State of Safety 2020

The State of Safety represents the work we are doing to improve the safety of the technical equipment we regulate in British Columbia. Read on to learn about safety trends, analysis and emerging risks.

Responding to COVID-19

Read about how we optimized remote assessments, online exam certification, and design registration to maintain the safety system while adhering…

Read more

Carbon Monoxide

Ammonia Safety Awareness Program

In collaboration with industry professionals, we designed a program that provides tools

Read more

Education and Awareness

Read more

Business Transformation

To make the safety system more efficient for our clients and provide a client-centric service delivery model, we are upgrading our technology,…

Read more

Amplifying the Voice of Stakeholders

In 2020, we adopted an innovative approach to stakeholder engagement. Learn how we revamped advisory committees to amplify the voi…

Read more

Previous State of Safety reports

State of Safety 2019

View

State of Safety 2019 View

State of Safety 2018 View

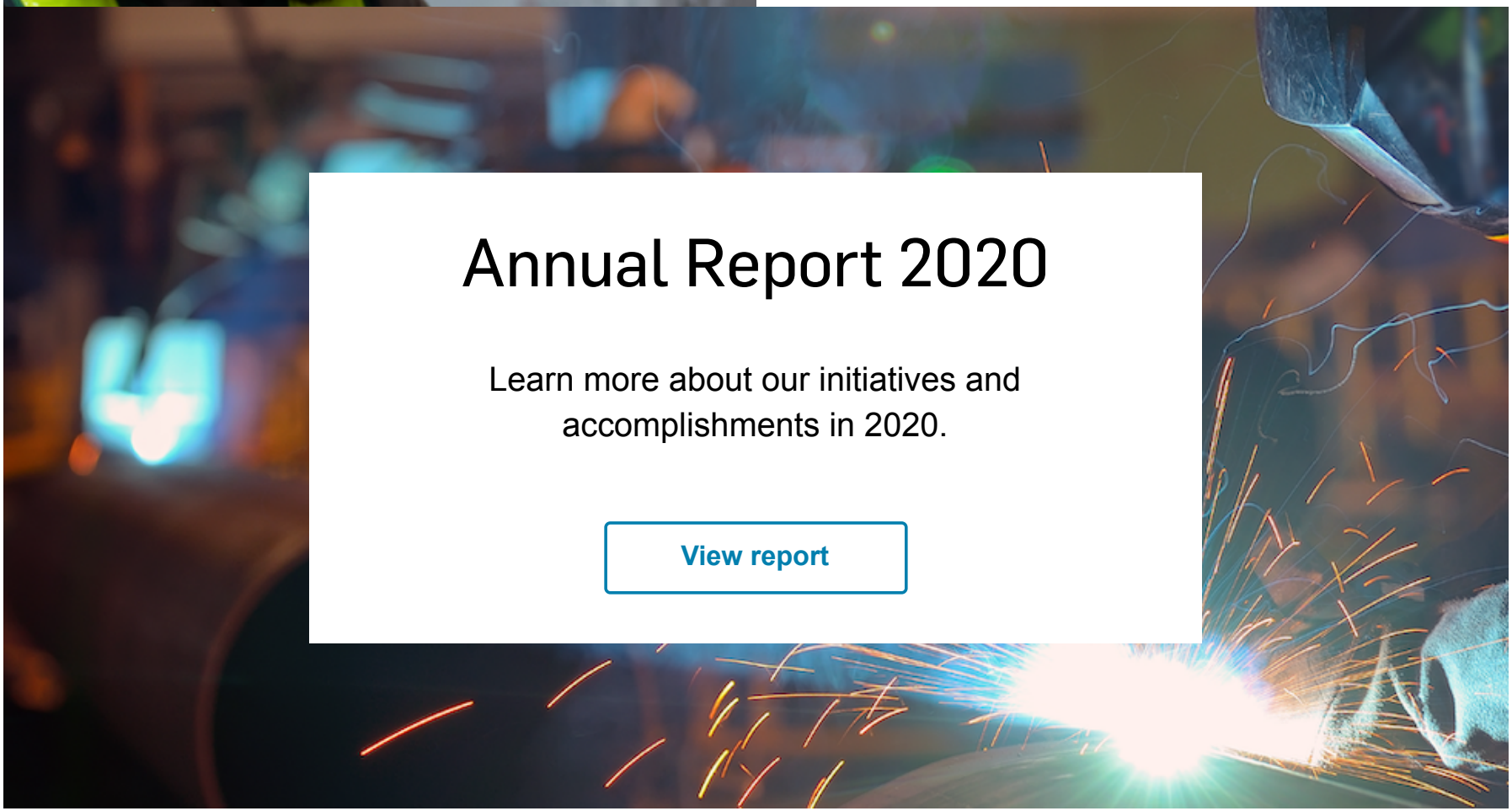
State of Safety 2017 View

Incidents

We investigate incidents in BC to better understand safety hazards and determine what actions can

be taken to manage them.

Read more >



Annual Report 2020

Learn more about our initiatives and accomplishments in 2020.

View report

Connect with us 

Technology

ENERGY

Boiler, PV, Refrigeration

Electrical

Gas

Alternative Safety Approaches (ASA)

TRANSPORTATION

Amusement Devices

Elevating Devices

Passenger Ropeways

Railways

Products

Permits

Certification

Licences

Design registration

Assessments

Learning centre

Regulatory resources

Codes, standards and regulations

Regulatory notices

Find a licensed contractor

Find a certified individual

Forms

Fees

Safety in BC

Safety stories

Incident investigations

Compliance and enforcement

State of Safety

Safety education

Get involved

News

Events

Engagement

Connect with us

Governance and leadership

Careers

Contact us

Sign up for newsletter

Have you witnessed an incident or hazard that involves regulated work or a regulated product?

Report an incident ›

Contact us

1 866 566 7233 (8 am–5 pm, Monday–Friday)

Office locations

Cookie policy Privacy policy Terms of use

Understanding Safety Risks: Incidents

Incidents

Incidents involving work or equipment regulated by the *Safety Standards Act* are required to be reported to the appropriate safety manager. We investigate many of these incidents to gain an understanding of safety hazards in British Columbia and determine what actions can be taken to manage them.

Key Statistics

483

Incidents reported

65

Incident investigations

9.9%

Decrease in incidents reported

Explanation of incidents

Technical Safety BC completes investigations on certain incidents reported to us in all technologies except for rail. We investigate incidents reported to us when:

- Regulated work or regulated equipment is involved
- Evidence is available to help determine causes and contributing factors.
- A learning opportunity exists to understand and document what caused the incident, and to inform prevention of similar incidents.

Learnings from incidents

While the number of reported incidents decreased by 9.5% in 2020, some trends were found in the 171 investigations that were completed. We found the following:

1. Carbon monoxide is still the silent killer

In the summer of 2020, Technical Safety BC responded to carbon monoxide (CO) incidents in Ruby Lake and Tulameen which resulted in three fatalities and one injury. These investigations documented instances of both slow and rapid onset carbon

monoxide exposures and demonstrate the hazards associated with some do-it-yourself (DIY) work.

These incidents illuminate some of the challenges of regulating DIY activity and the importance of obtaining proper permits. To help address this, we rolled out an extensive public safety education and awareness campaign to help educate British Columbians about the hazards of CO.

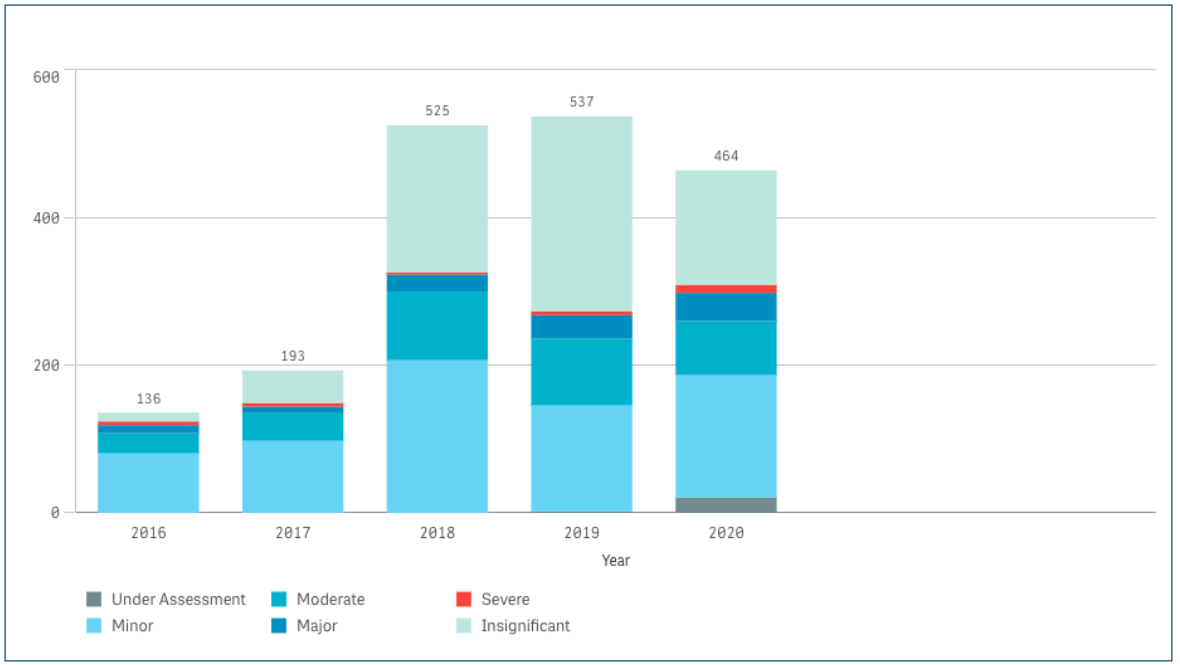
2. Passenger behaviour on amusement devices is a factor

Looking at Amusement Devices and Passenger Ropeways, we found passenger behaviour or passenger error to be the cause in most incidents. In our analysis of closed incidents related to ziplines, 75% of the incidents were due to passenger error and behaviour. For chairlifts and magic carpets on the ski hills, 32 incidents were passenger-related.

3. Leaks make up a large percentage of boiler, pressure vessel, and refrigeration incidents

Of 15 closed incidents, 10 involved an ammonia release or a boiler leak. For more information on these incidents, visit our Boiler, Pressure Vessel, and Refrigeration technology page.

Incidents Reported by Category (2016 - 2020)



To view a detailed breakdown of 2016 and 2017 data, see State of Safety 2019.

Incident Categories

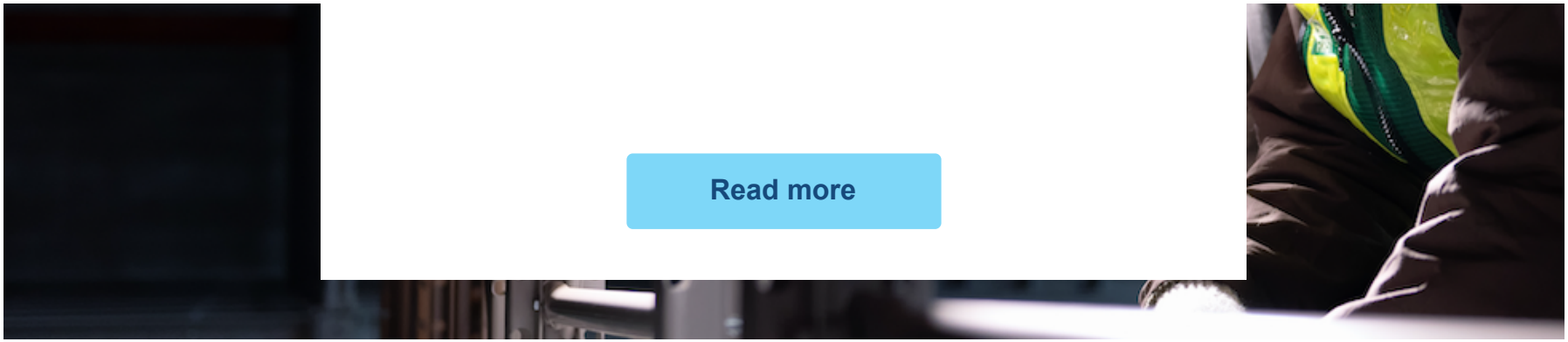
Under Assessment	Still being assessed by Technical Safety BC and was not assigned to a category as of time of data collection.
Severe	An incident that resulted with a fatal injury and/or severe equipment damage.

Major	An incident that resulted with major injury and/or major equipment damage.
Moderate	An incident that resulted with moderate injury and/or equipment damage.
Minor	An incident that resulted with minor injury and/or minor equipment damage.
Insignificant	An incident that resulted with insignificant and/or insignificant equipment damage.

Incidents Reported by Technology in 2020

Injuries

Injuries that result from regulated equipment are reported to Technical Safety BC each year and provide important information about inherent hazards.



Read more

Technology

ENERGY

Boiler, PV, Refrigeration

Electrical

Gas

Alternative Safety Approaches (ASA)

TRANSPORTATION

Amusement Devices

Elevating Devices

Passenger Ropeways

Railways

Products

Permits

Certification

Licences

Design registration

Assessments

Learning centre

Regulatory resources

Codes, standards and regulations

Regulatory notices

Find a licensed contractor

Find a certified individual

Forms

Fees

Safety in BC

Safety stories

Incident investigations

Compliance and enforcement

State of Safety

Safety education

Get involved

News

Events

Engagement

Connect with us

Governance and leadership

Careers

Contact us

Sign up for newsletter

Have you witnessed an incident or hazard that involves regulated work or a regulated product?

Report an incident ›

Contact us

1 866 566 7233 (8 am–5 pm, Monday–Friday)

Office locations

Cookie policy Privacy policy Terms of use

Understanding Safety Risks: Injuries

Injuries

The number of injuries reported to us in a given year provides an important indicator of the impacts of the hazards inherent in regulated equipment. Together with industry, our goal is to minimize incidents and injuries.

Please note that Technical Safety BC receives its injury reports and descriptions from operators or first responders at the time of, or immediately following the incident. As such, injuries may develop after the initial reports were made and the long-term effects of an injury may not be known to us. In these cases, injuries are not reflected in our statistics.

Key Statistics

Fatal injuries

5

Fatal injuries

11

Injuries related to "major"

3.49%

Decrease in injuries from 2019

Three gas-related incidents resulting in fatalities were investigated in 2020. Two of these incidents involved injuries caused by carbon monoxide exposure, and the third involved a fire where propane tank damage was found.

Major injuries

Of the closed investigations, 11 incidents were ranked as “major” in 2020. These included:

1. Two passenger ropeways incidents

In both incidents, passengers fell from chairlifts while attempting to offload, resulting in a fractured pelvis for one passenger, and a fractured vertebra for the other.

2. Two gas incidents related to propane

One incident was an explosion involving propane gas, resulting in burns to the victim's face and shoulders. The other incident involved an explosion and fire caused by a possible propane leak, resulting in burns on the victim.

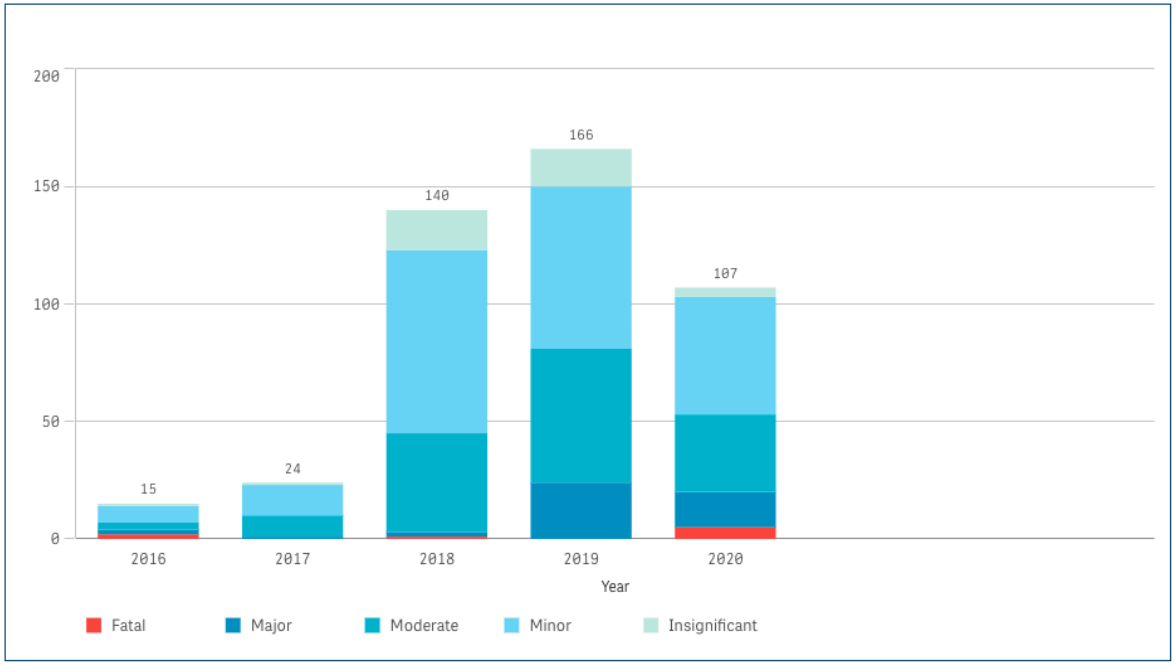
3. One amusement device incident

In this incident, a rider sustained a fractured vertebra while on a bobsled.

4. One boiler, pressure vessel, and refrigeration incident

In this incident, high-temperature condensate sprayed from a veneer dryer onto a maintenance worker, which resulted in third-degree burns.

Injuries by Category (2016 - 2020)



To view a detailed breakdown of 2016 and 2017 data, see State of Safety 2019.

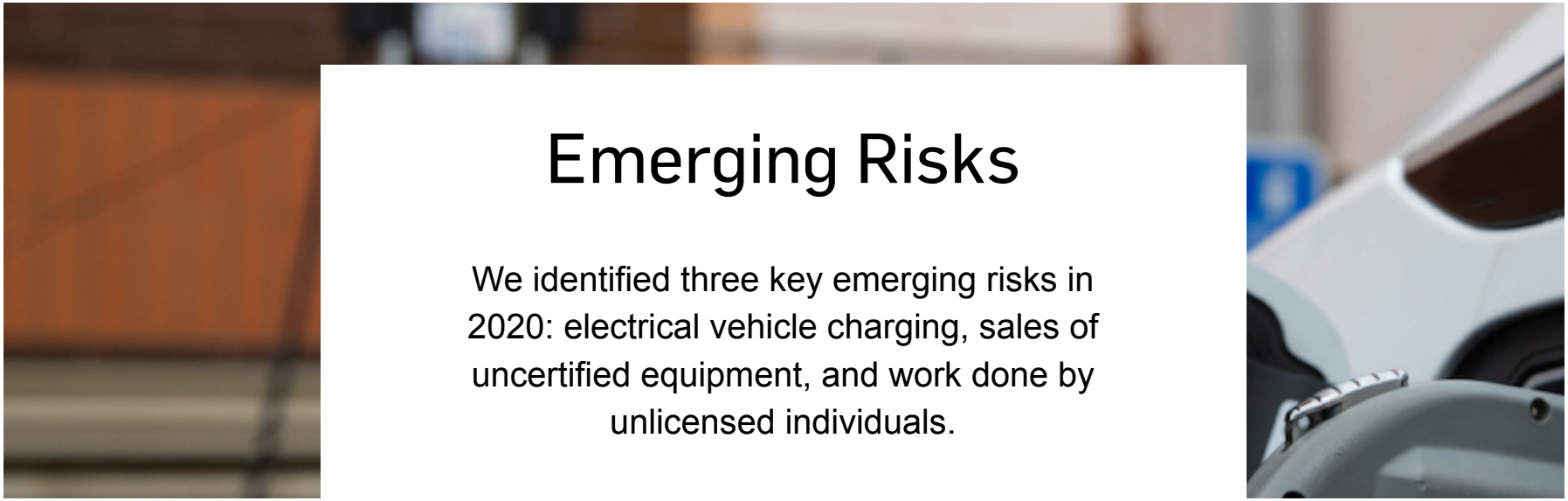
Injury Categories

Fatal	An injury causing death.
Major	An injury where residual effects are likely to significantly affect long-term quality of life.
Moderate	An injury where residual effects are unlikely to significantly

	affect long-term quality of life. E.g., temporary loss of consciousness, fractures, concussions.
Minor	An injury where there are typically no residual effects and recovery is expected. E.g., bruises, cuts, minor disorientation (confusion).
Insignificant	An injury where there are typically no residual effects and full recovery is expected. E.g., temporary pain and discomfort.

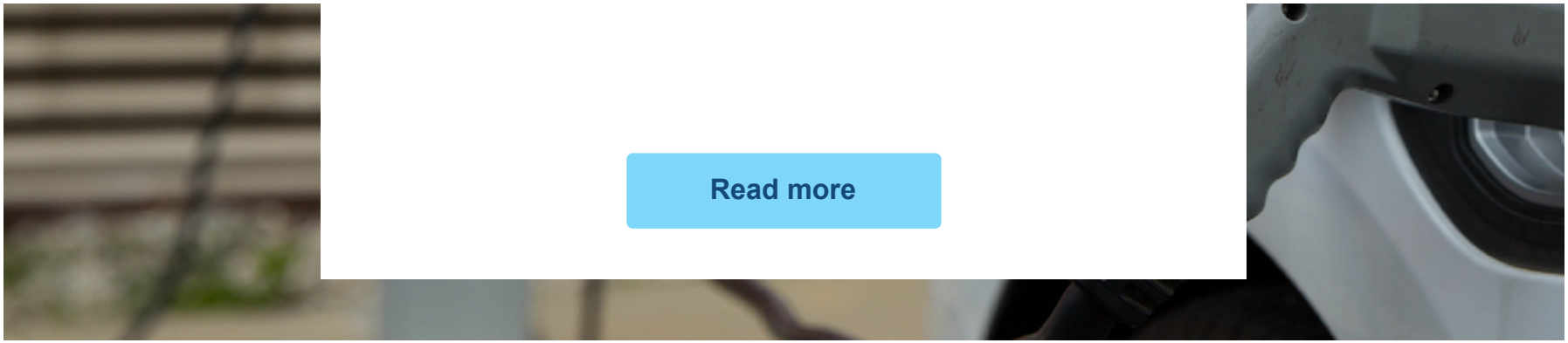
Injuries by Technology in 2020

Injuries by Technology in 2020



Emerging Risks

We identified three key emerging risks in 2020: electrical vehicle charging, sales of uncertified equipment, and work done by unlicensed individuals.



Read more

Technology

ENERGY

Boiler, PV, Refrigeration

Electrical

Gas

Alternative Safety Approaches (ASA)

TRANSPORTATION

Amusement Devices

Elevating Devices

Passenger Ropeways

Railways

Products

Permits

Certification

Licences

Design registration

Assessments

Learning centre

Regulatory resources

Codes, standards and regulations

Regulatory notices

Find a licensed contractor

Find a certified individual

Forms

Fees

Safety in BC

Safety stories

Incident investigations

Compliance and enforcement

State of Safety

Safety education

Get involved

News

Events

Engagement

Connect with us

Governance and leadership

Careers

Contact us

Sign up for newsletter

Have you witnessed an incident or hazard that involves regulated work or a regulated product?

Report an incident ›

Contact us

1 866 566 7233 (8 am–5 pm, Monday–Friday)

Office locations

Cookie policy Privacy policy Terms of use

Understanding Safety Risks: Emerging Risks

In this section

Home > State of Safety 2020 > Emerging Risks

Emerging Risks

Emerging risks are evaluated by Technical Safety BC through our Emerging Risk Tracker. In 2020, noteworthy emerging risks included potential safety risks associated with electric vehicle charging, sales of uncertified equipment, and work done by unlicensed individuals.

1. Electrical Vehicle Energy Management Systems (EVEMS)

As electric passenger vehicles become increasingly popular in British Columbia, there is concern over whether buildings that offer charging stations are properly equipped to handle a situation in which all charging stations are in use at the same time. In BC, many municipalities have set requirements for new buildings to be “electric vehicle ready.” However, with an EVEMS installed, they are not required to calculate electrical load based on 100% capacity. EVEMS technologies are designed to reduce demand on the electric grid by intelligently distributing power to multiple vehicles over the course of the day, rather than all at once.

Technical Safety BC is in the process of reviewing installation permits related to EVEMS and tracking non-compliance issues to help prevent risks to people or property caused by overloading charging stations. We have also initiated discussions with other

electrical regulators in the province to ensure consistency in regulation application.

2. Uncertified equipment

Sales of equipment unapproved for use in Canada pose a significant risk to British Columbians' safety, with online sales in particular failing regulation standards. British Columbians should only purchase electrical and gas equipment if they bear an approved certification mark to indicate they are safe for use.

In 2020, one fatality and one critical injury occurred in Ruby Lake, BC because of propane appliances that were not installed properly and not certified for use in Canada. Other reports included carbon monoxide alarms not certified for use in Canada, and electrical equipment not certified for use which have resulted in an electrical fire in at least one recent case (no fatalities or major injuries).

Technical Safety BC continues to push for greater awareness around certified products through campaigns and initiatives.

Read more about approved certification marks for electrical products.

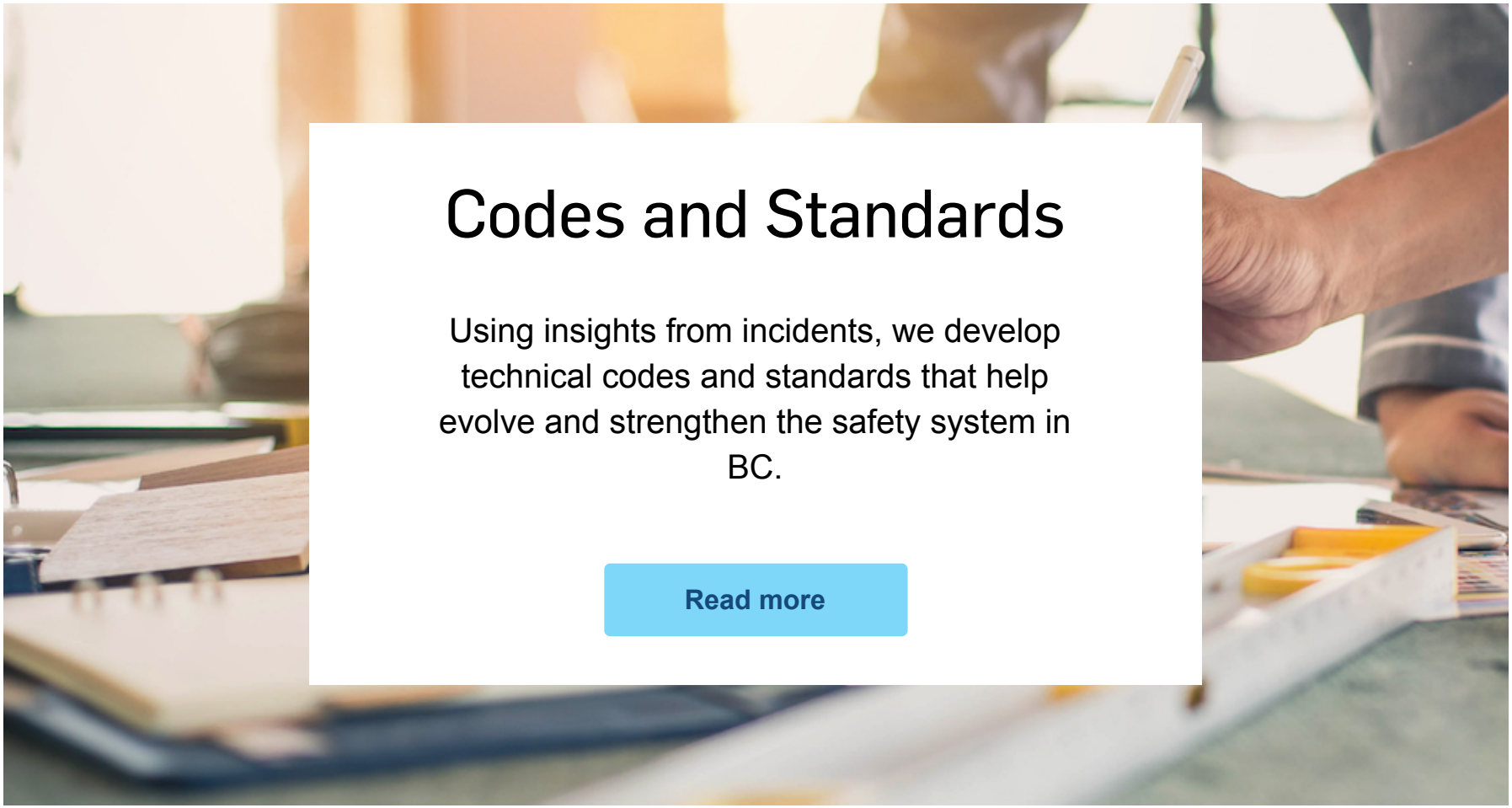
3. Work by unlicensed individuals

Licensed contractors perform regulated work and make sure equipment is installed properly. While there are no numbers on how much regulated work is performed annually by unlicensed individuals, the danger this presents is significant.

In the summer of 2020, Technical Safety BC released investigation reports on two fatal carbon monoxide incidents at Ruby Lake and Tulameen. These investigations found that improperly installed gas equipment, including the aforementioned propane appliance in Ruby Lake, led to three fatalities and one critical injury. In the case of Tulameen, an on-demand propane tankless water heater had been installed in a hazardous manner inconsistent with Canadian code and certification standards.

These fatal incidents demonstrate the most extreme hazards associated with some do-it-yourself (DIY) work and the challenges with regulating activity in this space, but they are not the only examples.

Almost half of 2020's electrical incidents occurred in detached homes, townhomes, and apartment buildings, indicating a need for greater public awareness of electrical safety at home and the importance of hiring a licensed contractor to perform regulated electrical and gas work.



Codes and Standards

Using insights from incidents, we develop technical codes and standards that help evolve and strengthen the safety system in BC.

Read more

Technology

ENERGY

Boiler, PV, Refrigeration

Electrical

Gas

Alternative Safety Approaches (ASA)

TRANSPORTATION

Amusement Devices

Elevating Devices

Passenger Ropeways

Railways

Products

Permits

Certification

Licences

Design registration

Assessments

Learning centre

Regulatory resources

Codes, standards and regulations

Regulatory notices

Find a licensed contractor

Find a certified individual

Forms

Fees

Safety in BC

Safety stories

Incident investigations

Compliance and enforcement

State of Safety

Safety education

Get involved

News

Events

Engagement

Connect with us

Governance and leadership

Careers

Contact us

Sign up for newsletter

Have you witnessed an incident or hazard that involves regulated work or a regulated product?

Report an incident ›

Contact us

1 866 566 7233 (8 am–5 pm, Monday–Friday)

Office locations

Managing Safety Risks: Codes and Standards

In this section

Home > State of Safety 2020 > Codes and Standards

Codes and Standards

As a regulator, we ensure British Columbia's specific needs are considered during the development of technical codes and standards. The insights and knowledge gained from incidents help evolve and strengthen the safety system.

Key Statistics

70

Regulatory instruments issued

1

Issue-specific consultation

79

Associations/ national committees attended

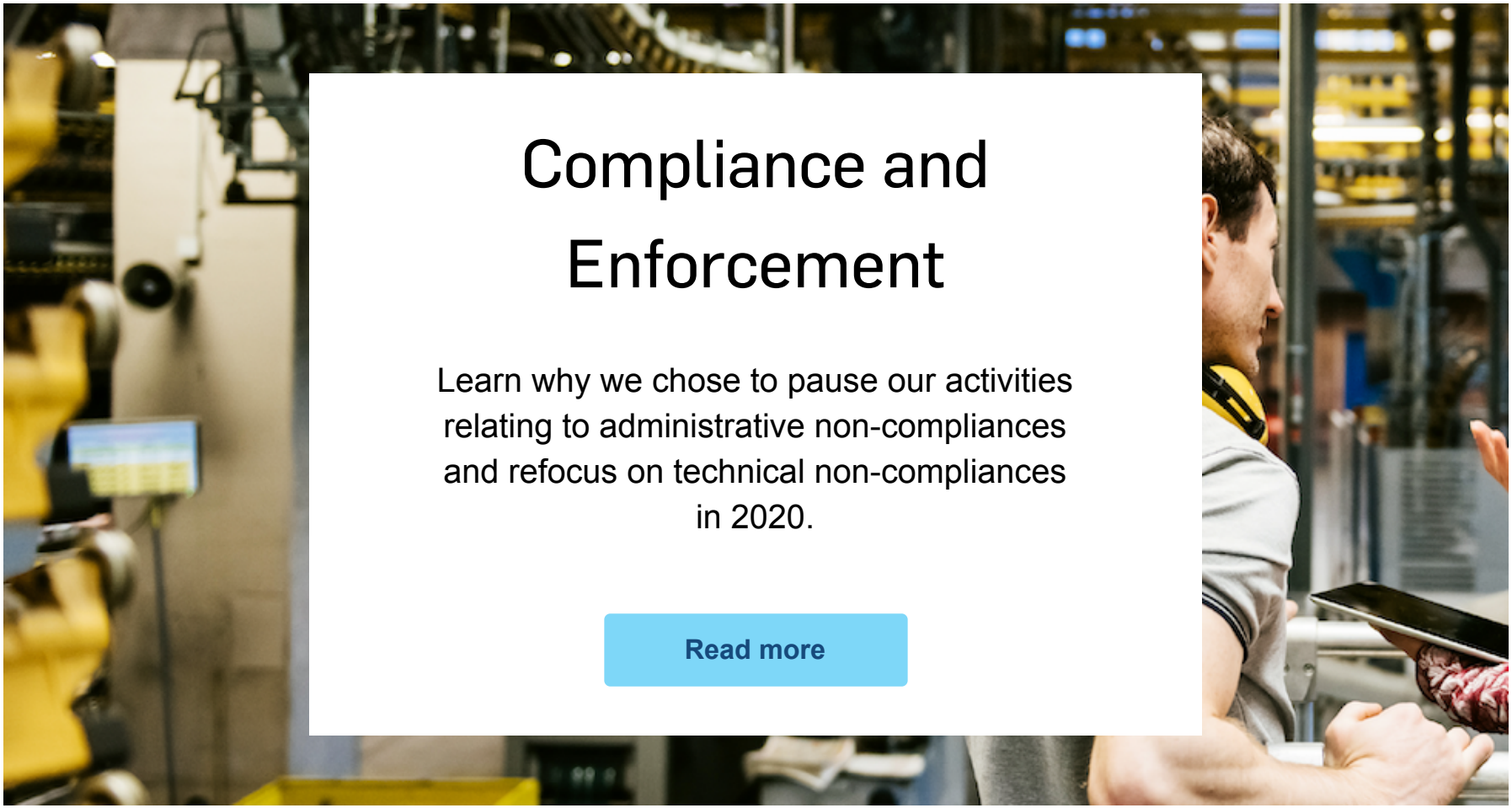
Codes and standards committees

The following is a list of all industry associations and national codes and standards committees in which Technical Safety BC participated during 2020.

Alternative Safety Approaches (ASA)	Show more
Amusement Devices	Show more
Boilers, Pressure Vessels, and Refrigeration	Show more
Electrical	Show more
Elevating Devices	Show more
Gas	Show more
Passenger Ropeways	Show more
Railways	Show more

General

Show more



Compliance and Enforcement

Learn why we chose to pause our activities relating to administrative non-compliances and refocus on technical non-compliances in 2020.

Read more

Technology

ENERGY

Boiler, PV, Refrigeration

Electrical

Gas

Alternative Safety Approaches (ASA)

TRANSPORTATION

Amusement Devices

Elevating Devices

Passenger Ropeways

Railways

Products

Permits

Certification

Licences

Design registration

Assessments

Learning centre

Regulatory resources

Codes, standards and regulations

Regulatory notices

Find a licensed contractor

Find a certified individual

Forms

Fees

Safety in BC

Safety stories

Incident investigations

Compliance and enforcement

State of Safety

Safety education

Get involved

News

Events

Engagement

Connect with us

Governance and leadership

Careers

Contact us

Contact us

Sign up for newsletter

Have you witnessed an incident or hazard that involves regulated work or a regulated product?

Report an incident ›

Contact us

1 866 566 7233 (8 am–5 pm, Monday–Friday)

Office locations

Cookie policy Privacy policy Terms of use

Compliance and Enforcement

When non-compliances are identified, our first step is often to work with duty holders to help them understand their obligations and provide them with a clear pathway to resolution. However, when these interventions don't achieve the desired result, Technical Safety BC may take enforcement action to achieve compliance.

Key Statistics

Compliance and enforcement actions

In 2020, we conducted 388 compliance and enforcement actions, of which 169 were compliance orders and 13 were compliance audits. Other compliance and enforcement activities include 181 warning notices issued, 24 monetary penalties, and one discipline order. No bonds were called this year.

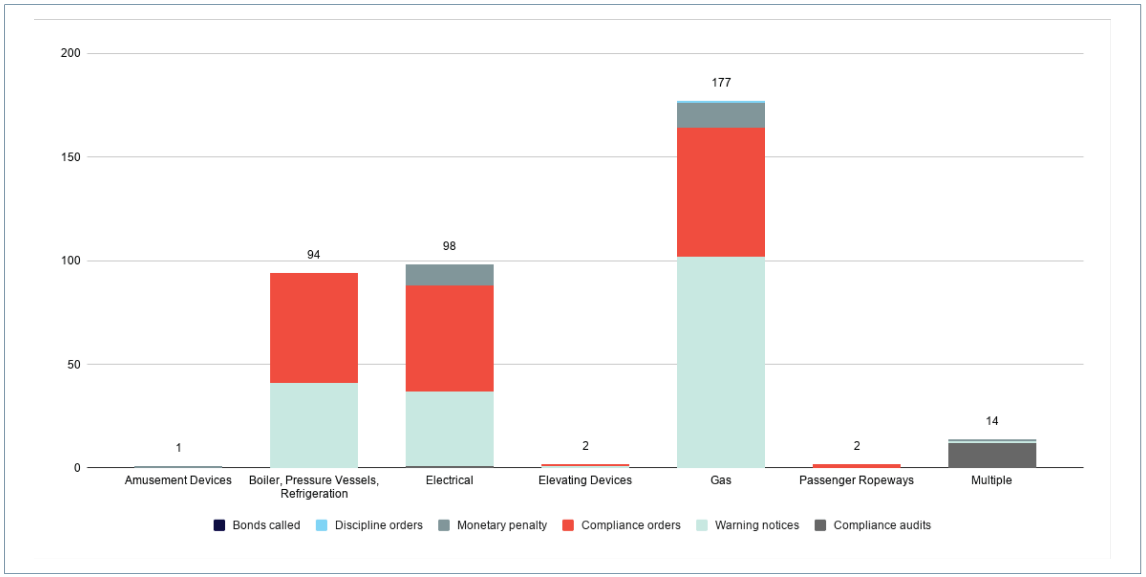
The compliance and enforcement actions taken were much less than in 2019 as a direct result of the impact of the COVID-19 pandemic. At the onset of the pandemic, Technical Safety BC took into consideration the challenges faced by clients to remain compliant and to continue to keep their businesses in operation. We chose to pause our actions related to administrative non-compliances and focused our efforts on addressing technical non-compliances and the hazards associated with them. The compliance and enforcement team continued important work to serve safety in 2020, including identifying 4,907 locations where regulated work was performed without a permit or permission.

Action Definitions

Bonds Show more

Compliance orders	Show more
Compliance audits	Show more
Warning notices	Show more
Monetary penalties	Show more
Discipline order	Show more
Duty holder	Show more

Compliance and Enforcement by Technology in 2020



Compliance and Enforcement by Technology in 2020

Compliance audit

Our compliance audits speak to the fairness of the selection process and the impact that audits have on the safety system. The criteria is organized into three distinct categories for determining compliance audits:

1. **Random:** An independent computer algorithm randomly selects a sample of contractor license data within all technologies, in all regions, on an annual basis.
2. **Investigation:** Analysis of the following indicators:

- the average rate of obtaining permits in a given period of time compared to the industry average and other companies of the same size and scope
- the number of non-compliances associated with a licence
- the hazard level associated with any non-compliance(s)
- the company's payroll compared with their permitting activities
- other factors such as previous enforcement history and the effectiveness of previous enforcement.

3. **Compliance monitoring:** When enforcement action does not achieve the desired behavioural effect, a deeper dive into the duty holders activities is warranted. Audits on repeat offenders will reveal the root cause of why the non-compliant behaviour continues.

Audits by Category in 2020

Audits by Category in 2020

Compliance and Enforcement by Year (2016 - 2020)

Impact of COVID-19

In 2020, our Compliance and Enforcement activities have had to adapt to comply with the health and safety guidelines outlined by the Provincial Government. As a result, our work focused on high risk cases and supporting our clients to reach compliance in these challenging times.

Monetary penalties in 2020

While legislation empowers us to issue a monetary penalty at any time in the enforcement process, we use our discretion when

doing so. In fact, we only issue monetary penalties after warning notices or compliance orders did not secure compliance, or when compliance was breached.

To provide transparency and understanding of where we are taking action, the following chart lists the monetary penalties issued in 2020. Most of these penalties were issued to those in the gas or electrical technologies.

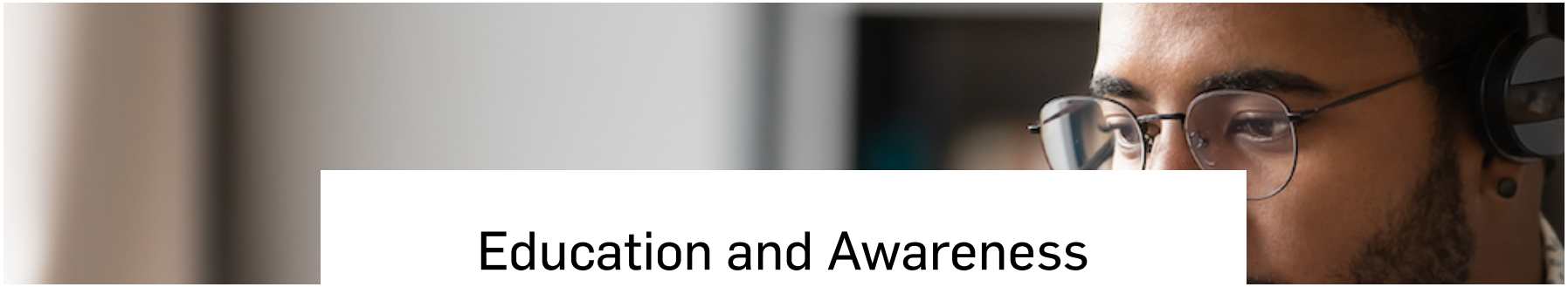
Monetary Penalties in 2020

Duty Holder	Technology	Category	Value
Sather Boat Works Ltd.	Electrical	Failure to comply with a compliance order	$14,000
Bison Plumbing & Heating Ltd.	Gas	Failure to comply with a compliance order	$12,000
Aura West Plumbing Inc.	Gas	Failure to comply with a compliance order	$12,000
Chris's Sign Service Inc.	Electrical	Failure to comply with a compliance order	$12,000

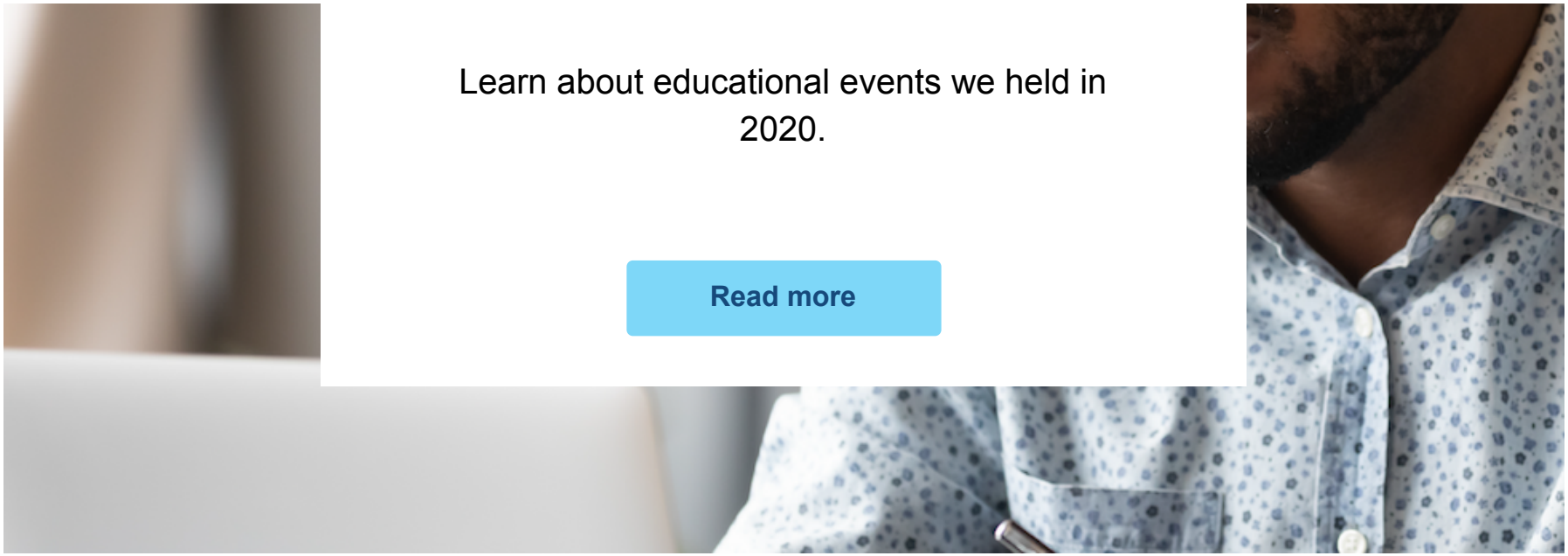
High Demand Heating Ltd.	Electrical	Failure to comply with a compliance order	$12,000
A Company	Gas	This enforcement action is currently under appeal (at the time of publishing this report).	$12,000
Shamin Pourmokhtari d.b.a. Glass House Optical	Electrical	Failure to comply with a compliance order	$5,500
Miller-Tech Electric Ltd.	Electrical	Failure to comply with a compliance order	$3,000
Robert Sammuel Caskey	Gas	Failure to comply with a compliance order	$3,000
Symbolistic Heating Ltd.	Gas	Failure to comply with a compliance order	$3,000
Dave Riley d.b.a. North Point Industrial Services	Electrical	Failure to comply with a compliance order	$3,000

Haab Homes Ltd.	Gas	Performing regulated work without required permit	$3,000
BPM Electric Ltd.	Electrical	Failure to comply with a compliance order	$3,000
Blue Moon Plumbing & Heating Ltd.	Gas	Failure to comply with a compliance order	$3,000
A Company	Gas	This enforcement action is currently under appeal (at the time of publishing this report).	$3,000
National Plumbing & Heating Ltd.	Gas	Failure to comply with a compliance order	$2,000
Ryan Orchard d.b.a. Orchard Plumbing & Heating	Gas	Failure to comply with a compliance order	$2,000
Granger Plumbing	Gas	Failure to comply with	$2,000

Ltd.		a compliance order	
Matthew Royal, Michael Royal and Bounce Hire (a partnership)	Amusement	Failure to comply with a compliance order	$1,500
Bennett Sheet Metal and Heating Ltd.	Electrical	Failure to comply with term/condition of a licence	$1,500
Tim Hall d.b.a. TNJ Plumbing & Heating	Gas	Failure to comply with a compliance order	$1,000
Hallmark Heating Chimney and Duct Ltd.	Gas	Failure to comply with a compliance order	$1,000



Education and Awareness



Learn about educational events we held in 2020.

Read more

Technology

ENERGY

Boiler, PV, Refrigeration

Electrical

Gas

Alternative Safety Approaches (ASA)

TRANSPORTATION

Amusement Devices

Elevating Devices

Passenger Ropeways

Railways

Products

Permits

Certification

Licences

Design registration

Assessments

Learning centre

Regulatory resources

Codes, standards and regulations

Regulatory notices

Find a licensed contractor

Find a certified individual

Forms

Fees

Safety in BC

Safety stories

Incident investigations

Compliance and enforcement

State of Safety

Safety education

Get involved

News

Events

Engagement

Connect with us

Governance and leadership

Careers

Contact us

Sign up for newsletter

Have you witnessed an incident or hazard that involves regulated work or a regulated product?

Report an incident ›

Contact us

1 866 566 7233 (8 am–5 pm, Monday–Friday)

Office locations

Cookie policy Privacy policy Terms of use

Managing Safety Risks: Education and Awareness

In this section

Home > State of Safety 2020 > Education and Awareness

Education and Awareness

We use our educational events and courses to help build awareness around common hazards, best safety practices, and industry regulations and standards to keep the public and our clients safe.

Key Statistics

Adapting our approach to safety education

Technical Safety BC provides safety and technical training across the province. Our insights from safety officer inspections, incident investigations, and direct feedback from clients help us identify education opportunities and design courses. Our courses are designed and taught by industry leaders with the most up-to-date knowledge of regulatory codes, safety best practices, and potential hazards.

The primary mode of delivery for our education has always been in-person sessions, but 2020 turned out differently. Due to the dynamic nature of the pandemic, we adjusted and adapted to the ever-evolving health and safety guidelines. In March, all in-person sessions were put on hold and we launched self-paced online courses and online blended formats to continue delivering education services to our clients, stakeholders and the public, as well as expand engagement and participation in the safety system.

In 2020, two new codes (2018 Electrical Code and B44 Elevating Devices Code) were adopted in British Columbia. Technical safety BC provided education courses to impart knowledge and prepare Electrical and Elevating Devices professionals for these new codes. These courses started out as regular, in-person courses, but that quickly had to change. We launched online versions at the

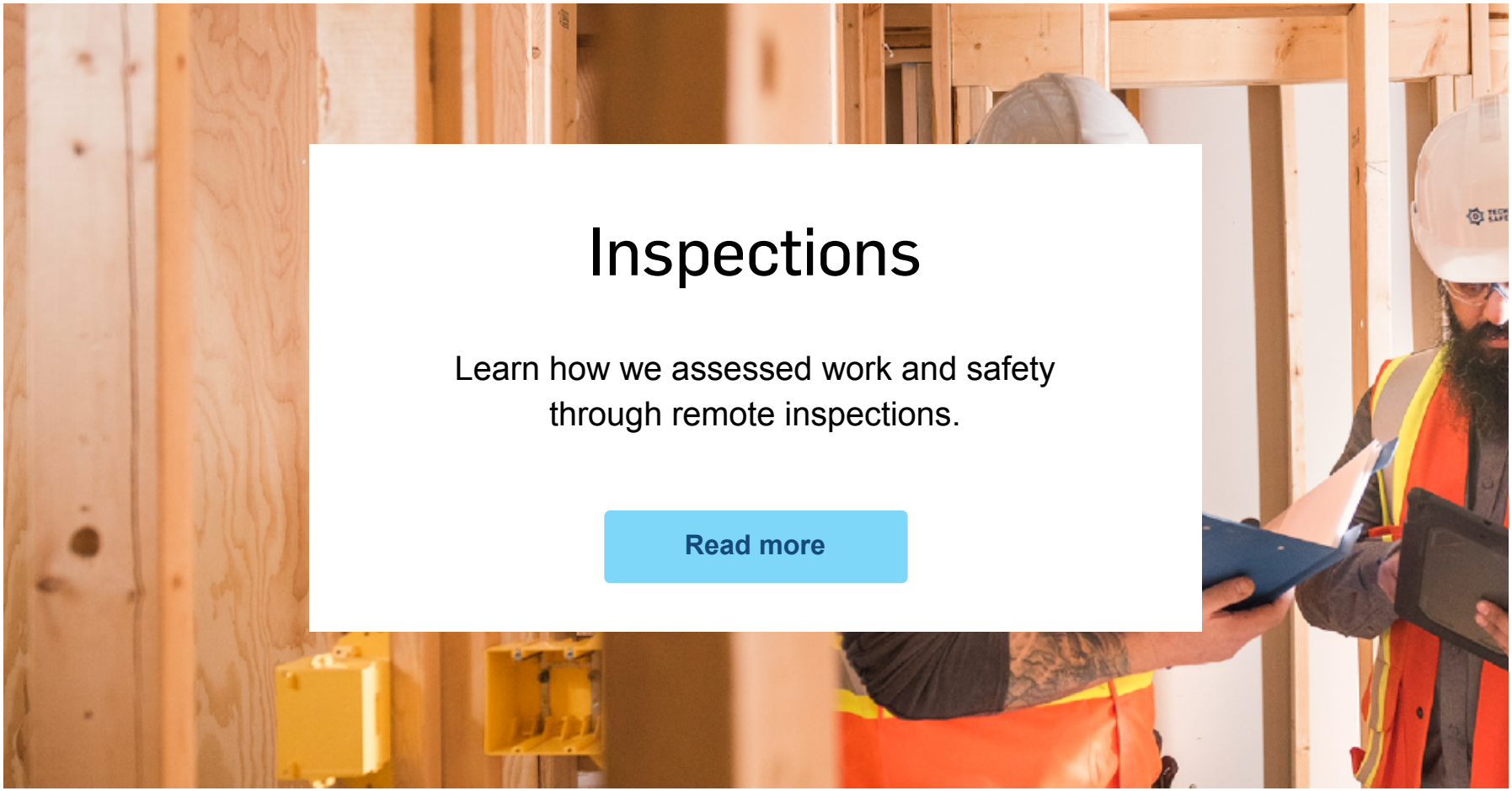
earliest opportunity to continue to prepare the province for the adoption of these codes.

We hosted two virtual town halls and launched a new course called *Passenger Ropeways and Passenger Conveyors: Act & Regulations* to provide the industry with an overview of the *Safety Standards Act*, Safety Standards General Regulation and Elevating Devices Safety Regulation, and explain how it applies to the Passenger Ropeway industry.

We also launched a new online course called *Getting Started: New Contractors and Regulations* to clarify the roles and responsibilities of contractors as they pertain to the *Safety Standards Act* and associated safety regulations in BC.

Finally, we updated and launched three new top non-compliance courses, one each for Electrical, Gas and the Boiler, Pressure Vessel, and Refrigeration industry. These courses shared the top non-compliances that safety officers notice during inspections.

We continued to support our clients across technologies during the pandemic through virtual webinars to keep them up to date on the changes in their industries, and to provide them an opportunity to connect with our safety officers.



Inspections

Learn how we assessed work and safety through remote inspections.

Read more

Technology

ENERGY

Boiler, PV, Refrigeration

Electrical

Gas

Alternative Safety Approaches (ASA)

TRANSPORTATION

Amusement Devices

Elevating Devices

Passenger Ropeways

Railways

Products

Permits

Certification

Licences

Design registration

Assessments

Learning centre

Regulatory resources

Codes, standards and regulations

Regulatory notices

Find a licensed contractor

Find a certified individual

Forms

Fees

Safety in BC

Safety stories

Incident investigations

Compliance and enforcement

State of Safety

Safety education

Get involved

News

Events

Engagement

Connect with us

Governance and leadership

Careers

Contact us

Sign up for newsletter

Have you witnessed an incident or hazard that involves regulated work or a regulated product?

Report an incident ›

Contact us

1 866 566 7233 (8 am–5 pm, Monday–Friday)

Office locations

Managing Safety Risks: Inspections

In this section

Home > State of Safety 2020 > Inspections

Inspections

Technical Safety BC assesses the safety of work through in-person and remote inspections and by using predictive algorithms that support safety officer decision-making. Together, these methods allow us to target the areas of highest risk to the public, while maximizing efficiency and effort.

Assessments help Technical Safety BC confirm that owners are complying with Regulations and the *Safety Standards Act*. Permit-holding contractors will often perform similar inspections, and our safety officers will step in when their expertise is needed.

Note: We use "assessment" to refer to the overall safety assessment, whereas inspection refers only to the type of evaluation made by our safety officers.

Key Statistics

45,121
Assessments completed

82%
Assessment pass rate

6,609
As-found hazards

In-person and Remote Inspections

In 2020, with the onset of COVID-19, equipment and systems safety was more important than ever. Navigating the impacts of COVID-19 changed the way assessments were performed. With our clients' and employees' safety in mind, remote inspections became our primary method of assessment. In-person inspections were performed only when we determined them to be critical to the safety system.

Key Statistics

20,300

Remote inspections

90%

Remote inspections pass rate

1,469

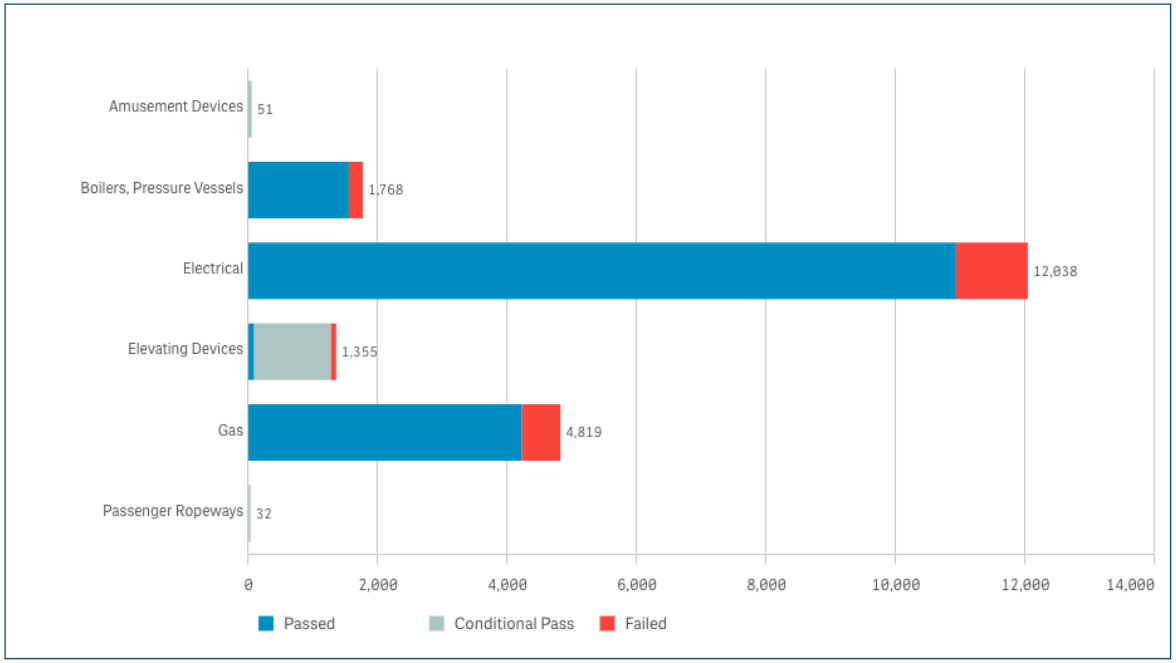
Remote as-found hazards

Remote inspections

Remote inspections involved the same assessment protocol as in-person inspections but were conducted through reviewing documents, photos, videos, video conference, and also speaking with the client through phone, video calls, and email.

In 2020, 20,300 remote inspections were completed, compared to only eight completed in 2019. Technical Safety BC will continue to conduct remote inspections after the COVID-19 pandemic as we have learned that this capability will continue to have significant uses that benefit both clients, the public, and safety throughout the province.

Compliance of Duty Holder's Work by Technology in 2020 (Remote Inspections)



Compliance of Duty Holder's Work by Technology in 2020 (Remote Inspections)

As-Found Hazard Assessments by Technology in 2020 (Remote Inspections)

As-Found Hazard Assessments by Technology in 2020 (Remote Inspections)

Key Statistics

Compliance of duty holders' work

At Technical Safety BC, we refer to a person who owns regulated products or performs regulated work as a duty holder. When physically assessing the work of a duty holder, our safety officers provide a rating of:

Pass	The safety officer has assessed that the regulated work and/or regulated product was found to comply with the *Safety Standards Act*, regulations, and/or applicable technical code(s).
Conditional Pass	The safety officer has assessed that the regulated work and/or regulated product was found to not comply with the *Safety Standards Act*, regulations, and/or applicable technical code(s). Further regulated work may only be undertaken as directed on the certificate of inspection, while the identified non-compliances are being corrected.

Fail	The safety officer has assessed that the regulated work and/or regulated product was found to not comply with the *Safety Standards Act*, regulations, and/or applicable technical code(s). Further regulated work on the affected system or phase of work, and/or operation of the regulated equipment must not be undertaken until the identified non-compliances have been corrected.

Compliance of Duty Holder's Work by Technology in 2020 (In-person Inspections)

Technical Safety BC completes investigations on certain incidents reported to us in all technologies except for rail. We do not have jurisdiction to investigate rail incidents. We investigate incidents reported to us when:

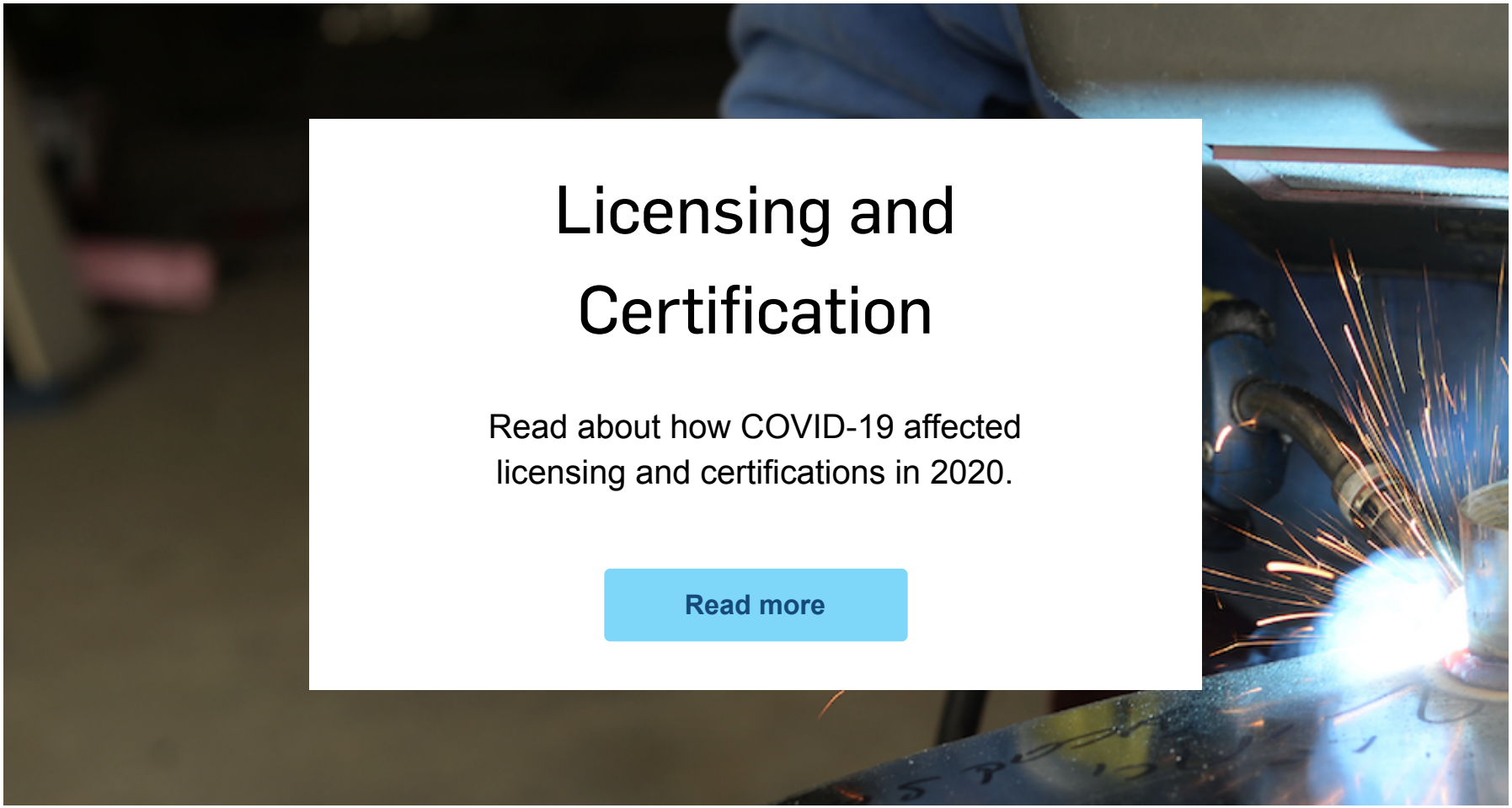
- Regulated work or regulated equipment is involved.
- Evidence is available to help determine causes and contributing factors.
- A learning opportunity exists to understand and document what caused the incident and to inform prevention of similar incidents.

Investigation Categories

Under Assessment	Still being assessed by Technical Safety BC and was not assigned to a category as of time of data collection.
Severe	An incident that resulted with a fatal injury and/or severe equipment damage.
Major	An incident that resulted with major injury and/or major equipment damage.

Moderate	An incident that resulted with moderate injury and/or equipment damage.
Minor	An incident that resulted with minor injury and/or minor equipment damage.
Insignificant	An incident that resulted with insignificant and/or insignificant equipment damage.

As-Found Hazard Assessments by Technology in 2020 (In-person Inspections)


Licensing and Certification
Read about how COVID-19 affected licensing and certifications in 2020.
Read more

Technology

ENERGY

Boiler, PV, Refrigeration

Electrical

Gas

Alternative Safety Approaches (ASA)

TRANSPORTATION

Amusement Devices

Elevating Devices

Passenger Ropeways

Railways

Products

Permits

Certification

Licences

Design registration

Assessments

Learning centre

Regulatory resources

Codes, standards and regulations

Regulatory notices

Find a licensed contractor

Find a certified individual

Forms

Fees

Safety in BC

Safety stories

Incident investigations

Compliance and enforcement

State of Safety

Safety education

Get involved

News

Events

Engagement

Connect with us

Governance and leadership

Careers

Contact us

Sign up for newsletter

Have you witnessed an incident or hazard that involves regulated work or a regulated product?

Report an incident >

Contact us

1 866 566 7233 (8 am–5 pm, Monday–Friday)

Office locations

Cookie policy Privacy policy Terms of use

Managing Safety Risks: Licensing and Certification

Licensing and Certification

Technical Safety BC issues licences to contractors and contracting companies who install, operate, and maintain regulated equipment. We issue certificates of qualification to individuals working on regulated equipment. Together, they provide the public with assurances that certain standards of knowledge and proficiency are being maintained around regulated work.

Key Statistics

Licences

The COVID-19 pandemic and subsequent health and safety guidelines caused a drop in new licences in 2020. All technologies were affected, but none so much as Amusement Devices, which experienced an 88% decrease in new licences, signalling a severe blow to the industry. In the latter half of 2020, as industries began to recover from the initial hurdles of the pandemic, licencing for all technologies began to recover, though none recovered fully in 2020.

The only exception to this summary is Passenger Ropeways. Although Passenger Ropeways had 0 new licences in 2020, this does not indicate a deviation from the norm, as Passenger Ropeways does not frequently issue licences.

Certificates

As with licences, COVID-19 had a significant impact on certifications in 2020, with recovery beginning in the latter half of the year. There was a *decrease* in new certificates across technologies, with one outlier being the pressure welder certification.

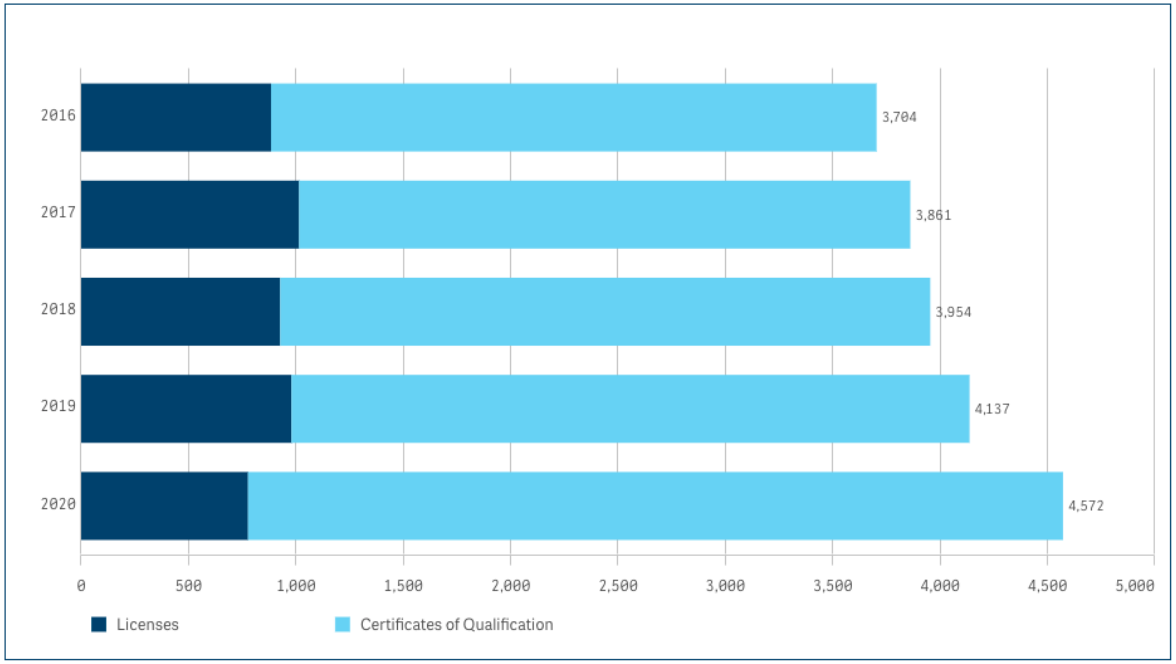
In 2020, British Columbia adopted a new, nationally recognized pressure welder certification program. Previously, pressure welders did not require a certificate to work. The introduction of this new program required all current pressure welders to make the transition to certification by December 2020, which led to a 156% increase in new certificates for Boilers, Pressure Vessels, Refrigeration as a whole. Notably, all other certificates within Boilers, Pressure Vessels, and Refrigeration saw a decrease in numbers.

For all certificates (with the exception of pressure welders), office closures and smaller exam sittings meant fewer applicants could complete their exams on schedule. In order to accommodate the situation, Technical Safety BC introduced online exams in July, so that exam applicants could get certified while still following provincial health guidelines. As we move into 2021 we continue to improve the process so that more clients can earn certifications remotely.

The pandemic negatively impacted a number of industries in BC, which in turn influenced 2020's certification numbers. For example, the long pause in construction work impacted the number of Elevating Devices certificates issued over the spring and summer. As construction picked up at the end of the year, there was a sharp increase in Personnel Hoist Operator and Car Switch Operator certificates, indicating a path to recovery for the workforce.

Note: Railways and Alternative Safety Approaches do not have licences or certificates of qualification and are not reflected in this chart.

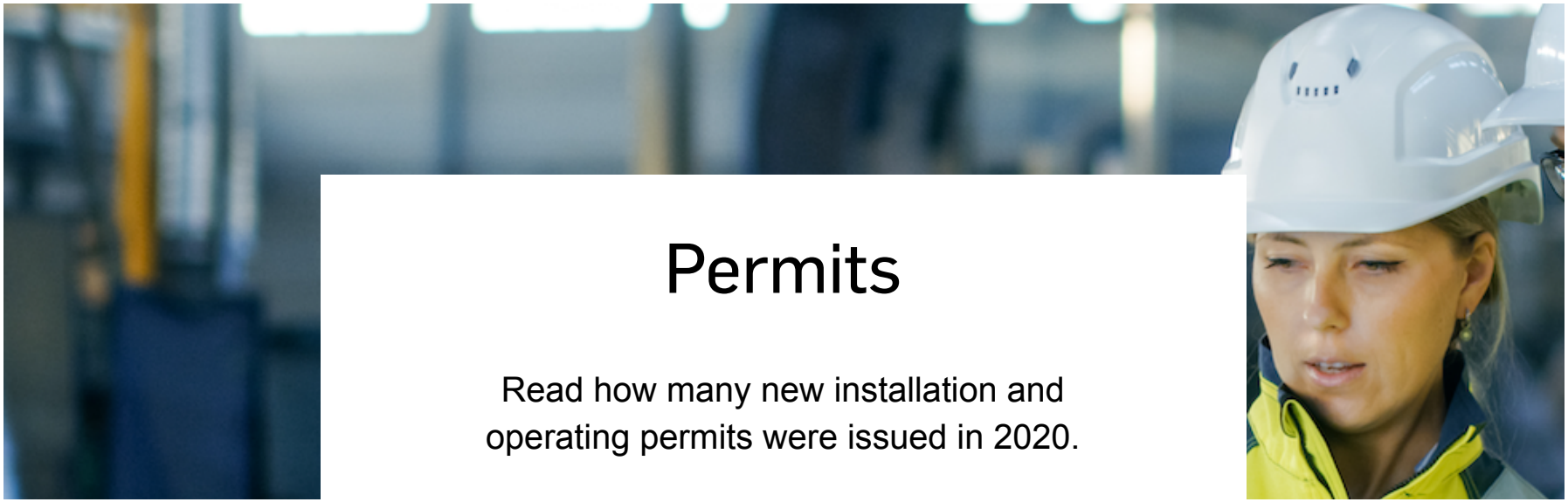
New Licenses and Certificates by Year (2016 - 2020)



New Licenses and Certificates by Year (2016 - 2020)

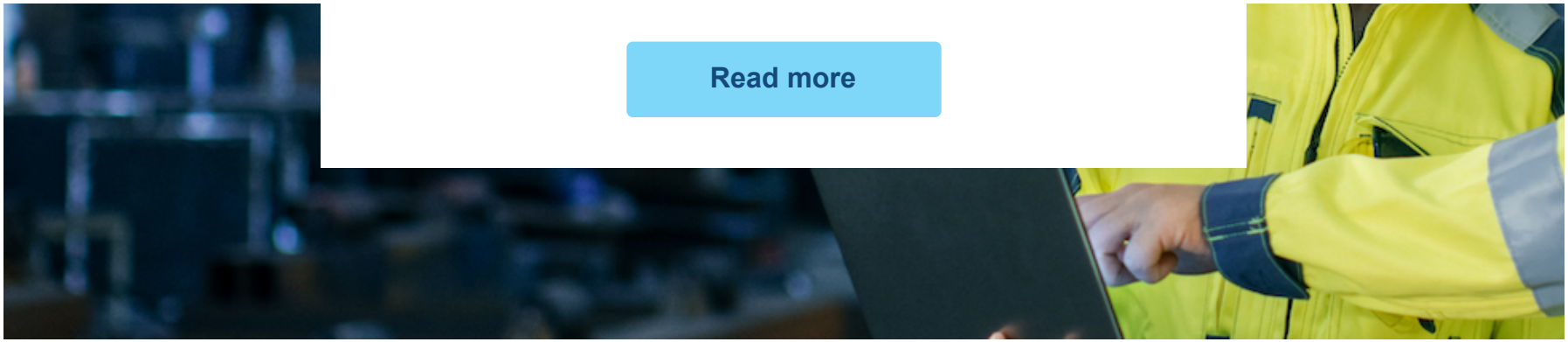
New Licences and Certificates by Technology in 2020

New Licences and Certificates by Technology in 2020



Permits

Read how many new installation and operating permits were issued in 2020.



Read more

Technology

ENERGY

Boiler, PV, Refrigeration

Electrical

Gas

Alternative Safety Approaches (ASA)

TRANSPORTATION

Amusement Devices

Elevating Devices

Passenger Ropeways

Railways

Products

Permits

Certification

Licences

Design registration

Assessments

Learning centre

Regulatory resources

Codes, standards and regulations

Regulatory notices

Find a licensed contractor

Find a certified individual

Forms

Fees

Safety in BC

Safety stories

Incident investigations

Compliance and enforcement

State of Safety

Safety education

Get involved

News

Events

Engagement

Connect with us

Governance and leadership

Careers

Contact us

Sign up for newsletter

Have you witnessed an incident or hazard that involves regulated work or a regulated product?

Report an incident ›

Contact us

1 866 566 7233 (8 am–5 pm, Monday–Friday)

Office locations

Cookie policy Privacy policy Terms of use

Managing Safety Risks: Permits

Permits

Technical Safety BC issues installation and operating permits to contractors and homeowners to ensure work is being done correctly and to connect them to the safety system. The data collected helps us track where regulated work is being done and by whom, should compliance and enforcement action be needed to correct unsafe work.

Key Statistics

100,152

Active operating permits in 2020

25%

Increase in elevating device permits

4,847

More installa
permits issu
2020 than 2

Installation permits

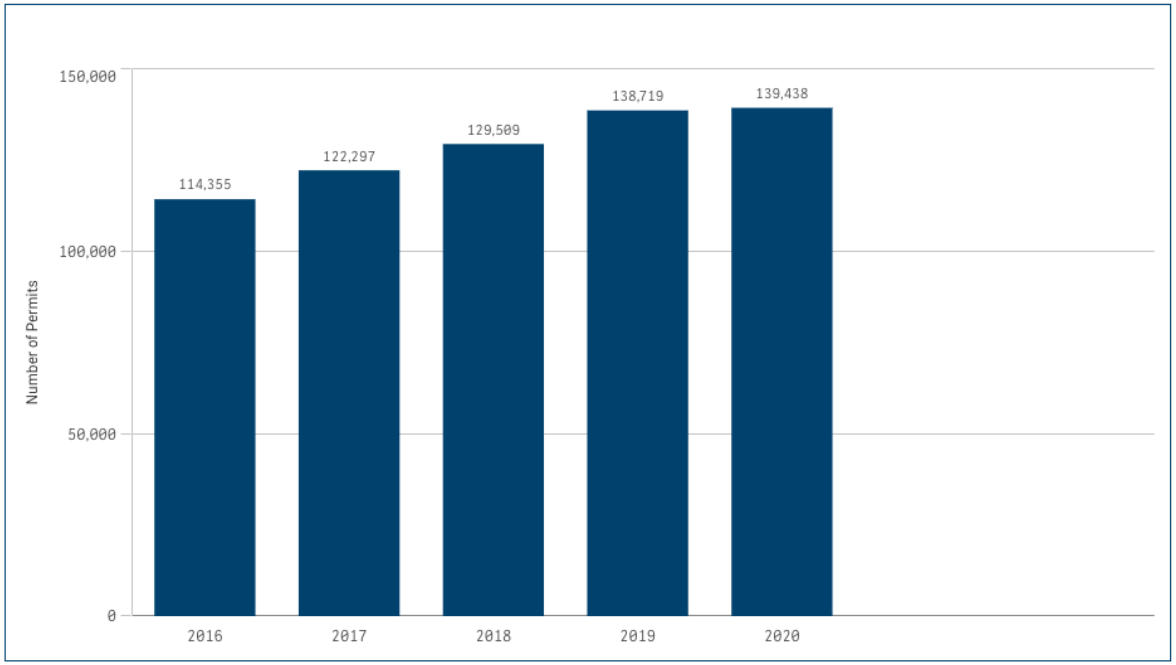
In 2020, a total of 139,500 installation permits were issued, a 0.6% increase compared to 2019.

The gas technology saw the greatest increase in installation permits with 61,717 being issued. There were also 35% more elevating device installation permits issued in 2020 than 2019.

Amusement Devices and Passenger Ropeways both saw a dramatic reduction in installation permits issued. In 2020 there were only nine amusement device installation permits issued, an 89% decrease in comparison to 2019. This can be attributed to amusement parks being closed due to provincial COVID-19 restrictions.

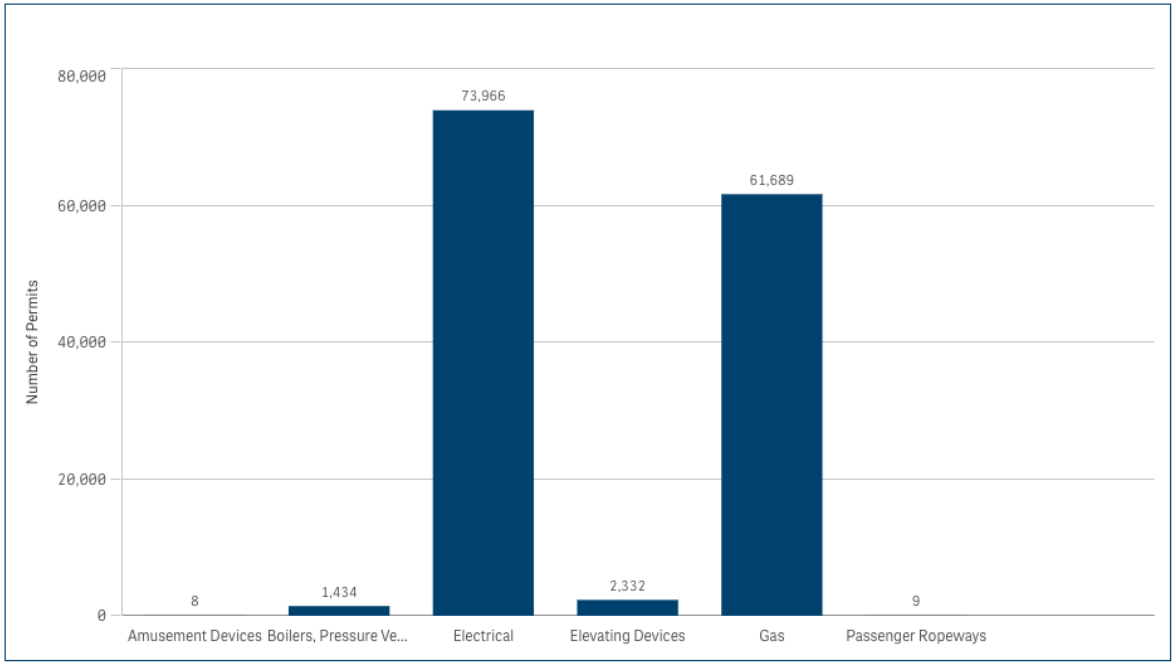
Passenger Ropeways installation permits also dropped from 38 permits in 2019 to just nine in 2020. This decrease was partially due to significant ski resort expansions throughout 2018 and 2019 with mountains like Whistler Blackcomb, Revelstoke and Manning Park Resort installing new passenger ropeway equipment.

Installation Permits by Year (2016 - 2020)



Installation Permits by Year (2016-2020)

Installation Permits by Technology in 2020



Installation Permits by Technology 2020

Operating permits

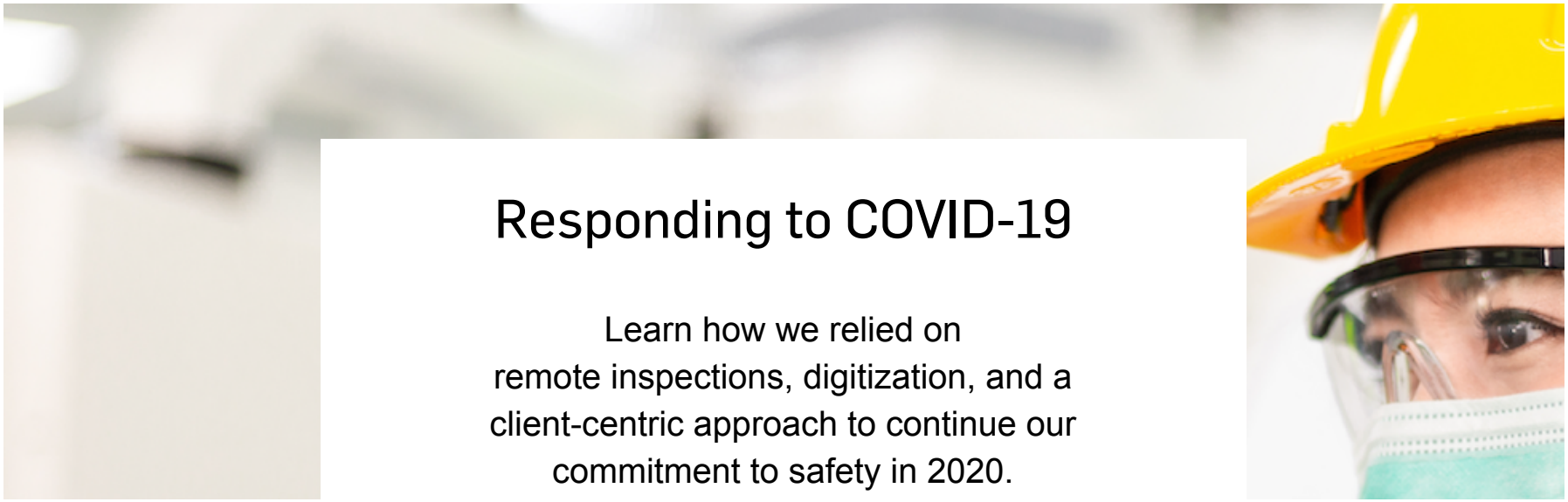
The number of active operating permits in 2020 decreased by 0.9% compared to the previous year. The Amusement Devices technology saw a decrease in operating permits, dropping by 37%. This was due to COVID-19 health guidelines which kept amusement parks closed or open with limited attractions.

Operating Permits by Year (2016 - 2020)

Operating Permits by Year (2016-2020)

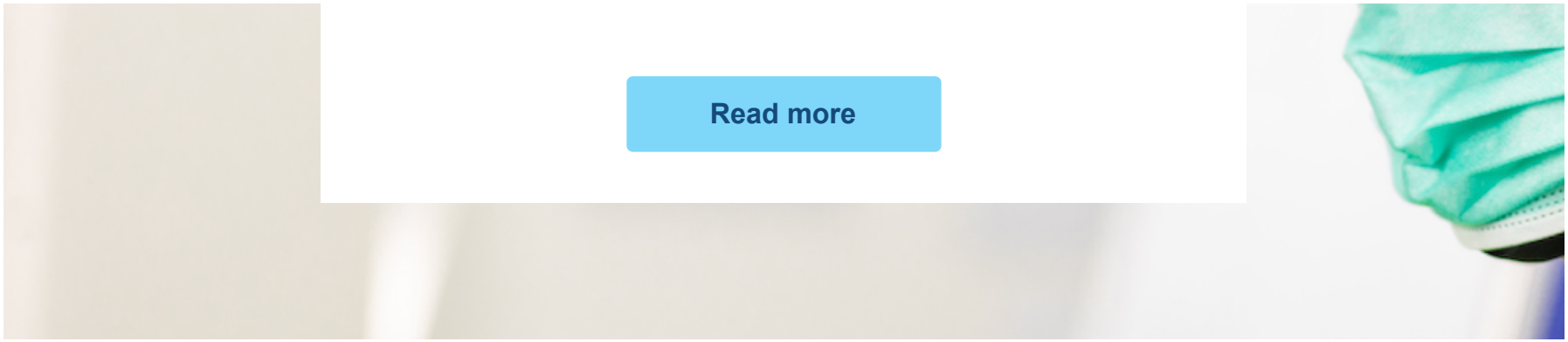
Operating Permits by Technology in 2020

Operating Permits by Technology in 2020



Responding to COVID-19

Learn how we relied on
remote inspections, digitization, and a
client-centric approach to continue our
commitment to safety in 2020.



Read more

Technology

ENERGY

Boiler, PV, Refrigeration

Electrical

Gas

Alternative Safety Approaches (ASA)

TRANSPORTATION

Amusement Devices

Elevating Devices

Passenger Ropeways

Railways

Products

Permits

Certification

Licences

Design registration

Assessments

Learning centre

Regulatory resources

Codes, standards and regulations

Regulatory notices

Find a licensed contractor

Find a certified individual

Forms

Fees

Safety in BC

Safety stories

Incident investigations

Compliance and enforcement

State of Safety

Safety education

Get involved

News

Events

Engagement

Connect with us

Governance and leadership

Careers

Contact us

Sign up for newsletter

Have you witnessed an incident or hazard that involves regulated work or a regulated product?

Report an incident ›

Contact us

1 866 566 7233 (8 am–5 pm, Monday–Friday)

Office locations

Cookie policy Privacy policy Terms of use

Key Initiatives: Responding to COVID-19

In this section

Home > State of Safety 2020 > Responding to COVID-19

Responding to COVID-19

In 2020, the world faced unprecedented challenges caused by the COVID-19 pandemic. It changed the way we work, learn, care for ourselves and each other, and, importantly, how we connect. For Technical Safety BC, the provincial restrictions pushed us to respond to the pandemic by mobilizing our operations and re-prioritizing to maintain business continuity and uphold our commitment to safeguarding technical systems in the province. Details on all initiatives are included in our 2020 Revised Business Plan.

Key Statistics

Our People First principle

20,300
Remote assessments

990
Exams taken online

4,694
New design registrations

We took immediate precautions to protect the health and safety of our employees, clients, and stakeholders by bolstering productivity remotely and digitally. This included transitioning to remote assessments, digital registration, online certification exams, and a remote contact centre.

Introducing remote assessments

In a typical year, Technical Safety BC conducts about 40,000 safety inspections in the field, so this created a unique challenge. To ensure that safety inspections would continue to take place, our safety officers began conducting inspections remotely, the only exception being if we determined that an in-person inspection was absolutely necessary. They used video call applications like Zoom and FaceTime in collaboration with asset owners and managers to perform remote safety inspections from their homes. Throughout the remainder of the year, we conducted 20,300 remote inspections, an exponential increase compared to 2019.

Digitizing the certification process

In May, Technical Safety BC launched an online exam pilot program. Previously, all exams had been administered in-person at Technical Safety BC offices across the province. By moving a majority of our exams online we were able to adhere to public health and safety guidelines and support our clients in earning certification and actively participating in the safety system. By the end of the year, over 990 clients had taken an online exam and 1,779 had taken an exam in-person.

Online design registration process

Another way we streamlined client interactions in 2020 was by changing our design registration to allow for digital receipt of plans. Previously, asset owners looking to modify technical equipment had to courier their design plans to our head office to have them registered prior to approval and certification. Now, submission and registration can be done more efficiently through our design registration online service.

By permanently moving design registration for all technologies online we simultaneously adapted to our clients' remote work challenges and made submission and registration more efficient

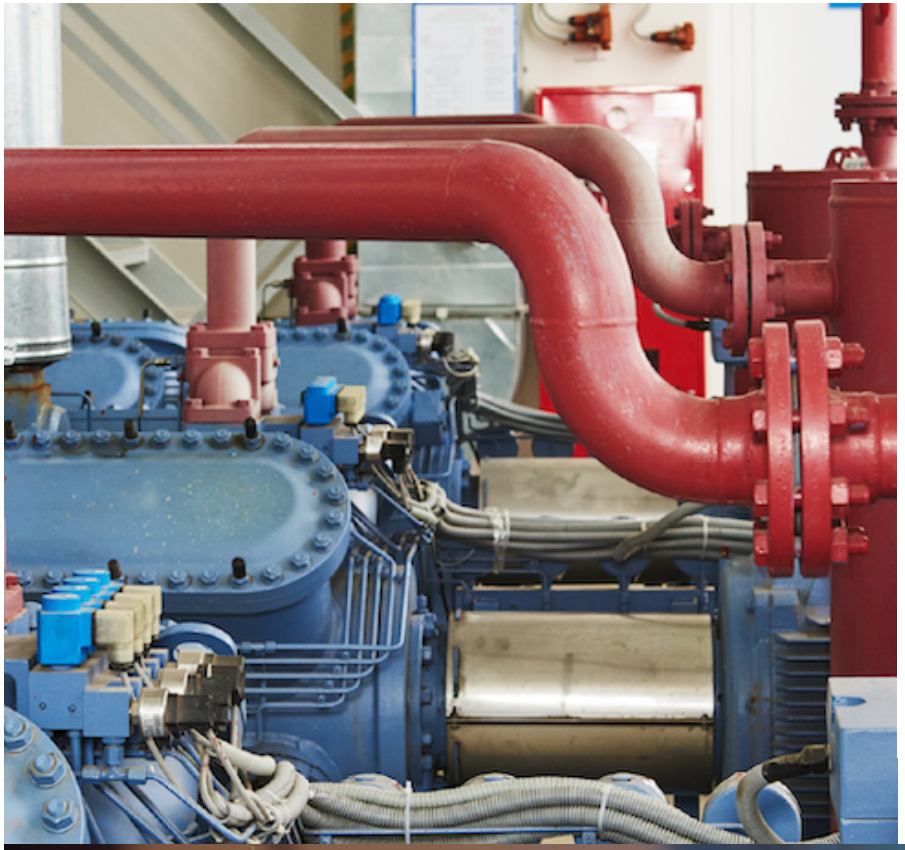
and transparent. The change also helped improve data access and clarify accountability to clients.

In 2020, 585 international and Canadian clients registered their engineering designs online.

Setting us up to Recover and Thrive

British Columbia is continuing to face a prolonged health and economic crisis. As such, Technical Safety BC is committed to lead through this crisis with its people-first approach to ensure the health and safety of our employees, clients and stakeholders.

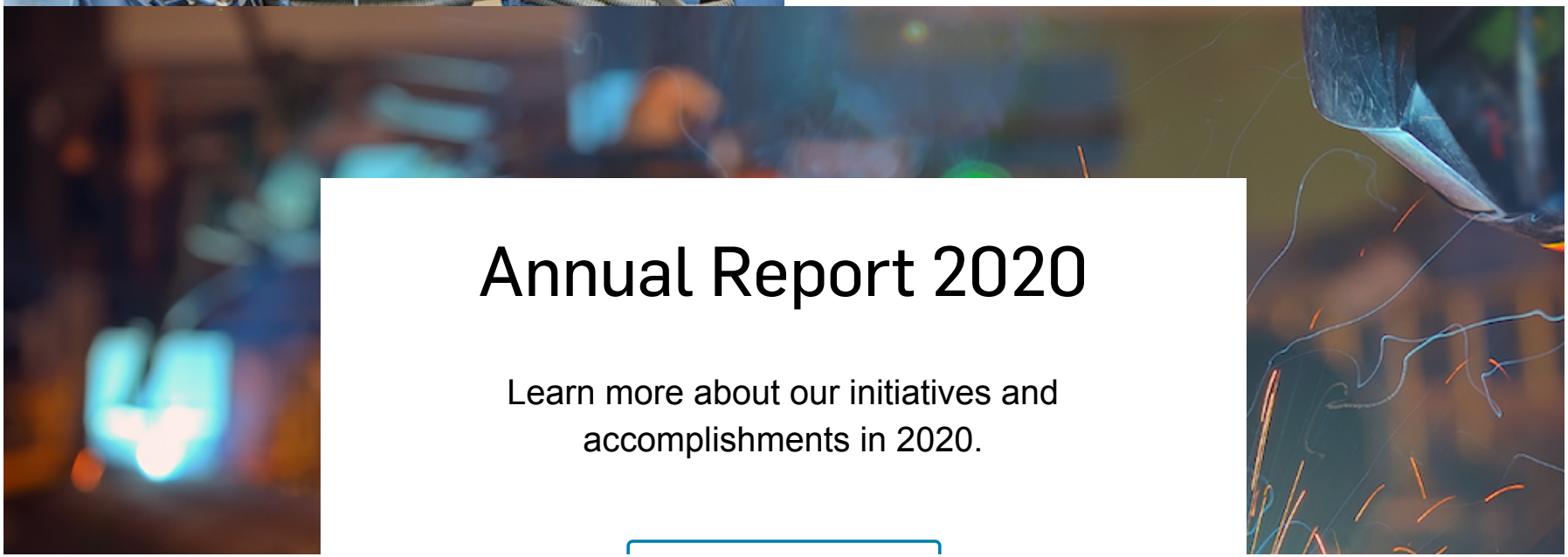
Maintaining public safety and enabling system and industry innovation go hand-in-hand. The changes introduced to our operations and processes in 2020 not only kept everyone physically safe, they also increased efficiency across the whole safety system. In 2021 and beyond, we will be continuing our efforts to improve client experience through digital strategies with the goal of making technical systems safer for all British Columbians



Ammonia Safety Awareness Program

In 2020, we designed a program that provides tools, educational opportunities, and training focused around increasing awareness of ammonia safet…

Read more >



Annual Report 2020

Learn more about our initiatives and accomplishments in 2020.

View report

Technology

ENERGY

Boiler, PV, Refrigeration

Electrical

Gas

Alternative Safety Approaches (ASA)

TRANSPORTATION

Amusement Devices

Elevating Devices

Passenger Ropeways

Railways

Products

Permits

Certification

Licences

Design registration

Assessments

Learning centre

Regulatory resources

Codes, standards and regulations

Regulatory notices

Find a licensed contractor

Find a certified individual

Forms

Fees

Safety in BC

Safety stories

Incident investigations

Compliance and enforcement

State of Safety

Safety education

Get involved

News

Events

Engagement

Connect with us

Governance and leadership

Careers

Contact us

Sign up for newsletter

Have you witnessed an incident or hazard that involves regulated work or a regulated product?

Report an incident ›

Contact us

1 866 566 7233 (8 am–5 pm, Monday–Friday)

Office locations

Cookie policy Privacy policy Terms of use

Key Initiatives: Ammonia Safety Awareness Program

In this section

Home > State of Safety 2020 > Ammonia Safety Awareness Program

Ammonia Safety Awareness

Program

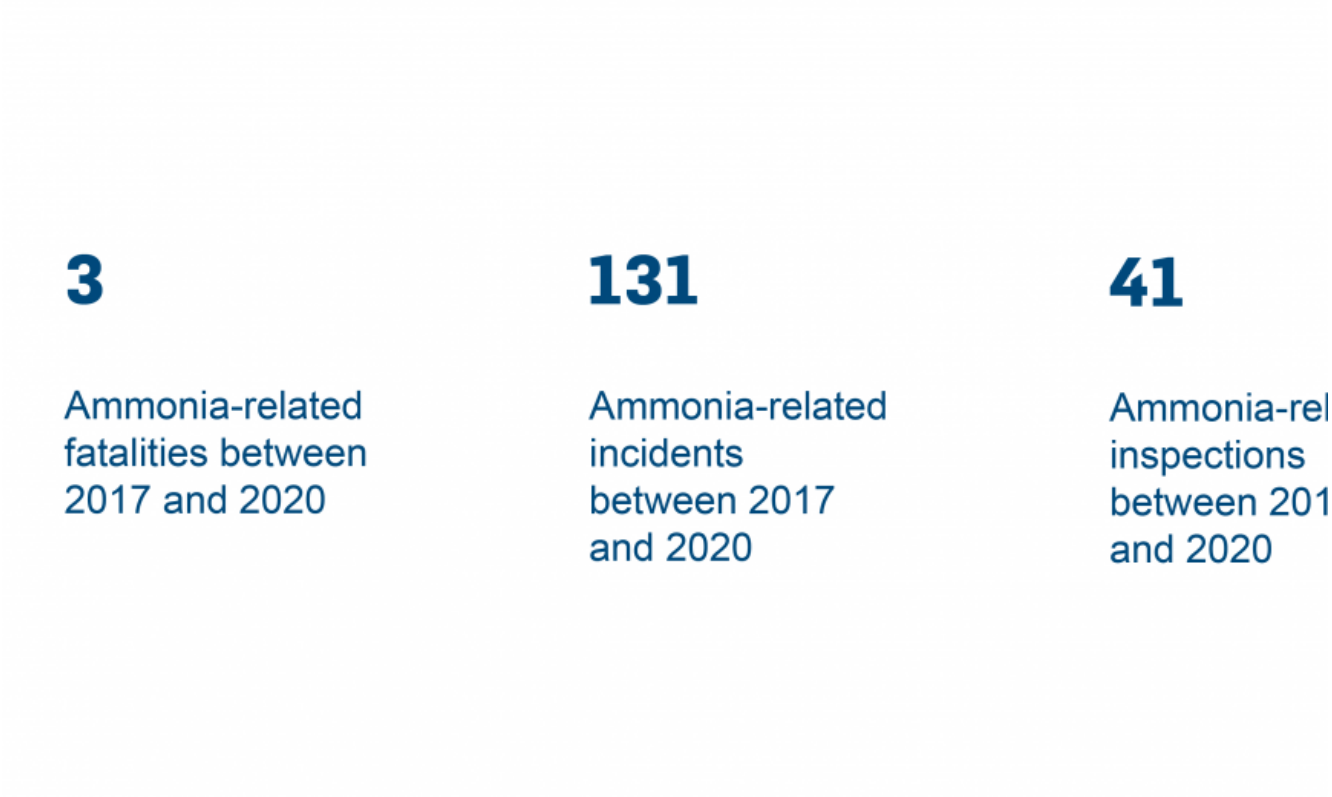
On October 17, 2017, there was an ammonia release at the Fernie Memorial Arena which resulted in three worker fatalities and caused the evacuation of 95 residents from 55 nearby homes. Following this event, Technical Safety BC released its incident investigation report on Fernie. This tragedy would form the catalyst for a multi-year industry-wide overhaul of ammonia safety procedures.

In the years following the Fernie incident, there have been an additional 66 reported instances that were assessed and resulted in 29 hazards and 37 incidents. In 75% of incidents, the cause was equipment failure or improper procedure. Clearly, there were knowledge gaps around ammonia equipment safety procedures at ammonia refrigeration facilities across the province.

Through analysis of injury and incident data, we quickly realized the need for a large-scale industry intervention to help provide education and training opportunities, as well as downloadable resources for refrigeration system technicians and operators.

Over the course of 2020, we worked in collaboration with industry partners to design and develop what would become known as the Ammonia Safety Awareness Program.

Key Statistics



Creating a culture of safety

The goal of the Ammonia Safety Awareness Program is to build a stronger safety culture by arming facility owners, managers, supervisors, and municipal councils with a greater awareness of the safety risks related to ammonia refrigeration equipment.

With industry partners, we spent hundreds of hours identifying learning opportunities and devising a strategy to help facility owners and managers keep their facilities as safe as possible.

A human-centric approach and behavioural insights were applied to design and evaluate a non-regulatory prevention program aimed at decreasing the risk of ammonia exposure in our communities. This meant working co-creatively with volunteer industry partners rather than administering a strictly regulatory approach. External collaborators included WorkSafeBC, Recreational Facilities Association of BC, Curl BC, municipal facility owners, and managers, frontline operators, and other refrigeration industry experts.

The results included the creation of an extensive training and education program.

Inspections carried out by the asset owner

Training and education efforts

For those without the educational background required for managing an ammonia refrigeration system, eight and a half hours of training around equipment lifecycle management, maintenance, and safety best practices was provided. This training program also acknowledges learnings from past incidents, and addresses identified knowledge gaps within the industry.

An educational program was developed for asset owners and managers to increase awareness of the dangers of ammonia exposure and to prevent and detect ammonia releases.

In addition to training and education, Technical Safety BC now provides downloadable tools to help industry professionals safely manage their ammonia refrigeration equipment across its lifecycle and meet regulatory requirements. These include a list of interview questions for hiring refrigeration technicians, equipment operation manuals, and clearly defined roles and responsibilities for operators, technicians, and owners.

> *“This is more valuable than a safety awareness course. I completed my IFO 10 to 15 years ago and this was a great refresher! All arena staff, including operators and maintenance teams, would benefit from this program”*
>
> - Ammonia Safety Awareness Program participant

Co-creative partnerships

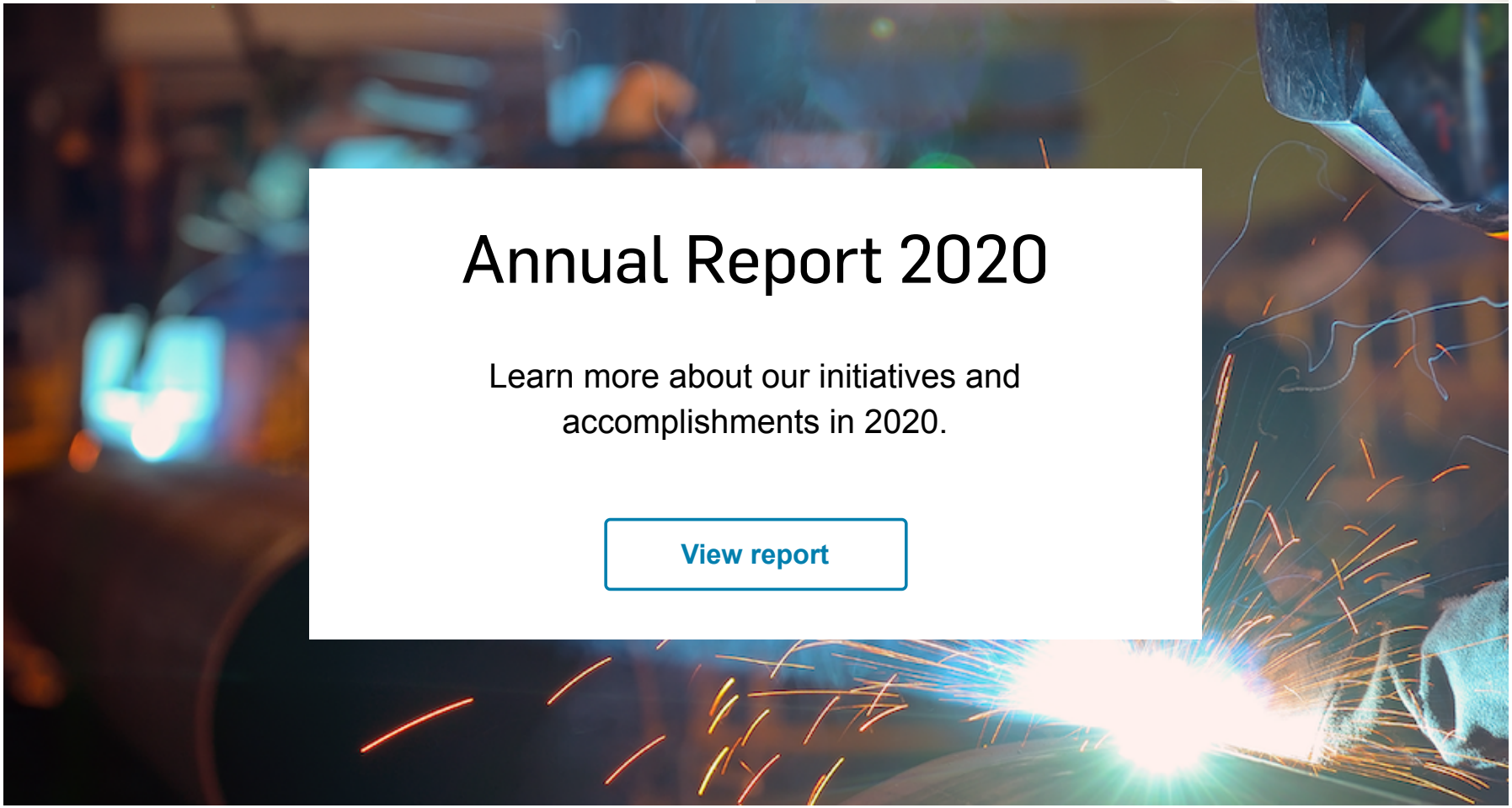
Technical Safety BC is proud of the collaborative partnerships established with recreational facility owners and managers throughout the BC refrigeration industry. Without the voluntary participation and disclosure from our partners, as well as their co-creative spirit, the Ammonia Safety Awareness Program would not be what it is today.

The results of this collaboration are already beginning to become apparent as asset owners and managers implement safer practices and procedures across the province. Since 2020, ten recreational facilities have completed the pilot program, helping to educate 19 employees. Together, we are developing a new program that will be launched to the full industry in the spring of 2021.

Carbon Monoxide Education and Awareness

To expand awareness and educate the public about the risks of carbon monoxide, we developed multiple public safety campaigns.

Read more >



Annual Report 2020

Learn more about our initiatives and accomplishments in 2020.

View report

Technology

ENERGY

Boiler, PV, Refrigeration

Electrical

Gas

Alternative Safety Approaches (ASA)

TRANSPORTATION

Amusement Devices

Elevating Devices

Passenger Ropeways

Railways

Products

Permits

Certification

Licences

Design registration

Assessments

Learning centre

Regulatory resources

Codes, standards and regulations

Regulatory notices

Find a licensed contractor

Find a certified individual

Forms

Fees

Safety in BC

Safety stories

Incident investigations

Compliance and enforcement

State of Safety

Safety education

Get involved

News

Events

Engagement

Connect with us

Governance and leadership

Careers

Careers

Contact us

Sign up for newsletter

Have you witnessed an incident or hazard that involves regulated work or a regulated product?

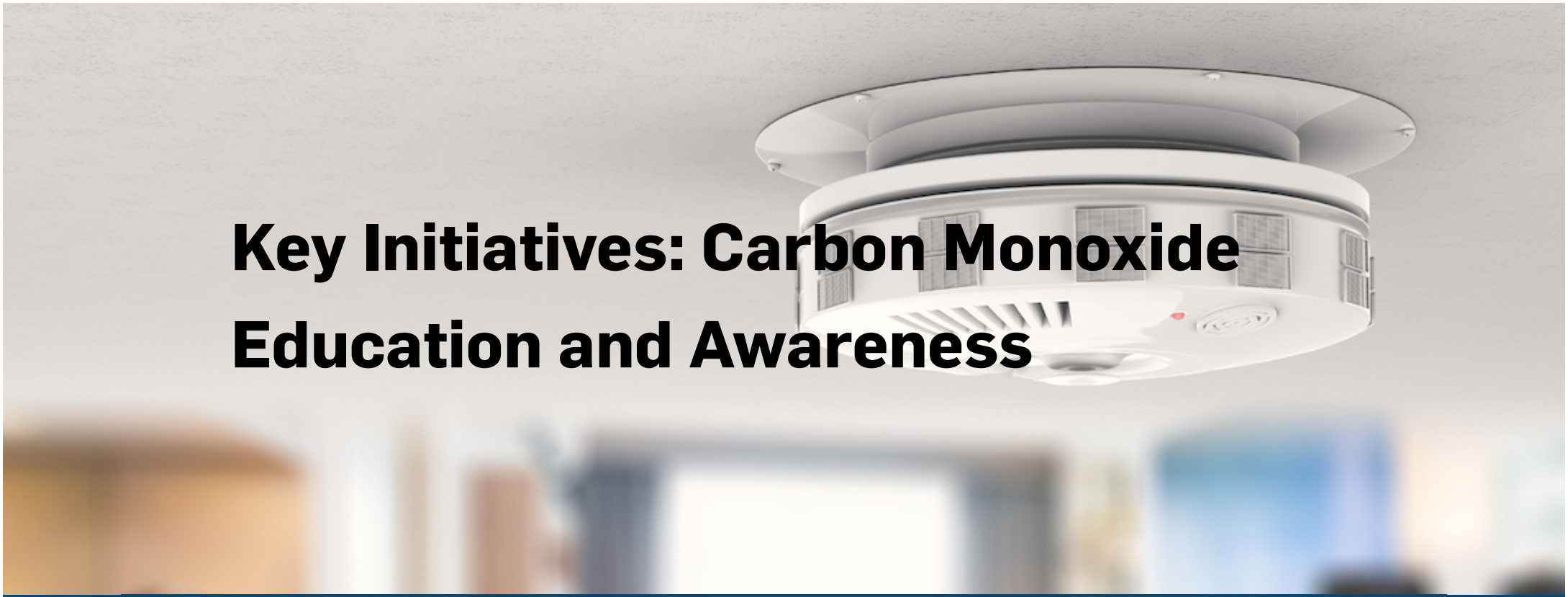
Report an incident ›

Contact us

1 866 566 7233 (8 am–5 pm, Monday–Friday)

Office locations

Cookie policy Privacy policy Terms of use



Key Initiatives: Carbon Monoxide Education and Awareness

In this section

Home > State of Safety 2020 > Carbon Monoxide Education and Awareness

Carbon Monoxide Education and

Awareness

Carbon monoxide (CO) exposures are a persistent risk in our safety system. In the past five years, there have been nine fatalities in British Columbia as a result of CO exposure, a fatality rate of two per year. The majority of CO incidents from 2016 to 2020, including fatalities, occurred at the edge of our safety system, where presence is limited. In many cases, the incidents occurred at properties that are geographically distant from licensed contractors, where owners chose do-it-yourself (DIY) installations.

Key Statistics

Carbon Monoxide Study

In April 2020, Technical Safety BC commissioned a study from PMG Intelligence to determine Canadians' awareness, attitudes, and behaviours related to CO. Key findings from this study included:

- Fewer than 1-in-5 Canadians are ‘very knowledgeable' about carbon monoxide
- Only 1-in-2 Canadians have checked to ensure their carbon monoxide alarms are working properly in the last year
- 3-in-10 Canadians are not sure of the potential sources of carbon monoxide in their home
- 38% of Canadians are unaware that carbon monoxide alarms have expiry dates and need to be replaced according to the manufacturer’s expiry date
- 71% of Canadians either do not know the signs of carbon monoxide buildup in their home or are unsure what the signs are

These insights, along with two fatal incidents that took place in 2020, made CO awareness a top priority for both the gas industry and the provincial government. In partnership with these key stakeholders, we developed and executed a six-month education and awareness campaign to improve awareness of CO risks in British Columbia.

Fatal incidents

On June 27, 2020, fatal exposure to carbon monoxide resulted in the death of one person and critically injured another. This incident occurred in a recreational cabin in Ruby Lake on the Sunshine Coast.

Another serious carbon monoxide incident took place on August 3, 2020 in Tulameen. This led to the death of two people.

Both incidents occurred on recreational properties where the owners had completed their own installations of propane-burning appliances.

In the Ruby Lake incident, investigators identified propane appliances that were installed improperly and not certified for use in Canada. The Tulameen incident was caused by a propane-fueled on-demand tankless water heater that was found to have been improperly installed in a shower building. Do-It-Yourself (DIY)

installations frequently present a greater CO risk and the incident investigation reports into both of these incidents revealed that appliances were installed in a hazardous manner inconsistent with Canadian code and certification standards.

These two incidents led to stronger messaging around the importance of having licensed contractors install gas appliances and annually inspect them. Carbon monoxide was also considered a higher priority risk leading to a larger public safety campaign in the fall.

Carbon Monoxide safety education efforts

In 2020, we ran two carbon monoxide awareness campaigns and launched supporting course and webinar materials to help educate the general public.

Targeting gas industry workers, the client education team created an online course about carbon monoxide. The course covers the characteristics of carbon monoxide, how it is produced, and outlines the ways in which gas industry workers can prevent CO risks.

Investigation findings were shared with the Ruby Lake Homeowner Association. A community outreach webinar gave attendees a better understanding of the incident that occurred and a chance to

ask our technical experts any questions. In total, nine households attended.

Carbon Monoxide safety awareness campaigns

A summer campaign running from July through mid-September shared valuable CO safety tips to campers, RV owners, boaters, and those staying in vacation rentals.

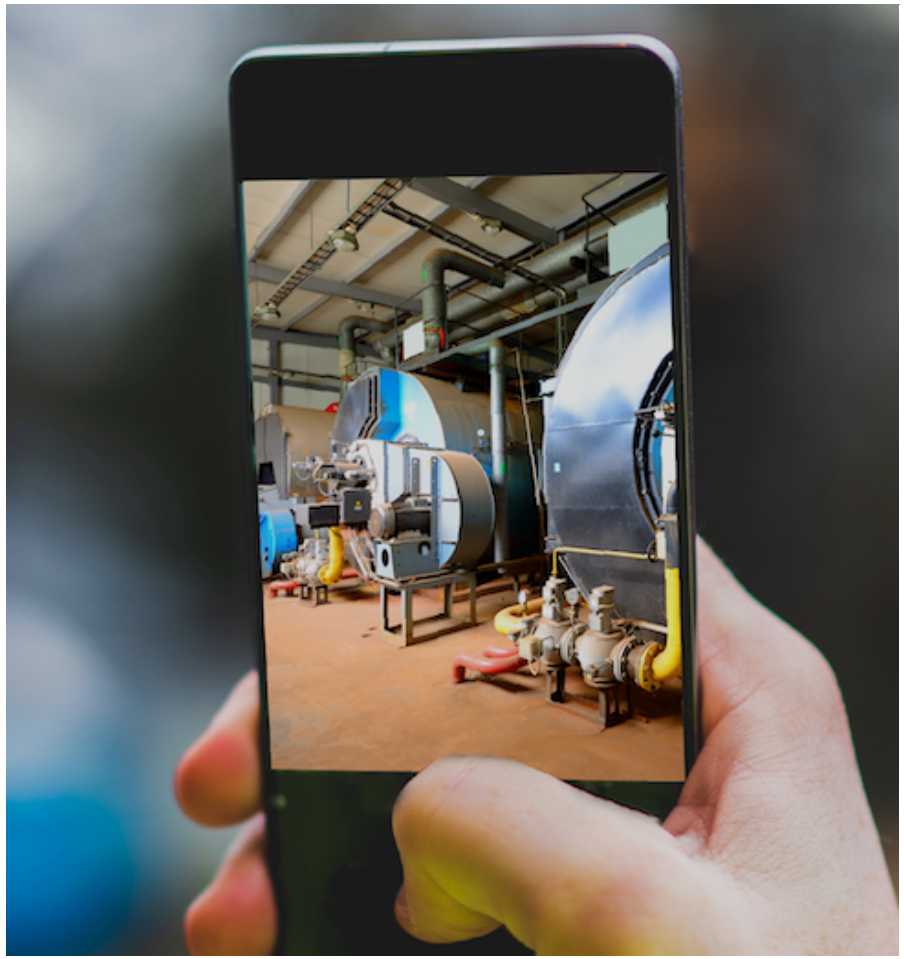
This was followed by a fall campaign targeting homeowners and renters promoting tips on how to keep homes CO-safe. The objective of both campaigns was to increase awareness of symptoms of carbon monoxide exposure (including rapid-onset exposure) and the sources and prevention of CO safety risks.

Throughout this six-month, cross-channel campaign, Technical Safety BC partnered with key industry and government stakeholders such as the Office of the Fire Commissioner, PreparedBC, Fortis BC, Pacific Northern Gas, the Canadian Propane Association, the Insurance Bureau of Canada, and Vancouver General Hospital.

Examples of advertisement materials used in our carbon monoxide awareness campaign (July 2020)

Future awareness and education

Carbon monoxide remains one of the deadliest risks in BC, causing approximately two fatalities per year. Awareness and education around CO safety is absolutely crucial to mitigating the very real risk CO presents to our communities. Technical Safety BC is committed to continuing its work with communities to increase awareness of the causes of CO poisoning and promoting preventative and safe behaviours.

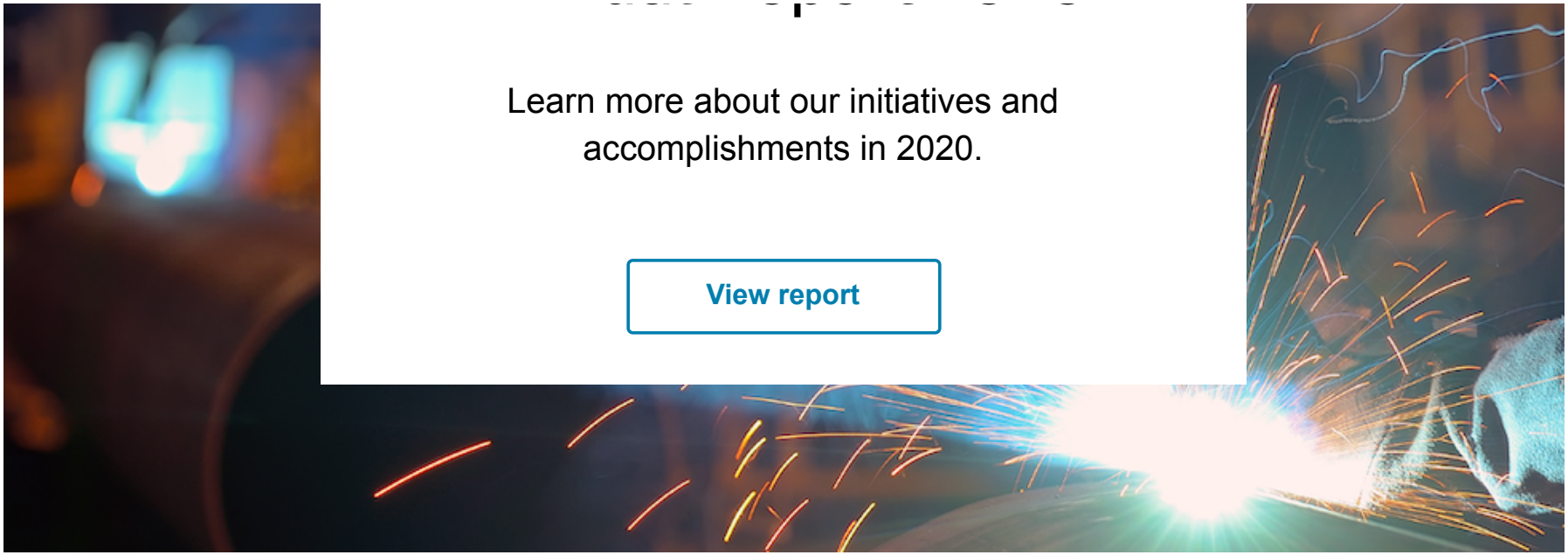


Business Transformation

To make the safety system more efficient for our clients, we are upgrading our technology. Read about our business transformation project.

Read more >

Annual Report 2020



Learn more about our initiatives and accomplishments in 2020.

View report

Technology

ENERGY

Boiler, PV, Refrigeration

Electrical

Gas

Alternative Safety Approaches (ASA)

TRANSPORTATION

Amusement Devices

Elevating Devices

Passenger Ropeways

Railways

Products

Permits

Certification

Licences

Design registration

Assessments

Learning centre

Regulatory resources

Codes, standards and regulations

Regulatory notices

Find a licensed contractor

Find a certified individual

Forms

Fees

Safety in BC

Safety stories

Incident investigations

Compliance and enforcement

State of Safety

State of Safety

Safety education

Get involved

News

Events

Engagement

Connect with us

Governance and leadership

Careers

Contact us

Sign up for newsletter

Have you witnessed an incident or hazard that involves regulated work or a regulated product?

Report an incident ›

Contact us

1 866 566 7233 (8 am–5 pm, Monday–Friday)

Office locations

Cookie policy Privacy policy Terms of use

Key Initiatives: Business Transformation

In this section

Home > State of Safety 2020 > Business Transformation

Business Transformation

As we shift towards a more human-centric approach to regulating safety in British Columbia, Technical Safety BC made it a key business goal to reduce complexity in the delivery of our products and remove barriers to connection. To accomplish this, we needed to create entirely new processes and tools. In 2020, we took the first steps towards overhauling our existing technology framework.

More efficient technology would mean more accurate data, better decision-making, faster response times, and a more streamlined safety system for all British Columbians. In short, it would become exponentially easier for everyone to participate in the system.

This multifaceted business transformation project will connect our clients to the safety system by simplifying processes and increasing consistency across the seven technologies we regulate. Additionally, it will provide us with a single source of truth so that information flows more freely between our clients, our employees and our stakeholders.

Transforming our business

The project is organized around four streams: people, product, data and systems.

From the data stream perspective, we will collect client and technology data more easily, store it securely in one central

location, and use it to develop insights, identify and mitigate risks more effectively. For our clients this means improved decision-making, smarter assessments, and the ability to discover and fulfil their needs faster.

From the product perspective, we will streamline our existing product line and processes, to make it easier for us to adapt our product offering as the safety system changes. We will be able to offer our clients products that better fit their needs and schedules.

The system stream focuses on our IT systems, so that we can connect employees and clients with the tools they need to complete business transactions and information to make safe decisions.

Finally, in the area of people, the project will help us achieve safety at a greater scale, by empowering and lifting the confidence of our clients, our employees, our stakeholders and the public.

Key objectives

In 2020, we outlined the main objectives of our multi-year business transformation.

1. Implementing tools that are flexible within a changing environment

We will be implementing a new IT platform as a replacement to our legacy system, which will give us the flexibility to meet the demands of our clients and the changing environment of the safety system.

2. Improving the safety system through process consistency and simplification

Through analysis, we discovered that our processes needed to be streamlined and simplified. This means using better, more efficient work practices in our day-to-day tasks as well as in our interactions with our clients.

3. Creating insight from quality data

As we create a single source of truth for data we will be able to utilize the same insights to make important decisions across the organization and throughout the safety system.

Moving forward

While the focus in 2020 was on analyzing our current technology and mapping out solutions, there are exciting developments on the horizon. In 2021 and into 2022, we are focusing on improving

processes for clients who need to obtain certifications and undergo safety assessments.

Amplifying the Voice of Stakeholders

Learn how we amplified the voice of our stakeholders and reworked our advisory committees.

Read more >

Annual Report 2020

Learn more about our initiatives and accomplishments in 2020.

View report

Technology

ENERGY

Boiler, PV, Refrigeration

Electrical

Gas

Alternative Safety Approaches (ASA)

TRANSPORTATION

Amusement Devices

Elevating Devices

Passenger Ropeways

Railways

Products

Permits

Certification

Licences

Design registration

Assessments

Learning centre

Regulatory resources

Codes, standards and regulations

Regulatory notices

Find a licensed contractor

Find a certified individual

Forms

Fees

Safety in BC

Safety stories

Incident investigations

Compliance and enforcement

State of Safety

Safety education

Get involved

News

Events

Engagement

Connect with us

Governance and leadership

Careers

Contact us

Sign up for newsletter

Have you witnessed an incident or hazard that involves regulated work or a regulated product?

Report an incident ›

Contact us

1 866 566 7233 (8 am–5 pm, Monday–Friday)

Office locations

Cookie policy Privacy policy Terms of use

Key Initiatives: Amplifying the Voice of Stakeholders

In this section

Home > State of Safety 2020 > Amplifying the Voice of Stakeholders

Amplifying the Voice of

Stakeholders

At Technical Safety BC, we value the voices of our stakeholders. Our industry experts, clients, associations, and communities help us advance our understanding of the day-to-day realities of the safety system. We rely on their insights, observations, and feedback as we outline regulatory policies, fee changes, and as we design and optimize our products.

Until 2020, our engagement efforts depended on in-person committee meetings with stakeholders from specific technologies that we regulate. The objectives of the group were broadly focused on gathering industry insights, which led to discussions on topics that were not always timely, resourced or immediately actionable.

When COVID-19 made in-person committees no longer possible, we used this as an opportunity to drastically overhaul and improve the ways in which we engage with our stakeholders. We reached out to various stakeholders for feedback and soon developed a 2020 restructuring plan that focused on the following change objectives:

1. Collapse existing technology-based standing committees and create purpose-driven groups that focus on a clear and timely policy, program or product improvement outcome.

2. Ensure that membership is representative but kept to a manageable group size to support collaborative discussion.

3. Utilize digital platforms to support different types of engagement, including those that support timely discussions, are low-cost, and easy to administer.

The ultimate goal was to amplify our stakeholders' voices so that we can better utilize their insights to refine and develop the safety system.

Digital engagement

In 2020, a new digital engagement tool was introduced to:

- Assist with the collection, analysis, and distribution of stakeholder insights
- Move engagement onto a digital platform given COVID-19 and limitations around in-person events and meetings
- Ensure diversity of voice and that feedback is representative of the industry

The new digital engagement tool enables stakeholders to contribute to ongoing discussions, ask questions, stay up to date on recent policy changes and announcements, and raise concerns with us. Digital tools also help reduce barriers to participation (e.g.,

multi-day travel) and ensure that everyone can contribute no matter where they are in the province.

Advisory committees

The advisory committees were also restructured around a clear and timely policy, program or product improvement outcome rather than technology-specific groups. This resulted in more focused and productive engagement with industry stakeholders.

Advisory group meetings in 2020:

- 1 meeting on Elevating Devices code implementation
- 6 meetings on gas code adoption
- 3 meetings on ammonia risk prevention
- 6 meetings on refrigeration safety
- 4 meetings on boiler devices code implementation
- 2 meetings on Business Transformation service design

Other stakeholder events held in 2020:

- 9 presentations to excavators, building owners, and stratas
- 3 surveys on COVID-19 recovery, remote inspections, and fees
- 3 safety officer focus groups on remote inspections

Outcomes

While 2020 presented a unique challenge for our engagement efforts, we saw some promising results that indicate the effectiveness of our restructuring effort in moving us closer towards a proactive, human-centric approach to industry engagement.

The feedback we received from advisory group members and internal employees notes the following benefits of the new advisory group structure:

- More focused, topic-specific agendas means that action items are more consistently completed
- Membership and meeting structure of the groups is more agile and tailored to the specific-topic needs
- Industry experts (advisory group members) have a greater influence in the design and implementation of changes that impact their industry

A study conducted at the end of 2020 found that stakeholders appreciated our COVID-19 communications and overall felt they were kept in the loop.

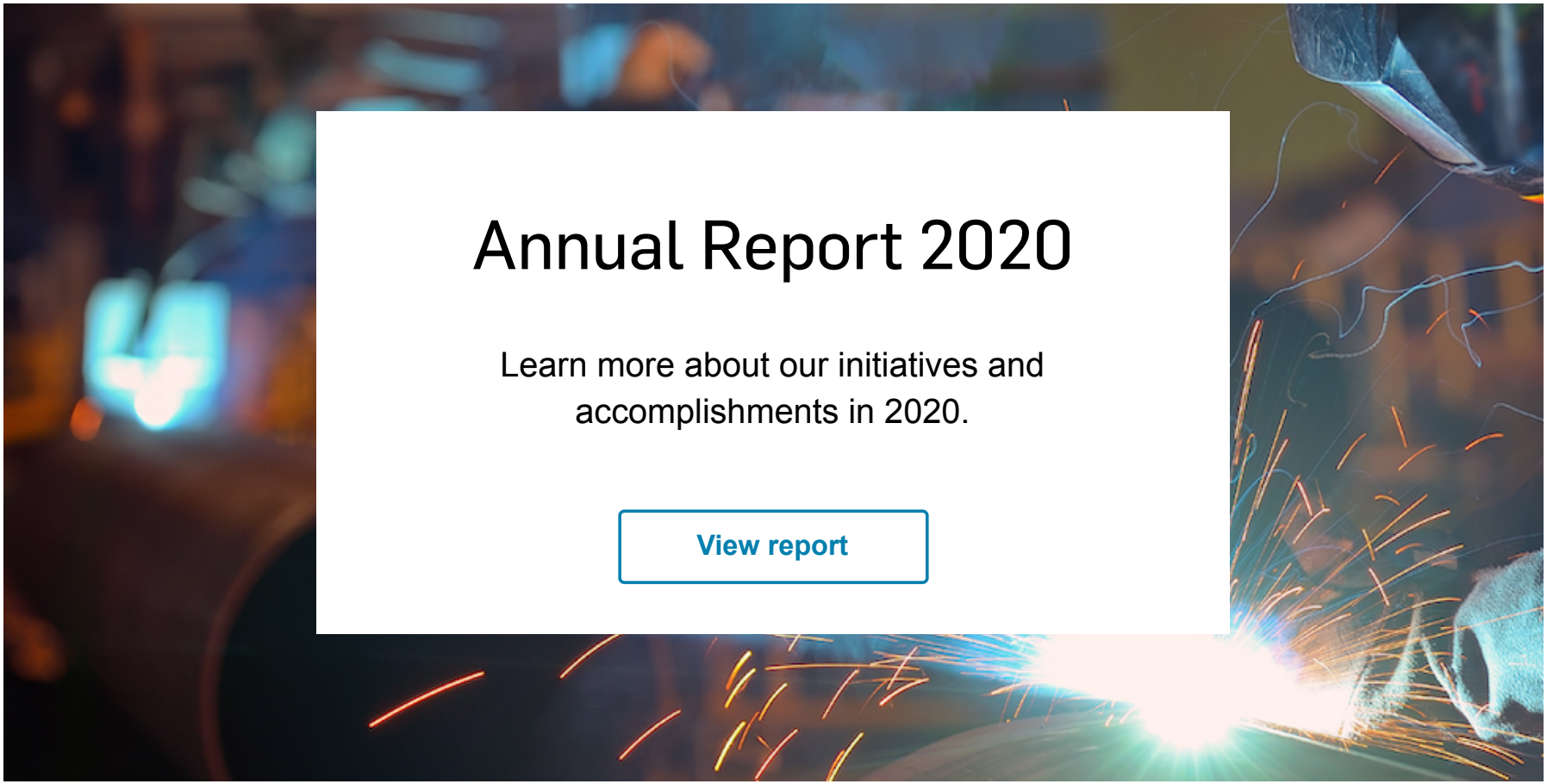
In addition to the study, we have also learned more about what makes an advisory group most effective. We observed that the greatest levels of participation, engagement and insights occur when industry representatives are involved during the needs

assessment, problem identification or design phases of a project. This enables us to deepen our understanding and design solutions that have the greatest opportunity for adoption and influencing positive industry change.

Alternative Safety Approaches

Learn about injuries, incidents, assessments, and permits in 2020.

Read more >



Technology

ENERGY

Boiler, PV, Refrigeration

Electrical

Gas

Alternative Safety Approaches (ASA)

TRANSPORTATION

Amusement Devices

Elevating Devices

Passenger Ropeways

Railways

Products

Permits

Certification

Licences

Design registration

Assessments

Learning centre

Regulatory resources

Codes, standards and regulations

Regulatory notices

Find a licensed contractor

Find a certified individual

Forms

Fees

Safety in BC

Safety stories

Incident investigations

Compliance and enforcement

State of Safety

Safety education

Get involved

News

Events

Engagement

Connect with us

Governance and leadership

Careers

Contact us

Sign up for newsletter

Have you witnessed an incident or hazard that involves regulated work or a regulated product?

Report an incident ›

Contact us

1 866 566 7233 (8 am–5 pm, Monday–Friday)

Office locations

Data by technology: Alternative Safety Approaches

In this section

Home > State of Safety 2020 > Alternative Safety Approaches

Alternative Safety Approaches

Alternative Safety Approaches (ASA) are developed with owners and operators in the oil and gas, propane, bio-energy, LNG, and institutional sectors. They provide a way for an owner or primary operator to undertake regulated work or use regulated products in a way that is different from traditional prescriptive requirements, but consistent with the safety objectives of the *Safety Standards Act*.

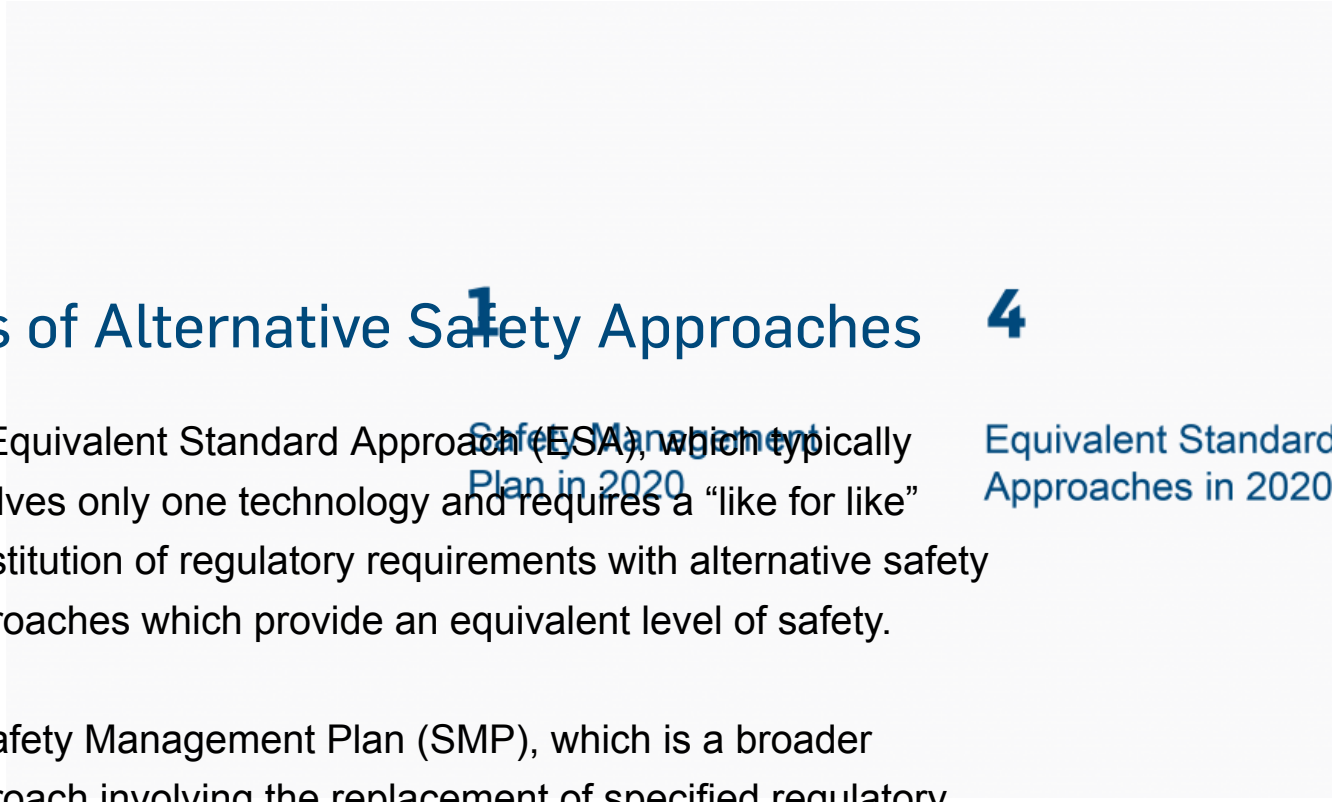
We oversee the acceptance of ASA for all technologies in accordance with the *Safety Standards Act* and the Alternative Safety Approaches Regulation.

Key Statistics

Types of Alternative Safety Approaches

1. An Equivalent Standard Approach (ESA), which typically involves only one technology and requires a “like for like” substitution of regulatory requirements with alternative safety approaches which provide an equivalent level of safety.

2. A Safety Management Plan (SMP), which is a broader approach involving the replacement of specified regulatory requirements with detailed, comprehensive safety management systems and which can involve multiple regulated technologies.



These options apply in different situations. The application process can vary in scale depending on complexity, but in all cases, clients are required to demonstrate that their proposed alternatives will achieve an equivalent, or better, level of safety.

Assessments and audits

A key feature of all alternative safety approaches is that clients take on increased responsibility for the safety of their equipment and work performed on their equipment or by their employees. We monitor the implementation of alternative safety approaches through a variety of oversight tools to assess client performance and the effectiveness of an alternative safety approach. Audits are central to this assessment and are performed using standard audit processes consistent with the International Standards Organization ISO19011—Guidelines for Auditing Management Systems.

Two types of audits are performed by the ASA program:

- *Registration* audits are performed to assess the readiness of a client to implement their alternative safety approach.
- *Conformance* audits are performed to assess the degree to which a client is effective in implementing the alternative safety approach.

In 2020, 11 Conformance audits and 6 Registration audits were performed. We also performed one registration audit jointly with the BC Oil and Gas Commission.

Overall, there were 17 audits deemed ‘Effective’, 12 ‘Effective, except for’, and 0 that were ‘Not Effective’.

Audit findings for sites operating with an accepted ASA are categorized in a manner similar to as-found conditions for

traditional inspection-based assessments. The audit process used by Technical Safety BC assesses how the procedures and processes identified in the ASA meet or exceed the objectives of the *Safety Standards Act* to minimize risks, hazardous installation, or operation.

Audit Ratings

Effective	Processes/and or controls are adequate, appropriate and effective to provide reasonable assurance that risks are being managed. Some enhancements may have been recommended.
Effective, except for	Processes/and or controls are adequate, appropriate and effective to provide reasonable assurance that risks are being managed, however, there are deficiencies that need to be addressed by management.
Not effective	Processes/and or controls are adequate, appropriate and effective to provide reasonable assurance that risks are being managed. There are a number of critical and high risk deficiencies that need to be addressed by management. These deficiencies have a significant impact on operations.

Alternative Safety Approaches by Rating in 2020

Alternative Safety Approaches Audit Ratings

Amusement Devices

Learn about injuries, incidents, assessments, and permits in 2020.

Read more

Technology

ENERGY

Boiler, PV, Refrigeration

Electrical

Gas

Alternative Safety Approaches (ASA)

TRANSPORTATION

Amusement Devices

Elevating Devices

Passenger Ropeways

Railways

Products

Permits

Certification

Licences

Design registration

Assessments

Learning centre

Regulatory resources

Codes, standards and regulations

Regulatory notices

Find a licensed contractor

Find a certified individual

Forms

Fees

Safety in BC

Safety stories

Incident investigations

Compliance and enforcement

State of Safety

Safety education

Get involved

News

Events

Engagement

Connect with us

Governance and leadership

Careers

Contact us

Sign up for newsletter

Have you witnessed an incident or hazard that involves regulated work or a regulated product?

Report an incident ›

Contact us

1 866 566 7233 (8 am–5 pm, Monday–Friday)

Office locations

Cookie policy Privacy policy Terms of use

Data by technology: Amusement Devices

In this section

Home > State of Safety 2020 > Amusement Devices

Amusement Devices

Technical Safety BC oversees the installation and operation of amusement devices throughout British Columbia in accordance with the *Safety Standards Act* and the Elevating Devices Safety Regulation. The types of regulated amusement devices range from waterslides and inflatable play equipment to larger rides such as roller coasters.

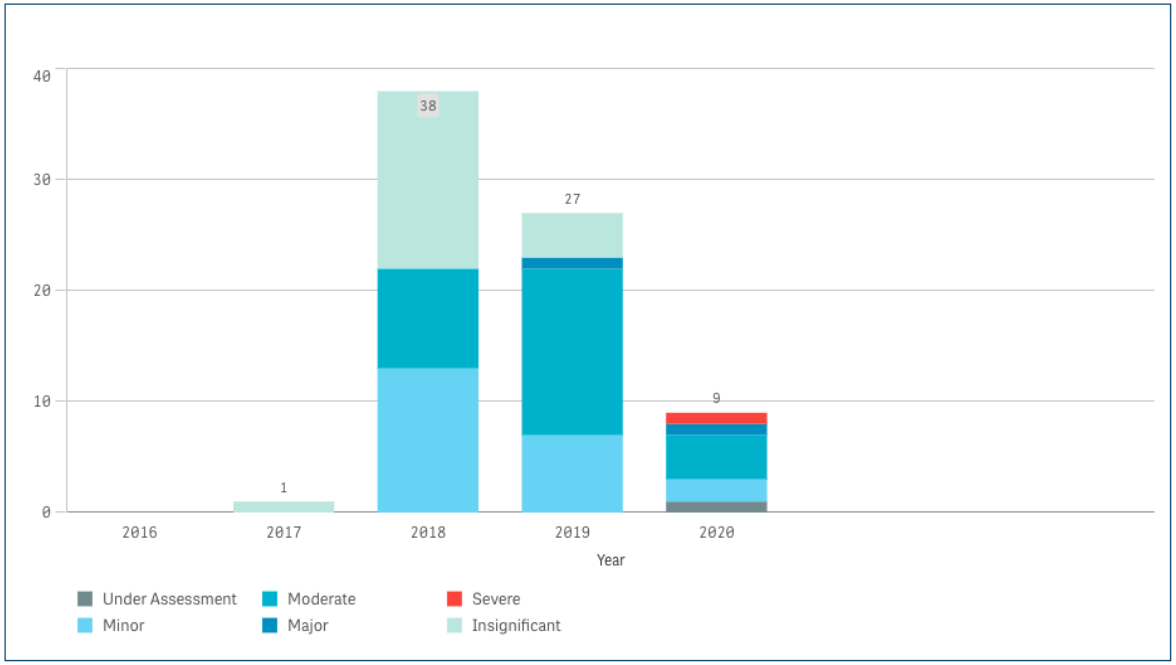
Key Statistics

Incidents

In 2020, the number of incidents reported to Technical Safety BC decreased by 17 (65%). This decrease can be attributed to the number of amusement devices that were not in operation due to the COVID-19 pandemic and provincial health and safety guidelines.

Almost all incidents that did occur on amusement rides and devices can be linked to operator error, passenger error, or a combination of both. We continue our efforts to educate those operating outside of the safety system on the importance of obtaining necessary licences and permits so that we can work together to prevent incidents.

Amusement Device Incidents by Year (2016 - 2020)

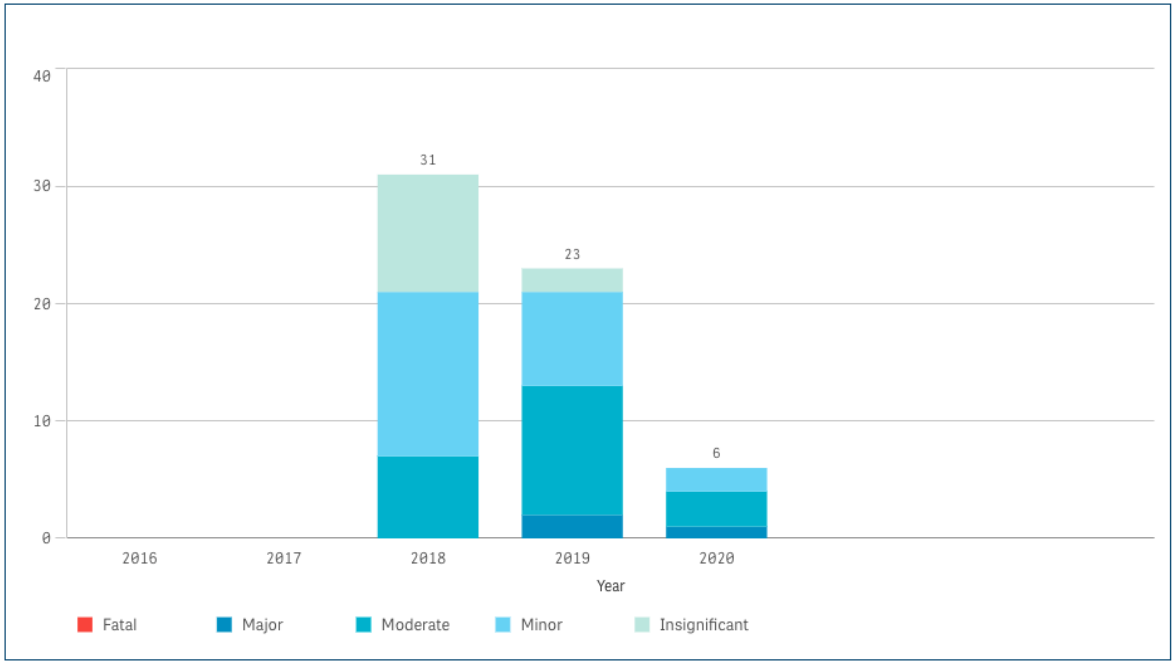


Amusement Device Incidents by Year (2016 - 2020)

Injuries

The number of amusement device injuries decreased by 17 (74%) compared to 2019. This decrease can be attributed to the number of amusement devices that were not in operation due to the COVID-19 pandemic.

Amusement Device Injuries by Year (2016 - 2020)



Amusement Device Injuries by Year (2016 - 2020)

Permits

In 2020, there were nine installation permits and 374 operating permits in the Amusement Devices technology. Both installation and operation permits decreased by 89% and 37% respectively compared to 2019. The amusement device industry was hit hard by the pandemic resulting in this significant drop in the number of permits.

Amusement Device Permits by Year (2016 - 2020)

Amusement Device Permits by Year (2016 - 2020)

Assessments

Technical Safety BC safety officers completed 107 assessments in 2020 which represents a decrease of 75% compared to 2019. There were 56 in-person inspections and 51 remote inspections.

This decrease in the total number of inspections is related to the large number of rides that were not in operation in 2020 due to the

COVID-19 pandemic. Those rides or devices that did operate opened later in the season than normal. Ziplines and waterslide parks made up the majority of amusement rides or devices that were able to open in 2020.

Assessment Ratings

Pass	The safety officer has assessed that the regulated work and/or regulated product was found to comply with the *Safety Standards Act*, regulations and/or applicable technical code(s).
Conditional Pass	The safety officer has assessed that the regulated work and/or regulated product was found to NOT comply with the *Safety Standards Act*, regulations and/or applicable technical code(s). Further regulated work may only be undertaken as directed on the certificate of inspection, while the identified non-compliances are being corrected.
Fail	The safety officer has assessed that the regulated work and/or regulated product was found to NOT comply with the *Safety Standards Act*, regulations and/or applicable technical code(s). Further regulated work on the affected system or phase of work, and/or operation of the regulated equipment must not be undertaken until the identified non-compliances have been corrected.

Amusement Device In-Person Inspections in 2020

Amusement Device In-Person Inspections in 2020

Amusement Device Remote Inspections in 2020

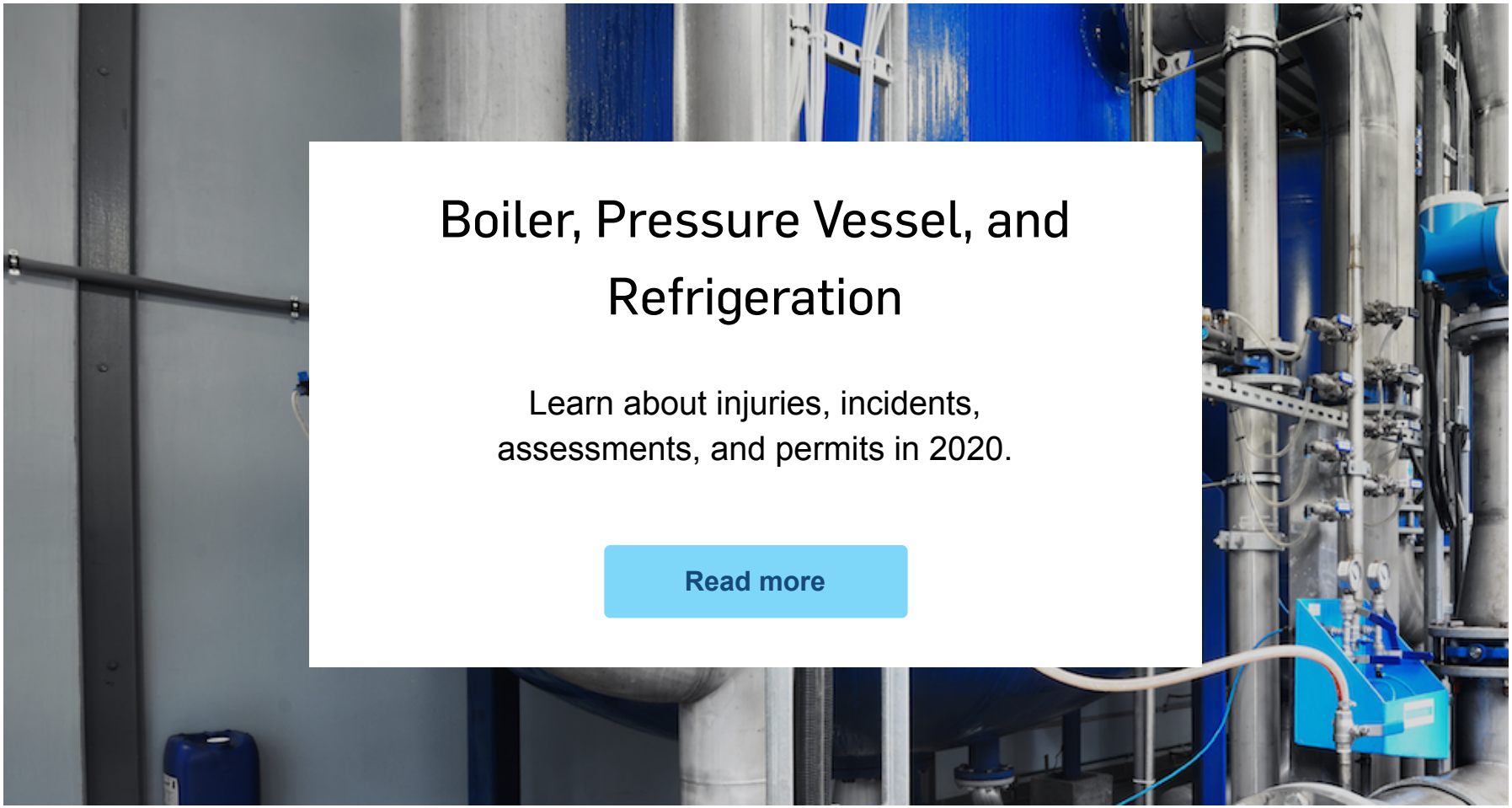
Amusement Device Remote Inspections in 2020

Emerging risks

The number of zipline operators is on the rise in British Columbia. As a result, the number of incidents relating to zipline braking has increased. We continue to research this issue by reaching out to operators and contractors to share safety knowledge about best industry practices.

Zipline safety education and awareness remains an important part of our safety mandate and will continue to be a main focus

throughout 2021.



Boiler, Pressure Vessel, and Refrigeration

Learn about injuries, incidents, assessments, and permits in 2020.

Read more

Technology

ENERGY

Boiler, PV, Refrigeration

Electrical

Gas

Alternative Safety Approaches (ASA)

TRANSPORTATION

Amusement Devices

Elevating Devices

Passenger Ropeways

Railways

Products

Permits

Certification

Licences

Design registration

Assessments

Learning centre

Regulatory resources

Codes, standards and regulations

Regulatory notices

Find a licensed contractor

Find a certified individual

Forms

Fees

Safety in BC

Safety stories

Incident investigations

Compliance and enforcement

State of Safety

Safety education

Get involved

News

Events

Engagement

Connect with us

Governance and leadership

Careers

Contact us

Sign up for newsletter

Have you witnessed an incident or hazard that involves regulated work or a regulated product?

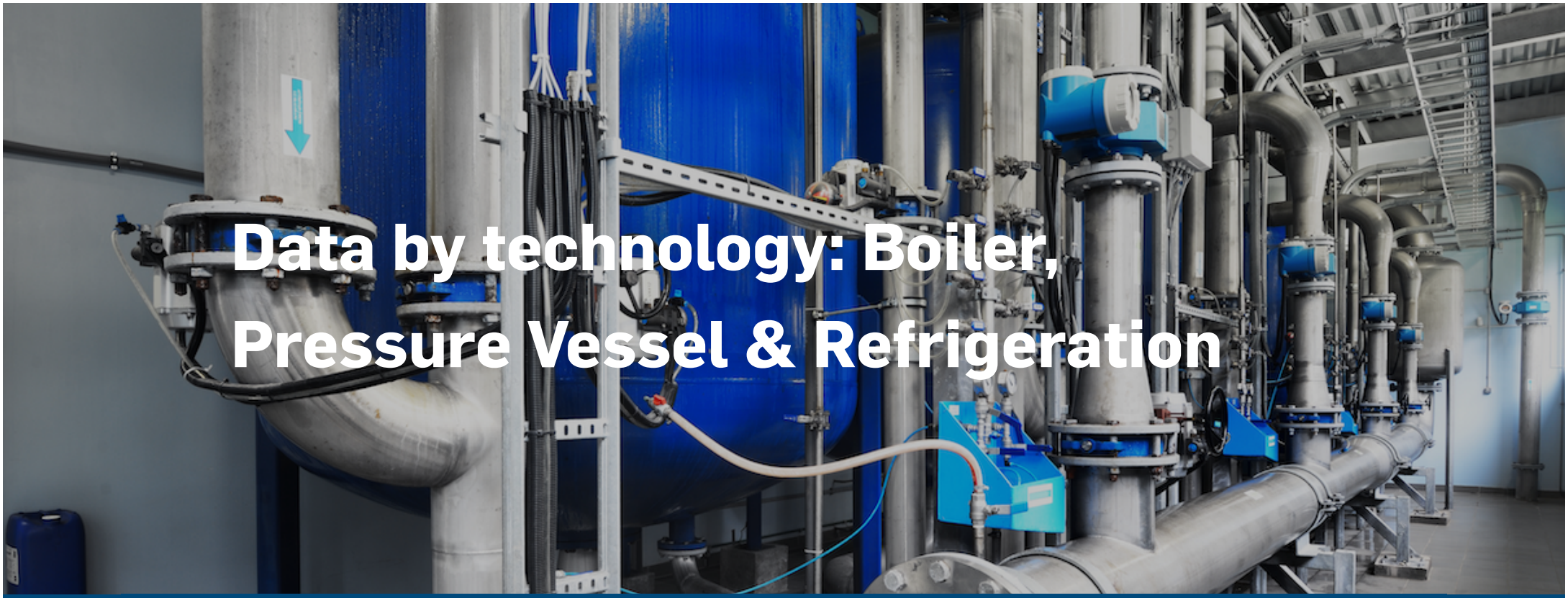
Report an incident ›

Contact us

1 866 566 7233 (8 am–5 pm, Monday–Friday)

Office locations

Cookie policy Privacy policy Terms of use



Data by technology: Boiler, Pressure Vessel & Refrigeration

In this section

Home > State of Safety 2020 > Boiler, Pressure Vessel and Refrigeration

Boiler, Pressure Vessel and

Refrigeration

Technical Safety BC oversees the design, construction, installation and operation of boilers, pressure vessels and refrigeration plants throughout British Columbia in accordance with the *Safety Standards Act* and the Power Engineers, Boiler, Pressure Vessel and Refrigeration Safety Regulation.

Key Statistics

45

Reported Incidents

2

Reported Injuries

1,764

Remote insp

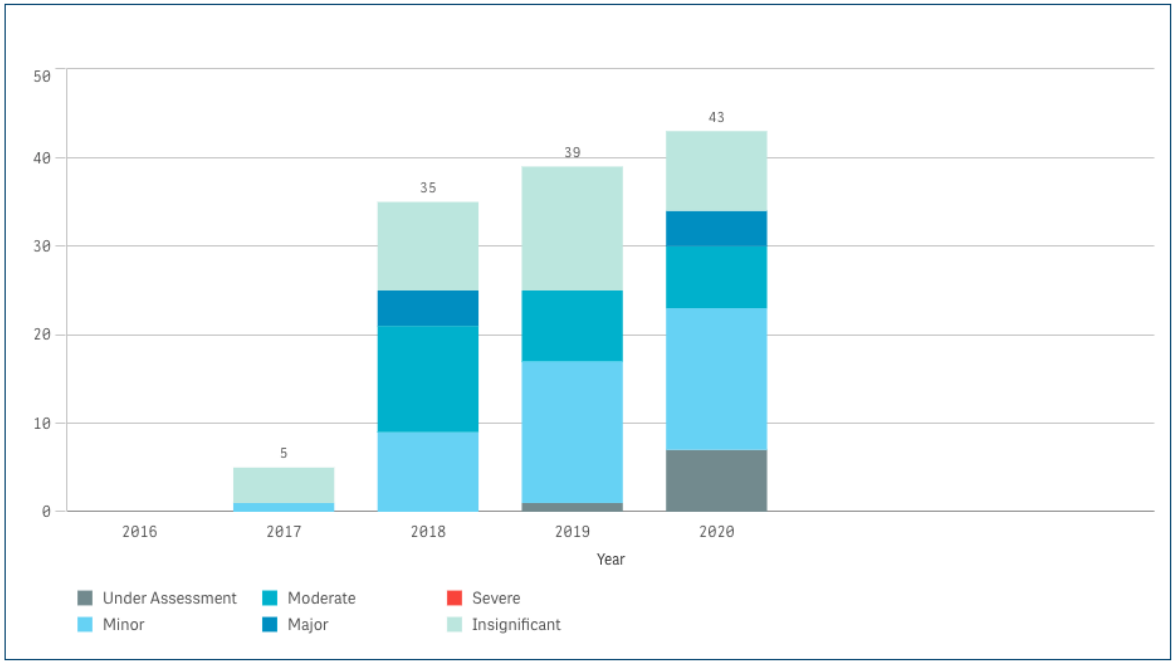
Incidents

In 2020, the number of Boiler, Pressure Vessel, and Refrigeration incidents reported to us increased by six (15%) compared to 2019.

One major incident was reported to us. This involved a worker receiving a third-degree burn injury when high-temperature condensate sprayed on his body.

Note: The category under assessment refers to incidents reported to Technical Safety BC that were still under investigation at year-end.

Boiler, Pressure Vessel and Refrigeration Incidents by Year (2016 - 2020)



Boiler, Pressure Vessel and Refrigeration Incidents by Year (2016 - 2020)

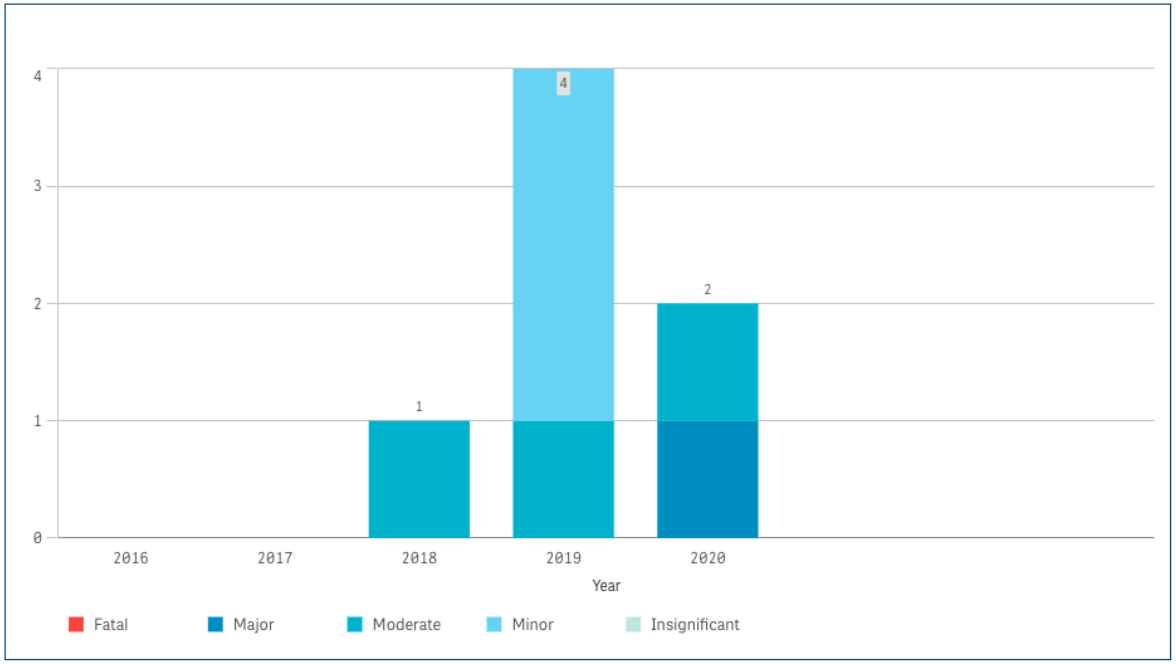
Injuries

Two injuries were reported to us in 2020. One was rated *major* involving third-degree burns to a worker's body, the other *moderate*.

Please note that we receive injury reports and descriptions from operators or first responders at the time of, or immediately following, the incident. Injuries may develop after the initial reports

were made to us and the long-term effects of a resultant injury may not be recorded as part of our investigation.

Boiler, Pressure Vessel and Refrigeration Injuries by Year (2016 - 2020)



Boiler, Pressure Vessel and Refrigeration Injuries by Year (2016 - 2020)

Permits

In 2020, there were 1,436 installation permits and 61,031 operating permits in the Boiler, Pressure Vessel and Refrigeration technology.

Boiler, Pressure Vessel and Refrigeration Permits by Year (2016 - 2020)

Boiler, Pressure Vessel and Refrigeration Permits by Year (2016 - 2020)

Assessments

Technical Safety BC safety officers completed 4,879 assessments of boiler, pressure vessel, and refrigeration equipment in 2020. There were 3,115 in-person inspections and 1,764 remote inspections.

Assessment ratings

Pass	The safety officer has assessed that the regulated work and/or regulated product was found to comply with the *Safety Standards Act*, regulations, and/or applicable technical code(s).
Fail	The safety officer has assessed that the regulated work and/or regulated product was found to NOT comply with the *Safety Standards Act*, regulations, and/or applicable technical code(s). Further regulated work on the affected system or phase of work, and/or operation of the regulated equipment must not be undertaken until the identified non-compliances have been corrected.

Note: Unlike some other technologies we regulate, BVPR does not have a Conditional Pass category.

Boiler, Pressure Vessel and Refrigeration In-person Inspections in 2020

Boiler, Pressure Vessel and Refrigeration Remote Inspections in 2020

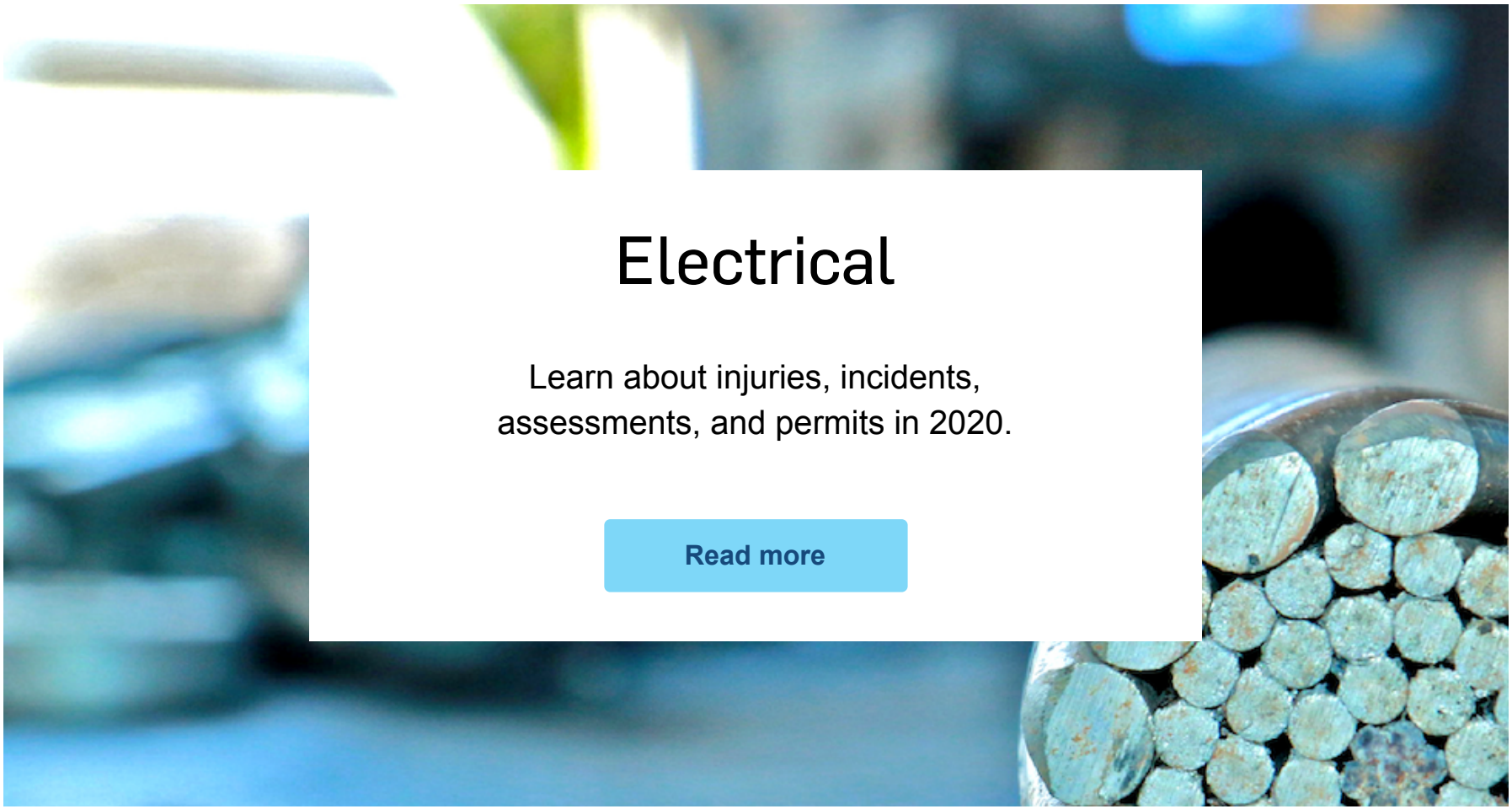
Licensing directive

In 2020, Technical Safety BC issued a directive clarifying the requirements for obtaining and maintaining a contractor licence under the Power Engineers, Boiler, Pressure Vessel and Refrigeration Safety Regulation.

This directive helps outline the work contractors do, and how it is managed in a quality control manual. By working with our stakeholders and defining their work scope within these quality

control documents, we will be able to streamline all class licenses in the future.

Ammonia Safety systems that were developed in 2020 and rolled out in 2021 will assist with ammonia plants to manage various high hazards associated with their facilities.



Electrical

Learn about injuries, incidents, assessments, and permits in 2020.

Read more

Technology

ENERGY

Boiler, PV, Refrigeration

Electrical

Gas

Alternative Safety Approaches (ASA)

TRANSPORTATION

Amusement Devices

Elevating Devices

Passenger Ropeways

Railways

Products

Permits

Certification

Licences

Design registration

Assessments

Learning centre

Regulatory resources

Codes, standards and regulations

Regulatory notices

Find a licensed contractor

Find a certified individual

Forms

Fees

Safety in BC

Safety stories

Incident investigations

Compliance and enforcement

State of Safety

Safety education

Get involved

News

Events

Engagement

Connect with us

Governance and leadership

Careers

Contact us

Sign up for newsletter

Have you witnessed an incident or hazard that involves regulated work or a regulated product?

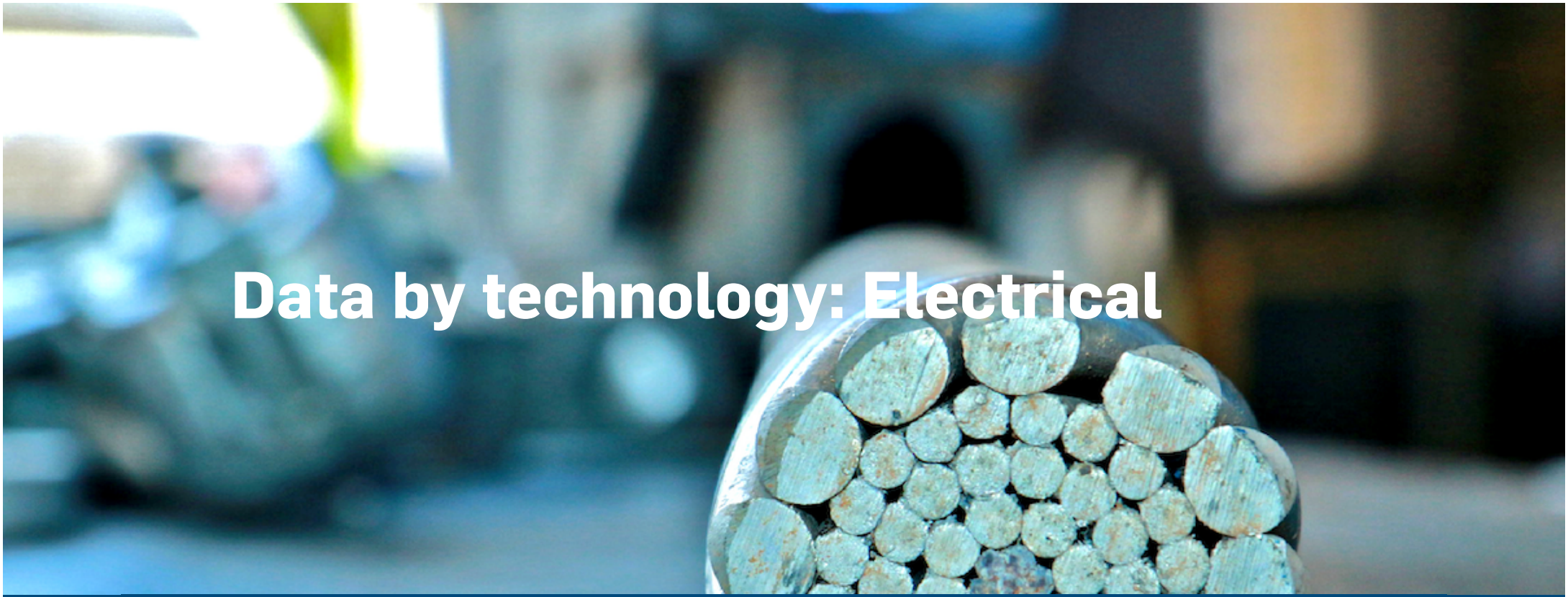
Report an incident ›

Contact us

1 866 566 7233 (8 am–5 pm, Monday–Friday)

Office locations

Cookie policy Privacy policy Terms of use



Data by technology: Electrical

Electrical

Technical Safety BC oversees electrical equipment and systems across British Columbia in accordance with the *Safety Standards Act* and the Electrical Safety Regulation. The exception are those municipalities that have separate administrative agreements with the provincial government.

Key Statistics

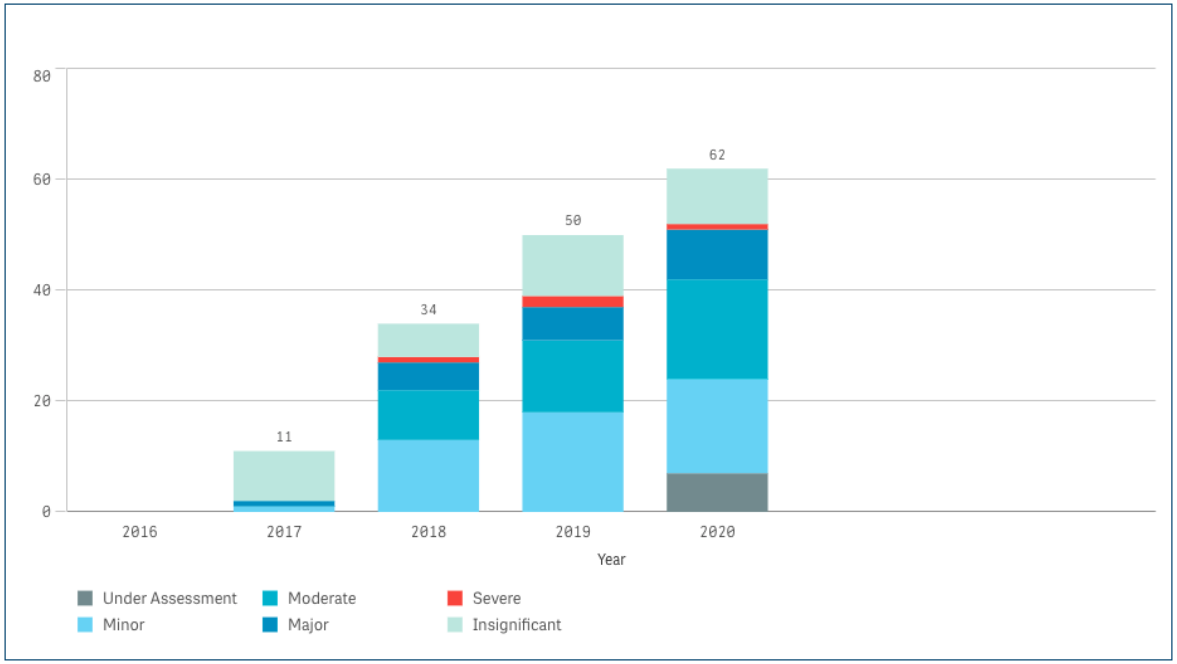
Incidents

In 2020, the number of electrical incidents reported to us increased by 15 (31%) compared to 2019.

The majority of the incidents were rated insignificant to moderate, ranging from arc flash burns to the hand to injuries sustained when working energized. There were no *severe* incidents reported to us.

Note: The category *under assessment* refers to incidents reported to Technical Safety BC that were still under investigation at year end.

Electrical Incidents by Year (2016 - 2020)



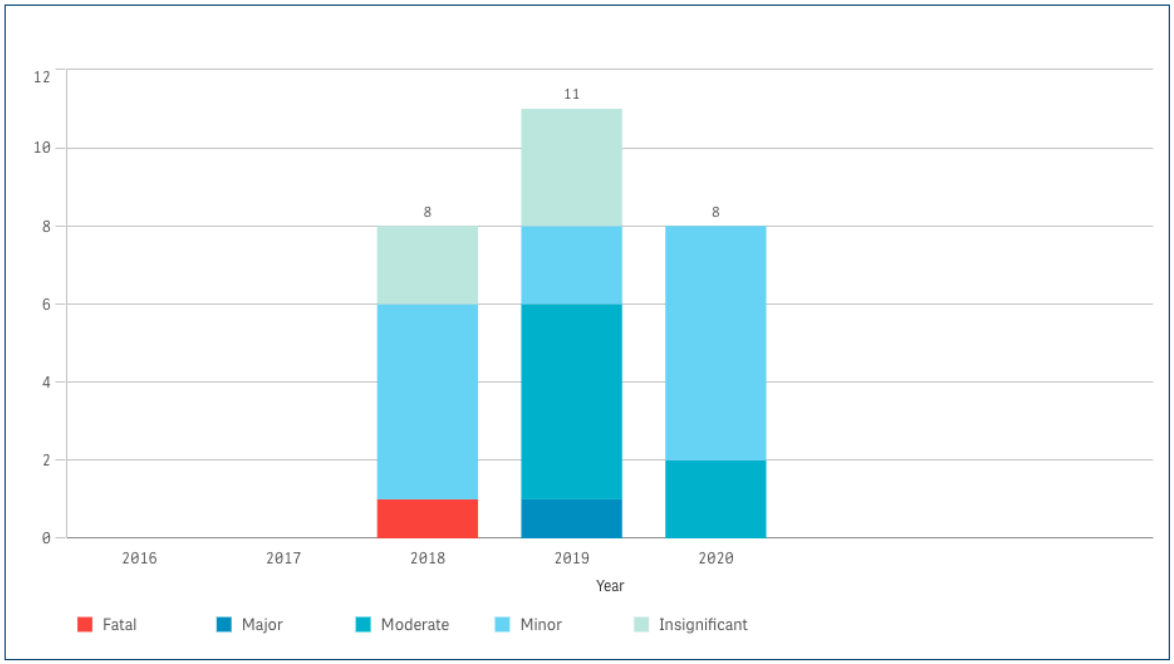
Electrical Incidents by Year (2016 - 2020)

Injuries

Six injuries related to the electrical technology were reported in 2020.

Please note that we receive injury reports and descriptions from operators or first responders at the time of, or immediately following, the incident. Injuries may develop after the initial reports were made to us and the long-term effects of a resultant injury may not be recorded as part of our investigation.

Electrical Injuries by Year (2016 - 2020)



Electrical Injuries by Year (2016 - 2020)

Permits

In 2020, a total of 85,664 electrical permits were issued, which included 73,979 installation permits and 11,685 operating permits. Overall, there was a 2.1% decrease in permits issued in 2020.

However, 6.7% (737) more operating permits were issued in 2020 compared to 2019.

Electrical Permits by Year (2016 - 2020)

Electrical Permits by Year (2016 - 2020)

Assessments

Technical Safety BC safety officers completed 24,952 assessments of electrical equipment and systems in 2020. This included 12,922 in-person inspections and 12,030 remote inspections.

Assessment Ratings

Pass	The safety officer has assessed that the regulated work and/or regulated product was found to comply with the *Safety Standards Act*, regulations, and/or applicable technical code(s).
Fail	The safety officer has assessed that the regulated work and/or regulated product was found to NOT comply with the *Safety Standards Act*, regulations, and/or applicable technical code(s). Further regulated work on the affected system or phase of work, and/or operation of the regulated equipment must not be undertaken until the identified non-compliances have been corrected.

Note: Unlike some other technologies we regulate, electrical does not have a Conditional Pass category.

Electrical In-person Inspections in 2020

Electrical Remote Inspections in 2020

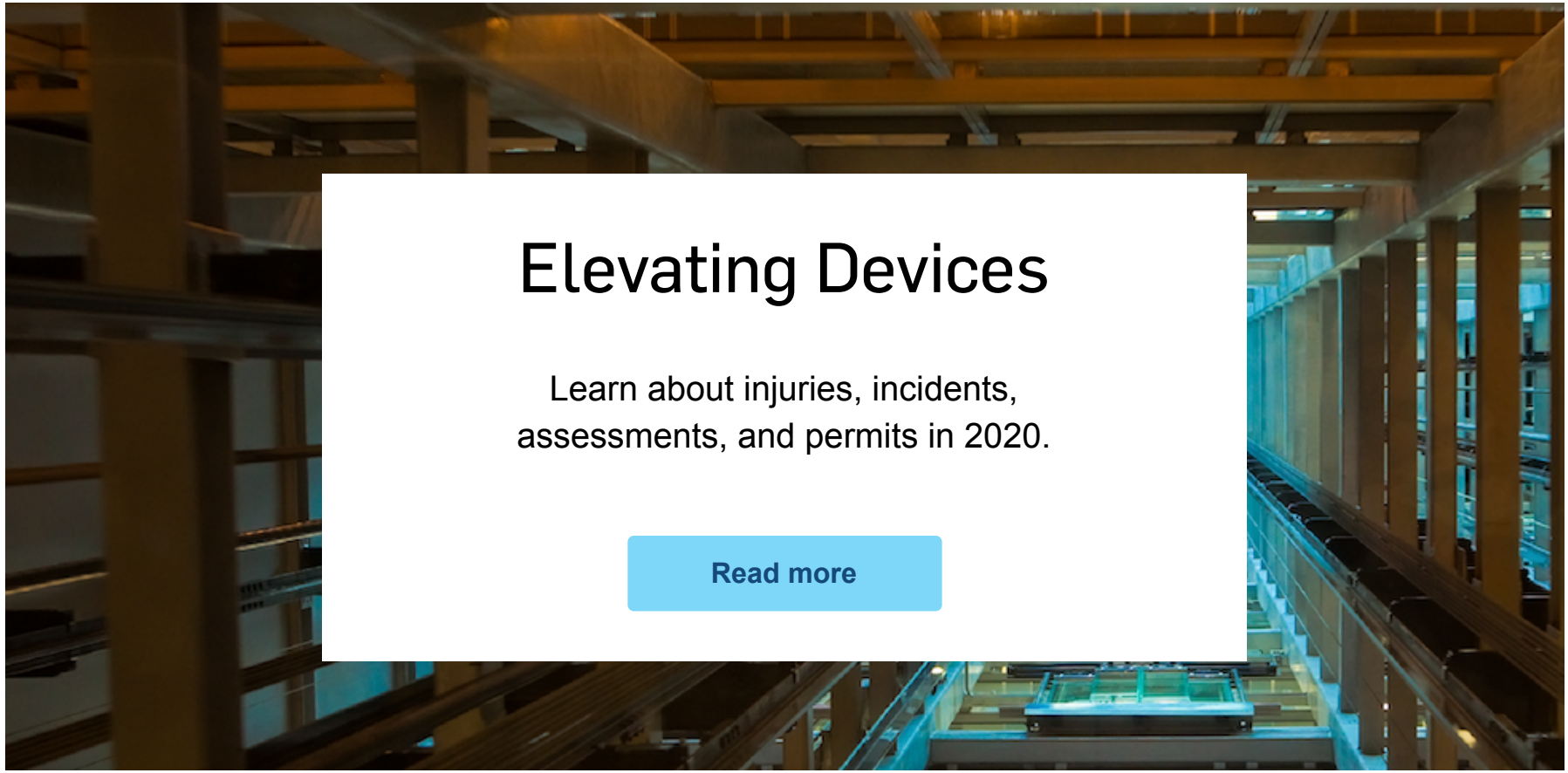
Non-compliance and education

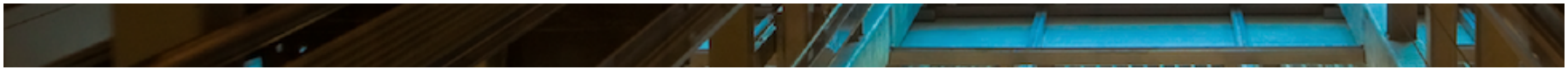
One of the top three non-compliances was the marking of equipment. This has been in the top three non-compliances for several years and could be the result of a gap in Field Safety Representative/electrical worker knowledge. Non-compliances increased overall due to the following:

- The adoption of the 2018 Code and new requirements also saw an increase in non-compliances.

- COVID-19 impact on manufacturers' supply chain, coupled with code change requirements, made new product scarce

The introduction of a new code change plus the efforts to increase education around new codes will help mitigate future non-compliances. For more information on code changes, read the top 22 changes you need to know about the 2018 Canadian Electrical Code.





Technology

ENERGY

Boiler, PV, Refrigeration

Electrical

Gas

Alternative Safety Approaches (ASA)

TRANSPORTATION

Amusement Devices

Elevating Devices

Passenger Ropeways

Railways

Products

Permits

Certification

Licences

Design registration

Assessments

Learning centre

Regulatory resources

Codes, standards and regulations

Regulatory notices

Find a licensed contractor

Find a certified individual

Forms

Fees

Safety in BC

Safety stories

Incident investigations

Compliance and enforcement

State of Safety

Safety education

Get involved

News

Events

Engagement

Connect with us

Governance and leadership

Careers

Contact us

Sign up for newsletter

Have you witnessed an incident or hazard that involves regulated work or a regulated product?

Report an incident ›

Contact us

1 866 566 7233 (8 am–5 pm, Monday–Friday)

Office locations

Cookie policy Privacy policy Terms of use

Data by technology: Elevating Devices

Elevating Devices

Technical Safety BC oversees the safety of elevators, escalators, moving walkways, dumbwaiters, lifts, and construction hoists in accordance with the *Safety Standards Act* and the Elevating Devices Safety Regulation.

Key Statistics

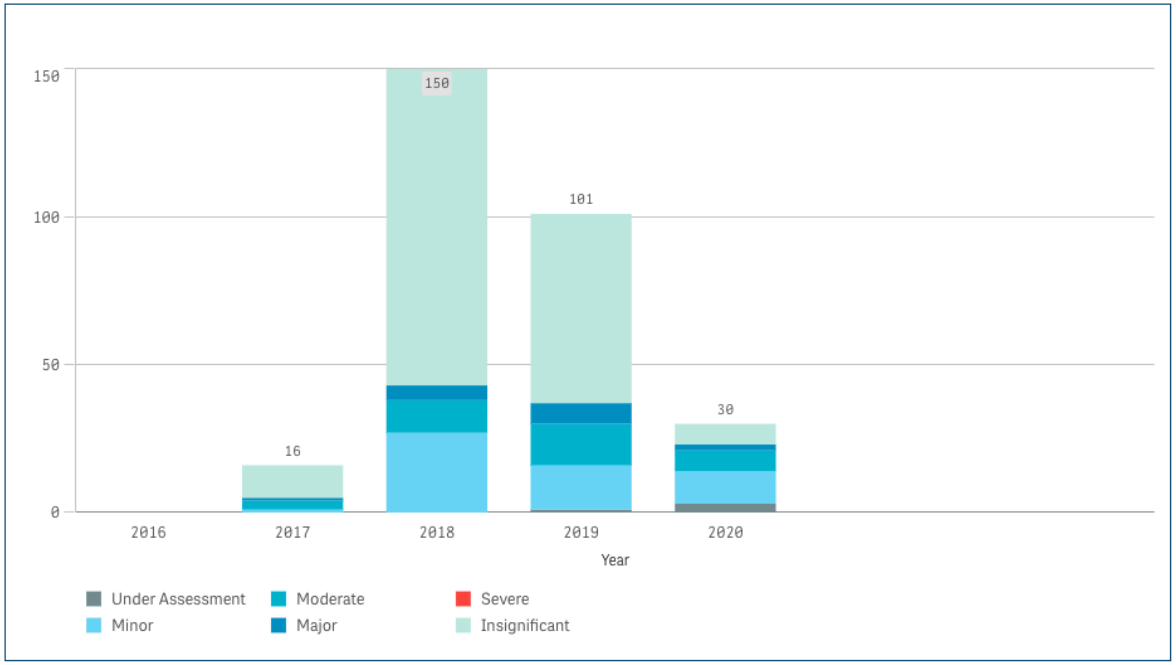
Incidents

In 2020, the number of incidents reported to us decreased by 64 (62%) compared to 2019.

There were no *major* incidents reported to us in 2020. Seven minor incidents included an elevator losing its programmed timers resulting in the doors closing immediately after opening.

Note: The category *under assessment* refers to incidents reported to Technical Safety BC that were still under investigation at year end.

Elevating Devices Incidents by Year (2016 - 2020)

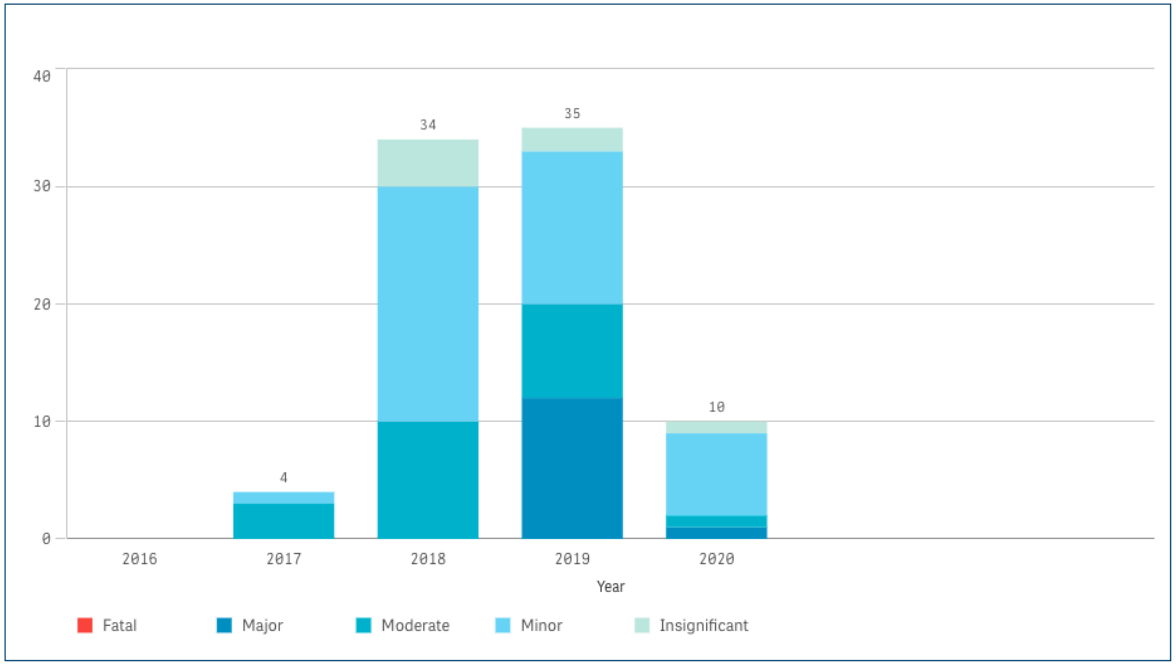


Elevating Devices Incidents by Year (2016 - 2020)

Injuries

In 2020, six injuries were reported to Technical Safety BC which is an 85% decrease compared with 2019. This decrease in injuries is likely due to the impact of COVID-19 and reduced usage of elevating devices.

Elevating Devices Injuries by Year (2016 - 2020)



Elevating Devices Injuries by Year (2016 - 2020)

Permits

The number of permits increased in 2020 to 27,642. The addition of 471 installation permits represented a 25% increase compared with 2019. Operation permits decreased by 2.1% in 2020.

Elevating Device Permits by Year (2016 - 2020)

Elevating Device Permits by Year (2016 - 2020)

Assessments

Technical Safety BC safety officers completed 2,836 assessments in 2020. There were 1,492 in-person inspections and 1,344 remote inspections.

Assessment ratings

Pass	The safety officer has assessed that the regulated work

	and/or regulated product was found to comply with the *Safety Standards Act*, regulations and/or applicable technical code(s).
Conditional Pass	The safety officer has assessed that the regulated work and/or regulated product was found to NOT comply with the *Safety Standards Act*, regulations and/or applicable technical code(s). Further regulated work may only be undertaken as directed on the certificate of inspection, while the identified non-compliances are being corrected.
Fail	The safety officer has assessed that the regulated work and/or regulated product was found to NOT comply with the *Safety Standards Act*, regulations and/or applicable technical code(s). Further regulated work on the affected system or phase of work, and/or operation of the regulated equipment must not be undertaken until the identified non-compliances have been corrected.

Elevating Device In-person Inspections in 2020

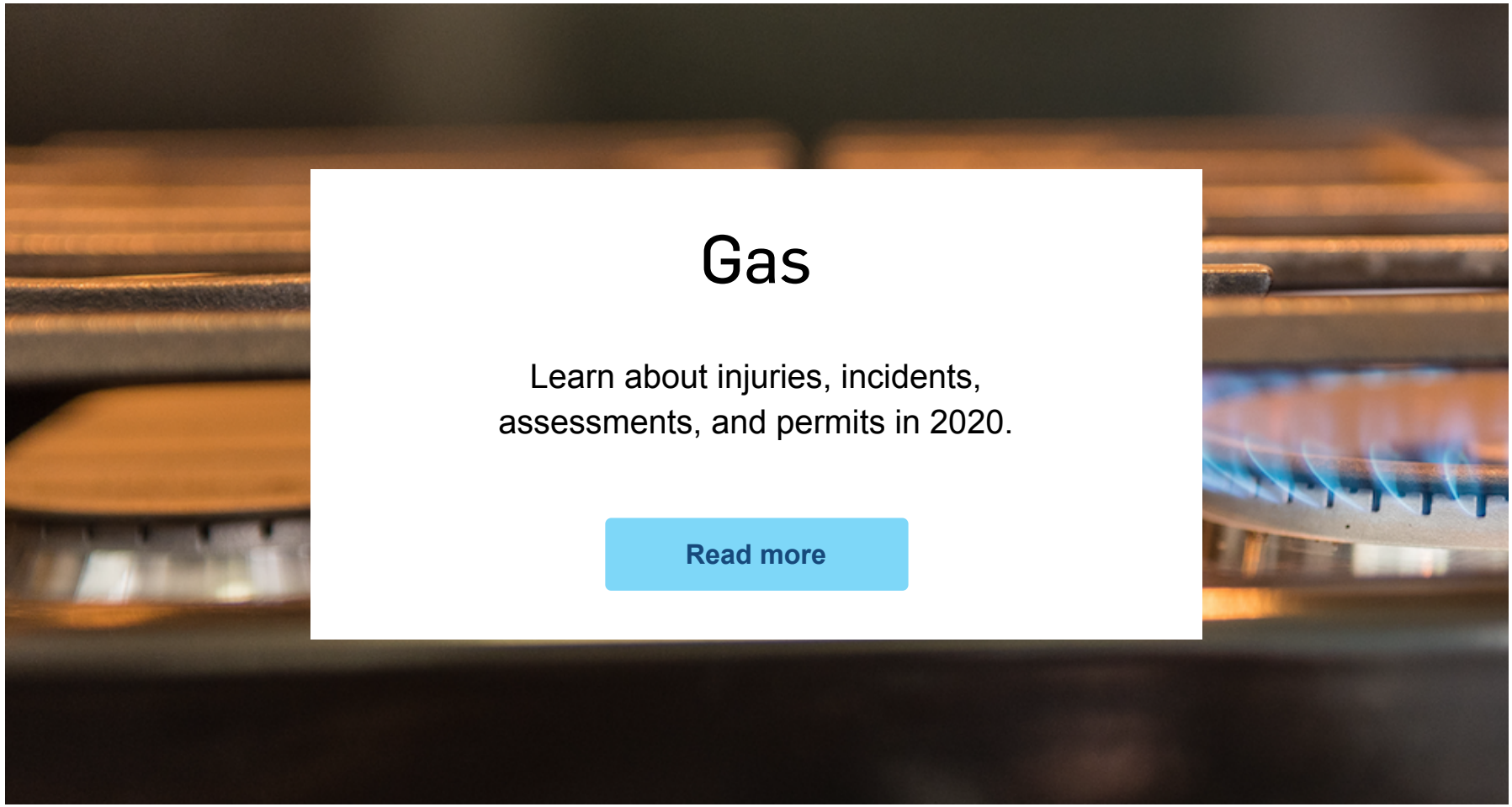
Elevating Device Remote Inspections in 2020

Improving elevating device safety

To improve the safe operation of elevators, escalators, and moving walks in BC, the B44-16 elevating safety code came into effect on April 30, 2020. The new code, which includes maintenance control programs and new testing requirements, calls for more transparency from maintenance contractors and device owners.

Additionally, Technical Safety BC has introduced continuing education requirements for Elevating Devices Mechanic certificate

renewals. These continuing education requirements ensure mechanics are staying up to date with safety information and changes in their industry.



Technology

ENERGY

Boiler, PV, Refrigeration

Electrical

Gas

Alternative Safety Approaches (ASA)

TRANSPORTATION

Amusement Devices

Elevating Devices

Passenger Ropeways

Railways

Products

Permits

Certification

Licences

Design registration

Assessments

Learning centre

Regulatory resources

Codes, standards and regulations

Regulatory notices

Find a licensed contractor

Find a certified individual

Forms

Fees

Safety in BC

Safety stories

Incident investigations

Compliance and enforcement

State of Safety

Safety education

Get involved

News

Events

Engagement

Connect with us

Governance and leadership

Careers

Contact us

Sign up for newsletter

Have you witnessed an incident or hazard that involves regulated work or a regulated product?

Report an incident ›

Contact us

1 866 566 7233 (8 am–5 pm, Monday–Friday)

Office locations

Cookie policy Privacy policy Terms of use

Data by technology: Gas

Gas

Technical Safety BC oversees industrial and commercial use of natural gas, propane, digester gas, manufactured gas, liquified petroleum gas, landfill gas and hydrogen throughout British Columbia in accordance with the *Safety Standards Act* and the Gas Safety Regulation.

Key Statistics

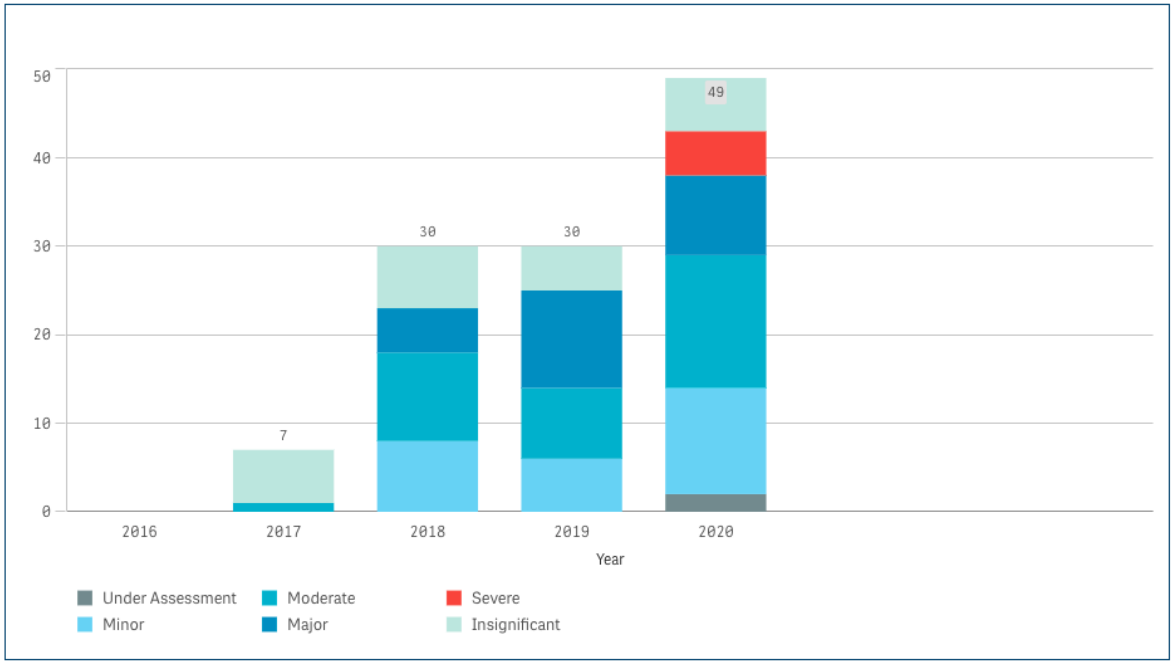
Incidents

In 2020, the number of gas incidents reported to us increased by 25 (83%) compared with 2019.

Technical Safety BC released its investigation reports into two fatal carbon monoxide incidents at Ruby Lake and Tulameen. These investigations documented instances of both slow and rapid-onset carbon monoxide exposures. These incidents demonstrate the hazards associated with some do-it-yourself (DIY) work and the challenges with regulating activity in this space.

The category under assessment refers to incidents reported to Technical Safety BC that were still under investigation at year-end.

Gas Incidents by Year (2016 - 2020)



Gas Incidents by Year (2016 - 2020)

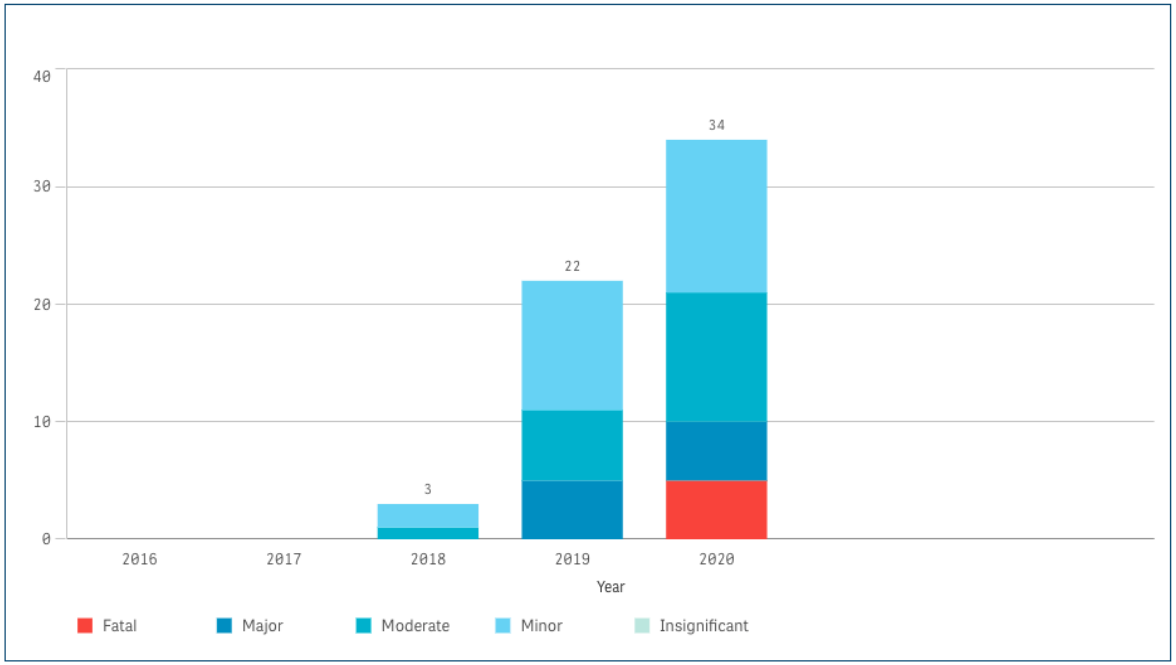
Injuries

In 2020, injuries decreased by three compared to 2019. The majority of injuries reported were related to carbon monoxide leaks and exposure.

Please note that we receive injury reporting and descriptions from operators of first responders at the time of, or immediately following the incident. Injuries may develop after the initial reports

were made to us and the long-term effects of a resultant injury may not be recorded as part of our investigation.

Gas Injuries by Year (2016 - 2020)



Gas Injuries by Year (2016 - 2020)

Permits

There were 63,278 gas permits issued in 2020, of which 61,714 were installation permits and 1,564 were operating permits.

Gas Permits by Year (2016 - 2020)

Gas Permits by Year (2016 - 2020)

Assessments

Technical Safety BC safety officers completed 10,892 assessments of gas equipment in 2020. There were 6,084 in-person inspections and 4,808 remote inspections.

Assessment Ratings

Pass	The safety officer has assessed that the regulated work and/or regulated product was found to comply with the *Safety Standards Act*, regulations and/or applicable technical code(s).
Conditional Pass	The safety officer has assessed that the regulated work and/or regulated product was found to NOT comply with the *Safety Standards Act*, regulations and/or applicable technical code(s). Further regulated work may only be undertaken as directed on the certificate of inspection, while the identified non-compliances are being corrected.
Fail	The safety officer has assessed that the regulated work and/or regulated product was found to NOT comply with the *Safety Standards Act*, regulations and/or applicable technical code(s). Further regulated work on the affected system or phase of work, and/or operation of the regulated equipment must not be undertaken until the identified non-compliances have been corrected.

Gas In-person Inspections in 2020

Gas In-person Inspections in 2020

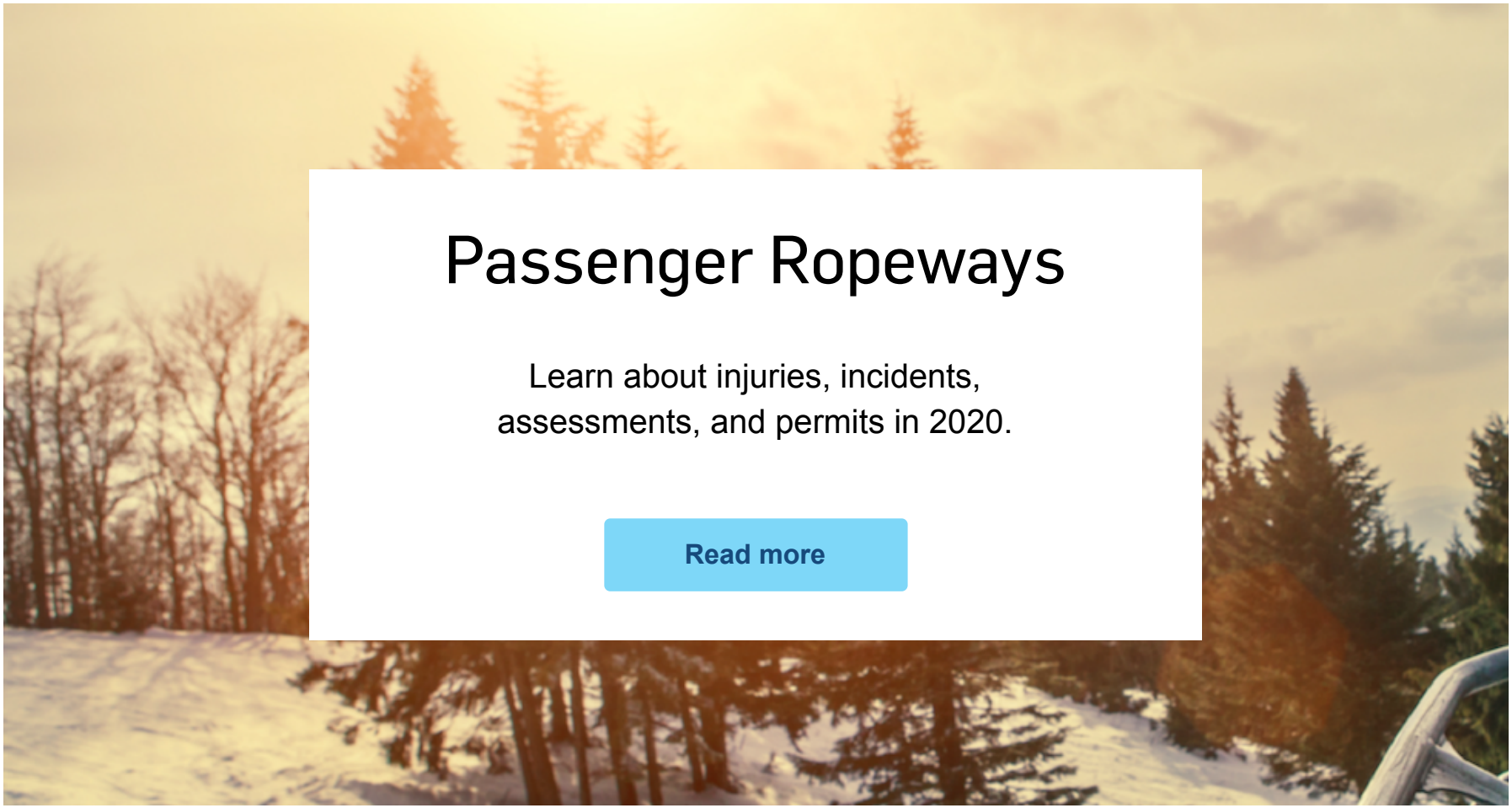
Gas Remote Inspections in 2020

Safety risks

A number of non-compliances due to the venting of temporary portable construction heaters were noted in 2020. As a safety precaution, Technical Safety BC issued a directive in order to clarify language around this safety hazard.

Sharing safety knowledge

Carbon monoxide exposures are a persistent risk in our safety system. By sharing our knowledge and insights gained during our incident investigations, Technical Safety BC provides education and awareness to gas service industry professionals around preventing the production and exposure of CO.



Passenger Ropeways

Learn about injuries, incidents, assessments, and permits in 2020.

Read more

Technology

ENERGY

Boiler, PV, Refrigeration

Electrical

Gas

Alternative Safety Approaches (ASA)

TRANSPORTATION

Amusement Devices

Elevating Devices

Passenger Ropeways

Railways

Products

Permits

Certification

Licences

Design registration

Assessments

Learning centre

Regulatory resources

Codes, standards and regulations

Regulatory notices

Find a licensed contractor

Find a certified individual

Forms

Fees

Safety in BC

Safety stories

Incident investigations

Compliance and enforcement

State of Safety

Safety education

Get involved

News

Events

Engagement

Connect with us

Governance and leadership

Careers

Contact us

Sign up for newsletter

Have you witnessed an incident or hazard that involves regulated work or a regulated product?

Report an incident ›

Contact us

1 866 566 7233 (8 am–5 pm, Monday–Friday)

Office locations

Cookie policy Privacy policy Terms of use

Data by technology: Passenger Ropeways

Passenger Ropeways

Technical Safety BC oversees the safety of passenger ropeways throughout British Columbia in accordance with the *Safety Standards Act* and the Elevating Devices Safety Regulation. These include tramways, gondolas, chairlifts, rope tows, and passenger conveyors.

Key Statistics

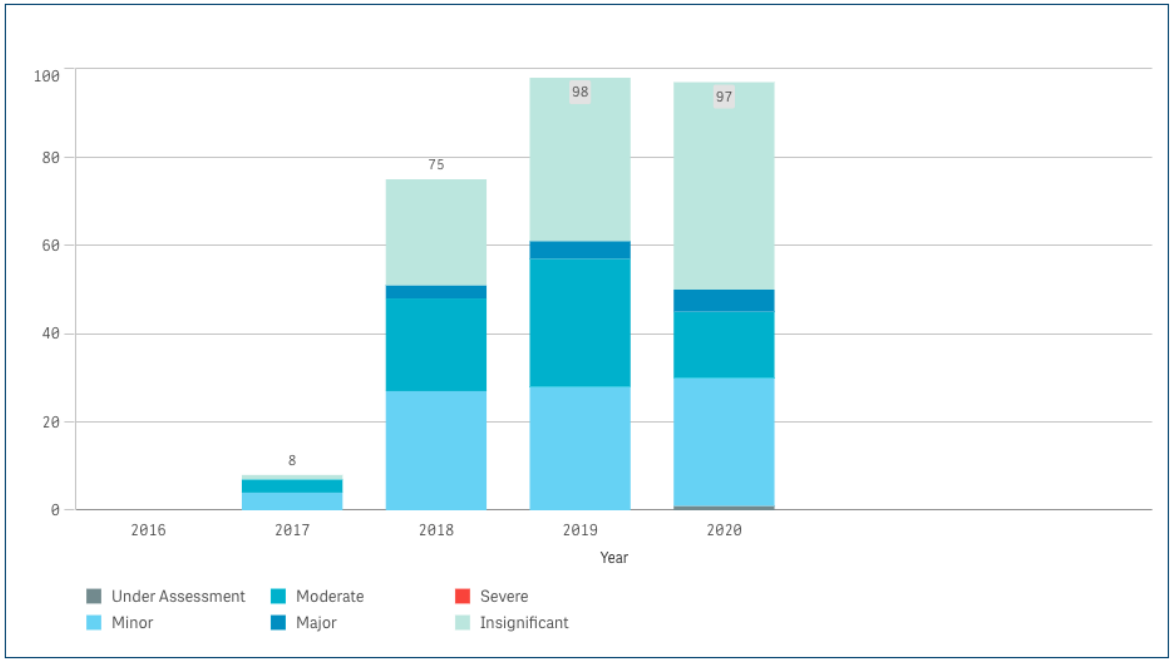
Incidents

In 2020, there were 98 reported incidents. The majority of the incidents that occur on passenger ropeways or conveyors happen while loading, unloading or riding the ropeway or conveyor, and can be attributed to passenger behaviour, improper procedure, or a combination of both.

We completed 12 onsite incident investigations in 2020. An incident that resulted in severe damage to equipment but no injuries was related to the vandalism of the Sea to Sky Gondola near Squamish.

Note: The category under assessment refers to incidents reported to Technical Safety BC that were still under investigation at year's end.

Passenger Ropeways Incidents by Year (2016 - 2020)



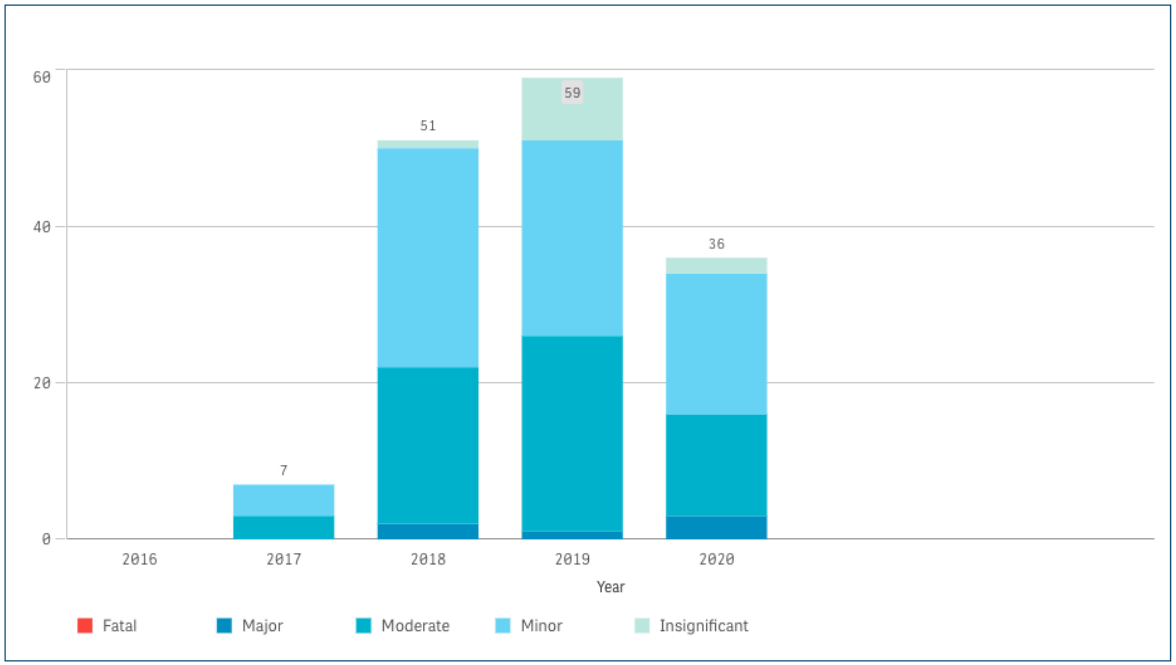
Passenger Ropeways Incidents by Year (2016 - 2020)

Injuries

While injuries in 2020 decreased by 38% compared to 2019, falls from carriers still occurred. There were only eight injuries caused by falls that were reported to us, which can be attributed to the ski season ending early in March 2020.

One fall from a carrier incident resulted in a major injury, however. The majority of injuries attributed to falls from carriers were rated as insignificant.

Passenger Ropeways Injuries by Year (2016 - 2020)



Passenger Ropeways Injuries by Year (2016 - 2020)

Permits

In 2020, there was a total of 204 passenger ropeway permits issued: nine installation permits and 195 operating permits. Overall, total permits decreased by 11% compared to 2019.

Passenger Ropeways Permits by Year (2016 - 2020)

Passenger Ropeways Permits by Year (2016 - 2020)

Assessments

In 2020, despite the COVID-19 pandemic, Technical Safety BC safety officers completed 163 inspections: 131 in-person and 32 remote.

Assessment Ratings

Pass	The safety officer has assessed that the regulated work and/or regulated product was found to comply with the *Safety Standards Act*, regulations and/or applicable technical code(s).
Conditional Pass	The safety officer has assessed that the regulated work and/or regulated product was found to NOT comply with the *Safety Standards Act*, regulations and/or applicable technical code(s). Further regulated work may only be undertaken as directed on the certificate of inspection, while the identified non-compliances are being corrected.
Fail	The safety officer has assessed that the regulated work and/or regulated product was found to NOT comply with the *Safety Standards Act*, regulations and/or applicable technical code(s). Further regulated work on the affected system or phase of work, and/or operation of the regulated equipment must not be undertaken until the identified non-compliances have been corrected.

Passenger Ropeways In-person Inspections in 2020

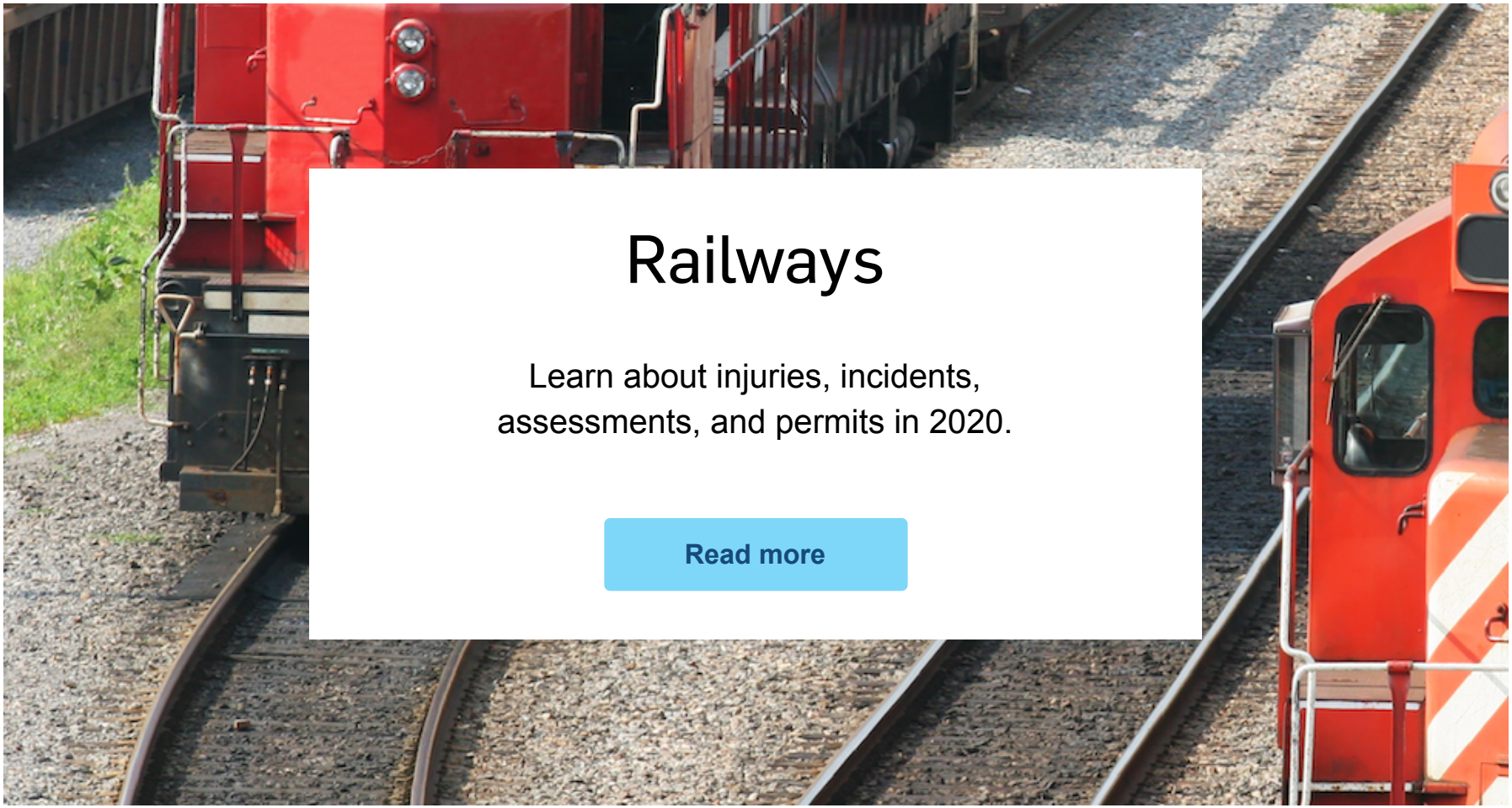
Passenger Ropeways Remote Inspections in 2020

Industry partnerships

We continue to work with the BC passenger ropeways industry to improve training and knowledge for passenger ropeway maintenance personnel. This partnership with industry resulted in a recent safety order that was issued in January of 2021.

Following the incident that occurred at the Sea to Sky gondola, a security review was completed by passenger ropeway operators, security experts, passenger ropeway manufacturers, insurance

agents, and Technical Safety BC. This led to the sharing of knowledge and best practices relating to vandalism, sabotage, site security, and cyber security. The initiative started in the fall of 2020 and continues into 2021.



Railways

Learn about injuries, incidents, assessments, and permits in 2020.

Read more

Technology

ENERGY

Boiler, PV, Refrigeration

Electrical

Gas

Alternative Safety Approaches (ASA)

TRANSPORTATION

Amusement Devices

Elevating Devices

Passenger Ropeways

Railways

Products

Permits

Certification

Licences

Design registration

Assessments

Learning centre

Regulatory resources

Codes, standards and regulations

Regulatory notices

Find a licensed contractor

Find a certified individual

Forms

Fees

Safety in BC

Safety stories

Incident investigations

Compliance and enforcement

State of Safety

Safety education

Get involved

News

Events

Engagement

Connect with us

Governance and leadership

Careers

Contact us

Sign up for newsletter

Have you witnessed an incident or hazard that involves regulated work or a regulated product?

Report an incident ›

Contact us

1 866 566 7233 (8 am–5 pm, Monday–Friday)

Office locations

Cookie policy Privacy policy Terms of use

Data by technology: Railways

Railways

Technical Safety BC regulates railways that operate solely within British Columbia and have a Ministers Certificate and Operating Permit issued by the BC Ministry of Transportation and Infrastructure. Provincial railways are subject to the *British Columbia Railway Act*, *Railway Safety Act*, and adopted federal railway safety legislation. We regulate five different classes of railways: common carrier, heritage, commuter, industrial, and industrial sidings and spurs.

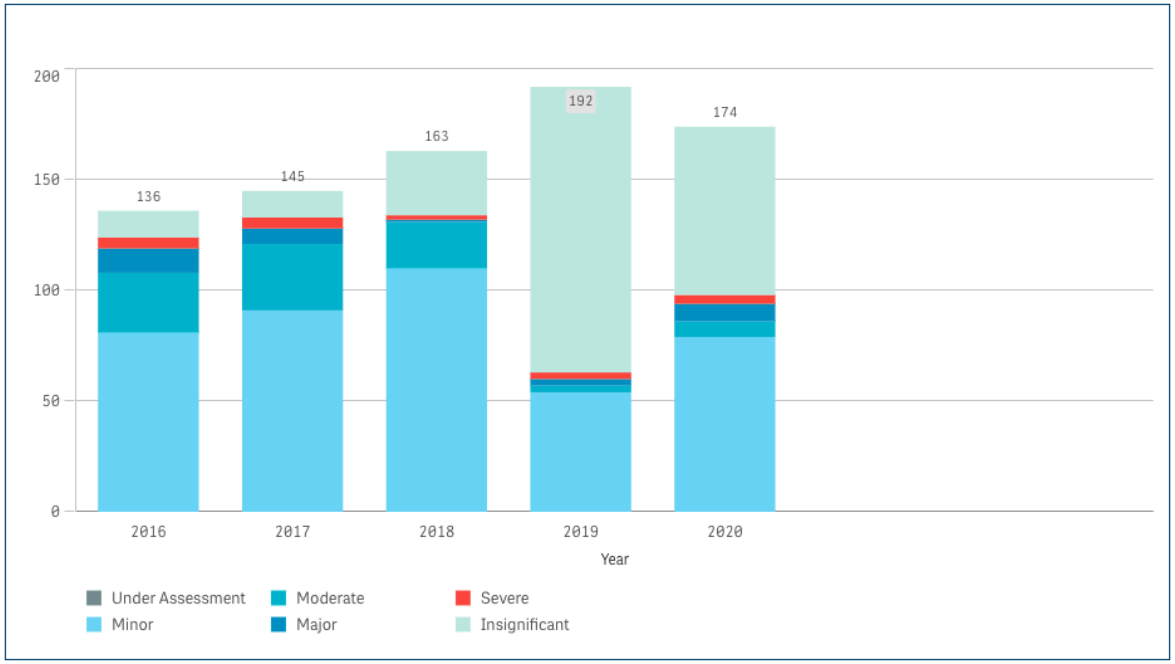
Key Statistics

Incidents

Railways are responsible for ensuring all hazards are properly managed for safe railway operations. Continuing our education efforts, Technical Safety BC provides operational information detailing the consequences of unsafe conditions that can impact the safety of railway employees, the public, and the environment.

In 2020, the number of incidents relating to railways decreased by 18 (9%) compared to 2019, with 171 reported incidents.

Railways Incidents by Year (2016 - 2020)



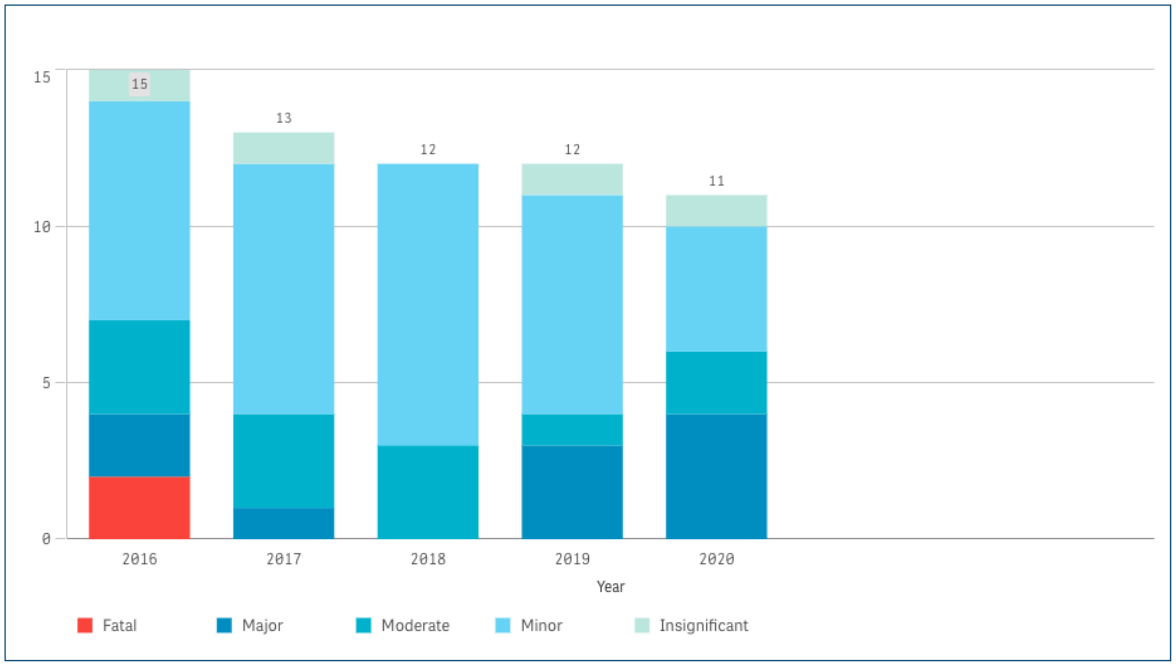
Railways Incidents by Year (2016 - 2020)

Injuries

In 2020, 11 injuries were reported to us, four of which were fatal and attributed to suicides.

Please note that we receive injury reports and descriptions from operators or first responders at the time of, or immediately following, the incident. Injuries may develop after the initial reports were made to us and the long-term effects of a resultant injury may not be recorded as part of our investigation.

Railways Injuries by Year (2016 - 2020)



Railways Injuries by Year (2016 - 2020)

Permits

Technical Safety BC does not issue railway installation permits.

Assessments and audits

As part of regular oversight, our railway safety officers assess and audit all operating railways. It is through assessments and audits that railways are sometimes found to be non-compliant with *Acts*, regulations, rules, and guidelines. Railway operations are also audited against their safety management systems, which are required for all railways.

In 2020, all assessments and audits were performed remotely due to COVID-19 health and safety restrictions. To that end, no visual or mechanical inspections were performed on site by a railways safety officer.

Assessment Ratings

Non-compliance	The safety officer has assessed the regulated work and/or regulated product and found it to be non-compliant with the *British Columbia Railway Act*, *Railway Safety Act,* and adopted federal railway safety legislation.
Recommendation	The safety officer has assessed the regulated work and/or regulated product and recommended that there are opportunities to better align with the *British Columbia Railway Act*, *Railway Safety Act*, and adopted federal railway safety legislation. A

	recommendation is not a fail, but rather an opportunity for improvement.

Note: Unlike some other technologies, Railways does not have a Conditional Pass category.

Emerging risks

Technical Safety BC's rail program annually audits certified railways to verify that all safety-critical employees are compliant with the training qualifications set out in their safety management system. In addition, all audits consist of an evaluation performed by a safety officer to validate a facility's ability to operate its equipment in a safe and compliant manner.

Proficiency tests

Despite internal proficiency tests being a requirement of all certified railways, facilities often do not possess the knowledge at a managerial level to assess or perform proficiency tests effectively. As a result, Technical Safety BC encourages industrial railways to leverage professional third-party consultants to conduct rail crew testing on their behalf. To further mitigate this risk, the rail program has increased its system capability to analyze rail incidents and compliance data to isolate those clients that are

underperforming and focus greater program resources to aid those clients as required.

Insufficient train crew competency on industrial sites

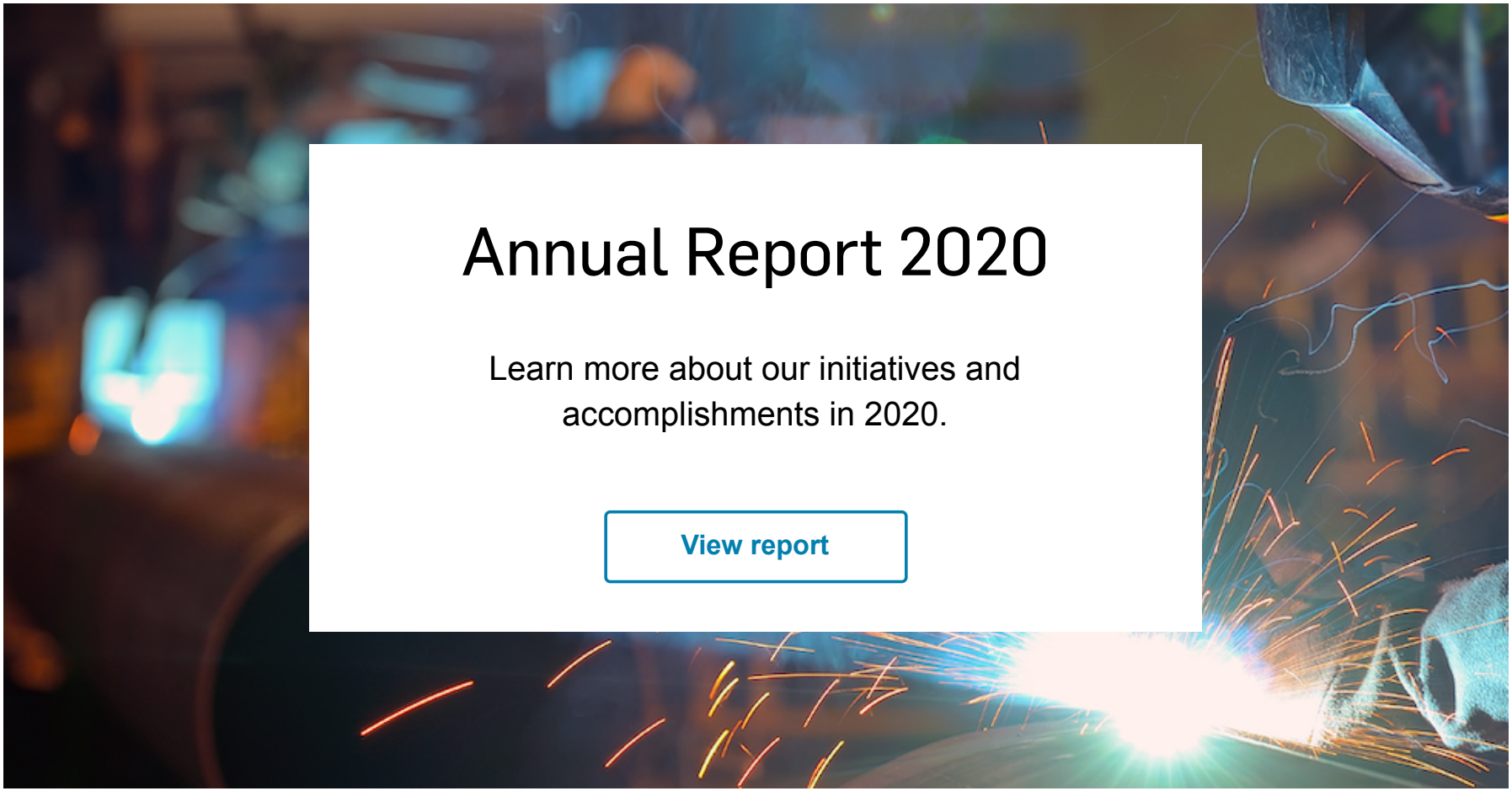
Due to the part time nature of the industrial railway sector, inexperienced train crews present a risk to safe rail operations. This is especially important when dangerous goods or substances (e.g., ammonia or chlorine) are transported within a facility as these goods present a greater hazard to workers, the public, and environment if employees lack the necessary training and support.

Safety advisories issued

In 2020, two safety advisories were issued by Technical Safety BC:

- An unusually high occurrence involving uncontrolled movement resulted in Technical Safety BC issuing a safety advisory recommending procedures for securing equipment.

A second safety advisory was issued to educate employees about the dangers of working in between equipment.



Annual Report 2020

Learn more about our initiatives and accomplishments in 2020.

View report

Technology

ENERGY

Boiler, PV, Refrigeration

Electrical

Gas

Alternative Safety Approaches (ASA)

TRANSPORTATION

Amusement Devices

Elevating Devices

Passenger Ropeways

Railways

Products

Permits

Certification

Licences

Design registration

Assessments

Learning centre

Regulatory resources

Codes, standards and regulations

Regulatory notices

Find a licensed contractor

Find a certified individual

Forms

Fees

Safety in BC

Safety stories

Incident investigations

Compliance and enforcement

State of Safety

Safety education

Get involved

News

Events

Engagement

Connect with us

Governance and leadership

Careers

Contact us

Sign up for newsletter

Have you witnessed an incident or hazard that involves regulated work or a regulated product?

Report an incident ›

Contact us

1 866 566 7233 (8 am–5 pm, Monday–Friday)

Office locations