

Written Submission for the Pre-Budget Consultations in Advance of the 2019 Budget

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LIST OF RECOMMENDATIONS

- **Recommendation 1:**

That Canada establish a comprehensive, long-term ‘Clean Fuel Strategic Plan’ (CFSP) to support sustainable growth and ensure competitiveness of the production and use of clean fuels in Canada. We recommend the CFSP development include:

- I. A ministerial round-table of clean fuel sector industry leaders and other clean energy experts to conduct a technical review of the clean fuel sector status, evaluate existing program measures (federal provincial), forecast clean fuel demand to 2030, and provide core strategic recommendations
- II. Consultation with provinces, territories, and Indigenous peoples
- III. Consultation with Canadians and other stakeholders
- IV. A commitment to implement the CFSP in 2020 (e.g. fiscal 2020-2021) through to 2030

- **Recommendation 2:**

That Canada commit core funding for the CFSP over 2020 – 2030 from carbon revenue funds, pursuant to a joint federal – provincial program to build clean fuel production capacity and infrastructure through:

- I. Capital support for expanding clean fuel production capacity and supply chain infrastructure
- II. Performance-based production credits for Canadian-made renewable and alternative fuels based on full lifecycle greenhouse gas emissions

- **Recommendation 3:**

That, subject to the CFSP, Canada support and expand Canada’s clean fuel production technologies and innovation systems through targeted use of measures, such as:

- I. Refundable tax credits, accelerated capital cost allowance, clean growth capital grants, and core applied research funding

A Clean Fuel Strategic Plan: To Ensure Canada's Competitiveness in the Emerging Global Market for Low Carbon Fuels

Overview

We appreciate the opportunity to provide our comments to the House of Commons Standing Committee on Finance (the 'Committee') on its pre-budget consultation for the 2019 Federal Budget. As indicated by the Committee in its invitation for submissions, the Committee is seeking input on "what steps the federal government can take to support and/or encourage Canadians and their businesses to grow the economy in the face of a changing economic landscape".¹

This is a very important consultation, as Canada faces the twin challenges of maintaining economic growth while reducing harmful greenhouse gas emissions. Global markets have become increasingly volatile in 2018, with sharp course changes to climate action measures and trade policies. Bold new strategies are needed to manage these risks and opportunities.

Advanced biofuel production and use in Canada is the focus of our submission. As we demonstrate in this submission, low carbon advanced biofuels production is a key driver for economic growth and 'green jobs' in Canada. There are also significant opportunities from the deployment of other low carbon alternative fuels, such as electric mobility (EVs) and fuel cell (hydrogen) vehicles. Clean fuel use is the principal mechanism to reduce greenhouse gas emissions in transport, buildings, and industrial sectors.

Collectively, Canada's clean fuel sectors understand the climate action imperative; we have well-established, commercially viable solutions; governments have implemented proven, market-based regulatory tools and are advancing new clean fuel regulations; and, we have quantified the magnitude of low carbon economic opportunities.

What is lacking is a focused, strategic plan. To meet Canada's 2030 climate action and economic goals, we recommend Canada develop and implement a comprehensive, long-term '*Clean Fuel Strategic Plan*' (CFSP), to ensure Canadian businesses and communities take leadership, make responsible investments, and remain globally competitive in the rapidly expanding market for clean fuels.

Advanced Biofuels Canada/ Biocarburants avancés Canada

Our organization promotes the production and use of low carbon advanced biofuels² in Canada, which our members supply across North America and globally. Our members have invested in advanced biofuels processing and supply chain operations across Canada and are actively bringing to market the next generation of low carbon biofuels. Advanced Biofuels Canada has provided expert advice to Canadian governments on transport fuel regulations and carbon pricing systems since 2005. For more information, please visit: www.advancedbiofuels.ca

¹ <https://www.ourcommons.ca/DocumentViewer/en/42-1/FINA/news-release/9928791>

² Advanced biofuels have GHG reductions of at least 50% below comparable fossil fuels and are made from sustainable biomass. Canada has approximately 750 M litres of advanced biofuels production capacity.

Transport Fuel Sector Overview

Pursuant to the federal *Clean Fuel Standard (CFS)*³, Canada will implement a performance-based regulation for liquid, gaseous, and solid fuels used in transportation, buildings, and industry. To illustrate the status and opportunities for clean fuels in Canada, we have provided data specific to the transport fuel sector market. Globally, efforts to decarbonize the transport sector market have resulted in significant growth in the production and use of biofuels since 2005. Tools to regulate fuel markets, measure lifecycle carbon emission reductions, and identify supply/demand market impacts are well developed for liquid transport fuels.

In Canada, since 2010, both the gasoline and diesel fuel markets have been subject to regulations requiring the minimum use of renewable fuels. Carbon intensity requirements for fuels have been required pursuant to regulations in Alberta (2011)⁴, British Columbia (2013)⁵, and Ontario (2014, 2018)^{6, 7}. See Appendix I for a map of Canadian fuel regulations.

Renewable Fuel Demand – 2010 - 2016

Navius Research has evaluated biofuels use in Canada and resultant greenhouse gas emissions reductions over the 2010 – 2016 period.

*Fuel Sales in Canada (million litres) and Avoided Greenhouse Gases (million tonnes/year)*⁸

	2010	2011	2012	2013	2014	2015	2016
<i>Gasoline</i>	43,094	42,377	43,993	43,635	44,223	44,480	46,099
<i>Ethanol</i>	1,701	2,371	2,497	2,838	2,961	2,813	2,843
% Content	3.9%	5.6%	5.7%	6.5%	6.7%	6.3%	6.2%
<i>Diesel</i>	28,533	27,766	28,464	29,071	29,932	29,330	29,384
<i>Biodiesel and HDRD</i>	159	337	504	585	605	650	540
% Content	0.6%	1.2%	1.8%	2.0%	2.0%	2.2%	1.8%
<i>Reduction in GHGs</i>	1.8	2.8	3.5	4.1	4.2	4.3	4.1

³ Canada CFS: <https://www.canada.ca/en/environment-climate-change/services/managing-pollution/energy-production/fuel-regulations/clean-fuel-standard.html>

⁴ AB RFS: <http://aep.alberta.ca/climate-change/guidelines-legislation/renewable-fuels-standard-regulation.aspx>

⁵ BC RLCFRR: <https://www2.gov.bc.ca/gov/content/industry/electricity-alternative-energy/transportation-energies/renewable-low-carbon-fuels>

⁶ ON Greener Diesel: <https://www.ontario.ca/laws/regulation/140097>

⁷ ON Ethanol in Gasoline: <https://www.ontario.ca/laws/regulation/050535>

⁸ Biofuels in Canada (Navius Research, 2018): <https://www.naviusresearch.com/publications/2018-biofuels-in-canada/>

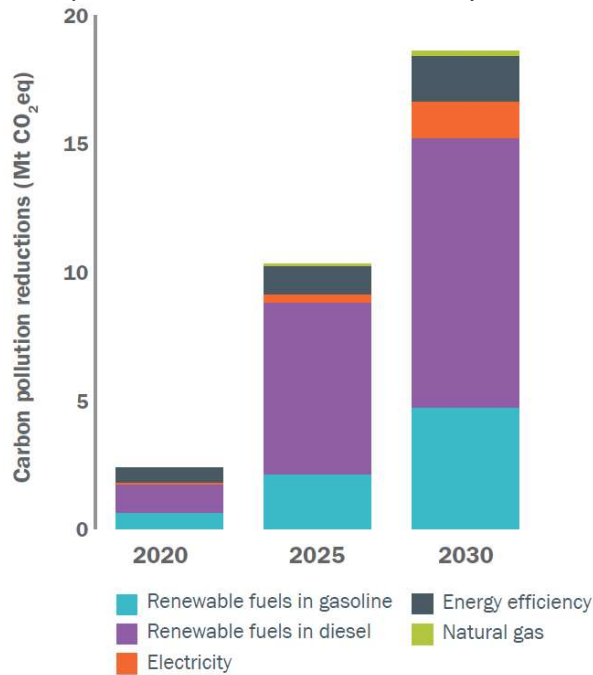
Growth in renewable fuel demand from market-based regulations expanded significantly over 2010 – 2014, but aggregate use has declined since that year. Avoided greenhouse gas emissions peaked at 4.3 million tonnes in 2015 and dropped to 4.1 million tonnes in 2016.⁹

Despite the significant increase in use of biofuels over the current decade, Canada has fallen dramatically behind the United States. The charts in Appendix I demonstrate a widening gap in the competitiveness of Canadian renewable fuels use in comparison to our US neighbours.

Renewable Fuel Demand – 2030

Looking forward to 2030, Clean Energy Canada has modelled potential demand for low carbon fuels across the range of fuel streams (liquid, gaseous, and solid) and use sectors (transportation, buildings, industry). Under one model forecast for the CFS design, they estimate that demand for renewable fuels for the transport sector alone could increase threefold, resulting in almost 20 million tonnes per year of avoided greenhouse gases. Renewable fuels use is key to meeting that target.

Transportation Emission Reductions by Fuel Resulting from the Clean Fuel Standard¹⁰



⁹ *Ibid*

¹⁰ Clean Energy Canada: Clean Fuel Standard Report, November 2017 - <http://cleanenergycanada.org/report/clean-fuel-standard-report/>

Renewable Fuel Supply – 2017 - 2018

Over the past decade, regulations and targeted programs have sought to expand the supply of Canadian-made renewable fuels to meet growing demand. However, conditions to attract investment capital and expand the production of low carbon biofuels have fallen short and Canada has become import dependent for the supply of ethanol, biodiesel, and renewable hydrocarbon diesel (RHD, also termed HDRD) to meet market demand. Canada’s trade deficit in renewable fuels in 2017 reached 1.4 million litres.

*Canadian Trade in Renewable Fuels – 2017 and 2018*¹¹

<i>(million litres)</i>	2017		2018 (Jan-Apr)	
	Import	Export	Import	Export
Ethanol	1,255	0	370	0
<i>Renewable Gasoline (Ethanol) Trade Surplus / (Deficit)</i>	(1,255)		(370)	
Biodiesel (BD)	296	327	95	105
RHD or HDRD	192	0	64	0
<i>Renewable Diesel (BD, RHD) Trade Surplus / (Deficit)</i>	(161)		(54)	
<i>Total Trade Surplus / (Deficit)</i>	(1,416)		(424)	

The trade maps provided in Appendix I indicate the markets of origin for renewable fuels imported into Canada. Given the current trade deficit in renewable fuels and forecast growth in clean fuel demand under the pending CFS, there is a clear economic opportunity to expand production of advanced biofuels to 2030.

Further, expansion of renewable fuel production in Canada would mitigate trade risks, given NAFTA uncertainties with the United States.

Economic Growth

A recent study¹² by Doyletech Corporation analyzed the economic impact of the federal CFS on the Canadian economy. The report looked at one scenario where biofuel blending increased to 10% and 5% in gasoline and diesel fuels, respectively, and a second scenario that responded to stronger demand for renewable fuels use to reduce greenhouse gas emissions by 21 million tonnes per year by 2030.

As demonstrated in the report, Canada has considerable natural resources (e.g. sustainable biomass, forestry and agriculture residues, wastes) and natural competitive advantages (e.g. proven

¹¹ Advanced Biofuels Canada: Statistics Canada

¹² Doyletech Corporation (2018): <https://advancedbiofuels.ca/biofuelsuccesscfs/>

technologies, fuel production and distribution infrastructure, innovation, and skilled labour) to support the buildout of globally competitive production plants across Canada.

Under the two scenarios, Doyletech estimated the marginal impacts of each phase, as follows:

CFS Scenario	Phase 1: Increase Renewable Fuel Blending (10%/5%)	Phase 2: Deepen GHG Emission Reductions to 21 MTY
Construction Phase		
<i>Economic Impact (\$ B)</i>	\$3.19	\$6.40
<i>Jobs</i>	15,698 job years	31,000 job years
<i>Federal Returns (\$ M)</i>	\$1,020	\$2,040
<i>Provincial Returns (\$ M)</i>	\$532	\$1,064
<i>Municipal Returns (\$ M)</i>	\$124	\$251
Operations Phase		
<i>Economic Impact (\$ B)</i>	\$5.66	\$12.78
<i>Jobs</i>	3,983 annual FT	8,631 annual FT
<i>Federal Returns (\$ M)</i>	\$527	\$1,163
<i>Provincial Returns (\$ M)</i>	\$462	\$1,017
<i>Municipal Returns (\$ M)</i>	\$34	\$74
Renewable Fuel Production		
<i>Ethanol – Investment (\$ B)</i>	\$1.84	\$3.68
<i>Capacity (MLY)</i>		
- Current	1,849	3,759
- New	1,910	4,160
- Total	3,759	7,919
<i>Biodiesel / RHD – Investment</i>	\$0.60	\$1.20
<i>Capacity (MLY)</i>		
- Current	728	1,398
- New	670	2,557
- Total	1,398	3,955

Clean Fuel Strategic Plan Summary

A comprehensive, long-term '*Clean Fuel Strategic Plan*' will support sustainable growth and ensure competitiveness of the production and use of clean fuels in Canada. In our submission, we have focused on the attributes of the liquid fuels market (primarily the transport sector); other clean fuel sectors (e.g. EVs, fuel cells) have demonstrated comparable opportunities to expand clean economic growth.

In focusing on renewable fuels for transport use, there is a demonstrated need for strategies to expand production capacity, and build resilience and competitiveness in the Canadian renewable fuels market:

- Renewable fuel markets have been established across Canada since 2010
- Canada has a significant trade deficit in renewable fuels
- Renewable fuel demand is forecast to grow significantly to 2030
- Canada has sufficient resources to support a sustainable and competitive advanced biofuels industry to meet domestic and export market demand
- Buildout of advanced biofuels production in Canada could support over 12,000 permanent clean energy jobs and over \$18 billion in annual economic output by 2030

The federal *Clean Fuel Strategic Plan* should:

- Commit core funding from carbon revenues (2020 – 2030)
- Work with the provinces and territories to capture benefits and advantages unique to each region of the country
- Build clean fuel production capacity and infrastructure through capital grants and performance-based production credits
- Support Canada's clean fuel production technology and innovation systems through targeted use of other tax and fiscal measures
- Be developed with clean fuel industry experts and other clean energy experts, in conjunction with the provinces, territories, Indigenous peoples, the Canadian public and other stakeholders

Advanced Biofuels Canada welcomes the opportunity to work with the governments of Canada, our clean fuel colleagues, and other Canadian stakeholders to achieve this important goal.

Appendix I: Advanced Biofuels Canada – Biofuels Market Information



Advanced Biofuels Canada - Members



Advanced Biofuels Canada: Member Profile

Technologies:

Innovation

- Fast Pyrolysis
- Gas Fermentation
- Hydrothermal liquefaction
- Hydrotreatment
- Steam-methane reforming (SMR)
- Thermo-catalytic de-polymerization
- Thermo-chemical
- Transesterification

Products:

Low Carbon Fuels

- Advanced Ethanol
- Alcohol to Jet Fuel
- Biocrude
- Biodiesel
- Renewable Fuel Oil
- Renewable Hydrogen
- Renewable Natural Gas
- Renewable Hydrocarbon Diesel

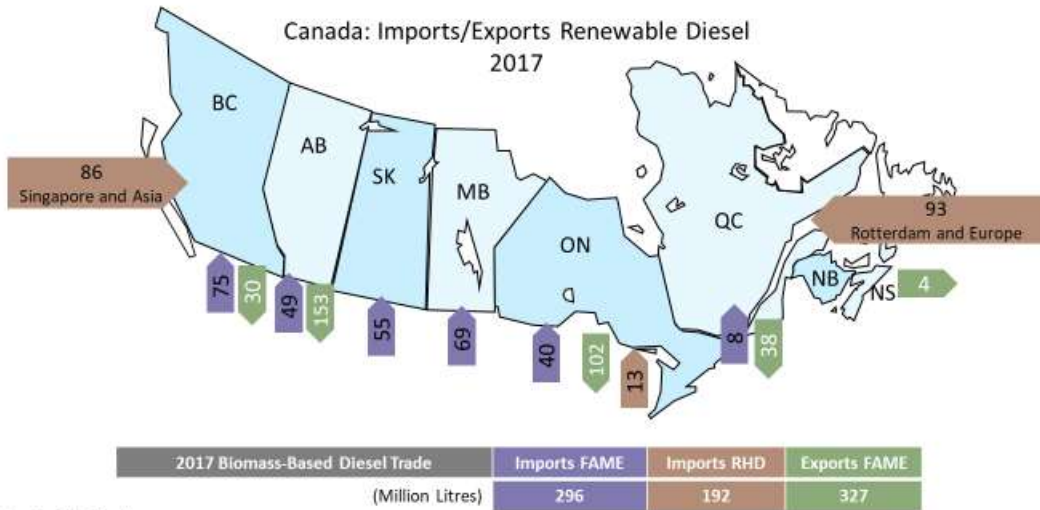
Co-Products:

Bio-Products

- Animal feed & nutritional supplements
- Bio-chemicals
- Bio-methanol
- Glycerin
- Green polymers
- Light & heavy fuel 'ends'
- Liquid CO2
- Renewable naphtha
- Renewable Liquid Petroleum Gas (R-LPG)



Canada Trade: Renewable Diesel

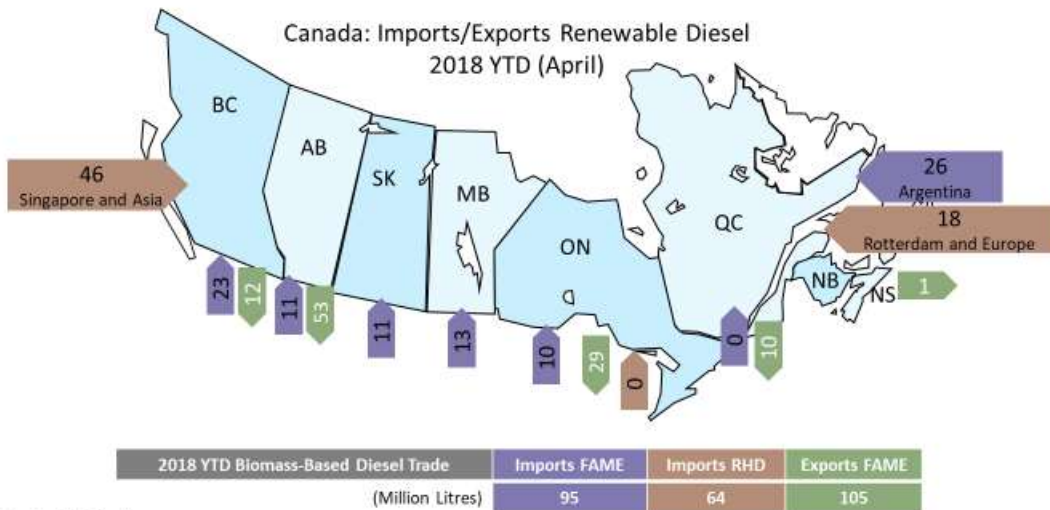


Source: StatCan CIMT database

Totals may not add due to rounding



Canada Trade: Renewable Diesel

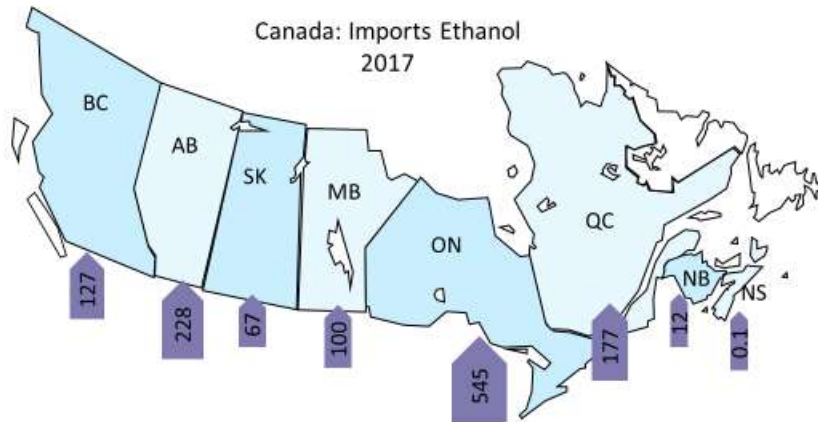


Source: StatCan CIMT database

Totals may not add due to rounding



Canada Trade: Ethanol



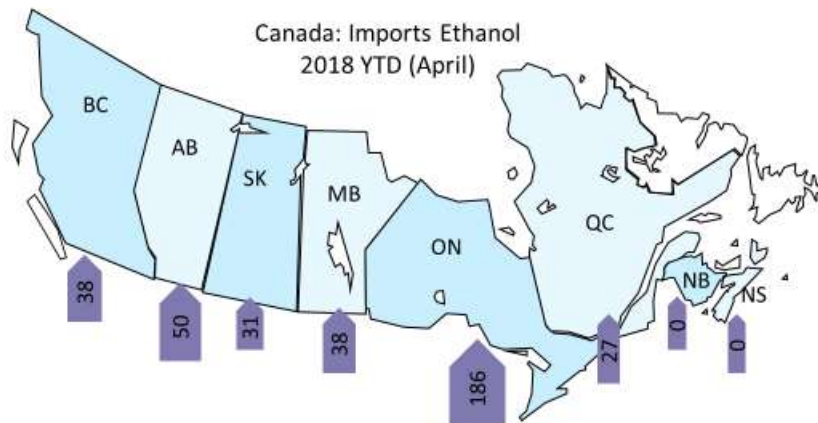
Total Imports = 1,255 million L

Source: StatCan CIMT database

Totals may not add due to rounding



Canada Trade: Ethanol



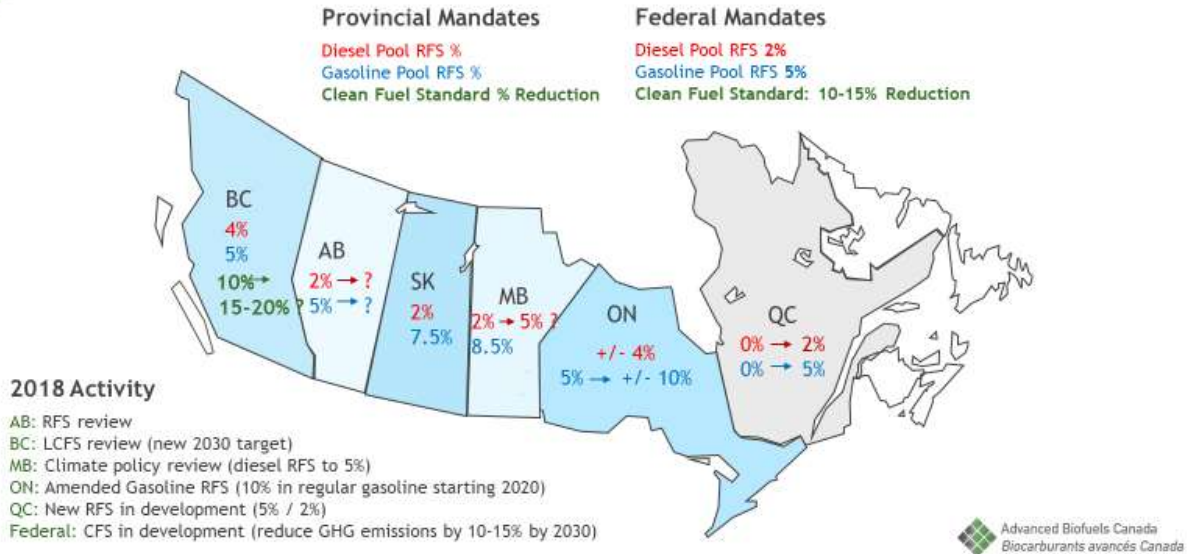
Total Imports YTD (April) = 370 million L

Source: StatCan CIMT database

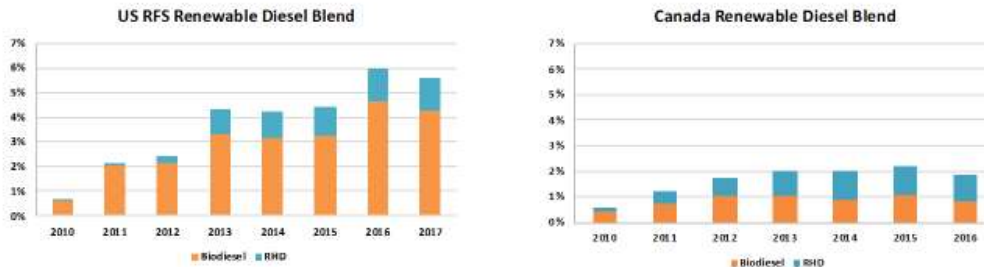
Totals may not add due to rounding



Canada Renewable Fuel Mandates



Renewable Diesel Blending: US and Canada



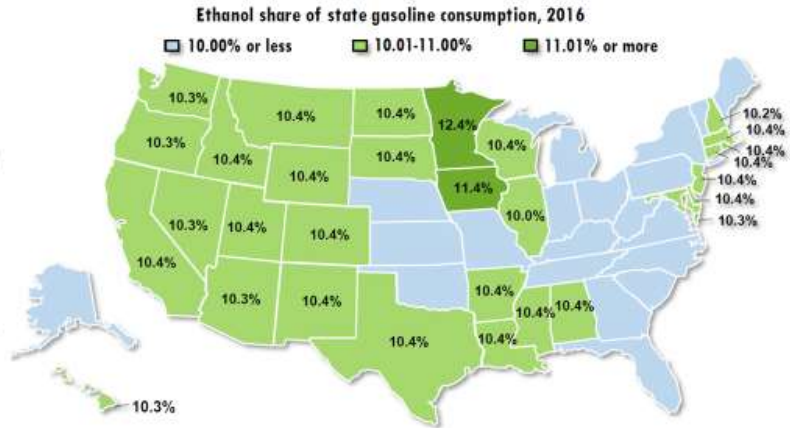
- US renewable diesel blending in on-road diesel transport exceeded 5% in 2016 and 2017
 - Biodiesel at 4.6% and 4.3% in 2016 and 2017; the remainder RHD
- Canadian renewable diesel blending was 1.8% in 2016 (0.8% biodiesel, 1% RHD)
 - British Columbia blending at 5-6% over 2013-2016
 - Ontario *Greener Diesel Regulation* has 4% requirement, with average 70% CI reduction (2017)

Source: EPA, Navis Research



Renewable Gasoline Blending: US and Canada

- US renewable gasoline (ethanol) blending exceeds 10% nationally, and in 30 states (2016)
 - Includes regular and premium grade gasoline
- Canadian mandates:
 - Manitoba – 8.5%
 - Saskatchewan – 7.5%
 - Ontario – 10.0%, with average 45% CI reduction (2020)



Source: RFA