



Purpose

This product is intended to enhance situational awareness and help inform the choices of decision makers by identifying the potential disruptive impacts associated with a COVID-19 pandemic could have on critical infrastructure (CI) systems. A human pandemic is one of many threats facing the operation of critical infrastructure (CI) and services in Canada. Unlike other threats, a pandemic does not directly impact physical and digital infrastructure, rather it impacts the workforce. In the event of a pandemic, the workforce may be diminished significantly. In addition to physical and digital assets, infrastructure sector employees' play an essential role in the successful operation of infrastructure. Thus, in addition to preparing for threats to physical and digital, infrastructure, sectors must prepare for threats to the health of workers. Additionally, a pandemic is unlike other emergencies in that it occurs over a prolonged period of time, usually months.

Given the interdependencies and connectedness among critical infrastructure, a pandemic that threatens to disrupt one sector could have a cascading effect and disrupt other critical services or systems. Consequently, in the event of a pandemic, all sectors must maintain production and delivery of critical goods and services to sustain the country's economic and social stability. The establishment, by sector organizations, of well-developed Business Continuity Plans that include supply chain coordination, will assist in maintaining delivery of critical goods and services during times of significant and sustained worker absenteeism.

Canadian critical infrastructure is highly interconnected with other countries, especially the United States. Disruptions of critical infrastructure abroad could potentially have cascading impacts in Canada. For example, the electrical grid is a cross border system, and issues in the United States could have severe implications for electrical power generation and transmission in Canada. To reduce the negative effects of an outbreak on cross border critical infrastructure, countries should seek to:





- Coordinate before, during and after a pandemic;
- Establish a mutually supportive operating environment; and
- Assist one another in improving the resiliency of critical infrastructure in the face of the pandemic threat.

In addition, CI stakeholders, federal, provincial, territorial partners, and CI owners/operators that are members of the CI Gateway (<https://cigateway.ps.gc.ca>) can refer to the Portal to access more detailed Infrastructure of Concern information as it becomes available.






This document is developed for planning purposes only, and is not intended to be a description of CI impacts resulting from COVID 19

This document was prepared by the Virtual Risk Analysis Cell (VRAC), located within Public Safety Canada's Critical Infrastructure Directorate. VRAC produces critical infrastructure analytical products, including impact assessments, computer simulation modelling, mapping, site resilience assessments and supports the Government Operations Centre with critical infrastructure analysis during significant events. Any questions should be directed to ps.vrac-cavr.sp@canada.ca.




Sector	Potential Disruptive Impacts	Potential Sector Needs
ALL SECTORS	<ul style="list-style-type: none"> - Increase in employee absenteeism (including refusal to work) - Supply chain disruptions (upstream and downstream) - Increased risk of cyber-attacks due to potential for malicious actors to leverage COVID-19 to target CI through phishing, etc. 	<ul style="list-style-type: none"> - Guidance re: potential impact travel restrictions might have on access to international workers. - Additional guidance regarding actions to take if a case of COVID-19 is detected among staff at a facility (e.g. temporary closure of facility) - Availability of Personal Protective Equipment (PPE) for front line workers
RISKS TO DIGITAL INFRASTRUCTURE	<ul style="list-style-type: none"> - Increased threat of cyber-attacks (phishing, ransomware, etc.) - Overload on remote access/telework systems (VPN, teleconferencing, etc.) 	
ENERGY AND UTILITIES 	<ul style="list-style-type: none"> - Potential upstream disruptions of supply chains supporting the sector: <ul style="list-style-type: none"> o i.e., chemicals for oil and gas production, oil and gas for electricity production 	
FINANCE 	<ul style="list-style-type: none"> - Potential outbreaks have the potential to affect financial markets, but are unlikely to affect operations.. 	
FOOD 	<ul style="list-style-type: none"> - Food shortages in stores expected if people make reserves in anticipation of quarantine measures. - Travel restrictions may also affect the agricultural industry in the medium-term, due to reliance on the temporary foreign worker program. - Potential upstream disruptions of supply chains supporting the sector: <ul style="list-style-type: none"> o i.e., fertilizers, chemicals and equipment 	<ul style="list-style-type: none"> - Additional information regarding unique/specific food safety implications related to COVID-19? - Additional information regarding any implications re: third party food safety certifications?
GOVERNMENT 	<ul style="list-style-type: none"> - Potential delays in the delivery of key government services. <ul style="list-style-type: none"> o i.e., Employment Insurance, income tax returns 	



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<p>HEALTH</p> 	<ul style="list-style-type: none"> - Hospitals and other healthcare facilities could be overwhelmed by large volumes of infected individuals. - Healthcare workers are also at greater risk of exposure, and absenteeism of health care workers could further overburden the healthcare system. - Challenge for health research facilities to both manage the volume of additional tests for COVID-19 while also working on the development of a vaccine. - Potential upstream disruptions of supply chains supporting the sector: <ul style="list-style-type: none"> o i.e., personal protective equipment, medicine and medical supplies 	
<p>INFORMATION COMMUNICATION TECHNOLOGY (ICT)</p> 	<ul style="list-style-type: none"> - Excessive loads on the telecommunications networks and the internet may occur due to increases in activity (e.g. more people working from home) - Potential upstream disruptions of supply chains supporting the sector: <ul style="list-style-type: none"> o i.e., IT equipment manufactured in affected countries 	
<p>MANUFACTURING</p> 	<ul style="list-style-type: none"> - Economic damage caused by an outbreak could also negatively affect demand for manufactured goods. - Disruptions to the transportation sector may also have an impact on the delivery of manufactured products, in particular given Just-in-Time delivery processes. - Potential upstream disruptions of supply chains supporting the sector: <ul style="list-style-type: none"> o i.e., raw materials, machinery and other inputs for production 	
<p>SAFETY</p> 	<ul style="list-style-type: none"> - Potential for decreased capacity to respond as safety sector workers are at greater risk of exposure due to direct contact with the public 	<ul style="list-style-type: none"> - Availability of PPE for front-line workers
<p>TRANSPORTATION</p> 	<ul style="list-style-type: none"> - Economic impacts on all modes of transportation due to travel restrictions and overall decreased movement of people. - Transportation workers are also at greater risk of exposure due to the sources and volume of passengers passing through commercial transportation facilities. 	



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<p>WATER</p> 	<ul style="list-style-type: none">- Potential upstream impacts on supply chains supporting the sector:<ul style="list-style-type: none">o i.e., chemicals for water treatment	