Railway Association of Canada | Association des chemins de fer du Canada

Railway Safety Act Review

A submission by the Railway Association of Canada

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Acronym Table

AAR	Association of American Railroads
ACRS	Advisory Council on Railway Safety
BCF	Building Canada Fund
CP	Canadian Pacific
CTA	Canadian Transportation Agency
FCM	Federation of Canadian Municipalities
FRA	Federal Railroad Administration
OL	Operation Lifesaver®
RAC	Railway Association of Canada
RSA	Railway Safety Act
RSAR	Railway Safety Act Review
RSIP	Railway Safety Improvement Program
SMS	Safety Management Systems
TSB	Transportation Safety Board

Executive Summary

Canada's railway safety regime has been studied, reviewed and amended on multiple occasions since the initial passage of the *Railway Safety Act* in 1989. This includes two previous statutory reviews of the legislation itself (1994 and 2007); studies by the Standing Committee on Transport, Infrastructure, and Communities; a review by the Office of the Auditor General; amending legislation; and new and changed regulations, rules and standards.

Essentially without exception, these reviews have reached the same overarching conclusion, which was well stated in 2007 by the *Railway Safety Act* Review Panel:

> *"The Panel finds that the Railway Safety Act and its general principles are fundamentally sound, but it recommends that a number of improvements be implemented."*

These general principles include a multilayered safety regime of strong regulatory oversight and enforcement by Transport Canada, overlain and complemented by corporate-level Safety Management Systems; and an efficient and responsive rule making capacity, with such rules subject to ministerial approval.

The Railway Association of Canada and its members agree with this general conclusion, including the need for further improvements by railway companies and stakeholders. The 2017-18 *Railway Safety Act* Review represents a foundationally important focus for such improvements, and we stand ready to work cooperatively to help bring them forward. This submission is part of that work.

In addition to our support for the general structure and intent of the *Railway Safety Act*, this submission offers recommendations in the following areas:

- The importance of a risk-minimization approach and mindset when contemplating legislative and, in particular, regulatory changes;
- The need for fundamental changes concerning important public safety issues around highway-railway grade crossings, proximity to railway operations, and trespassing on railway property;
- The consideration of human factors issues, such as safety culture, impairmant and distraction;
- The importance of fostering a culture of safety, which includes innovation and technological defenses; and
- The need to address critical issues relating to the survival of the shortline railway industry.

1.0 Introduction

The Railway Association of Canada (RAC) is pleased to provide this submission to the *Railway Safety Act* Review (RSAR) Panel and supporting Secretariat. This submission has been filed on behalf of RAC's freight and passenger member railways (**Appendix A**). It includes an overview of the railway sector in Canada and several of its initiatives to improve safety. It also provides an industry perspective on the critical challenges and barriers to enhancing rail safety in Canada, as well as a number of recommendations for the Panel to consider.

This submission is supported by a number of technical reports from subject matter experts, which are appended as follows:

- **Appendix B**: an overview of technology and innovation applied in the railway sector;
- **Appendix C**: a summary of the various powers and authorities available under the *Railway Safety Act* (RSA);
- **Appendix D**: an analysis of Safety Management Systems (SMS) in safety-sensitive industries;
- **Appendix E**: opportunities to enhance the *Railway Safety Act* and the role of SMS;
- **Appendix F**: a comprehensive study about population density in Canada and corresponding safety incidents; and
- **Appendix G**: an overview of safety culture developments in the railway sector since the last review.

2.0 Canada's railway network

Canadian freight railways serve more than 10,000 customers each year. More than 4 million carloads of freight are moved by approximately 2,400 locomotives and 33,000 dedicated railroaders across 44,000 kilometres of track that connects nine provinces, one territory, and multiple trade gateways between Canada and the United States (U.S.).

This network consists largely of two Canadian Class I railways (CN and Canadian Pacific (CP)), short sections of several U.S.-based Class I carriers, and more than 60 shortline and regional railways (here within referred to as shortlines). Trade corridors are enhanced by multimodal connections between the railways and ports, terminal operators, marine carriers, truckers, and other logistics providers.

Rail passenger services are predominantly provided by VIA Rail, GO Transit, Réseau de transport métropolitain and West Coast Express. Each year, more than 70 million passengers in the Vancouver, Greater Toronto, and Montreal areas travel by rail, and an additional 4 million intercity passengers are transported by VIA Rail.

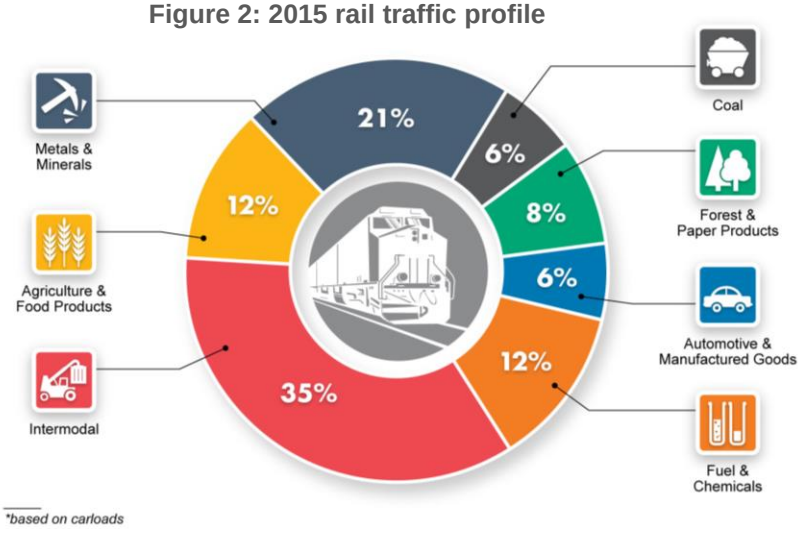
Figure 1: Canada's rail franchise

Railway customers enjoy access to a safe and efficient safe railway network that enables economic competitiveness, and an emission-friendly mode of transportation for travelling and commuting.

Freight railways continue to drive the Canadian economy by moving a diverse suite of goods, including: bulk commodities such as grain, potash and lumber; domestic and import/export containers; general merchandise such as forest and manufactured products; and fuel and chemicals.

As critical components of the economy, railways provide an efficient, low-cost and safe service to their customers. While the U.S receives more than 75 per cent of all Canadian exports[1], Pacific Rim and emerging economies have become increasingly more important trade partners.

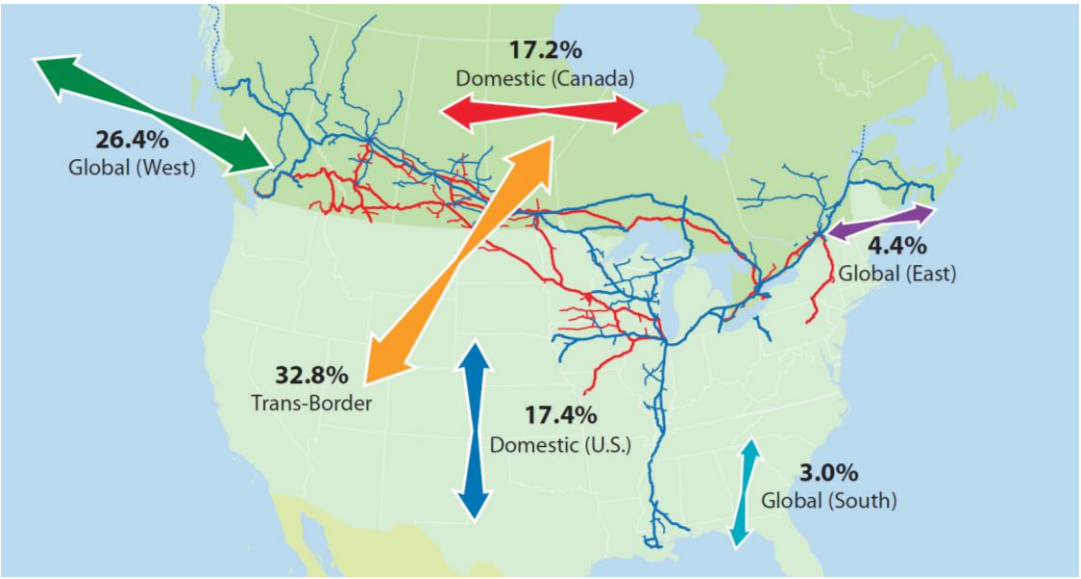
Figure 2: 2015 rail traffic profile



[1] Source: Industry Canada, 2016. Trade Data Online.

With the development of multi-lateral trade agreements, the railway network ensures that Canada is well placed to capitalize on its trade agenda. **Figure 3** provides an overview of the markets that Canadian railways enabled for their customers in 2015 (as measured by the percentage of railway revenues and their respective destination, including imports and exports).

Figure 3: Market reach



Furthermore, as Canada continues to support the international efforts to combat climate change and reduce emissions, railways are well positioned to be part of the solution. The industry's long-standing commitment to reducing emissions produced by locomotives has led to a number of innovative technologies and operating practices that have maximized fuel economy.

Railways can move one tonne of freight more than 200 kilometres on a single litre of fuel[2], and a 100-car freight train carrying 10,000 tonnes of goods can remove more than 300 trucks from our congested road and highway network[3]. The U.S. Federal Railroad Administration estimates that the movement of intermodal traffic by rail is approximately 4 times more fuel efficient than truck[4]. Similarly, commuter rail in Canada is roughly three times more efficient than automobile travel[5].

As the federal and provincial governments move forward with their respective carbon-pricing policies, the railway industry is uniquely positioned as one of the few sectors that can support the country's economic objectives while reducing emissions substantively. From 1990 to 2015, freight railways have reduced their GHG intensity (kg of CO_{2e} per 1,000 revenue tonne-kilometre) by more than 40 per cent, while

[2] Railway Association of Canada, 2016, Rail Trends 2016, Available from: http://www.railcan.ca/publications/trends
[3] Railway Association of Canada, 2016, 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.

experiencing a roughly 80 per cent increase in revenue tonne-kilometres[6]. Similarly, intercity passenger railway emissions (kg of CO_{2e} per passenger-kilometre) have decreased by approximately 55 per cent[7].

3.0 Investing to improve safety

The transition towards a competitive and commercial regulatory economic framework for the railway industry has ushered in an era of unprecedented investment and productivity. A succession of reforms from 1967 through 2000 ensured that the railway industry's economic regulatory framework was directed by market and commercial forces which, in turn, have unlocked the investments that are necessary to build, operate and maintain a safe and efficient rail network.

In fact, from 2007 to 2016, Canadian railway investments exceeded $32 billion, allowing the industry to drive safety performance improvements and increase their capacity in line with their customers' growing requirements. Class I railway investments in 2016 totaled nearly $4 billion, of which approximately 85 per cent were allocated to the continuous improvement of railway track and roadway, and rolling stock.

Investments in safety technology

Railways have led the development and deployment of innovative safety processes and technologies, in partnership with suppliers, government and academia. **Table 1** shows some examples of safety technologies now in use by Canadian railways. Many of these technologies have increased the frequency and improved the quality of equipment and infrastructure inspections, versus manual processes, and exceed regulatory requirements.

Table 1: Technologies deployed by railways to reduce safety risk

Technology to reduce infrastructure risk	Technology to reduce rolling stock risk
Advanced track geometry testing equipment to inspect lateral distance between rail, alignment, profile, etc.	Infrared and other wayside detectors (e.g. acoustic) to detect warm and hot bearings/wheels and dragging equipment
Ultrasonic detectors to identify rail defects below surface.	Wheel impact load detectors to identify high wheel-reel impacts and imbalanced rail cars.
Electrical and mechanical equipment to predict rock slide and fall in mountainous areas.	Wheel profile detectors to measure wheel profile and assess integrity.
Acceleration detectors to identify movements resulting from rail joint issues and/or track geometry.	Truck hunting detectors to measure lateral forces or unstable bogie.
Optical track and tie inspection imaging systems to inspect various items such as tie plates, joint bars, bolts and ballasts.	Advanced imaging systems to detect missing, damaged or worn rolling stock components.
Drones to detect track and bridge flaws.	Automated brake testing capability.

[6] Selected subset of data from Rail Trends 2016.
[7] Ibid.

The scope and diversity of technologies deployed to drive down risk continues to advance through collaborative efforts with the Association of American Railroads (AAR) and the Transportation Technology Centre Inc., as well as the Canadian Rail Research Laboratory at the University of Alberta, and the Research and Innovation Laboratory at the University of Illinois. In parallel to these programs, the industry maintains a long-standing collaboration with the Rail Research Advisory Board (RRAB), a collaborative rail research and development forum of industry, government and other stakeholders.

Data sharing, data management and predictive analytics techniques are increasingly being used to bring together the outputs of these formerly stand-alone systems. This combination allows railways to detect previously unseen patterns, and to build predictive algorithms.

See **Appendix B** for more information about safety technologies and innovation applied in the rail sector.

Investments in people and public safety

In addition to the corporate investments made to ensure that rail infrastructure and rolling stock are safe, Canada's railways have also invested in a number of initiatives to address safety in the workplace and in the thousands of communities through which they operate each year.

Investments in Safety culture

As field-level rail operations are quite decentralized and not always directly supervised, many railway employees work independently. As a result, their training, motivation and mindset are geared towards serving customers safely, thus protecting themselves, the public and the environment. Accordingly, railways must foster and continuously improve a deep safety culture among employees at all levels of the company. Examples of safety culture improvement initiatives undertaken since the last review include:

- Peer-to-peer initiatives: CP's *Home Safe* and CN's *Looking Out For Each Other* are engagement programs that introduce employee-driven commitments to work together and create an environment that upholds safety and strengthens culture;
- VIA Rail's *Securitel*: a safe and secure phone system that provides employees with an opportunity to anonymously report safety issues or concerns, which in turn increases prevention and promotes safety culture; and
- Advanced training facilities and modern curriculum: both CN and CP have enhanced or created best-in-class facilities to support employee training. For example, launched in 2014, CN's Campus Training program included an investment of more than $60 million in two state-of-the-art training facilities to deliver enhanced classroom and field training while strengthening the company's safety culture[8].

At the Industry level, and in response to the Lac-Mégantic tragedy, RAC introduced its Safety Culture Improvement Initiative in 2013. This initiative formalized the association's commitment to encourage its members to be proactive in maintaining effective SMS and in strengthening their safety culture. It includes the delivery of safety culture training to shortline railways, a steering committee that allows Canadian and American railways to exchange information about lessons learned and best practices, and access to resources from the CN Centre for Occupational Health and Safety[9]. To date, RAC's Safety Culture

[8] Source: CN news, https://www.cn.ca/en/news/2016/04/pressrelease_20160404100123_7473
[9] Additional information about the Centre can be found at: http://www.smu.ca/centres-and-institutes/cncohs.html

Improvement Initiative has exclusively financed five safety culture assessments at shortline and passenger railways, with an additional two assessments scheduled to begin later this year.

Additional information about safety culture in the railway sector is presented in section 5.

Investments in public safety education

Operation Lifesaver®

The railway industry recognizes that safety is a shared responsibility. Engagement with municipalities, provincial and federal governments, and other partners is necessary to inform the public about rail safety, and ultimately reduce the number of rail-related injuries and deaths in Canada. When looking at the evidence, it is clear that:

- collisions at highway-railway grade crossings and as a result of trespassing on railway property account for more than 85 per cent of all rail-related deaths and serious injuries in Canada over the last 10 years[10]; and
- roughly 38 per cent of all railway fatalities in Canada between 1999 and 2008 were suicides. This translates into roughly 43 rail-related suicides per year, of which 77 per cent are men aged 40 years old[11].

Established in 1981, Operation Lifesaver (OL) is a not-for-profit organization that is co-funded by Transport Canada and RAC[12]. Its mandate is to raise public awareness about the hazards associated with railway tracks and trains, and the dangers of trespassing on rail property. Over the last 35 years, OL has successfully developed relationships with railways, governments, law enforcement agencies, labour groups and other safety organizations across Canada. Together, they promote rail safety through a network of provincial committees that work to disseminate its messaging across the country.

Proximity Initiative

The Federation of Canadian Municipalities (FCM) and RAC recognize that it is in Canada's economic and public safety interests to promote proper land-use planning practices between railways and municipalities. Through their Memorandum of Understanding (MOU),[13] the signatory parties developed the *Guidelines for New Development in Proximity to Railway Operations* in 2003 and updated them in 2013.

These guidelines are intended for use by municipalities and provincial governments, municipal staff, railways, developers and property owners when developing lands in proximity to railway operations. They are meant to assist municipal governments and railways in reviewing and determining general planning policies when developing lands in proximity to railway operations, as well as to establish a process for making site-specific recommendations and decisions to reduce land-use incompatibilities for developments in proximity to railway operations.

[10] Railway Association of Canada. (October 12, 2016). *Canada's railways support new federal rail safety program.* Retrieved from: https://www.railcan.ca/news/canadas-railways-support-new-federal-rail-safety-program
[11] Mishara, B. L. & Bardon, C. (2017). *Characteristics of railway suicides in Canada and comparison with accidental railway fatalities: Implications for prevention.* Safety Science, 91, p. 251-259.
[12] The federal government has demonstrated its commitment to reducing the number of crossing and trespassing incidents in Canada by recently increasing OL's funding to $1.5 million over three years.
[13] Initially signed in 2003, and re-signed in 2009 as an open-ended agreement.

Responsible Care® and TRANSCAER®

CN and CP are partners in Responsible Care® — the chemistry industry's U.N.-recognized sustainability initiative. These railways have formally committed to the Responsible Care® Ethic and Principles for Sustainability, and undergo a verification process every three years to ensure that they are acting as responsible stewards of chemical products.

In partnership with the Chemistry Industry Association of Canada, the RAC and its members lead hundreds of outreach events each year that focus on assisting communities and their first responders in preparing for, and responding to, possible rail incidents involving dangerous goods. Since 2015, the RAC alone has held 152 TRANSCAER events that provided training to more than 4,500 first responders.

These initiatives, and other railway investments, are helping to reduce rail safety risks. They continue to improve safety performance and support Canadian railways' position as the safest in North America. Since 1999, the Canadian Class I accident rate has improved by approximately 43 per cent while U.S. Class I performance has improved by 28 per cent over the same period (**Figure 4**). Moreover, Canadian freight railways move 99.99 per cent of dangerous goods to their destination without a release resulting from an accident.

Figure 4: North American Freight Train Accident Rates (1996 - 2016)

Source: Federal Railroad Administration (FRA), CN and CP. Analysis based on FRA reporting criteria

Canadian passenger railways also maintain an excellent safety record, with an accident rate of 0.82 accidents per million passengers in 2015[14].

[14] Estimate for 2016. Source: RAC Rail Trends database, 2017.

4.0 Canada's rail safety framework

The RAC believes that the general structure and key provisions of the RSA are sound, and that they contribute to a strong, responsive rail safety regime which benefits all Canadians. These foundational aspects of the legislation include:

1. The complementary pillars of a robust regulatory regime managed by Transport Canada, overlain by an effective SMS carried out by each railway company. As was made clear by the 2007 Review Advisory Panel, and countless times since, this is not "de-regulation" or "self-regulation" as:
    a. The Minister of Transport and Transport Canada retain a suite of inspection and enforcement tools and penalties;
    b. Only the Minister of Transport and Transport Canada can formulate regulations, which supersede rules and company instructions; and
    c. The requirement for each company to have an effective SMS is, itself, a regulation.
2. The ability for the Minister of Transport to direct the industry, or an individual railway company, to develop or modify a rule or standard. Notably:
    a. All railway operating rules must be approved by the Minister of Transport and, once approved, have the legal force of regulation, thus industry or the applicable individual company must comply with it;
    b. The rulemaking process is much faster and more responsive than the process for developing a regulation; and
    c. The Minister of Transport retains the sole authority to approve, modify or reject the proposed rule.

As with any legislative process in Canada, making regulations is a long process requiring extensive and formal consultations, an impact assessment and cost-benefit analysis, followed by a traditional public comment period that can vary from 30 days to years depending on the number of considerations. In parallel to the legislation development process, the Minister maintains the authority to require railway companies to prepare and file engineering standards or rules on any matter where regulation can be made (excluding crossings). Similarly, the Minister of Transport may issue an order or emergency directive when observing an issue of non-compliance or potential threat to safe railway operations.

Establishing a rule requires consultation with relevant association and organizations designated by the Minister of Transport, who maintains the authority to approve the rules as filed by industry or impose terms and conditions which, if not respected, can result in refusal of the rule. Regulations override rules dealing with the same subject matter.

The rulemaking process is nimble and allows rules to be established at a faster pace than regulation. Its net effect allows the regulator and the industry to efficiently prepare for, and respond to, developing or emerging safety issues. Numerous rules have been developed by the rail industry and approved by the Minister of Transport with respect to the Canadian Rail Operating Rules, Locomotive Safety and Inspection Rules and Freight Car Safety Rules, for example.

In a more emphatic example, and immediately following the Lac-Mégantic accident, the Minister of Transport issued an emergency directive to protect safety, accompanied by an order under section 19 of the RSA requiring railway companies to formulate rules dealing with key trains. In this case, the RSA

rulemaking process enabled a quick industry response followed by a ministerial approval that improved safety outcomes. What would have taken months took only days to enact. The strength of the rulemaking process as an effective regulatory instrument has been noted by previous rail safety reviews in Canada[15,16] and this is why it is often cited as an example of "smart regulation."

A comprehensive summary of the RSA's authorities and approvals provisions can be found in **Appendix C.**

Recommendation 1: The RAC recommends that the foundational structure of the RSA – i.e. robust regulatory, inspection, and enforcement powers vested in Transport Canada; the requirement for each company to have an effective SMS; and the rulemaking provisions – be maintained, but with an important shift for SMS to a performance-driven and risk-based focus as described below.

The current application and enforcement of railway SMS in Canada
Railway SMS support the regulatory framework by incorporating a set of processes designed to integrate safety considerations into all decision-making, planning and operational activities. It is similar in concept to a financial management system, a human resources management system, or any ISO 9000-series management system, all of which call for a systemic, integrated approach to the business issue at hand. In the case of SMS in the railway sector and other safety-sensitive industries, the principal area of focus is operational safety. Additional information about SMS for safety-sensitive industries can be found in **Appendix D**.

In Canada, federally regulated railways are required to have a SMS, by the *Railway Safety Management Systems Regulations* promulgated under the RSA in 2001 and revised on April 1, 2015. The revised SMS regulations provide not only more detail and clarity, but also enhanced compliance and enforceability measures. In addition, they are applicable to local railway companies (i.e. any company that operates railway equipment on federally regulated railway track) of which some companies run low-volume switching operations that do not involve dangerous goods.

SMS compliance is assessed through Transport Canada's compliance monitoring program, which is designed to verify that a railway is in compliance with the regulations and that it consistently operates in accordance with its SMS. Practical elements of TC's monitoring program include annual reviews, and field and headquarters audits, of each railway's performance.

In theory, the monitoring and auditing of railway SMS should be an opportunity to proactively drive performance and identify solutions for mitigating in risk. In reality, SMS requirements, as written in the regulations, are prescriptive in nature with more than 150 "must" requirements and 105 "company must" references. By default, the extensive number of prescriptive requirements has positioned SMS as a compliance or check-box approach rather than a holistic assessment of a company's SMS used to deliver enhanced safety outcomes.

It is our view that the existing approach to monitoring and enforcing SMS requirements stands to be improved so that it focuses on risk, is applied consistently across Canada, and generates value by

[15] On Track: The Future of Railway Safety in Canada, December 1994 (p.43).
[16] Stronger Ties: A Shared Commitment to Railway Safety, November 2007 (p.50)

identifying systemic safety issues and opportunities for improvement. The applicability of SMS requirements to all federally regulated railways, and local railway companies, regardless of their operations or risk exposure also warrants significant consideration by the Review Panel. Industry and government efforts related to SMS should be built on collaboration and strive to foster continuous improvement.

In the absence of a transparent and priority-based framework for auditing railway SMS, a one-size-fits-all approach has been adopted. With this approach, regulatory requirements are not commensurate with the level of risk associated with smaller or local railway companies with limited operations on federally regulated track. In effect, the regulations as currently applied produce an excessive administrative burden for railways with a low risk profile, and potentially forfeit opportunities to add true safety value where risk is higher.

While RAC believes that the RSA continues to meet its fundamental objective of improving railway safety, and includes several aspects that position it as a modern and flexible piece of legislation, we argue that the existing compliance and enforcement regime as it relates to SMS (and other regulations) should evolve towards a performance-driven and risk-based approach that focuses on railway performance and safety improvement. Transitioning towards this approach includes the development and regular monitoring of safety performance against a series of performance indicators that are designed to create alignment between industry and government, as well as assurance that collective efforts are focused on improving safety measures where risk is highest.

More information about the opportunities to enhance SMS and the other aspects of the RSA is provided in **Appendix E**.

Recommendation 2: The RAC recommends that the *Railway Safety Management Systems Regulations* be amended to ensure that SMS requirements, audits and supporting enforcement measures are commensurate with a railway company's risk profile, safety performance and compliance history.

Recommendation 3: As a means of ensuring that the industry and the regulator's efforts are allocated to areas where risk is highest, RAC recommends that Transport Canada and the rail industry develop a risk-based framework (supported by performance indicators) that prioritizes safety issues, and directs industry and departmental efforts towards systemic risks, and not towards resolution of episodic and low-risk events.

5.0 Issues and challenges for improving rail safety in Canada

Crossing and trespassing issues

Transportation Safety Board statistics show that more than 85 per cent of railway operations-related fatalities and serious injuries over the past ten years have either occurred due to accidents at railway-roadway crossings at grade, or due to trespassing issues.

Table 2: Rail-related fatalities and serious injuries by cause type (2007 to 2016)

Year	Due to crossing accidents	Due to trespasser accidents	Due to all other accident causes	Total
2007	46	83	14	143
2008	63	67	9	139
2009	40	68	13	121
2010	52	74	17	143
2011	47	66	10	123
2012	62	70	23	155
2013	57	54	54	165
2014	50	54	6	110
2015	33	47	16	96
2016	43	66	12	121
Total	**493**	**649**	**174**	**1316**
Average	49	65	17	132
Per cent	**37%**	**49%**	**13%**	**100%**

Source: Transportation Safety Board. Averages and percentages may not add to 100 due to rounding.

The rail industry is concerned that the increase in accidents from 2015 to 2016 is the beginning of a trend that will continue in 2017. The RAC believes that operational safety risks to the public need to be mitigated through legislative and regulatory action for crossings and developments in proximity to railways.

Crossings

With an estimated 23,000[17] to 31,000[18] federally regulated public and private grade crossings in Canada, safety at crossings has become a principal rail safety interest for railways, governments and the Canadian public. Crossing safety strategies include:

- Closing redundant and little-used crossings;
- Grade-separating or upgrading existing crossings; and
- Strictly limiting the opening of new crossings, with a view to improve public safety and trade corridor efficiency.

These strategies are most effective when applied together, within a logical route segment or geographic area. The very successful Roberts Bank Rail Corridor Program is an excellent example of this approach[19]. As well, future land use planning decisions must consider alternatives to creating new grade crossings.

Canada's railways re-invest billions of dollars of their own capital annually. As discussed previously in section 3.0, the majority of these investments support plant and equipment renewal, safety systems and technology, and other safety-enhancing initiatives. Railways are able to plan, manage and finance such

[17] Source: Grade Crossings Regulations: what you need to know, 2016: Available at: https://www.tc.gc.ca/media/documents/railsafety/GradeCrossingsCanada_EN_2016_PRE_ACCESSIBLE.pdf
[18] Source: Evaluation of the Grade Crossing Closure Program, 2015. Available at: https://www.tc.gc.ca/eng/corporate-services/aas-gccp-1082.html#fnb1
[19] Port of Vancouver, 2016. Available at: https://www.portvancouver.com/development-and-permits/development/roberts-bank-rail-corridor/

activities independently. However, this is not the case for railway crossings (nor for trespassing/proximity issues), where they must work closely with various levels of government.

Public safety requires grade separations, improvement or closure of existing crossings, safety-based controls on the opening of new crossings, appropriate zoning decisions, and public education and enforcement. Governments and railways have taken joint action in all of these areas. Much more could be done if more funding was available and if certain process impediments were removed. The principal result would be fewer rail-related deaths and injuries, and a reduction in the risk of significant derailments caused by grade crossing collisions.

In addition to death or serious injury, every crossing accident has the potential to cause environmental or property damage, and disruptions to the movement of passengers and/or freight. Such delays not only drive up costs for the railway companies – they also impact the attractiveness of rail passenger travel and the reliability of rail-based supply chains. Supply chain reliability is a key requirement for the success of Canadian producers, manufacturers, retailers and exporters.

Governance

Under the existing oversight and administrative regime for grade crossings in Canada, Transport Canada is provided with the authority to close grade crossings, after completing a risk-based analysis, whereas the Canadian Transportation Agency (CTA) is responsible for granting the authority to open new crossings, without a requirement to assess public safety[20].

Currently, there is an MOU between Transport Canada and the CTA which deals with safety. Practically speaking, Transport Canada sends an inspector to the location of the proposed crossing, and that inspector gives advice to the Agency with respect to safety. In most instances, the affected railway learns about the inspector's visit after the advice has been given and there is no time to provide a railway perspective. This dichotomy in decision-making authority diminishes public safety as the overriding criteria for managing both the opening and closing of crossings in Canada.

Over time, history has proven that crossing-related accidents and their resulting effects, including fatalities and serious injuries, remain much too high. As a result, a policy change with a focus on safety and a restructuring of the governance regime for grade crossings in Canada are entirely appropriate. There would still be a role for the CTA to play in assessing the affordability and cost-sharing elements of the crossing, once it is approved by Transport Canada on safety grounds.

Grade Crossings Regulations and the Rail Safety Improvement Program

Canada's new *Grade Crossings Regulations*, and the accompanying *Grade Crossing Standards*, came into force in November 2014. These regulations put forward a series of improvements for grade crossings, including private crossings. Their stated aim is to improve safety by establishing comprehensive and enforceable safety standards for grade crossings (for railways, road authorities and private owners),

[20] Under section 103 of the *Canada Transportation Act* (CTA), the Agency may order a railway company to construct a suitable private crossing if it "considers it necessary for the owner's enjoyment of the land." Also, sections 101 and 102 of the CTA do not refer to any criteria reporting the approval of new crossings.

clarifying the roles and responsibilities of railway companies and road authorities and ensuring that they share key safety information[21].

While the regulations provide a framework for promoting safety standards for crossings across Canada, RAC believes that more can be done to ensure that crossings in Canada that are the least safe are addressed on a priority basis. A transition towards a risk- and corridor-based approach is required, with authority vested in a single regulator with a safety focus. Although Transport Canada has published a Grade Crossings Inventory as a means to assessing risk and compliance with applicable regulatory requirements[22], there is tremendous scope to develop a partnership approach with railways, provinces and communities, and other road authorities to improve crossing infrastructure, with priorities based on safety risk and benefit.

The regulations are supported by the Rail Safety Improvement Program (RSIP) – a program that makes available $18 million per year ($55 million over 3 years) in grant and contribution funding to improve rail safety and reduce injuries and fatalities related to rail transportation in three areas: safety improvements to existing rail lines; closures of grade crossings; and awareness-raising initiatives about rail safety. While the rail industry appreciates this and other programs and investments put in place by governments, it is our view that government funding for crossings in Canada is insufficient and does not align with the risks posed by crossings in Canada.

For example, costs to construct a single, straightforward grade separation in a rural setting can be approximately $20 million. A more complicated structure (multi-lane, multi-track, with adjacent ramps) in an urban setting can cost upwards of $60 million and often much more. And even a crossing upgrade to a full automatic crossing warning system (lights, gates, bells) will cost in the order of $1million. Even at an assumed 50 per cent federal contribution rate for such projects, it is clear that current levels of funding will not allow the aggressive actions required to promptly and significantly mitigate crossing safety risks. As a hypothetical case only, the estimated costs to complete 375 crossing upgrades of various types would be in the order of $1.25 billion. To be fully effective, such a program would have to run for multiple years.

Table 3: Crossing improvement costs

Project Type	Estimated Cost ($M)	Number of Projects	Estimated funding ($M)
Rural Grade Separation	$20	15	300
Urban Grade Separation	$60	10	600
Basic Crossing Signals	$0.2	250	50
Full Crossing Upgrade	$1	100	100
Proximity, Education, other	$200		200
TOTAL		**375**	**$1250**

[21] https://www.tc.gc.ca/eng/railsafety/railsafety-333.htm
[22] Source: Transport Canada, 2017. Grade Crossings Inventory: https://www.tc.gc.ca/eng/railsafety/railsafety-1000.html

Recommendation 4: The RAC recommends building on the intent of the RSIP, by:

- Dramatically increasing federal funding available for grade separations, crossing upgrades and crossing closures;
- Continuing to make enhanced RSIP funding and programming available to commuter agencies, municipalities and provincially regulated railways;
- Establishing and prioritizing crossing programming on a risk basis, with input and ongoing management from all levels of government, Transport Canada and the railway operators. These programs should take a corridor or geographic approach to produce an integrated program of grade separations, crossing closures and upgrades and, where warranted, new crossings;
- Transferring the authority to open new crossings from the Canadian Transportation Agency to Transport Canada, and ensuring that public safety is the primary consideration in new crossing approvals[23]; and
- Ensuring that proponents of new crossings provide a complete and comprehensive safety assessment to the road authority, the railway company and Transport Canada. This assessment must include a clear demonstration that there is no acceptable or appropriate alternative to the proposed crossing.

Proximity and public safety

Canada's quality of life and competitiveness depend on strong communities with sustainable growth and development. Many of Canada's communities were developed around railway infrastructure, and railways continue to be an integral part of community development. While the country continues to evolve towards an increasingly urbanized society, railways and people are living closer together as residential developments grow closer to railway facilities. Roughly 85 per cent of Canadians live in urban areas, of which nearly 50 per cent live in one of the six rapidly expanding urban areas (Toronto, Montreal, Vancouver, Ottawa-Gatineau, Calgary, or Edmonton)[24].

At the same time, railway operations are expanding in order to respond to the changing requirements of customers and consumers. Economic growth, increased commuter rail services, and growing international trade has resulted in considerable expansion of rail facilities. These facilities include new crossings, expanded sidings, scheduled freight service, new yards, and optimized and/or rationalized terminals, yards and corridors.

As communities and railways grow in closer proximity to each other, a number of issues may arise, including trespassing, vandalism, drainage, noise and vibration. While the latter are important, our present concern is safety. A recent analysis confirms that, from January 2004 to June 2017, more than 35 per cent of all rail-related fatalities in Canada occurred within rail corridors located in six urban regions. Correspondingly, population density in these regions has doubled, highlighting that population growth and rail-related fatalities are correlated. **Appendix F** includes a comprehensive study about population density in Canada and corresponding safety incidents.

[23] Under this arrangement we believe that cost apportionment responsibilities should remain with the Canada Transportation Authority.

[24] Statistics Canada, 2017. Population and dwelling count highlight tables. Available at: http://www12.statcan.gc.ca/census-recensement/2016/dp-pd/hlt-fst/pd-pl/index-eng.cfm

As mentioned in section 3 of this report, RAC and FCM continue to work under an open-ended MOU to develop common approaches to the prevention and resolution of proximity issues. Three specific areas, identified under a joint strategy for action, include:

> **Awareness:** Build awareness among stakeholders in the railway, municipal and development sectors on the need for effective railway-community proximity planning and management;
> **Guidelines**: Establish commonly understood proximity guidelines offering direction from the planning phase through construction and occupancy; and
> **Dispute resolution:** Create evaluation criteria and benchmarks for the local dispute resolution framework used by parties when railway-community proximity issues emerge.

Together, RAC and FCM have achieved significant progress by creating the Proximity Initiative, guidelines relating to land use planning in proximity to railway infrastructure[25], a dispute resolution process, and a coordinated communications strategy to raise awareness among railways, municipal governments and land developers. This effort has led to adoption of the guidelines (in full or in part) by close to 60 municipalities in Canada as well as an amendment to the Ontario government's Provincial Policy Statement to set clear direction for the long-term protection of its transportation network[26]. This statement directs planning authorities to plan for, and protect, rights-of-way for infrastructure, including transportation and major goods movement facilities and corridors. In addition, it directs planning authorities not to permit new developments in planned corridors that could preclude or negatively affect the use of the corridor for its intended purpose.

While progress in adoption of the guidelines has been made, Canada's size — encompassing a more than 40,000-route-kilometre rail network through more than 2,000 municipalities[27] — has made the municipality-by-municipality approach a challenge and has led to a shift in strategy aimed at gaining adoption of the guidelines at the provincial level. Accordingly, the Proximity Initiative has rightly been expanded in 2016 to include specifications for engaging with provincial governments, with the goal of having provincial governments adopt the guidelines into their land use acts.

As Canada becomes increasingly urbanized, municipalities and provincial governments need to create and/or update their policies, regulations and standards related to new development in proximity to rail operations so that there is greater consistency across the country and reduced risk to the public[28]. As the creation of new rail corridors, especially in urban areas, is most often prohibitive, it is essential to preserve and more fully utilize corridors already in place. Similarly, preserving surplus railway corridors for present or future use by commuter or inter-city rail is a wise and cost-effective measure that should be the responsibility of government.

Recommendation 5: As a means to reducing public safety incidents in municipalities and ensuring that there are nationally consistent standards for new developments in proximity to the railway network, the RAC recommends that the Minister of Transport directs provincial transportation ministers to adopt the

[25] Guidelines for New Development in Proximity to Railway Operations May 2013.
[26] e.g. Ontario Regulation 545/06. Section 9.
[27] RAC GIS database. Accessed September 2017.
[28] Earth Tech Canada Inc., *Proximity Guidelines and Best Practices: Final Report*, prepared for RAC and the FCM (Ottawa: August 2007).

RAC/FCM Proximity Guidelines in full. Included in this requirement should be a mandatory setback for new development within proximity of rail operations of 30 metres with a federal backstop provision.

(If a province has not passed proximity guidelines with this provision, then it should be a federal requirement. If the province does adopt the guidelines with a 30-metre setback, then the federal provision does not apply).

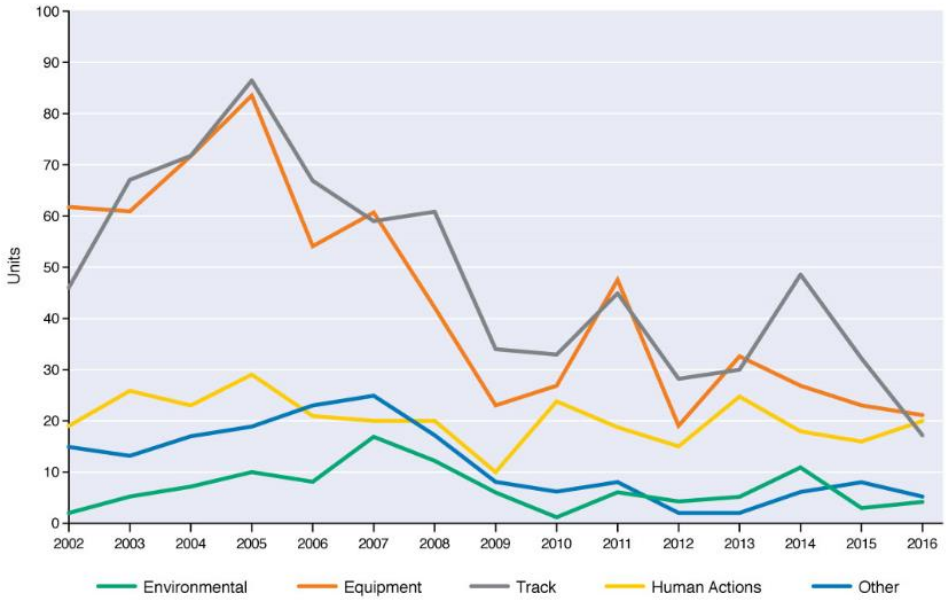
Recommendation 6: As a condition for reducing the number of fatalities and serious incidents resulting from crossings and trespassing in Canada, RAC recommends that federal funding under RSIP for crossings infrastructure should only be accessed by municipalities that have adopted the guidelines in full.

Human factors

Railways continue to invest their own capital in safety-supporting infrastructure, rolling stock and technology programs, with very positive long-term results. However, human factor-caused incidents continue to contribute to a significant proportion of all incidents in the rail sector: in 2016, more than 50 per cent of all incidents in the rail sector were caused by human factors[29].

A closer look at main-track derailment causation highlights that human factor-related incidents are not decreasing at a rate comparable to other causes such as equipment and track. **Figure 5** illustrates that, from 2002 to 2016, the number of mainline derailments associated with equipment, and track and infrastructure, have decreased by 66 and 63 per cent, respectively, while human actions-related incidents have increased by more than 5 per cent.

Figure 5: Causes of mainline accidents from 2002 to 2016



[29] TSB 2016 Annual Report, Statistical Addendum (Tables 4b, 5b, 6b and 10).

Safety culture

In their research, analysis and consultations, the 2007 RSA Review panel recognized the important role that safety culture can play in the effective implementation of SMS, noting that "the cornerstone of a truly functioning SMS is an effective safety culture". They put forward a series of recommendations to strengthen safety culture in the railway industry. Since the last review, a number of advancements have occurred including, but not limited to:

- The establishment of an industry-government working group that successfully produced a definition of safety culture for the railway sector[30] and development of a practical approach for assessing safety culture in the industry;
- A dedicated website, safety culture checklist and a safety management system guide with a standalone section on safety culture[31];
- A methodology and tool for completing a safety culture assessment at a railway company;
- The creation of the CN Centre for Occupational Health and Safety and the CN Professorship in Safety Culture in 2013;
- The adoption of safety culture programs by railway companies, that have rolled out corporate strategies to enhance safety culture within their respective companies; and
- The delivery of two international safety culture symposiums in Canada.

Although several efforts had been introduced and promoted by Transport Canada and railway companies to strengthen safety culture, the Lac-Mégantic tragedy underscored the importance of safety culture and its relevancy to all railways[32]. In response, and as a means to introducing a sector-based approach to advancing safety culture, RAC introduced the Safety Culture Improvement Initiative in 2013. This initiative formalized the association's commitment to ensure its members maintain effective SMS and continuously strengthen their safety culture. It includes the delivery of safety culture training to shortline railways, and the formation of a steering committee that provides a platform for Canadian and American railways to exchange information about lessons learned and best practices. It also provides access to resources from the CN Centre for Occupational Health and Safety[33].

Additional details about the evolution of safety culture in the railway industry since the last review is included in **Appendix G**.

To date, RAC's Safety Culture Improvement Initiative has exclusively financed five safety culture assessments at shortline and passenger railways, with an additional two scheduled to begin in 2017. Despite the progress made by the association and its members, more can be done through improved collaboration and financial contribution from the federal government to support research and development and safety culture improvements in the railway sector.

The partnership between the railway sector and the regulator in the U.S. to promote and improve safety culture provides a model for Canada. The Federal Railroad Administration (FRA) has made a concerted effort to invest in programs to advance safety culture in the rail industry. Most notably, in 2014 the FRA's

[30] Consisting of railways, the RAC, unions, experts and representatives from Transport Canada.
[31] Source: Transport Canada, 2017. Achieving an effective safety culture. Available at: https://www.tc.gc.ca/eng/railsafety/rsc-615.htm
[32] Railway Investigation Report R13D0054 – finding #15 (p.130)
[33] Additional information about the Centre can be found at: http://www.smu.ca/centres-and-institutes/cncohs.html

Office of Research and Development granted $250,000 for a pilot project to conduct safety culture assessments of shortline and regional railroads. With this grant, the American Shortline and Regional Railroad Association worked in cooperation with the National Transportation Systems Center (Volpe Centre) and the University of Connecticut to develop a comprehensive safety culture assessment program that includes online surveys and interview templates to engage railway staff at all levels, including evaluation and follow-up processes. The pilot study was declared a success and Congress appropriated $2 million per year to support the initiative in 2015 and 2016.

The RAC believes that the Government of Canada should invest in a program to support the continued development of safety culture in the rail industry. Funding support can be used to enable shortline railways to complete safety culture assessments, to develop safety culture implementation tools such as best practices and "how-to" resources and to support associated research at universities and academia or other centres of excellence.

Recommendation 7: The RAC recommends that the Minister of Transport allocates the resources necessary to create a program that supports (a) continuous assessment and improvement of safety culture for shortline railways, and (b) safety culture research in the railway sector.

Legalization of marijuana

The Government of Canada is committed to the legalization of marijuana by 2018. While the railway sector appreciates the efforts of the Task Force on Marijuana Legalization, Regulation and Restriction, we believe that their recommendations fell short of setting a path forward that will provide railway companies with a regulatory framework that will enable them to address marijuana use in the workplace proactively rather than reactively[34].

It is widely understood that the consumption of marijuana has effects which increase risk to employees and the public. In the railway sector, the use of marijuana is not conducive to safe workplace behavior and its consumption can diminish, rather than encourage, a strong safety culture. Operating a locomotive or working in a rail yard while under the influence of alcohol or drugs is a major safety concern for railways. If not addressed, the effects to employees, the public and the environment can be dire.

The RAC strongly encourages the government to establish a national cut-off level to determine impairment with a practical and legally acceptable workplace testing protocol for marijuana. However, legal precedent in Canada has limited the ability of employers to test workers randomly and before incidents occur for alcohol and drugs[35]. As a result, railways are forced to adopt a zero-tolerance policy that relies largely on testing for substance abuse after an incident has occurred.

To ensure that there is symmetry across the continental railway network, and for our members who operate in Canada and the U.S., we recommend that the government aligns national screening standards with those that already exist in the U.S. These standards, which include providing companies with the authority to introduce random drug testing, ensure that U.S.-based railway employees comply with federal

[34] The Task Force report can be viewed at: https://www.canada.ca/content/dam/hc-sc/healthy-canadians/migration/task-force-marijuana-groupe-etude/framework-cadre/alt/framework-cadre-eng.pdf
[35] Supreme Court of Canada 2013-06-14. Docket 34473. Available at: https://scc-csc.lexum.com/scc-csc/scc-csc/en/item/13106/index.do?r=AAAAAQAQZHJ1ZyBhbmQgdGVzdGluZwE

alcohol and drug testing laws, and provide CN and CP with the means to dismiss employees if they test positive, but only in the U.S. In general, the U.S. regulatory framework fosters a proactive approach that Canada should leverage as a means to achieving maximum safety benefits in the rail sector.

Recommendation 8: The RAC recommends that the Government of Canada establish a national cut-off level to determine impairment from marijuana and should create national screening standards that are equivalent to the authorities available to employers in the U.S.

Technology

Section 3.0 includes a summary of how railways invest in, and deploy, a variety of technologies to enhance rail safety and manage risk. Research and development is supported by extensive partnerships with railways, governments and academia throughout Canada and the U.S. While technology and innovation continues to produce a number of options for improving rail safety, the railway sector continues to work with Transport Canada and other relevant stakeholders to assess the feasibility of Locomotive Video and Voice Recorders (LVVR) and Enhanced Train Control (ETC).

Locomotive Video and Voice Recorders

LVVR systems are designed to record activity and conversations within the operating cab of locomotives as the train proceeds down the track. The immediate safety benefits associated with this technology are numerous and have been acknowledged by the Transportation Safety Board (TSB)[36], and by the Minister of Transport in the Transportation 2030 Plan and through the introduction of Bill C-49 on May 16, 2017. The RAC commends the government's efforts to support LVVR and the provisions put forward in Bill C-49.

Recommendation 9: That the provisions presented in Bill C-49 for LVVR become law.

Enhanced Train Control

In their investigation of the tragic 2012 accident involving VIA Rail passenger train no.92, the TSB recommended that freight and passenger railways implement physical fail-safe train controls in specific corridors[37]. In response to this recommendation, the Advisory Council on Railway Safety (ACRS) created a working group with a mandate to study existing and developmental fail-safe train control systems and to evaluate their suitability for Canada's railway operations. The RAC supports the process put in place by ACRS and looks forward to reviewing the working group's recommendations in the future.

Recommendation 10: The RAC recommends that the existing, co-operative approach (i.e. between Transport Canada and industry) to reviewing Enhanced Train Control technologies and developments, applicable to the Canadian context, continue to be actively pursued.

Lastly, RAC and its member railways appreciate Transport Canada's support for railway safety technology development including support to the Transportation Development Centre, Canadian Rail Research Laboratory at the University of Alberta and the Railway Research Advisory Board. However, we believe that development and deployment of safety technology could be further enhanced by reducing delays in

[36] Source: TSB Watchlist 2016. Available at: http://www.bst-tsb.gc.ca/eng/surveillance-watchlist/rail/2016/rail-03.pdf
[37] Source: TSB, 2013. TSB recommendation R13-01. Available at: http://www.bst-tsb.gc.ca/eng/recommandations-recommendations/rail/2013/rec-r1301.pdf

the exemption and approval processes; and by recognizing that proven, effective technology can render some current regulatory requirements obsolete.

Recent examples of not capitalizing on the full benefits of safety technologies include CP's experience with its automated train brake inspection process, and with its automated joint bar inspection process. In both cases there was considerable pressure from the regulator to maintain the current, largely manual processes, even though the automated systems were proven superior. Indeed, the automatic train brake inspection process still operates under an exemption, some six years after the program was undertaken.

Recommendation 11: the RAC recommends that Transport Canada completes a comprehensive review of regulations and rules so that redundant regulatory requirements are repealed and the use of innovation and technology can be accelerated.

Shortline railways

Canada's shortline railway sector is a critical component of the rail-based supply chain. More than fifty shortlines own roughly 20 per cent of the national rail network, servicing an extensive customer base from mining, forestry, agriculture, manufacturing and other sectors. Shortline railways compete directly with a subsidized trucking sector.

Compared to their Class I partners, shortlines operate shorter trains on low-density lines at slow speeds, and over an average length of haul of 140 kilometres. Between 2004 and 2015, the accident rate – a measure of accidents as a percentage of workload – among Canada's shortline railways fell by 63 per cent and currently stands at 5.23 accidents per billion gross ton-miles.

The costs of operating a shortline railway are increasing in correspondence with a growing regulatory agenda in Canada. New costs associated with grade crossings, SMS, insurance and carbon are just a few examples of how regulations introduced recently are affecting the shortline railway business model. These costs have a demonstrable impact on a shortline's ability to improve its infrastructure by diminishing the amount of capital available for investment.

A closer look at operating ratios (a measure of operating expenses as a percentage of operating revenues) and historical capital investment trends in the rail industry highlights that shortline railways typically maintain an operating ratio in the order of 90 per cent and, on average, allocate 10 to 12 per cent of their revenues back into their capital each year. By comparison, CN and CP maintain operating ratios in the 60 per cent range, and can reinvest approximately 18 to 20 per cent of their revenues annually.

Many shortlines operate on older, lighter rail, which allows for a maximum gross weight of 263,000 pounds per car, well below the Class I standard of 286,000 pounds per car. In addition, lighter rail forces shortlines to operate trains at lower speeds, in some cases 16 kilometres per hour. The result is reduced network fluidity, more congestion and decreased overall efficiency to move goods to market. Immediate and long-term capital investment are required to meet increasing regulatory obligations, rehabilitate or replace aging critical infrastructure such as bridges, and increase capacity to accommodate heavier traffic and, in general, improve safety conditions.

However, few government programs have effectively provided funding to shortline railways. For example, under the 2007 – 2012 Building Canada Fund (BCF), only two shortline railways received funding. The

total amount of support received by the two railways represented 0.07 per cent of all funding allocated under the BCF. While shortline railway projects are eligible for funding under the Community Improvement Fund or the Provincial-Territorial Fund of the renewed New Building Canada Plan for 2014 – 2024, applications require municipal or provincial governments to select them for infrastructure improvement projects. Experience to date proves that municipalities and provincial governments are more inclined to seek federal funding to focus on their government-owned assets (e.g. local roads and highways, public transit) rather than shortline railways.

Contrary to Canada, the U.S. provides numerous effective funding and financing programs to their shortline railways. These programs, which are provided by federal and state governments, comprise of:

- Grant programs (e.g. TIGER, Section 130 Railways-Highway Grand Crossings Programs);
- Concessional (low-cost) lending programs (e.g. Railroad Rehabilitation & Improvement Financing program); and
- Tax credit programs (e.g. Federal Railroad Track Maintenance Tax Credit).

These programs create multiple benefits by providing the capital necessary to rehabilitate or increase rail line capacity, improve grade crossings and meet new grade crossing regulations and, in some cases, rehabilitate and repair rail infrastructure that has been damaged by a natural disaster. Several programs allow shortline railways to apply directly and without a government co-sponsor.

Recommendation 12: The RAC recommends that the government create a capital funding program dedicated exclusively to shortline infrastructure investment and to reduce the costs associated with new rail safety requirements.

The funds would be accessible through a mechanism, which would limit contributions to the lesser of 50 per cent of the eligible investment in the infrastructure or $15,000 per mile of track of the network during the first two years, and to $5,000 per mile for the remaining five years.

This fixed funding amount per track mile would be similar to the existing U.S. program for shortlines, but would be accelerated in the first two years to foster shovel-ready projects.

Security

The rail industry has a long history of working with the government and relevant stakeholders on maintaining the security of goods and people moved by rail. Initiatives include:

- A MOU on Security that was first signed by RAC and Transport Canada in 1997 and renewed in 2007, requiring RAC members to develop, test and revise a risk-based security plan annually;
- Railway participation in border security programs such as the Canada's Partnerships in Protection and the Customs Trade Partners against Terrorism in the U.S.;
- The development of a confidential and secure approach for railways to regularly share information about dangerous goods carried by rail with designated Emergency Planning Officials in municipalities.

Collectively these initiatives allow railways to effectively prevent, mitigate, respond to, and recover from security threats. However RAC believes that security-sensitive information (e.g. waybills including

information about dangerous goods) should be protected under confidential terms and not circulated to a third party or made available to the public. Unfettered access to security-sensitive information can potentially expose the railway sector and the communities it transits through to terrorism or other public safety risk.

While subsection 39.2 (1) under the RSA offers some protection of railway security documents, the RAC believes that legislation focusses narrowly on public documents such as rules approved by the Minister, inspectors orders and emergency directives. More can be done to ensure that security sensitive information within a railway company such as a security plan or risk assessment is protected under law. Creating protection measures under Canadian legislation would also be a step closer to streamlining protection measures available in the U.S. under 49 CFR, part 1500.

The RAC also believes that there is a clear federal role to support railway security plans by improving the railway sector's access to intelligence and potential security threats to the railway network and the communities it operates through.

Recommendation 13: the RAC recommends that security-sensitive information should be defined in the *Railway Safety Act* so that this information is adequately protected and only made available under the appropriate terms and conditions set forth by a railway company.

6.0 Recommendations

As a means to improving rail safety in Canada, RAC recommends that:

Recommendation 1: The foundational structure of the RSA – i.e. robust regulatory, inspection and enforcement powers vested in Transport Canada; the requirement for each company to have an effective SMS; and the rulemaking provisions – be maintained, but with an important shift for SMS to a performance-driven and risk-based focus.

Recommendation 2: The *Railway Safety Management Systems Regulations* be amended to ensure that SMS requirements, audits and supporting enforcement measures are commensurate with a railway company's risk profile, safety performance and compliance history.

Recommendation 3: Transport Canada and the rail industry develop a risk-based framework (supported by performance indicators) that prioritizes safety issues, and directs industry and departmental efforts towards systemic risks, and not towards resolution of episodic and low-risk events.

Recommendation 4: The approach to managing grade crossings in Canada be improved by:

- Dramatically increasing federal funding available for grade separations, crossing upgrades and crossing closures;
- Continuing to make enhanced RSIP funding and programming available to commuter agencies, municipalities and provincially regulated railways;

- Establishing and prioritizing crossing programming on a risk basis, with input and ongoing management from all levels of government, Transport Canada and the railway operators[38];
- Transferring the authority to open new crossings from the Canada Transportation Agency to Transport Canada, and ensuring that public safety is the primary consideration in new crossing approvals[39]; and
- Ensuring that proponents of new crossings provide a complete and comprehensive safety assessment to the road authority, the railway company and Transport Canada. This assessment must include a clear demonstration that there is no acceptable or appropriate alternative to the proposed crossing.

Recommendation 5: The Minister of Transport directs provincial transportation ministers to adopt the RAC/FCM Proximity Guidelines in full. Included in this requirement should be a mandatory setback for new development within proximity or rail operations of 30 metres with a federal backstop provision[40].

Recommendation 6: That federal funding under RSIP for crossings infrastructure should only be accessed by municipalities that have adopted the guidelines in full.

Recommendation 7: The Minister of Transport allocates the resources necessary to create a program that supports (a) continuous assessment and improvement of safety culture for shortline railways, and (b) safety culture research in the railway sector.

Recommendation 8: The government establishes a national cut-off level to determine impairment from marijuana and should create national screening standards that are equivalent to the authorities available to employers in the U.S.

Recommendation 9: The provisions presented in Bill C-49 for LVVR become law.

Recommendation 10: That the existing, co-operative approach (i.e. between Transport Canada and industry) to reviewing Enhanced Train Control technologies and developments, applicable to the Canadian context, continue to be actively pursued.

Recommendation 11: That Transport Canada completes a comprehensive review of regulations and rules so that redundant regulatory requirements are repealed and the use of innovation and technology can be accelerated.

Recommendation 12: The government creates a capital funding program dedicated exclusively to shortline infrastructure investment and to reduce the costs associated with new rail safety requirements.

[38] These programs should take a corridor or geographic approach to produce an integrated program of grade separations, crossing closures and upgrades and, where warranted, new crossings.
[39] Under this arrangement we believe that cost apportionment responsibilities should remain with the Canada Transportation Authority.
[40] If a province has not passed proximity guidelines with this provision, then it should be a federal requirement. If the province does adopt the guidelines with a 30-metre setback, then the federal provision does not apply.

Recommendation 13: That security-sensitive information should be defined in the *Railway Safety Act* so that this information is adequately protected and only made available under the appropriate terms and conditions set forth by a railway company.

Appendix A: List of RAC Members

Alberta Prairie Railway
Amtrak
ArcelorMittal Infrastructure Canada s.e.n.c.
Barrie-Collingwood Railway
Battle River Railway, NGC Inc.
BCR Properties Ltd.
Big Sky Rail Corp
BNSF Railway Company
Boundary Trail Railway Co.
Cape Breton & Central Nova Scotia Railway
Capital Railway
Carlton Trail Railway
Central Maine & Québec Railway Canada Inc.
Central Manitoba Railway Inc.
Chemin de fer Arnaud Quebec
CN
Compagnie du Chemin de Fer Lanaudière Inc.
Canadian Pacific
CSX Transportation Inc.
Eastern Maine Railway Company
Essex Terminal Railway Company
Goderich-Exeter Railway Company Ltd.
Great Canadian Railtour Company Ltd.
Great Western Railway Ltd.
Hudson Bay Railway
Huron Central Railway Inc.
Keewatin Railway Company
Knob Lake and Timmins Railway
Kettle Falls International Railway, LLC
Last Mountain Railway
Metrolinx
New Brunswick Southern Railway Company Ltd.
Nipissing Central Railway Company
Norfolk Southern Railway
Ontario Northland Transportation Commission
Ontario Southland Railway Inc.
Orangeville Brampton Railway
Ottawa Valley Railway
Prairie Dog Central Railway
Québec Gatineau Railway Inc.
Québec North Shore and Labrador Railway
Réseau de transport métropolitan
The Roberval and Saguenay Railway Company
Romaine River Railway Company
Société du chemin de fer de la Gaspésie
South Simcoe Railway
Southern Ontario Railway
Southern Railway of British Columbia Ltd.
St. Lawrence & Atlantic Railroad (Québec) Inc.
Sydney Coal Railway
The Toronto Terminals Railway Company Ltd.
Train Touristique de Charlevoix Inc.
Trillium Railway Co. Ltd.
Tshiuetin Rail Transportation Inc.
Union Pacific Railroad Company
VIA Rail Canada Inc.
West Coast Express Ltd.
White Pass and Yukon Route Railroad