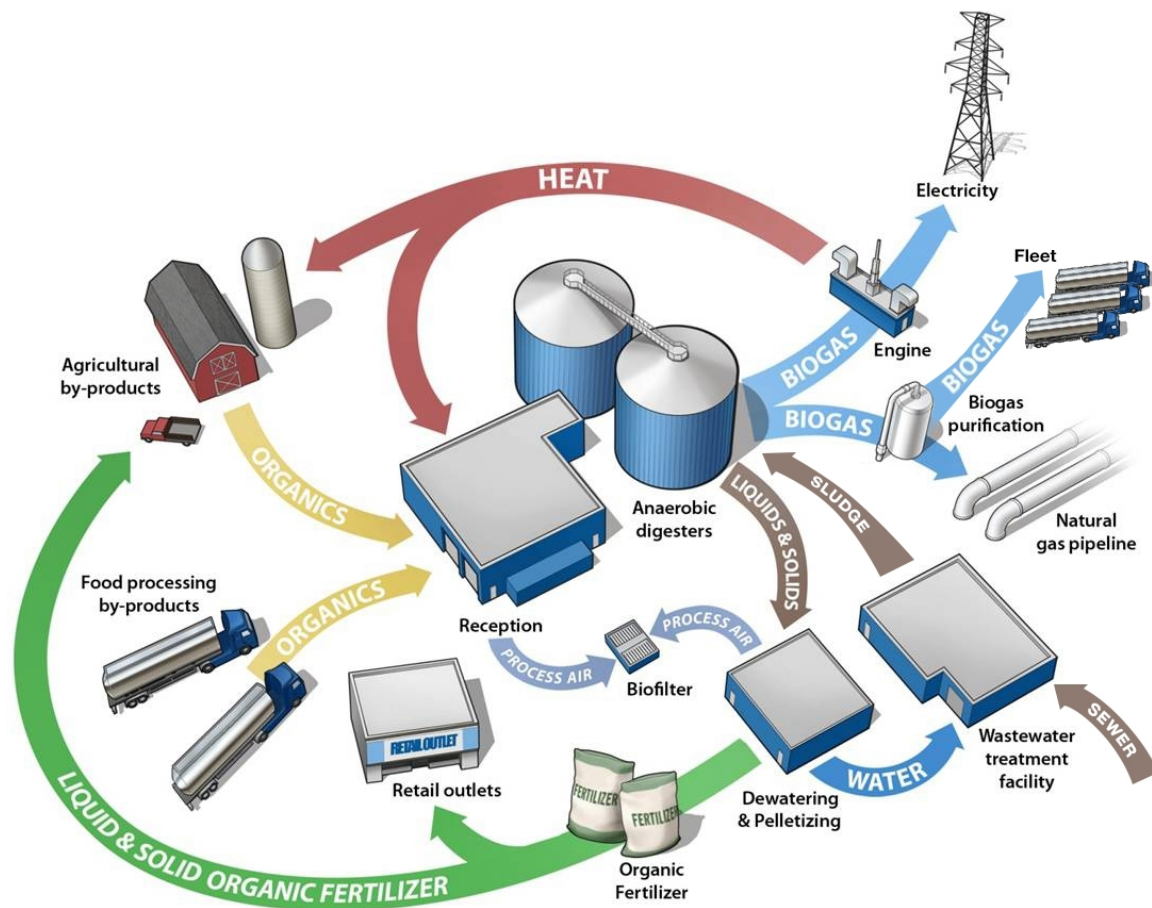


Biogas Market Drivers

Organics
Recycling

Energy
Generation

Climate
Change



Biogas/RNG Benefits

- **Waste management solutions**
 - diversion of organic materials from landfill
 - maximize energy and nutrient value
- **Methane abatement**
 - methane capture and utilization to energy from livestock, residential and commercial food waste, and municipal landfills
- **Renewable energy opportunities**
 - 3% of Canada's natural gas demand (2,420 Mm³/year) or 1.3% of its electricity demand (810MW)
 - renewable heat, electricity, pipeline quality gas for transportation, household heating, industrial, commercial and institutional processes
- **Green jobs and economic development**
 - 1,800 separate construction projects
 - \$7 billion capital investment, \$21 billion economic spin off to the Canadian economy

Biogas in Canada

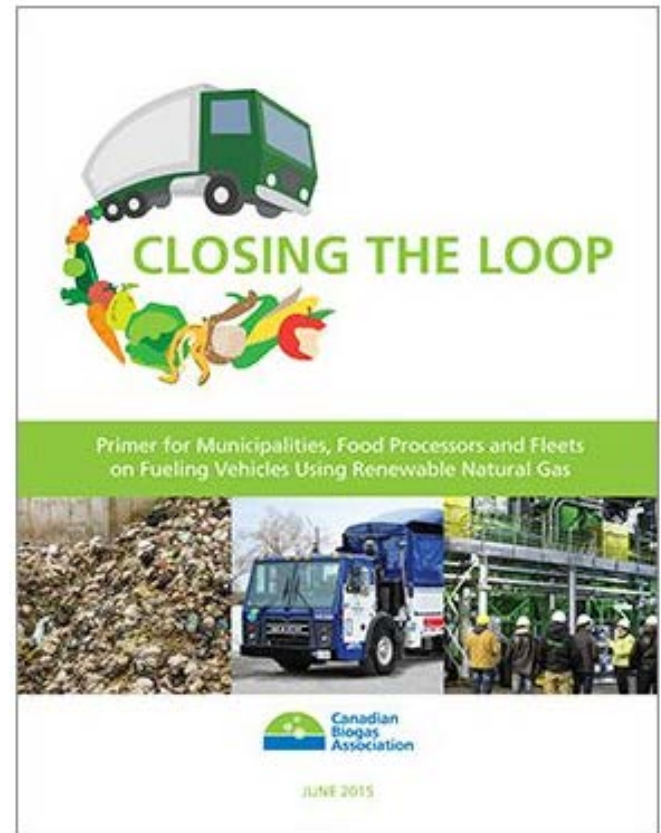


Policy Landscape Across Canada

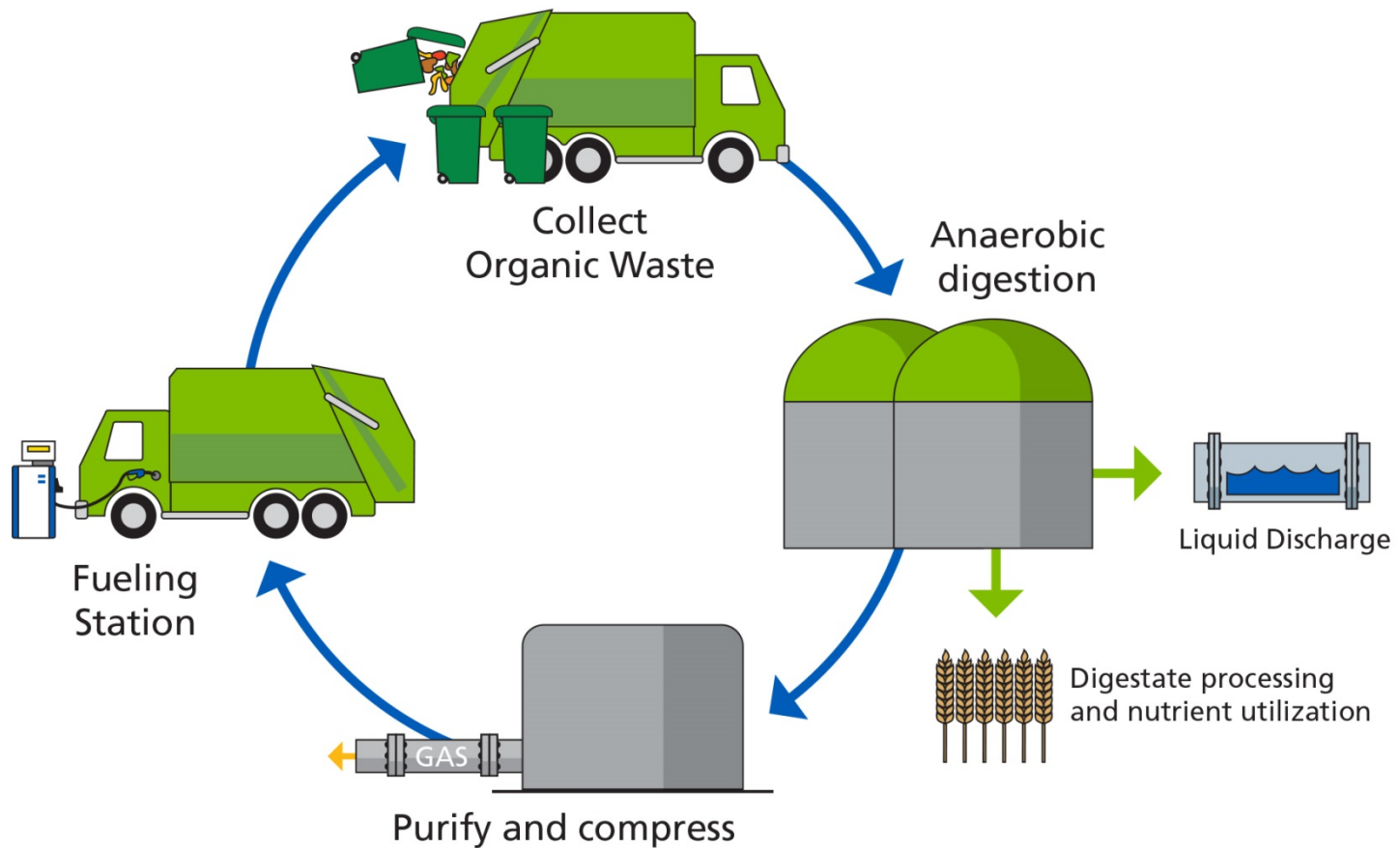
- **British Columbia**
 - voluntary RNG program, carbon tax, low carbon fuels standard
- **Alberta**
 - carbon price and emitters regulation, biogas offset protocols, localized organics bans, Bioenergy Producer Credit Program
- **Ontario**
 - feed-in-tariff for electricity, cap and trade regulation, climate change initiatives to foster RNG opportunities, organic strategy discussions
- **Quebec**
 - ban on organics in landfill by 2022, municipal capital incentives, carbon tax, RNG momentum project by project; 2030 energy policy
- **Nova Scotia**
 - ban on organics in landfill, community feed-in-tariff program (on hold)

Closing the Loop Primer

- For municipalities, food processors, fleets
- Introduction to RNG and its value
- CNG and RNG considerations and benefits
- Connection to planning and operations
- Steps to success
- Case studies and best practices



RNG Production



Municipal Biogas Objectives

- **Maximum Utilization**
 - use all of the biogas, always
- **Economic Return**
 - offset capital and operating expenses
- **Reduce Impact of Waste Management**
 - GHG reduction, Air, Traffic
- **Minimize Risk**
 - technical, commercial, decision
- **Minimize Administrative Burden**
 - energy marketing not core business

Biogas – 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

Paving the Way Forward

- Industry and federal/provincial governments need to work together to provide:
 - Renewable Fuel Standard in Canada for transportation
 - 10% RNG by 2030 to green the natural gas supply
 - Diversion of organic materials to optimize use of carbon sources
 - Value and recognition for methane emission reductions from biogas
 - Incorporate Biogas and RNG into Canada's energy and climate strategies.

VALUE OF BIOGAS 2017:

OPPORTUNITIES FOR...

VALUE OF
BIOGAS
WEST

January 27, Abbotsford, BC

VALUE OF
BIOGAS
EAST

March 24, Greater Toronto Area



Canadian
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