CN Submission to the RSA Review 2017-2018

September 22, 2017

CN Submission

CN is pleased to provide this submission to the Panel of the Railway Safety Act Review 2017-18. You will note that we have attempted to answer all questions identified by the Panel on June 23, 2017 in its Consultation Guidance Document.

1. Statements of Principle

To begin, CN wishes to emphasize that it strongly supports all initiatives aimed at further strengthening the safety of railway transportation in Canada. The current Review is taking place one year prior to the statutory deadline established under the *Railway Safety Act* (the "RSA") and CN supports this approach, which should accelerate the implementation of safety improvements. Safety is a core value at CN and our goal is to become the safest railway in North America. To that end, CN strongly believes in evidence-based policy and regulation in order to ensure that an appropriate level of attention and resources are directed to areas where they can have the most impact. Through this submission, CN wants to share with the Panel its direct experience as a North American Railway, and provide recommendations and suggestions based on that experience as well as more general facts, data and research, that build on the strength of the existing framework with a view to improving its efficiency in providing the safest environment possible.

2. CN's Business Model Integrates Safety

Railway operation is a heavy industrial activity which involves the handling of large, heavy and moving equipment in a 24 hour per day, 7 day per week, outdoor environment. CN operates a network of 19,600 miles, which on an average day handles approximately 120,000 rail cars and 1,600 high horsepower locomotives. Of CN's roughly 23,000 employees, 80% are unionized and 90% directly interact with the operation. To achieve our vision of becoming the safest railroad in North America, we are continuing to invest in safety training, technology, and infrastructure improvements. We are also intensely focused on developing a safety culture whereby each and every employee puts their own safety and the safety of others as the top priority. We believe that safety is foundational to delivering the level of operational and service excellence that is required to drive our sustainable, long-term business success.

As detailed more fully below, CN works to embed a safety culture in all aspects of its operations and works to ensure effective engagement of all stakeholders in ensuing safe railway operations.

2.1. Crossings and Signal Bungalows

All CN crossing equipment and signal bungalows that house signal equipment, prominently display the phone number of CN's 24/7 emergency line. This enables rapid communications to CN in case of an incident or the report of dangerous situations.

2.2. The CN Police

The concept of railway police in Canada was introduced more than 100 years ago in recognition of the fact that protecting a railway network could not be left to public police organizations alone. The RSA provides for the appointment of railway police constables who enforce part III of the *Canada Transportation Act* (CTA) and the laws of Canada or a province "in so far as their enforcement relates to the protection of property owned, possessed or administered by a railway company and the protection of persons and property on the property".

Beyond the traditional mandate of law enforcement, the CN Police assigns a large portion of its efforts to community outreach with a very strong focus on safety. For example, constables visit schools and community organizations to make presentations respecting the risks associated with trespassing on railway property or not respecting signals at road/rail crossings. Other educational activities of the CN Police in various public forums take place in the context of "Operation Lifesaver", a national program jointly administered by the rail industry and Transport Canada. In a similar fashion, CN Police constables are joined by other CN colleagues during "Rail Safety Week", an initiative where all CN employees are encouraged to take the "Safety Pledge" and actively inform their communities about rail safety with emphasis that this is a shared responsibility.

The CN Police 24-hour emergency contact line is also the contact point available to emergency first responders and members of the public to report any urgent safety or security issue. The CN Police assist in the coordination of emergency response to ensure the efficient use of resources and to minimize the impacts to the public or environment.

A leader in its field, the CN Police contributes significantly to the CN community outreach.

2.3. Community Outreach and Information Sharing

CN operates within a very large number of communities throughout Canada. In our experience, when communities and their citizens better understand the nature of CN's activities in their area, they are more alert to the risks of accidents and more receptive to the need for a cooperative approach to risk mitigation.

CN deploys great efforts and resources in reaching out to communities and volunteer based associations through initiatives that increase awareness with respect to railway safety in

addition to providing information aimed at preventing incidents and coordinating accident response when they occur.[1]

2.3.1. CN Inquiry Line/Email

CN's toll-free number operates from Monday to Friday providing callers with the opportunity to speak to a person (not voice mail) to discuss any matter respecting CN. Email likewise provides a means to communicate directly with CN. The role of CN employees assigned to those activities is to provide the information requested or to facilitate issue resolution. This service is largely used. Based on metrics of the first half of this year, it will handle 74,000 email and phone requests in 2017, a 39% increase from last year.

2.3.2. Proactive Outreach

While direct communication over the telephone or by email provides a good window to the outside world, CN also proactively reaches out to communities and neighbours in an effort to educate and engage.

2.3.3. Community Partnership Programs

CN supports many national and community-based non-profit organizations. This engagement is focused on safety, the environment, diversity and education, as well as caring and solidarity with communities. Hundreds of CN employees known as Railroaders in the community, give their time to worthy causes to which CN also provides grants. This program is largely acclaimed for its innovative formula where various causes receive a contribution in kind from CN employees through their personal engagement and also a financial contribution from CN which assist in the achievement of their goals.

2.3.4. Aboriginal Peoples and Communities

CN operates within or adjacent to nearly 200 different reserve lands of more than 110 First Nations and some Métis territories, in 8 provinces. CN has a dedicated team whose task is to proactively continue improving CN's relations with Aboriginal communities.

To that end, CN adopted in 2013 a CN Aboriginal Vision by which it commits to developing respectful, and mutually-beneficial relationships with all Aboriginal people, while ensuring service to its customers. CN is involved at various levels in Aboriginal Communities along its network. The specific needs of the population are identified to provide meaningful contributions. Likewise, education programs are put forward respecting safety. CN engages Aboriginal Peoples and Communities with a progressive approach. In 2015, CN enrolled in the

[1] We include as Appendix 1 CN's community outreach document entitled "Partnering With Our Neighbours" which provides a complete account of CN's initiatives with the communities where CN's network is located.

Canadian Council for Aboriginal Business' Progressive Aboriginal Relations (PAR) program, and officially became a PAR Committed company in September 2016. This designation signals to Aboriginal Communities that CN is a good business partner, a great place to work, and dedicated to the prosperity of Aboriginal communities.

The second aspect of CN's Aboriginal Vision is to be recognized by key stakeholders, including customers and Governments, as having a sound approach to engaging with Aboriginal Communities and having a respectful and sustainable relationship with Aboriginal people across its network. To that effect, CN was honoured to be the winner of the Indigenous Relations – Best Practices category of the 2017 Alberta Business Awards of Distinction. This award is given to a non-Indigenous business that demonstrates outstanding achievements in Indigenous relations, including economic development, employment and training, and Indigenous community support and that is recognized by the Indigenous community as such.

2.4. Rail Operations – Training

The fact that adequate training reduces accidents is well documented. Rail activities involve numerous operations performed by various groups of employees including: the construction and maintenance of infrastructure and equipment, train operations, and rail traffic control. Proper employee training is critical in ensuring employees undertake their work in a manner that prioritizes their own safety as well as the safety of others.

2.4.1. CN Training Centres

CN's two state-of-the-art training centres in Winnipeg, MB, (the CN Claude Mongeau National Training Centre) and Homewood, IL, provide CN employees with hands-on and classroom training for all key railway jobs with a constant and clear focus on safety as a core value. Employees receive training in ultra-modern indoor labs with equipment such as locomotive simulators. Outdoor labs are equipped with dedicated rolling stock, track and wayside equipment, as well as field training equipment. Experienced instructors/mentors deliver a robust curriculum. Since the opening of the campuses, over 15,000 employees have received training both for onboarding new employees and recurrent qualifications.

2.5. Safe Handling Awards

Canada's transportation logistics chain is composed of numerous parties with each having their specific role in ensuring the safe transportation of commodities. In 1992, CN introduced the "CN Safe Handling Awards" as a way of recognizing customers who have demonstrated their commitment to the safe handling of their dangerous goods (DG) shipments. Every year, a review is conducted of the releases that occurred involving dangerous goods shipments transported by CN in the previous calendar year to determine which customers are eligible to receive an award. While good safety practices are implemented on the basis of the obvious

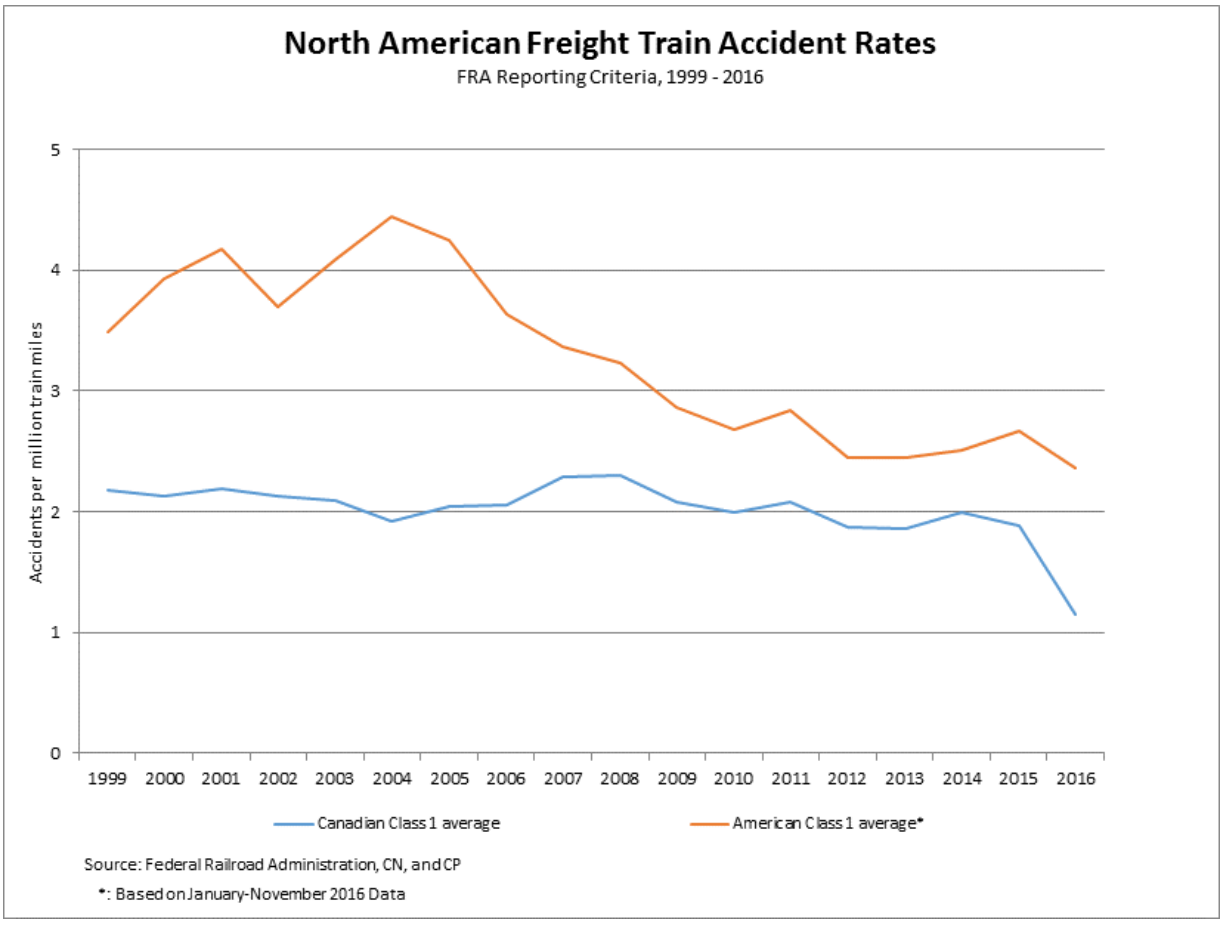
need to prevent accidents, the CN awards encourage shippers in "doing the right thing" by recognizing those who make a difference.[2]

3. Canadian Safety Results

3.1. Safety Results

In considering potential changes to the RSA, we believe it is important to first take stock of the state of railway safety in Canada. It is interesting to note that the record of Canadian railways compares positively with the rest of the North American industry. The following graph shows that this record has been consistent for over 15 years.

Looking at the data, one can see that, over the last 15 years, the safety performance of Canadian railways compares positively with the rest of the North American industry.



[2] We enclose as Appendix 2 the criteria used by CN to determine award recipients and a report of the 2016 award ceremony.

This record does not suggest that safety cannot be further improved. It certainly does, however, support the following conclusions:

- The current RSA has been effective in realizing its objective to improve further the safety of railway operations in Canada;
- Transport Canada's actions under the existing framework of the RSA are delivering positive results; and
- Canadian railway companies have implemented measures that have improved safety, notwithstanding an overall increase in the volume of traffic moved.

In this context, it is clear that the Canadian railway system does not require a major overhaul. CN accordingly agrees with the approach of the Guidance Document, which invites stakeholders to focus their efforts on specific issues where progress can be achieved.

4. The Framework of the RSA: A Shared Responsibility

The RSA is a framework statute establishing a structure for the regulation and enforcement of safety and security standards for federally regulated railway companies operating in Canada. The respective roles of the Minister of Transport and the industry are clearly delineated under the RSA. While railways, in the context of their operations, initiate certain provisions of the RSA, the Minister is vested with the ultimate authority to set standards and enforce this statute.

It is CN's experience that the RSA provides Transport Canada with a robust regulatory regime of inspection, audit and enforcement. That regime, when coupled with the requirement for Canadian railways to have Safety Management Systems (SMS) to provide a framework under which they must develop and embed a safety culture in all aspects of their operations, puts in place the means to strike an effective balance that ensures the effective engagement of all stakeholders in safe rail operations. CN has nevertheless noticed that achieving the proper balance between direct regulatory compliance and SMS can be a challenge.

The Canadian experience confirms that to achieve the highest standard of safety, the engagement of all stakeholders is required. By way of example, having grade crossing closure programs at Transport Canada, while a worthy endeavour in itself, may nevertheless fail to generate the desired results without adequate funding or, worse still, if its impact is neutralized by having new grade crossings approved by the Canadian Transportation Agency at the request of road authorities or private citizens. Later, we will discuss specific issues such as proximity of new developments or rail/road crossings whereby progress could be enhanced by ensuring all relevant stakeholders (not just railways) are implicated and held accountable. Crossings will be discussed in section 14.

4.1. Safety Management Systems ("SMS")

4.1.1. The Need for SMS

The purpose of SMS is to regulate railways to develop and maintain a safety structure of their own by encouraging initiatives which supplement the standards under the RSA.

4.1.2. The Introduction of SMS

Consistent with these principles, the 1999 RSA amendments that created the regulatory framework for SMS also included a definition for safety management system: "a formal framework for integrating safety into day to-day railway operations and includes safety goals and performance targets, risk assessments, responsibilities and authorities, rules and procedures, and monitoring and evaluation processes". The same definition is used today.

The 1999 amendments also included a Ministerial power that allowed the Minister to order a company to take "corrective measures" if the Minister was of the opinion that a company's SMS (i.e. its processes and procedures) had deficiencies that risked compromising railway safety. According to House and Senate debates, this authority was intended to meet specific policy goals including:

- requiring railway companies to go "beyond" the basic regulatory requirements (for example, as found in rules or regulations);
- providing a consistent basis for companies to monitor safety performance and compliance;
- promoting a safety culture within railways;
- enabling railways to demonstrate their commitment to safety; and
- bringing a safety culture into the company offices and boardrooms.

4.1.3. The First SMS Regulations - 2001

The first iteration of the *Railway Safety Management System Regulations* (Initial Regulations) came into force in March, 2001. These Initial Regulations included minimal requirements:

- A requirement for railway companies to "implement and maintain" a SMS with specific components (safety policy, performance targets, clear levels of responsibility, system for involving employees, system for identifying regulatory requirements, process to identify safety issues, risk control strategies, system for reporting incidents, system for ensuring training, procedures for safety data assessment, procedures for internal safety audits, system for monitoring corrective actions, documentation describing the SMS);

- A one-time requirement to file certain basic information about the railway company and its operations, as well as a description of certain SMS components; and
- An annual requirement to file its safety performance in relation to targets; its accident rates, and any changes made to the descriptions in the one-time filing.

Those initial Regulations included little to no detail regarding the criteria or the quality of each component of a SMS, nor did it outline performance targets for the SMS to achieve.

4.1.4. Amendments to the SMS Regulatory Authority - 2012

The regulatory authority for SMS found in section 47.1 was overhauled in 2012. Significant details were added, including:

- Authority to require that a SMS include:
    - an accountable executive;
    - the implementation of remedial actions to maintain the highest level of safety;
    - the continuous monitoring of the level of safety achieved;
    - the implementation of non-punitive internal reporting;
    - the involvement of employees in the operation of the SMS;
    - authority to establish the criteria to which the safety management system must conform – including principles of fatigue science applicable to scheduling.

Definitions in relation to “fatigue science” and “highest level of safety” were also added.

The government praised the amendments for their emphasis on the “central importance of safety management systems and for including provisions requiring rail companies to appoint an accountable executive for safety and for introducing a system for non-punitive reporting by employees”.

4.1.5. SMS Regulations - 2015

Acting under the 2012 amendment, Transport Canada repealed in its entirety the Initial Regulations and replaced them with the new *Railway Safety Management System Regulations, 2015* (2015 Regulations), which came into force in April, 2015. These more detailed regulations “establish the minimum requirements with respect to the safety-management system that a company must develop and implement for the purpose of achieving the highest level of safety”.

In essence, these regulations require many of the same SMS components as the Initial Regulations, but added specificity around the details that each process, policy or method must include. In that sense, the 2015 Regulations are providing increased information as to the

content of SMS, and their purpose. The 2015 Regulations also included requirements related to record retention, filings to the Minister, and communication to and consultation with employees. A new component was also added: that companies "apply the principles of fatigue science when scheduling the work of the employees".[3] In addition, the 2015 Regulations specified situations in which a risk analysis must be undertaken, thereby requiring railway companies to address certain risks in certain situations.

4.1.6. Amendments to the SMS Regulatory Authority - 2015

In 2015, under Bill C-52, the definition of fatigue science was repealed. Consequently, the s. 47.1 regulatory authority for employee scheduling within a SMS was broadened to apply to "the management of employee fatigue". Also, a new Ministerial power was added to allow the Minister to "order a company that is implementing its safety management system in a manner that risks compromising railway safety to take the necessary corrective measures." This new power allows the Minister to assess not only the policies and procedures of a SMS, but a company's proper implementation of these policies and procedures.

4.1.7. CN Proposal

CN's experience respecting SMS has been generally positive. For CN, SMS has achieved its policy objective of incorporating safety into daily operations, at all levels of the company. Through interactions with Transport Canada, CN has supported the implementation of this approach in Canada and CN looks forward to working with all stakeholders to implement the recent 2015 amendments.

In CN's view, considering recent amendments, no additional changes to the SMS structure are required at this time.

5. Locomotive Voice and Video Recording

Parliament is currently reviewing Bill C-49, which proposes amendments to the RSA in order to mandate the use of Locomotive Voice and Video Recording devices.

5.1. CN Proposal

CN supports the introduction of this technology in Canada through Bill C-49 and firmly believes it will greatly enhance accident investigation and support the development of new recommendations aimed at improving rail safety in Canada.

[3] See our section further dealing with fatigue management.

6. Emergency Response

6.1. The Transportation of Dangerous Goods Act, 1992

Emergency response is a matter governed by Part 7 of the *Transportation of Dangerous Goods Act, 1992* (the "TDGA") which requires that before a person offers for transport or imports certain dangerous goods, including the transportation of those goods, the person must have an approved Emergency Response Assistance Plan (ERAP) and ERAP is a plan that describes what is to be done in the event of a transportation accident involving dangerous goods. CN's ERAP is filed with and approved by Transport Canada.[4]

CN's ERAP is designed to explain the framework and procedures in place for CN's operations to respond safely and effectively to an emergency. In doing so, it provides, *inter alia*, for the integration of tactical plans with outside agencies, an incident response management system, and appropriate emergency response training and exercises.

CN's ERAP is a complete, organized and standardized response to incidents. Since its inception, it has proven to be a fully functional regime. It creates a real partnership with regulators and communities in which CN operates. This success is illustrated by the fact that CN has earned a National Achievement Award from Transportation Community Awareness and Emergency Response (TRANSCAER®) in recognition of its ongoing work to help communities understand the movement of hazardous materials and what is required in the event of transportation incidents.

The national TRANSCAER® award recognizes extraordinary achievements that support the organization's emergency preparedness efforts. CN has been TRANSCAER® award-winner for four consecutive years.

6.2. Duty to Respond

The TDGA also provides that persons in charge of the means of containment, including railway companies carrying dangerous goods, have a duty to respond to certain situations. It allows railways to take measures in the interest of public safety. These obligations are imposed by Subsection 18(2) which requires any person who has the charge, management or control of a means of containment to:

> "Take all reasonable emergency measures to reduce or eliminate any danger to public safety that results or may reasonably be expected to result from a release."

CN has developed an expertise in railway incidents and spills. In case of railway accidents involving dangerous goods causing a threat to public safety, a CN team of trained professionals

[4] We file CN's Emergency Response Plan as Appendix 3.

and contractors is deployed to perform a threat/damage assessment as well as critical tasks, such as product transfer and depressurization, in order to reduce the danger to the public. CN needs to have full authority under these circumstances in order to perform all actions required to reduce the threat posed by these dangerous goods. CN experts can also assist in certain situations even if CN is not involved in the release, as it did in the Lac Mégantic event for example.

Moreover, CN developed and solidified partnerships to ensure the highest degree of safety for the public and as such, CN is of the view that this regime should not be modified.

6.3. CN Proposal

The Emergency Response Assistance Plan as governed by the TDGA should not be amended or modified under the current RSA Review. Further, the current duty to respond to emergency situations should continue to enable railways to take all reasonable measures necessary to address the situation in the interest of public safety.

7. Rule-Making

CN is of the view that the current rule-making process under the RSA is an effective approach to regulating railway activities in Canada. Rules provide flexibility to Transport Canada to react quickly when issues require government action. They also involve consultations with stakeholders which ensure that the rules are technically feasible to address the matter at hand.

7.1. Regulations v. Rules

The federal legislative framework operates using two main instruments. The first such instrument consists of statutes adopted by Parliament acting in its legislative function. The second legislative instrument consists of regulations. Regulations are secondary-legislation, typically made by Governor-in-Council, that are both supported and limited by a regulatory power found in a statute. While the Governor-in-Council usually makes the regulation, the regulatory policy and text is often proposed by a Minister supported by a subject-matter expert department. Regulatory powers are included in statutes in order to allow for legislation to address numerous complex and technical activities that change over time.

As the enactment of regulations is an extension of Parliament's legislative powers, the regulation making process is subject to a framework found in the *Statutory Instruments Act* and administered by the Treasury Board. To ensure transparency and scrutiny, regulation-making involves numerous steps which provide procedural safeguards. In total, twelve steps are identified in the *Guide to the Federal Regulatory Development Process*[5] which structure the

[5] https://www.canada.ca/en/treasury-board-secretariat/services/federal-regulatory-management/guidelines-tools/guide-federal-regulatory-development-process.html.

adoption of regulations in Canada. While those steps guarantee due consideration of all aspects associated with the subject matter they cover, they also require time. The Guide indicates that 6 to 24 months is the reasonable period to allow the completion of the process but it is also clear that more complex matters can involve a longer period.

The RSA provides regulation making power to the Governor in Council for the adoption of regulations respecting rail safety and follows the process for the adoption of regulations. Where the RSA is different from most of federal statutes is in the rule making power which is another option in addition to Regulations, under which binding rules can also be adopted. The 1994 Review of the RSA described in its report "On Track" the rationale behind rule-making:

> A less formal and less expensive approach is to require the railways to develop and implement their own safety rules, subject to federal approval and stakeholder consultations. The rule-making regime is also open to government initiation, in that the Minister may require a railway company to make a rule. This RS Act innovation allows for a faster response to changing circumstances and would appear to be an efficient replacement for regulations.

Rules may be an exception to the process of the *Statutory Instruments Act*, but CN remains of the view that both the industry and the public benefit from rules due to their ability to be revised more quickly in order to respond to changing circumstances. CN is also pleased with the working groups established by Transport Canada to develop new rules or revise existing ones. The presence of RAC, Unions and other stakeholders contributes to the general acceptance of the rules by taking into account the views of all interested parties.

7.2. Rule-Making Safeguards

The rule-making power of the RSA is sometimes criticized as depending on the Industry's initiative. However, CN's experience with this process suggests otherwise. While the industry can initiate rule-making, the Minister can and does so when appropriate. In addition, the Minister can either direct railways to change rules or even revoke them. Those safeguards ensure that the public interest is always at the forefront of rule making under the RSA.

7.3. CN Proposal

It is CN's view that the current rule-making process under the RSA should remain in place.

8. Data

In 2007, a report entitled "Stronger Ties: A Shared Commitment to Railway Safety" was submitted to the Minister of Transport, Infrastructure and Communities. The Report recommended in 2007 that Transport Canada collect safety-related information on a proactive basis in order to prevent accidents. Acting on this recommendation, amendments were made to the *Transport Information Regulations* in 2015 to expand the scope of the information

provided by railway companies. More specifically, those regulations now include section 12.6 which enumerates the detailed safety performance data to be provided by railway companies.

CN notes that Bill C-49, currently under review by Parliament, will significantly expand the scope of the information provided by Canadian railways to Transport Canada. This information will include all waybill data (movement records including shippers, origins, destinations, commodity type, etc.) and information respecting service/performance indicators. The breadth of information Transport Canada will have access to when all of these provisions are in force should enable Transport Canada to respond to industry trends.

Considering these recent amendments, further requirements respecting safety related data would appear premature. CN submits that the next review of the RSA will be better positioned to assess the adequacy of the information provided under the *Transportation Information Regulations* or the CTA.

8.1. CN Proposal

Considering the recent amendments to the *Transportation Information Regulations,* CN submits that no action is required at this time with respect to data collection.

9. Alcohol & Drug Testing

9.1. Overview

Rail operations involve heavy industrial activities performed through human interventions. This makes the rail industry inherently safety-sensitive as a lack of vigilance can have serious consequences. A railway worker's use of alcohol and drugs, whether recreational, medicinal or arising from an addiction, has the potential to create unacceptable safety risks. Impairment from alcohol and drugs by persons who work in safety-sensitive positions is therefore a significant safety concern for CN. CN has implemented numerous measures over the years to curtail such safety risks, but concerns relating to alcohol and drug use and abuse in the workplace persist and require action.

The legal framework applicable to employers in the rail industry acknowledges those inherent risks but falls short of providing adequate means to ensure safe rail operations. While railways have a responsibility to prevent workers who may be unfit for duty due to the effects of alcohol and drugs from engaging in activities that could have adverse safety consequences for themselves, their co-workers, the public and the environment, drug and alcohol testing continues to be an option available only in limited circumstances. The difficulties associated with this ongoing problem will be exacerbated by the upcoming potential legalization of marijuana.

U.S. regulators recognize the safety-sensitive nature of the rail industry and the importance of proactively using tools to manage and mitigate the risk of a workplace incident caused by the effects of alcohol and drugs by imposing a legislative requirement for mandatory random alcohol and drug testing on designated safety-sensitive positions. The identified purpose of random testing in the U.S. is to proactively deter workers from attending work while unfit for duty due to the effects of alcohol and drugs. The risk is the same in Canada. Canadian regulators should therefore take guidance from the U.S. and implement random testing to proactively deter incidents caused by the effects of alcohol and drugs.

In support of that recommendation, our submission will address the following topics:

(a) the safety-sensitive nature of the rail transportation industry;

(b) the hazardous nature of alcohol and drugs in a safety-sensitive work environment;

(c) the onerous legislative obligations faced by employers to ensure workplace safety and mitigate against safety hazards;

(d) the steps taken by CN to address risks associated with alcohol and drugs;

(e) the importance of taking proactive steps to address risks related to alcohol and drugs to ensure the safety of the workplace and the public;

(f) the success of random alcohol and drug testing in the U.S.;

(g) the need for random alcohol and drug testing in Canada to proactively address alcohol and drug related risks; and

(h) the added risks associated with drugs in the workplace in light of the legalization of marijuana.

9.2. The Rail Transportation Industry is Safety-Sensitive

The operation of heavy equipment through direct human actions (running trades), human supervision (rail traffic control) or indirect human intervention (construction or maintenance of rail network, or locomotives and cars) make the rail industry an inherently safety-sensitive work environment.[6] For this reason, a focus on safety is critical to the rail industry, and employees

[6] *Canadian National Railway Co. v. National Automobile Aerospace, Transportation & General Workers Union of Canada (CAW-Canada)* (2000), 95 L.A.C. (4th) 341, 2000 CarswellNat 2285 (Can Arb) (Picher), at para. 198 ("***CNR 2000***"); *Canadian National Railway Company v. The National Automobile, Aerospace, Transportation and General Workers' Union of Canada, Local 100 Re: Policy Grievance* (2013), 230 L.A.C. (4th) 130, 2013 CarswellNat 267 (Can Arb) (Picher), at paras. 36, 37, and 40 ("***CNR 2013***"); *Canadian National Railway Company and Teamsters Canada*

must exercise the utmost care and attention at all times. A failure to be vigilant on duty significantly increases safety risks and can be harmful to the health and safety of employees, the public and the environment.[7] The significant incidents that have occurred in the rail industry illustrate the potential for adverse safety outcomes. A failure to be fit for duty (including through the use of alcohol or drugs) caused or contributed to a number of these incidents.[8]

9.3. Alcohol and Drugs are Safety Hazards

Alcohol and drugs pose hazards that detrimentally impact workplace safety.[9] Many studies have found a correlation between alcohol and drug use and increased risk of injury. For instance, a number of Canadian studies have confirmed a connection between cocaine use and roadway incidents:

- A 2012 study by Stoduto et al. concluded that car drivers who admitted to using cocaine had a 2.11 times increased risk of collisions;[10]
- A 2008 study by S. MacDonald et al. examined cocaine users in treatment for cocaine and found they were more likely to drive recklessly and have a higher rate of traffic violations;[11] and
- A 2002 study by Dussault et al. examined cocaine use and fatal collisions. The study found that if cocaine was detected in the deceased, the risk of a fatal accident increased 4.9 times, while for cocaine in combination with other drugs, there was a 12.2 times increased risk of a fatal accident.[12]

As can be seen, cocaine and opioids are drugs which contribute to increased safety risks.

Rail Conference (2010), 2010 CarswellNat 6080 (Canadian Railway Office of Arbitration & Dispute Case No. 3928) (Picher), at para. 3.

[7] *C.E.P. Local 707 v. Suncor Energy Inc.,* 2012 ABQB 627, 548 A.R. 195, at para. 21 (risk of injury or death is high at inherently dangerous worksites); *Teamsters Canada Rail Conference* v. *Canadian Pacific Railway Company*, 2017 QCCA 479 (consumption of cocaine in the context of rail operations).

[8] See for instance: (a) 1987 Maryland Amtrak Train Collision (16 fatalities and 174 injured). Marijuana use was found to be a contributing factor to the incident.

[9] McNeilly, et al., "The prevalence of work-related deaths associated with alcohol and drugs in Victoria, Australia 2001 – 6" (2010) 16 Injury Prevention 423; F. Couper and B. Logan, "Drugs and Human Performance Fact Sheets" [2004] NHTSA, DOT HS 809 725 4/04 at 7-11; *C.E.P., Local 707 v. Suncor Energy Inc.* (2008), 178 L.A.C. (4th) 223 (Alta Arb) (Elliott) ("***Suncor Elliott***"), at para. 23

[10] G. Stoduto et al., Examining the link between collision involvement and cocaine use, (2012) 123 Drug Alc. Depend. 260.

[11] S. MacDonald et al., Driving behavior under the influence of cannabis or cocaine, (2008) 9:3 Traffic Inj. Prev. 90.

[12] C. Dussault et al., The contribution of alcohol and other drugs among fatally injured drivers in Quebec: Some preliminary results, presentation at 16th International Conference on Alcohol Drugs and Traffic Safety, Montreal, (2002) p. 423–430 & C. Dussault et al., The role of cocaine in fatal crashes: First results of the Quebec drug study, (2001) 45 Annu. Proc. Assoc. Adv. Automot. Med. 125.

Considering that alcohol and other drugs can affect the health, safety and performance conduct of employees on the job, we must take into consideration the potential ramifications associated with the tabling of legislation to legalize marijuana in April 2017. In this regard, it is important to consider the performance deficits associated with this drug. Deficits from marijuana consumption can include hallucinations, visual disturbances, difficulty concentrating, decreased motor control, decreased ability to respond quickly to events and difficulty driving safely. Studies show that people under the influence of marijuana can have poor short-term memories.[13] In light of these effects, there is, unsurprisingly, a correlation between marijuana use and injuries.[14]

Given the resulting performance deficits, it is clear that marijuana use is incompatible with working in a safety-sensitive workplace. Like cocaine, marijuana use by drivers has been associated with increased accidents and fatalities.[15] Studies reviewing the effects of marijuana have concluded that "any situation in which safety both for self and others depends upon alertness and capability of control of man-machine interaction precludes the use of marijuana".[16] Similarly, a 2006 study of marijuana users found that marijuana use was associated with lower alertness and slower response times. This study further found that users experienced working memory problems at the start and psychomotor slowing and poorer episodic recall at the end of the work week. The authors determined the results suggested a "hangover" type effect and a subtle effect on cognitive function, more apparent under cognitive load and fatigue.[17] These are all performance deficits which pose unique safety risks in safety-sensitive work environments.

Further, performance deficits can last up to two days after use of a low dose[18] of marijuana.[19] In a study involving nine pilots ingesting 20 mg of THC, the use of marijuana adversely affected performance at 24 hours after smoking. Further, despite 7 of the 9 pilots showing some degree

[13] F. Couper and B. Logan, "Drugs and Human Performance Fact Sheets" [2004] NHTSA, DOT HS 809 725 4/04 at 7-11.

[14] See for instance, Gerberich, Susan Goodwin, et al, Marijuana Use and Injury Events Resulting in Hospitalization, (2003) 13 Annals of Epidemiology 230-237, where Goodwin et al. looked at nearly 65,000 individuals, where over 13,000 were current marijuana users, and found that male marijuana users had a 28% higher rate of hospitalization due to injuries than non-users and female users had a 37% higher rate of the same.

[15] M-C Li et al., Marijuana use and motor vehicle crashes, (2012) 34 Epidemiol. Rev. 65; M. Asbridge et al., Acute cannabis consumption and motor vehicle collision risk: systematic review of observational studies and meta-analysis, (2012) 344 BMJ e536.

[16] M. Huestis, "Cannabis (Marijuana) – Effects on human behavior and performance" (2002) 14:1/2 For. Sci. Rev. 15 at 45. It is also of note that studies regarding marijuana use and its effects generally administer doses that are lower than doses used in the real world (JG Ramaekers et al, "High-potency marijuana impairs executive function and inhibitory motor control" (2006) 31 Neuropsychopharmacology 2296 at 2296).

[17] E. Wadsworth et al., "Cannabis use, cognitive performance and mood in a sample of workers" (2006) 20:1 J. Psychopharm. 14.

[18] Further, real life doses are much higher, so experts have concluded that the real life effects are more significant.

[19] See for instance, S. Heishman et al., "Acute and residual effects of marijuana: Profiles of plasma THC levels, physiological, subjective, and performance measures" (1990) 37:3 Pharmacol. Biochem. Behav. 561. In this study, it was determined that performance deficits may last as long as 31 hours.

of deficit at 24 hours after smoking, only one reported any awareness of the drug's effects. The authors indicated the data "suggest[s] that very complex human/machine performance can be impaired as long as 24 hours after smoking a moderate social dose of marijuana, and that the user may be unaware of the drug's influence…[a]ny time our limited capacity working memory is presented with more information than it is able to process, marijuana carry-over effects may occur".[20]

Additional performance deficits are associated with long-term chronic marijuana use. Chronic daily users initiate responses more slowly and have poor performance on critical tasks. One study has shown that chronic daily users have significantly greater performance deficits than occasional users throughout weeks of abstinence.[21]

There is also a recognized abstinence and withdrawal syndrome associated with alcohol and drugs.[22] For instance, a study by the Harvard Medical School examined heavy marijuana users and found that abstinent heavy users experienced adverse effects, including anxiety and violent and aggressive behaviour, for 3 to 7 days and, for some, as long as 28 days.[23]

This is but some of the compelling and documented evidence showing that alcohol and drugs, including marijuana, are clear safety hazards that have no place in safety-sensitive work environments such as the rail industry.

9.4. Employers are Subject to Onerous Safety and Environmental Requirements

Employers in the rail industry have a legal obligation to ensure the safety of their workforce and the public, and to protect the environment. This includes reducing risks caused by alcohol or drug use at or before attending work. This obligation is derived from multiple statutory sources, each of which is described further below, and together illustrate the critical importance of addressing this issue in a robust and proactive fashion.

[20] V. Leirer et al., "Marijuana carry-over effects on aircraft pilot performance" (1991) 62:3 Aviat. Space Environ. Med. 221 at 221, 226.
[21] WM Bosker et al., "Psychomotor function in chronic daily cannabis smokers during sustained abstinence" (2013) 8:1 PLoS One 1.
[22] This is recognized by the DSM V (American Psychiatric Association (2013). Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition. Washington, DC: American Psychiatric Publishing, at pp. 516-519).
[23] E. Kouri and H. Pope, "Abstinence symptoms during withdrawal from chronic marijuana use" (2000) 8:4 Exp. Clin. Psychopharmacol. 483.

9.4.1. Railway & Transportation Safety Legislation

To be more specific, CN is subject to railway-specific safety rules and legislation, including the RSA, which contains prohibitions on alcohol and drug use in the workplace.[24]

For instance, the Canadian Rail Operating Rules (the "**CROR**"),[25] specifically address the issue of workplace substance abuse. Rule G of the CROR reads as follows:

> G. (a) The use of intoxicants or narcotics by employees subject to duty, or their possession or use while on duty, is prohibited.
> (b) The use of mood altering agents by employees subject to duty, or their possession or use while on duty, is prohibited except as prescribed by a doctor.
> (c) The use of drugs, medication or mood altering agents, including those prescribed by a doctor, which, in any way, will adversely affect their ability to work safely, by employees subject to duty, or on duty, is prohibited
> (d) Employees must know and understand the possible effects of drugs, medication or mood altering agents, including those prescribed by a doctor, which, in any way, will adversely affect their ability to work safely.

Additionally, the *Railway Medical Rules for Positions Critical to Safe Railway Operations* ("***Medical Rules***") require medical assessments for employees holding safety critical positions prior to commencement of employment in such positions, upon promotion or transfer into such positions and every 5 years until 40 years of age and every 3 years thereafter.[26] Medical assessments are to take into account medical conditions that could cause "impairment", including substance abuse or dependence.[27]

The RSA further allows the Governor in Council to make regulations relating to safe railway operations for safety-sensitive positions which include "the control or prohibition of the consumption of alcoholic beverages and the use of drugs by those persons."[28]

9.4.2. Occupational Health & Safety Legislation

Occupational health and safety legislation imposes an obligation on employers to ensure the health and safety of their workers and of workers present at their worksite.[29] If a workplace hazard is identified, employers have a legal obligation to take corrective steps to eliminate or, if not reasonably possible, to control the hazard. Therefore, employers must address workplace

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[24] See for instance: RSA; *Railway Safety Administrative Monetary Penalties Regulations,* SOR/2014-233; *Railway Safety Management System Regulations*, *2015*, SOR/2015-26; *Railway Employee Qualification Standards Regulations*, SOR/87-150; and *Transportation of Dangerous Goods Act, 1992*, S.C. 1992, c. 34.
[25] A rule approved under the RSA.
[26] *Railway Medical Rules for Positions Critical to Safe Railway Operations* ("***Medical Rules***"), at s. 4.
[27] *Medical Rules,* at s. 5.
[28] RSA, at s. 18(1)(c)(iv).
[29] *Canada Labour Code*, R.S.C. 1985, c. L-2, at ss. 124, 148.

hazards associated with alcohol and drugs.[30] A failure to identify hazards and take corrective action can result in a conviction under occupational health and safety legislation, which can include significant penalties.

9.4.3. Criminal Code

Section 217.1 of the *Criminal Code*[31] imposes a legal duty on employers to provide a safe workplace by "tak[ing] reasonable steps to prevent bodily harm to [an employee], or any other person, arising from that work or task". Employers who fail to take appropriate steps to ensure a safe work environment in the face of known hazards such as workplace alcohol and drugs can be subject to prosecution under the *Criminal Code*.[32]

9.4.4. Environmental Obligations

CN is also subject to obligations pursuant to environmental legislation.[33] The nature of CN's work is such that an incident caused or contributed to by alcohol or drug use could have adverse consequences to the environment and the public. The penalties imposed under such legislation are severe and can include imprisonment.[34] In determining an appropriate penalty, the extent to which the harm was "foreseeable" and "reasonably avoidable" will be assessed.[35]

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[30] See for instance, *R. v. 614128 Ontario Ltd. O/A Trisan Construction* (March 22, 2016), Barrie, Ontario (O.C.J.), unreported. In this case, Trisan Construction was prosecuted under the Ontario occupational health and safety legislation when an employee under the influence of cannabis was fatally injured. The Court held that the cannabis in the workers' system was recently ingested and materially contributed to the workplace fatality.

[31] *Criminal Code*, R.S.C. 1985, c. C-46, at s. 217.1 ("***Criminal Code***").

[32]See for instance *R. v Metron Construction Corp.*, 2012 ONCJ 506, [2012] O.J. No. 3649 ("***Metron CJ***"), rev'd by 2013 ONCA 541 ("***Metron CA***"), where an employer pled guilty to criminal negligence causing death due to a breach of the duty in section 217.1 of the *Criminal Code* for, amongst other things, "[p]ermitting persons under the influence of drugs to work on the project" (*Metron CJ*, at paras. 7, 10). In particular, it was determined that "three of the four deceased, including the site supervisor…, had marijuana in their systems at a level consistent with having recently ingested the drug" (*Metron CA,* at para. 13). In sentencing the employer, a company called Metron, the court emphasized the gravity and circumstances of the offence, the need to send a message of deterrence or denunciation to other corporations and the need to observe the intent and effectiveness of the *Criminal Code* provisions (*Metron CA*, at paras. 115 and 120).

[33] See e.g.: *Canadian Environmental Protection Act,* 1999, S.C. 1999, c. 33, at ss. 171 and 181 ("***CEPA***"); *Canada Water Act*, RSC 1985, c C-11, at s. 9 ("***CWA***"); and *Species at Risk Act*, S.C. 2002, c. 29, at ss. 32 and 33 ("***SARA***").

[34] See e.g.: *CEPA*, at ss. 272, 274, 280; *CWA*, at s. 30; and *SARA*, at s. 97. See also: *Environmental Violations Administrative Monetary Penalties Act*, S.C. 2009, c. 14, at s. 126.

[35] See: *R. v. Syncrude Canada Ltd*., 2010 ABPC 229, 30 Alta. L.R. (5th) 97, where the corporation was convicted of violating, amongst other things, the federal *Migratory Birds Convention Act,* 1994, S.C. 1994, c. 22. The Court considered the defence of due diligence, including whether the contravention "could not have been reasonably foreseen" and whether the corporation "should have known" what would occur (paras. 96 and 97). The Court found that the corporation had not taken all reasonable steps to avoid the contravention (paras. 101 and 165). Some federal environmental legislation statutorily includes the common law defence of due diligence, see e.g.: *CEPA*, at s. 30(1)(a); *CWA,* at s. 33; and *SARA*, at s. 100. Federal environmental legislation may also mandate consideration of a corporation's knowledge for the purposes of sentencing, see e.g.: *CEPA,* at s. 287.1(2), where the following are aggravating factors: risk of damage to the environment, risk of harm to human health, whether

Therefore, if an incident involving alcohol and drugs is foreseeable and could be avoided by taking appropriate measures, CN could suffer adverse consequences if such an incident occurs.

9.5. CN has Taken Steps to Address Risk Associated with Alcohol & Drugs

CN does not take this obligation lightly and has accordingly introduced a comprehensive Policy to Prevent Workplace Alcohol and Drug Problems (the "**Policy**") on January 28, 1997.[36] The Policy applies to all Canadian employees (a similar policy applies in the U.S.). The Policy Statement provides that:

> All employees are required to report and remain fit for duty, free of the negative effects of alcohol and other drugs. It is strictly prohibited to be on duty or to be in control of a CN vehicle or equipment while under the influence of alcohol or other drugs, including the after-effects of such use. Specifically, the use, possession, presence in the body, distribution or sale of illegal drugs while on duty (including during breaks), on or off company premises, on company business, or on company premises including vehicles and equipment, is prohibited. Possession, distribution or sale of beverage alcohol, and the consumption of any form of alcohol, is prohibited while on duty (including during breaks), on company premises, including vehicles and equipment, off company premises, or on company business.
>
> Employees are expected to use over-the-counter or prescription medications responsibly. All employees, in particular those in safety sensitive positions or who can be in the control of a CN vehicle or equipment, are responsible for investigating whether the medication will affect safe operations. Employees are required to check with their own physician or pharmacist, report any concerns to CN's designated medical provider and abide by their recommendations to ensure safety.

The Policy contemplates the following types of alcohol and drug testing: pre-employment; pre-assignment to a safety-sensitive position; as part of a fitness for duty assessment; reasonable cause; post-accident; relapse prevention; and as part of an agreement under a continuing employment contract.

Further, Canada-based employees who operate into the U.S. are subject to U.S. rules and regulations governing cross-border operations. This includes mandatory random alcohol and drug testing, as required under U.S. law.

CN has implemented numerous measures beyond alcohol and drug testing to assist in reducing the risk associated with alcohol and drugs. Such measures include the following:

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the offence was committed recklessly, and whether the offender failed to take reasonable steps to prevent the offence; and *SARA,* at s. 102, where courts must take into account whether there was recklessness, inadvertence, negligence, incompetence or a lack of concern.

[36] The Policy has been amended over the years to address any changes in circumstances or developments in the law or technology.

- In January of 1988, CN introduced its Employee Assistance Program ("**EFAP**"), providing for both voluntary and mandatory referrals, treatment and monitoring for employees with substance abuse problems;

- CN has implemented a "Looking out for Each Other Program" to encourage peers to assist each other in identifying threats to workplace safety;

- Periodic medical assessments for employees holding safety critical positions to ensure fitness for duty, as required by the RSA; and

- The CN Police Service has an officer trained as a Drug Recognition Expert ("**DRE**").

Despite all of the measures undertaken by CN, alcohol and drugs continue to pose a safety risk in the workplace.

9.6. Canada must be Proactive

Canada's approach to addressing safety risks attributable to alcohol and drug use has historically tended to be reactive rather than proactive. It is CN's position that the Canadian approach to this question does not provide adequate means to address efficiently the safety risks flowing from alcohol and drug use, and will be rendered even less effective if marijuana is legalized. Indeed, it is important to stress that the signs an employee is working under the influence of drugs or alcohol (or their lingering effects) are not always evident or observable by fellow employees, which highlight the limits of a merely reactive approach to addressing the risks involved. Considering the significant risks posed by alcohol and drugs, the rail industry requires more effective tools to help in its efforts to maintain safe operations in order to address proactively safety risks associated with alcohol and drugs.

Workplace incidents are preventable and policies that enforce safety procedures, like random alcohol and drug testing, reduce the likelihood of workplace incidents through their powerful deterrent effects.

The important deterrent effect of random alcohol and drug testing has been accepted by courts and tribunals:

- The Canadian Human Rights Tribunal in *Milazzo* accepted that a positive drug test result is a "red flag" of a potential issue requiring further assessment. An alcohol and drug testing policy will deter employees from using alcohol and drugs in the workplace.[37]

- In *Skinner*, the United States Supreme Court opined: "[b]y ensuring that employees in safety-sensitive positions know they will be tested upon the occurrence of a triggering event, the timing of which no employee can predict with certainty, the regulations significantly increase

[37] *Milazzo*, at paras. 171-172.

the deterrent effect of the administrative penalties associated with the prohibited conduct …concomitantly increasing the likelihood that employees will forego using drugs or alcohol while subject to be called for duty."[38]

- In *Air New Zealand*, the Employment Court ruled that: "[t]he evidence that random testing acts as a deterrent persuades us to hold that in safety sensitive areas where the consequences can be catastrophic, the objection to the use of intrusive methods to monitor in an attempt to eliminate a recognised hazard must give way to the over-riding safety considerations. These factors take precedence over privacy concerns."[39]

The deterrent effect created by random testing further supports the inclusion of random testing in the RSA. The implementation of a statutory requirement for mandatory random alcohol and drug testing in the RSA (or its enabling regulations) would significantly assist the rail industry in proactively mitigating safety risks to the workplace, the public and the environment from impairment from alcohol and drugs. In that regard, we can learn from the U.S. experience with alcohol and drug testing in the transportation industry.

9.7. The U.S. Experience – Random Testing Delivers Results

Alcohol and drug testing is required by the Federal Railroad Administration (the "**FRA**") for railroad industry employees. Random testing in the U.S. rail industry was introduced for all employees in safety-sensitive jobs in response to a 1987 Maryland train collision in which 16 people died and 174 were injured. Marijuana use was found to be a contributing factor to the incident, as acknowledged by the train operator himself.[40] This led U.S. authorities to recognize that random alcohol and drug testing may have helped prevent this tragedy if the individual using marijuana had been tested before taking control of the locomotive. More importantly, the identified purpose of random testing is to act as an effective deterrent that helps prevent accidents in railroad operations.[41]

On this basis, random testing was introduced in the U.S. rail industry. Each railroad must ensure that a regulated employee is subject to random testing whenever the employee performs a regulated service on the railroad's behalf.[42] Each railroad must submit a random

[38] *Skinner*, at p. 630.
[39] *NZ Amalgamated Engineering Printing and Manufacturing Union Incorporated v. Air New Zealand Limited*, [2004] NZ Emp C, [2004] 1 ERNZ 614, at para. 251.
[40] *Control of Alcohol and Drug Use*, 49 C.F.R §219, Subpart G—Random Alcohol and Drug Testing Programs.
[41] *Ibid*, at §219.601 (a).
[42] *Ibid*, at §219.601(b). The legislation defines "regulated employees" as a "covered employee or maintenance-of-way employee who performs regulated service for a railroad subject to the requirements of this part." "Regulated services" is defined as "covered service or maintenance-of-way activities, the performance of which makes an employee subject to the requirements of this part." A covered service and covered employee are defined as: "Covered service means service in the United States as a train employee, a dispatching service employee, or a signal employee, as those terms are defined at 49 U.S.C. 21101, but does not include any period the employee is relieved of all responsibilities and is free to come and go without restriction.

testing plan to the FRA for review.[43] The legislation is prescriptive as to what must be included in the plan, including the total number of employees or contractors covered, the name of the railroad's Designated Employer Representative, the number of random testing pools, target random testing rates, methods used to make random selections and the frequency of random selections.[44] Attached to these submissions as Appendix 4 is a copy of the U.S. railway alcohol and drug testing scheme (Part 219 of the U.S. Federal Regulations). The Panel will note that the DOT has not hesitated to cover all employees having a role in the safe operation of railways by having engineers, conductors, dispatchers, control operators, and signal persons subject to random testing. Further, in August 2017, the DOT added maintenance railway employees in recognition of many post incident positive results. This makes Part 219 of the U.S. Federal Regulations a very comprehensive scheme which provides concrete results.

This proactive approach to safety has been repeatedly endorsed in American courts, notably in *Exxon Corporation v Esso Workers' Union, Inc.*, where the United States Court of Appeals, First Circuit, reiterated that "employers must act affirmatively to avoid drug-related accidents rather than wait passively for such accidents to happen."[45]

The results of the proactive approach in the U.S. are impressive.[46] In 2004, the FRA published a final rule outlining the scheme for expanding the FRA's drug testing rules to include foreign-based rail employees,[47] including Canadian employees. The full background of the rule is published in the Federal Register, in which the FRA makes comments pertaining to the success of the random testing policy it implemented:

> [A]lcohol and drug testing of safety-sensitive railroad employees in the United States found a significantly higher level of substance abuse prior to the introduction of random testing.
>
> FRA's own data, compiled from domestic railroad reports, show a significantly higher level of substance abuse among safety-sensitive railroad employees in the United States prior to the introduction of random testing. For example, in 1988, the industry positive rates for reasonable

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"Covered employee" means an employee (as defined in this section to include an employee, volunteer, or probationary employee performing activities for a railroad or a contractor to a railroad) who is performing covered service under the hours of service laws at 49 U.S.C. 21101, 21104, or 21105 or who is subject to performing such covered service, regardless of whether the person has performed or is currently performing covered service. (An employee is not a "covered employee" under this definition exclusively because he or she is an employee for purposes of 49 U.S.C. 21106.) For the purposes of pre-employment testing only, the term "covered employee" includes a person applying to perform covered service in the United States." (*Ibid*, at §219.5.).

[43] *Ibid*, at §219.605 (a).

[44] *Ibid*, at §219.607.

[45] *Exxon Corporation v Esso Workers' Union, Inc.,* 118 F.3d 841 (1st Cir) (1997), at p. 14

[46] See for instance Dominic Zaal April (1994); Traffic Law Enforcement: A Review Of The Literature; Report No. 53 (the Monash Group study looked at traffic legislation and enforcement in Australia. The Monash Group found that 'the greater the perceived likelihood of apprehension, prosecution, conviction and punishment; ... the greater the deterrent effect."); T. Miller et al., Effectiveness and benefit-cost of peer-based workplace substance abuse prevention coupled with random testing, (2007) 39 Acc. Anal. Prev. 565.

[47] Eventually codified in the Code of Federal Regulations at 49 CFR 219.

> cause testing were 4.7 percent for drugs and 4.5 percent for alcohol. After the introduction of random testing in 1989, these rates declined respectively to 2.02 percent and 1.32 percent. While the positive rates for reasonable suspicion testing have continued to fall, a comparison of the data for post-accident testing reveals an even stronger impact on positive testing rates. In 1988 the positive rate for drugs after qualifying accident events was 5.6 percent. After the commencement of random testing in 1990, this rate fell to 1.1 percent positive. There was a corresponding reduction in post-accident positives from 41 in 1988 to 17 in 1990. In 2002, two employees (1.06 per cent) tested for drugs other than alcohol in post-accident testing events.
> […]
> FRA emphasized the importance of random drug and alcohol testing in detecting and deterring substance abuse by railroad employees. The deterrent effect of random testing, which was implemented by FRA in 1988-1989, most certainly influenced the dramatic reduction in post-accident positives from the 41 that were recorded in 1988 to the 17 that were recorded in 1990.[48]

To put this into context, the above quotations were stated to emphasize that, in the opinion of the FRA, Canadian rail drug testing standards were not sufficiently stringent to satisfy U.S. needs, citing in particular Canada's lack of random testing in Rule G of the *Canadian Rail Operating Rules*:

> FRA believes that the measures that have been implemented to date in Canada are neither comparable to the requirements of part 219, nor adequate to safeguard United States railroad operations were Canadian train crews to engage in extensive train operations in the United States.
> […]
> Transport Canada has approved Canadian Rule G, which was developed by the Canadian railroad industry, but Transport Canada has not reviewed and approved individual railroad plans implementing Canadian Rule G.
> […]
> Canadian Rule G has several significant differences from part 219. First, it fails to provide for alcohol and drug testing of railroad employees to detect and deter violations. Prior experience with a Rule G approach in the United States has revealed that such a rule alone, without the random and other tests required by part 219, is not effective in detecting and deterring drug and alcohol abuse among safety-sensitive railroad employees.
> […]
> Prior to the adoption of part 219 in 1985, railroads in the United States had attempted to deter alcohol and drug use by their employees by their Rule G…Unfortunately, accident reports revealed that the United States railroads' Rule G efforts were not effective in curbing alcohol and drug abuse by railroad employees. 48 FR 30726 (1983). Railroads were able to detect only a relatively small number of Rule G violations owing, primarily, to their practice of relying on observations by supervisors and co-workers to enforce the rule. FRA found that there was a "conspiracy of silence" among railroad employees concerning alcohol and drug use.

[48] Control of Alcohol and Drug Use: Expanded Application of FRA Alcohol and Drug Rules to Foreign Railroad Foreign-Based Employees Who Perform Train or Dispatching Service in the United States, 69 Fed Reg 19270 (2004), at 19277-19278.

> […]
> A review of the Canadian Rule G violations reported by CP indicates that the Canadian Rule G has resulted in the identification of an extremely low number of operating crew violators…It is likely that the true level of drug and alcohol abuse among Canadian operating crew employees was much higher.[49]

Once random testing was made a requirement for those foreign based employees working in the U.S., both within the rail industry and other industries governed by the Department of Transportation ("**DOT**"), it is not surprising that a positive deterrent effect was found. In particular, between 1996 and 2010, DriverCheck (a frequently used medical testing company) performed approximately 240,000 random drug tests for DOT-regulated employers in Canada and saw positive rates among drivers fall from 2.3 percent in 1996 to less than 0.5 percent in 2010.[50]

Those results confirm the effectiveness of a random testing policy which acts as a deterrent to alcohol and drug consumption by exposing workers to strict sanctions in case of test failures.

9.8. The Canadian Experience – Missed Opportunities

Courts, tribunals and boards of arbitration have recognized the importance of alcohol and drug testing in safety-sensitive workplaces, including reasonable cause, post-incident, return to work, unannounced follow-up, pre-employment and site access testing.[51] These types of testing are all currently provided for in CN's Policy, but are reactive in nature. Additional measures are necessary to address the shortcomings associated with the current reactive focus of Canadian law in the area of workplace alcohol and drug testing.

As indicated earlier, the Canadian approach to alcohol and drug testing is in large part reactive. While the U.S. have legislated the matter with the success previously discussed, the Canadian law has not yet supported a similar approach. In *Irving Pulp & Paper Ltd. v. CEP, Local 30*[52]*,* ("***Irving***"), the Supreme Court of Canada confirmed that random testing will be justified in a safety-sensitive work environment where there is *enhanced safety risk* such as evidence of a general problem with alcohol and drugs in the workplace.[53] The analysis consists of balancing interests by assessing whether the benefit to the employer from random testing is

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[49] Control of Alcohol and Drug Use: Expanded Application of FRA Alcohol and Drug Rules to Foreign Railroad Foreign-Based Employees Who Perform Train or Dispatching Service in the United States, 69 Fed Reg 19270 (2004), at 19276-19277.

[50] http://www.drivercheck.ca/services/drug-and-alcohol-testing/random-alcohol-and-drug-testing-program/random-alcohol-drug-testing-faq//

[51] *CNR 2000*, at para. 196; *Luka v Lockerbie & Hole Inc*., 2008 AHRC 1, 62 C.H.R.R. D/37, rev'd 2009 ABQB 241 (reversed only on the issue of who was the employer under Alberta Human Rights Act), aff'd 2011 ABCA 3; *Chiasson v Kellogg Brown and Root (Canada) Company,* 2005 AHRC 7, 56 C.H.R.R. D/466, rev'd 2006 ABQB 302, aff'd 2007 ABCA 426, leave to appeal to SCC refused [2008] S.C.C.A. No. 96 ("***Chiasson***"); *Bantrel*, at para. 77.

[52] 2013 SCC 34, 359 D.L.R. (4th) 394.

[53] *Irving*, at paras. 31, 37, 45, 52; *Suncor Energy Inc. v. Unifor, Local 707A,* 2016 ABQB 269, [2016] A.J. No. 530.

proportionate to the impact on employee privacy. In that regard, random testing has been accepted in a number of Canadian human rights and arbitration board decisions.[54] Further, there are a number of Canadian employers that currently utilize random testing, including for employees that also work within the United States and are subject to United States' legislation requiring random testing.[55]

Nonetheless, the Supreme Court and numerous Canadian courts have commented that the fact a workplace is found to be dangerous may not automatically give the employer the right to impose random testing unilaterally.[56] Contrary to the U.S. approach where the inherent dangerousness of specific activities such as railway operations allows for random testing, the Canadian approach has been more reactive, requiring a dangerous workplace and an enhanced safety risk, such as evidence of a general problem with alcohol and drugs:

> But, as previously noted, the fact that a workplace is found to be dangerous does not automatically give the employer the right to impose random testing unilaterally. The dangerousness of the workplace has only justified the testing of particular employees in certain circumstances: where there are reasonable grounds to believe that the employee was impaired while on duty, where the employee was directly involved in a workplace accident or significant incident, or where the employee returns to work after treatment for substance abuse. It has never, to my knowledge, been held to justify random testing, even in the case of "highly safety sensitive" or "inherently dangerous" workplaces like railways (*Canadian National*) and chemical plants (*DuPont Canada Inc. and C.E.P., Loc. 28-O (Re)* (2002), 105 L.A.C. (4th) 399), or even in workplaces that pose a risk of explosion (*ADM Agri-Industries*), in the absence of a demonstrated problem with alcohol use in that workplace. That is not to say that it is beyond the realm of possibility in extreme circumstances, but we need not decide that in this case. [Emphasis added.][57]

It is of note that that Supreme Court of Canada's comments above were made prior to the 2013 Lac Mégantic derailment which involved 47 fatalities and more than 30 buildings destroyed. In our view, the circumstances and scale of this incident at the very least would qualify the rail

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[54] See for instance *Strathcona* and *Greater Toronto Airports Authority v. PSAC, Local 0004*, [2007] L.V.I. 3734-2, 2007 CarswellOnt 4531 (Ont Arb) (Devlin), where random testing was accepted as reasonable based on the evidence. These decisions were cited with approval by the Majority and Minority in *Irving*. See also *Alberta (Human Rights & Citizenship Commission) v. Elizabeth Metis Settlement,* 2003 ABQB 342, 19 Alta. L.R. (4th) 71; rev'd on other grounds at 2005 ABCA 173 ("***Elizabeth Metis***") (random testing upheld as a bona fide occupational requirement); *Milazzo* (random testing reasonably necessary in some work environments); *Imperial Oil Ltd v. CEP, Local 900*, 138 L.A.C. (4th) 122, 2005 CarswellOnt 3873 (Ont Arb) (Picher), at para. 11 ("***Nanticoke Preliminary Decision***") (where random alcohol testing was taking place); *ATU, Local 113 v. Toronto Transit Commission,* 2017 ONSC 2078, 275 L.A.C. (4th) 187 (where the union's application for an injunction prohibiting the company's use of random alcohol and drug testing pending the grievance challenging the policy was dismissed. It was found that the damages caused by industrial accidents are irreparable, as opposed to the infringement of privacy rights.)

[55] *Procedures for Transportation Workplace Drug and Alcohol Testing Programs,* Department of Transportation (DOT) Rule, 49 C.F.R. §40; *Control of Alcohol and Drug Use*, 49 C.F.R. §219.601 and §219.607.

[56] *Irving,* at para. 45.

[57] *Irving* at para. 45.

industry to be considered one of the "extreme circumstances" referenced by the Supreme Court in Irving, to be considered on a case-by-case basis, allowing for random testing to curtail risks to safe rail operations.

By maintaining a less effective threshold than U.S. legislation, the Canadian approach to date provides exceedingly limited assistance to railroads in maintaining safe rail operations, and indeed in our respectful view sets the stage for an increased risk of serious accidents attributable to impaired employees. CN's sentiment in this regard is reflected in the views, both candid and forceful, of Justice Côté of the Alberta Court of Appeal in his dissenting opinion in the *Suncor CA Injunction* decision:

> [14] Killing or maiming people in a big accident, or a number of smaller accidents, is a uniquely weighty danger. The legal term "convenience" or "inconvenience" scarcely suffices. The big issue here is the "balance of convenience". Very full detailed and overwhelming evidence here shows the dangers of accidents, and of the danger of drinking or drugs among workers. Privately giving a urine sample to be tested for alcohol or drugs does not begin to equal death or dismemberment, or widowhood or becoming orphaned, by an accident. People routinely go to labs to give their physicians urine samples, and for a far broader set of tests. If the chambers judge did not see comparing death or maiming with that as the pivotal issue, that was error of law. And if it was seen, the contrary view is unreasonable, in my respectful view.
>
> […]
>
> [16] The physical dangers would be bad enough if those facing the perils of accidents were all Suncor employees and members of the respondent union. But they are not; those people work alongside thousands of other workers. Any accident, ranging from a truck backing up to a huge explosion, is likely to kill or injure others. Maybe even to kill or hurt members of the public not employed at the plant in question. Those others have no say in this litigation. The evidence here shows that this plant contains a number of very dangerous substances, often under pressure or at high temperatures. Some small leaks could be catastrophic.
>
> […]
>
> [18] Even if an accident caused no death, no injury, and no significant direct harm to nearby individuals nor to Suncor, it could well produce spills, leaks, smoke, pollution, or death or harm to fish or wildlife. The public and media of North America and Europe already take an enormous interest in the environmental impact of these very oil sands plants. The environmental penalties imposed on Suncor after such an accidental event could equal those for the Exxon Valdez grounding or the BP well fire in the Gulf of Mexico. (One intoxicated man caused the Exxon Valdez incident.) And the media and government reaction against all the Fort McMurray plants and their producers and those marketing their products could then be enormous and incalculable.

> [19] It is not certain that there will be an accident or that substance impairment will cause it. But the evidence shows it is likely. [Emphasis added.][58]

When considering the dire consequences that railway derailments can have – and which are now known to all – the very real shortcomings of this approach are clear and must be addressed by implementing a national transportation policy premised on prevention rather than reaction, and thus integrating random alcohol and drug testing.

It is clear that the existing legislative framework in Canada, while imposing on employers a legal obligation to ensure a safe work environment, does not provide employers with the means to address adequately a known and serious risk to workplace safety. Canadian law requires the occurrence of a significant safety risk in a safety-sensitive workplace before preventive steps can be implemented to try to curtail it *before* an incident occurs. When considering the dire consequences that railway derailments can have – and which are now known to all – the very real shortcomings of this approach are clear and must be addressed by implementing a national transportation policy premised on prevention rather than reaction, and thus integrating random drug and alcohol testing.

The need for legislative intervention to bolster a broader use of random testing as a preventive workplace health and safety tool was expressly addressed by the minority in the Supreme Court's 2013 *Irving* judgment:

> [t]he New Brunswick legislature has within the scope of its legislative authority the power to take drug and alcohol testing outside the purview of the collective bargaining process, as some other legislative bodies have done in certain contexts. See, e.g., Code of Federal Regulations, 49 C.F.R. Part 382 (United States); Rail Safety (Adoption of National Law) Regulation 2012, No. 662 (New South Wales); Railway Safety Act 2005 (Ireland). Indeed, some experts have suggested there is an "overwhelming argument" in this country for "legislative direction and definition that would add consistency, uniformity of meaning, and predictability for all workplace stakeholders" … That decision, however, is one for the New Brunswick legislature and not for this Court — no matter how strongly we might favour such a step. [Emphasis added.][59]

This comment confirms that the ultimate decision to introduce random alcohol and drug testing is for Parliament to make. Importantly, the *Irving* judgement was released prior to the Lac Mégantic accident which sadly showed how human errors can lead to a tragic outcome. In addition, the legal landscape as it relates to workplace alcohol and drug concerns is evolving, not the least of which as a result of the upcoming legalization of marijuana discussed in greater detail below.

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[58] *CEP, Local 707 v. Suncor Energy Inc.,* 2012 ABCA 373, 539 A.R. 206, at paras. 16, 18 and 19; see also *Strathcona*, at p. 50.

[59] *Irving*, at para. 72.

Canadian laws need to evolve with this changing landscape. Furthermore, adding a requirement for random testing in the RSA would address this need for change. Notwithstanding that cases have confirmed that random testing is reasonable, the need for legislature to step in and mandate the requirement of random alcohol and drug testing is not eliminated. This would align Canadian law with legislation in other jurisdictions which requires or allows for the random testing of employees holding safety-sensitive and safety-critical positions in the transportation industry, such as the U.S., Ireland and New South Wales[60].

9.9. Canada Must and Can Act

The urgency of revising Canada's historically reactive approach to workplace alcohol and drug testing was recently brought into focus through a well-publicized incident in which an airline pilot working for Sunwing airlines was able to make his way to the cockpit of his aircraft while having three times the legal limit of alcohol in his system, before passing out in the pilot's seat and being reported by other members of the flight crew. Had this pilot been allowed to take off, he would have endangered the lives of the 99 people on board the aircraft.

The flight crew was ultimately able to identify with relative ease that the pilot was a safety risk due to the apparent and well-known symptoms of alcohol abuse. The symptoms of drug impairment, however, are much less apparent and can be missed entirely. This is notably the case for marijuana and cocaine impairment which can be missed even by specially-trained experts.[61] Had the Sunwing pilot been impaired by marijuana or cocaine, he would most likely not have been deemed impaired by the other members of the flight crew, this incident thereby being likely to end in an altogether more tragic fashion.

There are currently no mechanisms in place for preventive screening of impaired employees mandated by Canadian law. This is in stark contrast to U.S. law, which not only permits but requires random testing of employees holding safety-critical positions in the transportation industry, such as airline pilots[62] and train crews.

[60] *Control of Alcohol and Drug Use*, 49 C.F.R. §219.601 and §219.607.

[61] Research confirms that even DREs (as employed by CN), individuals who have been specifically trained in the identification of drug-related performance deficits, have limitations in their ability to effectively identify drug use and associated performance deficits. See for instance, W. Bosker et al., A placebo-controlled study to assess Standardized Field Sobriety Tests performance during alcohol and cannabis intoxication in heavy cannabis users and accuracy of point of collection testing devices for detecting THC in oral fluid, (2012) 223:4 Psychopharmacol 439; S. Heishman et al., Laboratory Validation study of Drug Evaluation and Classification Program: Ethanol, cocaine, and marijuana, (1996) 20:6 J. Anal. Toxicol. 468; S. Heishman et al., Laboratory Validation study of Drug Evaluation and Classification Program: Alprazolam, d-amphetamine, codeine, and marijuana, (1998) 22:6 J. Anal. Toxicol. 503.

[62] Drug and Alcohol Testing Program, 14 C.F.R. §120.

9.10. The Legalization of Marijuana will Increase the Risk of Drugs at Work

Legalization of marijuana will normalize marijuana consumption, which will in turn likely increase the frequency and opportunity for use of this drug. This will adversely impact workplace safety and an employer's ability to ensure a safe work environment. As discussed above, marijuana use is incompatible with working in a safety-sensitive environment. To date, while government has introduced measures to address impaired driving concerns related to the legalization of marijuana, the existing draft legislation does not address workplace safety implications. Rather, with respect to the workplace, the Government of Canada has stated "[w]hile the legalization of cannabis has highlighted this concern, impairment in the workplace is not a new issue, and is not limited to cannabis. This issue has been a topic of ongoing dialogue among federal, provincial and territorial Ministers of Labour."[63] This comment would suggest that workplace safety concerns associated with marijuana are intended to be addressed by other means outside of legislation intended to legalize marijuana. CN submits that the RSA would constitute a logical place to require mandatory random alcohol and drug testing for safety-sensitive and safety-critical positions in the Canadian rail industry.

9.11. Conclusion

The rail industry is inherently safety-sensitive. A lack of vigilance by employees could pose adverse safety risks. Alcohol and drugs have no place in a safety-sensitive work environment. As a result, CN has many measures in place to address risks relating to alcohol and drug use at or before work. Nonetheless, such measures are all reactive. The law makers can help provide employers in the rail industry with the tools necessary to combat proactively the safety risks associated with alcohol and drugs by taking the next step and including mandatory random testing within the RSA or its regulations. Random testing is reasonable where there are enhanced safety risks, such as those found in the rail industry. The establishment of a concerted and consistent national regime to deal with the concrete risks posed to safe rail operations by drug or alcohol impairment requires state sponsorship through an effective regulatory framework.

9.12. CN Proposal

Therefore, CN strongly recommends that random testing provisions should be implemented in Canada under the RSA and that those provisions mirror the U.S. legislation, which has been tried and tested with success since 1991.

[63] Canada, Introduction of the Cannabis Act: Questions and Answers, (online: https://www.canada.ca/en/services/health/campaigns/introduction-cannabis-act-questions-answers.html).

10. Fatigue Management

In 2016, the TSB added fatigue issues to its Safety Watchlist, suggesting that Transport Canada and the railway industry implement actions to mitigate the risk of fatigue. As previously mentioned, the *Safety Management System Regulations* also require railway companies to "apply the principles of fatigue science when scheduling the work of their employees."

10.1. Fatigue is a Science

Many think of fatigue as the same as sleepiness or lack of sleep. Studies show that these concepts are different. Generally speaking, fatigue is the body's response to sleep loss and the challenge is to develop a framework in which fatigue can be objectively assessed and addressed. A scientific approach to fatigue has been implemented in numerous industries where work hours have inconsistent patterns.

10.2. Joint TCRC/CN Fatigue Management Strategy

Teamsters Canada Rail Conference (TCRC) and CN have agreed to jointly implement fatigue management strategies. The senior management of both organizations are engaged in this initiative and concrete results are being achieved. We enclose as Appendix 5 the Joint TCRC/CN Fatigue Management Strategies Submission.

One of the initiatives that has been implemented in Western Canada is the creation of scheduling windows for conductors, providing more advance knowledge of when they will be called for duty which enables employees to better plan their lives and sleep. The effectiveness of the scheduling initiative is being validated by employee volunteers who wear a "Readiband" device that tracks sleep and awake patterns in relation to the employees work schedule. The data is then validated by an independent fatigue management specialist who is able to assess improvements in employee performance and fatigue reduction as a direct result of this initiative.

The scheduling initiative is complemented by various efforts to improve employee awareness of fatigue, including enhanced employee communication, training, and education, including effective individual countermeasures to combat fatigue. It is essential for employees at all levels of the company to understand and commit to considering fatigue when their decisions or actions could affect the safety of themselves, other employees and the environment. Additionally, the TCRC-CN fatigue management program includes family education so that employees are supported by their families, or other outside support networks, to effectively mitigate fatigue.

CN is pleased with this joint approach. The commitment of both TCRC and CN to work together has delivered tangible results which improves safety and employees' quality of life.

Importantly, the TCRC-CN initiative is based on the science of fatigue management which recognizes the complexities of fatigue, which go far beyond associating hours of sleep to performance. Numerous studies confirm that effective fatigue management integrates and balances both the personal and professional lives of individuals, considers the wide variety of factors that cause fatigue, (including individual sleep quantity and quality, time of day, circadian rhythms), and deploys clear measures to mitigate fatigue and its impact on performance. The issue is clearly far more complex and personalized than a unidimensional approach respecting hours of service.

10.3. CN Proposal

CN is pleased to file with the Teamsters Canada Rail Conference a joint submission respecting fatigue management. We refer the Panel to this joint effort which confirms a common understanding that fatigue is a matter requiring empirical evidence and a scientific approach to delivering the best results.

CN supports the modernization of Canadian rules respecting fatigue on the basis of a scientific approach which would take into account empirical evidence.

11. Technology

Research and development in the rail sector has led to significant progress respecting safety. Innovation can be found in many aspects of modern railway activities. By way of example, CN operates many of its trains with distribution power, an on-board locomotive remote control systems, that enables locomotives to be placed within or at the end of the train. This technology improves train handling, breaking performance and fuel efficiency. Locomotives also use trip optimizers, a form of cruise control system which improve safety and reliability. New technologies related to train operations and track conditions are of particular interest and discussed below.

11.1. Positive Train Control (PTC)

11.1.1. Background to PTC – A U.S. Experience

After the August 20, 1969 collision of two Penn Central Commuter trains near Darien Connecticut, the US National Transportation Safety Board (NTSB) asked the FRA to study the feasibility of requiring a form of automatic train control system to protect against operator error and prevent train collisions. Over the next two decades, the NTSB issued a number of safety recommendations asking for train control measures. During the mid-1980s, the advent of microprocessor-based electronic control systems and the emergence of digital radio technology enabled the US Freight industry, through the Association of American Railways (AAR) and the Railway Association of Canada (RAC), to explore the development of Advanced Train Control Systems (ATCS) and a similar system known as Advanced Railroad Electronic

Systems (ARES). Pilot implementations of these systems were attempted during the 1990s with mixed results due to technology immaturity as well as high cost for the relatively small improvement in safety benefit provided. In short, the return on safety investment was not compelling enough to justify significant spending required to mature the technology, compared to other safety-improvement investment alternatives. Some spin-offs of these technology improvements were nevertheless employed for more targeted purposes – such as the replacement of pole lines used for signal systems or improved messaging protocols.

In 1994, the FRA (in a report to Congress on Railroad Communications and Train Control July 1994) called for a plan to work towards the deployment of a Positive Control System in view of the fact that PTC could not be justified based upon normal cost-benefit principles. The FRA proposed to implement a public-private partnership to explore technology options, demonstration systems, and to revise the regulatory framework to support such emerging initiatives. Over the subsequent years the FRA committed approximately $40 M to fund research activities related to PTC and organized a PTC Working Group to coordinate those activities. In 1999 the PTC Working Group provided a consensus report (Report to the Railroad Safety Advisory Committee to the FRA, Implementation of Positive Train Control Systems, Aug 1999) that recommended that PTC focus on prevention of train-to-train collisions, enforcement of civil speed restrictions and temporary slow orders, and protection for roadway workers operating within their limits of authority.

Subsequently, as part of the US High-Speed Rail Initiative, the FRA created a North American Joint Positive Train Control program (NAJPTC) along with Amtrak, Union Pacific, the AAR and the State of Illinois to implement a pilot system so support Amtrak Operations between Springfield and Mazonia Illinois. This pilot demonstrated that the system was not viable as conceived and that the development of standards for interoperability of PTC was very challenging.

Subsequently, the FRA used that experience to improve their approach. On March 7, 2005 the FRA established new regulations to allow for a technology neutral safety performance standard for processor-based signal and train control systems. Through this regulation, the FRA hoped to encourage voluntary implementation and adoption of PTC-like systems with the expectation that progressive development of the requisite technologies and supply chain would follow.

Accordingly, the four largest Class 1 railroads based in the U.S. (BNSF, CSX, NS, UP) along with the Alaska Railroad and Ohio Central Railroad undertook to begin voluntary design of a PTC system. In December 2006, the FRA approved an experimental version of an Electronic Train Management System (ETMS) for deployment with BNSF as a non-vital safety overlay. Although it was non-interoperable, ETMS demonstrated that it could be used in lieu of a block signal system. Meanwhile the participating railroads also started to explore their own non-interoperable and non-vital variations on PTC on a limited deployment basis. Despite the flurry of activity, these efforts highlighted the immaturity of the state of the art, the difficulty in obtaining sufficient radio spectrum required for electronic communication to the train, the lack of cost-effectiveness, as well as the difficulty in working towards an interoperable system. In

fact, ITCS was completely incompatible with the variations being developed by the freight railroads (which were themselves not harmonized).

On September 12, 2008, a California Regional Rail Authority Metrolink train, consisting of one locomotive and three passenger cars, collided head-on with an eastbound Union Pacific Railroad freight train near Chatsworth, California. The Metrolink train derailed its locomotive and lead passenger car; the UP train derailed its two locomotives and 10 of its 17 cars. The accident resulted in 25 fatalities, and 102 injured passengers. The U.S. National Transportation Safety Board (NTSB) concluded that the probable cause of the collision was "the failure of the Metrolink engineer to observe and appropriately respond to the red signal aspect at Control Point Topanga because he was engaged in prohibited use of a wireless device, specifically text messaging, which distracted him from his duties." The NTSB recommended the implementation of PTC is its report published in January 2010.[64]

On September 24, 2008, the U.S. Congress reacted by mandating the introduction of a Positive Train Control system. In passing the legislation, Congress added additional requirements to PTC, not previously planned as part of the safety case, based on high profile recent train accidents such as Chatsworth and a January 2005 incident in Graniteville South Carolina where a collision occurred in unsignalled territory due to an improperly aligned switch. PTC is a safety overlay required on all mainline track (i.e. all intercity and commuter tracks) expected to prevent train-to-train head-on collision, encroachment into a work zone without authority, and overspeeding derailments. Initially expected to be implemented by the end of 2015, Congress had to extend the period to do so because the technology, was still immature and standards for interoperability were continuing to prove to be elusive. In resetting the deadlines, Congress also made it more onerous should railroads fail to meet them: End of 2018 for passenger lines and 2020 for Class 1 freight lines provided that at (a) all construction and equipping of locomotives and back office systems are completed by end 2018 (b) least half of all applicable track are in revenue service demonstration by end of 2018 and (c) that system certification for PTC has been granted to the Class 1 rail road by end of 2018. Class 2 freight lines were allowed a longer extension until 2024.

11.1.2. Benefits of PTC Remain Uncompelling

PTC involves significant capital spending. The U.S. Class 1s are spending over $25 B, yet it is estimated that when fully implemented, this system will prevent less than 5% of all rail incidents in the U.S. The limited effectiveness of PTC is due to several factors:

- The majority of incidents do not occur on main track (68% of TSB reported incidents in Canada);
- PTC provides virtually no improved protection at vehicle crossings (18% of incidents in Canada);

[64] See page 63 of the NTSB report at https://www.ntsb.gov/investigations/AccidentReports/Reports/RAR1001.pdf.

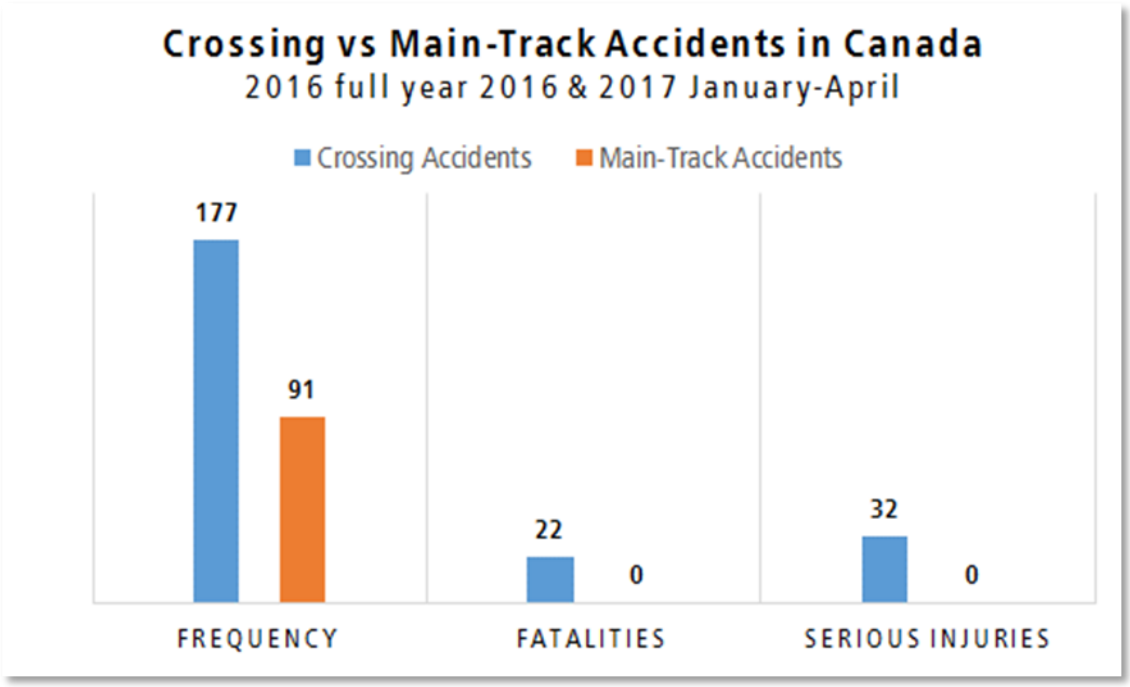
– PTC does not protect against end-of-train collisions, or collisions with non-locomotives (work vehicles, cars, personnel working outside of limits of authority);

– PTC does not protect against incidents caused by train mishandling, equipment failure, track failure, signal failure, failure to set handbrakes, or cargo-caused incidents (e.g. fire).

As an example, neither the Lac Mégantic nor Gogama incidents would have been prevented by PTC.

In fact, studies by the Canadian Rail Research Laboratory, the Rail Advisory Council and the University of Alberta found that less that 6% of all Canadian rail incidents might be preventable by any PTC-like system. Based on a detailed review of 10 years of incident data in Canada, in fact 97.6% of main track derailments would not have been prevented by PTC.

It is important to also bear in mind that the prevention of fatal accidents is not reduced significantly by PTC because fatalities involving train operation happen at rail/road crossings.



11.1.3. PTC - A Complex Technology

PTC is not a system but instead a “system of systems” comprised of complex and still immature technology:

- **Onboard Locomotive System:** communicates with wayside and back office systems to monitor a train’s position, and speed-activating braking as necessary. Due to interoperability requirements, the onboard system must support all operating practices that vary by railroad –

increasing complexity of use, training and deployment Furthermore, since locomotives are often loaned between railroads to avoid needing to switch locomotives when interchanging freight (i.e. to increase rail traffic fluidity), an interoperable PTC must support the use of a locomotive operated by a foreign crew, and/or on a foreign track, and/or under the control of a foreign railroad's back office operating under different operating practices. Unlike Canada that has a single rulebook, there are 3 major rule books used in US rail operation that further vary by railroad;

- **Wayside System:** physical control points along the right-of-way are augmented to communicate the position of all switches, signals and approaching trains to PTC Back Office systems. This almost always requires upgrading of legacy wayside equipment which is not otherwise compatible with digital communication required for PTC and further includes not only introducing new communications capability at each wayside point, but also creating and maintaining a detailed **digital map** of all those components, as well as of critical track features (e.g. curves, grades, diamonds, …);

- **PTC Back Office Systems:** storehouse for all information related to the railway's network and trains operating on it – relays GPS coordinates, authorities, zone speed and restrictions (including daily operating bulletins). The digital map required by PTC provides accuracy to 4 decimal places and is difficult to integrate with most back office dispatch systems that operate only to 2 decimal places. In many cases, existing maps used by the dispatch center must be redrawn to avoid rounding errors and since electronic authorities must be more precise than existing train movement authorities;

- **Communications Systems**: Three major segments are integrated by multiple wireless communications (i.e. radio, cellular, Wi-Fi & GPS satellite). Compounding matters is that there is very little radio spectrum available for use by railroads in either the USA or Canada. PTC consequently operates on a narrowband 220 MHz network that is limited data communication speed of less than 32 kilobits per second. It has not yet been demonstrated that this small bandwidth is sufficient to support train operations in dense traffic areas such as Chicago, nor with this bandwidth support the use of video communication (e.g. from forward or inward facing cameras).

To illustrate the scale of PTC, at CN alone, over 800 staff and US$1.2B will be invested in the efforts to introduce PTC on CN's U.S. lines alone which requires:

- Upgrading, installing and verifying 1,750 wayside interface units at all signals and switches;

- Installing approximately 175 new wayside data radio base stations every 25 miles to support effectively radio communications;

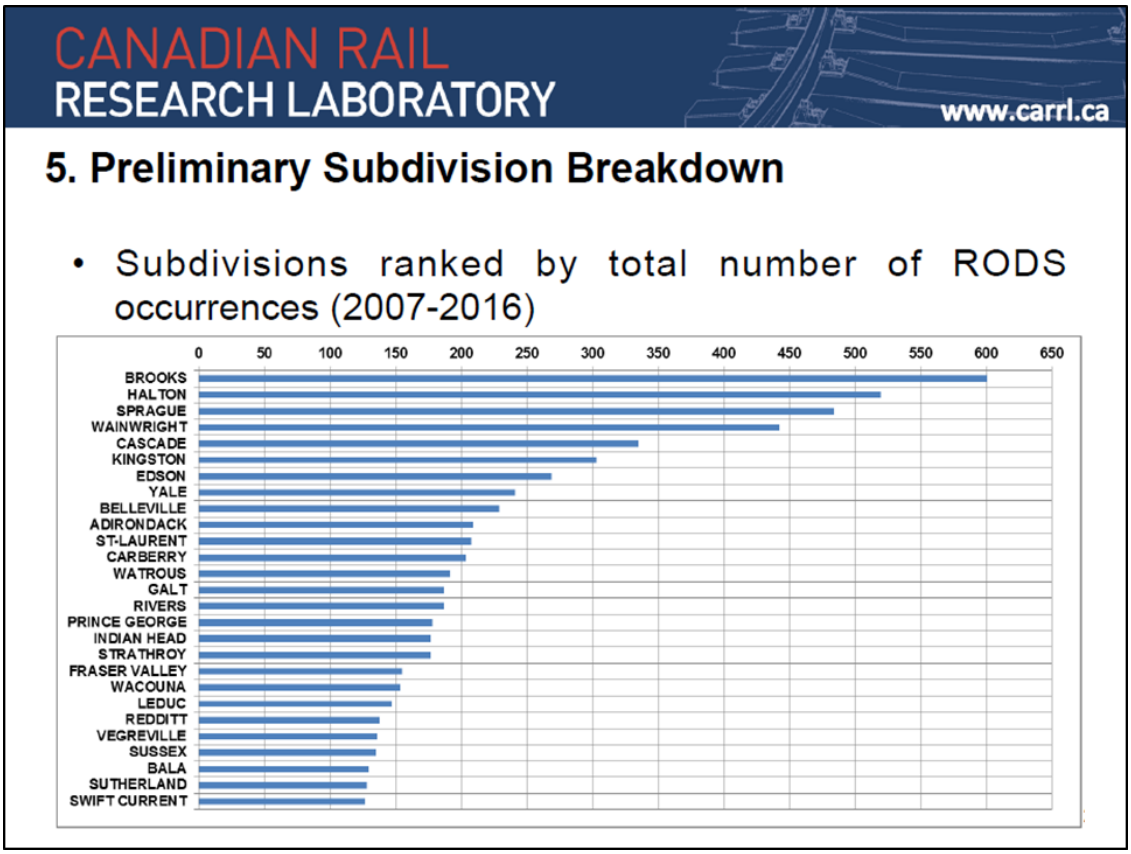
- Equipping and verifying 986 locomotives with onboard computers, displays and communications equipment;

- Upgrading coverage of cellular data networks to cover 3,500 route miles;
- Training over 3,000 employees across multiple roles.

Considering the large amount of resources necessary to develop and implement PTC, it is important, from a Canadian perspective, to consider the opportunity cost of investing in PTC compared to alternative safety improvement initiatives that produce a higher safety benefit per dollar spent such as grade crossing separations, crossing elimination and technology.

11.1.4. One-Size-Fits-All Approach not the Best Solution for Canada

The inherent differences in the Canadian geography and demography compared to the U.S. have a major influence in the risks variation of Canadian rail corridors. For example, there are 13 high-speed rail corridors in Canada, and all of them are located between Quebec City and Windsor and none in either the west or eastern parts of Canada. Similarly, the majority of passenger traffic is in Ontario and Quebec while the majority of bulk freight occurs in the west. These differences lead to significant differences in the type and frequency of incidents by track subdivisions. This is illustrated in the chart below prepared by the Canadian Rail Research Laboratory (CRRL) after reviewing a 10-year history of all TSB-reported incidents in the Reportable Observation Data System (RODS).



It is evident that the top 10 subdivisons vary by a factor of 3 from the worst to the 10th worse and that there is a factor of 4 difference across the top 30. The types of incidents in these subdivisions vary greatly too and CN is currently working with the CRRL to better understand those patterns which appear to be consistent on a corridor basis (i.e. vary by rail corridor). Clearly the diverse geography, demography and train movements create various safety needs which must be taken into consideration when assessing the appropriateness of PTC in Canada. For this reason, implementing PTC across Canada is not justified. The diverse geography, demography and train movements create various safety needs which must be taken into consideration.

CN strongly opposes implementing PTC in Canada given the immaturity of current technology, the specific geography and demography of the country, and the limited safety benefits such as grade regulations, crossing closures or multimodal technology.

11.1.5. CN Proposal

CN strongly opposes implementing PTC in Canada given the immaturity of current technology, the specific geography and demography of the country, and the limited safety benefits. Rather, it is CN's recommendation that government and industry work together to identify opportunities to enhance rail industry safety, especially on a rail corridor basis, including coordinating public and private infrastructure investment on a priority basis by corridor and the development of new technologies beyond what is normally associated with ETC so that a broader safety case can be addressed.

11.2. Inspection

Research and development in the rail sector has led to significant progress respecting safety. While innovation can be found in many aspects of modern railway activities, the most recent technology for inspection of railway infrastructure provides the industry with significant opportunities to improve safety. While inspections are a strong measure to prevent accidents, because technology can provide more accurate and more consistent information than human inspections, CN believes that the Panel should include a recommendation encouraging the use of new technology for inspections.

The most recent technology available for inspections provides the industry with significant opportunities to drive incremental safety. As inspections are a strong option to prevent accidents, and because technology can provide more accurate and more consistent information than human inspection, we believe that the Panel should include a recommendation encouraging the use of new technology for inspections as discussed more fully below.

11.2.1. Car Inspection

The role of this equipment is to relay real-time safety information to the train crew to take appropriate action. By way of example, the *Rules Respecting Key Trains and Key Routes* provide that companies must install Wayside Defective Bearing Detectors (WDBD) at least every 40 miles on key routes. When a defect is identified, the train must be safely stopped and inspected to determine the nature of the issue and whether the train can be safely operated to the next yard. This information is extremely valuable as a defective bearing can lead to derailments. On its main corridors, CN has HBD every 15 to 17 miles. The following detectors are also used on CN's network:

- Wheel Impact Load Detector (WILD) which measures the condition of the surface of the wheel by detecting each wheel's impact on the rail (i.e. from flat spots);
- Truck Hunting Detectors which provides alerts when cars are excessively moving back and forth laterally at high speed;
- Machine Vision Detectors which uses laser-video technology to capture wheel profiles and dimensions from trains in motion at speeds up to 65 mph.

11.2.2. Track Inspections

Historically, visual track inspections provided the foundation for ensuring that the condition of the track meets safety requirements. As there was no alternative available, visual inspections were the norm and to this date, the *Rules Respecting Track Safety* still require visual inspections. In general, visual inspections are required twice per week on core routes, and may be required more frequently depending on climatic conditions (primarily excessive cold or heat).[65] The Rules require that visual inspections be made on foot, or by riding in a vehicle at a speed allowing the person to visually validate compliance with the Rules. Importantly, mechanical or electrical track devices may be used, but only to <u>supplement</u> visual inspections. In other words, even if technology provides more reliable information than visual inspection does, the Rules nevertheless require railway companies to proceed with visual inspections.

When considering modern options available for track inspections, the requirement for human visual inspections appears obsolete. CN uses electronic inspections to provide measurable and objective data regarding track condition that is superior to the observation made by human visual inspection.[66] In particular, CN uses the following track inspection technologies:

- Ultrasonic Rail Flaw Detection (RFD) cars, which detect internal rail defects not visible to the naked eye;

[65] Rules Respecting Track Safety, Rule 2.4(e).

[66] CN enclosed as Appendix 6 its publication "Leadership in Safety – Safety First" which provides further descriptions of the technology used or developed by CN (Pages 22-27).

- Geometry inspection platforms (located on coach cars, trucks and hi-rail vehicles) which provide precise data on rail curvature and elevation in a manner that is more consistent and more accurate than human visual inspection;

- Vehicle track interaction (VTI) units on locomotives, which identify locations where locomotives feel significant impact or alignment that may indicate a potential track deviation;

- Rail joint bar detection units which can detect joint bar cracks in hard to see locations in a manner that is more consistent and more accurate than human visual inspection;

- Test cars measuring rail alignment, track gauge, cross levels and curves in tracks;

- Tie rating technology developing 3-D imaging of ties and related material; and

- Unmanned aerial vehicles (drones) to visually inspect critical infrastructure in difficult-to-access areas.

The current rail flaw detection process entails a stop and verify method that requires the chief operator of the high rail equipment to review indications at the very moment of the test, and decide which locations require verification. The testing speed for stop and verify inspections normally averages between 6 and 10 mph, depending on the rail conditions. While some rail flaws or potential defects can be identified and addressed immediately, this is not always the case, due to a variety of factors, including misinterpretation of data in real-time, or misunderstanding of indication information. In addition, maintenance cannot be undertaken on a priority or risk basis, as the process is linear and a large number of items presenting no risks to rail safety are identified and unnecessarily assessed even though only a few significant defects require action.

New technology available to CN would enable the scope and reliability of inspections to increase significantly. By having inspection devices located on passing trains, or high rail equipment proceeding at higher speed, more tracks can be inspected and the quality and consistency of the inspections significantly increased, which would enable CN to identify and address major defects more rapidly. The volume and quality of the information collected with new technology far exceeds what visual inspections can generate, making them redundant. As visual inspections also take up track time, they occupy slots which could be better used to undertake the track repairs that the new technology has indicated are necessary.

Transport Canada officials have shown some hesitation in supporting new technology, given that data from non-stop electronic inspection vehicles must be reviewed at a post processing facility before potential defect indications are identified, and required maintenance undertaken. From a practical perspective, this results in a maximum delay of 24 hours between the time the inspection vehicle passes, and the time that maintenance on the line begins. New safety vehicles can, however, inspect more track more quickly than visuals inspections, which should clearly compensate for this small delay. In addition, more urgent indications can be

undertaken on a priority basis, which represents a significant safety improvement over the current process.

CN is currently in the process of developing an automated technology to perform visual inspections using a rail car in regular train service. While this technology will not likely be ready for the next nine to 12 months, CN will be looking for relief on the required number of visual inspections currently required in the *Rules Respecting Track Safety.* It is important to stress that allowing railways to realize such efficiencies will do much to encourage the rapid and widespread adoption of safety-enhancing technologies. Encouraging Transport Canada to modernize their approach with the implementation of new technology is therefore critical to enable railway companies to continue to invest in new safety.

11.2.3. CN Proposal

New technology presents many opportunities to improve rail safety. CN requests that the Panel recommend that the following measures be adopted:

- Transport Canada should encourage the development and use of new technology;
- Transport Canada should actively participate in pilot projects aimed at developing, testing and implementing new technology for track and car inspections;
- Reduced visual inspection requirements should be considered as new technologies are proven to provide an equal or better process compared with inspections as currently provided in the *Rules Respecting Track Safety*; and
- The *Rules Respecting Track Safety* should be amended to authorize the permanent use of alternate inspection methods to visual inspections without the need to seek temporary exemptions as is currently required.

12. Proximity

The safety of rail operations is a shared responsibility. This joint interest is aptly illustrated when considering proximity issues. Developers, municipalities, residents and railways are all involved as are the federal and provincial governments.

12.1. Proximity and Risks – A Correlation

Railways are central to Canada's history and its present. Starting nearly 200 years ago, railways opened up the western half of the continent to industry and settlement, playing an instrumental role in facilitating the establishment of cities and towns, and the economic activities needed to support them. Even today, protecting the integrity of the railway network is favourable to the attractiveness and competitiveness of Canadian communities.

Canadian cities continue to develop and evolve, and their downtown areas are seeing denser residential and commercial occupation. Vacant lots are rare and in demand in many Canadian cities. As a result, development is increasingly occurring in close proximity to railway operations. Land use planning authorities, such as municipalities and provinces, generally have the necessary powers to regulate new developments, but some of them continue to overlook the serious safety issues that can arise when new developments with sensitive land uses are authorized in proximity to railway operations.

12.2. The Safety Issues

12.2.1. The Absence of Safety Barriers and Setbacks

Risks generated by the presence of natural features (e.g. floodplains) and by man-made features (e.g. airports, highways) require appropriate controls for development and human occupation in their vicinity. These features are usually addressed in applicable legislation or regulation, but there is currently no effective framework to deal with the proximity of new development projects to adjacent railway operations throughout Canada. Recognized best practices exist for this type of development and have been successfully implemented in some locations, namely by incorporating sufficient setbacks and safety barriers such as earth berms or crash walls along railway corridors.

12.2.2. Increased Trespassing

The presence of establishments like schools and shopping centres next to railroad tracks can create temptation for reckless and dangerous behaviour, such as trespassing over tracks in non-authorized locations. This is particularly true when residential development has taken place on either side of railway tracks without sufficient consideration for the location and capacity of existing rail crossing points, either at-grade or grade-separated. Ignoring these impacts in neighbourhood planning can lead to the emergence or increase of trespassing incidents. Throughout CN's Canadian rail network, CN Police regularly intervene to deal with the trespassing generated by poor neighbourhood planning.

For example, in the Town of Richmond Hill, Ontario, CN Police had to engage with local authorities as a result of poor planning which led to trespassing issues where 16th Ave crosses the CN tracks. At this location, CN's Bala Subdivision runs north and south with two mainline tracks. A four lane roadway with pedestrian sidewalks travels east and west over the tracks. In addition to CN, both GO Transit and VIA operate on the lines. The area is heavily populated with several large condominium towers and townhomes on the east side of the tracks, and two large shopping centers on the west side. Due to the design of the overpass, pedestrian access is difficult and pedestrians regularly choose to trespass on CN's tracks instead.

CN Police has taken multiple actions to promote safety at this trespassing location. They brought together stakeholders from CN, the town of Richmond Hill and the Region of York to discuss design changes to the grade separation. As the overpass is being replaced in the near future, CN has proposed changes to the new design which will incorporate pedestrian-friendly access to reduce trespassing occurrences. CN Police engaged with several businesses within the shopping centers to promote railway safety. The closest commercial property is an Immigration Canada Welcome Centre where railway safety material is now available and the Community Services Officer regularly conducts Operation Lifesaver presentations to new immigrants. “No Trespassing” signage is posted at the location as well. Due to the highly diverse area, and proximity to the Immigration Canada Welcome Centre, an additional sign was developed with messaging in six languages. Finally, the Town of Richmond Hill posted a sign at the location which directs pedestrians to the nearest pedestrian crossing. Several Rail Safety Week events have taken place in the area and at nearby GO Stations. When, notwithstanding all those efforts, trespassing occurs, CN Police conducts enforcement actions, under the *Trespass to Property Act* and *Railway Safety Act*. We enclose as Appendix 7 pictures showing this crossing and the signage referenced earlier.

Another trespassing example relates to Rivers Subdivision in Winnipeg which begins in the heart of Downtown at the VIA Depot and continues west towards Rivers, Manitoba. From Fort Rouge Yard westbound towards Portage La Prairie, numerous proximity issues have been identified. In some cases, fences are erected as well as 'No Trespass' signs that are subject to constant vandalism. An elementary school and playground back onto CN's right-of-way without any fencing as seen below and in Appendix 7.

A school field without fencing or other mitigation along one of CN's main lines in Winnipeg

12.2.3. Inadequate Traffic Capacity at Grade Crossings

Failure by individuals to respect crossing indications and warning signals at crossings is a major safety hazard; crossing design and capacity are an important factor to improving safety. Therefore, a municipality expecting growth in pedestrian, bicycle or vehicular traffic at a rail crossing should also evaluate the need for crossing improvements in the area, and should do so before authorizing any substantial change to land use and density in the subject development area. When there is sufficient traffic, road authorities should favour grade-separated structures with a greater capacity over more numerous at-grade crossings, considering that each grade-crossing is an additional risk factor.

12.2.4. Drainage Impacts

Climate-related events have the potential to affect all transportation infrastructure, including railway facilities and corridors. In parallel, urban and rural development modifies certain land characteristics such as: slopes, drainage patterns, surface imperviousness, the water table,

floodplains and runoff retention (or lack thereof). In recent years, CN has noticed an increase in drainage impacts to railway property due to interventions on adjacent lands, with the potential to reduce the integrity of the track bed, and generate serious safety concerns. The reality is that some land use authorities allow development without requirements in regard to hydrology and storm water management. The lack of proper drainage evaluation and intervention is simply not acceptable; it directly results in a safety risk that could increase over time. Another aspect to consider is that land owners and developers sometimes proceed with illegal drainage connections, and intentionally spill runoff from their lands to railway property, regardless of whether the land use authority has adequate stormwater management requirements.

Unauthorized drainage outlet taken from the track perspective in the Greater Toronto Area

12.2.5. The Absence of Federal Oversight

With the state of current rail safety legislation, the proliferation of such situations will continue. Beyond the aforementioned safety considerations, development that is too close to rail infrastructure, and does not include appropriate mitigation measures, also generates community complaints regarding noise and vibration; these complaints fall under the authority of another federal regulator, the Canadian Transportation Agency.

Certain land use authorities have decided to adopt policies and regulations to limit potential safety and acoustic impacts in new developments. They favour compatible land use designations, such as industry or utilities, on lands in close proximity to rail facilities. If land use authorities allow new sensitive land uses on these lands, they should also adopt appropriate zoning standards and other mechanisms that will require developers to take the following actions:

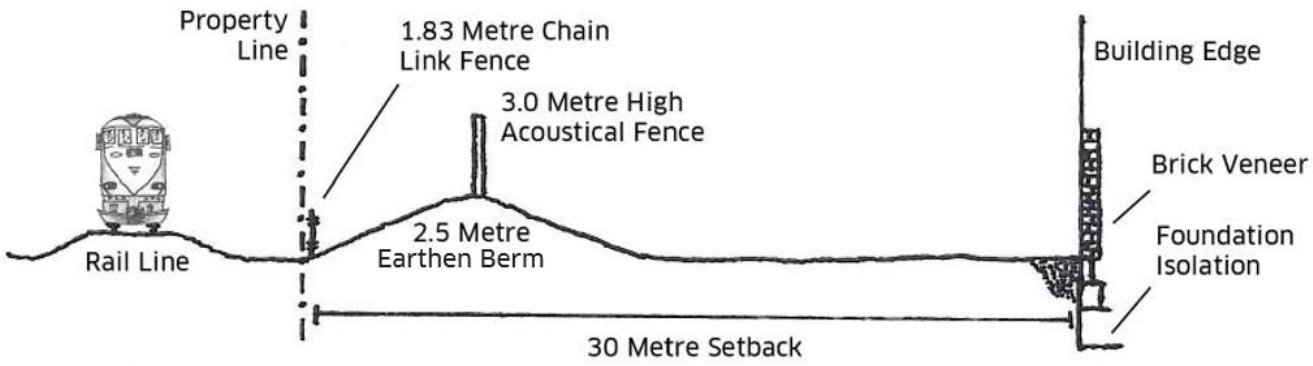
- Incorporate an adequate setback between buildings and the rail right-of-way;
- Ensure that covenants are placed on title warning future occupants of proximity to railway operations;
- Include safety barriers, such as earth berms or crash walls, to protect buildings and their occupants;
- Install and maintain fencing along a mutual property line with a rail corridor to limit trespassing;
- Assess potential noise and vibration impacts and mitigate them appropriately in the design and construction of buildings that will house sensitive uses and occupants. Typical mitigation measures include but are not limited to: noise barriers, building materials and glazing with appropriate acoustic properties, provision of air conditioning and residential building designs that do not locate bedrooms in parts of structures closest to the railway.

12.2.6. The Correlation between Proximity and Risk is no Longer Disputed.

The Federation of Canadian Municipalities (FCM) and the Railway Association of Canada (RAC) joined forces in 2003 to create the Proximity Initiative. In May 2013, they published a new version of the *Guidelines for New Development in Proximity to Railway Operations*[67] (Proximity Guidelines). This document is intended to share recognized best practices with provinces, municipalities, developers and property owners when developing on lands in proximity to railway facilities to reduce land-use incompatibilities. Here is an example of such best practices for a specific development scenario, namely a suburban townhouse project with single-family dwellings:

[67] The Guidelines are includes as Appendix 8.

CN's mainline in Brampton, ON and adjacent development designed in accordance with the Proximity Guidelines.



Cross-section of the interface between a rail line and a new development (Figure 2, page 19, Proximity Guidelines).

While the FCM-RAC Proximity Initiative has been relatively successful in raising awareness of railway proximity issues throughout Canada, few land use authorities have proceeded with the adoption of policies and standards that are consistent with recognized best practices, such as those detailed in the Proximity Guidelines. Certain municipalities and developers initiate dialogue with the affected railway company and follow the Proximity Guidelines, whereas CN and its industry partners have been dedicating resources for years to raise awareness, encourage dialogue, and promote best practices. Surprisingly, some municipalities object to the guidelines on the basis that they are not binding, even after the Lac-Mégantic accident. Municipal and professional associations have voiced their support for these best practices, but there is a general expectation from land use authorities that the framework to deal with land use compatibility issues in proximity to the federally regulated railway network should be brought forth by the Federal Government.

Since the 1980s, CN has been actively working with Canadian municipalities promoting the railway's input on proposed planning and zoning amendments, and on proposed development projects. In 2016, CN received 7,707 such requests, with more than two-thirds coming from Ontario municipalities, which are legally required to do so, as per regulations stemming from the Ontario Planning Act. In contrast, less than 1% of the development review requests sent to CN come from Quebec, despite the fact that CN's network is in proximity to almost 300 municipalities in the province, and despite the best intentions to improve land use planning after the Lac-Mégantic tragedy.

CN is committed to maintaining strong relationships with communities. While it is not our intent to single out any municipalities in particular, we feel the responsibility to share with the Review Panel the following two examples of residential development projects recently

approved in Canadian cities (see photos below). Unfortunately, there are similar examples in the urban areas of every one of the eight provinces in which CN operates its continental network.

New residential development in the Halifax area.

New residential development in the Greater Montreal Area.

Those developments were authorized by municipal authorities, notwithstanding CN's objections to their location. Unfortunately, new development in proximity to railways in many parts of Canada is being authorized without requirements to reach acceptable thresholds in terms of safety, land use acceptability, and mitigation. We cannot speak of widespread and effective handling of railway proximity issues by land use authorities. While many agree with the risk it represents, most are admittedly waiting for intervention by a higher tier of government to obligate them to adopt the appropriate measures.

12.2.7. The 2007 Recommendation – No Progress

The 2007 "Stronger Ties" Report included an entire chapter on Proximity Issues, in order to demonstrate thoroughly how rail safety is a responsibility shared by railways, land use authorities, and other stakeholders.

During its consultation process, the Panel conducting the 2007 review of the RSA witnessed dangerous behaviour by trespassers trying to get across a railway line in non-authorized locations (page 104). These are indeed daily occurrences for railway companies and their police forces. Community outreach and awareness campaigns delivered by the railways and by partners such as Operation Lifesaver are of great importance, in order to inform communities of the dangers of trespassing in existing neighbourhoods. The members also identified that new

development and land occupation patterns in our cities are a major contributor to the problem (page 104):

> *Residents of the new developments complain not only about crossing safety and train speeds through their community, but also about blocked crossings, as well as the noise, pollution and vibrations emanating from the trains and their yards, and the quantity of dangerous goods being carried on trains through densely-populated areas. The Panel received many submissions regarding these issues, from residents in urban and rural municipalities alike.*

Communication between municipalities and affected railway companies is also key in addressing potential incompatibility of a new development, but this communication does not always occur (page 104):

> ***Under the RSA (s.8(1)), a railway company must give notice of proposed railway work to adjacent landowners and the municipality. Municipalities and developers, however, are not required to provide similar notice to railway companies when they plan new development near railway lines.***

After observing that railway infrastructure is not always considered in the design, zoning and planning of communities, the Advisory Panel ultimately made the following recommendation to the Minister (page 107):

> *Recommendation 34 - The RSA should be amended to require the developer and municipalities to engage in a process of consultation with railway companies prior to any decision respecting land use that may affect railway safety.*

Since 2007, the RSA has been amended numerous times, but these considerations were completely ignored. CN hopes to highlight the need for a Federal framework in dealing with new development and new occupation in proximity to railway operations, because the status quo includes a lack of rigour by land use planning authorities, to the detriment of safety, land use compatibility and cohabitation with communities.

The current Review of the RSA is rare opportunity to address this key safety issue. There is evident need to introduce legislative changes that will pave the way for regulations governing new developments in proximity to railway operations.

12.3. The Need for an Intervention

As explained in the previous sections, municipalities generally have the necessary powers to regulate new developments. Some municipalities choose not to regulate developments in proximity to railways in order to benefit from a 'comparative advantage' to attract developers and increase their tax bases. However, intervention can favour an effective, fair and uniform approach to proximity issues.

Ontario has been a pioneer in proactively encouraging land use compatibility with railways in order to protect communities and neighbourhoods, all while also protecting the integrity and capacity of its transportation networks. With work that began in the 1980s, the Ontario government, Ontario municipalities and the railways developed a framework to reduce effectively railway proximity issues in new developments. Today, the province has strong policies in this regard (Ontario Provincial Policy Statement, 2014) supported by regulations stemming from the Planning Act (Ontario Regulations, 543/06, 544/06, 545/06). This approach has been based on collaboration between the concerned stakeholders, and has not affected real estate growth. Developers have incurred some additional costs to improve the safety and compatibility of their housing products, yet new project starts have not wavered.

The Governments of New Brunswick, Saskatchewan and Alberta have undertaken consultation with stakeholders on how to address railway safety and proximity issues. While other provinces have been evaluating ways of better guiding their development, there are still projects being approved without sufficient mitigation to address safety risks and land use compatibility. Numerous municipalities along CN's Canadian network still do not consult the railway on important planning and development matters.

12.3.1. The Specific Regulation-Making Power of the RSA

The threat to safety posed by developments in proximity to railway lines is not a recent issue. When the current RSA came into force in 1988, it included section 24 under the heading "Non-railway Operations Affecting Railway Safety", to provide the federal government with a regulatory power respecting the control or prohibition of the construction or alteration of buildings on land adjoining railway lines which is analogous to a zoning power:

> **24** (1) The Governor in Council may make regulations:
> a) respecting
> (i) the control or prohibition of the construction or alteration, or
> (ii) the control of the maintenance
> of buildings and other structures, not being railway works, erected or proposed to be erected above or below a line of railway, or on land adjoining the land on which the line is situated, to the extent only that is necessary to prevent those buildings or structures from constituting a threat to safe railway operations;
> [...]
> g) respecting the control or prohibition of any other activity, on land adjoining the land on which a line of railway is situated, that could constitute a threat to safe railway operations.

This regulatory power has not, however, been used to date. While no reason for this reluctance to act has been formally provided, we understand some have suggested that such regulations would not be constitutionally valid. CN wants to address this assumption which, to the extent it exists, is misguided.

12.3.2. The Federal Jurisdiction Respecting Rail Safety

The federal jurisdiction respecting interprovincial railways is well established. It has also been confirmed that this jurisdiction extends to the safety of rail operations. When dealing with proximity issues, the matter is usually assessed by considering the potential conflict which may exist between the federal jurisdiction respecting rail safety and the provincial jurisdiction respecting land use. More specifically, two questions are raised:

1. Can Parliament regulate, as section 24 of the RSA suggests, land use respecting properties adjoining land on which railways are located and the buildings to be located on those properties?

2. If the answer to question 1 is yes, what is the extent (or the limit) of the federal jurisdiction?

Respecting question 1, the immediate proximity of railway lines in relation to properties with various types of use has the effect of varying the risks on the basis of the respective compatibilities that these uses may have with railway activities. The risks this proximity creates must, however, be acknowledged and addressed. As indicated earlier, the current state of proximity regulation is incomplete and the national nature of railway operations in Canada requires uniformity in the rules which can only be achieved through federal interventions. By way of example, the Guidelines recommend for residential developments to be set back a minimum of 30 meters from a railway line because this is considered an adequate buffer zone in case of derailments. These connections between the risk created by the proximity of the rail activity to residential developments or public buildings such as schools or parks should provide a solid basis for intervention by federal authorities to prevent their establishment within this zone.

Turning to question 2, the location of industrial buildings should not be prohibited within 30 metres of a railway line because the risks in case of derailments are lower and do not automatically call for the same mitigation. Experience shows that the location of specific buildings, even on lands not adjoining a railway line, can raise risks of different types. For example, the construction of a school 300 meters from a railway line might not increase risks of impacts in case of derailment but it can increase the volume of pedestrian traffic at crossings located in the vicinity of the school. In this instance, a prohibition might not be appropriate but a notice to the railway company in the context of the approval process leading to the construction of the school would enable railways to suggest mitigating measures such as road access, crossing upgrades, fencing and safety education. Currently, with the exception of Ontario, railways are not always afforded the opportunity to comment and are presented with a *fait accompli*, which must then be addressed as the situations arise.

12.3.2.1. The Framework of the RSA

Section 24 of the RSA was introduced because the regulations it contemplates would further the purpose and framework of the RSA[68] which has an unequivocal declaration of objectives:

> **3** The objectives of this Act are to:
>
> **a)** promote and provide for the safety and security of the public and personnel, and the protection of property and the environment, in railway operations;
> […]
> **d)** facilitate a modern, flexible and efficient regulatory scheme that will ensure the continuing enhancement of railway safety and security.
>
> Indeed, the notion of safety is present in the entire RSA. In that regard, a very broad regulatory power is given to the Minister:
>
> **3.1** The Minister is responsible for the development and regulation of matters to which this Act applies, including safety and security, and for the supervision of all matters connected with railways and, in the discharge of those responsibilities, the Minister may, among other things:
> **a)** promote railway safety and security by means that the Minister considers appropriate;
>
> The RSA conveys a broad notion of safety:
>
> **4(4)** In determining, for the purposes of this Act, whether railway operations are safe railway operations, or whether an act or thing constitutes a threat to safe railway operations or enhances the safety of railway operations, regard shall be had not only to the safety of persons and property transported by railways but also to the safety of other persons and other property.
>
> The Superior Court of Ontario considers that "the RSA has as one of its prime purposes the maintenance of public safety"[69].

The desire to improve railway safety is at the origin of the RSA. In 1988, the RSA was brought in by the legislator in response to the Hinton, Alberta accident[70], where 23 people died in a collision between a CN freight train and a VIA Rail passenger train. The Parliamentary Secretary responsible to present the RSA then declared that this Act: "brings safety into the Ministry of Transport"[71], that it "provides a clear focus on safety by placing in a single Act all the federal Government's powers for the regulation of railway safety"[72] and finally that it "give[s] the Government all the powers necessary to ensure safety on the railways"[73]. Thus, the RSA

[68] For an overview of the Act, see : *Burgess v. Canadian National Railway Company*, 78 OR (3d) 209; 34 CCLT (3d) 288 at para 27 ff.
[69] Burgess v. Canadian National Railway Company, 78 OR (3d) 209; 34 CCLT (3d) 288.
[70] Blaine A Thacker, Commons Debates, 33rd Parliament, 2nd Session, vol 10, February 4, 1988 at p 12 609.
[71] Ibid.
[72] *Ibid*, at p 12 612.
[73] Ibid.

regulates the construction or alteration of railway works in its Part I, the operation and maintenance of railway works and equipment in its Part II and even the non-railway operations affecting railway safety in Part III where section 24 is included.

12.3.2.2. The Experience with Airports

As previously mentioned, the notion of safety falls within federal jurisdiction. By analogy, it is recognized that federal jurisdiction in aeronautics extends to aviation safety[74]. Importantly, the federal intervention respecting adjacent land has been accepted in the context of air transportation. In the *Orr* case, a group of citizens opposed Montreal Airport's intention to take possession of an adjoining land to build a control tower[75]. The group contended that the construction contravened Quebec's legislation. The Superior Court did not see the colour of right in this argument: the control area is required to enhance the safety of airport users and, more particularly, of the public[76]. Therefore, it falls within the federal government's exclusive jurisdiction over aviation.

12.3.2.3. Adjacent Land Use under the Aeronautics Act

The *Aeronautics Act*[77] (AA) provides the government with an airport zoning power on all land "required for use as an airport" including land adjacent to or in the vicinity of an airport. In that respect, the Supreme Court reaffirmed that "the transportation needs of the country cannot be allowed to be hobbled by local interests"[78] This zoning power allows the federal government to prohibit all use incompatible with the operation or safety of the airport.

Importantly, section 24 of the RSA sets itself apart from the airport zoning power in that its most restrictive wording: the Governor in Council can regulate the adjoining lands "to the extent only that is necessary". In other words, the purpose of the regulation-making power is not to prohibit all uses of lands adjacent to railway lines, but only to control or prohibit building structures to the extent necessary in relation to those constituting a threat to safe rail operations. In that sense, the Guidelines provide a solid basis on which relevant distinctions can be established to determine the "extent necessary" of the control or prohibition.

As indicated earlier, there is absolutely no doubt that regulating safety is within the power of Parliament in relation to the regulation of railways under federal jurisdiction. A federal intervention on this question can provide an efficient long-term solution to an issue that significantly increases safety risks. The regulation-making power found in the RSA appears to acknowledge the need to regulate. Finally, the federal intervention respecting lands adjacent to

[74] Bell Canada v. Quebec (Commission de la Santé et de la Sécurité du Travail), [1988] 51 DLR (4th) 161, 1 SCR 749 at para. 255.
[75] Orr c. Aéroports de Montréal, 2016 QCCS 5032.
[76] *Ibid*, at para 6 (our translation).
[77] *Aeronautics Act*, RSC 1985, c A-2.
[78] British Columbia (Attorney General) v. Lafarge Canada Inc., [2007] 2 SCR 86.

airports, contrasts with the hesitation in relation to lands adjacent to railways, without any valid reasons being provided.

12.4. CN Proposal

In line with the beliefs and values of the Canadians it serves, the Federal Sustainable Development Strategy is the government's plan and vision for a more sustainable Canada. It outlines goals and actions to promote clean growth, ensure healthy ecosystems and build safe, secure and sustainable communities. Rail safety and land use compatibility are vital pillars upon which to build, maintain and protect our communities. CN believes that only a sufficiently structured legislative intervention by the Federal Government can ensure that new developments in proximity to railways are regulated effectively and equitably in all Canadian communities.

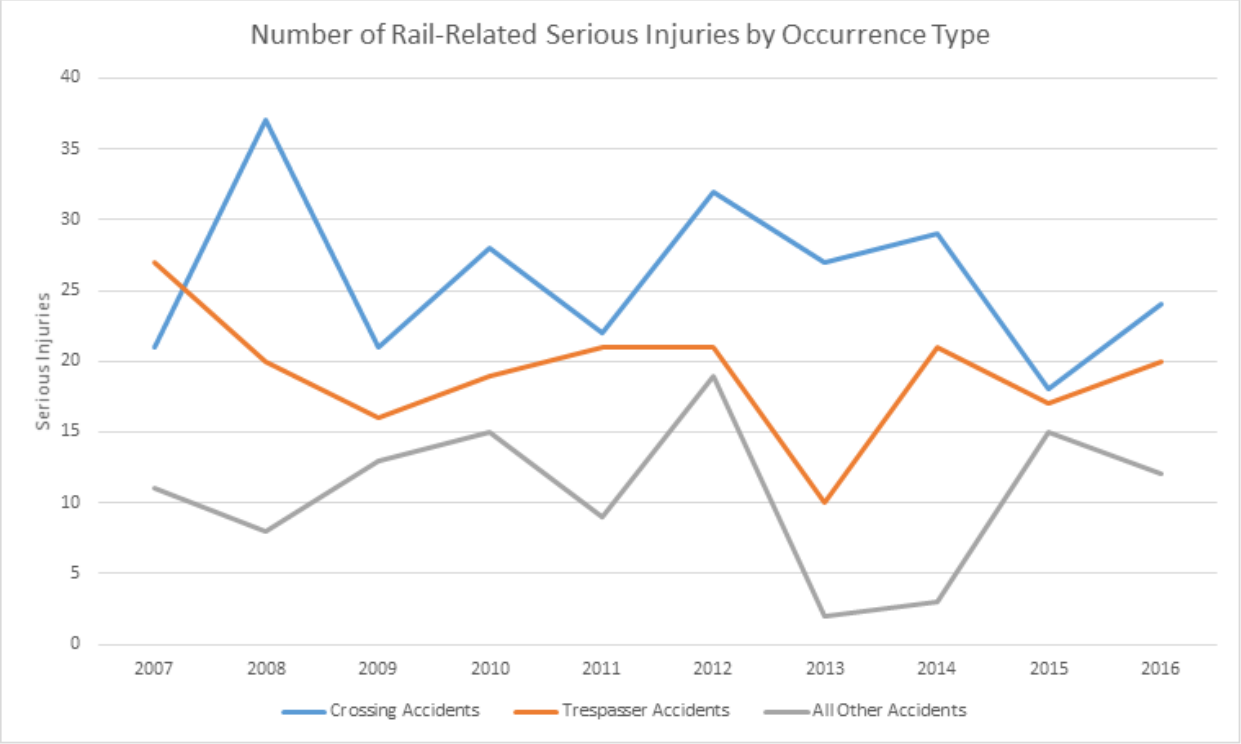
In order to address the obvious shortcomings related to land use planning in proximity to railways, CN respectfully requests that the Panel recommend that the Statutory Review of the RSA include provisions to ensure:

- Federal regulations should be adopted to introduce minimum standards, based on the Proximity Guidelines, for the various mitigation measures to be included in new sensitive development projects in proximity to railway operations, including the establishment of a 30 m setback for the construction of residential and public buildings on land adjacent to railway lines;
- Provisions should be included in the revised RSA that will direct land use planning authorities, provincial, municipal or otherwise, to formally provide pre-notice and seek input from the affected railway company before authorizing land-use plan amendments, zoning amendments, new subdivisions for lands or construction permits within 300 m of a railway corridor;
- Federal policies and strategies should be implemented to create a national framework for new development in proximity to railway activities consistent with the FCM-RAC Guidelines.

13. Crossings

13.1. Grade Crossings: A Significant Safety Risk

Each year, grade crossings are the source of the **largest** number of rail-related accidents leading to fatalities in Canada. The following graph compares the number of fatalities at grade crossings with all other fatalities related to rail activities in Canada.



While the cause of crossing fatalities may vary, the fundamental risk created by a grade crossing is the immediate conflict that exists between road and rail traffic. As both cannot take place simultaneously, priority must be given to one over the other. There are approximately 15,000 grade crossings on CN's Canadian network alone, of which approximately 7,000 are public and 8,000 are private. This large number would make impossible an operation where trains would have to stop at each crossing to give priority to road traffic. This would practically put rail activities at a standstill. The current practice under which railways have priority represents the better option, as it enables railways to discharge their common carrier public mandate of moving traffic efficiently, and in a manner that does not prevent road traffic from circulating. In light of this and the significant proportion of accidents taking place at grade crossings, Transport Canada and railway companies have taken measures aimed at reducing occurrences. Notwithstanding those efforts, the statistics confirm that a particular focus should continue to be placed on this matter. CN respectfully submits that the following issues should be considered by the Panel in an effort to increase crossing safety and reduce accidents at grade crossings:

- Ensuring compliance with the *Grade Crossings Regulations;*
- Limiting the number of new grade crossings;
- Accelerating the closure of grade crossings.

13.2. The Grade Crossing Regulations

The *Grade Crossing Regulations* (the "Regulations") and associated Standards came into force on November 28, 2014. They were adopted specifically to increase crossing safety by establishing specific, more stringent, safety standards to be met at each crossing, whether public or private. For public crossings, the Regulations require the exchange of technical information (number or road lanes, number of tracks, traffic counts, etc.) between road authorities and railway companies to provide readily available information to assist in the assessment of crossings in order to determine upgrade requirements.

The new Standards apply immediately to all new crossings or any crossings that undergo a significant change. Existing crossings must be brought into compliance by November 28, 2021. While CN supports the intention of the Regulations to increase safety at crossings across Canada, we have also identified challenges associated with meeting the requirements of these Regulations by the prescribed date, many of which will impact not only railways, but provinces, municipalities and private landowners.

13.2.1. The Exchange of Information under the *Grade Crossing Regulations*

Consistent with the notion that safety is a shared responsibility, sections 4 to 18 of the Regulations set out the information to be exchanged between railway companies and road authorities. The deadline to satisfy the information sharing requirements of the Regulations was November 28, 2016. For the purpose of complying with this regulatory requirement, CN developed a spreadsheet for each road authority wherein the required railway information was included and provided for all grade crossings under each jurisdiction[79]. In an effort to develop a single document containing all information relating to each crossing, and to facilitate compliance by road authorities, CN also included in its spreadsheet a section where road authorities could simply fill in the road information.

To date, CN has not received information for approximately 24% (or 1,680) of the 7,000 public grade crossings located on its Canadian network. While CN welcomes the information received thus far, as it will facilitate implementation of safety measures where the information is available, the lack of compliance by many road authorities within the two-year period provided in the Regulations is surprising. This is especially so considering that many road authorities advocate for mitigating measures at crossings, and that the provision of this information is the first step towards the implementation of such safety measures. Without complete and accurate information for each crossing by both parties, railways and road authorities cannot reliably assess crossings and determine any required upgrades, over the next four years in order to meet the regulatory requirements. Additionally, railways cannot be expected to provide

[79] CN encloses the spreadsheet used to comply with the Regulations as Appendix 9. This document was also provided to Transport Canada notwithstanding the fact that the Regulations do not require CN to do so.

missing information or validate information provided by road authorities with respect to technical road and traffic information as this is clearly not within railway expertise.

13.2.2. The Cost of Complying with the *Grade Crossing Regulations*

As previously mentioned, the Regulations mandate that all crossings, public or private, be brought into compliance by November 28, 2021. While some crossings will not require significant upgrades to comply with the Regulations, others will need major work and, in many instances, the installation of automatic warning systems such as lights and gates. The potential costs associated with implementing these Regulations, already significant for CN, may be more daunting for certain road authorities and even more so for private crossing landowners. For example, the installation of an automatic warning system including gates, required under the Regulations in order to achieve sightlines at a private crossing giving access from a private property to a road, is typically in the range of $300,000 to $500,000. Such amount may be prohibitive when considering that private owners who are often contractually responsible to assume all or part of the costs may not have the capacity to pay for such upgrades. Further, complying with the Regulations where railway companies are financially responsible, creates a significant financial burden for railway companies.

Current federal funding is now available through Transport Canada's Railway Safety Improvement Program (RSIP) which has a total budget of $52 million over three years and builds on Transport Canada's former Grade Crossing Improvement, Grade Crossing Closure and Operation Lifesaver Programs. It includes not only an infrastructure, technology and research component (projects that address immediate rail safety needs) but also a public education and awareness component (education projects aimed at reducing crossing accidents and trespassing incidents). Eligible recipients include not only railways, but also provinces, municipalities, road and transit authorities, crown corporations, non-profit organizations and individuals. CN's portion of this program is a maximum of $10M per year. Given the broad range of projects competing for the same funds, it is clear that funding is insufficient to attain full compliance with the Regulations by 2021.

Indeed these concerns were raised at the time the Regulations were developed and were mentioned in the Regulatory Impact Analysis Statement (RIAS). Comments were received from the RAC, CN and VIA stating that the costs to upgrade private crossings to meet sightline requirements are too high compared to the benefits to be derived. Comments were also received from road authorities clearly stating that they would need a funding program that is commensurate with the costs of complying with the Regulations. At the time of the RIAS it was calculated that the costs for railways, provinces, municipalities, aboriginal bands and private authorities, associated with upgrading existing grade crossings to the new Standards, as calculated in 2012 for a 20-year horizon, were estimated to be in net present value (NPV) $127 Million with an annualized average of $13.4 Million. Additionally, the RIAS stated that over 78% of the overall costs of the Regulations were expected to be borne by railway companies. CN is certainly prepared to assume its fair share based on the cost apportionment established under Agreements or Board Orders, but it is clear that when the Regulations were developed, the cost

to comply was greatly underestimated. There is nevertheless an opportunity for Transport Canada to acknowledge that a robust contribution program is necessary for compliance with the Regulations on time. Without such a program, the Regulations will fail to deliver the intended outcome of effective improvement to crossing safety by having all crossings upgraded to the standards by November 28, 2021.

13.2.3. Need for Risk Based Approach

As stated above, under the new Standards all existing crossings have until November 28, 2021 to be brought into compliance with certain components of the new Standards. This approach, i.e., the general applicability of the Standards to all crossings while treating them all with equal priority, is not risk-based, and fails to consider the importance of the railway network and use of a crossing. The lack of such a risk-based analysis to identify where upgrades would be most effective, and the limited framework that would allow for exemptions from certain requirements of the Regulations and Standards, especially at private crossings, presents challenges to bringing crossings into compliance by the prescribed date. The Regulations fail to direct crossing upgrade investment to those crossings where the greatest safety benefit could be achieved. By way of example, a $500,000 investment for a warning system with gates on a low density railway line at a private crossing with limited use, could be better spent on crossings with higher road and rail traffic.

The 2015 Report for the Review of the *Canada Transportation Act* chaired by David Emerson recognized the importance of clarifying the roles and responsibilities related to private crossings and, specifically, the need to consider public healthy and safety and the impacts that grade crossings have on economic activity. As such, the Review recommended that applications for construction of new crossings include consideration of the impact that a new crossing will have on a railway's local and regional performance[80].

In March 2015, Transport Canada's Evaluation and Advisory Services delivered a report entitled: "Evaluation of the Grade Crossing Improvement Program". The Report recognized that there was no consistent risk-based approach to prioritizing GCIP applications for funding across the regions, and recommended that Transport Canada implement a consistent and systematic approach to targeting the highest-risk crossings in Canada through the GCIP[81].

While CN supports the intention of the Regulations to achieve greater crossing safety in Canada, without a risk-based approach to implementing crossing upgrades, which would targets investment at the highest risk crossings first, the current framework will likely not achieve the desired improvement to crossing safety.

[80] http://www.tc.gc.ca/eng/ctareview2014/canada-transportation-act-review.html
[81] https://www.tc.gc.ca/eng/corporate-services/des-reports-1268.html

13.2.4. CN Proposal

To the extent that there are significant challenges which increase the risk that the Regulations will not be complied with by the prescribed date and will likely not achieve the desired safety benefits, CN is asking the Panel to recommend that:

- Transport Canada provide support to road authorities that have not provided information under the *Grade Crossing Regulations*, by providing assistance in the preparation of accurate information and validating information provided;
- Road authorities which have failed to provide information in accordance with the Regulations should be required to comply within a prescribed period;
- The period expiring on November 28, 2021, to have crossings brought into compliance with the standards set in the Regulations, be extended by the same period of time road authorities fail to comply with the requirement to provide information to the railways;
- A contribution program commensurate with the costs of the work required to comply with the Regulations should be established by Transport Canada;
- To align with the fact that safety is a shared responsibility, funding under the program should be available to private owners, road authorities and railways to ensure a fair contribution by all and consistent with applicable agreements, Board orders or Agency decisions;
- The requirement to upgrade crossings should be assessed on a risk-based approach taking into consideration railway corridor fluidity and efficiency, and crossing use, directing investment in upgrades to those crossings which will achieve the greatest safety benefit;
- To support such a risk-based approach, a mechanism be implemented to allow for exemptions to certain requirements of the Regulations and Standards where safety could otherwise be achieved.

13.3. Canada's Modern Reality Calls for New Rules Respecting Crossings

Railways in Canada are closely associated with the development of the country. They were specifically mandated in order to build a network to support settlement by providing opportunities for the transportation of persons and goods. It is the reason why Canada's key urban centers were all located in proximity to railways. This also explains why Canada's road network crosses railways in numerous locations. Both networks are interdependent for the purpose of facilitating trade and commerce.

13.3.1. Entitlement to Crossings

In the context of the development of Canada, it was important that rules pertaining to rail crossings were implemented to support the construction of crossings, ensuring that railway

lines would not prevent economic development and the establishment of its residents. Rules under the various railway statutes have been consistent in ensuring that those having to cross railway lines are entitled to obtain crossings (municipalities, farmers, housing developments, etc).

While safety was not completely ignored, the relevant provisions never referenced safety as a consideration for authorizing the establishment of rail crossings. Even today's provisions do not make safety a stated factor that the Agency must take into account. In fact, current provisions of the CTA give authority to the Agency to authorize the construction of road crossings without any specific factor (let alone safety) to be taken into account. Subsection 101(3) of the CTA provides:

> (3) If a person is unsuccessful in negotiating an agreement or amendment mentioned in subsection (1), the Agency may, on application, authorize the construction of a suitable road crossing, utility crossing or related work, or specifying who shall maintain the crossing.

Interestingly, subsection 101(4) of the CTA refers the Agency to the RSA but only to section 16 and only for the purpose of apportioning the costs of the crossings. Section 16(4) of the RSA provides:

> (4) Where a matter is referred to the Agency under subsection (1), the Agency shall, having regard to any grant made under section 12 or 13 in respect of that matter, the relative benefits that each person who has, or who might have, referred the matter stands to gain from the work, and to any other factor that it considers relevant, determine the proportion of the liability for construction, alteration, operational and maintenance costs to be borne by each person, and that liability shall be apportioned accordingly.

Notwithstanding the fact that railway crossings create safety risks, the CTA and the RSA are silent on safety when dealing with new applications and, with the exception of the relative benefit, leave the Agency with total discretion as to whether or not a crossing should be authorized ("any other factor it considers relevant"). CN submits that this approach fails to deal with the safety concerns associated with crossings and that the CTA should specifically require consideration of the safety risks that the proposed crossing creates. To that end, the party proposing the establishment of a new crossing should be required to have a safety assessment performed by a qualified person, this assessment having to be filed in support of the application at the Agency.

13.3.2. The Role of Transport Canada

Under the RSA, Transport Canada is the subject matter expert respecting rail safety, but no formal requirement respecting the consultation of Transport Canada exists in the current

provisions of the CTA. While there is currently a Memorandum of Understanding (MOU) [82] entered into between Transport Canada and the Agency, it falls short of dealing adequately with safety issues and lacks procedural safeguards. With respect to crossings the MOU specifies that when the Agency receives an application for a crossing, the Agency will provide a copy to Transport Canada who will provide any safety advice and information for the Agency's use as part of its crossing regulatory processes. However there is nothing binding in the MOU that the safety information must be taken into consideration in the determination of the Agency. Additionally, there is no requirement for consultation with railways on the information provided by Transport Canada.

13.3.3. The Need to Reconsider the Current Rules

Although allowing parties to cross railway lines was necessary when Canada was being developed, the same entitlement today is more difficult to understand. Most areas where railway lines are located have a mature road network with numerous rail crossings. Likewise, most requests for private crossings show that there are other private crossings in the vicinity, but that crossing the railway line where requested provides a more direct and convenient option than connecting to a road where an existing crossing exists. It is also the option generally favored by applicants because it is the most economic. Simply put, the current regulatory framework perpetuates the entitlement to rail crossings, notwithstanding clear evidence that safety risks are increased as an outcome.

Accepting that road crossings increase safety risks and that efforts must be made to reduce their numbers, CN submits that any party asking for the establishment of a new crossing should have the burden of showing why a crossing is needed. This party should be specifically required to provide an assessment of whether accessing other existing crossings is an available option. Importantly, the rules should provide that additional costs to do so should not lead the Agency to favor the more direct option and the establishment of a new crossing. The rules should instead impose an obligation to utilize existing crossings even if this represents a more costly option. The creation of new crossings should be the exception when no other options exist. CN also submits that the party seeking the establishment of a new crossing should assume all costs respecting its construction, maintenance and protection, to send a strong signal in support of safety.

13.3.4. CN Proposal

CN respectfully asks that current provisions in the CTA be amended to limit the number of new crossings by prohibiting the establishment of new crossings unless:

[82] Memorandum of Understanding between the Federation of Canadian Municipalities and the Railway Association of Canada http://www.tc.gc.ca/eng/railsafety/publications-772.htm.

- The Applicant shows that there are no available alternate options to the crossing requested (options at a higher cost remaining available for the purpose of this assessment);

- Through a safety assessment performed by a qualified person and filed with the application, the risks presented by the proposed crossing are identified, and the proposed mitigating measures identified with options;

- The costs to construct, maintain and protect the new crossings are assumed by the Applicant.

13.4. The Need to Close Grade Crossings

To have a consistent approach respecting grade crossings, the closure of existing crossings should become a priority. As discussed above, the entitlement to grade crossings under the Canadian framework has led to the proliferation of unnecessary crossings. Their number could be reduced through a rationalization program which would take into account safety considerations and their relative proximity. This program would require significant efforts and funding but is necessary. In the documents distributed to stakeholders by the Panel in the context of the Roundtable held in Montreal, references are made to U.K. and E.U. programs which have successfully achieved reduction in grade crossings. Considering this positive experience, the absence of a mechanism in the *Grade Crossings Regulations* to proceed with closures is an unfortunate omission which deprives railways, road authorities and private parties from taking action when warranted.

13.5. CN Proposal

To encourage the closure of unnecessary grade crossings, Transport Canada should:

- Amend the *Grade Crossings Regulations* to introduce a mechanism under which railways, road authorities and private parties could seek closure of railway crossings when unable to agree; and

- Establish a grade crossing closure program where Transport Canada would promote crossing consolidation and closure with specific targets and appropriate funding.

14. Review of Enforcement Actions

14.1. Current Powers of the Transportation Appeal Tribunal of Canada

The Transportation Appeal Tribunal of Canada (TATC) is a quasi-judicial body established in 2003, pursuant to the *Transportation Appeal Tribunal of Canada Act*. It is mandated to review, *inter alia*, orders made by a Transport Canada railway safety inspector under section 31 of the RSA.

The review is conducted by a member of the TATC who can, pursuant to subsection 31.1(4) of the RSA, either confirm the order or refer the matter to the Minister for reconsideration.

Orders made by TC inspectors:

> 31(2) If the railway safety inspector is satisfied that the threat is immediate, the inspector may, in the notice, order the person or any company whose railway operations are affected by the threat, to take the measures that are specified in the notice to mitigate the threat until it has been removed to the inspector's satisfaction.
> […]

Review by the Tribunal:

> 31.1(4) The member may confirm the order or refer the matter to the Minister for consideration.

This provision is in stark contrast with the process under the *Aeronautics Act,* where the member or panel of the TATC can substitute its own decision on the existence of immediate threat for that of the Minister. Section 6.9(8) of the *Aeronautics Act* provides:

> 6.9(8) On a review under this section of a decision of the Minister to suspend or cancel a Canadian aviation document, the member of the Tribunal who conducts the review may determine the matter by confirming the Minister's decision or substituting his or her own determination.

This difference in the powers of the TATC, respecting infractions of similar nature but in different modes, is difficult to explain. While the modes are different in the manner they transport persons or goods, no one can advance an objective reason as to why Ministerial orders in the air sector can be varied by the TATC and not for Ministerial orders in the rail sector. This difference is nevertheless important because it maintains in place for the rail sector measures which the TATC does not consider appropriate.

14.1.1. CN's Experience with the Review Process Currently in Place

Since 2015, CN filed three (3) notices of application for review with respect to Notices and Orders issued by railway safety inspectors:

1) Notice and Order at Limoilou
    - Notice and Order issued by Transport Canada on June 11, 2015.
    - Notice of review filed by CN with the TATC on June 18, 2015.
    - Hearing held on March 23, 2016.
    - On July 12, 2016, the TATC determined that no evidence was filed to justify the measure imposed by the inspector at all times.

- On March 16, 2017, CN filed additional representations with TC for the Minister's reconsideration.
- To this date, the reconsideration process is still ongoing. CN must nevertheless comply with the Order issued over 2 years ago despite the TATC's finding.

2) Notice and Order at Goreway Drive (Brampton Intermodal Terminal)

- Notice and Order issued by Transport Canada on February 19, 2016.
- Notice of review filed by CN with the TATC on March 8, 2016.
- Hearing held on June 23, 2016.
- On November 30, 2016, the TATC determined that the Minister had not proven on a balance of probabilities that he was justified in issuing the order. The TATC also found that the alleged hazard did not constitute an immediate threat as per the Act.
- On March 16, 2017, CN filed additional representations with TC for the Minister's reconsideration.
- To this date, the reconsideration process is still ongoing. CN must nevertheless comply with the Order issued almost 2 years ago despite the TATC's finding.

3) Notice and Order at Prince George on deadheading/transit time

- Notice and Order issued by Transport Canada on October 26, 2015.
- Notice of review filed by CN with the TATC on November 26, 2015.
- Hearing held on June 8-9, 2016.
- On October 12, 2016, the TATC determined that the inspector did not have enough evidence on a balanace of probability to prove an imminent threat to railway safety.
- On March 16, 2017, CN filed additional representations with TC for the Minister's reconsideration.
- On May 19, 2017, the Minister revoked the order. CN was nevertheless required to comply with the Order for almost 2 years, despite the TATC's prior finding.

CN's experience shows that the current process is inconsistent with the rule of law. By operation of section 31.3 of the RSA, CN remains subject to orders even though the TATC has determined the order is not fully justified. This renders ineffective the appeal process and amounts to CN being denied due process of law.

14.1.2. CN Proposal

CN is respectfully asking the Panel to recommend the following changes:

- Section 31.1(4) and 31.2(3) of the RSA [and section 32.1(5) and 32.2(3) in relation to the review of a ministerial order] should be amended so as to authorize the TATC, in the case of a review of an order of a Transport Canada railway safety inspector, to confirm, revoke or alter the order.
- In the alternative, section 31.4 [and section 32.4 in relation to the review of ministerial order] should be amended to include a maximum number of days within which the Minister may confirm the order, or may, by order, alter or revoke the order of the railway safety inspector in order to avoid the situation noted above.

14.2. Review of Administrative Monetary Penalties issued under the RSA

14.2.1. Background

In its 2007 Report entitled "Stronger Ties: A Shared Commitment to Railway Safety", the RSA Review Committee recommended that "a*n administrative monetary penalty (AMP) scheme should be included in the Railway Safety Act as an additional compliance tool."* The committee also recommended that the scheme should include the following elements:

- the decision to impose a penalty should be the Minister's decision;
- before a decision is made, due process should be followed;
- the decision should be reviewable by the Transportation Appeal Tribunal of Canada;
- the level of fines should be consistent with those imposed in the aviation and marine modes; and
- an enforcement policy prescribing parameters for AMPs should be made public.

In the Report's accompanying discussion, the RSA Review Committee noted:

> We recommend that administrative monetary penalties be implemented as an additional enforcement option under the Railway Safety Act, and as an alternative to prosecution, particularly in respect of cases of persistent non-compliance, for example (emphasis added).

As a result, the *Railway Safety Administrative Monetary Penalties Regulations* came into force on April 1, 2015. They include Schedules of the maximum AMP amounts payable by individuals and corporations, for violations of particular Sections of the RSA, the Safety Management System (SMS) Regulations, and other Regulations. The maximum amount payable by a Corporation is $250,000, and a cursory review of the Schedules indicate that this amount is

reserved for what would have to be willful management violations of fundamental requirements.

14.2.2. Original Intent behind AMPs

In many of the consultation sessions held by the RSA Review Committee at that time, railway companies were of the view that AMPs could indeed be a useful compliance alternative to prosecution, as long as they were applied in a progressive fashion in cases such as willful violations and negligence by management, and, as noted above, on-going non-compliance and failures to correct. They also supported the Committee's call for due process, centralized control, an appeals process, and a transparent enforcement policy. There seemed to be general agreement among railways and Transport Canada around these principles at the time.

We file as Appendix 10 the presentation made by Transport Canada to the rail industry in the context of those consultations which confirms that a progressive approach in the use of AMPs would be applied.

14.2.3. Actual Use of AMPs by Transport Canada

Since 2015, Transport Canada has at times used AMPs in a manner that contradicts the continuum announced during consultations. In fact, Canadian railways have been more frequently exposed to AMPs as a first-line compliance tool. In some instances, AMPs have even been issued immediately after letters of warning were provided, and after railway companies had replied to propose how the situation would be corrected. Leaving aside natural justice issues raised by this practice, it is troubling to realize that Transport Canada will issue AMPs after the safety matter that prompted the letter of warning has been addressed.

One recent example of this actual use is the AMPs issued in March 2017 to CN on the Brazeau and Camrose subdivisions for rail not properly bolted with at least two bolts at each joint. In that case, concurrent to the inspection, the track supervisor immediately installed the missing bolts in front of the inspector, who later issued a Notice Acknowledging Immediate Action Taken. Transport Canada nevertheless, and despite the compliance and removal of the immediate threat, issued an AMP.

It follows that the use of AMPs as a first line compliance tool (in the same manner as traffic tickets are issued), is inconsistent with their framework and purpose. This practice has led to some challenges of AMPs before the TATC and is not conducive to the spirit of cooperation that should exist between Canadian railway companies and Transport Canada regarding safe rail operations.

CN submits that there is no need for AMPs to be applied outside of the original intent. Doing so negates the history of working together, and the railways' long-demonstrated safety focus, willingness to improve, and the capacity to meet or exceed regulatory requirements. Even though some could say that using AMPs as a first-line compliance tool is not prohibited by the

RSA, it remains that such an approach leads away from constructive resolution of the safety issue at hand, which is in no one's interest.

The status of AMPs, once issued, are published on Transport Canada's website. If a majority of AMPs are shown as "under review" before the TATC, it indicates that the railways involved do not consider they have been treated fairly, which in turn detracts from the public's perception of the value of the entire process. Thoughtful Canadians expect Transport Canada to develop sound regulations and railway companies to comply with them. The current environment suggests otherwise, as more and more challenges of Transport Canada's measures appear to indicate that railway companies do not comply with safety regulations, and that rail operations are not safe in Canada. This detracts from the fact that railways do comply with, and often exceed safety regulations. The perception is nevertheless different and serves no valid purpose. If an AMP is levied following a fair, graduated, and transparent process, the railway concerned will know its best way forward to correct the situation, and not challenge the AMP.

In short, enhanced railway safety is in the interests of all stakeholders, and a collaborative approach has thus far proven to be the most effective means to achieve that end. It is therefore unfortunate and unhelpful that the manner in which AMPs have been administered so far has detracted from an otherwise constructive and productive engagement on railway safety.

14.2.4. CN Proposal

CN urges the Panel to recommend that Transport Canada adopt and document a policy around AMPs, to be based on their previously-stated notions of continuums of compliance and safety enforcement, and on due process, which recognizes the history and record of the railway company involved.

Such a policy would in no way hinder Transport Canada's ability to issue and publish an AMP when due process has been followed, when an egregious or willful management failure is identified, or when there is an on-going history of non-compliance or inaction.

In addition, AMPs should not be issued when an item has been identified to the railways by TC and appropriate action taken. AMPs should not be used as a matter of course but applied only when repetitive and inconsistent practices exist.

15. Conclusion

CN very much welcomes the opportunity to provide the Panel with its views respecting how the RSA framework can be improved to enhance safety. Throughout this submission we have reiterated that safety is a joint responsibility under which railways, regulators, governments, municipalities, employees, and residents each have a role to play. CN's record shows a constant engagement with key stakeholders supplemented by leadership and innovation, including the establishment of state of the art training centres and a joint fatigue management initiative with our employees and the unions.

In our view, the current framework continues to deliver a robust structure under which monitoring by Transport Canada is the basis. We have identified areas where progress can be achieved to ensure that the Canadian rail industry meets the safety standards technology allows. In particular, research and development respecting inspection and technology afford opportunities which must be supported because of the huge potential for prevention they create. Prevention could be further achieved through random drug and alcohol testing, a topic which requires special consideration in light of pending legislation respecting the legalization of marijuana. We must caution the Panel about the temptation to recommend the implementation of PTC in Canada in light of the U.S. initiative which illustrates the on-going challenges of implementation and limited impact with respect to preventing accidents.

Proximity and crossings offer real opportunities to improve the current framework. We have submitted for your consideration concrete measures which could quickly deliver significant results in those sectors. Finally, we have offered suggestions respecting the enforcement of the RSA which would support the continued efforts of the industry to act consistently with best safety practice. The Canadian railway system is amongst the safest in the world and we are confident that the Panel's recommendations will promote and enhance safety. CN's commitment respecting safety will continue to support initiatives such as this Review and we are looking forward to working with all stakeholders in the interest of a safer environment.

16. Summary of CN Proposals

Topic	CN Proposal
Safety Management Systems	Considering recent amendments, no additional changes to the SMS structure are required at this time.
Emergency Response	The Emergency Response Assistance Plan as governed by the TDGA should not be amended or modified under the current RSA Review. The current duty to respond to emergency situations should continue to enable railways to take all reasonable measures necessary to address the situation in the interest of public safety.
Rule-Making	The current rule-making process under the RSA should remain in place.
Data	Considering the recent amendments to the Transportation Information Regulations, no further action is required at this time with respect to data collection.
Random Drug and Alcohol Testing	CN strongly recommends that random testing provisions should be implemented in Canada under the RSA and that those provisions mirror the U.S. legislation which has been tried and tested with success since 1991.
Fatigue Management Strategy	CN supports the modernization of the Canadian rules respecting fatigue on the basis of a scientific approach which would take into account empirical evidence.
Positive Train Control	CN strongly opposes implementing PTC in Canada given the immaturity of current technology, the specific geography and demography of the country, and the limited safety benefits. Rather, it is CN's recommendation that government and industry work together to identify opportunities to enhance rail industry safety, especially on a rail corridor basis, including coordinating public and private infrastructure investment on a priority basis by corridor and the development of new technologies beyond what is normally associated with ETC so that a broader safety case can be addressed.
Inspection	The development and use of new technology should be encouraged by Transport Canada; Transport Canada should actively participate in pilot projects aimed at

	developing, testing and implementing new technology for track and car inspections; Reduced visual inspections requirements should be considered as new technologies are proven to provide an equal or better process compared with inspection as currently provided in the Rules respecting track safety. The Rules Respecting Track Safety should be amended to authorize the permanent use of alternative inspection methods to visual inspection without the need to seek temporary exemptions as is currently required.
Proximity	Federal regulations should be adopted to introduce minimum standards, based on the Proximity Guidelines, for the various mitigation measures to be included in new sensitive development projects in proximity to railway operations, including the establishment of a 30 m setback for the construction of residential and public buildings on land adjacent to railway lines; Provisions should be included in the revised RSA that will direct land use planning authorities, provincial, municipal or otherwise, to formally provide pre-notice and seek input from the affected railway company before authorizing land-use plan amendments, zoning amendments or new subdivisions for lands or construction permits within 300 m of a railway corridor; Federal policies and strategies should be implemented to create a national framework for new development in proximity to railway activities consistent with the FCM-RAC Guidelines.
Grade Crossing Regulations	Transport Canada should provide support to road authorities that have not provided information required under the Grade Crossing Regulations, by providing assistance in the preparation of accurate information and validating information provided; Road authorities which have failed to provide information in accordance with the Regulations should be required to comply within a prescribed period; The period expiring on November 28, 2021 to have crossings brought into compliance with the standards set in the Regulations should be extended by the same period of time road authorities fail to comply with the requirement to provide information to the railways. A contribution program commensurate with the costs of the work required to comply with the Regulations should be established by

	Transport Canada; To align with the fact that safety is a shared responsibility, funding under the program should be available to private owners, road authorities and railways to ensure a fair contribution by all and consistent with applicable agreements, Board orders or Agency decisions; The requirement to upgrade crossings should be assessed on a risk based approach taking into consideration railway corridor fluidity and efficiency, and crossing use, directing investment in upgrades to those crossings which will achieve the greatest safety benefit; To support such a risk-based approach, a mechanism should be implemented to allow for exemptions to certain requirements of the Regulations and Standards where safety could otherwise be achieved.
Applications respecting new crossings	The Canada Transportation Act should be amended to limit the number of new crossings by prohibiting the establishment of new crossings unless: The Applicant shows that there are no available alternate options to the crossing requested (options at a higher cost remaining available for the purpose of this assessment); Through a safety assessment performed by a qualified person and filed with the application, the risks presented by the proposed crossing are identified, and the proposed mitigating measures identified with options; The costs to construct, maintain and protect the new crossings are assumed by the Applicant.
Grade Crossing Closures	Transport Canada should amend the Grade Crossings Regulations to introduce a mechanism under which railways, road authorities and private parties could seek closure of railway crossings when unable to agree; and Transport Canada should establish a grade crossings closure program that would promote crossing consolidation and closure with specific targets and appropriate funding.
Review of enforcement actions	Section 31.1(4) and 31.2(3) of the RSA [and section 32.1(5) and 32.2(3) in relation to the review of a ministerial order] should be amended so as to authorize the TATC, in the case of a review of an order of a railway safety inspector, to confirm, revoke or alter the order. In the alternative, section 31.4 [and section 32.4 in relation to the review

	of ministerial order] should be amended to include a maximum number of days within which the Minister may confirm the order, or may, by order, alter or revoke the order of the railway safety inspector in order to avoid the situation noted above.
Administrative Monetary Penalties (AMPs)	Transport Canada should adopt and document a policy around AMPS, to be based on their previously-stated notions of continuums of compliance and safety enforcement, and on due process, which recognizes the history and record of the railway company involved. AMPS should not be issued when an item has been identified to the railways by TC and appropriate action taken. AMPs should not be used as a matter of course but applied only when repetitive and inconsistent practice exist.