Railway Association of Canada | RIGHT TRACK

RAC Environment Committee – 2021 – 01

Clean Fuel Standard (CFS)

February 2nd, 2021

3:00 pm – 5:00 pm Eastern Time

Video conference link

Items for Discussion	Leader	Time
1) Welcome and Call to Order	Chair	3:00
2) Meeting Objectives	Ben	3:02
3) CFS regulations briefing & review policy positions	Cara/Ben	3:10
4) Stakeholder engagement strategy	Ben/Cara	4:00
5) Open Discussion	ALL	4:30
6) Adjournment	ALL	5:00

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Clean Fuel Standard

Liquid Fuel Regulations

Railway Association of Canada (RAC)

2021.01

AGENDA

- Refresher
  - CFS background and purpose
- Draft Liquid Fuel Regulations
  - What (and who?) is regulated?
  - How are requirements met? (The credit market)
  - Credit creation (3 options)
  - End-use fuel switching: changes to the CFS
  - Impacts on the freight sector
- Advocacy/ Response

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Clean Fuel Standard

Background & Purpose

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CFS: BACKGROUND

- Timeline:
  - 2016: Announced as part of the Pan Canadian Framework on Clean Growth and Climate Change
  - 2017: CFS Regulatory Framework released;
  - 2018: CFS Regulatory Design Paper released;
  - 2019: CFS Regulatory Approach released;
  - **2020: Liquid Fuels Regulations released.**

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CFS: PURPOSE

- The CFS aims to reduce emissions from Canada's transportation and oil & gas sectors, which account for 25% and 26% respectively of the total GHG emissions in Canada
- The CFS has been designed to increase the cost of liquid fossil fuels and decrease the cost of low carbon energy sources
- By 2040, the CFS is expected to result in GHG emissions reductions of ~221 megatonnes (Mt), at a cost of ~20.6 billion. This amounts to a societal cost of ~$94/tonne. This is less than the estimated social cost of carbon (SCC)
- The CFS is expected to work hand-in-glove with carbon pricing to reduce overall emissions: while carbon pricing will provide the incentive to transition to lower carbon options, the CFS will increase the availability of the latter and ensure a range of choices

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CFS: CHANGES ANNOUNCED IN DECEMBER 2020

- CFS regulations were originally being developed for liquid, gaseous, and solid fossil fuels – **they will now cover liquid fuels only**
- Originally aimed to reduce GHG emissions from fuels used in transportation, buildings and industry – **now focus is on transportation and oil & gas**
- The CFS originally aimed to reduce greenhouse gas (GHG) emissions by 30 million tonnes (Mt) a year by 2030 – **that target has been reduced to 20 Mt per year**. To offset this difference, the government now plans to increase the carbon price to $170 a tonne by 2030

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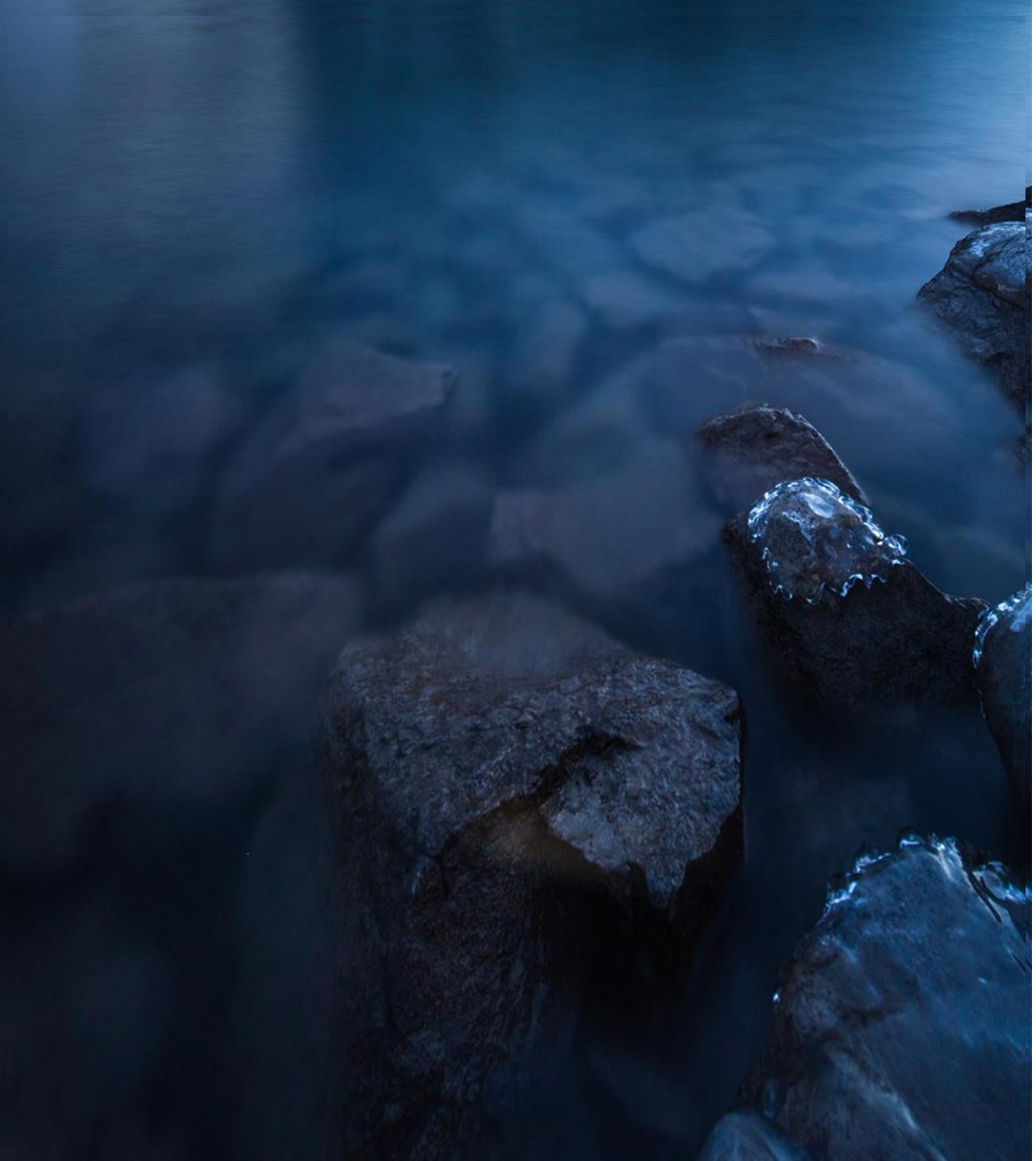

Liquid Fuel Regulations (Draft)

- What (and who?) is regulated?
- How are requirements met: the credit market
- Credit creation: 3 options
- End-use fuel switching: changes to the CFS
- Impacts on the freight sector

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CARBON INTENSITY (CI) REDUCTIONS

- The Liquid Fuel Regulations target **carbon intensity (CI) reductions** in liquid fossil fuels produced and imported into Canada
- Liquid fossil fuel primary suppliers (i.e., **fuel producers and importers**) are the regulated parties

Table — Carbon Intensity Fuel Limit

Item	Column 1 Liquid Fossil Fuel	Column 2 Limit per compliance period, in gCO_2e/MJ								
		from December 1 to December 31, 2022	2023	2024	2025	2026	2027	2028	2029	2030 and after
1	Gasoline	93.6	92.4	91.2	90.0	88.8	87.6	86.4	85.2	84.0
2	Diesel	93.6	92.4	91.2	90.0	88.8	87.6	86.4	85.2	84.0
3	Kerosene	84.6	83.4	82.2	81.0	79.8	78.6	77.4	76.2	75.0
4	Light Fuel Oil	92.6	91.4	90.2	89.0	87.8	86.6	85.4	84.2	83.0
5	Heavy Fuel Oil	95.6	94.4	93.2	92.0	90.8	89.6	88.4	87.2	86.0
6	Jet Fuel	88.0	88.0	88.0	88.0	88.0	88.0	88.0	88.0	88.0

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CREDIT MARKET – CREDIT CREATION

- Annual CI reduction requirements will be met via a credit market, where each credit represents a lifecycle emission reduction of one tonne of CO2e.
- There are three ways to create credits:

  (1) Actions that reduce the CI of the fossil fuel throughout its lifecycle,

  (2) Supplying low-carbon fuels, and

  (3) Specified end-use fuel switching in transportation.

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COMPLIANCE FUND & CREDIT CLEARANCE MECHANISM

- Compliance Fund: to provide a flexibility mechanism, a primary supplier may also fulfill up to 10% of its credit requirements by contributing to a registered funding program. Cost: $350 per credit in 2022.
  - Funds/programs may be eligible if they operate in Canada, fund projects or activities that support the deployment or commercialization of technologies or processes that reduce CO2e emissions and provide publicly available annual audited reports.
  - Contributions to the fund must be used for projects or activities that reduce emissions within a five-year period from the time the contribution is made. It is expected to be used initially in 2027, and be active at or near the 10% limit until 2036 when contributions will begin to decline.
- A credit clearance mechanism (CCM) will be available for primary suppliers to acquire credits following the end of each compliance period. Cost: $300 per credit in 2022.

CREDIT CREATION CATEGORY 1: REDUCE LIFECYCLE CI OF FOSSIL FUEL

- Lifecycle carbon intensity (gCO2e/MJ) regulations for extraction + production + distribution + use
- Quantification methods will be developed for various project types, starting with carbon capture and storage; low-carbon intensity electricity integration; enhanced oil recovery; and co-processing of biocrudes in refineries and upgraders.
- Other projects* could be recognized under a generic quantification method that will also be developed, provided they meet the eligibility criteria. The latter may only amount to a maximum of 10% of their liquid class reduction requirement.
    - Project proponents will have to apply to have a project recognized for credit creation and submit a validation report. Annual reporting accompanied by a third-party verification report and a verification opinion will be required.
    - Credits would be created for 10 years for emission reduction projects, except for carbon capture and storage projects, which would create credits annually for a minimum of 20 years. As long as an applicable quantification method still exists, projects may be renewed once for an additional 5 years.
- Primary suppliers can also create credits by reducing the CI of gaseous or solid fuels as well, but this can only amount to a maximum of 10% of their liquid class reduction requirement

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CREDIT CREATION CATEGORY 2: SUPPLY LOW-CARBON FUELS

- Low carbon fuel (biofuels, synthetic fuels with CI= or < 90% of the credit reference CI value) producers and importers will be able to create credits as voluntary credit creators.
- Fuel LCA model under development will be used in credit quantification.
- Note that land-use and biodiversity (LUB) criteria are being established. Biomass feedstocks will have to comply with these for the fuel to be eligible to create credits.

CREDIT CREATION CATEGORY 3: SPECIFIED END-USE FUEL SWITCHING IN TRANSPORTATION

- Credits are created by changing or retrofitting a fossil fuel combustion device to be powered by another fuel or energy source.
- As described in Section 18, all low-carbon energy volumes supplied for transportation would be eligible to create credits, **except for rail vehicles.**
  - Low-carbon energy sources include hydrogen in fuel cell vehicles, electricity in electric vehicles, natural gas and renewable natural gas (including CNG and LNG) or hydrogen (including compressed and liquefied) in natural gas vehicles, and propane and renewable propane in propane vehicles
- Credit creators:

Switch to	Section	Credit Creator	Type of Vehicle
Natural gas (liquefied or compressed) and liquefied petroleum gas (LPG)	84	Owner/Operator of fuelling station	Vehicle (ex. natural gas or propane vehicles)
Renewable natural gas (RNG), hydrogen and renewable propane	85		Vehicle, that is not a hydrogen fuel cell vehicle (ex. natural gas or propane vehicles)
	86	Producer/Importer	
Electricity	87	Charging network operator and charging site host	Electric vehicle
Hydrogen	88	Owner/Operator of hydrogen fuelling station	Hydrogen fuel cell vehicle

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END-USE FUEL SWITCHING IN TRANSPORTATION - CREDIT TRANSFERS

- While credits from transportation fuel switching are generated by owners/ operators of the fueling facility; the producers and importers of low CI fuels; owners or operators of hydrogen fueling stations for dispensing hydrogen to hydrogen fuel cell vehicles; charging network operators for residential and public charging of EVs; and charging site hosts for private or commercial charging of EVs, credits may be transferred to the owners/ users of the vehicles themselves:
  - Section 21 outlines that the right to create compliance credits may be transferred to another party in specific circumstances under a written agreement for specified compliance period(s). This includes users of electric or hydrogen fuel cell vehicles.
  - Similarly, section 92 outlines how credits created by producing or importing low CI fuel may be transferred upon creation to another party who purchases the fuel.

END-USE FUEL SWITCHING IN TRANSPORTATION - EER

- Credit creation for switching to electricity or hydrogen fuel cell is based on the energy efficiency ratio (EER) for an internal combustion engine vehicle compared to the alternate propulsion option. EERs have been estimated and are included in the Fuel LCA Model Methodology document:

Vehicle Type	EER
Light- and medium-duty electric vehicles	4.1
Heavy-duty electric vehicles	5.0
Electric marine vessels	3.1
Light- and medium-duty hydrogen fuel cell vehicles	2.1
Heavy-duty hydrogen fuel cell vehicles	1.9

- These will be “updated periodically and new vehicle types may be added to reflect new technologies or improved understanding of these technologies as they are deployed”

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2019 REGULATORY APPROACH INCLUDED RAIL VEHICLES IN END-USE FUEL SWITCHING

- The **2019 Proposed Regulatory Approach included** fuel switching in vehicles, both on-road and off-road, and in **locomotives** and marine vessels.
- Excerpt from the Proposed Regulatory Approach "Charging site hosts will be eligible to create credits for electricity supplied to electric trains and other rail transport vehicles propelled by an electric motor whose source of electricity is from a third rail, overhead catenary system or a rechargeable battery, with similar requirements for the electricity supplied to be measured by a dedicated meter. Environment and Climate Change Canada is considering setting a baseline for credit creation for electricity supplied to trains and other rail transport vehicles. Subways will not be considered as electric trains for the purposes of credit creation, however, as these are by default powered by electricity."
- "Electric trains" were assigned an EER of 3.3

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CHANGE IN THE 2020 LIQUID FUEL REGULATIONS: EXCLUSION OF RAIL VEHICLES FROM END-USE FUEL SWITCHING

- In July 2020, the Multi Stakeholder Committee was told:

> - Change from previous approach: No credit creation from rail vehicles as many existing and future light rail systems are already electric by default
>   - High potential for significant credit creation with a single rail system

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CHANGE FROM 2019 REGULATORY APPROACH: EXCLUSION OF RAIL VEHICLES FROM END-USE FUEL SWITCHING

- When asked about the potential to unintentionally incentivize a modal shift in freight transport from rail to trucking, resulting in a net increase in GHG emissions for the transport sector, ECCC replied:

> "The current proposal does not consider credit creation for electric rail vehicles based on existing systems. Note that EER values will be updated periodically, and new vehicle types may be added to reflect new technologies. As such, ECCC could consider the possibility of adding EERs for future types of rail vehicles, if or when they are deployed, and once use data become available to enable determination of an EER relative to comparable diesel-powered trains.
>
> The proposal to include electric heavy-duty on-road vehicles is intended to incent additional use and adoption of currently emerging technologies. ECCC will monitor the performance of the CFS and its impact on the transportation sector and will be able to make adjustments in future amendments if necessary."

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EXPECTED IMPACTS ON THE FREIGHT SECTOR

- The CFS Liquid Fuel Regulations are expected to increase liquid fuel prices for freight transportation, due to increases in production costs for primary suppliers.
    - Freight transportation represents 40% of the liquid energy demand (second only to households, which represent 41%).
    - Increases will be minimal in 2022, but will increase: estimates of incremental fuel prices in the diesel pool range from 4 to 13 cents per litre by 2030, based on how many credits go to market (if fewer credits that go to market, incremental costs are reduced)*
    - The freight transportation sector is expected to incur increased costs due to the proposed Regulations. As this sector is not trade-exposed and does not compete directly in international markets, it is expected that these will be passed on to customers. However, it is possible that some firms in the freight transportation sector may not be able to fully pass on increased costs and may need to absorb some of these costs, depending on market share competition in the regions in which they operate. As a result, additional compliance costs may require those firms to alter operations due to the proposed Regulations.

EXPECTED IMPACTS, CON'T.

- The ground freight transportation sector is among the most affected in terms of output (at a projected decrease of 1.2% by 2030), based on the expected increase in liquid fossil fuel prices and how sectors are expected to adapt to these changing prices in order to maximize profit*
- Many of the sectors that rely on rail to are also expected to be affected:
  - Mining and iron and steel are called out as sectors that will experience increased costs – impact on output is 0.1% less
  - The agriculture, forestry and lumber sectors are estimated to have a negative output effect (0.2% less output by 2030) because low carbon fuels used for blending are assumed to be imported. To the extent that the low-carbon fuels used for compliance with the CFR are produced domestically, the impact on output would be lower or even positive
  - Chemicals and manufacturing & construction are also projected to see 0.1% less output by 2030

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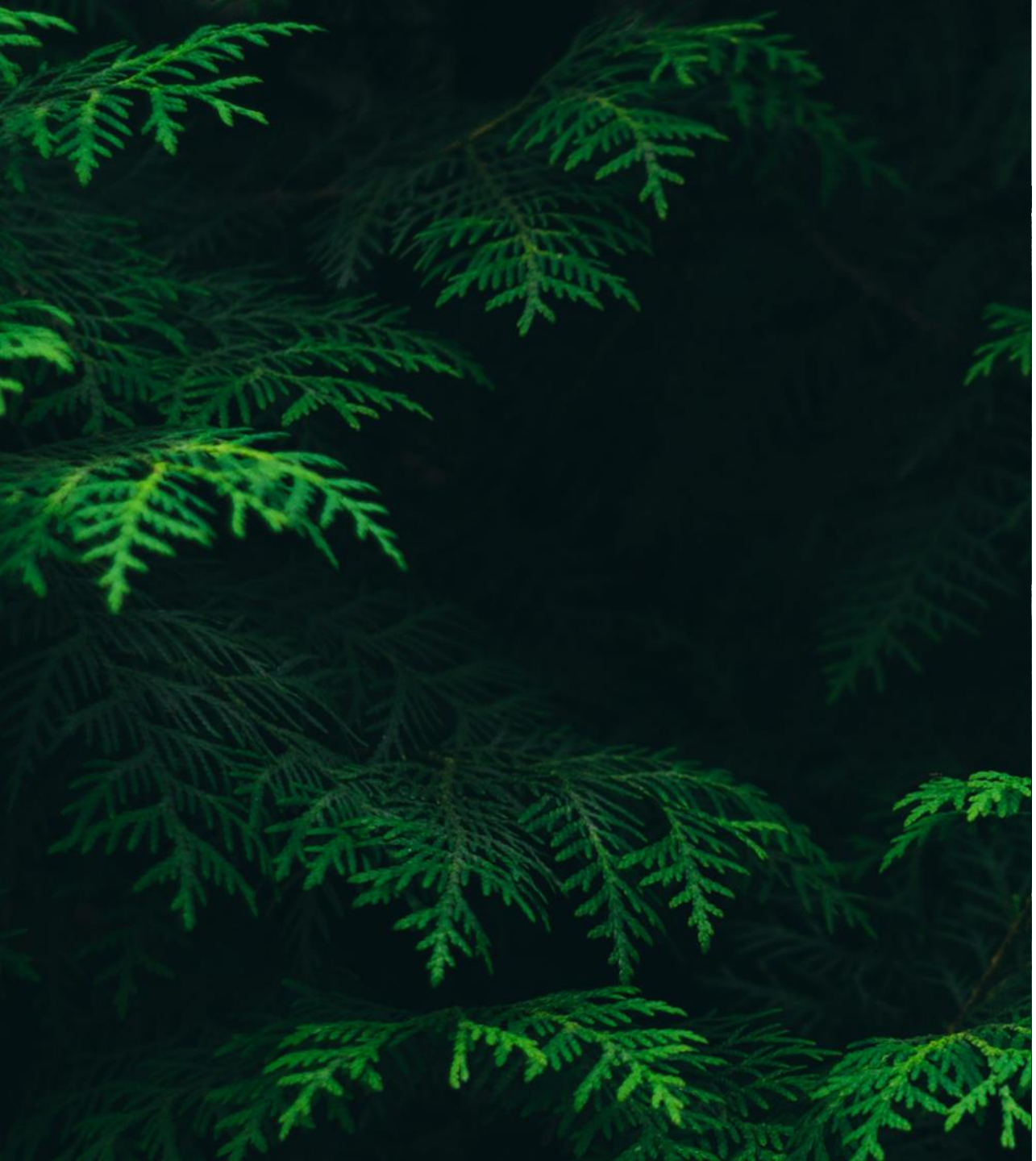

Advocacy/ Response

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PREVIOUS ADVOCACY MESSAGING

- In response to the 2019 Proposed Regulatory Approach, RAC made the following requests, **that have not been recognized in the draft Liquid Fuel Regulations**:
  - That the CFS recognize the Memoranda of Understanding (MOU) between the RAC and Government of Canada to reduce railway emissions produced by locomotives;
  - That ECCC ensure through regulation that the composition of blended fuels is disclosed to railway companies on a transactional basis;
  - That ECCC prevent market distortions in the transportation industry; and
  - That ECCC broaden the definition of transportation end-use fuel switching to include loading and unloading equipment.
- Further, **in now excluding rail from credit generation by fuel switching, ECCC has moved in the opposite direction from what had been hoped**.

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THAT THE CFS RECOGNIZE THE MOU BETWEEN THE RAC AND THE GOC TO REDUCE RAILWAY EMISSIONS PRODUCED BY LOCOMOTIVES

- Rail is an extremely efficient transportation modality for moving both people and freight. Modal shift to rail continues to provide an excellent opportunity to decarbonize the transportation sector per The Future of Rail report developed by the IEA.
- Due to high cost, long-lasting equipment with high energy requirements, decarbonizing this sector presents unique challenges. It will require strategic cooperation from several sectors including academia/research, OEMs, fuel producers, rail operators and government bodies. The RAC and Transport Canada are working together under the 2018 MOU to advance collaborative public-private efforts and to develop a pathway to decarbonize the rail sector.
- Precedent: *Liquid fuels for international marine use will not be subject to the Clean Fuel Standard, based on the following: the International Maritime Organization adopted an interim strategy for greenhouse gas emissions in 2018, which will be reviewed in 2023. ECCC recognizes the IMO as the appropriate forum to address international maritime shipping emissions, and the work it has undertaken to address these emissions*.

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THAT THE CFS RECOGNIZE THE MOU BETWEEN THE RAC AND THE GOC TO REDUCE RAILWAY EMISSIONS PRODUCED BY LOCOMOTIVES

- Asking for an exemption such as the one that has been granted for international maritime shipping would run contrary to the goals of the Pathway project, and further would be challenging to navigate based on provincial fuel standards
- The CFS could recognize the MOU by earmarking a portion of the compliance fund revenue to support rail-based technology developments identified by the Pathway
- ***Recommendation**: look to other jurisdictions for best practices, beginning with California

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THAT ECCC ENSURE THROUGH REGULATION THAT THE COMPOSITION OF BLENDED FUELS IS DISCLOSED TO RAILWAY COMPANIES ON A TRANSACTIONAL BASIS

- The CFS will reduce the Canadian average baseline carbon intensity value for diesel from its current 100 g CO2e/MJ to 90.0 g CO2e/MJ by 2030. In order to achieve this, average biofuel blend rates in diesel by 2030 will likely be between 10-20%.
- OEM warranties currently limit biodiesel to 5% and HDRD to 30%
- These higher blends of fuel could be help the rail sector to reduce emissions **if they can be used safely**: i.e. without damaging engines, causing negative operational impacts, or voiding warranties.
- **OEMs have signaled that they are aware of and working to mitigate this issue**

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THAT ECCC PREVENT MARKET DISTORTIONS IN THE TRANSPORTATION INDUSTRY

- Rail is the most fuel-efficient mode for movement of both people and freight by a very large margin. As it is written, the CFS will incentivize a shift away from rail, instead making it more economically attractive for people to move in cars and freight to move on trucks.
- This is expected to result in a net increase in GHG emissions for the transport sector
- Rail should be able to generate credits based on conversion of both locomotives and yard equipment to electricity or hydrogen fuel cell technologies

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THAT ECCC BROADEN THE DEFINITION OF TRANSPORTATION END-USE FUEL SWITCHING TO INCLUDE LOADING AND UNLOADING EQUIPMENT.

- Due to its localized operating area and reduced energy intensity requirements, yard equipment is widely seen as a possible “first step” to electrification of rail – allowing smaller scale testing of catenary, battery, or hydrogen fuel cell
- Allowing credit generation based on conversion of yard equipment to electricity or hydrogen fuel cell technologies would hasten the development and testing of this important interim step in rail decarbonization

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NOT ADDRESSED IN PREVIOUS ADVOCACY MESSAGES

- Freight rail, both long haul and short line, serves sectors such as agriculture, forestry, mining and chemicals, which are foundational to Canada's economy
- As fuel costs rise, the freight rail sector will be forced to pass these costs on to customers.
- **Allowing rail vehicles to generate credits through end use fuel switching would reduce the scale of these additional costs and benefit multiple sectors of the economy**

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FOR FURTHER DISCUSSION

- These points are intended to be seeds for deeper thought;
- Follow-up conversation is recommended and encouraged:
  - **Are there impacts that have not be captured, to either the rail sector or its customers (both people and freight?)**

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THANK YOU
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GROUP

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Other			
Polution Probe			
OEMS			
Social media targeted campaign			

Appendix

Past RAC Comments for Reference

Railway Association of Canada | RIGHT TRACK

The railway sector: opportunities and challenges for implementing a clean fuel standard

A submission prepared by the Railway Association of Canada

May 1, 2017

Railway Association of Canada | RIGHT TRACK

Table of Contents

Acronym Table

AMT	Agence métropolitaine de transport
CAC	Criteria Air Contaminants
CDP	Carbon Disclosure Project
CFS	Clean Fuel Standard
ECCC	Environment and Climate Change Canada
EPA	Environmental Protection Agency
GHG	Greenhouse Gases
M	Million
MOU	Memorandum of Understanding
Mt	Megatonne
OEM	Original Equipment Manufacturer
RAC	Railway Association of Canada
TC	Transport Canada
U.S.	United States of America

1 Overview

This submission presents the views of the Railway Association of Canada (RAC) and its members concerning the proposed Clean Fuel Standard for Canada.

RAC submits that railways have maintained a deep commitment to controlling emissions, both greenhouse gases (GHG) and criteria air contaminants (CAC), for more than 20 years, notwithstanding the absence of specific and detailed regulations. We believe that the sector is uniquely poised in its ability to help Canada achieve its climate change target while supporting the country's economic objectives.

This submission provides a number of items for consideration to ensure that Environment and Climate Change Canada (ECCC) is fully aware of the potential implications of a clean fuel standard (CFS) to the railway sector and its ability to provide a competitive, safe and low-cost service offering to its customers. It also provides insight into and encourages the Minister to recognize the role railways can play in providing a pathway to compliance for other industries subject to the CFS.

In this submission we ask ECCC to consider:

- Combining the *Renewable Fuels Regulations* with the CFS for a single point of compliance, ensuring that the standard does not exceed maximum blend rates for locomotive-engine technology.
- Partnering with the rail industry to assess the GHG reduction potential of fuel switching in the sector, as well as the costs to and regulatory pathways for implementing them.
- Ensuring that the CFS is anchored in a comprehensive strategy for reducing emissions within the transportation sector. This would involve addressing:
    - How price impacts on fuels and incentives to promote fuel switching could impact modal choices, ultimately leading to increases in GHG emissions from transportation.
    - The availability of biofuels, and how available biomass feedstock can best be used to reduce GHG emissions.
- Recognizing modal shift as a legitimate mechanism for generating compliance credits for shippers and other stakeholders subject to CFS requirements.

We also ask ECCC to recognize that Canadian railways operate within a competitive North American railway network and are an integral components of multi-modal supply chains that enable Canadian shippers to compete internationally. A CFS requirement that applies to the railway sector and not its competitors in Canada or the U.S. will pose a disadvantage to Canadian railways and the customers they serve. Any requirement for the railway sector should be subject to a full cost-benefit analysis that considers the potential impacts to Canadian shippers and railway revenues.

2 Canada's railway sector

Canadian railways provide multiple services to more than 10,000 customers each year by using a finite pool of resources, including track infrastructure, right of ways, yards, locomotives, and crews. More than 4.8 million (M) carloads of freight are moved by approximately 2,400 locomotives and 33,000 dedicated railroaders across 44,000 kilometers of track that spans nine provinces, one territory and several points throughout the continental United States (U.S.).

This impressive network consists largely of two Canadian owned and operated Class I railways, U.S. Class I carriers and more than 50 local and regional railways that intersect with multiple transportation service providers including ports, terminal operators, truckers and other logistics providers.

As part of this complex network, Canadian freight railways strive to operate as efficiently as possible by operating 24/7 and 365 days a year. This involves maximizing long-haul movements and train lengths, and consolidating traffic flow, as well as minimizing car handlings, switching and the number of times a car must be handled in a yard.

Passenger railways reflect services provided predominantly by VIA Rail, GO Transit, OC Transpo, Agence métropolitaine de transport (AMT) and West Coast Express. Each year nearly 80 M people in the Vancouver, Greater Toronto, and Montreal areas commute to work by rail and an additional 4 M travel with VIA rail each year.

Figure 1: Canada's rail franchise

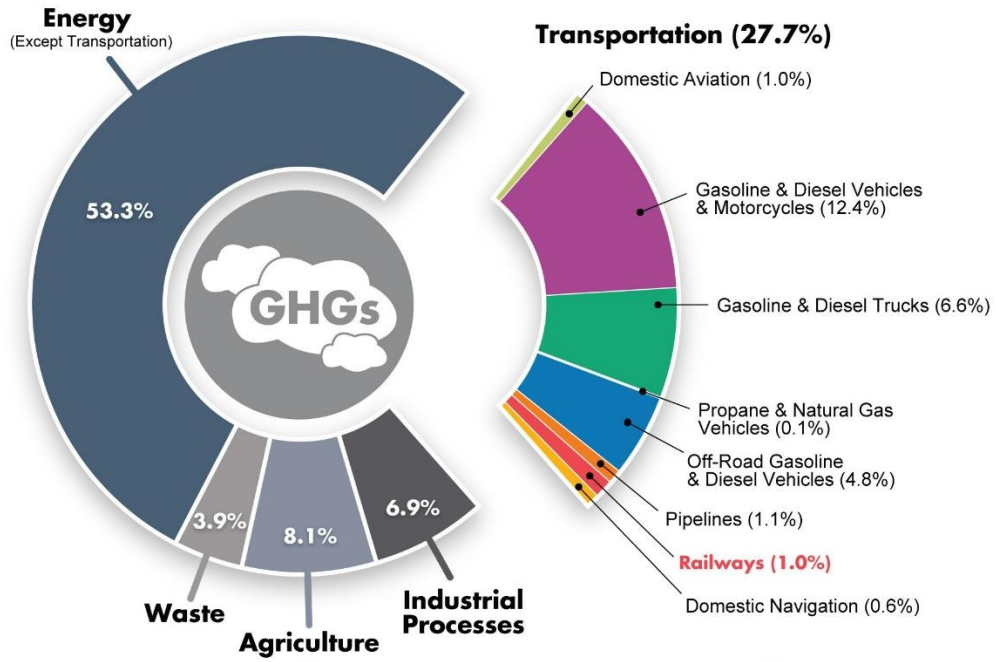
Management of this network results in immediate benefits for all customers who are served by it. These benefits include access to a highly efficient and safe railway network that enables economic competitiveness, and an emission-friendly mode of transportation for travelling and commuting to work for Canadians.

3 Recognizing rail as pathway to compliance

RAC members can assist the Government of Canada in achieving its emissions reduction target by 2030.

As a safe, efficient and emission-friendly mode of transportation for the movement of goods and people, railways are well placed to drive down transportation-related emissions in Canada, which continue to be produced largely by road transportation[1]. If fact just one percent of emissions in Canada are generated by the rail industry despite the significant volumes of goods and people moved each year.

Figure 2: Emissions profile in Canada



Canada's railways are uniquely positioned as one of the few sectors that can support the country's economic objectives while reducing emissions substantively. While the railway sector fully appreciates the Minister's intentions to reduce transportation-emissions through the use of a clean fuel standard, the RAC would like to underscore that rail can be used to decouple the economic benefits of transportation from its environmental impacts.

Rail can move one tonne of freight over 200 kilometers on a single litre of fuel[2], and a single freight train is capable of removing over 300 trucks from our congested road and highway network[3]. Furthermore, in 2009 the U.S. Federal Railroad Administration confirmed that the movement of intermodal traffic by rail is roughly 4 times more fuel efficient than truck[4]. Furthermore, commuter rail in Canada is roughly three times more efficient than the average car[5].

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[1] Conference Board of Canada, 2015. A Long Hard Road. Reducing GHG Emissions in Canada's Road Transportation Sector by 2050. Available at: http://www.conferenceboard.ca/temp/7920fdb2-1774-4476-bfbd-713c0ab2615f/7491_a_longhardroad__rpt.pdf, p.1

[2] Railway Association of Canada, 1 December 2016, Rail Trends 2016 (p.18), available from: http://www.railcan.ca/publications/trends

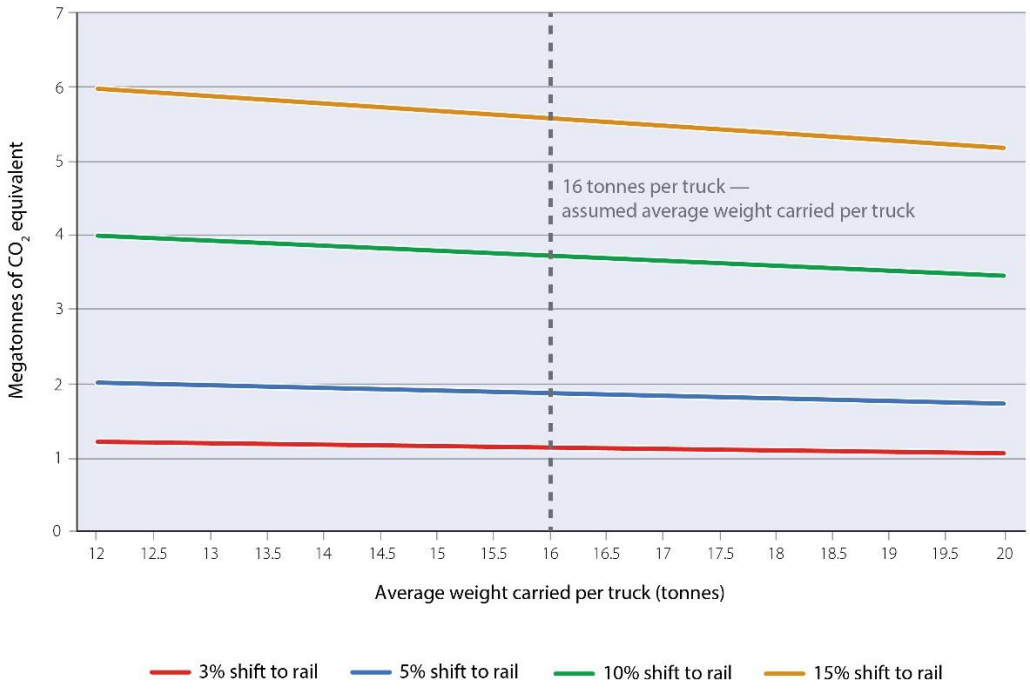
[3] Railway Association of Canada, 1 December 2015, Rail Trends database (tonnes per carload Class I rail) & Federal Highway Administration, 1 May 2003, Commercial Vehicle and Size Weight Program, available from: http://ops.fhwa.dot.gov/freight/sw/overview/index.htm

[4] Federal Railroad Administration, 19 November 2009, Comparative Evaluation of Rail and Truck Fuel Efficiency on Competitive Corridors (p.23), available from: https://www.fra.dot.gov/eLib/details/L04317

[5] RAC internal analysis using public data sources, July 2016. Worksheets are available upon request.

The RAC believes that governments have yet to proactively embrace the potential for using rail to reduce emissions in Canada. **Figure 3** highlights that shifting 3, 5 and 10 per cent of truck traffic to rail would result in a 1.1, 1.9, or 3.7 Megatonne (Mt) reduction of CO_{2e} per year[6]. By comparison British Columbia's carbon tax regime is estimated to reduce emissions in 2020 by up to 3 Mts of CO_{2e} annually[7].

Figure 3: Estimated reductions associated with transferring truck traffic to rail



In several cases manufacturing and processing industries have already invested in less-intensive power sources (e.g. investments in natural gas-powered production processes) and will potentially have few compliance options under the proposed CFS framework. In other cases, some industries commit to moving their goods by rail as a means to achieving their voluntary sector-based emissions reduction targets. For example, the Forest Products of Canada identifies transporting more of their products by rail as a pathway for reducing the sector's overall carbon footprint, beyond the production and processing of forest and paper products.

Modal shift provides an immediate and ready-made solution for CFS compliance while simultaneously reducing transportation-related emissions in Canada. It also supports the government's statements to use more rail as a means to reducing emissions in Canada[8,9]. Government investments into rail infrastructure can help support modal shift and reduce emissions substantively. For example, the Government of Quebec has demonstrated leadership by providing funding to support modal shift projects as a means to reducing transportation-related emissions in the province[10].

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[6] RAC internal analysis using public data sources, July 2016. Worksheets are available upon request.

[7] B.C. Ministry of Finance (2016). Tax Reductions, Funded by a Revenue Neutral Carbon Tax. Available from: http://www.fin.gov.bc.ca/tbs/tp/climate/tax_cuts.htm

[8] The Pan-Canadian Framework on Clean Growth and Climate Change, 2016. p.17

[9] Speaking notes for The Honourable Marc Garneau, Minister of Transport - Transportation 2030. Available at: http://news.gc.ca/web/article-en.do?nid=1146789

[10] Ministry of Transport, Sustainable Mobility and Transport Electrification, 22 February 2016, Programme visant la réduction ou l'évitement des émissions de gaz à effet de serre par le développement du transport intermodal , available from:

The **RAC and its members recommend that modal shift is recognized as a legitimate pathway to compliance for industry subject to the CFS framework.** We believe that industry and shippers should be allowed to generate compliance credits when they elect to move their products by rail.

4 Railway emission performance

Canadian railways have voluntarily managed and reported annually on locomotive emissions since 1995, through a successful series of Memoranda of Understanding (MOU) with the federal Government. The initial MOU, which covered performance from 1995 to 2005, committed the railways to cap nitrogen oxide (NO_x) emissions for the rail industry to 115 kilo-tonnes annually. The subsequent MOU, which covered performance from 2006 to 2010, included GHG reduction targets (on an intensity basis) for Class 1 freight, short line railways, inter-city passenger rail, and commuter rail. Under this agreement railways continued the sector's commitment to reduce CAC emissions.

The most recent MOU, which excludes U.S. Class 1 railways, covers performance from 2011 to 2016 and sets ambitious emissions reductions targets for Class 1 freight and shortline railways and inter-city passenger rail.

The MOU obliges the railways to purchase and remanufacture locomotives in accordance with standards referenced in the U.S. Code of Federal Regulations Part 1033[11]. In fact, since 2005 more than 430 non-compliant locomotives have been retired and replaced with 525 new U.S. Environmental Protection Agency (EPA) compliant locomotives and 828 remanufactured locomotives that meet Part 1033 requirements. **Table 1** provides a breakdown of performance over the last two MOUs.

Table 1: Locomotive performance from 2005 - 2013

	U.S. EPA Tier Level Locomotives Purchased	U.S. EPA Tier Level Locomotives Remanufactured	Retired** Locomotives
2006-2010 MOU	375	174	196
2011-2016 MOU*	150	654	238
Total	**525**	**828**	**434**

Source: Locomotive Emissions Monitoring Program dataset.
*Data reflective of 2005 – 2013 only.
**Retired refers to the quantity of locomotives that, from an accounting perspective, were removed from a railway's fleet during a calendar year.

While the MOU drives procurement practices in the rail sector, it also plays a role in formulating corporate emission reduction targets that are reported through various formats including the Carbon Disclosure Project (CDP) and corporate sustainability initiatives. For example, in 2015 both CN and CP were awarded positions on the Canada Climate Disclosure Leadership Index in recognition of their efforts to disclose high quality carbon emissions and energy data to the CDP's climate change program. The MOU also provides a platform for identifying collaborative research opportunities between railways and the federal government.

Performance under the MOU agreements has been positive with railways demonstrating that investments in technology and more efficient operating practices are improving fuel economy and reducing emissions. Investments in new Tier-locomotives, anti-idling devices, and trip-optimization software have reduced emissions, while innovation such as distributed power and the use of longer, heavier trains have helped

https://www.mtq.gouv.qc.ca/partenairesprives/transportferroviairemaritimeaerien/programmes-aide/Pages/Programme-reduction-evitement-ges.aspx

[11] Available at: https://www.gpo.gov/fdsys/granule/CFR-2011-title40-vol33/CFR-2011-title40-vol33-part1033

achieve optimal results. Furthermore, supply chain collaboration and the full integration of the Precision Railroading[12] philosophy across the Class I railway network ensures that goods move efficiently across Canada and to international destinations.

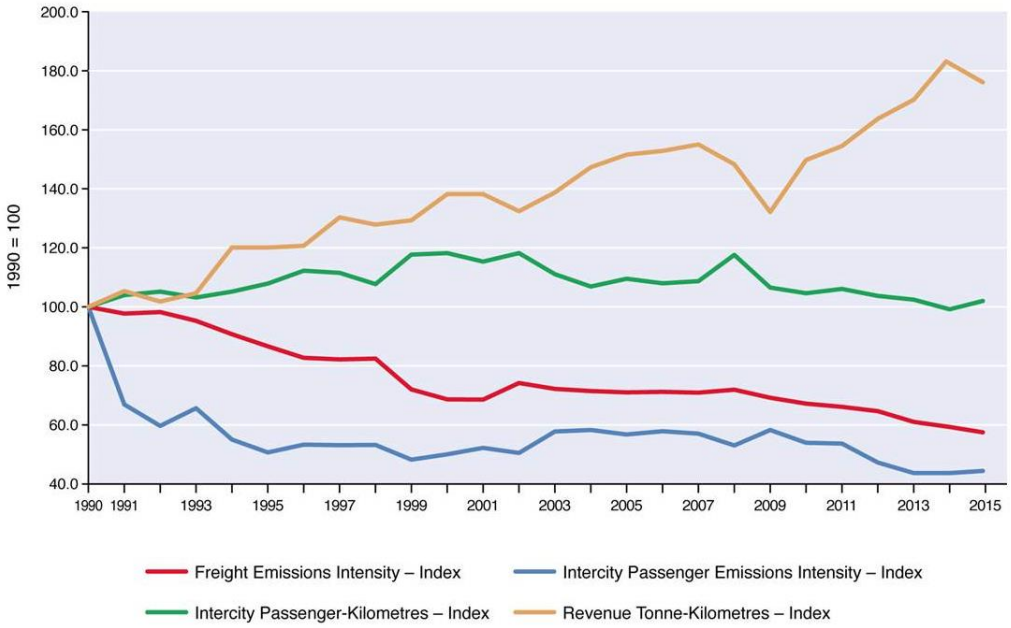
Table 2 includes a list of common technologies and operational practices used by railways to reduce emissions.

Table 2: Examples of technologies and operational practices used by railways to reduce emissions

Longer and Heavier Trains	Use of Ultra-Low Sulphur Diesel Fuel
Dynamic Brakes	Engine Retrofits
Anti-Idling Devices	Distributed Power
Rail Lubrication	Fuel Trip Optimizer Technology/Driver assistance programs
Top-of-Rail Friction Control	Yard Optimization Practices

Emission performance under the MOU agreements has been exceptional. **Figure 4** highlights that from 1990 to 2015 freight railways have reduced their GHG intensity (kg of CO_{2e} per 1,000 revenue tonne-kilometer) by more than 40 per cent, while experiencing roughly an 80 per cent increase in revenue-tonne-kilometers[13]. Similarly, intercity-passenger railway emissions (kg of CO_{2e} per passenger-kilometer) have decreased by approximately 55 per cent while ridership has increased by 2 per cent over the same period[14].

Figure 4: Emission performance (kg of CO_{2e} per 1,000 revenue tonne-kilometer) from 1990 – 2015



[12] Additional details about Precision Railroading are available at: http://www.cpr.ca/en/investors/precision-railroading-philosophy-can-build-a-leading-transcontinental-railway

[13] Selected subset of data from Rail Trends 2015.

[14] Ibid.

5 Challenges and barriers to integrating technology in the railway sector

The emission performance referenced in Figure 4 highlights that railways make significant investments each year to improve the efficiency of their operations and reduce corresponding emissions. These investments are targeted at improving locomotive performance, infrastructure, railway operations and other innovative methods to improve the velocity and fluidity of the railway network.

While these investments continue to demonstrate strong emission performance, there are limitations and barriers to introducing new technologies in the railway sector that need to be considered before the Minister introduces a realistic clean fuel standard for the railway sector.

These limitations have been extensively detailed in the work completed in cooperation with Transport Canada and the U.S. EPA under the Canada U.S. Regulatory Cooperation Council. Since 2012, a dedicated working group has reviewed the potential for lowering emissions in the Canadian and U.S. railway sectors. The research completed under this initiative has produced several findings that speak to complex nature of the fully integrated North American railway industry, and the multiple challenges associated with fuel switching or alternative powered locomotives. For example, the National Research Council of Canada noted in their research that:

> *"The long term life span of major railway components, such as locomotives and rail track, along with the need to provide equipment that can be interchanged with all other railways limits the speed at which the rail sector can economically and operationally adopt new technologies"*[15].

The results of this research, which presented a series of potential options and pathways, was discussed by Canadian and U.S. railways and government organizations over the course of a two day meeting that occurred at the 2012 Railroad Environmental Conference hosted by the University of Illinois. The final report produced from this meeting found that:

> *"No single, clear technical pathway was identified as having both high benefits and low challenges for the rail industry as a whole that could be applied across the board for all types of operations"*[16].

In summary, the barriers to entry for new technologies in the railway sector are high. Below is a short synthesis of some of the major challenges and barriers experienced to date.

Renewable fuel use in the railway sector

Railways work in cooperation with locomotive manufacturers and renewable fuel supply chain partners to ensure compliance with the federal *Renewable Fuels Regulations*. Introduced on July 1, 2011, the regulations require producers and importers of diesel fuel and heating oil to have an annual average of 2 per cent renewable fuel content in the fuel they produce and import.

As a means to ensuring that biodiesel could be used effectively in the Canadian rail industry, particularly during winter months, CP completed a five-month winter operational trial with support from the National Renewable Diesel Demonstration Initiative. From November 2009 to March 2010, four GE AC4400CW diesel-electric locomotives were held in captive service on CP's mainline between Calgary and Edmonton.

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15 National Research Council of Canada, 2012. Reducing Emissions in the Rail Sector: Technology and Infrastructure Scan and Analysis, p.ix.

16 ICF International, 2013. 2012 Railroad Workshop: Working Together to Reduce Locomotive Emissions, p.12.

The primary focus of the study was to assess the feasibility of using up to a maximum of five percent (B5) biodiesel blend in freight locomotives operating in cold weather service (-40 degrees Celsius). Ultra-low sulphur diesel (ULSD) was splash-blended with soy-based biodiesel to produce the resulting B5 biodiesel. Mechanical assessments were performed prior to and after the test period to determine impacts on locomotive engine performance and components. Demonstration findings reported no service operations, and no adverse impact to locomotive engine performance or components.

While the test successfully demonstrated the viability of B5 biodiesel use in cold weather freight rail service, the industry experienced renewable fuel supply chain issues after the regulations came into force in 2011. These issues included the availability of biodiesel and distribution infrastructure, the limited number of vendors, quality control, and the availability of appropriate blends. In some cases, market conditions forced railways to blend fuels in their rail yards as a means to meeting compliance.

While the principal issues associated with integrating biodiesel have largely been resolved, the RAC is concerned that a new clean fuel standard that imposes a higher biodiesel content on the railway industry will create number of challenges including but not limited to:

- Potentially reducing locomotive performance due to engine failure and higher maintenance.
- Rejected warranty claims from Original Equipment Manufacturers (OEMs); and
- Fuel availability and quality control issues from fuel suppliers.

Given that the level of uncertainty associated with increasing the renewable fuel content remains high, **the RAC recommends that the existing *Renewable Fuels Regulations* and proposed clean fuel standard are aligned into a single point of compliance, where the current maximum tested bio-diesel blend-rate is not exceeded.**

Electrification and LNG-powered locomotives

Innovative approaches to reducing emissions are moving forward and signaling that emission performance in the rail sector will continue to improve. For example, the AMT's Deux Montagnes line is fully electric, and the railway continues to assess opportunities to electrify segments of its network. Similarly, Metrolinx launched the Transit Project Assessment Process in July 2015 to consult on its proposed approach for the electrification of the GO Rail Network[17].

In the freight railway sector, the transition away from diesel-powered locomotives to alternative fuel sources such as liquefied natural gas (LNG) is also evolving, albeit at a slower pace. For example, CN was the first railway in North America to pioneer an LNG-powered locomotive as part of a pilot study from 2012 to 2013 that moved freight between Edmonton and Fort McMurray, Alberta[18].

However, long-refuel processes, higher than expected maintenance costs and the drop in diesel fuel prices have stalled the mainstream application of this technology in the railway sector[19]. Furthermore, the RAC is participating in an initiative with Transport Canada, Natural Resources Canada and the fuel utility sector to investigate the potential for natural gas use in the Canadian transportation sector, including rail. To date this research has confirmed a number of complex challenges associated with integrating LNG-powered locomotives in the railway sector. We look forward to sharing the results of this research with ECCC in the near future[20].

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[17] Metrolinx, 2016. Electrification. Available at: http://www.gotransit.com/electrification/en/default.aspx

[18] CN, 27 September 2012, CN tests natural gas/diesel fuel powered locomotives between Edmonton and Fort McMurray, Alta., available from: http://www.cn.ca/en/news/2012/09/media_news_cn_tests_natural_gas_locomotives_20120927

[19] CBC News, 25 January 2016, LNG replacing diesel? Not for a long, long while, available from: http://www.cbc.ca/beta/news/business/lng-diesel-bison-shell-cnrail-2016-1.3414257

[20] For additional information about this research, please contact Todd Stiles at todd.stiles@canada.ca / 613-808-8756.

While these items seek to explore the potential for fuel switching, they underscore that there are a number of challenges and barriers that need to be overcome to confirm viable options for the freight rail sector. These challenges will need to be addressed through collaborative arrangements between railways, governments, and the railway supplier and clean-tech communities to identify new solutions to reduce emissions even further.

To overcome the challenges and barriers for introducing new ground-breaking technology in the railway sector, **the RAC recommends that the Government of Canada works with the Canadian rail sector to fulfill its commitment to take actions to improve efficiency and support fuel switching in the rail sector**[21].

Integrated nature of the North American rail industry

The RAC would also like to emphasize that the freight rail industry in North America is highly integrated with rail traffic often interchanged by multiple railways. In fact, more than 30 per cent of Canadian railway revenues are generated by transboarder traffic that often originates or terminates on a U.S. railway.

In order to ensure that railways can work collaboratively to meet the needs of the North American economy and deliver goods safely, there is symmetry in railway infrastructure and engineering standards as well as locomotive design and rolling stock. Thus, the investments required to build the infrastructure necessary to support fuel switching need to be made at a North American scale and cannot be supported by Canadian railways alone.

It is also paramount that ECCC realizes that Canadian railways compete directly with U.S. railways for multiple commodities such as container traffic, grain, lumber and forest products, automotive parts and vehicles, and chemicals and fuel products. Imposing a clean fuel standard on the Canadian rail industry when no reciprocal standard is in place for U.S. railways is fundamentally unfair, creates an uneven commercial playing field, and will directly jeopardize the ability of Canadian businesses to compete with their U.S. counterparts.

Assuming that the Minister introduces a clean fuel standard that is similar to the structure and pricing framework in British Columbia, the estimated costs to the railway sector will be $150 M to $200 M by 2022 assuming that fuel consumption levels do not change and that compliance units are valued at $171/tCO2$_e$[22].

6 Unintended consequences of fuel switching in the trucking sector

Multiple regional climate change strategies collect revenues from various carbon pricing strategies and use these revenues to support fuel switching to natural gas in the trucking sector. While the introduction and advancement of natural gas-powered trucks may reduce emissions in the trucing sector, the RAC suggests that ECCC assesses the potential risk associated with this approach and its ability to reduce transportation-related emissions.

Government subsidies into a natural gas trucking sector can potentially enable trucking companies to offer a service at a lower rate than rail, stimulating modal shift into the trucking sector. However, conventional rail continues to be nearly 3.5 times more efficient than LNG/CNG powered trucking when assuming a truck capacity of 16 tonnes per truck[23]. The RAC believes that a 3, 5 and 10 per cent shift of rail traffic to LNG/CNG powered truck will increase transportation-related emissions by 0.62 Mt, 1.03 Mt and 2.07 Mt respectively.

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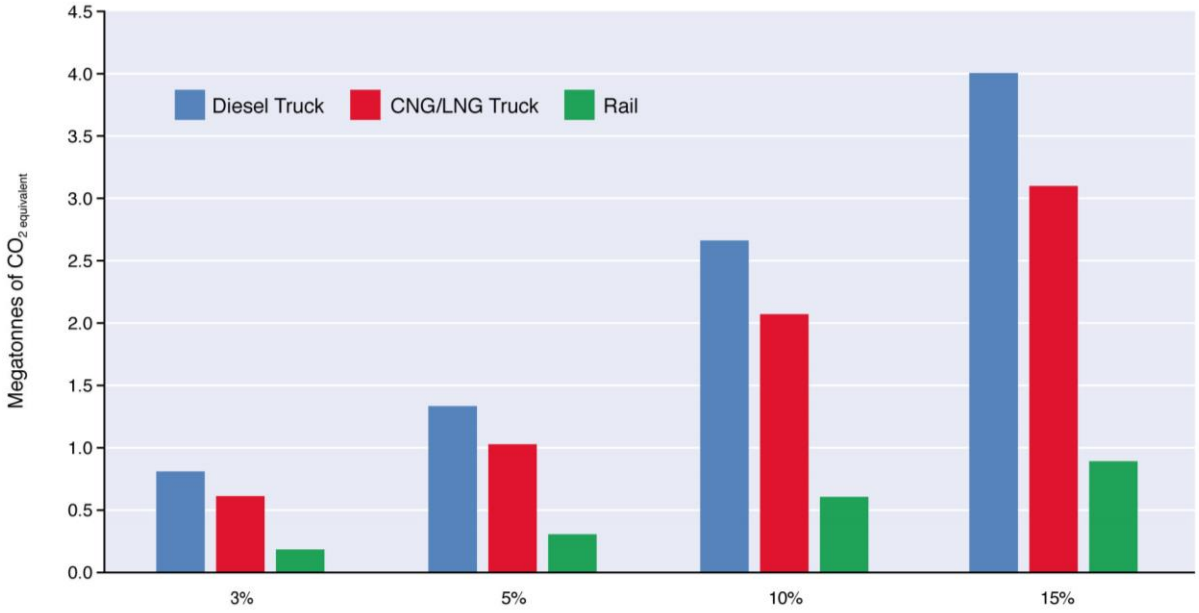
[21] The Pan-Canadian Framework on Clean Growth and Climate Change, 2016. p.18.

[22] Railway Association of Canada, 2017. Internal analysis.

[23] Efficiency ratios extracted from Canada's National Inventory Report (for rail) and the U.S. National Inventory Report (for CNG/LNG trucking – Table A108). Workbooks are available upon request.

Figure 5: CNG/LNG trucking vs. rail



7 Closing

As a critical component to growing the economy, and with a long-standing commitment to reducing emissions, Canada's railway industry can deliver prosperity while becoming part of the country's climate change solution.

If you have any questions or comments, please contact Michael Gullo, Director Policy, Economic and Environmental Affairs for the Railway Association of Canada at 613 564 8103 or mgullo@railcan.ca.

Railway Association of Canada | RIGHT TRACK

April 13, 2018

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RE: Comments on the proposed clean fuel standard for the liquid fuel stream

This submission presents the views of the Railway Association of Canada (RAC) and its members concerning the proposed Clean Fuel Standard (CFS) and framework for liquid fuels.

This submission provides several items for consideration by Environment and Climate Change Canada (ECCC) so that the department is fully aware of the potential implications of a CFS to the railway sector and its ability to provide a competitive and low-cost service offering to its customers. It also encourages the department to recognize the role railways can play in reducing emissions in Canada and as a legitimate pathway to compliance for industries subject to the CFS.

Railways and the Canadian Economy
Canada's freight railways move a broad range of goods that reflect the composition of the Canadian economy, including bulk commodities such as grain, mining products, merchandise goods, and finished automobiles. These railways provide multiple services to more than 10,000 customers each year by using a finite pool of locomotives, rolling stock and crews to transport approximately $280 billion in goods each year across 44,000 kilometers of track that spans nine provinces and one territory.

The *Canada Transportation Act* requires railways to fulfill their "common carrier obligation" (sections 113 and 114) and carry all traffic tendered by shippers. As a means to fulfilling this obligation, railways are required to position fuel at their facilities to support their operations and meet the demands of their customers. To put it simply, the railway fuel supply chain is not static and railways are periodically required to import fuel from the United States (U.S.) when domestic fuel supply chains cannot meet customer demand. This is an important nuance for the department to recognize in the design of the CFS as it clarifies that a railway will be an obligated party when it imports fuel from the United States.

Our comments on the proposed framework are as follows:

The CFS is a rigid framework for railways
The early design principles for the CFS indicate that obligated parties will be provided with a range of compliance pathways under the proposed framework[1]. Our understanding is that a railway will be an obligated party when it imports fuel from the U.S., and that the only pathway to compliance for a company will be to purchase credits from another obligated party or renewable

[1] Environment and Climate Change Canada, January 18 and 19, 2018. Clean Fuel Standard Multi-Stakeholder Consultative Committee and Technical Working Group Inaugural Meetings. Page 12.

fuel importer/producer within the liquid fuel stream or credit market[2]. Our review also indicates that unlike other obligated parties, a railway company will not be afforded the opportunity to generate credits based on the investments it makes to reduce emissions through technology and innovation, management strategies, increasing renewable fuel content or fuel switching for yard operations.

We strongly encourage the department to develop a compliance option for railways that recognizes investments in infrastructure that support the increased use of renewable fuels (e.g. enhanced fuel systems) or assets that can facilitate fuel switching (e.g. decarbonization of yard operations). This option could be managed through an agreement between ECCC and a railway company, providing an additional compliance pathway for the sector.

As currently worded, the compliance pathway for railways is very narrow and if not addressed will be a fundamental shortcoming of the CFS design and consultation process. We also argue that the inability to provide railways with credit-generating opportunities places railways and Canadian shippers at a competitive disadvantage.

The RAC recommends that:

1. ECCC recognizes the railway sector's obligations under the *Canada Transportation Act* and excludes fuel imported from the U.S. for railway operations.
2. ECCC reviews the compliance options for the railway sector and recognizes that the investments made by railways to reduce emissions are eligible for generating compliance credits under the CFS framework.

Transparency needs to become a central theme to the CFS

While the consultation process has focused on developing a CFS that establishes lifecycle carbon-intensity requirements for liquid, gaseous and solid fuels, the RAC is concerned with lack of attention being paid to information disclosure for fuel produced and sold under the proposed framework. Railways require detailed information about the composition of the fuel they purchase and how much it costs for several reasons. Understanding the chemical properties of the fuel is critical for ensuring that railway companies can:

- Operate their locomotives in compliance with the warranty conditions established by locomotive manufacturers[3].
- Ensure that the fuel purchased under the CFS does not affect locomotive performance and matches the existing energy per unit of fuel metric for fuel available to railway companies; and
- Assess whether their existing fuel storage and handling systems will be compatible with the new fuels produced and sold under the CFS regime.

Railways also require detailed information about the CFS compliance costs that will be passed on to them by fuel producers and distributors. Railways require this information to calculate

[2] Environment and Climate Change Canada, March 26, 2018. Liquid Fuel Stream Placement.

[3] Our understanding is that a fuel that meets ASTM D975 (diesel standard) isn't automatically compliant with warranty conditions – 'drop-in' biofuels have properties that can impact engine performance that are not part of the standard (e.g. aromatic concentrations), and engine manufacturers continue to impose maximum blend limits.

their expenditures and if required, accurately adjust rates to support the movement of freight and people.

The RAC recommends that:

3. The ECCC ensures that fuel producers and distributors are required to provide detailed information about fuel content and CFS compliance costs to railway customers.

Furthermore, the department has stated that the renewable fuel content requirements referenced in the *Renewable Fuel Regulations* will be maintained in the short-term and eventually replaced by the CFS in the long-term[4]. Given that the level of uncertainty associated with increasing the renewable fuel content under the CFS remains high, the RAC recommends that:

4. the existing *Renewable Fuels Regulations* and proposed CFS are aligned into a single point of compliance, where the current maximum blend-rates for renewable fuels are not exceeded.

The costs of compliance need to be addressed to fully understand competitiveness issues

The RAC asks that ECCC recognize that railways are integral components of multi-modal supply chains that enable Canadian shippers to compete in North America and internationally. Currently approximately 70 percent of Canadian Class I railway revenues are generated by activities that support trade. As a derived-demand industry, the competitiveness of our customers and the Canadian economy is critical and important.

As currently described, the CFS will increase production and operating costs for Canadian industry, and will introduce a new cost to railways for the fuel they purchase. These collective costs need to be identified to determine whether Canadian businesses can maintain their market share in North America and abroad.

For railways, this information is required to set a competitive rate that facilities market access and trade opportunities for shippers, and ensures that railways can generate the capital required to maintain their infrastructure and support operations. Our estimates indicate that the costs of compliance to the railway industry for provincial and federal climate change policies is significant and will rise to $1.6 billion by 2022[5]. We also believe that imposing a cost to the railway sector in Canada and not its competitors in the U.S. is fundamentally unfair and creates a disadvantage for railways and the supply chains they operate within.

Our understanding is that the department is committed to completing a Regulatory Impact Analysis Statement (RIAS) this spring or summer[6]. Considering this commitment, the RAC recommends that:

[4] Environment and Climate Change Canada, January 18 and 19, 2018. Clean Fuel Standard Multi-Stakeholder Consultative Committee and Technical Working Group Inaugural Meetings. Page 11.
[5] Railway Association of Canada, 2017. Cost of Compliance with Carbon Regulations for Canada's Rail Sector. Available upon request.
[6] Environment and Climate Change Canada, January 19, 2018. Clean Fuel Standard Technical Working Group – Role and Engagement in Regulatory Development. Page 3.

5. ECCC works with stakeholders to ensure that a cost-benefit analysis is completed to support the RIAS. This analysis should confirm the CFS compliance costs to railways and Canadian industry.

Excluding modal shift as a compliance option under the CFS is missed opportunity for reducing emissions in Canada

The RAC understands that the CFS aims to reduce the carbon intensity across the lifecycle of fuels used in Canada from production to use[7]. We continue to believe that modal shift provides an immediate and ready-made solution for CFS compliance (as it pertains to the use of fuels), while simultaneously reducing transportation-related emissions and supporting the Government's objectives under the Paris Agreement. If just 10 per cent of truck traffic was transferred to rail, Canada would reduce transportation-related emissions 3.7 Megatonne (Mt) of CO_{2e} per year[8].

We strongly encourage the department to reconsider its position and recognize modal shift as a legitimate compliance pathway under the CFS. The department has implied that shifting to a more energy efficient mode or technology within the liquid fuel stream (e.g. from hydrocarbon powered truck to rail) will not qualify for a compliance credit as this type of shift does incent deep decarbonization. The RAC disagrees with this position, which lacks objectivity and has yet to be fully described in government policy. We also believe that this position contradicts the government's statements to use more rail as a means to reducing emissions in Canada[9,10].

In many cases manufacturing and processing industries have already invested in less-intensive power sources (e.g. investments in natural gas-powered production processes) and will potentially have few compliance options under the proposed CFS framework. In other cases, some industries commit to moving their goods by rail to achieve voluntary sector-based emissions reduction targets.

As previously communicated in our correspondence to ECCC on May 1, 2017, railways have an impressive emissions portfolio where they can move one tonne of freight over 200 kilometers on a single litre of fuel[11], and a single freight train can remove over 300 trucks from our congested road and highway network[12]. In general, railways are roughly 4 times more fuel efficient than truck[13].

Moving more goods and people by rail is a proven method for reducing emissions and has been embraced by provincial governments as part of their climate change solution. For example, the Government of Quebec has demonstrated leadership by providing funding to support modal

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[7] Environment and Climate Change Canada, January 18 and 19, 2018. Clean Fuel Standard Multi-Stakeholder Consultative Committee and Technical Working Group Inaugural Meetings. Page 4.

[8] RAC internal analysis using public data sources, July 2016. Worksheets are available upon request.

[9] The Pan-Canadian Framework on Clean Growth and Climate Change, 2016. p.17

[10] Speaking notes for The Honourable Marc Garneau, Minister of Transport - Transportation 2030. Available at: http://news.gc.ca/web/article-en.do?nid=1146789

[11] Railway Association of Canada, 1 December 2016, Rail Trends 2016 (p.18), available from: http://www.railcan.ca/publications/trends

[12] Railway Association of Canada, 1 December 2015, Rail Trends database (tonnes per carload Class I rail) & Federal Highway Administration, 1 May 2003, Commercial Vehicle and Size Weight Program, available from: http://ops.fhwa.dot.gov/freight/sw/overview/index.htm

[13] Federal Railroad Administration, 19 November 2009, Comparative Evaluation of Rail and Truck Fuel Efficiency on Competitive Corridors (p.23), available from: https://www.fra.dot.gov/eLib/details/L04317

shift projects as a viable approach for reducing transportation-related emissions in the province[14].

The RAC recommends that:

6. modal shift is recognized as a legitimate pathway to compliance for industry subject to the CFS framework. We believe that shippers should be allowed to generate compliance credits when they elect to move their products by rail.

ECCC should be aware of the potential unintended consequences associated with fuel switching

The RAC is concerned that Government policy and investments to support fuel switching in other sectors may increase transportation-related emission in Canada. Freight moves for a variety of economic reasons but can be principally driven by a freight rate. Government subsidies into a LNG/CNG powered trucking sector can potentially enable trucking companies to offer a service at a lower rate than rail, stimulating modal shift into the trucking sector.

However, conventional rail continues to be nearly 3.5 times more efficient than LNG/CNG powered trucking when assuming a truck capacity of 16 tonnes per truck[15]. Our estimates indicate that a 10 per cent shift of rail traffic to LNG/CNG powered truck will increase transportation-related emissions by 2.07 Mt in Canada per year.

Closing

RAC submits that railways have maintained a deep commitment to controlling emissions for more than 20 years, notwithstanding the absence of specific and detailed regulations. We believe that the sector is uniquely poised in its ability to help Canada achieve its climate change target while supporting the country's economic objectives. However, we believe it is paramount that the CFS framework recognizes the railway sector's responsibilities under the *Canada Transportation Act* and fully assesses the cost implications to the sector and the customers it serves.

The facts, figures and analysis presented in this submission are available upon request.

If you have any questions or comments or require additional information, do not hesitate to contact me at 613-564-8103 or mgullo@railcan.ca

Regards,

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[14] Ministry of Transport, Sustainable Mobility and Transport Electrification, 22 February 2016, Programme visant la réduction ou l'évitement des émissions de gaz à effet de serre par le développement du transport intermodal , available from: https://www.mtq.gouv.qc.ca/partenairesprives/transportferroviairemaritimeaerien/programmes-aide/Pages/Programme-reduction-evitement-ges.aspx

[15] Efficiency ratios extracted from Canada's National Inventory Report (for rail) and the U.S. National Inventory Report (for CNG/LNG trucking – Table A108). Workbooks are available upon request.