

In the matter of Telecom Notice of Consultation CRTC 2024-292, *Call for comments—
Reconsideration of an aspect of Telecom Decision 2023-358*

Prepared for
**Canadian Radio-television and Telecommunications Commission
(CRTC)**

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Competitive risks from the CRTC's wholesale HSA policy

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I. Scope of charge

- (1) I have been asked by Bragg Communications Inc., carrying on business as Eastlink (“Eastlink”) and Cogeco Communications Inc., on behalf of its subsidiary Cogeco Connexion Inc. (“Cogeco”) to assess the impact of Telecom Decision CRTC 2023-358 and by extension Telecom Regulatory Policy CRTC 2024-180 on competition in wireline markets in Canada and telecom more broadly. In particular, I have been asked to assess how wholesale wireline access by the Big 3 national carriers (Bell Canada, Rogers Communications Canada Inc., and TELUS Communications Inc.) outside their traditional serving territories may impact telecom competition. I present my findings in this report, which are informed by the available evidence, economic theory, and my training and experience as an economist focused on competition issues. My curriculum vitae is included as Appendix A.

II. Executive summary

- (2) The CRTC's current wholesale high-speed access (HSA) policy poses significant risks to facilities-based competition in Canadian telecom. By allowing the "Big 3" national wireless incumbents to access others' wireline facilities, including those of smaller facilities-based wireline incumbents, it risks the viability of smaller facilities-based competitors. It also reduces the incentives of the Big 3 to invest in facilities outside of their own footprints, either through alternative technologies to provide home internet, or expansion of existing technologies. Both of these risks threaten facilities-based competition in Canadian telecom, which is generally superior to reseller competition for consumers, since it allows competition on quality, innovation, and investment, and not just on price.
- (3) Smaller, regional facilities-based competitors such as Cogeco and Eastlink may see their viability threatened by the policy. The Big 3 would be able to better offer bundled wireline-wireless products in the wireline footprint of smaller facilities-based competitors, potentially over those smaller competitors' own wireline networks that the smaller competitors would struggle to compete with. Smaller facilities-based competitors often lack comparable ability to bundle services to the Big 3, in addition to lacking their national brand recognition, retail presence, and financial resources.
- (4) Both economic theory and the history of wireless competition in Canada point to the importance of preserving facilities-based competitors outside of the Big 3 in telecom. Economic theory supports the notion that extensive multi-market contact among similarly-situated competitors puts upward pressure on prices, and conversely, that smaller, "maverick" firms can have an outsized impact in lowering prices. That theory has been borne out and well documented in the history of Canadian wireless competition, where smaller regional facilities-based competitors have been shown to exert downward pressure on pricing in areas where they are present.
- (5) Facilities-based competition is also damaged by the impact of the policy on the Big 3's incentives to invest. The ability to access existing wireline networks on a regulated wholesale basis reduces their payoffs from either investing in alternative technologies or extending their own networks. Recent history in the United States may be instructive on this point. One of the top three wireless networks in the United States, T-Mobile, has historically lacked a wireline footprint. As an alternative to wireline, it has aggressively marketed fixed wireless for home internet, in competition with the wireline products of cable companies and incumbent local exchange carriers (ILECs). That has led to further investments by T-Mobile in fibre infrastructure, and enhanced facilities-based competition.
- (6) An outcome in which facilities-based competition is harmed because the viability of small facilities-based competitors is threatened and investment incentives are reduced is contrary to the stated goals of the Government of Canada and the CRTC. It is also inconsistent with the government's approach to wireless competition, where its MVNO policy was carefully crafted to preserve investment incentives and the viability of smaller facilities-based carriers. By allowing the Big 3 to access

wholesale facilities on the same terms as smaller competitors, the policy as currently constructed also undercuts one of the stated rationales of the HSA mandate, which is to promote independent resellers as a way to increase variety and lower prices for wireline customers.

III. The CRTC wholesale high-speed access (HSA) policy risks undermining its stated goals

- (7) The Government of Canada recently issued a new policy direction ordering that the CRTC, in performing its duties under the *Telecommunications Act*, should consider “how its decisions would promote competition, affordability, consumer interests and innovation.”¹ Its order in particular calls for the CRTC to consider the extent its decisions would, among other factors, “encourage all forms of competition and investment,” “reduce barriers to entry into the market and to competition for telecommunications service providers that are new, regional, or smaller than the incumbent national service providers,” “enable innovation in telecommunications services, including new technologies and differentiated service offerings,” and “stimulate investment in research and development and in other intangible assets that support the offer and provision of telecommunications services.”²
- (8) These goals are broadly consistent with the CRTC’s own stated goals for its wholesale HSA policy: “to establish a wholesale HSA service framework so that Canadian consumers benefit from a more competitive [i]nternet service market,” which it believes “can eventually lead to lower prices, greater choice of telecommunications services, and more product features for residential and business consumers.”³
- (9) Certain aspects of the current wholesale HSA policy, however, run counter to these goals. Below I describe, briefly, the history of the CRTC’s wholesale HSA regulation, and potential problems with its current policy. In subsequent sections of this report, I describe the potential economic implications of these errors.

¹ Minister of Justice, “Order Issuing a Direction to the CRTC on a Renewed Approach to Telecommunications Policy,” SOR/2023-23, August 18, 2024, ¶ 2.

² Minister of Justice, “Order Issuing a Direction to the CRTC on a Renewed Approach to Telecommunications Policy,” SOR/2023-23, August 18, 2024, ¶ 2. Collectively, the CRTC refers the major internet service providers (ISPs) as the “incumbents.” These companies include the incumbent local exchange carriers, which are Bell Canada, Saskatchewan Telecommunications (SaskTel), and TELUS Communications Inc. and the incumbent cable carriers, which are Cogeco Communications Inc., Bragg Communications Incorporated (carrying on business as Eastlink), Rogers Communications Canada Inc., and Videotron Ltd. *See* Canadian Radio-television and Telecommunications Commission, “Telecom Regulatory Policy CRTC 2024-180,” Public record 1011-NOC2023-0056, August 13, 2024, ¶ 2.

³ Canadian Radio-television and Telecommunications Commission, “Telecom Decision CRTC 2023-53,” Public record 1011-NOC2020-0187, March 8, 2023, 1; Canadian Radio-television and Telecommunications Commission, “Telecom Notice of Consultation CRTC 2013-551,” File number 8663-C12-201313601, October 15, 2013, ¶ 2.

III.A. Evolution of the CRTC's wholesale HSA framework

- (10) The CRTC's wholesale HSA framework has existed since the early 2000s, when the Commission shifted its focus from telephone services to broadband services.⁴ Its framework aimed to meet the policy objectives set out in the 1993 *Telecommunications Act*.⁵
- (11) Since then, in several reviews, most recently in 2023, the CRTC has adjusted the details of its wholesale HSA policy in the face of changes in the relevant technologies and market conditions, and its evaluation of the success of its policy, in order to further its overarching goals of promoting pro-consumer outcomes via maintaining robust retail competition and investment in high-speed internet access.⁶ It has adjusted the technological scope of the mandate (for example, switching between mandated "aggregated" and "disaggregated" wholesale access), the wholesale rates, and details of to whom and in which regions the mandate applies.⁷ In its most recent review, the CRTC found that "the disaggregated wholesale HSA service framework has not fulfilled its mandate and requires reconsideration," and that "aggregated HSA, including aggregated FTTP services, is determined to be essential."⁸ This was a reversal of CRTC's 2015 policy, in which "the Commission determined that aggregated HSA would no longer be mandated and would be phased out once disaggregated HSA was implemented" and mandated wholesale access to fibre-to-the-premises (FTTP) facilities was

⁴ Canadian Radio-television and Telecommunications Commission, "Telecom Regulatory Policy CRTC 2015-326," File number 8663-C12-201313601, July 22, 2015, ¶ 4.

⁵ These include "to facilitate the orderly development throughout Canada of a telecommunications system that serves to safeguard, enrich, and strengthen the social and economic fabric of Canada and its regions," "to render reliable and affordable telecommunications services of high quality accessible to Canadians in both urban and rural areas in all regions of Canada," and "to stimulate research and development in Canada in the field of telecommunications and to encourage innovation in the provision of telecommunications services. See Canadian Radio-television and Telecommunications Commission, "Telecom Notice of Consultation CRTC 2013-551," File number 8663-C12-201313601, October 15, 2013, ¶ 7.

⁶ See, for example, Canadian Radio-television and Telecommunications Commission, "Telecom Notice of Consultation CRTC 2009-261," Public record 8663-C12-200907321, May 8, 2009; Canadian Radio-television and Telecommunications Commission, "Telecom Regulatory Policy CRTC 2010-632," File numbers 8663-C12-200907321, 8661-C12-200904286, and 8638-C12-200905010, August 30, 2010; Canadian Radio-television and Telecommunications Commission, "Telecom Regulatory Policy CRTC 2015-326," File number 8663-C12-201313601, July 22, 2015; Canadian Radio-television and Telecommunications Commission, "Telecom Notice of Consultation CRTC 2023-56," Public record 1011-NOC2023-0056, March 8, 2023.

⁷ CRTC 2015-326 made the determination that "the provision of aggregated services will no longer be mandated and will be phased out in conjunction with the implementation of a disaggregated service," with the goal of increasing choices for customers. Canadian Radio-television and Telecommunications Commission, "Telecom Regulatory Policy CRTC 2015-326," File number 8663-C12-201313601, July 22, 2015, 1.

CRTC 2021-181 approved updated rates for aggregated wholesale HSA. Canadian Radio-television and Telecommunications Commission, "Telecom Decision CRTC 2021-181," Public record 8662-C12-201912502, May 27, 2021, 2.

CRTC 2023-358 required incumbent telephone companies in Ontario and Quebec to temporarily provide workable wholesale access to their FTTP networks in response to declining internet competition in the two territories. Canadian Radio-television and Telecommunications Commission, "Telecom Decision CRTC 2023-358," Public record 1011-NOC2023-0056, November 6, 2023, 2.

⁸ Canadian Radio-television and Telecommunications Commission, "Telecom Decision CRTC 2023-53," Public record 1011-NOC2020-0187, March 8, 2023, ¶ 32; Canadian Radio-television and Telecommunications Commission, "Telecom Regulatory Policy CRTC 2024-180," Public record 1011-NOC2023-0056, August 13, 2024, ¶ 31.

available only under the new disaggregated framework.⁹ The CRTC has approached the current policy with an eye to changing the scope and tariffs associated with the wholesale access regime in order to achieve its policy goals under the changing market dynamic.¹⁰

III.B. Current policy outlined in CRTC 2024-180

- (12) Telecom Notice of Consultation CRTC 2023-56 led to an interim requirement that incumbent telephone companies Bell and TELUS provide competitors aggregated wholesale access to their FTTP networks by May 2024 in their serving territories in Ontario and Quebec.¹¹
- (13) The CRTC has now issued Telecom Regulatory Policy CRTC 2024-180, outlining further HSA rules and clarifications. The policy mandates that the ILECs provide aggregated HSA access to their fibre networks throughout Canada, expanding on the interim FTTP wholesale access mandated in 2023 and implemented in May 2024.¹² Further, the CRTC confirmed that incumbents (both telephone and cable carriers) can continue to access wholesale HSA outside of their traditional wireline territories (“out-of-territory”).¹³ This does not include access to wholesale HSA “in-territory.” The CRTC has said that in-territory mandated access can harm investment and competition by causing incumbents to rely on aggregated HSA instead of improving their own networks, which may have lower speeds than what may be available by wholesale access.¹⁴ The Commission has not explicitly defined “in-territory” and “out-of-territory.”¹⁵

⁹ Canadian Radio-television and Telecommunications Commission, “Telecom Decision CRTC 2023-358,” Public record 1011-NOC2023-0056, November 6, 2023, ¶ 4.

¹⁰ Canadian Radio-television and Telecommunications Commission, “Telecom Regulatory Policy CRTC 2024-180,” Public record 1011-NOC2023-0056, August 13, 2024, 1–2.

¹¹ Canadian Radio-television and Telecommunications Commission, “Telecom Decision CRTC 2023-358,” Public record 1011-NOC2023-0056, November 6, 2023, ¶ 128.

This only applied to Bell and TELUS because the temporary legislation was only applicable in Ontario and Quebec, where the CRTC had found that wholesale competition had declined most significantly. These two provinces historically have the most internet subscribers in Canada. Between 2020 and 2022, independent wholesale-based competitors lost 47% of subscribers in Ontario and Quebec. *See* Canadian Radio-television and Telecommunications Commission, “Telecom Decision CRTC 2023-358,” Public record 1011-NOC2023-0056, November 6, 2023, 2.

¹² Cable companies are not required to offer aggregated wholesale access to their FTTP facilities because they currently only own cable that connects only 5% of all households, which the CRTC believes does not require a wholesale mandate. *See* Canadian Radio-television and Telecommunications Commission, “Telecom Regulatory Policy CRTC 2024-180,” Public record 1011-NOC2023-0056, August 13, 2024, 2.

¹³ Affiliates of the incumbents would also not be allowed to use aggregated HSA in the traditional territories of their incumbents, but they would be able to use aggregated HSA in out-of-territory regions. *See* Canadian Radio-television and Telecommunications Commission, “Telecom Regulatory Policy CRTC 2024-180,” Public record 1011-NOC2023-0056, August 13, 2024, 2, ¶ 44.

¹⁴ Canadian Radio-television and Telecommunications Commission, “Telecom Regulatory Policy CRTC 2024-180,” Public record 1011-NOC2023-0056, August 13, 2024, ¶ 38.

¹⁵ Cogeco submitted a proposed definition for “in-territory” to the CRTC as “any municipality (incorporated city, county, metropolitan authority, town, village, township, district or rural municipality or other incorporated municipal body however designated) at which an [i]ncumbent offers facilities-based high-speed retail internet services.” “Tariff for Third Party Internet Access Service TPIA Tariff,” Cogeco submission to the CRTC in regard to CRTC 26400,

III.C. Risks of the policy

- (14) The CRTC’s mandate reinforces the ability of the Big 3 national telecom companies—Bell, TELUS, and Rogers—to use the wireline facilities of other competitors outside of their footprint, including those of much smaller facilities-based competitors such as Cogeco and Eastlink.
- (15) A general risk of Big 3 wholesale HSA access is that small, regional facilities-based carriers that lack the national brand, resources, retail presence, and ability to bundle wireless and wireline products of the Big 3, would see threats to their competitive significance and long-term viability from entry or expansion of the Big 3 as resellers in their footprint, possibly on the wireline networks of those smaller carriers. I discuss this avenue of harm in more detail in Section V below. If smaller incumbent facilities-based carriers are not viable under this regime, a consequence could be the transfer of those facilities ultimately to national incumbents, which could impact telecom competition more broadly.
- (16) One may ask why the viability of a particular type of competitor matters—someone would end up owning the wireline network, and what difference does it make whether it is a regional incumbent or a national incumbent? As I discuss in Section V, economic theory and the history of telecommunications competition in Canada indicate that competition is enhanced by the presence of facilities-based competitors outside of the Big 3. In addition, a policy that threatens the viability of regional wireline and wireless competitors runs counter to the Government of Canada’s 2023 policy direction that describes a key objective of the CRTC as “reduc[ing] barriers to entry into the market... [for providers that are] new, regional or smaller than the incumbent national services providers.”¹⁶
- (17) A second risk of the policy is that the Big 3 would see their investment incentives significantly decreased by the ability to use existing facilities. The CRTC has historically emphasized the need to protect the incentives of incumbents to invest in new facilities and new technologies.¹⁷ That is the explicit rationale given for its prohibition on in-territory wholesale access by incumbent wireline providers.¹⁸ Investment in wireline networks outside of one’s wireline footprint is costly, but technology changes rapidly, and other technological approaches are possible. With advances in wireless technology and spectrum capacity, alternatives for high-speed home internet service such as fixed wireless technology become more viable. Indeed, the experience of T-Mobile’s fixed wireless

September 9, 2024.

Canadian Radio-television and Telecommunications Commission, “Telecom Regulatory Policy CRTC 2024-180,” Public record 1011-NOC2023-0056, August 13, 2024, ¶ 40.

¹⁶ Minister of Justice, “Order Issuing a Direction to the CRTC on a Renewed Approach to Telecommunications Policy,” SOR/2023-23, August 18, 2024, ¶ 2.

¹⁷ Canadian Radio-television and Telecommunications Commission, “Telecom Decision CRTC 2023-358,” Public record 1011-NOC2023-0056, November 6, 2023, 2; Canadian Radio-television and Telecommunications Commission, “Telecom Regulatory Policy CRTC 2024-180,” Public record 1011-NOC2023-0056, August 13, 2024, 2.

¹⁸ Canadian Radio-television and Telecommunications Commission, “Telecom Regulatory Policy CRTC 2024-180,” Public record 1011-NOC2023-0056, August 13, 2024, ¶ 38.

product in the United States has shown the viability of such an approach, and has led it to invest in complementary fibre-to-the-home capacity.

- (18) A final risk of this approach has already been noted in this policy decision. As the CRTC has summarized, “[S]everal parties expressed concern that any use of wholesale HSA services by the incumbents could harm competition. These parties argued that the incumbents’ use of wholesale HSA services – even outside their traditional serving territories (out-of-territory) – would enable the incumbents to undercut independent ISPs, particularly where the incumbents can bundle wireless and wireline retail services.”¹⁹
- (19) To the extent maintaining market access for independent resellers is one objective of the CRTC in this mandate, in accord with its past statements,²⁰ allowing the Big 3 telecom companies equivalent access on the same terms as independent resellers risks undermining this goal. As I describe in more detail in Section VII below, small independent resellers are in a very different competitive position than the Big 3 telecom companies, and face difficulties competing with the national incumbents when both are using the same infrastructure at the same wholesale rates.
- (20) In the rest of this report, I will discuss each of these risks in turn, after first reviewing the current state of wireline competition.

¹⁹ Canadian Radio-television and Telecommunications Commission, “Telecom Regulatory Policy CRTC 2024-180,” Public record 1011-NOC2023-0056, August 13, 2024, ¶ 40.

²⁰ Canadian Radio-television and Telecommunications Commission, “Telecom Decision CRTC 2023-358,” Public record 1011-NOC2023-0056, November 6, 2023, 1–2; Canadian Radio-television and Telecommunications Commission, “Telecom Regulatory Policy CRTC 2024-180,” Public record 1011-NOC2023-0056, August 13, 2024, ¶¶ 7-8. .

IV. Current wireline competition

- (21) Before describing in more detail the risks raised by the current policy, I first review the state of competition within the wireline footprints of Cogeco and Eastlink, which could be significantly affected by the CRTC's rulemaking. I also discuss the unique position of the Big 3 telecom companies in both wireline and wireless.
- (22) Approximately 93.9% of Canadian households had a residential home internet subscription in 2022, and 93% of those were via a wireline connection.²¹ About 87% of broadband customers purchase their internet through cable or telephone companies.²²
- (23) Typically, Canadians have two facilities-based wireline options: an ILEC and a cable carrier.²³ In addition, Canadians can purchase broadband through resellers using the networks of the facilities-based carriers. These companies provide broadband by accessing existing coaxial and fibre optic networks laid by cable carriers and ILECs, at times connecting to the networks of multiple carriers to provide customers internet coverage.²⁴ These resellers do not typically operate using their own networks, but create service offerings at particular price and speed points based on the terms of their wholesale access.²⁵ Finally, a smaller number of Canadians currently access broadband internet at home through fixed wireless or satellite connections.²⁶

²¹ Canadian Radio-television and Telecommunications Commission, "Communications Market Reports – Open Data," "Data – retail fixed Internet" dataset, tabs "N-I" and "N-I5", <https://crtc.gc.ca/eng/publications/reports/PolicyMonitoring/cmrd.htm>.

²² Competition Bureau Canada, "Delivering Choice: A Study of Competition in Canada's Broadband Industry," August 7, 2019, 12, <https://ised-isde.canada.ca/site/competition-bureau-canada/sites/default/files/attachments/2022/CSBP-BR-Main-Eng.pdf>.

²³ Canadian Radio-television and Telecommunications Commission, "Telecom Notice of Consultation CRTC 2023-56," Public record 1011-NOC2023-0056, March 8, 2023, ¶ 4.

The North (Northwest Territories, Nunavut, and Yukon) generally only have access to one network. Canadian Radio-television and Telecommunications Commission, "Communications Monitoring Report," updated December 10, 2020, <https://crtc.gc.ca/eng/publications/reports/policymonitoring/2020/cm4r.htm#a2>.

²⁴ Since the late 1990s, the CRTC has required the largest cable and telephone providers to provide wholesale access to independent competitors. Competition Bureau Canada, "Delivering Choice: A Study of Competition in Canada's Broadband Industry," August 7, 2019, 13–14, <https://ised-isde.canada.ca/site/competition-bureau-canada/sites/default/files/attachments/2022/CSBP-BR-Main-Eng.pdf>. See also discussion in Section III.A above.

²⁵ Competition Bureau Canada, "Delivering Choice: A Study of Competition in Canada's Broadband Industry," August 7, 2019, 13, <https://ised-isde.canada.ca/site/competition-bureau-canada/sites/default/files/attachments/2022/CSBP-BR-Main-Eng.pdf>.

²⁶ More than 400,000 customers (around 3% of Canadian households), primarily in the northern territories, used Starlink's satellite internet as of July 2024. Ericsson found that 7 out of 10 Canadians were not aware of FWA as an internet technology. "Elon Musk boasts 400,000 Canadian customers use his Starlink satellite internet service," National Post, July 18, 2024, <https://nationalpost.com/news/world/starlink-canadian-customers-satellite-internet>; Ericsson Canada, "Could 5G fixed wireless access be the future of broadband in Canada?" BNN Bloomberg, April 10, 2024, <https://www.bnnbloomberg.ca/ericsson-canada/2024/06/17/could-5g-fixed-wireless-access-be-the-future-of-broadband-in-canada>.

IV.A. Cogeco

- (24) In Canada, Cogeco Communications provides wireline internet, video and phone services to Canadians in Ontario and Quebec under its Cogeco brand, and also serves Ontario, Quebec, and the western provinces through its recently acquired oxio brand.²⁷ Cogeco provides these services through its own long-distance fibre optic systems, advanced hybrid fibre-coaxial (HFC) telecommunications distribution networks, point-to-point fibre networks and FTTP network technologies.²⁸ Cogeco provides wireline internet to just over [REDACTED] customers in Ontario and Quebec.²⁹ Currently, about [REDACTED] homes are passed via HFC and [REDACTED] are passed by FTTP.³⁰ Cogeco has expanded its FTTP high-speed internet coverage to underserved and unserved areas across Ontario and Quebec in recent years.³¹ oxio uses Cogeco infrastructure to reach customers on Cogeco's operating footprint in Ontario and Quebec; it accesses other HFC network infrastructure via wholesale HSA in Alberta, British Columbia, Manitoba, and Saskatchewan, as well as parts of Ontario and Quebec.³² oxio currently has [REDACTED] subscribers.³³
- (25) In part as a response to consumer demand for bundled wireless and wireline service, Cogeco is preparing to launch wireless services in its home territory. In its 2023 Annual Report, Cogeco lists "launch and grow mobile services" as one of its five "growth vectors," and motivated in part by "evolving customer needs and increased interest in bundled services."³⁴ In May 2024, Cogeco initiated the rollout of its wireless service in the US.³⁵ It also signed a five-year MVNO agreement with a national wireless network in August 2024 to bring wireless service to its wireline footprint in

²⁷ Cogeco serves an additional one million customers through its Breezeline brand in 13 eastern US states. Cogeco, Q3 2024 Shareholders' Report, 18, 20, https://cdn.corpo.cogeco.com/cca/6717/2073/6084/CCA.Q3.2024_-_Shareholders_Report.pdf; Cogeco, 2023 Annual Report, 16,

https://cdn.corpo.cogeco.com/cca/4517/0240/4280/9465D_Rapport_Annuel_2023_CCA_EN_F.pdf.

Cogeco, "Cogeco Connexion Announces the Acquisition of oxio," news release, February 21, 2023, <https://corpo.cogeco.com/cca/en/press-room/press-releases/cogeco-connexion-announces-acquisition-oxio/>.

²⁸ Cogeco, 2023 Annual Report, 16, https://cdn.corpo.cogeco.com/cca/4517/0240/4280/9465D_Rapport_Annuel_2023_CCA_EN_F.pdf.

²⁹ Internal Cogeco data provided by Cogeco Regulatory department.

³⁰ Internal Cogeco data provided by Cogeco Regulatory department.

³¹ Cogeco, 2023 Annual Report, 24, https://cdn.corpo.cogeco.com/cca/4517/0240/4280/9465D_Rapport_Annuel_2023_CCA_EN_F.pdf.

³² Internal Cogeco data provided by Cogeco Regulatory department.

³³ Internal Cogeco data provided by Cogeco Regulatory department.

³⁴ Cogeco, 2023 Annual Report, 19, https://cdn.corpo.cogeco.com/cca/4517/0240/4280/9465D_Rapport_Annuel_2023_CCA_EN_F.pdf.

³⁵ Cogeco, 2024 Annual Report, 8, https://cdn.corpo.cogeco.com/cca/2017/3041/5952/CCA.Q4.2024_-_Annual_Report.pdf.

Canada,³⁶ with the intent to enable wireless and wireline bundling.³⁷ Cogeco owns wireless spectrum that covers 100% of its wireline footprint.³⁸

IV.B. Eastlink

- (26) Eastlink is a facilities-based, privately held Canadian telecommunications company providing internet, wireline telephone, mobile wireless, and TV services throughout their serving areas in seven Canadian provinces.³⁹
- (27) Eastlink provides wireline internet primarily through HFC as well as some FTTP internet technology to approximately [REDACTED] customers.⁴⁰ Eastlink's wireline footprint is located throughout Atlantic Canada, Ontario, Alberta, and British Columbia, with a primary focus on rural Canada.⁴¹ Eastlink does not use wholesale HSA to serve its customers.⁴²
- (28) Eastlink launched its first wireless services in Nova Scotia and Prince Edward Island in 2013. Since then, it has expanded its wireless network throughout Atlantic Canada, Ontario and Alberta.⁴³ Eastlink provides wireless services to approximately [REDACTED] customers and continues to expand its network.⁴⁴ For example, it recently launched wireless service in northern New Brunswick.⁴⁵

IV.C. Reseller competitors

- (29) While it is difficult to accurately measure the share of home internet customers nationally or provincially who are purchasing from resellers, the CRTC found that over 1 million Canadian households nationally were served by resellers in 2018.⁴⁶ It found that resellers were able to establish

³⁶ Cogeco, 2024 Annual Report, 8, 22, https://cdn.corpo.cogeco.com/cca/2017/3041/5952/CCA.Q4.2024_-_Annual_Report.pdf.

³⁷ Cogeco, 2024 Annual Report, 63, https://cdn.corpo.cogeco.com/cca/2017/3041/5952/CCA.Q4.2024_-_Annual_Report.pdf.

³⁸ Cogeco, "Investor Update," October 31, 2024, 18, https://cdn.corpo.cogeco.com/cca/7417/3041/5999/Q4-2024_IR_PRESENTATION.pdf.

³⁹ "Our Network & Services," Eastlink, accessed November 4, 2024, <https://residential.eldmztest.com/ournetwork>; Internal Eastlink data provided by Eastlink Regulatory department.

⁴⁰ Internal Eastlink data provided by Eastlink Regulatory department.

⁴¹ Confidential Eastlink response to Interrogatory in regard to CRTC 2023-56, Attachment 1, Question 6, April 25, 2023.

⁴² Internal Eastlink data provided by Eastlink Regulatory department.

⁴³ "Our Story," Eastlink, <https://www.eastlink.ca/about/about-us/our-story>, accessed October 31, 2024.

⁴⁴ Internal Eastlink data provided by Eastlink Regulatory department.

⁴⁵ Eastlink, "Eastlink continues its mobile expansion in Northern NB. Now offering mobile choice and competition in Tracadie," news release, June 25, 2024, https://www.eastlink.ca/about/media-centre?newsid=1215&srsId=AfmBOop2rpueeG5PBJZ3IWKGuyNcrEHKod7gH5LQmxsfX-KTdJX_ML8z.

⁴⁶ Competition Bureau Canada, "Delivering Choice: A Study of Competition in Canada's Broadband Industry," August 7, 2019, 19–20, <https://competition-bureau.canada.ca/sites/default/files/attachments/2022/CSBP-BR-Main-Eng.pdf>.

15–20% market share in regions where they focused marketing efforts in 2018.⁴⁷ The presence of resellers has declined in recent years; relative to 2021, the number of wholesale internet lines declined in 2022 by 10% across Canada, with a 12.5% and 12.8% decrease in Ontario and Quebec, respectively.⁴⁸

- (30) Cogeco provides wholesale HSA to a number of resellers across its wireline footprint, including many resellers owned by the Big 3.⁴⁹ As of July 2024, resellers provided wireline internet service to over [REDACTED] subscribers via Cogeco’s wireline facilities,⁵⁰ which equates to a share of roughly [REDACTED] of all households with internet service provided by Cogeco’s network.⁵¹ As of January 2024, over [REDACTED] end users received wireline internet service from resellers utilizing Eastlink.⁵²

IV.D. Big 3

- (31) Bell Canada, Rogers, and TELUS together hold a dominant share of both the wireless and wireline markets in Canada.⁵³ Together, they have a nearly 90% subscriber share of the wireless market in Canada, and nearly 80% of the wireline market among facilities-based carriers, as shown in Figure 1 below.
- (32) Each has grown in part through acquisitions in recent years, such as the acquisition of the wireline assets of Shaw by Rogers in 2023,⁵⁴ the acquisition of MTS by Bell in 2017,⁵⁵ and a series of acquisitions by the Big 3 of resellers such as Altima by TELUS, Comwave by Rogers, and EBOX by Bell.⁵⁶ TELUS has been the most aggressive in its use of wholesale HSA framework. TELUS accounts for over [REDACTED] of all TPIA end-users on Cogeco’s network, and their portion of total

⁴⁷ Competition Bureau Canada, “Delivering Choice: A Study of Competition in Canada’s Broadband Industry,” August 7, 2019, 21, <https://competition-bureau.canada.ca/sites/default/files/attachments/2022/CSBP-BR-Main-Eng.pdf>.

⁴⁸ Canadian Radio-television and Telecommunications Commission, “Annual highlights of the telecommunications sector 2022,” 14, <https://crtc.gc.ca/eng/publications/reports/PolicyMonitoring/2023/tel.htm>.

⁴⁹ Internal Cogeco data provided by Cogeco Regulatory department.

⁵⁰ Internal Cogeco data provided by Cogeco Regulatory department.

⁵¹ Cogeco provides internet service to roughly 900,000 households, as shown in Figure 1.

⁵² Confidential Eastlink response to Interrogatory in regard to CRTC 2023-56, Attachment 3, Question 9, April 25, 2023.

⁵³ See Appendix B for their wireless footprints.

⁵⁴ On April 3, 2023, Rogers announced completion of the acquisition of Shaw Communications Inc. Rogers Investor Relations, “Acquisition of Shaw,” accessed November 4, 2024, <https://investors.rogers.com/shaw/>.

















⁵⁵ On March 17, 2017, BCE announced the completion of the acquisitions of MTS. BCE, “Acquisition of MTS – March 17, 2017,” accessed November 4, 2024, <https://www.bce.ca/investors/shareholder-info/corporate-actions/mts>.

⁵⁶ Bell and TELUS acquired EBOX and Altima respectively in 2022, while Rogers acquired Comwave in 2023. Lynn Greiner, “Telus quietly acquires London, Ont.-based ISP,” IT World Canada, February 6, 2023, <https://www.itworldcanada.com/article/telus-quietly-acquires-london-ont-based-isp/525728>; Wildeboer Dellelce LLP, “Wildeboer Dellelce acts for Comwave Networks Inc. in its Acquisition by Rogers Communications Canada Inc.” news release, November 1, 2023, <https://wildlaw.ca/transactions/rogers-communications-canada-inc-completes-acquisition-of-comwave-networks-inc>; “Bell acquires Longueuil-based Internet provider EBOX,” Newswire, February 24, 2022, <https://www.newswire.ca/news-releases/bell-acquires-longueuil-based-internet-provider-ebox-819104090.html>.

TPIA subscribers on Cogeco’s network has grown over the past four quarters.⁵⁷ With its relatively smaller wireline footprint than the other Big 3 firms, TELUS has greater opportunity to leverage the HSA regime, yet with revenues of roughly \$20 billion in 2023 (over 6 times that of Cogeco) and assets totaling \$56 billion (almost 6 times that of Cogeco), TELUS is by no means in equal competition with Cogeco.⁵⁸ Although this may generate short-term price disruption, as I will explain, the history of wireless competition in Canada and the economics of coordination more broadly are supportive of significant risks to competition in the long term.

- (33) Figure 1 shows the substantial gap between the Big 3 and other facilities-based telecom competitors in Canada, in both wireline and wireless, in number and share of households.⁵⁹

Figure 1. Comparison of facilities-based competitors

Category	Provider	Number served (millions)		Share served	
		Wireless households	Wireline customers	Wireless households	Wireline customers
Big 3	Bell	10.3	4.5		
	Rogers	11.6	4.2		
	TELUS	10	2.6		
Smaller facilities-based competitors	Cogeco		0.9		
	Eastlink				
	SaskTel	0.7	0.5		
	Videotron	3.9	1.7		

Source: Publicly available company information and 2023/2024 company financial reports. Eastlink data is internal and provided by Eastlink Regulatory department.

Note: Wireless households represent mobile wireless customers and wireline represents wireline internet users. SaskTel wireline households served include “wireline network accesses” and “internet and data accesses.”

⁵⁷ Internal Cogeco data provided by Cogeco Regulatory department.

⁵⁸ Cogeco, 2023 Annual Report, 5, 26, https://cdn.corpo.cogeco.com/cca/4517/0240/4280/9465D_Rapport_Annuel_2023_CCA_EN_F.pdf; TELUS, 2023 Annual Report, 4, <https://www.telus.com/en/about/investor-relations/reports/annual-reports>.

⁵⁹ See Appendix B for the wireless footprints of the Big 3. For wireline, Bell has more infrastructure in Eastern Canada, and TELUS has more infrastructure in Western Canada. Bell response to CRTC in regard to TNC 2023-56, DM#4351030, March 8, 2023. TELUS response to CRTC in regard to TNC 2023-56, DM#4389191, June 13, 2023.

V. The CRTC rulemaking risks undercutting smaller facilities-based carriers and cementing the dominance of the Big 3 in Canadian telecom

- (34) The CRTC has pointed to the “disruptive” potential of out-of-territory entry of the Big 3 into wireline resale as a justification for its policy position.⁶⁰ The history of competition among the Big 3 in wireless telephony casts doubt on that conclusion. As I reported in previous submissions to the CRTC in its evaluation of wireless MVNO rulemaking, competition among the Big 3 in wireless did not lead to competitive wireless prices without additional pressure by smaller competitors.⁶¹ That fact, in that context, underscored the importance of preserving and facilitating the competition offered by emerging facilities-based competitors such as Shaw and Videotron and strong regional competitors such as SaskTel and MTS.⁶²
- (35) As I discussed then, the danger of a poorly designed policy was that it might undercut smaller competitors’ ability and incentive to invest and compete.⁶³ An overly broad wireline HSA mandate carries the same risks that an overly broad MVNO mandate did. The current policy gives Canada’s largest telecommunications companies equal access to a regulated regime that is designed to facilitate competition from smaller competitors. In this light, the policy risks being self-defeating. Smaller facilities-based competitors such as Cogeco and Eastlink, when faced with increased competition from national incumbents with the ability to bundle multiple telecom services, including over the wireline networks of smaller facilities-based competitors, may see their viability threatened, with the risk that such networks are ultimately taken over by the Big 3. The history of wireless competition in

⁶⁰ Canadian Radio-television and Telecommunications Commission, “Telecom Regulatory Policy CRTC 2024-180,” Public record 1011-NOC2023-0056, August 13, 2024, ¶ 42 (“The Commission considers that where an incumbent operates out-of-territory, it is acting as a new competitor with the potential to disrupt the status quo, to the benefit of consumers. Such access enables the incumbents to provide new competitive offers and puts pressure on all competitors to deliver additional benefits for consumers.”).

⁶¹ See Eric Emch, “An assessment of wholesale roaming policy in Canada: Response to initial interventions in Telecom Notice of Consultation CRTC 2017-259,” Report prepared for Shaw Communications Inc. in the matter of Telecom Notice of Consultation CRTC 2017-259, October 27, 2017, https://ised-isde.canada.ca/site/examen-legislation-radiodiffusion-telecommunications/sites/default/files/attachments/997_ShawCommunications_AppendixB-EmchReport_Oct2017.pdf; Eric Emch, “The evolution of facilities-based competition in Canada: Recent gains and regulatory risks,” Report prepared for Shaw Communications Inc. in the matter of Telecom Notice of Consultation CRTC 2019-57, May 15, 2019.

⁶² See Eric Emch, “An assessment of wholesale roaming policy in Canada: Response to initial interventions in Telecom Notice of Consultation CRTC 2017-259,” Report prepared for Shaw Communications Inc. in the matter of Telecom Notice of Consultation CRTC 2017-259, October 27, 2017, § V, https://ised-isde.canada.ca/site/examen-legislation-radiodiffusion-telecommunications/sites/default/files/attachments/997_ShawCommunications_AppendixB-EmchReport_Oct2017.pdf; Eric Emch, “The evolution of facilities-based competition in Canada: Recent gains and regulatory risks,” Report prepared for Shaw Communications Inc. in the matter of Telecom Notice of Consultation CRTC 2019-57, May 15, 2019, § V.

⁶³ See Eric Emch, “The evolution of facilities-based competition in Canada: Recent gains and regulatory risks,” Report prepared for Shaw Communications Inc. in the matter of Telecom Notice of Consultation CRTC 2019-57, May 15, 2019, § VII.

Canada and the economics of coordination more broadly indicate that risks to telecom competition in this scenario cannot be ignored.

V.A. Role of smaller facilities-based competitors historically

- (36) As I documented in previous submissions to the CRTC, the history of the Canadian wireless market demonstrates the importance of having smaller facilities-based carriers in competition with the Big 3.⁶⁴ Carriers like Freedom Mobile (Shaw), Videotron, SaskTel, and MTS (before its merger with Bell) have had a disproportionate impact on wireless prices. The Competition Bureau documented the impact of regional competitors in early 2017, noting that it had:

[C]onducted a thorough pricing analysis using confidential internal company data. The results of this analysis showed that mobile wireless pricing in Saskatchewan, Thunder Bay, Quebec and Manitoba is substantially lower than in the rest of Canada. These are all areas that have a strong regional competitor... The Bureau concluded that these differences in price could not be explained by factors such as quality, differences in demand or demographics, but instead were based on the existence or nonexistence of a strong regional competitor.⁶⁵

- (37) Such an analysis is consistent with economic theory, which shows that high-price outcomes are more likely when firms have a high degree of multi-market contact across products and geographies, and are less likely when smaller, “maverick” firms with diverging incentives are present in a market.

V.B. The economics underlying the importance of smaller facilities-based carriers

- (38) Competition authorities worldwide, as well as academic economists recognize that certain markets with small numbers of participants can be susceptible to collusive or coordinated behaviour, which may take explicit or tacit forms.⁶⁶ In the case of wireline telephony, that danger of coordination is

⁶⁴ See Eric Emch, “The evolution of facilities-based competition in Canada: Recent gains and regulatory risks,” Report prepared for Shaw Communications Inc. in the matter of Telecom Notice of Consultation CRTC 2019-57, May 15, 2019, § V.

⁶⁵ Government of Canada, “Acquisition of MTS by Bell,” February 15, 2017, <https://competition-bureau.canada.ca/how-we-foster-competition/education-and-outreach/position-statements/acquisition-mts-bell>.

⁶⁶ The Competition Bureau states that “[c]oordination involves interaction by a group of firms (including the merged firm) that is profitable for each firm because of each firm's accommodating reactions to the conduct of the others. Coordinated behaviour may relate to price, service levels, allocation of customers or territories, or any other dimension of competition.” Competition Bureau Canada, “Merger Enforcement Guidelines,” October 6, 2011, ¶ 6.24, <https://ised-isde.canada.ca/site/competition-bureau-canada/en/how-we-foster-competition/education-and-outreach/publications/merger-enforcement-guidelines>. See also US Department of Justice and the Federal Trade Commission, Merger Guidelines, December 18, 2023, § 2.3, <https://www.justice.gov/d9/2023-12/2023%20Merger%20Guidelines.pdf>; UK Competition and Markets Authority, Merger Assessment Guidelines,

mitigated by the fact that, even though there are a small number of facilities-based players in each region dictated by economies of scale in building out wireline networks, different technologies mean that the underlying costs and opportunities are not symmetric, and different firms even in a duopoly may have asymmetric incentives to invest to pull ahead of competitors rather than coordinate.⁶⁷

- (39) However, the identity of the owners of the wireline networks matters for competitive outcomes in telecom. The economic literature on multi-market contact, and the focus in merger policy on the important competitive role of “maverick” firms, points to a conclusion that an important dimension of competition in telecom is preserved by having wireline networks owned by firms other than the Big 3. This is true particularly to the extent that wireless and wireline technologies will increasingly compete in the future, and these smaller wireline firms are potential entrants or disruptors in other areas of telecom.

V.B.1. The economics of multi-market contact

- (40) Firms can coordinate explicitly (through communication and agreement) or tacitly (without explicit communication) across a variety of dimensions of competition, including price, product offerings, customers, wages, benefits, or geographical footprint. Explicit collusion is illegal in Canada, but tacit collusion may not be.⁶⁸ However, one of the primary goals of merger review in Canada is to prohibit mergers that facilitate tacitly coordinated outcomes.⁶⁹ This is because market structure, including both

March 18, 2021, § 6,

https://assets.publishing.service.gov.uk/media/61f952dd8fa8f5388690df76/MAGs_for_publication_2021_--_.pdf.

The Competition Bureau also mentions that “[c]oordinated behaviour may involve tacit understandings that are not explicitly negotiated or communicated among firms. Tacit understandings arise from mutual yet independent recognition that firms can, under certain market conditions, benefit from competing less aggressively with one another. Coordinated behaviour may also involve express agreements among firms to compete less vigorously or to refrain from competing. Such agreements may raise concerns under the conspiracy and bid-rigging provisions of the Act.” Competition Bureau Canada, “Merger Enforcement Guidelines,” October 6, 2011, ¶ 6.25, <https://ised-isde.canada.ca/site/competition-bureau-canada/en/how-we-foster-competition/education-and-outreach/publications/merger-enforcement-guidelines>.

The academic literature also supports this idea. As described by Motta (2004), “[i]n economics collusion is a situation where firms’ prices are higher than some competitive benchmark” and this outcome can occur “both when firms act through an organi[z]ed cartel (explicit collusion), or when they act in a purely non-co-operative way (tacit collusion).” Massimo Motta, *Competition Policy: Theory and Practice* (Oxford, UK: Cambridge University Press, 2004), 138.

⁶⁷ See Eric Emch, “An evaluation of competition and wholesale HSA regulation in Canada,” Report prepared for Bell Canada in the matter of Telecom Notice of Consultation CRTC 2023-356, June 20, 2023, § V.

⁶⁸ Government of Canada, “Bid-rigging, price-fixing and other agreements between competitors — Common types of illegal agreements that hinder competition,” updated July 22, 2024, <https://competition-bureau.canada.ca/bid-rigging-price-fixing-and-other-agreements-between-competitors/bid-rigging-price-fixing-and-other-agreements-between-competitors-common-types-illegal-agreements>. (“A cartel forms when two or more parties agree not to compete with one another. A cartel can be created through a simple verbal agreement made by a group of business people over lunch or it could be a highly structured arrangement with strict rules that are monitored and enforced.”; “There are six common types of illegal agreements: price-fixing, market allocation, restricting supply, bid-rigging, wage-fixing and no-poaching.”)

⁶⁹ According to the Canadian Merger Enforcement Guidelines, “[a] merger may prevent or lessen competition substantially when it facilitates or encourages coordinated behaviour among firms after the merger. The Bureau’s analysis of these coordinated effects entails determining how the merger is likely to change the competitive dynamic in the market such that coordination is substantially more likely or effective.” The Guidelines further state that

the number and the identity of competitors, is an important factor in determining whether tacit collusion is likely.

- (41) One way in which the identity of competitors can matter for the possibility of coordination is in the degree to which firms interact across multiple products or geographies. The economic literature has shown that such “multi-market contact” can enhance the sustainability of collusive outcomes and increase the probability of coordination across firms.
- (42) The possibility that multimarket contact can foster anticompetitive outcomes was first raised by economist Corwin Edwards. He described the incentive to “live and let live” when firms face a stronger threat of retaliatory action across multiple markets for any competitive action:

When one large conglomerate enterprise competes with another, the two are likely to encounter each other in a considerable number of markets. The multiplicity of their contacts may blunt the edge of their competition. A prospect of advantage from vigorous competition in one market may be weighed against the danger of retaliatory forays by the competitor in other markets. Each conglomerate may develop a live-and-let-live policy designed to stabilize the whole structure of the competitive relationship.⁷⁰

- (43) Bernheim and Whinston (1990) formalized the intuitive notion of “live and let live” coordination discussed by Edwards (1955).⁷¹ Their theoretical model clarifies that multimarket contact allows firms to effectively “transfer” the ability to collude from one market to another when demand and cost conditions are more conducive for collusion in some markets than others. Intuitively, coordination is more difficult when firms are asymmetric—their interests diverge and it is thus more difficult to reach a common understanding of an appropriate “collusive” outcome, let alone sustain that outcome when conditions change. When firms interact across multiple markets, however, these asymmetries can be smoothed such that the firms are effectively more symmetric in the broader context. For example, suppose one firm is dominant in a particular province—its “home market”—and prices are high in that market. A much smaller firm in that market may have much to gain by aggressive competition and much less to lose by lower market-wide prices, since its installed base in that market is much smaller. Suppose the smaller firm, however, has its own “home market,” where

“[c]oordinated behaviour may involve tacit understandings that are not explicitly negotiated or communicated among firms. Tacit understandings arise from mutual yet independent recognition that firms can, under certain market conditions, benefit from competing less aggressively with one another.” Competition Bureau Canada, “Merger Enforcement Guidelines,” October 6, 2011, ¶ 6.23 and ¶ 6.25, <https://ised-isde.canada.ca/site/competition-bureau-canada/en/how-we-foster-competition/education-and-outreach/publications/merger-enforcement-guidelines>.

⁷⁰ Corwin Edwards, as quoted by Heggstad and Rhoades (1978). Arnold A. Heggstad and Stephen A. Rhoades, “Multi-market interdependence and local market competition in banking,” *The Review of Economics and Statistics* 60, no. 4 (November 1978): 523-532.

⁷¹ B. Douglas Bernheim and Michael D. Whinston, “Multimarket Contact and Collusive Behavior,” *RAND Journal of Economics* 21, no. 1 (Spring 1990): 1-26.

the situations are reversed. Then, aggressive competition in one market may lead to aggressive competition in the other, and both firms have a lot to lose from that outcome. Coordination in that case is easier to sustain over both markets combined than each market individually.

- (44) The theoretical result of multimarket contact increasing the risk of coordination is supported by empirical findings in various industries, including telecommunications and airline.
- (45) Parker and Röller (1997) studied how the degree of collusion in the US mobile telephony industry in situations with few competitors was impacted by multimarket contact and cross-ownership.⁷² In late 1983, the US Federal Communications Commission (FCC) granted two spectrum licenses within each US standard metropolitan statistical area (SMSA), thus introducing a regional duopolistic market structure.⁷³ Using a structural model and data on prices, outputs, input costs, and market structure of the US mobile telephony industry, the authors find that the duopolistic structure of that industry on average is significantly more collusive than the noncooperative duopoly outcome.⁷⁴ To test multimarket effects, they studied the correlation between the degree of collusion (estimated as a parameter in the structural model) and the number of markets where the two competitors face each other. They found that multimarket contact significantly increases collusion.⁷⁵
- (46) Studies in the airline industry also find multimarket contact increases the likelihood of coordination and leads to higher prices. Evans and Kessides (1994) analyzed airline fares in the US between 1984 and 1988—a period of increased multimarket contact due to rapid consolidation—and found that fares were higher on routes where the competing carriers had extensive inter-route contacts.⁷⁶ Their finding is consistent with claims of industry experts that airlines live by the “golden rule,” i.e., that they refrain from initiating aggressive pricing in a given route for fear of what their competitors might do to retaliate in other overlap routes.⁷⁷ Ciliberto and Williams (2014) confirmed the findings of Evans and Kessides (1994) with more recent data, and utilized a structural model to study how multimarket contact affected tacit collusion (estimated as a parameter in their model).⁷⁸ They found

⁷² Philip M. Parker and Lars-Hendrik Röller, “Collusive conduct in duopolies: multimarket contact and cross-ownership in the mobile telephone industry,” *RAND Journal of Economics* 28, no. 2 (Summer 1997).

⁷³ Philip M. Parker and Lars-Hendrik Röller, “Collusive conduct in duopolies: multimarket contact and cross-ownership in the mobile telephone industry,” *RAND Journal of Economics* 28, no. 2 (Summer 1997): 306.

⁷⁴ Philip M. Parker and Lars-Hendrik Röller, “Collusive conduct in duopolies: multimarket contact and cross-ownership in the mobile telephone industry,” *RAND Journal of Economics* 28, no. 2 (Summer 1997): 317, 321.

⁷⁵ Philip M. Parker and Lars-Hendrik Röller, “Collusive conduct in duopolies: multimarket contact and cross-ownership in the mobile telephone industry,” *RAND Journal of Economics* 28, no. 2 (Summer 1997): 315–320.

⁷⁶ William N. Evans and Ioannis N. Kessides, “Living by the ‘golden rule’: Multimarket contact in the US airline industry,” *Quarterly Journal of Economics* 109, no. 2 (May 1994).

⁷⁷ William N. Evans and Ioannis N. Kessides, “Living by the ‘golden rule’: Multimarket contact in the US airline industry,” *Quarterly Journal of Economics* 109, no. 2 (May 1994): 341.

⁷⁸ Federico Ciliberto and Jonathan W. Williams, “Does multimarket contact facilitate tacit collusion? Inference on conduct parameters in the airline industry,” *RAND Journal of Economics* 45, no. 4 (Winter 2014).

that carriers with little multimarket contact did not cooperate in setting fares, while carriers with a significant amount of multimarket contact could sustain near-perfect cooperation in setting fares.⁷⁹

- (47) The anticompetitive effects of multimarket contact are also widely recognized by competition authorities. The Competition Bureau merger guidelines state that “when firms participate in multiple geographic or product markets, there are greater opportunities for them to discourage deviation from coordinated behaviour because there is broader scope for punishing deviations.”⁸⁰

V.B.2. The role of “maverick” firms

- (48) So-called “maverick” firms may play a particularly important role in constraining coordination and anticompetitive prices.⁸¹ Maverick behaviour is the result of certain firms having different incentives than leading firms in the industry, resulting from asymmetries in size, technology, or scope, with the last directly relating to the multi-market contact idea discussed above. A maverick firm is a firm that faces substantially different tradeoffs than its rivals. For that reason, it may prefer a different market equilibrium than its rivals and resist coordinated outcomes. For example, it may be a firm with a different capacity utilization or a firm that more heavily discounts future profits relative to profits today.⁸² The 2010 US Horizontal Merger Guidelines illustrate the disruptive role of maverick firms through a few examples:

For example, if one of the merging firms has a strong incumbency position and the other merging firm threatens to disrupt market conditions with a new technology or business model, their merger can involve the loss of actual or potential competition. Likewise, one of the merging firms may have the incentive to take the lead in price cutting or other competitive conduct or to resist increases in industry prices. A firm that may discipline prices based on its ability and incentive to expand production rapidly using available capacity also can be a maverick, as can a firm that has often

⁷⁹ Federico Ciliberto and Jonathan W. Williams, “Does multimarket contact facilitate tacit collusion? Inference on conduct parameters in the airline industry,” *RAND Journal of Economics* 45, no. 4 (Winter 2014): 766.

⁸⁰ Competition Bureau Canada, “Merger Enforcement Guidelines,” October 6, 2011, ¶ 6.33, <https://ised-isde.canada.ca/site/competition-bureau-canada/en/how-we-foster-competition/education-and-outreach/publications/merger-enforcement-guidelines>.

⁸¹ Jonathan B. Baker and Timothy F. Bresnahan, “Economic Evidence in Antitrust: Defining Markets and Measuring Market Power,” *Handbook of Antitrust Economics*, ed. Paolo Buccirossi (Cambridge, MA: MIT Press, 2008), 22 (“[i]n a market in which coordination is imperfect and incomplete—as coordinated oligopoly conduct would be expected to be, given the difficulties firms subject to the antitrust laws have in communicating and making side payments—one firm, termed the maverick, may constrain the effectiveness of coordinated pricing while its rivals would be willing to coordinate more completely (as by raising the industry price closer to the monopoly level).”).

⁸² See, e.g., Massimo Motta, *Competition Policy: Theory and Practice* (Oxford, UK: Cambridge University Press, 2004), 143, footnote 11.

resisted otherwise prevailing industry norms to cooperate on price setting or other terms of competition.⁸³

- (49) Maverick firms can play an outsized competitive role by disrupting potential coordination by other players in an industry.^{84,85} A regulatory outcome that increases symmetries between leading firms and reduces the viability of potential maverick firms, or eliminates them altogether, can weaken competition and harm customers by making anti-competitive coordination in the market more effective or more likely to arise.⁸⁶

V.C. Wireline services are increasingly bundled with wireless services

- (50) The Big 3 increasingly offer their wireline and wireless services in bundles.⁸⁷ Consumers' interest in bundled services can be due to lower bundled prices as well as the convenience of having a single account with a single bill for multiple services.⁸⁸ This increased scope of bundling puts smaller

⁸³ US Department of Justice and the Federal Trade Commission, Horizontal Merger Guidelines, August 19, 2010, ¶ 2.1.5, <https://www.justice.gov/atr/file/810276/dl?inline>.

⁸⁴ See, e.g., Baker (2002) for a description of how Northwest Airlines, a maverick firm in the airline industry, prevented two attempted parallel price increases from multiple other airlines, interpreted best as resulting from imperfect coordination. Jonathan B. Baker, "Mavericks, mergers, and exclusion: Proving coordinated competitive effects under the antitrust laws," *New York University Law Review* 77 (April 2002): 166–173.

⁸⁵ Relatedly, economists and antitrust enforcers recognize the important role that "nascent competitors"—competitors that are relatively small currently but could grow into a significant rival to the dominant players of a market—can play.

See, e.g., Hemphill and Wu (2020), who acknowledge the importance of nascent competitors in competition and relevant considerations in antitrust enforcement. C. Scott Hemphill and Tim Wu, "Nascent competitors," *University of Pennsylvania Law Review* 168 (2020).

The 2023 US Merger Guidelines recognize that acquisitions of nascent competitors can entrench a dominant position. US Department of Justice and the Federal Trade Commission, Merger Guidelines, December 18, 2023, 20–21, https://www.ftc.gov/system/files/ftc_gov/pdf/2023_merger_guidelines_final_12.18.2023.pdf.

⁸⁶ Jonathan B. Baker and Carl Shapiro, "Reinvigorating Horizontal Merger Enforcement," *How the Chicago School Overshot the Mark: The Effect of Conservative Economic Analysis on U.S. Antitrust*, ed. Robert Pitofsky, (Oxford, UK: Oxford University Press, 2008), 261–262. ("[H]orizontal mergers affect the likelihood and effectiveness of coordination by altering the constraints imposed by maverick producers. If an acquisition involves a maverick, the merged firm would likely pose less of a constraint on coordination than before, leading to higher prices." "If a merger narrows asymmetries among sellers—as by reducing the differences among sellers in product attributes or seller costs—it most likely reduces the odds that a maverick firm would prefer a substantially lower coordinated price than its rivals, and thus tends to lead to higher prices by making coordination more effective.").

⁸⁷ In the US, industry participants have noted "an unprecedented level of convergence of offers, with top telecom companies now offering discounts for converged wireline-wireless bundles" since 2022. Jeff Moore, "Convergence of wireless and wireline offers is a telecom megatrend – Moore," Fierce Network, July 14, 2022, <https://www.fierce-network.com/wireless/convergence-wireless-and-wireline-offers-telecom-megatrend-moore>.

See also "Bundles: Internet + Mobility," Bell, accessed November 4, 2024, <https://www.bell.ca/Bell-bundles/Internet-Mobility>; "5G mobile plans," Rogers, accessed October 23, 2024, https://www.rogers.com/plans?icid=R_WIR_CMH_6WCMCMZ; "Mobile and Home Bundles," TELUS, accessed November 4, 2024, <https://www.telus.com/en/deals-and-bundles/internet-tv-phone>.

⁸⁸ David Anders, "5 Reasons to Bundle Home Internet (and a Few Reasons You Shouldn't)," CNET, October 4, 2024, <https://www.cnet.com/home/internet/when-should-you-bundle-home-internet-with-other-services/>.

wireline competitors who are relatively weaker in wireless at a disadvantage to national wireless incumbents, if the latter are able to offer such bundles nationwide through the wholesale HSA regime.

- (51) For Bell, sales of wireline and wireless bundles are increasing over time. In 2024 Q2, Bell reported that 41% of new internet customers subscribed to a service bundle with wireless.⁸⁹ In the same quarter, Bell's wireline and wireless bundles in Bell's fibre footprint saw 18% year-over-year growth.⁹⁰ This growth has brought the percentage of Bell's residential households that subscribe to a wireline-wireless bundle to 48%.⁹¹ TELUS CEO Darren Entwistle recently said that premium wireline-wireless bundles will be a focus for the carrier.⁹² Further, TELUS attributes its growth in mobile wireless phone subscribers in part to the success of wireless and wireline bundles.⁹³ One motivation behind Rogers' recent \$26 billion acquisition of Shaw was to create "attractive bundled services," including wireline-wireless bundles.⁹⁴ Data from Eastlink show that their sales of wireline and wireless bundles have increased from [REDACTED] of their customers to [REDACTED] from 2020 to 2024, even though differences between their wireline and wireless footprints limit their ability to bundle the two.⁹⁵
- (52) Growth in wireline and wireless bundles is also a driver in acquisition strategy for providers internationally. In Europe, the convergence of wireless and wireline has been a common theme in M&A activity, with over 19 transactions that combined wireless and wireline providers between 2013 and 2023.⁹⁶ Across the telecom industry, the convergence of wireless and wireline players was one of the predominant deal types in 2023, and looking forward, wireless and wireline convergence is expected "to remain a trend in Europe, particularly in countries where pure [wireless] or [wireline]

⁸⁹ BCE, "Q2 2024 Results Conference Call," August 1, 2024, 3, <https://www.bce.ca/investors/financial-reporting/2024-Q2/2024-q2-presentation.pdf>.

⁹⁰ BCE, "Q2 2024 Results Conference Call," August 1, 2024, 3, <https://www.bce.ca/investors/financial-reporting/2024-Q2/2024-q2-presentation.pdf>.

⁹¹ BCE, "Q2 2024 Results Conference Call," August 1, 2024, 5, <https://www.bce.ca/investors/financial-reporting/2024-Q2/2024-q2-presentation.pdf>.

⁹² Ritika Dubey, "Telus contends with tough competition, Telus International challenges in Q2," CityNews, August 2, 2024, <https://toronto.citynews.ca/2024/08/02/telus-corp-reports-q2-net-income-up-from-year-ago/>.

⁹³ TELUS, "Management's discussion and analysis: 2024 Q2," accessed October 25, 2024, 21, https://assets.ctfassets.net/fltupc9ltp8m/2UuPv2FVt17SVoxSgSIQm2/c7583a85c11328a7d9002489be051176/TELUS_Q2_2024_MD_A_and_Financial_Statements_EN_08022024.pdf.

⁹⁴ Rogers, "Rogers Closes Transformative Merger with Shaw," news release, April 3, 2023, <https://about.rogers.com/news-ideas/rogers-closes-transformative-merger-with-shaw/>.

⁹⁵ Eastlink's wireless and wireline footprints do not overlap everywhere, so its ability to bundle in some areas is limited. As of October 25, 2024, [REDACTED] of Eastlink's wireline customers have Eastlink wireless, [REDACTED] of Eastlink's wireless customers have Eastlink wireline. Internal Eastlink data provided by Eastlink Regulatory department.

⁹⁶ Georgia Jordan, "Fixed-mobile convergence drives bundle adoption in Europe; low quad-play take-up," S&P Global, November 28, 2023, <https://www.spglobal.com/market-intelligence/en/news-insights/research/fixed-mobile-convergence-drives-bundle-adoption-in-europe-low-quad-play-take-up>.

players have significant market share.”⁹⁷ Similar deals are occurring in Canada, with Rogers’ acquisition of Shaw as a recent example.⁹⁸

- (53) The increased prevalence of wireline and wireless bundling has competitive implications, particularly for smaller wireline competitors that do not yet offer robust wireless services such as Cogeco.⁹⁹

V.D. Big 3 access to the HSA mandate threatens Cogeco and Eastlink as facilities-based competitors

- (54) The increased ability of the Big 3 to access competitors’ wireline services through the wholesale mandate outside of their own footprint means that they will have an increased ability to offer bundled wireline and wireless services outside of that footprint directly in competition with, and potentially on the same wireline network as, smaller regional facilities-based wireline competitors that cannot always offer a comparable bundle. Cogeco cannot currently offer a wireline-wireless bundle at all,¹⁰⁰ and Eastlink’s ability to bundle is limited by differing wireless and wireline footprints.¹⁰¹
- (55) The disadvantage in bundling is aggravated by differences in brand value, financial resources, and retail presence. For example, Bell has over 8,000 retail points of distribution across Canada, and TELUS has over 900 stores.¹⁰² In comparison, Cogeco and Eastlink each has fewer than 30 stores.¹⁰³
- (56) Cogeco estimates that for Ontario and Quebec, over ██████ in revenue for Cogeco is at stake.¹⁰⁴ Cogeco projects that its share in this footprint could decrease to less than ██████ of the current share if the Big 3 enter its footprint with wireline services via the HSA mandate, leading to roughly a ██████ decrease in revenue, or loss of more than ██████ in revenue annually.¹⁰⁵ This decrease assumes that independent resellers will disappear and that bundling levels by the Big 3 will increase,

⁹⁷ Lena Koolmann, Anthony Luu, and Suzy Shaw, “Thoughtful M&A strategies are key to growth in tech, media, and telecom,” McKinsey & Company, February 29, 2024, <https://www.mckinsey.com/capabilities/m-and-a/our-insights/thoughtful-m-and-a-strategies-are-key-to-growth-in-tech-media-and-telecom>.

⁹⁸ Rogers, “Rogers Closes Transformative Merger with Shaw,” news release, April 3, 2023, <https://about.rogers.com/news-ideas/rogers-closes-transformative-merger-with-shaw/>.

⁹⁹ Cogeco currently does not offer a wireless service in Canada. *See* Section IV.A.

¹⁰⁰ *See* Section IV.A.

¹⁰¹ Eastlink’s wireless and wireline footprints don’t overlap everywhere, so its ability to bundle in some areas is limited. Internal Eastlink data provided by Eastlink Regulatory department.

¹⁰² “BCE Overview,” BCE, accessed October 30, 2024, <https://www.bce.ca/about-bce/bce-overview>; “Stores,” TELUS, accessed October 30, 2024, <https://stores.telus.com/en/>.

¹⁰³ “Find a store,” Cogeco, accessed November 4, 2024, <https://www.cogeco.ca/en/contact>; “Find Your Nearest Eastlink Store,” Eastlink, accessed October 30, 2024, <https://www.eastlink.ca/storelocator?srsId=AfmBOOp7paXeLRwqPqpB6mYpBys7Axcnj9wzJzUIOI4DNrWRo3wCqi9k>.

¹⁰⁴ Internal Cogeco data provided by Cogeco Regulatory department.

¹⁰⁵ Internal Cogeco data provided by Cogeco Regulatory department.

including pre-existing wireless subscribers that will switch to bundling with the Big 3's wireline offerings.¹⁰⁶

- (57) Eastlink has said that it has already shut down service to 61 communities where it could no longer profitably provide business due to the economic effects of wholesale requirements.¹⁰⁷ It believes that allowing the Big 3 incumbents access to the framework will allow those firms to "aggressively capture wireline customers" through bundling.¹⁰⁸ It has noted that allowing these firms on to the HSA framework "would threaten to tip the scales to the point where maintaining [its] network in many communities, urban and rural, would become no longer viable."¹⁰⁹

¹⁰⁶ Internal Cogeco data provided by Cogeco Regulatory department.

¹⁰⁷ Eastlink, "Response to Interrogatory," abridged response in regard to CRTC 2023-56, March 1, 2024, 12.

¹⁰⁸ Eastlink, "Response to Interrogatory," abridged response in regard to CRTC 2023-56, March 1, 2024, 12.

¹⁰⁹ Eastlink, "Response to Interrogatory," abridged response in regard to CRTC 2023-56, March 1, 2024, 13.

VI. The CRTC rulemaking decreases incentives to invest

(58) As I have discussed in earlier proceedings before the CRTC, facilities-based competition is generally superior to reseller competition.¹¹⁰ Facilities-based competitors provide more differentiation and opportunities for innovation than resellers and provide a type of competition that does not require ongoing tariff-setting in markets with rapidly changing technologies. Thus, preserving incentives to invest in networks or technologies is an important consideration in wireline regulation, as it is in wireless regulation.¹¹¹

(59) The CRTC shares this view, and has used it as a justification for prohibiting in-territory access to the HSA mandate for national incumbents:

The Commission considers that Canadians benefit when the incumbents have incentives to continue investing in their networks. Such investment will better ensure that Canadians have access to multiple high-speed wireline networks, which will increase competition and choice in the long run. It will also ensure that Canadians continue to benefit from the resiliency created by multiple networks.¹¹²

(60) Such concerns about maintaining investment incentives properly extend out-of-territory as well. The Big 3 are already able to compete out of territory through alternate technologies such as fixed wireless, and can expand their wireline footprint with additional investment. Such strategies have proven successful for T-Mobile in the United States, for instance, which has entered the home broadband market through a rapidly expanding fixed wireless product as well as recent investments in fibre to the home. By giving the Big 3 a low-cost alternative to expanding their facilities-based competition, the policy risks undercutting that type of competition.

¹¹⁰ See Eric Emch, “The evolution of facilities-based competition in Canada: Recent gains and regulatory risks,” Report prepared for Shaw Communications Inc. in the matter of Telecom Notice of Consultation CRTC 2019-57, May 15, 2019, § V.

See also Eric Emch, “An Assessment of wholesale roaming policy in Canada: The interaction of competition, regulation, access, and investment,” Report prepared for Shaw Communications Inc. in the matter of Telecom Notice of Consultation CRTC 2017-259, September 8, 2017, § V; Eric Emch, “Competition, investment, and MVNO mandates: Evidence on recent market developments and response to initial interventions,” Report prepared for Shaw Communications Inc. in the matter of Telecom Notice of Consultation CRTC 2019-57, November 22, 2019, §IV.B.

¹¹¹ A 2017 report prepared for the European Commission highlighted several studies that analyzed the impact of wholesale broadband competition on investment incentives. A number of studies discussed show that wholesale broadband access regulation reduces investment incentives. The report also pointed to a 2015 study by Godlovitch et al. for Ofcom, the UK’s communications regulator, which shows that competition among providers with their own infrastructure is the main factor in driving network enhancements. James Allen, et. al., “Economic impact of competition policy enforcement on the functioning of telecoms markets in the EU,” European Commission, Directorate-General for Competition, 2017, 68–73, <https://data.europa.eu/doi/10.2763/572780>.

¹¹² Canadian Radio-television and Telecommunications Commission, “Telecom Regulatory Policy CRTC 2024-180,” Public record 1011-NOC2023-0056, August 13, 2024, ¶ 39.

VI.A. Broadband home internet can be provided by alternative technologies

VI.A.1. Fixed wireless

- (61) Fixed wireless broadband service utilizes wireless networks to provide internet to households and businesses. Wireless connections are made to a fixed antenna or a combined modem and router at a customer's premises.¹¹³
- (62) Fixed wireless access (FWA) is easy to deploy in areas where there is already spectrum coverage, since installation does not require any drilling or cabling.¹¹⁴ In the United States, for example, T-Mobile has 5.6 million fixed wireless subscribers, and has added 400,000–500,000 new customers per quarter in recent quarters.¹¹⁵
- (63) The primary downside to fixed wireless as a broad-based alternative to wireline for home service is availability of adequate spectrum to ensure sufficient capacity and speed.¹¹⁶ As additional licenses for spectrum become available, 5G networks in Canada will become more capable.¹¹⁷
- (64) Current providers of fixed wireless internet services in Canada include several facilities-based providers (Bell, TELUS, SaskTel, and Rogers) and Xplore, an internet service provider focused on rural areas.¹¹⁸ Bell's service, advertised as "rural internet," utilizes the provider's wireless broadband network that homes connect to via antenna. Download speeds are advertised to reach up to 50 Mbps.¹¹⁹ TELUS's Smart Hub internet has download speeds ranging from 25 to 200 Mbps depending on the plan, and it can support up to 30 connected devices.¹²⁰ Rogers' wireless 5G home internet is accessible anywhere within its wireless network footprint.¹²¹

¹¹³ Jonathan Kim, "Fixed wireless internet: a broadband alternative emerges," Dgtl Infra, August 25, 2022, <https://dgtlinfra.com/fixed-wireless-internet-broadband/>.

¹¹⁴ Will Townsend, "The 5G Fixed Wireless Access Vs. Fiber Debate," Forbes, February 20, 2024, <https://www.forbes.com/sites/moorinsights/2023/02/20/the-5g-fixed-wireless-access-vs-fiber-debate/>.

¹¹⁵ Joel Leighton, "T-Mobile's Fixed Wireless Internet Continues to Add Customers," Broadband Breakfast, July 31, 2024, <https://broadbandbreakfast.com/t-mobiles-fixed-wireless-internet-continues-to-add-customers/>.

¹¹⁶ Will Townsend, "The 5G Fixed Wireless Access Vs. Fiber Debate," Forbes, February 20, 2024, <https://www.forbes.com/sites/moorinsights/2023/02/20/the-5g-fixed-wireless-access-vs-fiber-debate/>.

¹¹⁷ Ericsson Canada, "Could 5G fixed wireless access be the future of broadband in Canada?" BNN Bloomberg, April 10, 2024, <https://www.bnnbloomberg.ca/ericsson-canada/2024/06/17/could-5g-fixed-wireless-access-be-the-future-of-broadband-in-canada>.

¹¹⁸ "Best Rural Internet Providers in Canada: Satellite, Wireless, and DSL," WhistleOut, April 12, 2023, <https://www.whistleout.ca/CellPhones/Guides/rural-internet>; "About Us," Xplore, accessed on November 5, 2024, <https://www.xplore.ca/about/>.

¹¹⁹ "Rural Internet," Bell, accessed October 18, 2024, https://www.bell.ca/Bell_Internet/promotions/wireless-home-internet.

¹²⁰ "Smart Hub Internet," TELUS, accessed October 22, 2024, https://www.telus.com/en/internet/smart-hub?linkname=Smart_Hub_Internet&linktype=ge-meganav.

¹²¹ "FAQs about Rogers home Internet," Rogers, accessed November 5, 2024,

VI.A.1.a. Fixed wireless in the United States

- (65) Fixed wireless in the United States has seen rapid growth in recent years not only in rural areas but also in urban areas.¹²²
- (66) Internet providers, such as T-Mobile, Verizon, and AT&T, offer fixed wireless home internet through their 5G networks in the US.¹²³ T-Mobile's and Verizon's fixed wireless network footprints are shown in Figure 2 and Figure 3, respectively.¹²⁴ A 2022 industry report noted that Verizon experienced an increase in fixed wireless subscribers while subscribers in wireline decreased.¹²⁵

<https://www.rogers.com/support/mobility/mobile-internet/faqs-about-rogers-5g-home-internet>.

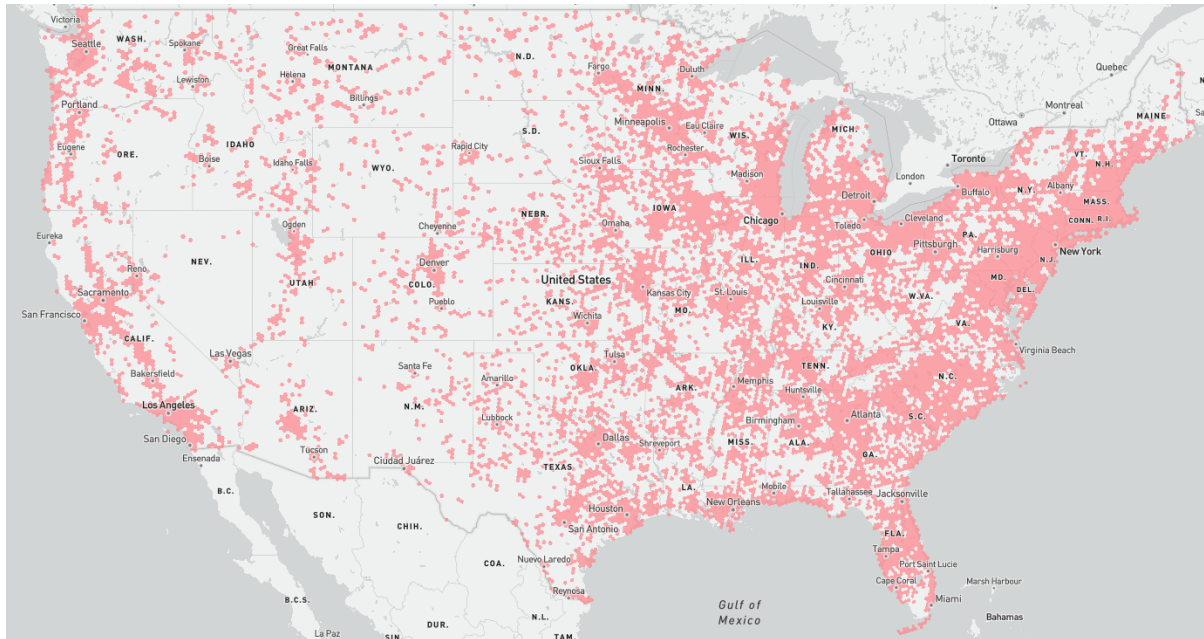
¹²² Robert Wyrzykowski, "5G Fixed Wireless Access (FWA) Success in the US: A Roadmap for Broadband Success Elsewhere?" Opensignal, June 6, 2024, <https://www.opensignal.com/2024/06/06/5g-fixed-wireless-access-fwa-success-in-the-us-a-roadmap-for-broadband-success-elsewhere>.

¹²³ "How it works: A window into 5G wireless internet," T-Mobile, accessed October 25, 2024, https://www.t-mobile.com/home-internet/how-5g-home-internet-works?cmpid=HEIS_PB_P_HMEINTRNET_43700080241008595&gad_source=1&gclid=EAIaIQobChMI2KvK6vqViQMvKJaBR2hlwLQEAAAYASABEgKE1PD_BwE&gclsrc=aw.ds; "Get 5G Home Internet," Verizon, accessed October 25, 2024, https://www.verizon.com/home/internet/5g/?cmp=KNC_H_P_COE_GAW_5GH_2023_12_BP-20815586559&gad_source=1&gclid=EAIaIQobChMI9-i6hPuViQMvM6FaBR3O2xe-EAAYASAAEgIAGfD_BwE&gclsrc=aw.ds; "AT&T Internet Air," AT&T, accessed October 25, 2024, <https://www.att.com/internet/internet-air/>.

¹²⁴ AT&T has a smaller footprint compared to those of T-Mobile and Verizon because AT&T is a newer entrant in fixed wireless internet. Jeff Heynen, "5G Fixed Wireless and the Threat to Cable's US Dominance," Dell'Oro Group, July 31, 2023, <https://www.delloro.com/5g-fixed-wireless-and-the-threat-to-cables-us-dominance/>; Kevin Parrish and Peter Holslin, "AT&T Internet Air Has Arrived Nationwide—Here's How To Get It," HighSpeedInternet.com, October 23, 2024, <https://www.highspeedinternet.com/resources/att-5g-home-air-internet>; "FCC National Broadband Map," Federal Communications Commission, updated December 31, 2023, https://broadbandmap.fcc.gov/provider-detail/fixed?version=dec2023&zoom=4.04&vlon=-97.726512&vlat=37.781049&providers=130077_71_on&br=r&speed=25_3&pct_cvg=10.

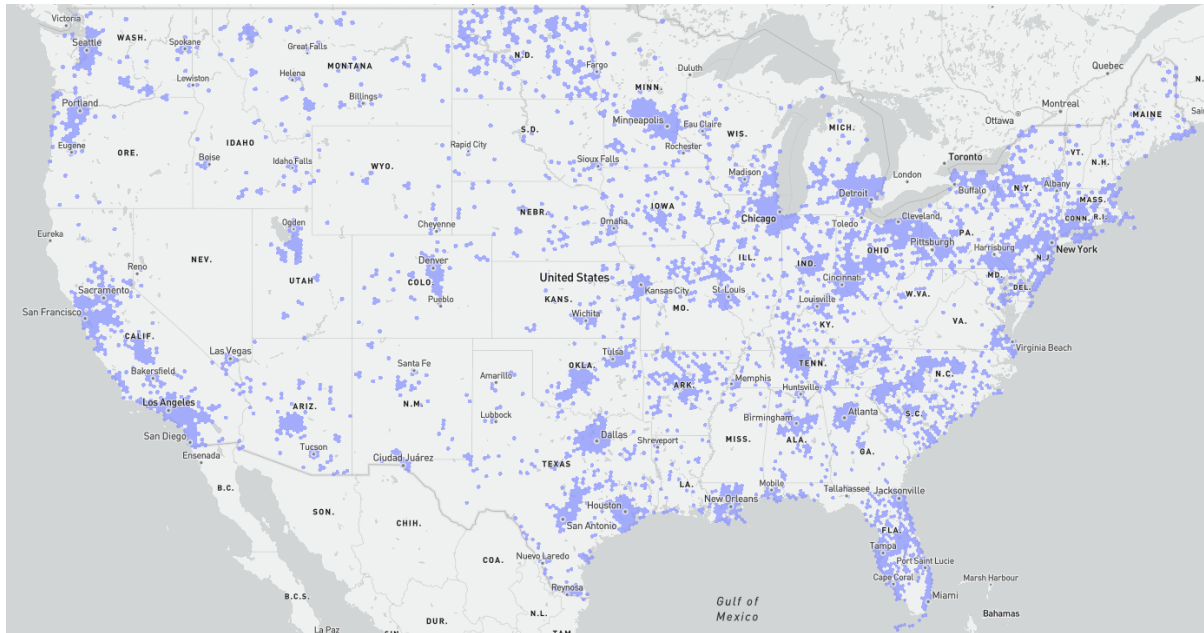
¹²⁵ Jeff Baumgartner, "Verizon's big fixed wireless gains mask slowing wireline broadband growth," April 22, 2022. ("Consumers continue to see the benefit of the speed, reliability and simplicity of the FWA product," added Matt Ellis, Verizon's chief financial officer. "And businesses continue to recognize that FWA can be a primary broadband access solution for all of their needs.")

Figure 2. US coverage of T-Mobile's fixed wireless network footprint



Source: "FCC National Broadband Map," Federal Communications Commission, updated October 30, 2024, https://broadbandmap.fcc.gov/provider-detail/fixed?version=dec2023&zoom=4.00&vlon=-98.345336&vlat=38.313509&providers=130403_71_on&br=r&speed=25_3&pct_cvg=10.
Note: Footprint for 25/3 Mbps speed and at least 10% coverage. Data as of December 31, 2023.

Figure 3. US Coverage of Verizon's fixed wireless network footprint



Source: "FCC National Broadband Map," Federal Communications Commission, updated October 30, 2024, https://broadbandmap.fcc.gov/provider-detail/fixed?version=dec2023&zoom=4.00&vlon=-97.066603&vlat=38.773947&providers=130403_71_off%2C131425_71_on&br=r&speed=25_3&pct_cvg=10.
Note: Footprint for 25/3 Mbps speed and at least 10% coverage. Data as of December 31, 2023.

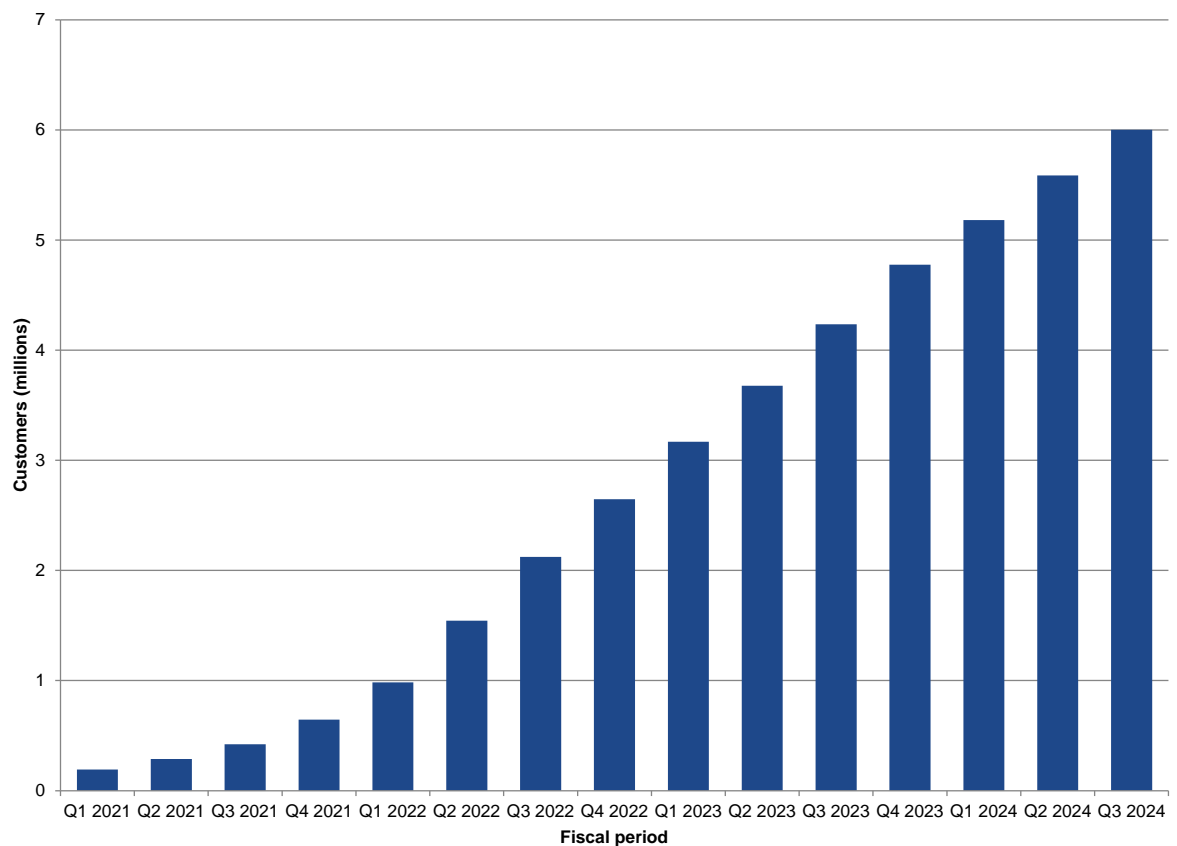
- (67) T-Mobile in particular has led the way in deployment of fixed wireless in the United States, with 5.6 million subscribers as of September 2024 and a waiting list of over a million.¹²⁶ As shown in Figure 4 below, T-Mobile has seen steady growth in fixed wireless customers in recent years. 51% of T-Mobile's fixed wireless customers were previously subscribed to internet services from a traditional cable provider.¹²⁷ T-Mobile notes that there is more demand than supply available of FWA, which has led it to make additional investments in fibre to the home as a new entrant in that space.¹²⁸

¹²⁶ Linda Hardesty, "The 1 million people on T-Mobile's fixed wireless waiting list will get a little help from fiber," Fierce Network, September 19, 2024, <https://www.fierce-network.com/broadband/fiber-will-help-1-million-people-t-mobiles-fixed-wireless-waiting-list#>.

¹²⁷ Jeff Heynen, "5G Fixed Wireless and the Threat to Cable's US Dominance," Dell'Oro Group, July 31, 2023, <https://www.delloro.com/5g-fixed-wireless-and-the-threat-to-cables-us-dominance/>.

¹²⁸ Linda Hardesty, "The 1 million people on T-Mobile's fixed wireless waiting list will get a little help from fiber," Fierce Network, September 19, 2024, <https://www.fierce-network.com/broadband/fiber-will-help-1-million-people-t-mobiles-fixed-wireless-waiting-list#>; "T-Mobile and EQT Announce Joint Venture to Acquire Lumos and Build Out the Un-carrier's First Fiber Footprint," T-Mobile, April 25, 2024, <https://www.t-mobile.com/news/business/t-mobile-eqt-jv-to-acquire-lumos>.

Figure 4. T-Mobile fixed wireless internet customers over time



Source: T-Mobile Quarterly Results, “Financial Results, Supplementary Data, and Non-GAAP Reconciliations” (“Q3-2024-ER-Tables-vFinal.xlsx”, “Q4-2023-ER-Tables-vFinal.xlsx”, and “TMUS-12_31_2022-ER-Tables.xlsx”, tab “ER Metrics”). Downloaded from <https://investor.t-mobile.com/financials/quarterly-results/default.aspx>.

- (68) While Verizon provides service to fewer customers compared to T-Mobile, Verizon’s fixed wireless internet service has also grown steadily in recent years, from roughly 100,000 connections in Q4 2021 to nearly 2.5 million in Q3 2024.¹²⁹

VI.A.2. Mobile wireless

- (69) Most Canadians have access to high-speed internet over wireless services. Over 99% of Canadians had access to mobile coverage and 96% of Canadians had access to LTE-A coverage in 2019,

¹²⁹ Verizon, 3Q 2024 Financial & Operating information (“FOI_3Q24_VZ_102224.pdf” at 8), and 4Q 2022 Financial & Operating information (“2022Q4-VZ-FOI-012423cl.pdf” at 8). Downloaded from <https://www.verizon.com/about/investors/quarterly-earnings>.

although coverage varies across regions.¹³⁰ 5G rollout began in 2020 and currently reaches over 70% of Canadians.¹³¹

- (70) Most cell phones are now capable of enabling a hotspot that can be used by other devices, such as laptops or TVs.¹³² However, current limits on wireless data and speeds make mobile wireless a less attractive option than wireline or fixed wireless for most users at home,¹³³ but the economics of using mobile wireless at home will change as wireless capacity increases.

VI.B. The HSA mandate reduces the incentives of the Big 3 to invest in home broadband internet outside of their current footprint

- (71) As discussed above, in the United States, T-Mobile has made substantial inroads into home broadband internet without developing its own wireline network or accessing the networks of others. Instead, it leveraged its cellular spectrum to provide an alternative but competing product to those of incumbent cable providers and ILECs. To complement that effort, it has also recently invested in fibre-optic connections to the home in certain markets, despite the existing cable and telecom infrastructure to deliver home internet.
- (72) With access to the existing wireline infrastructure as proposed, the Big 3 will have little incentive to take such creative approaches to home broadband, including building their own facilities. Instead, they will rely on the networks of others, whose own investment incentives will decrease to the extent that other carriers are using their networks at below-market rates.
- (73) The importance of preserving investment incentives for wireline providers is well recognized and is the motivation for restricting in-territory access to the HSA mandate.¹³⁴ A similar logic applies out of territory.

¹³⁰ “Communications Monitoring Report,” Canadian Radio-television and Telecommunications Commission, updated December 10, 2020, <https://crtc.gc.ca/eng/publications/reports/policymonitoring/2020/cmr4.htm#a2>.

¹³¹ Tim Fisher, “Where Is 5G Available in Canada? (Updated for 2024),” Lifewire, updated January 23, 2024, <https://www.lifewire.com/5g-canada-4582444>; Kevin Kearney, “Canada 5G Network Availability,” WhistleOut, updated January 04, 2024, <https://www.whistleout.ca/CellPhones/Guides/5g-availability>.

¹³² Angelo Ilumba, “How to Use a Mobile Hotspot for Home Internet,” WhistleOut, updated July 10, 2024, <https://www.whistleout.com/CellPhones/Guides/replace-home-internet-with-hotspot-data>.

¹³³ Angelo Ilumba, “How to Use a Mobile Hotspot for Home Internet,” WhistleOut, updated July 10, 2024, <https://www.whistleout.com/CellPhones/Guides/replace-home-internet-with-hotspot-data>.

¹³⁴ “An incumbent [f]acilities-based [c]ompetitor may elect to access a rival’s network through the wholesale high-speed access framework within the incumbent’s wireline footprint, or within other geographic regions where the incumbent otherwise would have likely expanded their footprint. ... However, this scenario also presents a threat to long-run competition, where for example an incumbent chooses to cease maintaining, upgrading or expanding their network in that region, preferring instead to rely on wholesale access. The Bureau views such an outcome as negative for competition and should such a scenario occur, it may suggest that the regulated wholesale rates for the accessed network in that region are not striking the right balance between lower prices and continued investment in high-quality and reliable networks. Competition Bureau Canada, “Further Comments of the Competition Bureau Notice of Consultation

VII. The CRTC rulemaking risks further diminishing the presence of independent resellers

- (74) By reinforcing the Big 3's ability to use the wholesale wireline access regime outside of their home territories, the CRTC's rulemaking risks further diminishing the presence of small, independent resellers in the sales of home broadband internet, in addition to its impact on the viability of smaller facilities-based carriers. This runs counter to the stated policy goals of the Government of Canada and the CRTC.

VII.A. The Government of Canada and CRTC have made the robust presence of new, regional, or smaller providers a policy goal

- (75) Both the Government of Canada and the CRTC have argued for the value of new, regional, or smaller providers in bringing lower prices and increased variety to Canadian consumers. Indeed, that is one of the stated purposes of the wholesale access regime.¹³⁵
- (76) Yet, as noted above, the current wireline HSA policy does the opposite by giving the Big 3 access to mandated wholesale HSA, which threatens the competitive viability of smaller facilities-based providers, as well as independent resellers, potentially allowing the Big 3 to further entrench their dominance in the long term.
- (77) As the CRTC has noted, the presence of independent resellers has been declining in recent years, both due to difficulties in implementing the HSA regime and due to acquisitions of small resellers by the national incumbents:

The Commission observes the following: Consumers have fewer choices when buying [i]nternet services: in recent years competition has been declining. By the end of 2022, independent ISPs served significantly fewer customers than they did at the start of 2020. At the same time, several of the largest independent ISPs have been purchased by incumbents.¹³⁶

CRTC 2023-56," October 16, 2023, ¶ 103, <https://competition-bureau.canada.ca/how-we-foster-competition/education-and-outreach/further-comments-competition-bureau-notice-consultation-crtc-2023-56>.

¹³⁵ The Minister of Justice has called on the CRTC to "reduce barriers to entry into the market and to competition for telecommunications service providers that are new, regional, or smaller than the incumbent national service providers." Minister of Justice, "Order Issuing a Direction to the CRTC on a Renewed Approach to Telecommunications Policy," SOR/2023-23, August 18, 2024, ¶ 2.

Canadian Radio-television and Telecommunications Commission, "Telecom Decision CRTC 2023-358," Public record 1011-NOC2023-0056, November 6, 2023, 1–2; Canadian Radio-television and Telecommunications Commission, "Telecom Regulatory Policy CRTC 2024-180," Public record 1011-NOC2023-0056, August 13, 2024, ¶¶ 7-8.

¹³⁶ Canadian Radio-television and Telecommunications Commission, "Telecom Regulatory Policy CRTC 2024-180,"

- (78) The Commission has found that the number of Canadians purchasing wireline internet from independent resellers had fallen by 40% in recent years, despite the overall number of wireline internet users increasing.¹³⁷ Though it has recognized this trend, the CRTC in its latest ruling has said that it considers entry by national incumbents as resellers to be potentially disruptive, and that other kinds of competitors should not be protected from this competition:

In setting out its regulatory framework, the Commission seeks to create opportunities for innovative competitors to differentiate themselves and offer new choices to consumers. This is not the same as guaranteeing that one type of competitor can profitably compete without risk. In respect of wholesale HSA services, the Commission enables wholesale access at just and reasonable, cost-based rates. It is then up to competitors to find commercial strategies that deliver an attractive value proposition that responds to consumers' needs.¹³⁸

- (79) As I discuss below, the issue is not allowing independent resellers and other smaller providers to compete “without risk,” but rather whether new, regional, or smaller providers can remain viable in the face of vigorous entry by out-of-territory Big 3 incumbents with their substantial advantages. Above, I discussed the threat of Big 3 out-of-territory entry through mandated wholesale to the “maverick” facilities-based competitors. In the following section, I describe how Big 3 use of mandated wholesale HSA threatens resale competition.

VII.B. Resellers also face substantial disadvantages competing with the Big 3

- (80) Resellers, including both independent resellers and resellers owned by incumbents operating on others' networks, provide internet services to less than 20% of the homes in Canada.¹³⁹ In recent

Public record 1011-NOC2023-0056, August 13, 2024, ¶ 17.

Aggregated HSA allows competitors to use incumbents' access and transport infrastructure to offer internet services, while disaggregated HSA allows competitors to use the incumbents' access infrastructure but must obtain their own transport to provide internet in the incumbent's region. According to digital economy nonprofit Cybera, the need to lease or build transport facilities to connect to multiple points of interconnection (POIs) on the incumbent's infrastructure presents “prohibitive up-front costs of disaggregation.” Cybera, “Telecom Notice of Consultation CRTC 2020: Call for Comments- Appropriate Network configuration for disaggregated wholesale high-speed access services,” 2020, ¶ 18, <https://www.cybera.ca/cyberas-response-to-crtc-investigation-on-disaggregated-wholesale-access/>.

Canadian Radio-television and Telecommunications Commission, “Telecom Decision CRTC 2023-358,” Public record 1011-NOC2023-0056, November 6, 2023, ¶ 45; Canadian Radio-television and Telecommunications Commission, “Telecom Regulatory Policy CRTC 2024-180,” Public record 1011-NOC2023-0056, August 13, 2024, ¶¶ 6–7.

¹³⁷ Canadian Radio-television and Telecommunications Commission, “Telecom Decision CRTC 2023-358,” Public record 1011-NOC2023-0056, November 6, 2023, 1.

¹³⁸ Canadian Radio-television and Telecommunications Commission, “Telecom Regulatory Policy CRTC 2024-180,” Public record 1011-NOC2023-0056, August 13, 2024, ¶ 41.

¹³⁹ Canadian Radio-television and Telecommunications Commission, “Telecom Regulatory Policy CRTC 2024-180,” Public record 1011-NOC2023-0056, August 13, 2024, ¶ 1.

years, facilities-based competitors operating on their own networks, both ILEC and cable companies, have gained subscribers year-over-year while resellers increasingly have lost subscribers on the ILEC networks and, after first experiencing slower growth on cable networks, eventually lost subscribers on both types of networks in 2022 compared to the prior year.¹⁴⁰

- (81) Within the overall decline of resellers, the decline of independent resellers has been even more pronounced, due to acquisitions of resellers by incumbents, in particular the Big 3. Figure 5 presents the major mergers and acquisitions of resellers by the Big 3 in recent years. After accounting for incumbent carrier acquisitions of resellers, the number of subscribers to independent resellers in Ontario and Quebec decreased by 47% from 2020 to 2022.¹⁴¹

Figure 5. Big 3 companies' acquisitions of resellers in recent years

Category	Parent Company	Primary brand	Mergers & acquisitions
Incumbent local exchange carriers (ILECs)	BCE	Bell Canada	EBOX (2022), Distributel (2022)
	TELUS	TELUS	Altima (2022), Start.ca (2023)
Incumbent cable company	Rogers	Rogers	Comwave (2023), KWIC (2021)

Source: Publicly available company information.

- (82) The decline of independent resellers in the face of increasing presence by the Big 3 incumbents in the reseller market is not surprising. Smaller competitors facing entrenched incumbents with their substantial advantages often face an uphill battle. When they succeed, it is often due to a new technology, lower costs, or a new business model that cannot be easily replicated by incumbents.¹⁴² In this case, with the exact same technology, and having the exact same wholesale cost structure, as a Big 3 incumbent, leaves a smaller reseller few options for differentiation. A Big 3 incumbent, for its part, has many tools in its toolbox that a smaller reseller lacks, including the ability to bundle wireline and wireless services, a national brand recognition enhanced by many decades of market presence and advertising investment, and a robust retail presence.¹⁴³

¹⁴⁰ Competition Bureau Canada, "Further Comments of the Competition Bureau, Notice of Consultation CRTC 2023-56," October 16, 2023, ¶ 26.

¹⁴¹ Canadian Radio-television and Telecommunications Commission, "Telecom Decision CRTC 2023-358," Public record 1011-NOC2023-0056, November 6, 2023, ¶ 82.

¹⁴² See, e.g., Hemphill and Wu (2020), who acknowledge the importance of "nascent competitors" in competition and relevant considerations in antitrust enforcement. The authors state that "a nascent competitor is an innovator. Innovation can take the form of technical progress or new business models that better serve consumer needs." They highlight the role of nascent competitors in preserving competition: "Protecting the fruits of innovation is important because new products and services drive economic growth. Such competition is valuable both because the entrant's product may represent a real advance and because the entrant increases the pressure on the incumbent to innovate in anticipation or response. Competition also opens the door to further entry in this and other businesses. Finally, and perhaps most obviously, competition can benefit consumers by lowering the price paid for these innovations." C. Scott Hemphill and Tim Wu, "Nascent competitors," *University of Pennsylvania Law Review* 168 (2020): 1886.

¹⁴³ Kantar, a global marketing and data analytics company, estimates the Big 3 have brand values of \$8.8–\$14.2 billion US dollars and are among the top 10 most valuable Canadian brands as of 2024. Scott Megginson, "Kantar BrandZ names RBC as Canada's most valuable brand for sixth year," Kantar, October 24, 2024, <https://www.kantar.com/inspiration/brands/kantar-brandz-names-rbc-as-canadas-most-valuable-brand-for-sixth-year>.

- (83) To the extent that having a variety of distinct options is a policy goal of the CRTC or the Government of Canada, that goal is undermined by allowing the Big 3 to have regulated wholesale access on the same terms as independent resellers and other smaller competitors.

VIII. Recommendations

- (84) The CRTC's current wholesale HSA policy threatens the viability of smaller facilities-based competitors and undermines the investment incentives of the Big 3. By allowing the Big 3 to use the out-of-footprint wireline networks of others, the policy jeopardizes the diversity and competitiveness of the Canadian telecom landscape.
- (85) The simplest and most direct way to resolve the issues raised by this report is by eliminating the Big 3's access to the wholesale HSA regime both in-territory and out-of-territory, in a way that is agnostic to the underlying network technology. Such a restriction would increase the investment incentives of the Big 3 and reduce their ability to undermine facilities-based and resale-based competition from smaller regional and independent competitors. the investments of others.

Appendix A. Curriculum vitae of Eric R. Emch

A.1. Summary of experience

I have more than two decades of experience in economic analysis of competition policy issues, including the competitive effects of horizontal and vertical mergers, analysis of single-firm conduct and monopolization, market definition, and collusion. My recent work has focused on merger and monopolization issues in a variety of industries, including mobile app distribution, digital ad tech, payment cards, wireless telephony, and pharmaceuticals. I am currently Vice Chair of the Intellectual Property Committee of the American Bar Association.

I joined Bates White from the Antitrust Division of the US Department of Justice (DOJ), where I served as Staff Economist and Assistant Chief of the Competition Policy Section. As Assistant Section Chief, I led teams of economists in theoretical and empirical analyses of merger, monopolization, and collusion cases. As a staff economist, I conducted theoretical and empirical analyses in support of merger and non-merger investigations in a wide variety of industries.

While on leave from DOJ from 2007 to 2008, I led the Organisation for Economic Co-operation and Development's Regional Competition Center in Seoul, Korea, where I designed, organized, and conducted competition policy workshops for staffers of national competition authorities across Asia. I have published in journals such as the Journal of Industrial Economics, Review of Industrial Organization, Review of Network Economics, and Antitrust Law Journal on a number of antitrust topics. I have been named to the Who's Who Legal list of top Competition Economists since 2014 and recognized as a Competition Thought Leader since 2021.

A.2. Education

- PhD, Economics, University of California at Berkeley
- AB, Economics and History, Brown University

A.3. Professional experience

- Bates White Economic Consulting
 - Partner, January 2014–present
 - Principal, April 2011–January 2014

- Research Economist, DOJ Antitrust Division, January 2009–April 2011
- Senior Economist, OECD Competition Division, Paris, France, September 2007–December 2008
- Assistant Chief, DOJ Antitrust Division Competition Policy Section, August 2004–August 2007
- Economist, DOJ Antitrust Division, October 1999–August 2004

A.4. Selected Bates White experience

- Co-led the team on behalf of Epic in *Epic Games Inc. v. Google LLC et al.*, concerning the monopolization of app distribution on Android smartphones. Supported testifying expert on issues of market definition, market power, theory of harm, and competitive effects.
- On behalf of American Express in *Anthony Oliver, et al. v. American Express Company et al.*, provided expert report on market power, market definition, and competitive effects in connection with antitrust allegations concerning certain non-discrimination provisions in American Express’s acceptance agreements with merchants. Submitted expert report and provided deposition testimony.
- In *In re Axon Enterprise, Inc.*, retained on behalf of the Federal Trade Commission, which sought to unwind Axon’s purchase of VieVu—both manufacturers of body-worn cameras used by police departments. Examined relevant market and market power and the effect of the merger on competition. Submitted reports and provided deposition testimony.
- Retained on behalf of the plaintiff investor class in *Plymouth County Retirement System, et al. v. Patterson Companies, Inc.*, et al., a matter in which the plaintiffs alleged that the defendant colluded with its two main competitors to fix dental supply prices by boycotting group purchasing organizations. Provided written and deposition testimony on whether the economic evidence was consistent with the defendants’ participation in a collective agreement.
- Analyzed antitrust issues related to pharmaceutical product hopping and submitted expert and rebuttal reports in support of plaintiff states in *State of Wisconsin et al. v. Indivior Inc. et al.*
- Analyzed Canadian wireless telephony competition and submitted expert reports in Matter of Telecom Notice of Consultation CRTC 2017-259, Canadian Radio-television and Telecommunications Commission, September 8, 2017.
- In *In re Determination of Rates and Terms for Making and Distributing Phonorecords*, led a team supporting the expert in preparing testimony on behalf of Spotify USA Inc. regarding royalty payments under Section 115 of the Copyright Act.
- Prepared economic analysis and expert report on behalf of the Canadian Competition Bureau in support of its review of the acquisition of Manitoba Telecom Services, Inc., by BCE Inc.

- Led the team supporting the expert on behalf of DOJ in its successful challenge of the proposed \$34.6 billion merger of Halliburton and Baker Hughes.
- Led the team providing analysis and expert support for DOJ in analyzing the proposed merger of silicon metal producers FerroAtlantico and Globe Specialty Metals. Analyzed the competitive effects of the proposed transaction, and supported preparation of expert testimony in the event of a merger challenge.
- Led a team assessing the potential competitive effects of AT&T's proposed \$48 billion acquisition of DirecTV during an extended review of the transaction by the DOJ and FCC. Analyzed competition and complementarities among broadband internet and video programming services on behalf of AT&T. The merger was ultimately approved by both agencies.
- On behalf of Constellation Brands, analyzed the competitive effects of Anheuser-Busch InBev and Grupo Modelo's proposed divestiture of brewery and distribution assets to Constellation in response to DOJ's concerns about their proposed merger. Coauthored a white paper positing that the proposed divestiture resolved the concerns initially raised and would likely improve competition relative to the status quo. DOJ ultimately approved the merger, subject to the proposed divestiture package.
- Retained by DOJ's Antitrust Division to produce an expert report and serve as an expert witness for a proposed merger in the publishing industry. Analyzed competition between the merging firms, product and geographic market definition, potential unilateral and coordinated effects avenues of merger harm, and effects on final consumers.
- Retained by DOJ's Antitrust Division to produce an expert report and serve as an expert witness for a proposed merger in the energy services industry. Merger was eventually approved after parties proposed a divestiture package resolving potential competitive concerns.
- On behalf of Express Scripts and Medco Health Solutions, provided economic analysis on a wide range of competitive issues that the Federal Trade Commission (FTC) explored during its eight-month investigation of their merger. Demonstrated that the proposed transaction would not meaningfully put the combined company in a position to exercise market power in any relevant market or market segment. This analysis, which Bates White presented to the FTC, supported the agency's conclusion that there is a dynamic, competitive market for PBM services and that the proposed acquisition would not change this. The FTC closed its investigation after finding no likelihood of future unilateral effects, coordinated effects, or exercise of monopsony power resulting from the merger.
- On behalf of DuPont, provided economic analysis in an antitrust case against Kolon Industries related to sales of para-aramid fiber in the United States. The case involved monopolization counterclaims filed by Kolon against DuPont, subsequent to another case brought by DuPont that claimed theft of trade secrets. Kolon alleged that the use of certain supply agreements between

DuPont and some of its customers was illegal exclusionary conduct under Section 2 of the Sherman Act and claimed damages for Kolon. Bates White provided expert testimony showing that DuPont is not a monopolist in the market for para-aramid fiber and that the supply agreements at issue are not detrimental to competition. DuPont was granted summary judgment in its favor, and Kolon's antitrust counterclaims were dismissed with prejudice.

- On behalf of the World Bank and Kuwait competition authority, drafted new merger control regulations and merger enforcement guidelines and presented them to Kuwaiti authorities.
- On behalf of the World Bank and the Peruvian government, analyzed competitive concerns in the Peruvian payment card market and helped draft a written report analyzing the market and remedial options.
- Retained by the OECD to develop and lead four workshops for staff of Asian antitrust authorities: (1) a workshop on "Cartel Fundamentals" for ASEAN member countries in Bangkok, Thailand, in September 2014; (2) a workshop on monopolization and abuse of dominance in Jeju, Korea, in June 2014; (3) a workshop on "Legitimate Business Practices or Cartels in Disguise?" in Hanoi, Vietnam, in October 2011; and (4) a workshop on monopolization and abuse of dominance in Busan, Korea, in December 2011. Participants included staff from the competition authorities of China, India, Indonesia, the Philippines, Pakistan, Vietnam, Singapore, Myanmar, Malaysia, and Mongolia, among others.
- Retained by the OECD to develop and lead workshops on pricing-related abuse of dominance and exclusionary practices for staff members of Eastern European competition authorities in Budapest, Hungary in December 2012 and March 2013.

A.5. Selected Department of Justice experience

- Led teams of economists evaluating economic theory and empirical evidence for cases in the transportation, energy, and payment cards sectors.
- Oversaw the analysis of effects on electricity prices from the merger of two large suppliers on the same regional interchange. Work included detailed merger simulation and analysis of the effects of long-term contracting on supply, and an analysis of how potential divestitures would affect postmerger pricing.
- Examined potential exclusionary conduct in payment cards markets, including theoretical modeling of potential anticompetitive effects.
- Provided support to Antitrust Division expert and trial team in *United States v. Visa USA*.
- Led economics teams in defining and analyzing possible non-horizontal effects of mergers in several cases in the software and manufacturing industries. Conducted extensive theoretical and

empirical analyses of possible competitive effects from non-horizontal aspects of the proposed merger of General Electric and Honeywell in 2001.

- Worked with attorneys in incorporating economic content into legal arguments and in rebutting arguments of opposing economics experts in *United States v. First Data Corp.*
- Prepared as a testifying expert in two merger cases in the computer software industry. Conducted analyses of the transactions, including modeling of the competitive effects and data analysis to support theoretical predictions, and prepared draft expert reports.
- Conducted empirical analysis related to competitive effects and market definition in airline markets for inclusion in the Antitrust Division's comments to the Department of Transportation on a proposed swap of takeoff and landing rights between airlines.

A.6. Selected OECD experience

- Oversaw the development and implementation of training and outreach activities directed at staffers at emerging competition authorities in Asia.
- Developed a series of training workshops in Hanoi, Vietnam; Busan and Seoul, South Korea; and Singapore focused on merger policy, cartel enforcement, antitrust aspects of competitor collaborations, quantitative analysis in competition policy enforcement, and monopolization and abuse of dominance. Representatives from virtually all national competition authorities in Asia participated in one or more of the workshops.
- Designed, organized, and led workshops on competition policy enforcement for China's Ministry of Commerce (MOFCOM) and State Administration for Industry and Commerce. Workshops were held in Xi'an and Shanghai.

A.7. Testimony and submitted reports

- *Anthony Oliver, et al. v. American Express Company et al.*, US District Court for the Eastern District of New York. Expert Report: January 16, 2023.
- *Plymouth County Retirement System, et al. v. Patterson Companies, Inc., et al.*, US District Court for the District of Minnesota. Expert Report: January 21, 2021; Deposition: April 6, 2021.
- *In re Axon Enterprise, Inc., a Corporation*, Docket Number 9389, before the Federal Trade Commission Office of Administrative Law Judges. Expert Report: September 4, 2020; Rebuttal Report: September 25, 2020; Deposition: October 1, 2020.

- “Competition, Investment, and MVNO Mandates: Recent Market Developments and Response to Initial Interventions.” Expert Report by Eric. R. Emch, prepared for Shaw Communications, Inc. in the Matter of Telecom Notice of Consultation CRTC 2019-57, Canadian Radio-television and Telecommunications Commission, November 22, 2019.
- “The Evolution of Facilities-Based Competition in Canada.” Expert Report by Eric. R. Emch, prepared for Shaw Communications, Inc. in the Matter of Telecom Notice of Consultation CRTC 2019-57, Canadian Radio-television and Telecommunications Commission, May 15, 2019.
- *State of Wisconsin et al. v. Indivior Inc. et al.*, US District Court for the Eastern District of Pennsylvania. Expert Report: November 2018; Rebuttal Report: April 2019; Depositions: February 2019 and June 2019.
- “An Assessment of Wholesale Roaming Policy in Canada: Response to Supplemental Intervention of Ice Wireless in Telecom Notice of Consultation CRTC 2017-259.” Expert Report by Eric R. Emch, prepared for Shaw Communications, Inc. in the Matter of Telecom Notice of Consultation CRTC 2017-259, Canadian Radio-television and Telecommunications Commission, November 3, 2017.
- “An Assessment of Wholesale Roaming Policy in Canada: Response to Initial Interventions in Telecom Notice of Consultation CRTC 2017-259.” Expert Report by Eric R. Emch, prepared for Shaw Communications, Inc. in the Matter of Telecom Notice of Consultation CRTC 2017-259, Canadian Radio-television and Telecommunications Commission, October 27, 2017.
- “An Assessment of Wholesale Roaming Policy in Canada: The Interaction of Competition, Regulation, Access and Investment.” Expert Report by Eric R. Emch, prepared for Shaw Communications, Inc. in the Matter of Telecom Notice of Consultation CRTC 2017-259, Canadian Radio-television and Telecommunications Commission, September 8, 2017.

A.8. Papers and publications

- Emch, Eric, Thomas D. Jeitschko, and Arthur Zhou. “What Past Agency Actions Say About Complexity in Merger Remedies, with an Application to Generic Drug Divestitures.” *Competition: Journal of the Antitrust, UCL, and Privacy Section of the California Lawyers Association* 27, no. 1 (2018): 87–104.
- Emch, Eric, and David C. Kully. “Partial Cross-Ownership and Antitrust: Putting the Current Debates in Context.” *Cartel & Joint Conduct Review* 13, no. 1 (2017): 3–17.
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- Edlin, Aaron, and Eric R. Emch. “The Welfare Effects of Price Matching Policies.” *Journal of Industrial Economics* 47, no. 2 (1999): 145–67.
- Emch, Eric R. “Does Opportunism Explain Markups in Laser Printer Toner and Memory? No and Yes: Evidence on Aftermarket Pricing for Laser Printers.” Department of Justice Discussion Paper EAG 02-3, March 2002.

A.9. Selected presentations

- “Can We Fix It? The Performance of Remedies and How Best to Intervene.” Panelist, Centre for Competition Economics seminar, January 31, 2024
- “DMA—Trial and Error Regulation?” E.C.A Expert Forum, April 17, 2023
- “Big Tech Antitrust Bills.” Concurrences Global Antitrust Economics Conference, December 8, 2022
- “Monopolization v. Dominance: US v. EU?” Concurrences Judge Douglas Ginsberg Liber Amicorum Conference, November 5, 2018
- ABA Merger Practice Workshop. ABA Section of Antitrust Law, October 26, 2018
- “Innovation and Merger Control.” Panelist, ABA Antitrust Law Spring Meeting, April 11, 2018
- ABA Merger Practice Workshop. ABA Section of Antitrust Law, September 28, 2017

- “Merger Enforcement.” Panelist, 11th Annual Global Antitrust Enforcement Symposium, Georgetown Law, September 12, 2017
- “Fundamentals of Antitrust Economics Series: Market Power.” Teleconference presentation, ABA Section of Antitrust Law, January 17, 2017
- “Price Discrimination Markets in Merger Cases: from Investigations to Courtrooms.” Teleconference presentation, ABA Section of Antitrust Law, May 18, 2016
- “Fundamentals of Antitrust Economics Series: Market Power.” Teleconference presentation, ABA Section of Antitrust Law, March 10, 2016
- “Fundamentals of Antitrust Economics Series: Coordinated and Vertical Effects.” Teleconference presentation, ABA Section of Antitrust Law, February 13, 2015
- “Merger Remedies in Theory and Practice.” Panel moderator, 2014 Hal White Antitrust Conference, Bates White Economic Consulting, Washington, DC, June 9, 2014
- “Deviation in Dominance: Why Is Your Client a Monopolist There but Not Here?” Teleconference panelist, ABA Section of Antitrust Law, February 18, 2014
- “The Economics of Vertical Foreclosure.” Panelist, 2013 Hal White Antitrust Conference, Bates White Economic Consulting, Washington, DC, June 3, 2013
- “Fundamentals: Antitrust Economics.” Panelist, 61st ABA Antitrust Law Spring Meeting, Washington, DC, April 10, 2013
- “Antitrust in Asia: Recent Developments in China, Japan, and Korea.” Presentation, Dechert LLP, Washington, DC, August 1, 2012
- “Using Data and Economic Logic to Improve Antitrust Enforcement.” Presentation, Workshop for the Chinese Ministry of Commerce, sponsored by the Asian Development Bank, Lijiang City, People’s Republic of China, 2009
- “Antitrust Approaches to Partial Equity Investments.” American Antitrust Institute 9th Annual Energy Roundtable, Washington, DC, 2009
- “Competition Enforcement versus Sector Regulation: An International Perspective.” Presentation, Korean Competition Law Association International Symposium, Seoul, South Korea, 2008
- “The Theory and Application of Competition Policy.” Presentation, International Symposium for Antitrust Enforcement, State Administration for Industry and Commerce, Beijing, People’s Republic of China, 2007
- “Merger Policy: An International Perspective.” Seminar, Shanghai University of Finance and Economics, Shanghai, People’s Republic of China, 2007

- “The US Electricity Market: The Economics of the Exelon/PSEG Merger.” Presentation, Workshop on the Liberalization of Electricity Markets, OECD Regional Competition Center, Budapest, Hungary, 2007
- “The Economics of Tying and Bundling.” Presentation, International Seminar on Abuse of Dominance, sponsored by OECD and the Antimonopoly Office of the Slovak Republic, Bratislava, Slovakia, 2007
- “Market Definition and Market Power in Payment Card Networks.” Presentation, Antitrust in Two-Sided Industries, eSapience Conference, Boston, MA, 2006
- “The Economics of Vertical Mergers.” Training session for Antitrust Division lawyers and economists, Washington, DC, 2005
- “The Competitive Effects of Horizontal Mergers: Unilateral and Coordinated.” Annual training session for new Antitrust Division lawyers and economists, Washington, DC, 2003–2005
- “Competition Policy and Value Creation.” Presentation, Productivity, Innovation, and Value Creation Conference, Conference Board, Amsterdam, Netherlands, 2004
- “GECAS and the GE/Honeywell Merger.” Presentation, CRA International, Washington, DC, 2004
- “Market Definition in Payment Systems.” Presentation, NY State Bar Association, New York, 2004
- “Vertical Foreclosure in the Aircraft Engine Market? The Role of GE Capital Aviation Services in Killing the GE/Honeywell Merger.” Presentation, INFORMS Marketing Science Conference, University of Maryland, College Park, MD, 2003
- “Antitrust Principles.” Training sessions, Hungarian Office of Competition, Budapest, Hungary, 2001
- “Merger Analysis.” Workshop, Romanian Office of Competition, Timisoara, Romania, 2001
- “The Role of Economics in Antitrust.” Presentation, NEI, Rotterdam, Netherlands, 2000

A.10. Courses taught

- Undergraduate Industrial Organization, Georgetown University
- Graduate Microeconometrics, Johns Hopkins University
- Undergraduate Industrial Organization and Public Policy, UC Berkeley

A.11. Professional associations

- American Bar Association
 - Vice Chair, Intellectual Property Committee, 2023–2024
- American Economic Association
- Industrial Organization Society

A.12. Referee

- American Economic Review
- B.E. Journals in Economic Analysis and Policy
- International Journal of Industrial Organization
- Journal of Industrial Economics
- Review of Industrial Organization

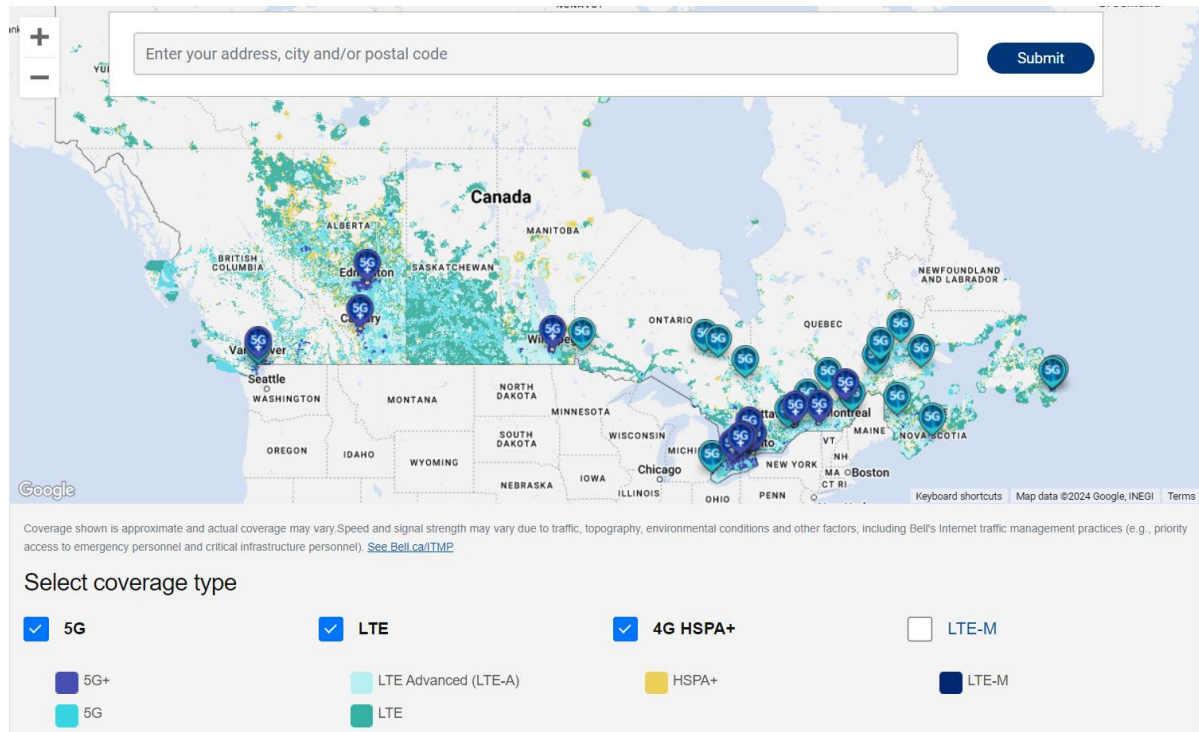
A.13. Distinctions and honors

- Who's Who Among International Competition Economists, 2014–present
 - Thought Leader in Competition, 2021–present
- Antitrust Division Award of Distinction, 2004
- Victor Kramer Foundation Fellowship, 2002–2003
- Alfred P. Sloan Foundation Doctoral Dissertation Fellowship, 1998–1999
- UC Berkeley Department of Economics Fellowship, 1997–1998
- Olin Foundation Fellowship in Law and Economics, 1996–1997
- IBER Distinguished Graduate Fellowship, 1994–1995
- Flood Fellowship in Economics, 1993–1994
- Class of 1873 Prize for Excellence in Economics, Brown University, 1991

Appendix B. Mobile networks of the Big 3

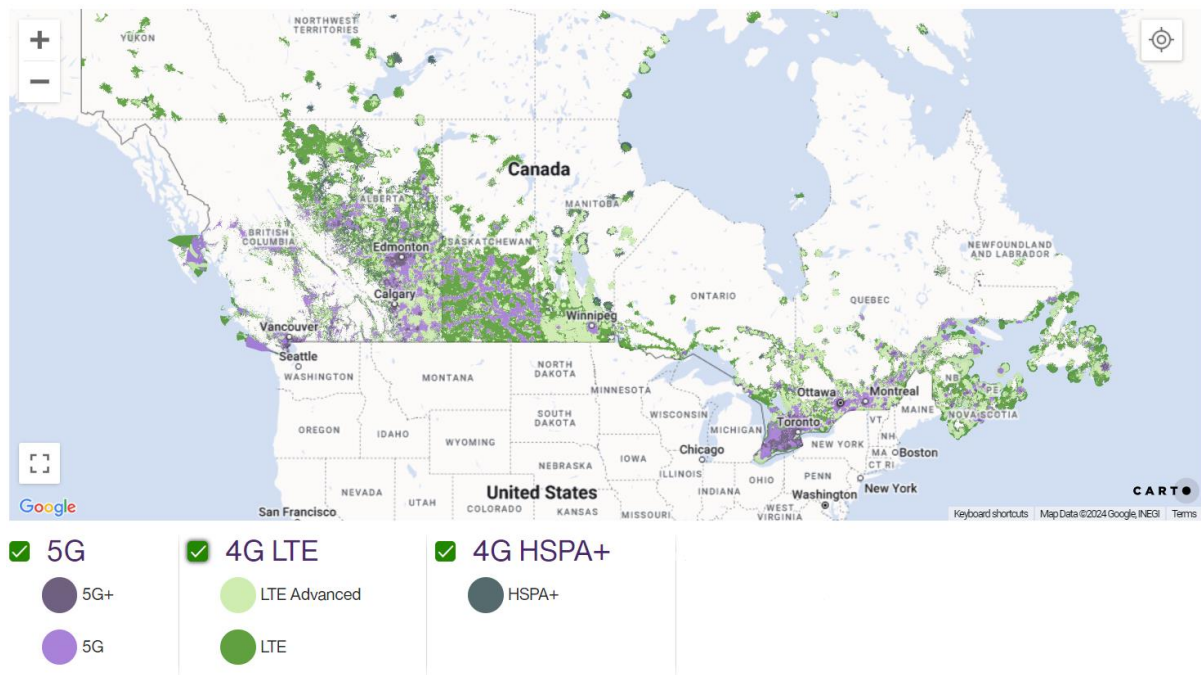
(86) The figures in this appendix show the wireless footprints of the Big 3.

Figure 6. Bell wireless coverage map



Source: "Coverage map," BCE, accessed October 31, 2024, https://www.bell.ca/Mobility/Our_network_coverage.

Figure 7. TELUS wireless coverage map



Source: "Coverage Map," TELUS, accessed October 31, 2024, <https://www.telus.com/en/mobility/network/coverage-map>.

Figure 8. Rogers wireless coverage map



Source: "Coverage map of the Rogers 5G network," Rogers, accessed October 31, 2024, <https://www.rogers.com/mobility/network-coverage-map>.

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