

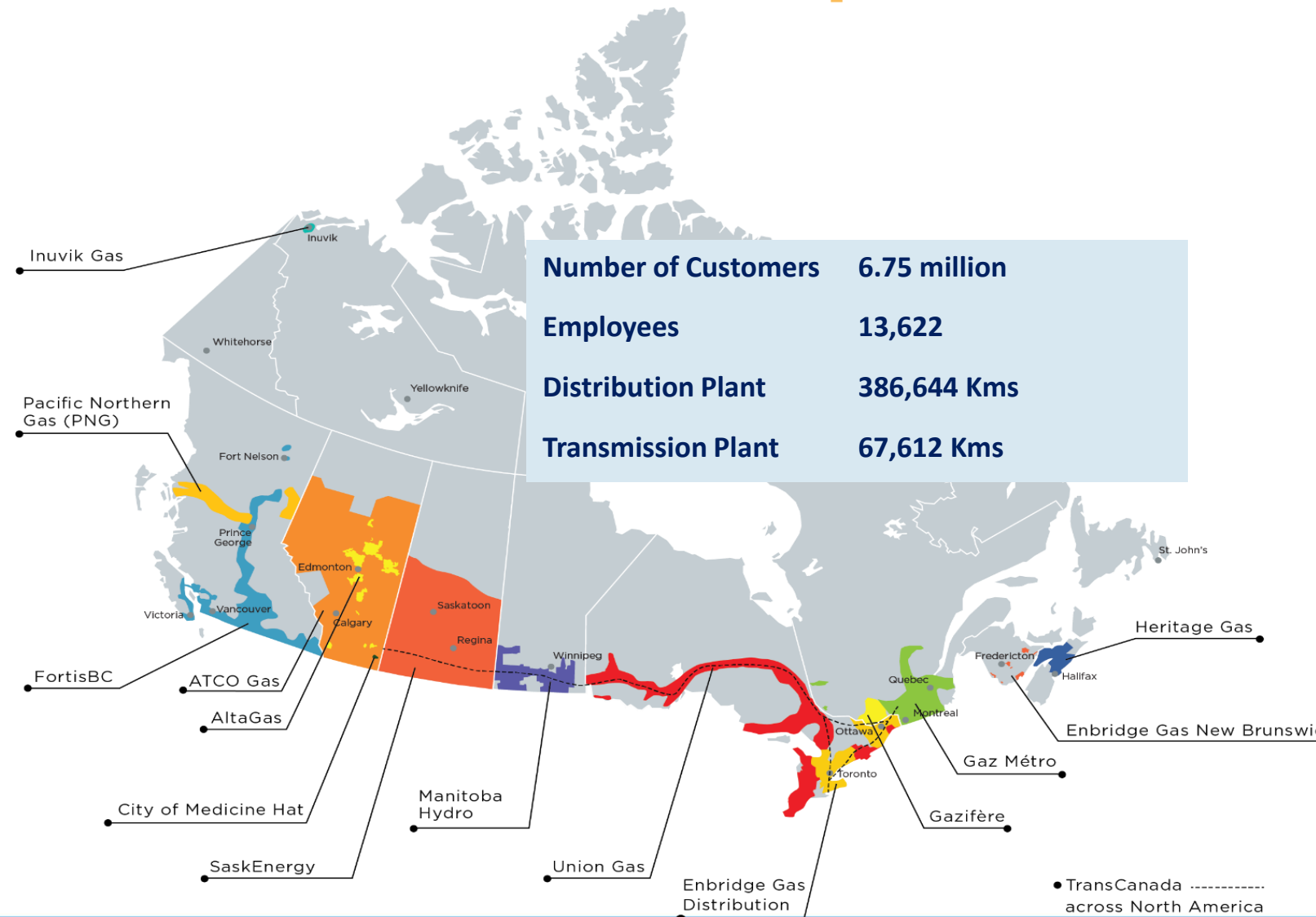
RENEWABLE NATURAL GAS

*Providing affordable, renewable energy for
Canada*

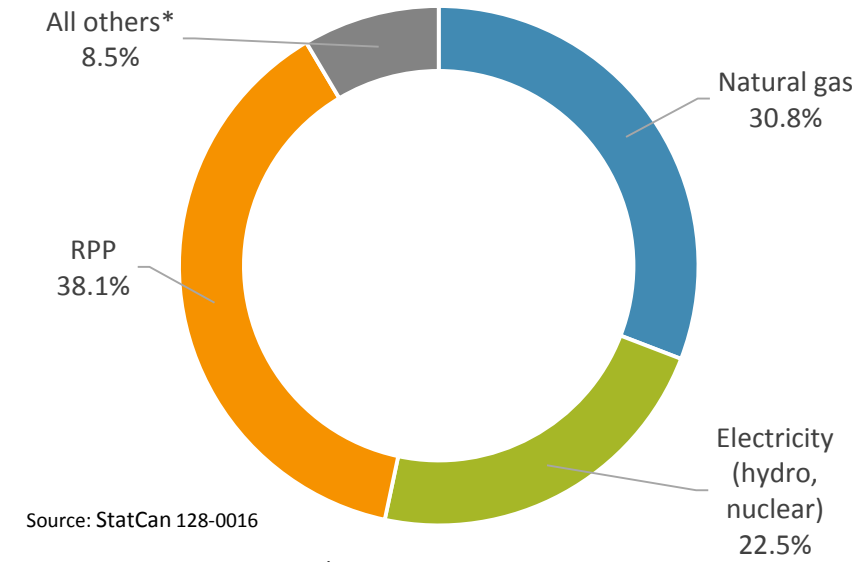
Paul Cheliak
Director, Innovation and New Markets
Canadian Gas Association



CGA Membership & Canadian Energy Demand



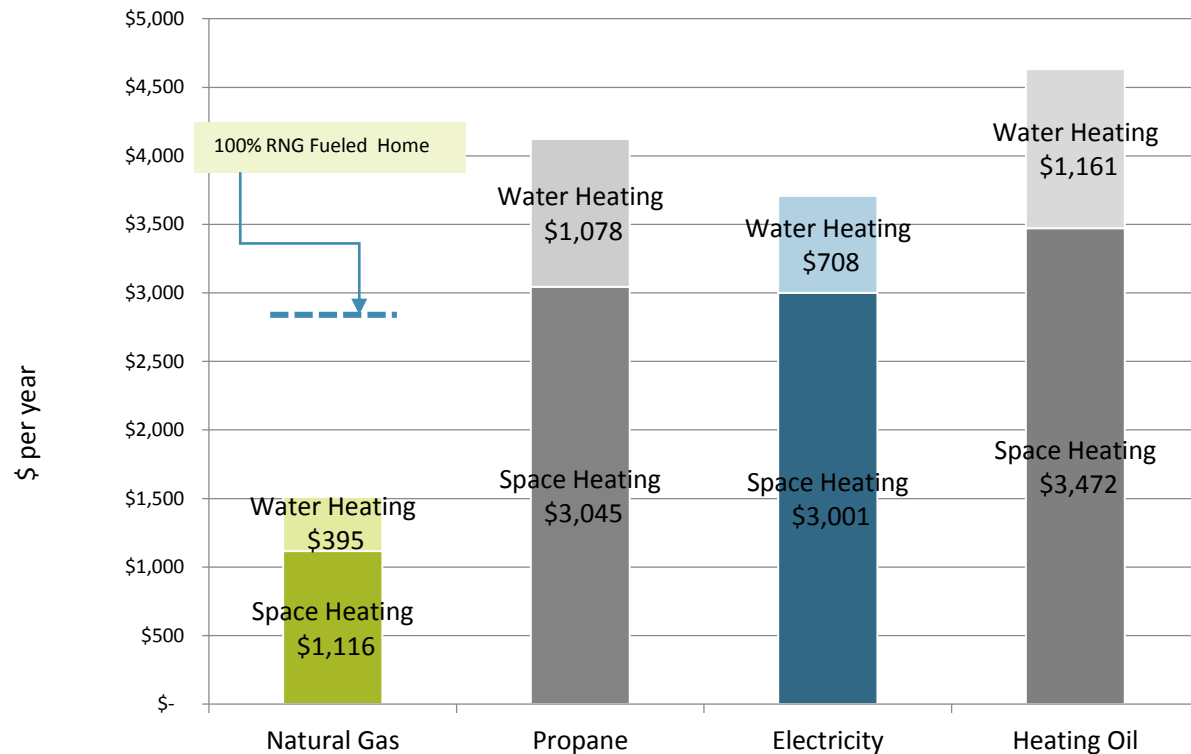
Energy final demand - Canada



Source: StatCan 128-0016
*Coal, NGLs, coke, coke oven gas, steam

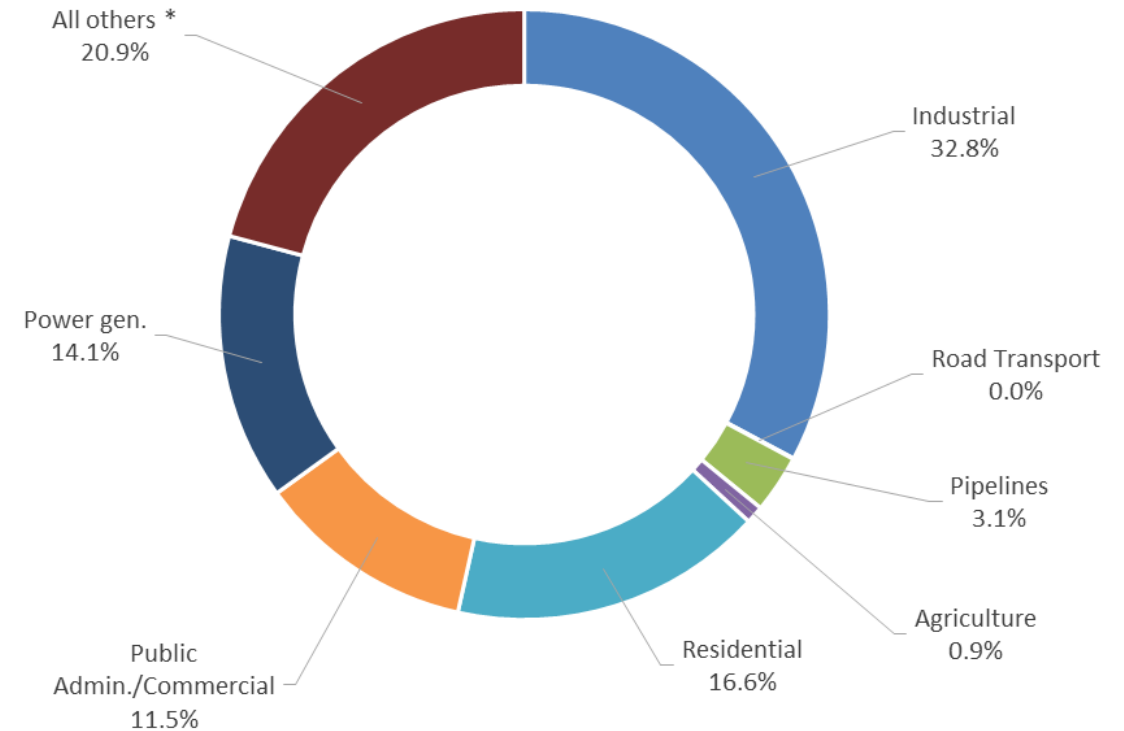
Natural Gas Use and Unmatched Affordability

Residential Space & Water Heating Costs - Canada, 2015



Source: StatsCan, Hydro Quebec, Kent Marketing, Canadian Gas Association

Natural gas - demand by sector 2013 (TJ,%)



Source: Statcan 128-0016

*transformed to RPP or steam, producer use, non-energy use

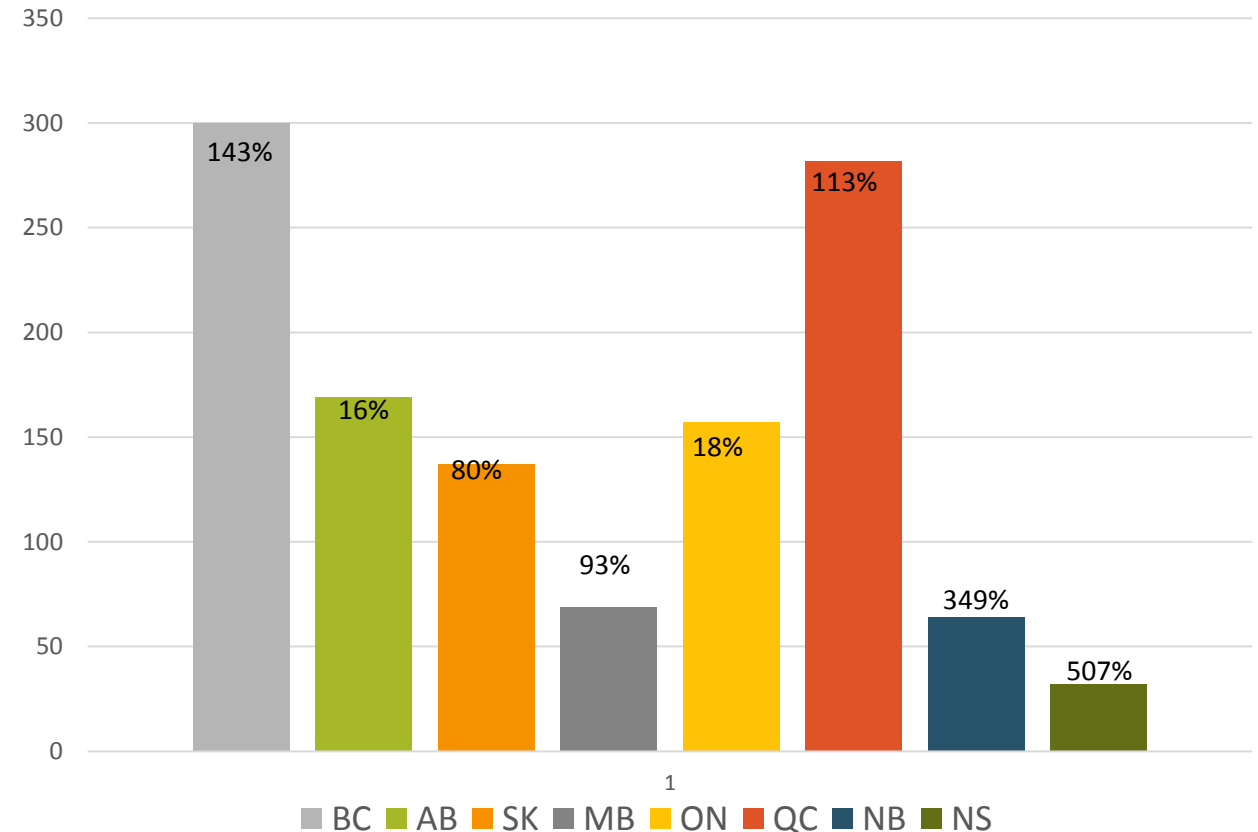
Canada's RNG Opportunity

Canada's total
gas demand is
2,670 Bcf

Canada's RNG
Potential is
1,415 Bcf

10% of Gas
Demand with
RNG delivers 14-
22 MT GHG
reductions,
equal to 2.8-4.4
million cars
emissions

RNG Potential (bcf/year) vs. Provincial Gas Demand



Sources: Statistics Canada, Table 128-0016. Alberta Innovates, 2010

CGA's 2025 and 2030 Target for RNG Blending

2020

- Each province in Canada has an operating RNG market
- Federal and provincial support for biomass gasification

2025

- 5% of Canada's natural gas demand from RNG
- 4-12 megatonnes in GHG savings

2030

- 10% of Canada's natural gas demand from RNG
- 14-22 megatonnes in GHG savings



"The Government congratulates Canada's natural gas utilities for leading by example with their new renewable natural gas targets. "Finding new ways to develop renewable energy will help Canada transition to a low-carbon economy, creating opportunities for jobs and helping to achieve our climate change objectives." said the **Honourable Jim Carr, Canada's Minister of Natural Resources.**

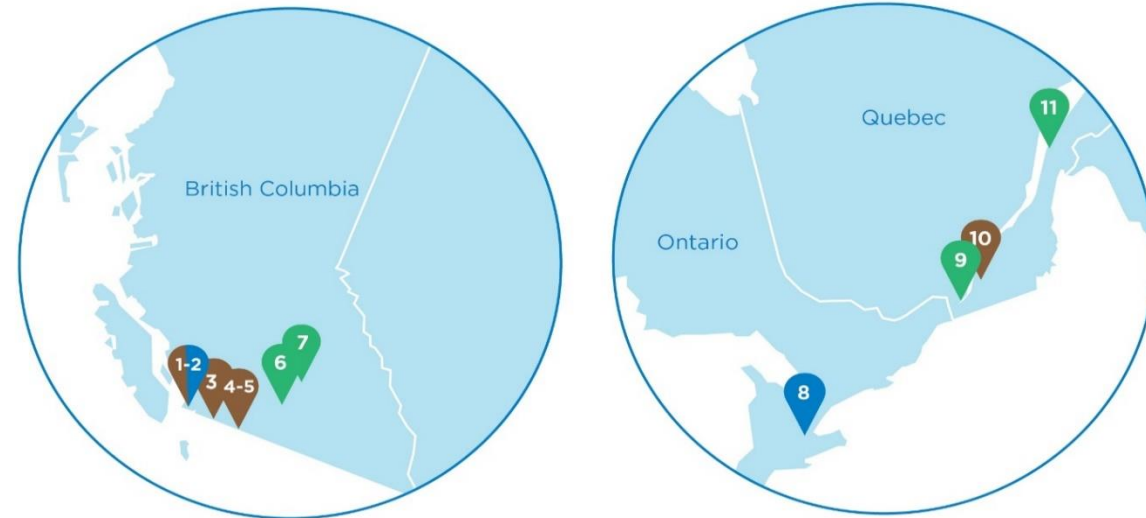
Canadian RNG Projects

Canadian Renewable Natural Gas (RNG) Projects

Operating & In Development as of 2017

In Summary:

- 11 Projects
- 130 million litres of RNG in diesel litres
- Enough RNG for 55,000 homes



- Digester
- Landfill
- Wastewater treatment gas

1 Delta, BC
Start date: 2014
RNG Production: 1,348 homes/year
Status: Operating

2 Richmond, BC
Start date: 2016
RNG Production: 505 homes/year
Status: In development

3 Surrey, BC
Start date: 2017
RNG Production: 1,100 homes/year
Status: In development

4 Chilliwack, BC
Start date: 2015
RNG Production: 1,348 homes/year
Status: Operating

5 Abbotsford, BC
Start date: 2010
RNG Production: 2,527 homes/year
Status: Operating

6 Kelowna, BC
Start date: 2014
RNG Production: 3,032 homes/year
Status: Operating

7 Salmon Arm, BC
Start date: 2013
RNG Production: 1,011 homes/year
Status: Operating

8 Hamilton, ON
Start date: 2011
RNG Production: 2,695 homes/year
Status: Operating

9 Terrebonne, QC
Start date: 2014
RNG Production: 28,000 homes/year
Status: Operating

10 St. Hyacinthe, QC
Start date: 2017
RNG Production: 5,054 homes/year
Status: In development

11 Rivière du loup, QC
Start date: 2016
RNG Production: 1,350 homes/year
Status: In development

The RNG Cost Advantage

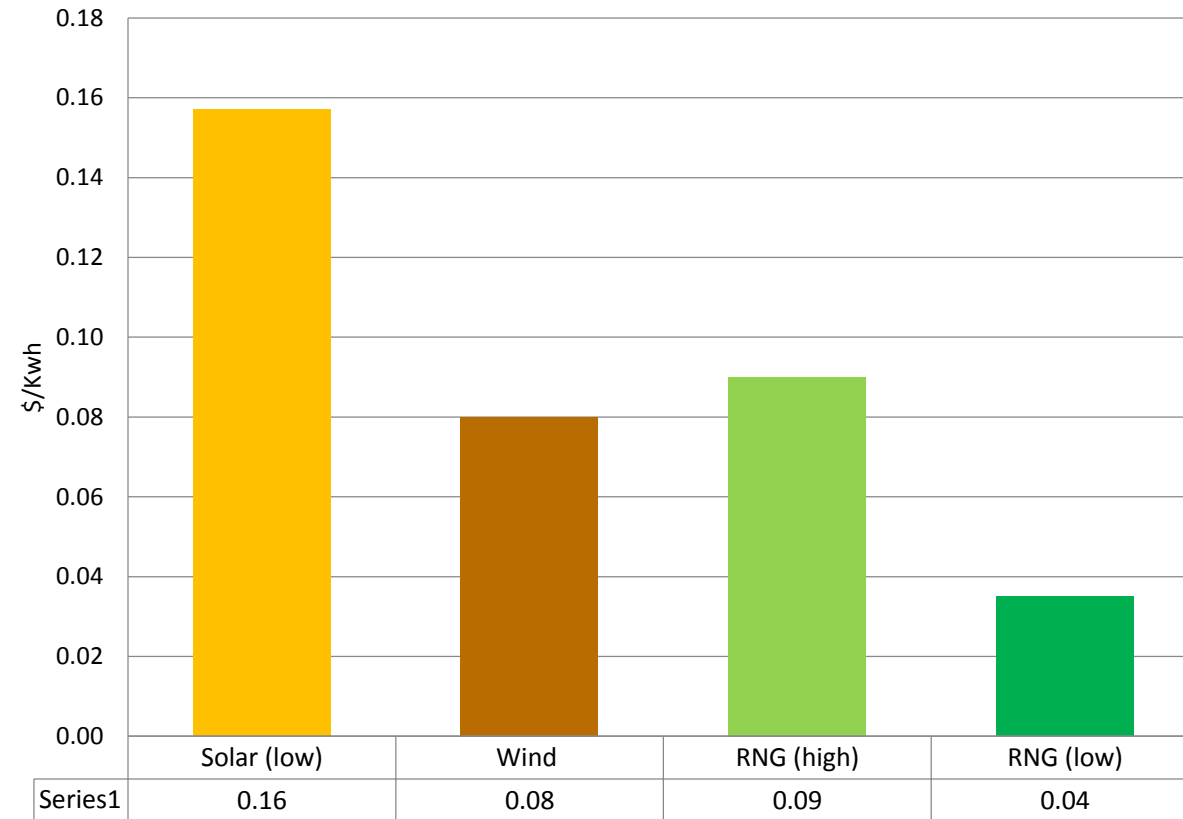
Affordable

- RNG can compete easily with wind and solar electricity
- RNG is produced year round without intermittency and can be **stored underground**
- In terms of electricity equivalent pricing, RNG costs between 4 – 9 cents/Kwh

Versatile

- RNG can be used in any energy application that uses natural gas
- RNG uses existing pipeline infrastructure to bring affordable fuel to customers
- Lowens energy cost to customers and operating costs to utilities

Figure 1: Comparing Canadian Renewable Energy Costs



Federal Support for RNG

Role of the Federal Government:

Allocate Cleantech Funding to advance biomass to RNG technology piloting project across Canada.

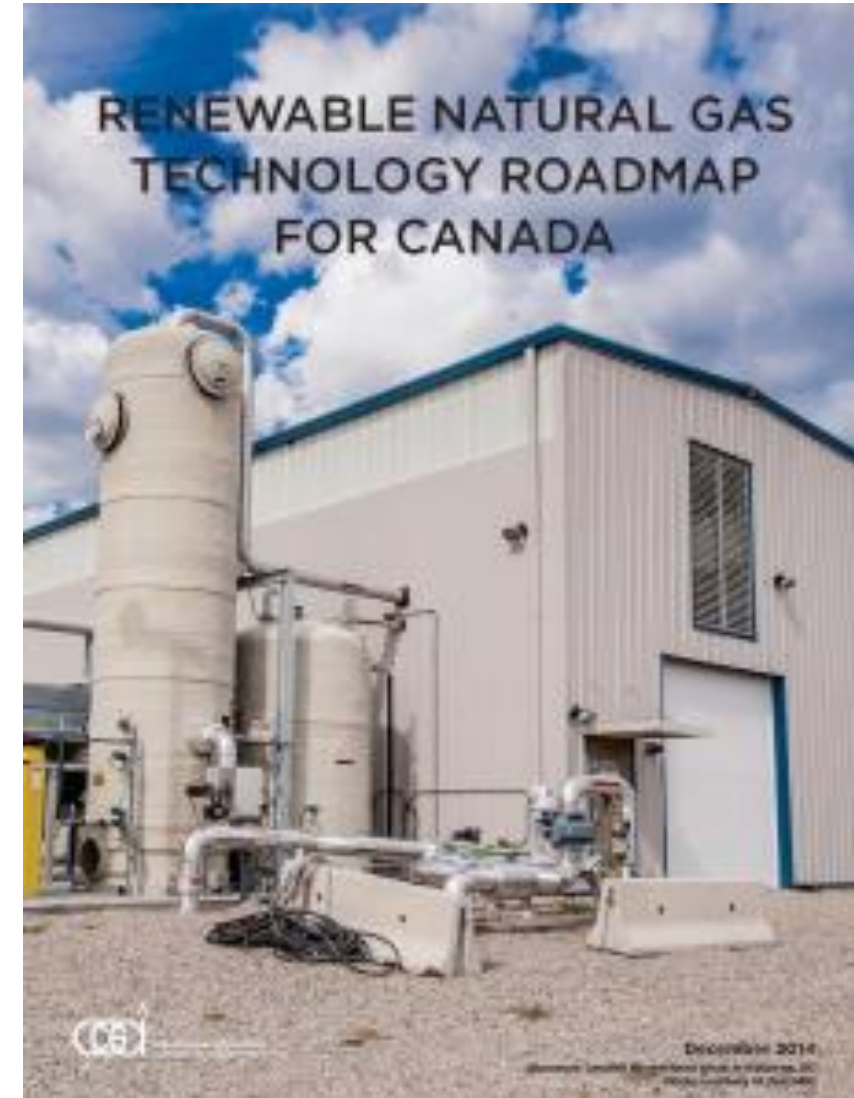
2017

Amend Canada's Renewable Fuels Regulation to allow RNG as a compliance option (as is done in the US via EPA).

2018

Allocate matching federal Clean Infrastructure funding to support provincial RNG programs (e.g., \$100 million for Ontario outlined in the Climate Action Plan)

2018
-19



For more information visit
www.cga.ca