



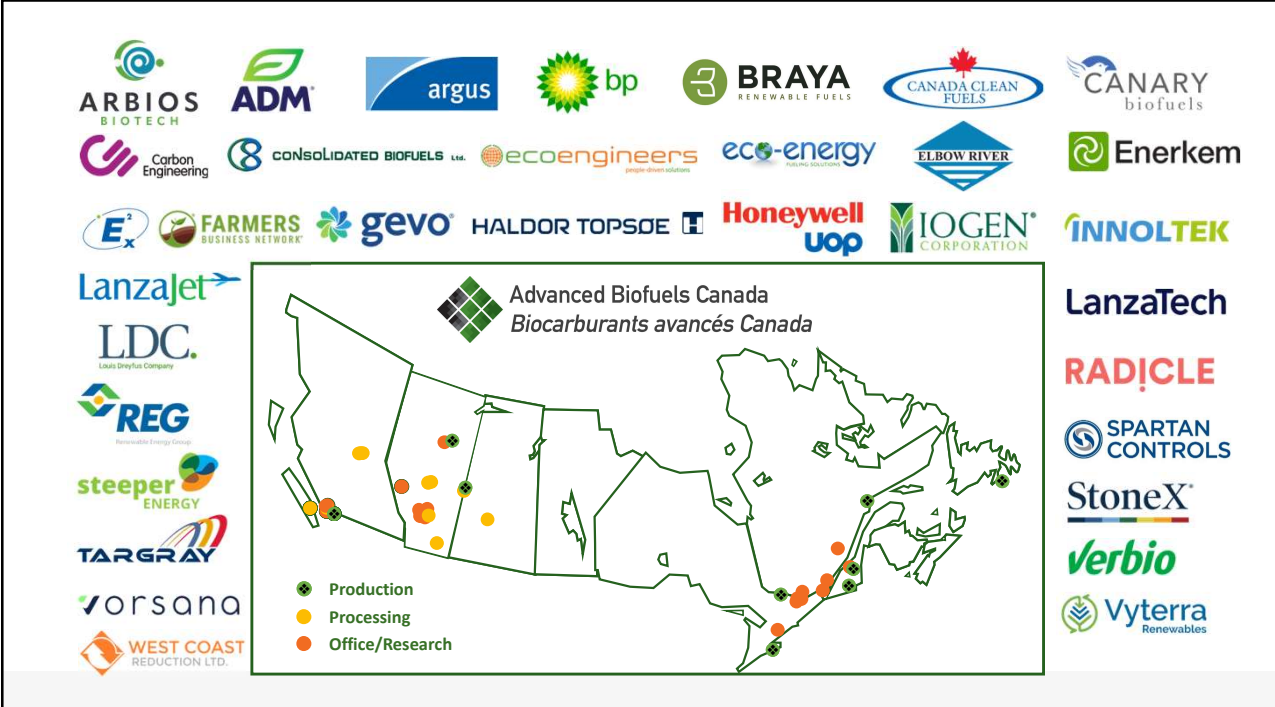
Advanced Biofuels Canada  
Biocarburants avancés Canada

*Marine Fuels*

Federal Clean Fuel Regulations and BC Low Carbon Fuel Standard

June 23, 2022

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ARBIOS BIOTECH ADM argus bp BRAYA CANADA CLEAN FUELS CANARY biofuels

Carbon Engineering CONSOLIDATED BIOFUELS ecoengineers eco-energy ELBOW RIVER Enerkem

E<sup>2</sup> FARMERS BUSINESS NETWORK gevo HALDOR TOPSOE Honeywell uop IOGEN CORPORATION INNOLTEK


LanzaJet LDC. REG steeper ENERGY TARGRAY vorsana WEST COAST REDUCTION LTD.

Advanced Biofuels Canada  
Biocarburants avancés Canada

Production  
Processing  
Office/Research

LanzaTech RADICLE SPARTAN CONTROLS StoneX verbio Vyterra

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## Diverse Technologies, Products

### Technologies:

#### Innovation

- Bio-chemical
- Thermo-chemical
- Transesterification
- Biomass co-processing
- Catalytic de-polymerization/ hydrothermal liquefaction
- Catalytic upgrading
- Gas fermentation
- Hydrotreating
- Direct Air Capture

### Products:


#### Low Carbon Fuels

- Advanced Ethanol
- Biocrude
- Biodiesel
- Biogas (H<sub>2</sub>, RNG)
- Biojet (SAF/LCAF)
- Bio-methanol
- Renewable Fuel Oil
- Renewable Gasoline
- Renewable Hydrocarbon Diesel (HRD)
- Synthetic Diesel

### Co-Products:


#### Bio-Products

- Bio-chemicals
- Fatty acids
- Glycerin
- Animal feed & nutritional supplements
- Green polymers
- Light & heavy fuel 'ends'
- Liquid CO<sub>2</sub>
- Phosphate
- Renewable naphtha
- Renewable Liquid Petroleum Gas (R-LPG)

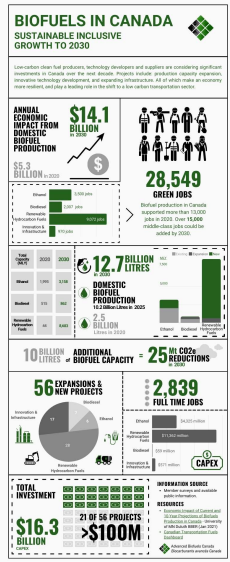


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## Resources



**\$14.1** BILLION  
ANNUAL ECONOMIC IMPACT FROM DOMESTIC BIOFUEL PRODUCTION

**28,549** GREEN JOBS


**12.7** BILLION LITRES  
DOMESTIC BIOFUEL PRODUCTION

**50** EXPANSIONS & NEW PROJECTS

**2,839** FULL TIME JOBS

**\$16.3** BILLION INVESTMENT

**>\$100M** CAPEX



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### Canadian Transportation Fuels Dashboard


Visualize Canadian Biofuels Data

REGULATIONS | CHARTS | BIOFUELS | FEEDSTOCK

Provincial Regulations Map

Federal Data

[advancedbiofuels.ca/resources/canadian-transportation-fuels-dashboard/](https://advancedbiofuels.ca/resources/canadian-transportation-fuels-dashboard/)



Net Zero Clean Fuels  
A World of Advanced Biofuels in Canada

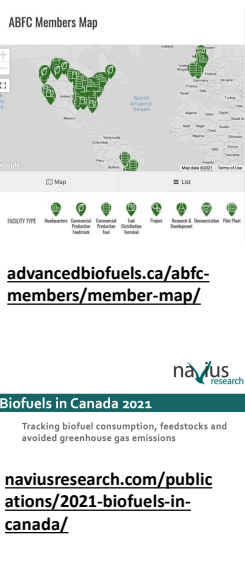
SITE OPTIMIZED FOR LARGE SCREENS

### Advanced Biofuels

Delivering Net Zero Emissions

**NET-ZERO CLEAN FUELS TODAY**

[netzerocleanfuels.ca](https://netzerocleanfuels.ca)



ABFC Members Map


[advancedbiofuels.ca/abfc-members/member-map/](https://advancedbiofuels.ca/abfc-members/member-map/)

**navius** research

**Biofuels in Canada 2021**

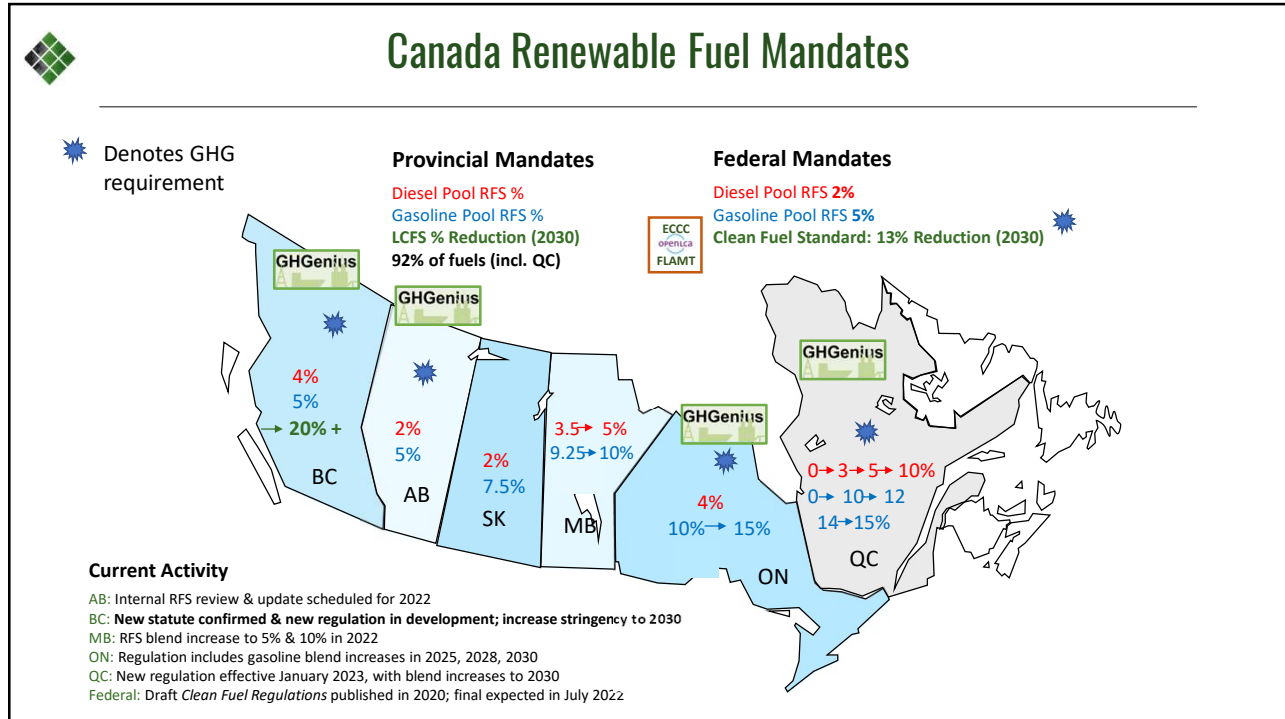
Tracking biofuel consumption, feedstocks and avoided greenhouse gas emissions

[naviusresearch.com/publications/2021-biofuels-in-canada/](https://naviusresearch.com/publications/2021-biofuels-in-canada/)



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## Federal Clean Fuel Standard *draft*

**Obligated parties:**  
refiners, importers

**Coming into force:**  
July 1, 2023

**Anticipated final Regulation:** July 6, 2022

**Compliance credit market:** Opt-in parties can generate credits – blending/import, sell to obligated parties/others

Target: 15% Gasoline, Diesel CI Reduction Below 2016 by 2030

<div style="background-color: white; color: #2e7d32; padding: 10px; border-radius: 10px; margin-bottom: 10px;"> <p><b>CLEANER FOSSIL FUELS</b></p> <p>Compliance Category 1 </p> </div> <div style="background-color: #e0e0e0; padding: 5px; border-radius: 10px; margin-bottom: 5px;">Export Credits - Crude, Refined</div> <div style="background-color: #e0e0e0; padding: 5px; border-radius: 10px; margin-bottom: 5px;">Import Credits - Crude, Refined, Biofuels</div> <div style="background-color: #e0e0e0; padding: 5px; border-radius: 10px; margin-bottom: 5px;">Compliance Fund 10% - Gaseous 10%</div> <div style="background-color: #e0e0e0; padding: 5px; border-radius: 10px;">Fossil Credit Rules Outside Regulation</div>	<div style="background-color: white; color: #2e7d32; padding: 10px; border-radius: 10px; margin-bottom: 10px;"> <p><b>BIOFUELS &amp; SYNTHETIC FUELS</b></p> <p>Compliance Category 2 </p> </div> <div style="background-color: #e0e0e0; padding: 5px; border-radius: 10px; margin-bottom: 5px;">Double Count Biofuel Volumes 2022*</div> <div style="background-color: #e0e0e0; padding: 5px; border-radius: 10px; margin-bottom: 5px;">Credits for Non-Obligated Fuels and Non-Fuel Barrel Products</div> <div style="background-color: #e0e0e0; padding: 5px; border-radius: 10px; margin-bottom: 5px;">Lifecycle Assessment Model <span style="color: yellow; font-weight: bold; font-size: small;">NEW</span></div> <div style="background-color: #e0e0e0; padding: 5px; border-radius: 10px;">Land Use &amp; Biodiversity Criteria <span style="color: yellow; font-weight: bold; font-size: small;">NEW</span></div>	<div style="background-color: white; color: #2e7d32; padding: 10px; border-radius: 10px; margin-bottom: 10px;"> <p><b>ELECTRIC VEHICLES &amp; GASEOUS TRANSPORT</b></p> <p>Compliance Category 3 </p> </div>
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## CFS Compliance Categories



### Compliance Category 1 (CC1)

- Carbon Capture and Storage
- Upstream Improvements
- Reductions in Refineries
- Incremental Methane Reductions – Conventional Oil
- Co-processed Fuels



### Compliance Category 2 (CC2)

- Ethanol
- Biodiesel
- Renewable Hydrocarbon Fuels
- Pyrolysis Oil (Biocrude)
- Sustainable Aviation Fuel
- Synthetic Fuels (Direct Air Capture, etc.)



### Compliance Category 3 and Other (CC3)

- Fossil fuels displaced by Propane and Renewable Propane
- Fossil fuels displaced by Natural Gas or Renewable Natural Gas or Hydrogen
- Fossil fuels displaced by Electric Vehicles
- Fossil fuels displaced by Hydrogen Fuel Cell Vehicles



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## CFS and Marine Fuels (CG1)

The International Maritime Organization adopted an interim strategy for GHG emissions in 2018, which will be reviewed in 2023. The Department supports the International Maritime Organization as the appropriate forum to address international maritime shipping emissions, and the work it has undertaken to address these emissions. Therefore, liquid fuels for international marine use would not be subject to the proposed Regulations.

Confidential



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## CFS and Marine Fuels (CG1)

### Pools of liquid fuel — volume

#### Subtracted volumes

(2) Despite subsection (1), a primary supplier may subtract from their pool of a type of fuel in the liquid class for a given compliance period any volume of that fuel if they make, before July 1 of the calendar year that follows the compliance period, a record that establishes that the volume was

- (a) sold or delivered for a use other than combustion;
- (b) sold or delivered for use in a marine vessel that had a non-Canadian port as its destination; or

In July 2021 ECCC updated that the CFS “will not include a regulatory obligation for heavy and light oil (which are predominantly used in stationary applications) and distillate fuel oils used in space heating.”

July 12, 2021, *Canada’s Climate Actions for a Healthy Environment and a Healthy Economy*

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## BC Low Carbon Fuels Act (LCFA)

Progress: First Reading May 9, 2<sup>nd</sup> reading May 10, 3<sup>rd</sup> Reading May 17<sup>th</sup>, Royal Assent June 2<sup>nd</sup> (no changes)

Bill No.	Title	Member	First Reading	Second Reading	Com- mittee	Report	Amended	Third Reading	Royal Assent	S.B.C. Chap. No.
11	Commercial Liens Act	Hon. S. Robinson	<a href="#">Mar. 7</a>	Mar. 10	Mar. 29	Mar. 29	<a href="#">Mar. 29</a>	<a href="#">Mar. 31</a>	Mar. 31	9
12	Property Law Amendment Act, 2022	Hon. S. Robinson	<a href="#">Mar. 28</a>	Apr. 5	Apr. 25	Apr. 25		<a href="#">Apr. 25</a>	Jun. 2	12
13	Passenger Transportation Amendment Act, 2022	Hon. R. Fleming	<a href="#">Mar. 8</a>	Mar. 30	Apr. 7	Apr. 7	<a href="#">Apr. 7</a>	<a href="#">Apr. 25</a>	Jun. 2	10
14	Wildlife Amendment Act, 2022	Hon. K. Conroy	<a href="#">Mar. 9</a>	Mar. 30	Apr. 26	Apr. 26		<a href="#">Apr. 26</a>	Jun. 2	13
15	Low Carbon Fuels Act	Hon. B. Ralston	<a href="#">May 9</a>	May 10	May 17	May 17		<a href="#">May 17</a>	Jun. 2	21
16	Transportation Amendment Act, 2022	Hon. R. Fleming	<a href="#">Apr. 5</a>	Apr. 27	May 3	May 3		<a href="#">May 9</a>	Jun. 2	16

New regulation to be in-force January 1, 2023, regulatory consultations underway



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## BC-Low Carbon Fuel Standard

- Low Carbon Fuel Standard (LCFS)
  - *Greenhouse Gas Reduction (Renewable and Low Carbon Fuel Requirements ) Act* now updated to *Low Carbon Fuels Act*
  - Renewable and Low Carbon Fuel Requirements Regulation, currently being updated
- Uses 'Carbon Intensity' (CI) as the metric:
  - CI is determined through lifecycle analysis (LCA) with gCO<sub>2</sub>equivalent/MJ of fuel as the functional unit
  - LCA calculates GHG emissions from cultivation through to combustion in an engine
- Current LCFS regulation applies to gasoline and diesel, updated LCFS regulation may apply more broadly to fossil-derived fuels: gasoline, diesel, jet fuel, 'prescribed fossil-derived fuel' (such as HFO, MGO, others)
- Diesel fuel used in marine applications is already included in LCFS



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## BC-Low Carbon Fuel Standard

- Fuel suppliers receive **debts** for fuels with a **higher** carbon intensity than the current limit
- Fuel suppliers accrue **credits** for fuels with a **lower** carbon intensity than the current limit
- At the end of each compliance period, suppliers must have a balance of zero or more credits to avoid non-compliance penalties
- If a supplier has a credit balance at the end of a compliance period, they retain those credits for use in later years
- Fuel suppliers can obtain credits for achieving compliance with the LCFS by:
  - **Supplying** low carbon fuels
  - **Buying** credits from low carbon fuel suppliers
  - **Earning** credits through Initiative Agreements
  - **Capturing** CO<sub>2</sub> in B.C. from ambient air and permanently sequestering it (beginning with the new Act)



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## BC Low Carbon Fuels Branch Marine Fuel Consultations

- Diesel Fuel used in marine applications is already subject to the LCFS.
- The new Low Carbon Fuels Act enables the introduction of the remaining types of fossil fuel.
- The BC Government intends to begin the process of regulating these fuels by requiring suppliers of marine gas oil, heavy fuel oil and any alternatives to report, beginning January 1, 2023.
- The Low Carbon Fuels Branch is in the process of planning consultations to inform the development of policy for marine fuel regulations. If you are interested, please send your response to the following questions on behalf of your company/organization to [lcfs@gov.bc.ca](mailto:lcfs@gov.bc.ca):
  1. Do you produce marine fuel?
  2. Do you import marine fuel into B.C.?
  3. Do you consume marine fuel?
  4. Are you an interested party? If so, please describe your interest or role in the marine sector.
  5. Who would you like us to contact with further communications (please provide name, email and phone number)?

Shared with permission from the Low Carbon Fuels Branch – BC Ministry of Energy, Mines and Low Carbon Innovation

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**Thank You!**

[fghatala@advancedbiofuels.ca](mailto:fghatala@advancedbiofuels.ca)

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