



Telecom Regulatory Policy CRTC 2017-182

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Next-generation 9-1-1 – Modernizing 9-1-1 networks to meet the public safety needs of Canadians

Canadians depend on the provision of reliable and effective 9-1-1 services to seek help in an emergency. As technology and consumers' needs evolve, so do consumers' expectations related to 9-1-1 services. In the coming years, telecommunications networks across Canada, including the networks used to make 9-1-1 calls, will continue to transition to Internet Protocol (IP) technology. This will enable Canadians to access new, enhanced, and innovative 9-1-1 services with IP-based capabilities, referred to as next-generation 9-1-1 (NG9-1-1) services. For example, Canadians could stream video from an emergency incident, send photos of accident damage or a fleeing suspect, or send personal medical information, including accessibility needs, which could greatly aid emergency responders.

In this decision, the Commission is setting out its determinations on the implementation and provision of NG9-1-1 networks and services in Canada. This will require coordination and collaboration between numerous stakeholders, including the Commission; telecommunications service providers that provide 9-1-1 services (TSPs); 9-1-1 network providers; the CRTC Interconnection Steering Committee (CISC); federal, provincial, territorial, and municipal governments; emergency responders; and public safety answering points (PSAPs). As such, in this decision, the Commission is making a number of recommendations in which all stakeholders will have a role to play, including the establishment of a national PSAP and emergency responder coordinating body.

The Commission has determined that an incumbent local exchange carrier (ILEC) stewardship model under Commission oversight is the most appropriate with respect to the governance and funding of NG9-1-1, such that the ILECs will be responsible for the construction, operation, and maintenance of the NG9-1-1 networks, with Commission oversight, including through Commission approval of the ILECs' tariffs.

*The Commission **directs** all ILECs to establish their NG9-1-1 networks and to be ready to provide NG9-1-1 Voice service by **30 June 2020** wherever PSAPs have been established in a particular region.*

*The Commission also **directs** all TSPs to make the necessary changes to support NG9-1-1 Voice throughout their operating territories by **30 June 2020** wherever (i) their networks are capable of doing so, and (ii) PSAPs have launched NG9-1-1 Voice. The Commission determines that real-time text (RTT)-based NG9-1-1 Text Messaging is the second method of communication to be supported on the NG9-1-1 networks. The Commission **directs** mobile wireless service providers to provide RTT-based NG9-1-1 Text Messaging throughout their operating territories by **31 December 2020** wherever (i) their networks are capable of doing so, and (ii) PSAPs have launched NG9-1-1 Text Messaging. The Commission also requests that CISC submit to the Commission, for information, its recommended public education campaign for each new NG9-1-1 service.*

*During the transition to NG9-1-1, ILECs are **directed** to support existing 9-1-1 voice services over the existing 9-1-1 networks in parallel with the new NG9-1-1 networks. As well, ILECs are to decommission their current 9-1-1 network components that will not form part of their NG9-1-1 networks by **30 June 2023**. The existing 9-1-1 tariff rate regime for funding the current 9-1-1 networks will remain in place during the transition, along with new incremental tariffed rates that will be established for NG9-1-1. These rates will be in effect until current 9-1-1 networks are decommissioned, at which time final NG9-1-1 network access tariff rates will be established.*

Finally, the Commission is imposing obligations related to (i) ensuring the reliability, resiliency, and security of the NG9-1-1 networks; (ii) reporting on NG9-1-1 network outages; and (iii) ensuring privacy in an NG9-1-1 environment.

Introduction

1. Effective and timely access to emergency services in Canada is critical to the health and safety of Canadians, and is an important part of ensuring that Canadians have access to a world-class communication system.
2. Canadians currently have access to either Basic 9-1-1 or Enhanced 9-1-1 service through wireline, wireless, and voice over Internet Protocol (VoIP) telephone services¹ wherever a 9-1-1 call centre, also known as a public safety answering point (PSAP), has been established. Canadians in areas where a PSAP has not yet been established are typically required to dial seven- or ten-digit telephone numbers to seek emergency services from responders such as police, fire, or ambulance.

¹ Basic 9-1-1 service enables callers to be connected to 9-1-1 operators in public safety answering points (PSAPs), who dispatch the appropriate emergency responders. Enhanced 9-1-1 service includes Basic 9-1-1 service but also automatically provides PSAP 9-1-1 operators with the telephone number and location of the caller.

3. In the coming years, telecommunications networks across Canada, including the networks used to make 9-1-1 calls,² will continue to transition to Internet Protocol (IP) technology. This transition will have a major impact on the networks, systems, and arrangements used to provide 9-1-1 services, and will be a complex and costly undertaking that will occur gradually over a number of years.
4. In paragraph 7 of Telecom Regulatory Policy 2014-342,³ the Commission indicated that Canadians should have access to new, enhanced, and innovative 9-1-1 services with IP-based capabilities, otherwise referred to as next-generation 9-1-1 (NG9-1-1) services. As such, the Commission announced its intention to conduct a comprehensive examination of NG9-1-1 in order to establish an NG9-1-1 regulatory framework.
5. With NG9-1-1,⁴ Canadians in need of emergency services could ultimately send a text message or transmit photos, videos, and other types of data to 9-1-1 operators, in addition to making traditional voice 9-1-1 calls using wireline, wireless, or VoIP telephone services. For example, they could stream video from an emergency incident, send photos of accident damage or a fleeing suspect, or send personal medical information, which could greatly aid emergency responders.

Roles and responsibilities

6. The provision of 9-1-1 services in Canada requires coordination between numerous stakeholders, including the Commission; telecommunications service providers that provide 9-1-1 services (TSPs);⁵ 9-1-1 network providers; and federal, provincial, territorial, and municipal governments.
7. The Commission regulates the provision of telecommunications services in Canada. The *Telecommunications Act* (the Act) requires that the Commission accomplish its mandate with a view to furthering the implementation of the policy objectives set out in section 7 of the Act, a number of which are directly relevant to the provision of 9-1-1 services.

² For the purpose of this decision, 9-1-1 networks include all equipment, transmission facilities, databases, and systems between the point of interconnection of the originating network and the 9-1-1 network, up to the demarcation point of the 9-1-1 network with the primary PSAP. Originating networks refer to the wireline, wireless, or VoIP networks of the local exchange service providers where 9-1-1 emergency service requests originate. The originating networks are interconnected to the regional 9-1-1 network, which then delivers the call to the appropriate PSAP.

³ That decision sets out the Commission's 9-1-1 action plan, which includes key initiatives aimed at enhancing Canadians' access to existing 9-1-1 services and facilitating the transition to next-generation 9-1-1 services.

⁴ For the purpose of this decision, "NG9-1-1" refers to NG9-1-1 communications services, including the methods by which Canadians contact and send ancillary information to PSAPs, and the underlying networks used to provide these communications services.

⁵ Today, TSPs are telephone service providers that offer wireline and wireless local exchange telephone services, including local VoIP services. In the future, they could be expanded to include other types of providers as new NG9-1-1 services are introduced.

8. In the 9-1-1 context, the Commission regulates the 9-1-1 access services offered by TSPs and the operation of related 9-1-1 networks by the incumbent local exchange carriers (ILECs).⁶ Specifically, the Commission establishes regulatory policies, standards, and conditions of service, and approves tariffs and agreements governing access by Canadians to PSAPs.
9. Provincial, territorial, and municipal governments are responsible for emergency responders and for the establishment and operation of the primary or secondary PSAPs⁷ that dispatch them.
10. In Telecom Public Notice 96-28, the Commission established the CRTC Interconnection Steering Committee (CISC). The Emergency Services Working Group (ESWG), under the purview of CISC, is an open forum that is primarily composed of TSPs, PSAPs, and 9-1-1 industry specialists. The ESWG addresses technical and operational implementation issues related to the provisioning of 9-1-1 services in Canada.

Regulatory background

11. Before the introduction of local telephone competition, 9-1-1 access services were provided exclusively by the ILECs. With the introduction of local telephone competition, in Telecom Decision 97-8, the Commission mandated competitive local exchange carriers (CLECs) to provide their end-users with access to 9-1-1, and ILECs to provide wholesale access for CLECs to their 9-1-1 networks.⁸
12. Since that time, the Commission has issued a number of decisions, regulatory policies, and orders dealing with wholesale access to the ILECs' 9-1-1 networks, the characteristics of the 9-1-1 network access that must be provided, and other matters relevant to 9-1-1 network access. As a result, every TSP operating in Canada, including mobile wireless service providers (WSPs), is required to provide its customers with 9-1-1 access service wherever a PSAP has been established by a relevant provincial, territorial, or municipal authority. These measures ensure that Canadians have reliable access to 9-1-1 services regardless of their choice of TSP.

⁶ The term "ILECs" includes both large and small ILECs.

⁷ A primary PSAP is a PSAP to which 9-1-1 calls are routed directly as the first point of contact. In most cases, the primary PSAP then contacts the appropriate agency to dispatch emergency responders. However, in cases where local authorities determine that specialized expertise is required to handle the 9-1-1 call, such as emergency medical services, 9-1-1 calls are then transferred to a secondary PSAP.

⁸ The Commission has mandated the ILECs, including the small ILECs, to provide CLECs and mobile wireless carriers with a wholesale 9-1-1 access service that enables them to route 9-1-1 calls and ancillary information over 9-1-1 networks. Many small ILECs have chosen to enter into commercial agreements with larger ILECs, which provide all or part of the 9-1-1 network functionality, so that the small ILECs can meet their obligation to provide both their retail and wholesale customers with access to 9-1-1 services.

13. Wholesale access to the ILECs' 9-1-1 networks is governed by Commission-approved tariffs, which set out the rates, terms, and conditions of this access. Additional details are set out in the ILECs' Commission-approved agreements with CLECs and mobile wireless carriers, which expand on the ILECs' tariffs. These agreements ensure that competitive access to the 9-1-1 networks is consistent with applicable policies and is not unjustly discriminatory or otherwise provided in a manner that would confer an undue preference or advantage on the 9-1-1 network provider.
14. ILECs, also known as the 9-1-1 network providers, and some CLECs have also established 9-1-1 agreements with local governments and/or PSAPs themselves. These agreements outline each party's rights, obligations, and responsibilities. While the Commission does not approve these agreements, it has imposed certain obligations on the ILECs through 9-1-1-related policies and requirements, as well as 9-1-1 network access tariffs. Since mobile wireless carriers access 9-1-1 networks either directly through the ILEC or through a CLEC, it is not necessary for these carriers to establish 9-1-1 agreements with local governments.
15. More recently, with a view to increasing access to 9-1-1 services by persons with hearing or speech disabilities, in Telecom Decision 2013-22, the Commission directed WSPs and 9-1-1 network providers to support the provision of Text with 9-1-1, which enables persons with disabilities to access PSAPs via Short Message Service (SMS)-based⁹ text messaging. This was an interim solution designed to meet an urgent need until NG9-1-1 becomes available in Canada and IP-based technology enables the general public to communicate directly with PSAPs using text messaging.
16. In Telecom Decision 2015-531, the Commission approved the adoption of the National Emergency Number Association (NENA)¹⁰ i3 architecture standard for NG9-1-1 in Canada (the NENA i3 standard). The Commission indicated that adoption of the NENA i3 standard would facilitate the transition from current 9-1-1 systems to NG9-1-1 and provide a clear path forward for all 9-1-1 stakeholders and Canadians.
17. As well, in Telecom Regulatory Policy 2016-165, the Commission made various determinations related to the reliability and resiliency of existing 9-1-1 networks. The record associated with that proceeding was included on the record of this proceeding, since a number of issues considered in the present proceeding relate to reliability and resiliency matters.

⁹ SMS is a text messaging solution that enables users of mobile telephones to exchange short text messages. In the context of Text with 9-1-1, when a pre-registered person with a hearing or speech disability dials 9-1-1 on a wireless device, that person's contact and location information is automatically transmitted to the PSAP in the same way it is for other wireless service users, but the 9-1-1 call is flagged as coming from a person with a hearing or speech disability. Upon receiving a flagged 9-1-1 call, the 9-1-1 operator responds by sending an SMS text message to the caller, thus enabling the caller to text back and forth with the operator. However, this solution does not enable people to initiate a 9-1-1 communication by texting directly to 9-1-1.

¹⁰ NENA is a 9-1-1 standards-making organization whose mission is to foster the technological advancement, availability, and implementation of the 9-1-1 emergency system. NENA is based in the United States and has a Canadian chapter and membership. It is composed mostly of PSAPs, equipment vendors, and TSPs.

18. The decisions referred to above, as well as other Commission decisions, regulatory policies, and orders related to the provision of 9-1-1 services, constitute the current 9-1-1 regulatory framework.

Telecom Notice of Consultation 2016-116 proceeding

19. Through Telecom Notice of Consultation 2016-116, the Commission initiated a public proceeding to examine the establishment of a regulatory framework for NG9-1-1 in Canada. This included the examination of a roadmap for the transition of current 9-1-1 networks to IP in an efficient and cost-effective manner while ensuring the continued provision of reliable 9-1-1 services. Specifically, the Commission sought to address fundamental policy matters, such as the roles and responsibilities of TSPs, the transition steps and timing involved in evolving to NG9-1-1, and how network-related NG9-1-1 costs should be recovered. The Commission examined how 9-1-1 networks and services need to evolve to take advantage of technological advancements while addressing the evolving needs and communications methods of Canadians. Although the Commission does not regulate PSAPs, issues related to PSAP needs, coordination, governance, and NG9-1-1 readiness were also considered, since they are integral to triggering the provision of NG9-1-1 services to Canadians.
20. Many parties participated in the proceeding, including current 9-1-1 network providers (Bell Canada, MTS Inc. [MTS],¹¹ Saskatchewan Telecommunications [SaskTel], and TELUS Communications Company [TCC]), the Canadian Independent Telephone Company Joint Task Force (JTF), TSPs, the Canadian Network Operators Consortium Inc. (CNO), the Canadian Wireless Telecommunications Association (CWTA), consumer and accessibility groups, provincial and territorial governments, the Office of the Privacy Commissioner of Canada, emergency responder organizations, PSAPs, and individual Canadians. These parties represented regions across Canada.
21. This proceeding included an oral hearing that began on 16 January 2017.
22. The public record of this proceeding, which closed on 20 February 2017, can be found on the Commission's website at www.crtc.gc.ca or by using the file numbers provided above.

Strategic policy objectives

23. The Commission's determinations in this proceeding were informed by the policy objectives set out in section 7 of the Act and by the Policy Direction.¹²

¹¹ In February 2017, Bell Canada received approval by federal regulators to purchase MTS. However, Bell Canada and MTS participated throughout the proceeding as separate entities and will be treated as such for the purpose of this decision.

¹² *Order Issuing a Direction to the CRTC on Implementing the Canadian Telecommunications Policy Objectives*, P.C. 2006-1534, 14 December 2006

24. In this context, the Commission's determinations were made with a view to achieving the following strategic objectives:

- increasing the safety of Canadians by giving them the best access to emergency services through world-class telecommunications networks;
- providing high-quality information, services, and support to PSAPs, which ultimately enables emergency responders to effectively assist Canadians;
- introducing NG9-1-1 solutions that are cost-effective, innovative, and transparent;
- during the transition to NG9-1-1, maintaining the existing high-quality, reliable 9-1-1 networks;
- ensuring an effective and timely transition to NG9-1-1; and
- using standards-based solutions that allow for flexibility and strive for national consistency.

Issues

25. The Commission has identified the following issues to be addressed in this decision:

- Implementation of NG9-1-1 networks and services in Canada
- Matters beyond the Commission's jurisdiction
- Governance and funding
- Network design
- NG9-1-1 services
- Coordination of trials and launch of services
- Decommissioning of current 9-1-1 networks
- Public education
- Privacy

Implementation of NG9-1-1 networks and services in Canada

Positions of parties

26. All parties agreed that the transition to NG9-1-1 will enable the provision of new 9-1-1 services and functionalities that will enhance emergency response and public safety. TCC submitted that this support was a strong signal to the Commission to

move forward with the development of NG9-1-1 in Canada. Bell Canada added that NG9-1-1 presents an exciting opportunity to integrate more modern forms of communication into the 9-1-1 environment.

27. PSAPs generally submitted that the Commission should establish a regulatory framework for NG9-1-1 and that new capabilities need to be enabled as soon as reasonably possible. E-Comm¹³ added that the 9-1-1 network infrastructure in Canada must evolve and that the Commission should establish an overall NG9-1-1 regulatory framework that preserves the effectiveness of current 9-1-1 services and enables a gradual transition to NG9-1-1.
28. The Paramedic Chiefs of Canada (PCC) submitted that given our rapidly evolving mobile IP world, more emergency-related data can be delivered to PSAPs, and this critical information could affect the outcome of an incident. The PCC added that the ability to push this data through to emergency responders is essential and that no limitations should be placed on the pathways or the types of information that may be shared.
29. The Public Interest Advocacy Centre, the National Pensioners Federation, and the Council of Senior Citizens' Organizations of British Columbia (hereafter, PIAC et al.) submitted that the transition to NG9-1-1 presents new opportunities for public safety protection, including the ability to meet consumers' expectations related to 9-1-1 services based on their current use of telecommunications services.

Commission's analysis and determinations

30. All parties support the development of NG9-1-1 in Canada. No telecommunications service is more life impacting and essential to Canadians than 9-1-1 services, and parties to this proceeding recognize the need to provide world-class emergency service networks and services.
31. In the coming years, most telecommunications networks across Canada, including the originating networks used to make 9-1-1 calls, will continue to transition to IP technology.
32. Canadians are also changing their methods of communication. The prevalence of mobile devices and new applications has led to a shift in Canadians' expectations, including how they access emergency services. Canadians increasingly expect to be able to reach 9-1-1 using their smartphones and telematics,¹⁴ to communicate through both voice and text messaging, and to send additional information to emergency responders, such as pictures and videos.

¹³ E-Comm is a multi-municipality agency that provides emergency communications operations for most of British Columbia.

¹⁴ Telematics involves the sending, receiving, and storing of information to control remote objects, such as vehicles or sensors, via telecommunications devices.

33. However, current 9-1-1 networks do not allow for this additional information to be sent to emergency responders before they arrive on the scene. Additionally, current 9-1-1 networks are not equipped to provide PSAPs and emergency responders with enhanced tools, such as the ability to transfer calls between each other seamlessly, allowing for more effective and efficient responses.
34. Since NG9-1-1 is an IP-based network, it will enable the provision of new services and functionalities that will enhance emergency communications and, consequently, public safety.
35. In light of the above, the Commission is mandating the establishment of NG9-1-1 networks and services across Canada, as set out in the determinations below.
36. The Commission and the entities under its jurisdiction, however, cannot accomplish this complex task independently. Other stakeholders involved in the provision of emergency services also have a significant role to play in ensuring that NG9-1-1 becomes a reality in Canada. The following section discusses the Commission's views on how this may be achieved as effectively and efficiently as possible.

Matters beyond the Commission's jurisdiction

Provincial/territorial 9-1-1 legislation

Background

37. Certain provincial and territorial governments have established legislation addressing, among other things, the collection and distribution of funds for PSAPs. They have also taken on oversight and coordination roles in establishing province- or territory-wide PSAP standards and policies.

Positions of parties

38. ILECs generally submitted that provincial and territorial governments and PSAPs throughout the country are in varying states of readiness to migrate to NG9-1-1, which will affect the speed at which NG9-1-1 can be adopted. For example, the province with the highest number of 9-1-1 calls and PSAPs, Ontario, does not formally coordinate the delivery of 9-1-1 services at the provincial level.
39. The Coalition of the Willing (CW)¹⁵ added that it viewed the lack of provincial legislation and leadership in Ontario and British Columbia, two very populous provinces, as being of significant concern. The CW stated that variations in NG9-1-1 deployment across the country could not only create an inconsistent user experience but could also be dangerous for Canadians.

¹⁵ The CW is composed of representatives from emergency service and police organizations across the country, as well as representatives from the Association of Public-Safety Communications Officials, Canada, Inc.; the Canadian Interoperability Technology Interest Group; NENA; and the Windermere Group.

40. Several PSAPs submitted that their level of NG9-1-1 preparedness is low. However, other PSAPs, such as Calgary 9-1-1 and the Saskatchewan PSAPs, indicated that they had started formal planning and had some approved funding set aside for NG9-1-1.
41. The Alberta Emergency Management Agency (AEMA) [a provincial government organization] submitted that it has seen tremendous benefits from having provincial 9-1-1 legislation in place. For example, legislation in Alberta provides a funding source to directly cover some PSAP costs and, in certain cases, these funds have been used to prepare for the transition to NG9-1-1. Legislation in Alberta also aims to create province-wide procedures and standards that will ensure consistent service delivery. Calgary 9-1-1 submitted that PSAPs in Alberta have benefited from the leadership of the AEMA and proposed that Alberta serve as a model for other provinces and territories, to both support and regulate the PSAPs under their jurisdiction.

Commission's analysis and determinations

42. Canadian PSAPs are in varying states of readiness to implement NG9-1-1, which will directly impact the speed at which NG9-1-1 will be made available to Canadians. Provinces, territories, and municipalities, not the Commission, are responsible for the transition of the PSAPs under their jurisdiction. Evidence suggests that where provincial/territorial legislation exists, PSAPs are better prepared since they are more likely to benefit from coordination, standards, and policies, as well as funding mechanisms to support their modernization.
43. The Commission therefore recommends that the provinces and territories that do not currently have 9-1-1 legislation in place, or whose 9-1-1 legislation could be bolstered, enact appropriate legislation to address issues related to coordination, funding, PSAP standards, and public education, as necessary, to assist their PSAPs in preparing for NG9-1-1.
44. The Commission also recommends that primary and secondary PSAPs research the steps required to transition to NG9-1-1 and develop a transition plan in conjunction with their provincial, territorial, or municipal governments. In this regard, it would be beneficial for primary and secondary PSAPs that do not yet participate in the CISC ESWG to do so in order to inform their plans.

National emergency services coordination

Positions of parties

45. PSAPs, provincial governments, and emergency responders were generally of the view that there is a need for a single body that would provide national coordination for the delivery of 9-1-1 services by PSAPs and emergency responders in Canada. This would better ensure a consistent application of NG9-1-1 systems and services across Canada. These parties also submitted that although CISC has played somewhat of a national coordination role for these entities and for TSPs, in the past (for instance, during the rollout of Text with 9-1-1), a centralized body that has dedicated staff would be better equipped to tackle a complex, large-scale project such as NG9-1-1.

46. The CW proposed that due to a lack of engagement from any other federal department, the Commission should establish an NG9-1-1 administrator to direct funding towards the establishment and operation of a national coordinating body. TCC agreed that such a body would be useful but argued that its establishment does not fall within the Commission's mandate. TCC instead proposed that the matter be raised with the Minister of Public Safety and Emergency Preparedness.
47. The Interoperability Working Group (IWG), which falls under the mandate of the Senior Officials Responsible for Emergency Management (SOREM) and is co-chaired by Public Safety Canada and a provincial or territorial emergency management organization representative, submitted that the planning, coordination, and deployment of NG9-1-1 in Canada is an area of national interest, similar to other telecommunications initiatives that are being advanced, including wireless public alerting and the Public Safety Broadband Network (PSBN).¹⁶ The IWG added that given its focus on future communications systems, it expects to discuss NG9-1-1 going forward.
48. The IWG also submitted that the most important overarching priority regarding 9-1-1 services is the establishment of a national governing body that would provide a common forum to discuss 9-1-1 service delivery, as well as develop guidelines and tools to allow for the certification of PSAPs. The IWG indicated that, in terms of which federal department is best placed to play a broad leadership role, Public Safety Canada brings the right players to the table and has a relationship with emergency responders and the provincial and territorial governments with respect to emergency service management.

Commission's analysis and determinations

49. The Commission agrees that the rollout of NG9-1-1 in Canada would be more effective, efficient, and consistent across the country if there were national coordination of PSAPs and emergency responders. The Commission is well positioned, either directly or through CISC, to assist with NG9-1-1 technical standards and public education. The national coordination of 9-1-1 stakeholders other than providers of telecommunications services is not, however, within the Commission's mandate.
50. As indicated in its 9-1-1 action plan set out in Telecom Regulatory Policy 2014-342, the Commission is responsible for establishing national telecommunications policies, including NG9-1-1 policies, standards, and requirements. The Commission also indicated that, given that its jurisdiction is limited to providers of telecommunications services, it would not be appropriate for the Commission to create a governance body that would oversee the 9-1-1 ecosystem as a whole, including PSAP matters. The Commission continues to be of this view and reiterates that it would welcome greater coordination of 9-1-1 and NG9-1-1 PSAP and emergency responder matters, and that it would be prepared to participate in any such forum in a manner consistent with its mandate.

¹⁶ The PSBN is a proposed 700 Megahertz network that will enable Canada's emergency responders to access an interoperable, reliable, and secure wireless high-speed data communications network.

51. Given the national leadership responsibility that Public Safety Canada is tasked with under the *Department of Public Safety and Emergency Preparedness Act*, that department is an appropriate organization to take a leadership role in the national coordination of PSAPs' and emergency responders' transition to NG9-1-1.
52. To ensure that a new national coordination body is created and operational in time to benefit NG9-1-1 stakeholders and the general public, the Commission recommends that Public Safety Canada establish this body urgently to facilitate the transition to NG9-1-1 according to the timelines set out in this decision.
53. CISC has historically been playing a coordinating role in the introduction of 9-1-1 services and capabilities. The Commission determines that CISC will continue to coordinate matters related to the provision of NG9-1-1 services by the NG9-1-1 network providers and TSPs, as well as the collaboration between these providers and the PSAPs. A list of the follow-up activities that the Commission has requested CISC to conduct in this decision is included in the Appendix.

Emergency responders' NG9-1-1 needs

Background

54. Depending on the location, provincial, territorial, or municipal governments are responsible for both emergency responders and the establishment and operation of the primary and secondary PSAPs that dispatch them. In most cases, PSAPs are operated by emergency responder organizations, such as police services, but PSAPs are sometimes separate entities.
55. As such, the NG9-1-1 needs of PSAPs and emergency responders may vary. PSAPs require information that enables them to quickly assess the nature of the emergency to determine the emergency responder organization to be dispatched. Emergency responders, on the other hand, may require more in-depth situational information, such as accessibility needs, medical records, and building schematics, that provides for a more efficient and effective response.

Positions of parties

56. The Ontario Provincial Police (OPP), the Toronto Police Service (TPS),¹⁷ and the Canadian Interoperability Technology Interest Group (CITIG) submitted that having access to additional data, such as pictures and videos, may enable emergency responders to make more informed decisions when responding to an emergency situation and to be alert to changing circumstances. The PCC submitted, however, that too many variables exist at this time to properly determine emergency responders' priorities for the rollout of new forms of emergency information.

¹⁷ The TPS intervened on behalf of itself, as well as a number of PSAPs, the Alberta E9-1-1 Advisory Board, the Ontario Ministry of Health and Long-Term Care's Emergency Health Services Branch, the New Brunswick 9-1-1 Bureau, the Nova Scotia Emergency Management Office, and the Ontario Police Technology Information Cooperative (OPTIC).

57. CITIG also submitted that the Commission should continue to consult with emergency responder agencies regarding the introduction of NG9-1-1 capabilities. CITIG added that the proposed national coordinating body should determine priorities for the rollout of new methods of communication and additional data, and that emergency responders should be part of that conversation.
58. The PCC further submitted that the implementation of a 700 Megahertz PSBN is expected to provide a dedicated network that would enable the transfer of emergency response data between, for example, a secondary PSAP connected to the NG9-1-1 network and the emergency responders on the PSBN. CITIG submitted that the PSBN would be a natural conduit to transmit to emergency responders the type of data collected in an NG9-1-1 system.

Commission's analysis and determinations

59. The Commission agrees that one of the stakeholder groups that will benefit most from NG9-1-1 deployment is emergency responders, who require timely access to critical emergency data to best assist Canadians.
60. CISC is currently discussing what is technically available to be delivered to PSAPs and emergency responders via the NENA i3 standard.¹⁸ The Commission recommends that emergency responders actively take part in these discussions, since it would benefit Canadians to have emergency responders' needs well understood by all NG9-1-1 stakeholders, including the Commission.
61. The link between NG9-1-1 and the PSBN is a natural one, since NG9-1-1 networks will capture emergency data and the PSBN will enable emergency responders to access it efficiently. NG9-1-1 networks and the PSBN share the same goal of improving communications during emergencies through a nationwide IP-based architecture. The Commission therefore recommends that ongoing dialogue between Public Safety Canada, the Commission, and other NG9-1-1 stakeholders continue to take place with respect to the progress and timing of the rollout of the PSBN. This dialogue will ensure a mutual understanding of how and when both networks may be interconnected.

Governance and funding

NG9-1-1 governance and funding models

Positions of parties

62. All parties agreed that under the current regulatory framework, the ILECs have provided high-quality, reliable, resilient, and secure 9-1-1 networks. Many parties, including CNOC, ILECs, and PSAPs, submitted that the ILECs are therefore best positioned to be the NG9-1-1 network providers and should continue to provide

¹⁸ See CISC ESWG Task Identification Forms ESTF0081, ESTF0082, and ESTF0083, through which the ESWG must assess the technical and operational aspects of the NENA i3 standard to establish the requirements for originating networks, NG9-1-1 networks, and PSAP-based considerations.

services in accordance with the rates, terms, and conditions set out in Commission-approved tariffs. These parties indicated that the ILECs have already developed strong and reliable partnerships with PSAPs, they are currently providing 9-1-1 services very effectively, and they will continue to do so during and after the transition to NG9-1-1. These parties submitted that the tariff process (i) ensures that the Commission reviews costs before approving rates, and (ii) provides an opportunity for interveners to comment on specific concerns.

63. A number of parties, including Freedom Mobile Inc. (Freedom Mobile),¹⁹ PIAC et al., Quebecor Media Inc. on behalf of Videotron G.P. (Videotron), Rogers Communications Canada Inc. (RCCI), and Shaw Telecom G.P. (Shaw), supported governance and funding models that rely on a coordinating entity or a consortium of service providers to oversee the selection and funding of one or more NG9-1-1 network providers. They argued that generally, such models would (i) be more efficient and cost-effective than the current model, (ii) ease the administration of NG9-1-1 funding, and (iii) increase the transparency of 9-1-1 funding.
64. Alternatively, some parties submitted that the Commission should use the National Contribution Fund mechanism to fund NG9-1-1. They argued that this approach would ensure that funds are collected from all providers of the services used to communicate with PSAPs, including Internet service providers (ISPs).
65. Several companies, including RCCI, Shaw, and Videotron, argued that it has been nearly 20 years since a review of 9-1-1 service costs has taken place and that the Commission should require ILECs to file new Phase II cost studies related to existing 9-1-1 network costs.
66. Parties such as Bell Canada submitted that although 9-1-1 service costs have not been reviewed in many years, since demand has increased over time, the current 9-1-1 service rates have actually declined on a per-user basis, and that these rates represent good value for consumers.

Commission's analysis and determinations

67. The current governance framework, which is based on direct Commission oversight over the ILECs as the 9-1-1 network providers, has resulted in Canadians being provided with 9-1-1 services through high-quality, reliable, resilient, and secure 9-1-1 networks. Given the importance of 9-1-1 services to Canadians, the Commission determines that it is in the public interest that the Commission retain direct oversight over these services. The governance and funding model that supports NG9-1-1 services must therefore include an active supervisory role for the Commission so that it can ensure that 9-1-1 services are reliable, resilient, and secure, and that they are available to Canadians at cost-effective rates.

¹⁹ In the proceeding, submissions were received from WIND Mobile Corp. However, since then, the company underwent a name change and is now Freedom Mobile.

68. The alternative governance and funding models proposed in this proceeding generally rely on a multi-stakeholder approach to governance that either minimize the Commission's role or create duplicate layers of oversight. Under these models, the coordinating entity or consortium would have oversight over (i) the NG9-1-1 network provider(s), (ii) the cost of delivering NG9-1-1 services, and (iii) the rate that Canadians would pay for NG9-1-1 services. If the Commission were to implement a governance and funding model that does not enable unrestricted and direct Commission oversight and is not based on Commission approval of tariffs, it would be difficult for the Commission to meet its obligation under the Act to ensure the reliability and cost-effectiveness of 9-1-1 and NG9-1-1 services. Duplicate layers of oversight would add an extra layer of administration, leading to increased costs to the system. As well, the benefits would be limited.
69. An approach based on Commission-approved tariffs would provide the Commission with the tools necessary to ensure that the funding of NG9-1-1 is provided as cost effectively as possible. This approach would also ensure that funding is based on recovering the actual costs of building, operating, and maintaining the NG9-1-1 networks, and that costs are subject to the Commission's disclosure guidelines to ensure that they are as transparent as possible.²⁰
70. In light of the above, the Commission determines that an ILEC stewardship model under Commission oversight is most appropriate with respect to the governance and funding of NG9-1-1, such that the ILECs will be responsible for the building, operation, and maintenance of the NG9-1-1 networks. The Commission will retain full direct oversight through the ILECs' tariffs, and the tariff rates are to be established based on each NG9-1-1 network provider's costs, plus an approved markup.
71. Accordingly, the Commission hereby requires, pursuant to section 24 of the Act, that as a condition of offering and providing telecommunications services, the ILECs (i) provide end-user access to NG9-1-1 networks in their operating territories; (ii) provide wholesale access to these networks wherever provincial, territorial, and/or municipal governments have established PSAPs; and (iii) connect their NG9-1-1 networks to the primary PSAPs in their operating territories. The ILECs can meet these obligations either directly, by building their own NG9-1-1 networks, or indirectly, by outsourcing to another ILEC.²¹

²⁰ The Commission has taken steps over the years to ensure more transparency with respect to the costing of wholesale services. In Telecom Regulatory Policy 2012-592, the Commission developed guidelines with respect to costing that enable (i) competitors to comment more meaningfully on proposed costs, and (ii) the Commission to obtain a record that is as full and complete as possible on which to base its determinations.

²¹ All ILECs, regardless of whether they outsource some or all of their NG9-1-1 network functionality, are considered to be NG9-1-1 network providers.

72. The Commission also requires, pursuant to sections 24 (regarding carriers) and 24.1 (regarding non-carriers) of the Act, that as a condition of offering and providing telecommunications services, TSPs ensure that NG9-1-1 traffic is routed to primary PSAPs over the ILECs' NG9-1-1 networks.
73. To ensure a smooth transition from the current 9-1-1 system to NG9-1-1 and the recovery of the costs related to (i) operating and maintaining existing 9-1-1 services, and (ii) funding the deployment and operation of the NG9-1-1 networks, the Commission determines that existing 9-1-1 tariffs will continue to apply and that NG9-1-1-specific tariffs will be required.
74. As parties have noted, under the current regulatory framework, the rates charged for 9-1-1 services have declined on a per-user basis over the years and do not represent a significant burden for end-users. The existing 9-1-1 tariff rate regime will therefore remain in place until current 9-1-1 networks are decommissioned. The Commission does not intend to re-examine 9-1-1-related costs during the transition period.
75. However, to improve transparency in 9-1-1-related costs, the Commission intends to collect information related to revenue received for providing 9-1-1 and NG9-1-1 networks and services during its annual data collection process, and to publish this information on an aggregated basis in its annual Communications Monitoring Report, beginning in 2018.

Funding of connections to secondary PSAPs

Positions of parties

76. Many parties, including most TSPs, submitted that the interconnection of secondary PSAPs to the primary PSAPs through the NG9-1-1 networks would assist in providing end-to-end NG9-1-1 services to Canadians. Some parties added that these connections should be funded through a Commission-established NG9-1-1 funding regime.
77. SaskTel and Freedom Mobile submitted that it would not be feasible to fund the connection of secondary PSAPs through tariffs, given the large number of secondary PSAPs that require connections. Freedom Mobile submitted that connecting all secondary PSAPs to Emergency Services IP-Enabled Networks (ESInets)²² would be a very large project, especially given how frequently the architecture might change.

Commission's analysis and determinations

78. The Commission agrees, in principle, that the interconnection of secondary PSAPs to primary PSAPs through the NG9-1-1 networks would assist in the end-to-end provision of NG9-1-1 services.

²² ESInets are IP-based networks that connect originating networks with all public safety agencies that may be involved in an emergency.

79. However, as discussed above, the Commission's jurisdiction does not include the establishment, operation, and maintenance of secondary PSAPs; this is the responsibility of the provinces, territories, or municipalities, as the case may be. These entities understand the needs of their communities and determine whether and where it is appropriate to establish a secondary PSAP. Further, they are best positioned to determine what constitutes a secondary PSAP in their circumstances given that, based on the record of this proceeding, the definition of a secondary PSAP varies across the country and the number of secondary PSAPs in the country is likely significant. In the future, new secondary PSAPs may also be established. Therefore, the number of secondary PSAPs that would be interconnected to NG9-1-1 networks in the future is unknown.
80. In the Commission's view, provinces, territories, or municipalities, as the case may be, are also best positioned to determine whether the benefits of establishing a secondary PSAP justify the costs.
81. In light of the above, the costs of NG9-1-1-related connections of secondary PSAPs should be recovered from the relevant provincial, territorial, or municipal government and not through any Commission-approved NG9-1-1 network access tariffs.

Requirement to contribute funding for NG9-1-1 networks

Positions of parties

82. Several parties, including most ILECs and TSPs, indicated that the 9-1-1 networks should be funded by the entities that make use of those networks. They noted that those entities are presently limited to TSPs whose services make use of telephone numbers, and that they expect CISC to make recommendations on how such a funding policy should be applied as NG9-1-1 services are introduced. Freedom Mobile, RCCI, and Shaw argued that over-the-top (OTT) voice service providers should also provide funding for NG9-1-1 networks, but that it would be premature to require ISPs to do so.
83. TCC and Videotron submitted that the Commission should collect funds to support NG9-1-1 not only from wireline service providers and WSPs, but also from ISPs, since Internet services will be used to communicate with PSAPs in the future. These parties submitted that it would be unfair to fund NG9-1-1 solely through fees collected from wireline and wireless service subscribers when Canadians will be able to access new 9-1-1 networks via technologies that do not make use of telephone numbers.

Commission's analysis and determinations

84. A general principle governing the existing 9-1-1 funding mechanism is that the 9-1-1 networks are funded by the entities that make use of those networks. For this reason, the current 9-1-1 networks are funded by the TSPs that provide 9-1-1 services to their subscribers. Other service providers, such as ISPs, that currently do not offer 9-1-1 services to their subscribers do not contribute to the funding of the 9-1-1 networks.

85. In the future, service providers that support telematics access to 9-1-1 services may offer NG9-1-1 services to their subscribers. Since the entities that make use of the NG9-1-1 networks should contribute to their funding, it is appropriate that these service providers contribute to the funding of NG9-1-1 networks.
86. The Commission therefore determines that as a general principle, all service providers that provide an NG9-1-1 service that enables their subscribers to communicate with a PSAP over the NG9-1-1 networks should contribute to the funding of those networks. Specific determinations related to the implementation of this principle will be made as new NG9-1-1 services are introduced.

Network design

Interconnection of NG9-1-1 networks

Background

87. The NENA i3 standard supports the interconnection of NG9-1-1 networks, which will in turn enable the transfer of emergency service requests across NG9-1-1 networks. This would be useful, for example, in situations where one PSAP may need to transfer information to another across provincial, territorial, or municipal borders. The interconnection of NG9-1-1 networks would also enable these networks to back up each other, increasing the reliability and resiliency of the overall Canadian NG9-1-1 system.

Positions of parties

88. Most parties supported the implementation of interconnected regional or provincial/territorial networks for a variety of reasons, including reliability and resiliency and to better support PSAPs' operational requirements.
89. Bell Canada and TCC submitted that the interconnection of NG9-1-1 networks should rely on formal interconnection arrangements so that the reliability and integrity of the overall network is maintained. Bell Canada added that CISC should be tasked with recommending viable technical requirements for the interconnection of NG9-1-1 networks and that the Commission could then set out and oversee the policies that would govern the interconnection arrangements.
90. TCC indicated that at the root of the NENA i3 standard is the concept that ESInets should be interconnected to allow for an end-to-end network of networks, enabling the transfer of information between public safety agencies regardless of geography. TCC submitted that network interconnections should have physical diversity, in terms of both network equipment and cabling. TCC added that 9-1-1 services have always been held to an extremely high standard of reliability and that this standard must be maintained or exceeded during any transition to NG9-1-1.
91. PSAPs agreed that NG9-1-1 networks should be interconnected to minimize the risk of potentially paralyzing system-wide failures. For example, Calgary 9-1-1 added that a stable, high-performing, highly capable, and resilient interconnected network across

the country should be the ultimate goal to provide failover between networks. Le Conseil provincial du secteur municipal du Syndicat canadien de la fonction publique (CPSM) submitted that the deployment of several interconnected NG9-1-1 networks will ensure that the responsibility of maintaining reliable and resilient NG9-1-1 networks will be shared.

Commission's analysis and determinations

92. All parties to this proceeding agreed that NG9-1-1 networks in Canada should be interconnected. The Commission agrees that it would be appropriate to have interconnected NG9-1-1 networks, as envisioned by the NENA i3 standard. This would increase the reliability and resiliency of the overall NG9-1-1 system in Canada, thereby providing PSAPs with the highest level of service available to assist them with their operations.
93. As requested in Telecom Decision 2015-531, and as described by parties to this proceeding, CISC has already begun discussions that are expected to yield a compilation of technical requirements that will form the basis for an NG9-1-1 network-to-network interface technical specification for Canada.²³ In Telecom Regulatory Policy 2012-24, the Commission also tasked CISC with the development of a new IP voice network interconnection architecture for emergency services.²⁴
94. It is important that the Commission receive CISC's recommendations in a timely manner to align with the transition timelines outlined in this decision, since the policies and arrangements governing NG9-1-1 network interconnections may form the basis of a follow-up process that the Commission intends to initiate upon receipt of the CISC reports.
95. In light of the above, the Commission determines that NG9-1-1 networks in Canada must be interconnected to form a national network of networks, and requests that CISC complete all work related to NG9-1-1 network interconnections and submit the associated reports to the Commission by **31 March 2018**.

Entities allowed to interconnect directly with NG9-1-1 networks

Background

96. Under the current regulatory framework, there are entities that the Commission has determined can interconnect directly with 9-1-1 networks, such as mobile wireless carriers, CLECs, and PSAPs. These entities are generally interconnected using dedicated facilities, which ensures that the 9-1-1 networks are accessed securely.

²³ See the ESWG Tasks ESTF0081: Assess the technical and operational aspects of the NENA i3 architecture – Originating network requirements, and ESTF0082: Assess the technical and operational aspects of the NENA i3 architecture – ESInet and core component considerations.

²⁴ See the Network Working Group Task [NTTF030](#).

97. In an NG9-1-1 environment, entities other than mobile wireless carriers and CLECs may seek to interconnect directly with the NG9-1-1 networks to send emergency service requests to PSAPs. Examples include entities that provide services such as telematics and social media text messaging applications.

Positions of parties

98. Generally, parties agreed that there is a need to exercise caution when permitting entities to interconnect directly with NG9-1-1 networks given that they will be IP-based and inherently more vulnerable than the current non-IP 9-1-1 networks. Bell Canada submitted, however, that trusted entities, such as mobile wireless carriers, CLECs, and PSAPs, should be permitted to interconnect directly with NG9-1-1 networks just as they do today.
99. Bell Canada, supported by RCCI, SaskTel, and Videotron, further submitted that new entities should also be permitted to interconnect directly with NG9-1-1 networks, but that CISC must first recommend authentication criteria to assess the reliability and trustworthiness of these entities. Videotron submitted that CISC should address the topic of interconnection of new entities with NG9-1-1 networks only once those networks have been deployed.
100. CNOC submitted that NG9-1-1 network access should be open to non-TSPs to the greatest extent feasible, provided that such entities abide by all related conditions.
101. PSAPs generally indicated that NG9-1-1 networks should be accessible to all types of entities, to the maximum extent possible, provided that they abide by the conditions established to govern access. They submitted that they have other trusted partners today that are not interconnected directly with 9-1-1 networks, such as emergency measures organizations and poison control centres. They added that CISC will need to define clear guidelines for interconnecting with NG9-1-1 networks and that the entities allowed to interconnect should be providing useful and valuable emergency information.

Commission's analysis and determinations

102. Today's 9-1-1 networks are operated by ILECs in accordance with Commission policies and tariffs. Mobile wireless carriers, CLECs, and PSAPs are required to sign agreements with the 9-1-1 network providers that set out numerous conditions of service to ensure that the networks are accessed securely; therefore, they are considered to be trusted entities. As well, as set out in paragraph 72 above, TSPs are required to ensure that NG9-1-1 traffic is routed to PSAPs over ILEC NG9-1-1 networks.
103. The Commission determines that mobile wireless carriers, CLECs, and PSAPs should continue to interconnect directly with the NG9-1-1 networks, since adequate safeguards are in place to ensure the reliability, resiliency, and security of their network connections. The Commission **directs** the NG9-1-1 network providers to ensure that their relevant tariffs and agreements reflect this determination.

104. TSPs that are not mobile wireless carriers or CLECs currently access 9-1-1 networks by routing their subscribers' 9-1-1 calls through trusted entities, that is ILECs, CLECs, or mobile wireless carriers. As such, the same safeguards described above are in place for these providers. Accordingly, the Commission determines that it remains appropriate for entities that currently access 9-1-1 networks indirectly via these trusted entities – for example, local VoIP service providers and resellers – to continue to do so once NG9-1-1 networks are deployed.
105. Since NG9-1-1 services are expected to be provided by various entities in the future, the Commission may need to initiate a future review to determine which entities other than CLECs, mobile wireless carriers, and PSAPs should be permitted to interconnect directly with the NG9-1-1 networks. The Commission may establish authentication criteria at that time.

Reliability, resiliency, and security of the NG9-1-1 networks

Background

106. In Telecom Regulatory Policy 2016-165, the Commission reviewed the reliability and resiliency of the 9-1-1 networks in Canada and found it appropriate to establish an obligation, pursuant to section 24 of the Act, that the 9-1-1 network providers must take all reasonable measures to ensure that their 9-1-1 networks are reliable and resilient to the maximum extent feasible.
107. To assist parties in interpreting what measures would be reasonable with respect to their individual networks, the Commission indicated that the 9-1-1 network providers should use an adequate combination of reliability and resiliency industry best practices, including a number of identified matters relating to 9-1-1 network design principles, operation, and maintenance practices, as well as 9-1-1 network monitoring and service restoration practices.²⁵ The Commission also required all 9-1-1 network providers to file with it, by 30 March of each year, an annual report on 9-1-1 network outages that cause 9-1-1 service outages.
108. To date, the Commission has not established any general policy with respect to 9-1-1 network security, given that current 9-1-1 networks in Canada are largely based on closed or dedicated networks and standards that make their overall architecture secure.

Positions of parties

109. Bell Canada and MTS submitted that reliability, resiliency, and security considerations should be addressed by CISC, since it is best positioned to assess related issues. TCC proposed that wherever applicable, ratified policies and guidelines from organizations such as NENA pertaining to reliability, resiliency, and security should be incorporated into the Canadian NG9-1-1 network design.

²⁵ See paragraph 31 of Telecom Regulatory Policy 2016-165.

110. Most parties indicated that NG9-1-1 services must maintain the same level of reliability and resiliency that Canadians currently rely on. The AEMA, la Coalition pour le service 9-1-1 au Québec (la Coalition), the CW, the OPP, PIAC et al., and the TPS submitted that the Commission should establish national NG9-1-1 reliability and resiliency standards. MTS, RCCI, and Shaw submitted that the reliability and resiliency obligations that the Commission has established for current 9-1-1 networks should be extended to NG9-1-1 networks. Bell Canada, the CPSM, MTS, PIAC et al., RCCI, SaskTel, TCC, and Videotron generally submitted that the current 9-1-1 outage reporting requirements should also apply to NG9-1-1 networks.
111. PSAPs generally submitted that the Commission should require the establishment of service level agreements (SLAs)²⁶ between NG9-1-1 network providers and PSAPs to clarify the obligations of NG9-1-1 network providers, ensure that service standards are being met, and ensure that NG9-1-1 network providers are held accountable. However, Bell Canada submitted that service level objectives (SLOs),²⁷ not SLAs, are typically established between 9-1-1 network providers and provincial/territorial and municipal governments. Bell Canada added that operations reference manuals are more effective to clarify 9-1-1 roles and procedures and should be put in place for NG9-1-1.
112. TCC submitted that it would be helpful if the PSAPs provided details on the misdirected calls they receive annually to assist CISC and the NG9-1-1 network providers in better understanding network gaps or flaws and ensuring that calls are delivered to the appropriate PSAP on the first attempt.
113. Parties generally submitted that network security and protection of the confidentiality of information would be more challenging in an IP environment, since the NG9-1-1 networks would be subject to the same sorts of attacks that occur in other parts of the Internet. Bell Canada and la Coalition submitted that the overall security of an NG9-1-1 network is only equal to the weakest link in the chain of stakeholders, and that all involved parties must play a part in protecting and securing their respective portion of the NG9-1-1 infrastructure and the information it carries.
114. Calgary 9-1-1 and E-Comm submitted that security measures will be required to protect the NG9-1-1 network infrastructure and to ensure the authenticity of the person requesting emergency services in an IP-based environment. RCCI submitted that security best practices should be regularly reviewed and updated to address new threats.

²⁶ An SLA is a binding contractual arrangement between a service provider and a customer that defines, among other things, the obligations and responsibilities of each party, as well as the level(s) of service being sold by the service provider to the customer. For example, an SLA could include time frames to respond to a trouble report and to restore service, as well as target service levels (e.g. time frames to be met 90% of the time).

²⁷ The difference between SLOs and SLAs is that SLAs are binding contractual arrangements that often include monetary penalties that can be imposed when service objectives are not met. On the other hand, SLOs typically refer to specific measurable indicators that may be used to measure the performance of the service provider.

115. La Coalition and the CPSM submitted that all NG9-1-1 systems and network components should remain on Canadian soil for privacy and security purposes. Individual interveners submitted that all NG9-1-1 traffic should remain in Canada.

Commission's analysis and determinations

116. The reliability, resiliency, and security of NG9-1-1 networks are paramount in ensuring that Canadians can continue to rely on and trust 9-1-1 services. It is critical that NG9-1-1 networks be designed and built in a way that mitigates potential risks of service failures and protects the confidentiality of the information carried over these networks to the greatest extent feasible.
117. To ensure national consistency in the level of reliability, resiliency, and security of the NG9-1-1 networks, to minimize the possibility of emergency service requests not being delivered to PSAPs, and to ensure the adequate protection of the NG9-1-1 networks, it is appropriate to establish reliability, resiliency, and security regulatory measures. These are further discussed below.

Reliability, resiliency, and security obligations

118. Various groups, such as CISC and NENA, are currently examining industry best practices and standards for reliability, resiliency, and security. Therefore, it is premature for the Commission to establish a definitive set of specific reliability, resiliency, and security industry best practices and standards at this time.
119. Nonetheless, general guidance would be timely and prudent while NG9-1-1 networks are being designed. Accordingly, the Commission requires, pursuant to section 24 of the Act, that as a condition of offering and providing telecommunications services, NG9-1-1 network providers take all reasonable measures to ensure that their NG9-1-1 networks are reliable and resilient to the maximum extent feasible. This includes adopting the applicable reliability and resiliency principles and practices highlighted in Telecom Regulatory Policy 2016-165.²⁸
120. All parties that interconnect with NG9-1-1 networks, that transmit communications to NG9-1-1 networks, or that are responsible for portions of the NG9-1-1 networks have a role to play in ensuring the overall security of these networks and the protection of the information to be carried over them. As such, the Commission requires, pursuant to sections 24 (regarding carriers) and 24.1 (regarding non-carriers) of the Act, that as a condition of offering and providing telecommunications services,
- a. NG9-1-1 network providers (i) take all reasonable measures to ensure that their NG9-1-1 networks are secure, and (ii) protect the confidentiality of the information carried over these networks to the maximum extent feasible;

²⁸ For example, these include network design principles (e.g. critical component backups configured in a geo-redundant fashion, diverse interconnection points, transport network diversity, and backup power provisioning), operation and maintenance practices such as route diversity auditing, contingency plans for disaster or outage recovery, and 24/7 network monitoring.

- b. NG9-1-1 network providers, CLECs, and mobile wireless carriers that connect to any NG9-1-1 network (i) take all reasonable measures to ensure that their interconnection with NG9-1-1 networks and the communications to be transmitted over such networks are secure, and (ii) protect the confidentiality of the information carried over these networks to the maximum extent feasible;
 - c. non-carrier TSPs that transmit traffic to NG9-1-1 networks (i) take all reasonable measures to ensure that their communications to be transmitted over such networks are secure, and (ii) protect the confidentiality of the information carried over these networks to the maximum extent feasible; and
 - d. all TSPs must include in service contracts, any NG9-1-1-related tariffs, or other agreements with third parties involved in the provision of NG9-1-1 services, and/or with PSAPs (primary and secondary), a requirement that this party take all reasonable measures to (i) ensure that the communications destined for carriage over NG9-1-1 networks will be secure, and (ii) protect the confidentiality of the information carried over these networks to the maximum extent feasible.
121. For the purpose of these obligations, the boundaries of the NG9-1-1 network are defined as beginning at and including the points of interconnection between the originating networks and the NG9-1-1 networks, and ending at the demarcation points between the NG9-1-1 networks and the primary PSAPs.

Reliability, resiliency, and security best practices and standards

122. CISC is best positioned to develop recommendations and guidelines for the implementation of specific industry best practices and standards, including performance standards and service levels, regarding the reliability, resiliency, and security of the NG9-1-1 networks, given that it is currently monitoring related NENA standards development and lessons learned in other jurisdictions that are implementing NG9-1-1.
123. Accordingly, the Commission requests that CISC identify and recommend NG9-1-1 industry best practices and standards related to the reliability, resiliency, and security of the NG9-1-1 networks in Canada, including performance standards and service levels applicable to NG9-1-1 network providers and TSPs, in a report to be submitted by **31 December 2017**. The Commission also requests that CISC continue to identify and recommend to the Commission such best practices and standards as this information becomes available.

Location of NG9-1-1 network components and traffic

124. To ensure the safety of NG9-1-1 networks and the information transmitted over such networks, it is appropriate that the NG9-1-1 networks and all the information carried over these networks remain under Canadian jurisdiction to the greatest extent feasible.
125. Accordingly, the Commission imposes an obligation, as a condition of offering and providing telecommunications services pursuant to section 24 of the Act, that NG9-1-1 network providers take all reasonable measures to ensure that all NG9-1-1 network components reside in Canada, and that all traffic transiting their NG9-1-1 networks and destined for a PSAP located in Canada remain in Canada. Should NG9-1-1 network providers wish to make use of components outside Canada, they are to notify the Commission, supported by full justification as to why it is not reasonable to locate the components in Canada, within six months prior to the proposed use of such components.

Reporting on NG9-1-1 network outages

126. It would be appropriate for the Commission to monitor whether the NG9-1-1 network reliability, resiliency, and security practices of each NG9-1-1 network provider ensure that emergency service requests are delivered to PSAPs in a timely and secure manner. This would enable the Commission to address any concerns, as required.
127. As such, the Commission requires each NG9-1-1 network provider to file the following:
- a. annual reports on NG9-1-1 network outages that cause NG9-1-1 service outages (i.e. NG9-1-1 network outages during which any number of NG9-1-1 Voice²⁹ calls are not delivered to the primary PSAP's demarcation point).
 - The reports shall detail, for each outage, the date, duration, and cause of the outage; the affected geographical area; the remedial action taken to address the outage; and the number of affected NG9-1-1 Voice calls, if this information is available.
 - The reports shall also provide the total number of NG9-1-1 Voice calls made over the NG9-1-1 networks during the reporting period, broken down by province/territory.
 - The first report shall cover the NG9-1-1 network outages logged from the launch date of the NG9-1-1 networks until December of that calendar year. This report is to be filed with the Commission by **30 March** of the following calendar year.

²⁹ NG9-1-1 Voice is a service that enables the end-to-end provision of an IP-based 9-1-1 voice call, as defined under the NENA i3 standard. This service is expected, at a minimum, to provide the capabilities and functions of the 9-1-1 services in place today, including functions such as conference calling and calling back the person requesting emergency services following a disconnection.

- Each subsequent report is to cover the period of 1 January to 31 December and is to be filed with the Commission by **30 March** of the following calendar year.

- b. an abridged version of these reports, including aggregated information regarding NG9-1-1 network outages, for the public record.

128. As new methods of communication such as NG9-1-1 Text Messaging are rolled out, related reporting requirements may be defined at that time.

SLOs

129. Since provincial, territorial, and municipal governments may have different requirements regarding what to include in NG9-1-1-related SLOs, it would be challenging for the Commission to create national or provincial/territorial SLOs that would address all PSAPs' specific circumstances. It is therefore not appropriate for the Commission to develop a template SLO or to mandate SLOs for the provision of NG9-1-1 networks. However, since some parties may consider it appropriate to negotiate such objectives, the Commission encourages NG9-1-1 network providers to enter into discussions with PSAPs regarding SLOs, as appropriate.

Operations reference manuals

130. To clarify stakeholders' roles and responsibilities in an NG9-1-1 environment, the 9-1-1 Interconnection Guidelines document that is maintained by CISC, as well as the Terminal to Network Interface documents and operations reference manuals of the individual 9-1-1 network providers, should be updated to reflect NG9-1-1 interconnection requirements and procedures. The Commission therefore requests that CISC update the 9-1-1 Interconnection Guidelines document to incorporate NG9-1-1 services. The Commission **directs** NG9-1-1 network providers to update their respective Terminal to Network Interface documents and operations reference manuals, and to provide them to other 9-1-1 stakeholders in a timely manner.

Operational information

131. PSAPs currently have access to information regarding their call statistics from 9-1-1 network providers that helps them monitor trends and manage their training and staffing demands. It would be appropriate for PSAPs to continue to have access to this information during the transition to NG9-1-1 and afterwards. The Commission therefore **directs** NG9-1-1 network providers to provide primary PSAPs with the call-related information they require to manage their operations, such as call volumes and the number of calls not answered. Similarly, the Commission encourages PSAPs to continue to collaborate and share information, such as misdirected call information or missing or inaccurate location information, with NG9-1-1 network providers to ensure efficient network management and the quality of 9-1-1 services delivered to Canadians.

NG9-1-1 network design efficiencies

Positions of parties

132. RCCI and Videotron submitted that the implementation of NG9-1-1 provides an opportunity to create network efficiencies, such as the sharing of NG9-1-1 network components and more efficient TSP interconnections.
133. Bell Canada submitted that the grouping of certain network elements to reduce costs in an NG9-1-1 network design is possible as long as the design gives careful consideration to the level of redundancy and reliability required for NG9-1-1 services. Bell Canada noted that CISC has already initiated network design discussions and that the Commission will rule on the resulting recommendations. These recommendations are expected to address issues such as whether individual TSPs should maintain their own customer information databases or create one national database.
134. SaskTel submitted that it currently uses Bell Canada's 9-1-1 customer information database, since this approach was more feasible for SaskTel than any other. SaskTel added that going forward, there may similarly be certain portions of the NG9-1-1 network that could be shared with other NG9-1-1 network providers, given the potential size and scope of the transition to NG9-1-1.
135. Bell Canada submitted that a reduction in the number of points of interconnection between NG9-1-1 network providers and TSPs is a natural benefit of the transition to NG9-1-1. Bell Canada also submitted that the NENA i3 standard will streamline TSPs' interconnections with the NG9-1-1 ESInets and that CISC has yet to finalize details on the appropriate number of points of interconnection. Bell Canada indicated that it is reasonable to envision that TSPs would need to interconnect with NG9-1-1 network providers at only a few locations within the provider's operating territory.

Commission's analysis and determinations

136. To introduce an NG9-1-1 system in Canada that is as reliable, resilient, secure, and cost-efficient as possible, the stakeholders involved in the design of the NG9-1-1 networks should take into account efficiencies that will be gained from taking advantage of economies of scale, using existing network components as appropriate, and routing traffic as efficiently as possible.
137. As such, the Commission **directs** NG9-1-1 network providers to collaborate and to provide the Commission with a single report, no later than **31 December 2017**, detailing recommendations on the following:
- the roles and responsibilities of the NG9-1-1 network providers and TSPs related to the provision of NG9-1-1 location information servers and customer information databases;
 - specific NG9-1-1 network components that could be shared to take advantage of economies of scale; and

- efficient interconnection arrangements applicable to NG9-1-1 networks, especially for TSPs.

138. Following receipt of the above-mentioned report, the Commission intends to seek input from NG9-1-1 stakeholders on the recommendations made by the NG9-1-1 network providers, as appropriate.

NG9-1-1 services

Principles governing the introduction of NG9-1-1 services

Positions of parties

139. Parties generally supported the introduction of NG9-1-1 services that will enable Canadians to directly interact with PSAPs and emergency responders through methods of communication such as voice, text messaging, and telematics. They also supported the transmission of additional forms of data, such as pictures, video clips, user-provided personal information, building schematics, and medical records.
140. The CWTA submitted that NG9-1-1 services must be exhaustively tested, with a particular focus on usability testing. While new 9-1-1 services are always tested extensively in terms of functionality, the CWTA expressed the view that additional user interface testing and fine-tuning are just as important, since it is difficult to alter an industry-wide service once it has been launched, and a service with poor usability would likely be underused.
141. ILECs generally submitted that NG9-1-1 services should be (i) based on standards, including the NENA i3 standard, (ii) driven by PSAPs' needs, and (iii) helpful in providing assistance during an emergency. PIAC et al. submitted that new methods of communication with PSAPs and emergency responders should (i) include those that consumers regularly use and generally expect to be available, (ii) be inclusive and innovative, and (iii) take into account the differing preferences of consumers.
142. La Coalition submitted that principles should be established to govern the introduction of NG9-1-1 services. For example, the new services should not increase processing and response times for the PSAPs nor limit their ability to provide appropriate routing and location information. The CW, supported by CITIG, added that current levels of service and information that enable the provision of a fast and accurate response must be, at a minimum, maintained or improved, taking into account impacts on downstream agencies such as secondary PSAPs and emergency responders.
143. The CW added that NG9-1-1 services must satisfy the following requirements:
- (i) directly route emergency service requests to the appropriate PSAP;
 - (ii) automatically provide accurate location information, subscriber information, the type of device used, and the identity of the originating network provider;
 - (iii) enable communications and data to be transferable to downstream agencies; and
 - (iv) enable PSAPs to re-establish contact with persons requesting emergency services when communications are interrupted.

Commission's analysis and determinations

144. The introduction of NG9-1-1 services will increase the safety of Canadians by giving them access to emergency assistance through world-class telecommunications networks. However, certain factors should be taken into account, including the benefits of the service to Canadians and the appropriateness of the service based on communications habits. Further, the service should leverage the 9-1-1 brand as appropriate and be based on national standards, including the NENA i3 standard, for national consistency. Finally, the functionality, information, and level of service provided by current 9-1-1 voice calls should be maintained and improved upon, and the service should be extensively tested prior to launch.
145. NG9-1-1 services should also meet the strategic objective of providing high-quality information, services, and support to PSAPs, which ultimately enables emergency responders to effectively assist Canadians. Therefore, each NG9-1-1 service to be introduced should provide the following capabilities, to the extent that they are technically feasible:
- direct routing of emergency service requests to the appropriate primary PSAP;
 - automatic provision of accurate location information to PSAPs;
 - traceability;³⁰
 - automatic provision of information such as the name, address, and telephone number of the person requesting emergency services to PSAPs;
 - provision of the identity of the originating network provider to PSAPs;
 - transferability of communications and data from primary PSAPs to downstream agencies; and
 - the ability for PSAPs to re-establish contact with the person requesting emergency services when communications are interrupted.

NG9-1-1 Voice

Positions of parties

146. Parties submitted that NG9-1-1 Voice should be the first NG9-1-1 service to be introduced and that current 9-1-1 voice services should be seamlessly transitioned to NG9-1-1 Voice as soon as possible. PSAPs expressed the view that voice communications continue to be the most effective way to respond to emergency requests for the foreseeable future, since they provide two-way live communications,

³⁰ Traceability refers to identifying both the person requesting emergency services and the means for the PSAP to contact that person (i.e. for telephone calls, this refers to the name of the caller and their callback number).

enabling a quick determination of the nature of the emergency and an efficient exchange of information.

147. Bell Canada and TCC estimated that they could complete deployment of NG9-1-1 networks in their operating territories by the end of 2020, and SaskTel estimated three to five years from the date of a Commission decision. MTS indicated that it has proactively purchased a new converged IP network platform that will support NG9-1-1, but it did not provide an estimated completion date for NG9-1-1 deployment.
148. TSPs stated that they would need to make changes in their originating networks to support NG9-1-1 services and generally provided an estimate of between 0.5 to 3 years to be ready to deploy NG9-1-1 Voice in all or part of their operating territories. TSPs submitted that the Commission should not mandate the implementation of NG9-1-1 services until a substantial number of PSAPs are ready to accept the associated types of emergency service requests.
149. TSPs indicated that some originating networks that are not IP-based will never be able to support NG9-1-1. For instance, Freedom Mobile submitted that legacy wireless networks will not have the IP multimedia capability to support NG9-1-1 services but that this could be mitigated by decommissioning those non-IP networks.
150. PSAPs submitted that their implementation timelines and challenges must be taken into account to ensure an effective rollout. Many PSAPs indicated that they will upgrade their 9-1-1 systems and equipment within the next five years as part of the natural product life cycle. The CW submitted that its Vision 2020 strategy³¹ indicates that NG9-1-1 services in Canada should be implemented by 2020, preceded by an NG9-1-1 trial in 2018. A number of PSAPs and provincial government agencies agreed that these objectives are aggressive but achievable.

Commission's analysis and determinations

151. The transition of existing 9-1-1 voice services to NG9-1-1 Voice is a logical first step that will provide increased features and the capability to transfer requests for emergency assistance between parties connected to the NG9-1-1 networks. This transition should take place in an efficient and timely manner that minimizes costs to Canadians and takes into account the needs of PSAPs and the general public.
152. Based on the timelines provided by Bell Canada, SaskTel, and TCC, it should be possible for these companies' NG9-1-1 networks to be complete and for them to begin providing NG9-1-1 Voice in 2020. Given that ILECs can choose to outsource most of their 9-1-1 network functionality to other ILECs today, and that they may continue to do so for NG9-1-1, their transition to NG9-1-1 may occur as soon as the ILEC to which they outsource is ready.

³¹ As described by the CW, this document provides a future-state strategy for NG9-1-1 in Canada, including recommendations related to stakeholder engagement, governance, and funding.

153. TSPs indicated that in general, it should be possible to make the required changes to their originating networks to support NG9-1-1 Voice within three years. However, some originating networks, such as code division multiple access (CDMA) and time division multiplexing (TDM) networks, are based on circuit-switched technology and will never be capable of supporting NG9-1-1 services. It is expected that these networks will be decommissioned in the near future as TSPs evolve their networks to IP-based networks. Therefore, TSPs are not mandated to provide NG9-1-1 Voice for telephone services provided over these non-IP-based networks.
154. The CW's Vision 2020 strategy, which is supported by many PSAPs; many provincial, territorial, and municipal governments; and police, fire, and paramedic chiefs across Canada, sets a 2020 target for the transition of PSAPs to NG9-1-1. Parties such as the AEMA, Bell Canada, Calgary 9-1-1, and the CW indicated that this is an aggressive but achievable goal for many PSAPs. This timeline also demonstrates the willingness of PSAPs and governments to commit to implementing NG9-1-1 in the near future. As well, a 2020 target date will likely spur leaders at the federal, regional, provincial/territorial, and municipal levels to prioritize NG9-1-1 deployment and related funding.
155. In light of the above, the Commission determines that NG9-1-1 Voice should be the first NG9-1-1 service to be supported on the NG9-1-1 networks, and that 30 June 2020 is an appropriate date to expect NG9-1-1 network providers, TSPs, and PSAPs to be ready to launch NG9-1-1 Voice, as set out in the following directions.
156. The transition to NG9-1-1 Voice must occur in a smooth and orderly manner, such that it is transparent to Canadians who have come to rely on uninterrupted, high-quality access to 9-1-1 services. Laboratory trials conducted in a controlled environment, followed by end-to-end implementation trials, would enable NG9-1-1 network providers and other stakeholders to test network components and functionalities to identify potential implementation issues and solutions.
157. Since Bell Canada and TCC will be the NG9-1-1 network providers supporting the majority of the Canadian population, they should complete such trials in their operating territories and share their findings with other stakeholders as appropriate, including via CISC. However, other NG9-1-1 network providers may also choose to conduct laboratory and implementation trials, and recover the associated costs, if it would assist them in their NG9-1-1 network implementation.
158. The Commission therefore **directs** Bell Canada and TCC to (i) undertake NG9-1-1 laboratory trials in 2017, and (ii) start NG9-1-1 Voice implementation trials with certain PSAPs and TSPs in their respective operating territories in 2018 and at the latest by the end of February 2019. The Commission also requests that CISC make recommendations on the technical details associated with these NG9-1-1 Voice implementation trials and submit a related report to the Commission no later than **31 December 2017**. These recommendations should include which PSAPs and TSPs will participate in the trials, which geographical areas will be covered, and recommended time frames.

159. The current 9-1-1 voice services provided by TSPs will be transitioned to NG9-1-1 Voice as the required changes are made to the TSPs' networks. The Commission therefore **directs** the NG9-1-1 network providers to continue to support current 9-1-1 voice services over the existing 9-1-1 networks in parallel with the new NG9-1-1 networks during the transition period. This will enable TSPs and PSAPs that are not yet ready to support NG9-1-1 services to continue their operations during the transition.
160. The Commission **directs** all ILECs to establish their NG9-1-1 networks and to be ready to provide NG9-1-1 Voice by **30 June 2020** wherever PSAPs have been established in a particular region.
161. The Commission **directs** all ILECs to file proposed NG9-1-1 wholesale and retail tariffs no later than **1 June 2020**. These tariffs are to include proposed rates supported by cost studies that reflect the incremental costs of adding new NG9-1-1 networks, services, or functionalities.
162. The Commission **directs** TSPs, throughout their operating territories, to (i) make the necessary changes to support NG9-1-1 Voice in their originating networks that are technically capable of supporting NG9-1-1 Voice by **30 June 2020**, and (ii) provide NG9-1-1 Voice to their customers served by networks that are technically capable of supporting NG9-1-1 Voice wherever PSAPs have launched NG9-1-1 Voice on or after 30 June 2020 by routing 9-1-1 calls over NG9-1-1 networks. However, these obligations are subject to the following exception: if a TSP provides voice services over an originating network that is technically not capable of supporting NG9-1-1 Voice, that provider is required to continue to support the existing 9-1-1 voice service for the remaining life of the network.
163. The Commission also recommends that primary and secondary PSAPs make the necessary changes within their organizations to implement NG9-1-1 Voice, and that provincial/territorial and municipal governments take measures to ensure that their PSAPs provide NG9-1-1 Voice by the end of 2020.

NG9-1-1 Text Messaging

Positions of parties

164. Many parties submitted that NG9-1-1 Text Messaging should be introduced following NG9-1-1 Voice. RCCI submitted that Canadians are already used to sending text messages daily, making this the next logical NG9-1-1 service to be launched. CITIG and PSAPs agreed, submitting that NG9-1-1 Text Messaging provides an alternative method of requesting emergency help when a voice-based request for assistance is not possible and without raising an audible alarm.

165. Most parties also agreed that real-time text (RTT)³² over wireless IP-enabled networks should be adopted to support NG9-1-1 Text Messaging in Canada, since it is IP-based, is included in the NENA i3 standard, can be directly routed to the appropriate PSAP with location information, and is being adopted by WSPs worldwide. RTT will therefore become standard on most wireless devices in the near future, enabling subscribers to (i) communicate with a PSAP in real time using text messaging; and (ii) transmit multimedia information, such as images, to PSAP operators.
166. Accessibility groups submitted that alternate means of communication with PSAPs will need to be determined should the Commission decide to phase out teletypewriter (TTY) services. The Canadian Hearing Society (CHS) argued that NG9-1-1 should support TTY, while Bell Canada and Freedom Mobile submitted that RTT should replace TTY, since TTY has technological limitations in an IP-based network, which can impede the delivery of TTY messages.
167. Accessibility groups generally submitted that NG9-1-1 should support direct RTT-based texting to PSAPs. The CHS cited the United States Federal Communications Commission's (FCC) Notice of Proposed Rulemaking (FCC 16-53) concerning the transition from TTY to RTT. The CHS stated that the notice proposed that systems that use RTT (i.e. wireless networks and devices) support full 9-1-1 emergency communications, function consistently with low error rates, are compatible with technologies such as screen readers, and are generally compatible with features that voice service users expect, such as voice mail and conference calling.
168. Parties also agreed that while Canadians use SMS-based and OTT-based³³ text messaging services frequently, these solutions do not support routing to the appropriate PSAP and do not provide PSAPs with location information, which the PSAPs consider to be critical information that should automatically be provided with each emergency assistance request. The CW submitted that there is a risk of consumer confusion if only certain types of text messaging solutions are supported and that public education will be key to mitigating this risk.
169. Bell Canada submitted that devices with integrated RTT are expected to be available on the market beginning in 2018. The company estimated that 50% of Bell Mobility Inc.'s postpaid subscribers would have a device enabled with RTT by 2020. TCC submitted that RTT will be available in the next generation of handsets and noted that adoption is faster in wireless technologies than in wireline technologies. TCC added that WSPs should not be required to provide NG9-1-1 Text Messaging until the industry has adopted RTT as the standard default device messaging application.

³² RTT is a text message that is transmitted instantly as it is being typed. RTT is used for conversational text.

³³ In this context, OTT-based services refer to services provided by third-party providers other than the current TSPs, through applications that enable the provision of text messaging and the transmission of other media, such as pictures and video clips, via the Internet. Only the third-party provider has the ability to control the functionality of the service or the content. Examples of OTT messaging include Facebook Messenger and WhatsApp Messenger.

170. Freedom Mobile submitted that it would be able to support RTT when NG9-1-1 networks are implemented in two to three years. Freedom Mobile stated that it expects an integrated RTT application on devices to become available in 2017 and that it could start RTT service testing in 2018.
171. PSAPs noted that Canadians are already prepared to use text messaging to communicate with them. The CW submitted that it will not be difficult for PSAPs to support RTT once it becomes available from WSPs and once the appropriate trials have been conducted. The CPSM, the CW, and some PSAPs submitted that NG9-1-1 Text Messaging could be implemented across Canada in three to five years.
172. Accessibility groups also noted some confusion and misconceptions regarding how the current Text with 9-1-1 service functions, in particular with respect to wireless service plans.

Commission's analysis and determinations

173. The introduction of NG9-1-1 Text Messaging is a logical next step following NG9-1-1 Voice that mirrors the evolving communications methods of Canadians and will allow for communications in situations where, for example, making a voice call is not possible or is dangerous.
174. While SMS-based text messaging is widely used, and its use with 9-1-1 was introduced as an interim solution for Canadians who are Deaf, hard of hearing, or speech impaired, it has limitations that make it unsuitable as an NG9-1-1 Text Messaging solution for all Canadians. For example, it (i) is not a stand-alone service in that it cannot be used without first placing a voice call, (ii) is not IP-based, (iii) is not supported as an NG9-1-1 technology under the NENA i3 standard, (iv) cannot be directly routed to the appropriate PSAP, (v) does not provide location information, and (vi) is not reliable as a long-term solution since text messages are delivered on a best-effort basis. SMS is therefore not an appropriate solution for the provision of NG9-1-1 Text Messaging in Canada.
175. Given that Canadians frequently use OTT-based text messaging services and social media, they may expect to be able to request emergency assistance using those types of services. It is unclear how OTT-based text or social media messages would be routed to the appropriate PSAP or how those services would automatically provide PSAPs with the 9-1-1 caller's information or location. Furthermore, providers of OTT-based text messaging or social media services have not indicated any desire to provide NG9-1-1 services to their subscribers.
176. Given the above, and the risk that the use of multiple text messaging services may lead to consumer confusion and PSAP operational issues, OTT-based text messaging and social media services are not a priority for the Commission in establishing an NG9-1-1 Text Messaging solution at this time.

177. On the other hand, RTT (i) is an IP-based solution, (ii) is supported under the NENA i3 standard and is standards-based for originating networks and devices, (iii) can be routed to the appropriate PSAP, (iv) can provide location information, (v) is delivered in real time, and (vi) supports the transmission of multimedia information. Further, accessibility groups support the use of RTT and the FCC has mandated its use to replace TTY in wireless IP networks.³⁴ RTT-capable devices are expected to become available in the Canadian marketplace in 2017, and Canadians' use of these devices is expected to be prevalent by 2020, given the average two-year life cycle of mobile devices. The Commission therefore determines that RTT is an appropriate solution for NG9-1-1 Text Messaging.
178. With respect to the timing of the introduction of NG9-1-1 Text Messaging, allowing some time after the launch of NG9-1-1 Voice would (i) give PSAPs time to address any operational and technical challenges, (ii) mitigate the risk of service disruption, and (iii) allow for coordination between 9-1-1 stakeholders. Therefore, it is appropriate to introduce NG9-1-1 Text Messaging six months after the launch of NG9-1-1 Voice.
179. Testing of NG9-1-1 Text Messaging will need to be conducted in certain parts of Canada where all key NG9-1-1 stakeholders are ready and willing to do so. This testing should be conducted with PSAPs in both official languages.
180. In light of the above, the Commission determines that RTT-based NG9-1-1 Text Messaging will be the second method of communication to be supported on the NG9-1-1 networks.
181. The Commission requests that CISC develop the technical specifications for the implementation of RTT-based NG9-1-1 Text Messaging and submit a report to the Commission with its recommendations no later than **31 December 2017**. The Commission also requests that CISC develop and recommend a plan for users of the existing Text with 9-1-1 service to transition to NG9-1-1 Text Messaging and submit it to the Commission by **30 June 2020**.
182. The Commission **directs** (i) mobile wireless carriers to make the necessary changes to support RTT-based NG9-1-1 Text Messaging in their originating networks, provided that these networks are technically capable of supporting NG9-1-1 Text Messaging, throughout their operating territories by **31 December 2020**; and (ii) WSPs to provide NG9-1-1 Text Messaging to their customers served by networks that are technically capable of supporting NG9-1-1 Text Messaging, wherever PSAPs have launched NG9-1-1 Text Messaging, as of **31 December 2020**. The Commission also **directs** NG9-1-1 network providers to make changes to their networks to support the implementation of NG9-1-1 Text Messaging by **31 December 2020**.

³⁴ Refer to FCC 16-169, in which the FCC (i) amended its rules (imposed in FCC 16-53) to facilitate a transition from TTY technology to RTT as a reliable and interoperable universal text solution over wireless IP-enabled networks for persons who are Deaf, hard of hearing, deaf-blind, or have a speech disability; and (ii) sought comments on the application of RTT to telecommunications relay services and on a sunset date for TTY support, as well as other matters.

183. The Commission recommends that primary and secondary PSAPs make the necessary changes to implement RTT-based NG9-1-1 Text Messaging, and that provincial, territorial, and municipal governments take measures to ensure that their PSAPs are capable of providing RTT-based NG9-1-1 Text Messaging to Canadians on 31 December 2020 or soon thereafter.
184. The Commission expects that persons with disabilities will be consulted during the development of NG9-1-1 Text Messaging to ensure that their needs are considered in the design of the service, including during usability testing. The Commission also encourages accessibility groups and individuals interested in the implementation of NG9-1-1 services to participate in CISC. Given that current users of the SMS-based Text with 9-1-1 service will be transitioned to NG9-1-1 Text Messaging using RTT, the Commission requests that 9-1-1 stakeholders, through CISC, develop a transition plan to set out the details of how this will be accomplished.
185. The technical issues raised by parties related to TTY in IP-based networks are broader than the scope of this proceeding and are being considered by the Commission as part of the Telecom Notice of Consultation 2017-33 proceeding (review of the regulatory framework for text-based message relay services, which includes TTY relay services). However, users of message relay services and video relay service will be able to continue to access 9-1-1 services in an NG9-1-1 environment through relay operators, in line with existing obligations.
186. With respect to concerns raised by parties regarding wireless service plans, in Telecom Regulatory Policy 2016-496, the Commission directed all WSPs to offer mobile wireless service packages that meet the needs of Canadians with disabilities no later than 21 June 2017. The Commission stated that these packages must include access to 9-1-1 service and be based on consultations with Canadians with disabilities.

Other methods of communication and the provision of additional data

Positions of parties

187. Parties generally supported the introduction of other methods of communication, such as telematics and video calling, as long as they meet certain general principles and provide the capabilities set out in paragraphs 144 and 145 above, and that the numerous associated implementation and operational challenges are addressed.
188. RCCI submitted that in the future, machine-to-machine requests for emergency assistance could be made from car sensors and alarm monitoring systems, but an evaluation will need to be conducted to understand how these requests could interact with the NG9-1-1 system. Calgary 9-1-1 and the CW submitted that they support receiving data directly from telematics and alarm companies, but cautioned that initial triage would be necessary since only a small percentage of these requests relate to actual emergencies.

189. PIAC et al. and accessibility groups supported the implementation of video calling, especially for persons with disabilities who could use sign language to communicate with 9-1-1 operators.
190. All parties generally supported the concept of enabling additional forms of data, such as pictures, videos, and medical records, to be provided over the NG9-1-1 networks and submitted that different types of data could benefit different stakeholders. TSPs submitted that the choice of which data types to support should be driven by PSAPs and emergency responders.
191. Parties, including the CW and the OPP, raised numerous implementation issues, such as who should be responsible for data management given the vast quantities of data that will be available in an NG9-1-1 environment. CITIG submitted that the two biggest challenges in terms of additional data are the required evolution of the 9-1-1 call taker's role, and how to triage and manage the data.
192. Emergency responders submitted that they wish to receive only relevant and validated data but that they do not currently have the technical means to readily access it.
193. Generally, parties submitted that the idea of a national mobile NG9-1-1 application had potential but that it requires further investigation and careful consideration. Calgary 9-1-1 and E-Comm submitted, however, that an NG9-1-1 application could be used as a means to collect and provide additional information to PSAPs and emergency responders about the person requesting assistance. PIAC et al. and RCCI expressed a similar view, submitting that an NG9-1-1 application could be a repository for user-specific medical information.
194. The accessibility groups were of the view that accessibility should be taken into account during the development of the NG9-1-1 networks and that user profiles could be made available to inform PSAPs of callers' unique communications needs, communications barriers, medical conditions, assistive devices, and contact information.
195. Bell Canada and RCCI submitted that CISC should manage and coordinate the rollout of new NG9-1-1 services across Canada. RCCI added that the PSAPs should ultimately determine which technology to adopt and set out an implementation schedule.
196. ILECs indicated that it is premature to set a time frame for the implementation of other methods of communication and additional data, since many factors have not yet been determined. In addition, TSPs and PSAPs submitted that they have not yet reached conclusions on what information should be conveyed. They added that a transition time frame will depend on several factors, including technical requirements, the duration of technical trials, and, more importantly, the PSAPs' transition to NG9-1-1.

Commission's analysis and determinations

197. Enabling new methods of communication and the transfer of additional data to PSAPs and emergency responders is consistent with the Commission's strategic objectives of (i) providing Canadians the best access to emergency services; and (ii) providing high-quality information to PSAPs, which ultimately enables emergency responders to effectively assist Canadians. However, parties raised numerous implementation and operational issues that must be resolved prior to the introduction of these new NG9-1-1 services.
198. In the future, NG9-1-1 networks will enable (i) TSPs to provide additional data to PSAPs, such as more detailed location information, as well as data regarding the service provider and the device associated with a subscriber; (ii) Canadians to provide multimedia information, as well as personal information, such as their language preferences, accessibility needs, emergency contact information, medical information, and alternative addresses; and (iii) third parties to provide data such as building schematics and medical records.
199. As a general principle, NG9-1-1 stakeholders are expected to support these new methods of communication and additional data. However, it is premature at this time for the Commission to make specific determinations with respect to how and when these services should be introduced.
200. CISC is currently evaluating the feasibility of implementing other methods of communication and additional data in an NG9-1-1 environment,³⁵ and is expected to provide its initial report with recommendations to the Commission as set out in paragraph 205 below.
201. Given that the technical capability for Canadians to provide personal information in an NG9-1-1 environment requires further exploration, it should be examined by CISC. The Commission therefore requests that CISC (i) further evaluate the introduction of user-provided information, including defining what information to collect and any appropriate mechanism(s) to enable this collection, as well as the feasibility of using a national NG9-1-1 application or a web portal to collect this information; and (ii) submit a report with recommendations to the Commission by **31 December 2018**.
202. To assist the Commission in considering the introduction of any methods of communication or additional data, the Commission requests that CISC provide its recommendations on the following: (i) whether the potential NG9-1-1 service meets the principles governing the introduction of NG9-1-1 services and provides the capabilities set out in paragraphs 144 and 145 above; and (ii) a proposed implementation plan, including timelines and identified technical dependencies.

³⁵ Refer to ESWG Task Identification Forms ESTF0081, ESTF0082, and ESTF0083 regarding the implementation of the NENA i3 standard in Canada.

Coordination of trials and launch of services

Positions of parties

203. Bell Canada submitted that there are a number of ongoing CISC task identification forms dealing with fundamental matters associated with NG9-1-1 in Canada. The company indicated that a first step for 9-1-1 network providers to migrate to NG9-1-1 would be to proceed with the implementation of an ESInet, core next-generation components, and interconnection specifications. However, for these components to be fully operational, security and identity management practices must first be identified.
204. Parties agreed that CISC should be the forum to evaluate and determine the technical and operational requirements for the implementation of NG9-1-1. Parties also indicated that NG9-1-1 network providers, TSPs, and PSAPs need to coordinate their NG9-1-1 implementation plans through CISC to ensure an effective and efficient transition.

Commission's analysis and determinations

205. The technical requirements related to NG9-1-1 must be finalized to ensure that all stakeholders have a common understanding prior to implementation. Therefore, the Commission requests that CISC complete its current NG9-1-1 implementation-related tasks in ESWG Task Identification Forms 81, 82, and 83, and submit reports as required with recommendations to the Commission no later than **31 December 2017**.
206. To conduct trials or coordinate the launch of NG9-1-1 services in a given area, NG9-1-1 network providers and TSPs need to be aware of whether the PSAPs in their operating territories are ready to support NG9-1-1 services. Therefore, a process must be established to enable these stakeholders to coordinate their activities and communicate with each other and with the Commission.
207. The Commission therefore requests that CISC (i) coordinate the implementation trials for both NG9-1-1 Voice and NG9-1-1 Text Messaging; and (ii) submit trial status report(s) to the Commission on the NG9-1-1 Voice and NG9-1-1 Text Messaging trials on two occasions, the first by **31 December 2019** and the second by **31 December 2020**.
208. It is also appropriate for CISC to establish and maintain a readiness and deployment status report for NG9-1-1 network providers, TSPs, and PSAPs. The Commission therefore requests that CISC submit two status reports on the progress of NG9-1-1 implementation by TSPs and primary and secondary PSAPs, the first by **31 December 2022** and the second by **31 December 2023**.

Decommissioning of current 9-1-1 networks

Positions of parties

209. Parties generally agreed that the current 9-1-1 networks will need to remain in place and operate in parallel with the new NG9-1-1 networks until TSPs and PSAPs are

fully transitioned to NG9-1-1. Parties also generally agreed that the Commission should determine a decommissioning date for current 9-1-1 networks to prevent the imposition of an unreasonable cost burden on Canadians and to incent PSAPs and provincial, territorial, and municipal governments to transition to NG9-1-1.

210. However, parties provided varying estimates for the decommissioning deadline. Specifically, Bell Canada estimated that decommissioning could occur from 5.5 to 6.5 years from the date of the Commission's decision in this proceeding, while TCC estimated 5 years, SaskTel estimated up to 10 years, and MTS estimated from 4.5 to 10 years. CLECs and Freedom Mobile submitted that an appropriate decommissioning date would be from 1 to approximately 2 years after the NG9-1-1 networks are launched. PIAC et al. proposed that it would take a maximum of 5 years from the date of the Commission's decision to transition all TSPs and PSAPs to NG9-1-1. The Nova Scotia Emergency Management Office envisioned that the transition period would take a minimum of 2 years after the NG9-1-1 networks are launched.
211. ILECs indicated that it could take up to 10 years from the date of the Commission's decision in this proceeding to decommission the current 9-1-1 networks because decommissioning depends on PSAPs' transition to NG9-1-1, which is not under their control. Consequently, Bell Canada and CLECs submitted that PSAPs' transition to NG9-1-1 could be incented by the Commission clarifying that provinces, territories, and municipalities, rather than TSPs, will be responsible for funding PSAP gateways (also referred to as legacy PSAP gateways, which enable the connection of existing PSAP equipment and systems to NG9-1-1 networks) for PSAPs that have not transitioned by the decommissioning date. Therefore, these gateways should not be considered part of NG9-1-1 networks. Bell Canada added that PSAPs should not plan to depend on gateways but should consider their use only as a last resort.
212. To enable interoperability between current 9-1-1 networks and NG9-1-1 networks, Bell Canada and RCCI submitted that Legacy Selective Router Gateways should be included as part of the NG9-1-1 networks, since TSPs and PSAPs may transition to NG9-1-1 at different times.

Commission's analysis and determinations

213. The Commission agrees that it is appropriate to set a decommissioning date for the current 9-1-1 networks. It is reasonable to maintain the current 9-1-1 networks in parallel with the NG9-1-1 networks during the transition period. However, doing so over a long period of time is not sustainable, pursuant to the Commission's strategic objective of introducing NG9-1-1 solutions that are cost effective. It is also important for Canadians to realize the benefits of NG9-1-1 as quickly as possible; therefore, it is not in the public interest to allow a few TSPs or PSAPs to delay the transition to NG9-1-1.
214. Most parties considered that a reasonable decommissioning date would be two to three years after the implementation of NG9-1-1 networks. However, some large TSPs, such as RCCI, will require more than two years to transition to NG9-1-1 nationally. Based on PSAPs' submissions, it may take longer for most PSAPs to

become NG9-1-1-enabled. As such, a two-year transition period would not be sufficient, particularly in the case of any unforeseen delays. Given that the rollout of NG9-1-1 is complex and involves coordination between numerous stakeholders, it would be appropriate to set the decommissioning date for three years after the implementation of NG9-1-1 networks.

215. The Commission therefore determines that all ILECs are to decommission their current 9-1-1 network components that will not form part of their NG9-1-1 networks by **30 June 2023**, or earlier if all the TSPs and PSAPs in an ILEC's operating territory have completed their transition to NG9-1-1. The Commission **directs** all NG9-1-1 network providers, by that date, to file proposed NG9-1-1 wholesale and retail tariffs, including proposed rates based on cost studies that include (i) network components that were formerly included in 9-1-1 cost studies but continue to be required for the provision of NG9-1-1 services, and (ii) all other NG9-1-1-related cost components. At that time, the Commission will re-evaluate the continued appropriateness of applying the 9-1-1 tariff rate regime when establishing new NG9-1-1 tariff rates. The proposed effective date of the tariffs is to be no later than **30 June 2023**.
216. TSP gateways (which enable legacy originating networks to connect to NG9-1-1 networks, also referred to as legacy network gateways) and PSAP gateways enable the continued provision of current 9-1-1 services but not of NG9-1-1 services. Use of these gateways instead of implementing NG9-1-1 would postpone the PSAPs' transition, require time and effort, divert funding from the implementation of NG9-1-1, and deny Canadians the benefits of NG9-1-1 services. The Commission therefore determines that TSP and PSAP gateways do not form part of the NG9-1-1 networks and should not be used as part of their NG9-1-1 implementation plans. Such use should be considered only as a last resort to connect to NG9-1-1 networks. Accordingly, TSPs and PSAPs are responsible for these gateways and for funding them, if required.
217. Legacy Selective Router Gateways, on the other hand, are necessary to enable the current 9-1-1 networks and the NG9-1-1 networks to function in parallel. Therefore, the Commission determines that Legacy Selective Router Gateways do form part of the NG9-1-1 networks, and are to be funded through the ILECs' NG9-1-1 network access tariff rates.

Public education

Positions of parties

218. Parties generally submitted that a coordinated launch of NG9-1-1 services, supported by consumer education, is important to reduce the risk of consumer confusion regarding which services are available in a particular area.
219. CITIG, PIAC et al., and TCC added that all stakeholders, namely the Commission, TSPs, PSAPs, government bodies, and emergency responders, have a role to play and a duty to educate the public regarding the launch. MTS added that ILECs are best

positioned to inform their subscribers of the changes, with input and guidance from CISC.

220. Accessibility groups submitted that they should also be involved in public education and outreach in both English and French. They indicated that there is a need for targeted outreach in American Sign Language (ASL) and Langue des signes québécoise (LSQ) to ensure that the needs of persons with disabilities are addressed and that persons with disabilities are aware of and know how to use new NG9-1-1 services.

Commission's analysis and determinations

221. The Commission agrees that a coordinated launch of NG9-1-1 services, in conjunction with public education campaigns, is key to mitigating the risks of consumer confusion regarding the availability of NG9-1-1 services in a particular area and will help safeguard Canadians.
222. Multiple stakeholders are involved in the delivery of NG9-1-1 services, from both a telecommunications and a public safety perspective. Each stakeholder has a role to play in educating the public about new NG9-1-1 services, including their availability, characteristics, and limitations.
223. PSAPs and emergency responders have played an important role in educating the public about 9-1-1 services to date, as was the case with the introduction of Text with 9-1-1 service. It is appropriate and important that they continue to do so. The Commission therefore recommends that PSAPs, as well as provincial, territorial, and municipal governments, conduct public education campaigns as new NG9-1-1 services are launched, either through the proposed national coordination body or through CISC in the absence of such a body.
224. The Commission expects the proposed national coordination body, CISC, PSAPs, and TSPs to consult with accessibility groups when developing NG9-1-1 public education and awareness campaigns. The Commission expects all related information to be made available in English, French, ASL, and LSQ, as appropriate.
225. Since CISC brings together all NG9-1-1 stakeholders, including NG9-1-1 network providers and TSPs, it is the appropriate forum to coordinate education campaigns with these stakeholders. As such, the Commission requests that CISC submit, for information, its recommendations to the Commission on an appropriate public education campaign at least three months prior to the launch of each new NG9-1-1 service. The campaign should take into account any targeted education or outreach required, for example, to persons with disabilities.

Privacy

Positions of parties

226. Bragg Communications Incorporated, operating as Eastlink (Eastlink); la Coalition; Calgary 9-1-1; the CW; E-Comm; TCC; the TPS; and Videotron generally submitted

that the current privacy policies and safeguards applicable to 9-1-1 networks and services are adequate for an NG9-1-1 environment. Eastlink, TCC, and Videotron submitted that TSPs' role would be limited to passing along NG9-1-1 information to PSAPs securely. Shaw added that it would not be appropriate for TSPs or NG9-1-1 network providers to capture, store, validate, or access end-user data, given the potential significant harm associated with the use and disclosure of such information.

227. PIAC et al. submitted that the privacy rules that would apply to NG9-1-1 are unclear and comprise a patchwork of federal and provincial/territorial privacy legislation. PIAC et al. therefore submitted that the Commission should establish national, general privacy rules that would apply to any personal information collected, used, or disclosed over the NG9-1-1 networks.
228. Bell Canada, MTS, and the Office of the Privacy Commissioner of Canada generally submitted that the Commission's 9-1-1 privacy policy should apply to any data, such as images, videos, and end-user data, supplied during NG9-1-1-related communications. Bell Canada and MTS added that all of this data should be treated as confidential, unless the person requesting emergency assistance provides express consent for other use or disclosure, or disclosure is ordered pursuant to a legal power.
229. The Office of the Privacy Commissioner of Canada indicated that it is important to take privacy considerations into account in the planning and development stages of NG9-1-1 to ensure that personal information is protected at the time of operation and implementation, with a focus on (i) limiting use and disclosure, (ii) retention procedures, and (iii) safeguards.

Commission's analysis and determinations

230. In an NG9-1-1 environment, more personal and detailed information could be transmitted to PSAPs. NG9-1-1 could also enable TSPs to provide and manage additional information about the person requesting emergency assistance, such as medical information, emergency contact information, or home and work addresses. This additional information is not explicitly covered by the existing Commission 9-1-1 privacy policy set out in 9-1-1 tariffs and in agreements between 9-1-1 network providers and the authorities operating the PSAPs.
231. In addition, with the implementation of NG9-1-1, it is expected that entities that are not currently involved in the provision of 9-1-1 services could be involved in the capture, storage, or validation of end-user or other types of data provided during emergency communications.
232. Accordingly, the Commission requires, pursuant to sections 24 (with respect to carriers) and 24.1 (with respect to non-carriers) of the Act, that as a condition of offering and providing telecommunications services, all TSPs must ensure that all information or data that is transmitted for purposes associated with emergency services accessed through the NG9-1-1 networks and is stored or otherwise under the custody or control of the TSPs shall be used for the sole purpose of responding to 9-1-1-related communications, unless the subscriber provides express consent for other

use or disclosure, or disclosure is ordered pursuant to a legal power. For greater clarity, information or data related to a specific emergency occurrence shall be used only for the purpose of responding to that emergency, unless the subscriber provides express consent for other use or disclosure, or disclosure is ordered pursuant to a legal power.

233. In addition, the Commission requires TSPs to

- a. develop procedures with respect to the retention and destruction of personal information involved with NG9-1-1 services prior to the provision of these services; and
- b. include in their tariffs, service contracts, or other agreements with third parties involved in the provision of NG9-1-1 services the following requirements:
 - i. all information or data that is provided by a subscriber, or on their behalf, for purposes associated with emergency services accessed through the NG9-1-1 networks and is stored or otherwise under the custody or control of a third party shall be used for the sole purpose of responding to 9-1-1-related communications, unless the subscriber provides express consent for other use or disclosure, or disclosure is ordered pursuant to a legal power. For greater clarity, information or data related to a specific emergency occurrence shall be used only for the purpose of responding to that emergency, unless the subscriber provides express consent for other use or disclosure, or disclosure is ordered pursuant to a legal power; and
 - ii. the third party shall implement guidelines and procedures with respect to the retention and destruction of personal information related to NG9-1-1 services prior to the provision of those services.

234. The Commission will address any specific privacy issues resulting from the introduction of an NG9-1-1 service prior to such introduction, as required.

Policy Direction

235. The Policy Direction states that the Commission, in exercising its powers and performing its duties under the Act, shall implement the policy objectives set out in section 7 of the Act, in accordance with paragraphs 1(a), (b), and (c) of the Policy Direction.

236. The Commission considers that its determinations in this decision are consistent with the Policy Direction for the reasons set out below.

237. The issues considered in this decision include determining (i) a proper governance model for the provision of NG9-1-1 services, (ii) the funding model for these services, (iii) the interconnection of NG9-1-1 networks and access to these networks, (iv) the methods of communication to be supported by NG9-1-1 networks, and (v) the

information to be transited over these networks. This decision also establishes appropriate monitoring, reporting, and privacy-related requirements.

238. Given the importance of 9-1-1 services for Canadians, market forces cannot be solely relied upon to govern their provision; therefore, regulation is required. In compliance with subparagraph 1(b)(i) of the Policy Direction, the regulatory measures established in this decision serve to advance the policy objectives set out in paragraphs 7(a), (b), (c), (g), (h), and (i) of the Act.
239. Consistent with subparagraphs 1(a)(ii) and 1(b)(iii) and (iv) of the Policy Direction, the regulatory measures established in this decision are efficient and proportionate to their purpose and interfere with the operation of competitive market forces to the minimum extent necessary to meet the policy objectives. As well, to the greatest extent possible, the Commission has implemented its regulatory measures in a symmetrical and competitively neutral manner. Finally, the regulatory measures related to interconnection are technologically and competitively neutral, to the greatest extent possible. These measures enable competition from new technologies and do not artificially favour either Canadian carriers or resellers.
240. Specifically, the regulatory measures established in this decision apply to all NG9-1-1 network providers and, where appropriate, to all TSPs. These measures were adopted and structured with a view to ensuring that Canadians continue to have access to reliable and effective emergency services, and that these services evolve as technologies evolve to respond to the changing needs of Canadians. The decision to mandate the ILECs to be responsible for providing the NG9-1-1 networks builds on the fact that the ILECs already provide the current 9-1-1 networks and have established relationships with PSAPs. Maintaining this service delivery model for NG9-1-1 services will ensure timely and direct regulatory oversight by the Commission, including the establishment of cost-based rates, as well as an orderly and efficient transition to NG9-1-1 networks and services.

Secretary General

Related documents

- *Review of the regulatory framework for text-based message relay services*, Telecom Notice of Consultation CRTC 2017-33, 2 February 2017
- *Modern telecommunications services – The path forward for Canada’s digital economy*, Telecom Regulatory Policy CRTC 2016-496, 21 December 2016
- *Matters related to the reliability and resiliency of the 9-1-1 networks*, Telecom Regulatory Policy CRTC 2016-165, 2 May 2016
- *Establishment of a regulatory framework for next-generation 9-1-1 in Canada*, Telecom Notice of Consultation CRTC 2016-116, 29 March 2016

- *CISC Emergency Services Working Group – Consensus report regarding a Next-Generation 9-1-1 network architecture standard for Canada*, Telecom Decision CRTC 2015-531, 30 November 2015
- *9-1-1 action plan*, Telecom Regulatory Policy CRTC 2014-342, 25 June 2014; as amended by Telecom Regulatory Policy CRTC 2014-342-1, 30 January 2015
- *CISC Emergency Services Working Group – Consensus report regarding Text Messaging with 9-1-1 trial and service implementation*, Telecom Decision CRTC 2013-22, 24 January 2013
- *Confidentiality of information used to establish wholesale service rates*, Telecom Regulatory Policy CRTC 2012-592, 26 October 2012
- *Network interconnection for voice services*, Telecom Regulatory Policy CRTC 2012-24, 19 January 2012
- *Local competition*, Telecom Decision CRTC 97-8, 1 May 1997
- *Implementation of regulatory framework – Development of carrier interfaces and other procedures*, Telecom Public Notice CRTC 96-28, 1 August 1996

Appendix to Telecom Regulatory Policy CRTC 2017-182

Requested follow-up activities for CISC

2017

Expected completion date	Activity	Expected outcome
31 December 2017	Develop recommended technical details to support the NG9-1-1 Voice implementation trials, including which PSAPs and TSPs will participate, which geographical areas will be covered, and recommended time frames	Report with recommendations
31 December 2017	Develop recommended technical specifications for the implementation of RTT-based NG9-1-1 Text Messaging	Report with recommendations
31 December 2017	Identify and recommend NG9-1-1 industry best practices and standards related to the reliability, resiliency, and security of the NG9-1-1 networks in Canada, including performance standards and service levels applicable to NG9-1-1 network providers and TSPs	Report with recommendations
31 December 2017	Complete its current NG9-1-1 implementation-related tasks in ESWG Task Identification Forms 81, 82, and 83	Reports with recommendations

2018

Expected completion date	Activity	Expected outcome
31 March 2018	Develop the technical details of NG9-1-1 network interconnections	Reports with recommendations
31 December 2018	Further evaluate the introduction of user-provided information, including defining what information to collect and any appropriate mechanism(s) to enable this collection, as well as the feasibility of using a national NG9-1-1 application or a web portal to collect this information	Report with recommendations

2019

Expected completion date	Activity	Expected outcome
31 December 2019	Submit status report(s) 1 of 2 with respect to implementation trials for NG9-1-1 Voice and NG9-1-1 Text Messaging	Status report(s)

2020

Expected completion date	Activity	Expected outcome
30 June 2020	Develop and recommend a plan for users of the existing Text with 9-1-1 service to transition to NG9-1-1 Text Messaging	Report with recommendations
31 December 2020	Submit status report(s) 2 of 2 with respect to implementation trials for NG9-1-1 Voice and NG9-1-1 Text Messaging	Status report(s)

2022

Expected completion date	Activity	Expected outcome
31 December 2022	Submit a report on the progress of NG9-1-1 implementation by TSPs and primary and secondary PSAPs	Status report

2023

Expected completion date	Activity	Expected outcome
31 December 2023	Submit a report on the progress of NG9-1-1 implementation by TSPs and primary and secondary PSAPs	Status report

Ongoing

Activity	Expected outcome
Update the 9-1-1 Interconnection Guidelines document to incorporate NG9-1-1 services	Updated Interconnection Guidelines document
Provide recommendations on (i) whether each potential NG9-1-1 service meets the principles governing the introduction of NG9-1-1 services and provides the capabilities set out in paragraphs 144 and 145 of this decision, and (ii) a proposed implementation plan, including timelines and identified technical dependencies	Report with recommendations
Submit, for information, its recommendations on an appropriate public education campaign at least three months prior to the launch of each new NG9-1-1 service	Report, for information