Strengthening First Nations Connectivity Through Spectrum Rights

First Nations Technology Council

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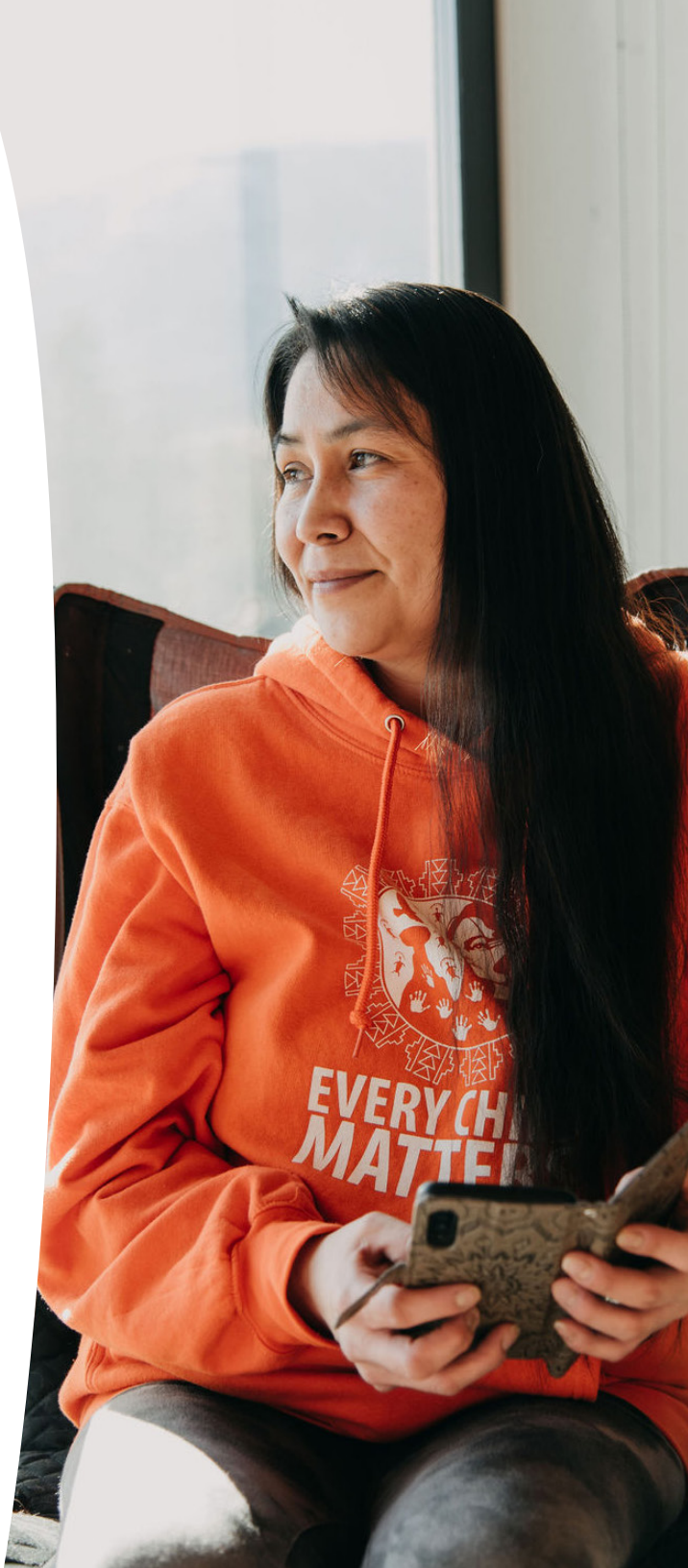
Table of Contents

Executive Summary

Access to reliable, high-speed internet remains out of reach for many First Nations across British Columbia. As of March 2025, 17.1% of households on First Nation reserves and Modern Treaty Nation lands still do not meet the minimum recommended internet speeds.[1] Reliable connectivity is crucial for public safety, education, healthcare, language and cultural revitalization, and economic opportunities. Without it, First Nations communities remain excluded from the opportunities of the digital age.

This report, *Strengthening First Nations Connectivity Through Spectrum Rights*, explores one critical but often overlooked piece of the connectivity puzzle: radiofrequency spectrum. Spectrum refers to the invisible range of electromagnetic frequencies that carry wireless signals for cell phones, Wi-Fi, and other communication technologies. It is a finite and valuable resource. For First Nations, access to spectrum is not just a technical issue, but a question of sovereignty, equity, and self-determination.

This report was developed by the First Nations Technology Council (Technology Council), with support from Archipel Research & Consulting, drawing on interviews with 12 experts and community members, as well as international case studies and existing literature. It is the second publication in the Indigenous Digital Enablement Series (IDES), a research initiative designed to build knowledge, capacity, and advocacy tools that enable First Nations to make informed decisions about digital technologies and infrastructure.



[1] Ministry of Citizens Services, "Connectivity Coverage in B.C.", accessed October 24, 2025, www2.gov.bc.ca/gov/content/governments/connectivity-in-bc/20358.

Key Findings

The report identifies several key barriers faced by First Nations communities:

Administrative and technical capacity: Understanding and navigating Canada's licensing processes requires time, expertise, and resources that many communities currently lack access to.

Infrastructure challenges: Spectrum access alone is not enough; it must be supported by physical infrastructure such as towers, fibre connections, and trained technicians.

Funding limitations: The cost of applications, permits, and infrastructure is often prohibitive, and funding programs are difficult to access due to short timelines and administrative burdens.

Regulatory barriers: Processes designed for large telecommunications companies often fail to accommodate small operators or community-led initiatives.

While the Government of Canada's new frameworks, the non-competitive local licensing (NCLL) process and the proposed Indigenous Priority Window (IPW), represent positive steps, they do not yet fully address these systemic barriers. Interview participants emphasized that limited timelines, uneven access to available spectrum, and insufficient awareness-building continue to limit the effectiveness of these policies.

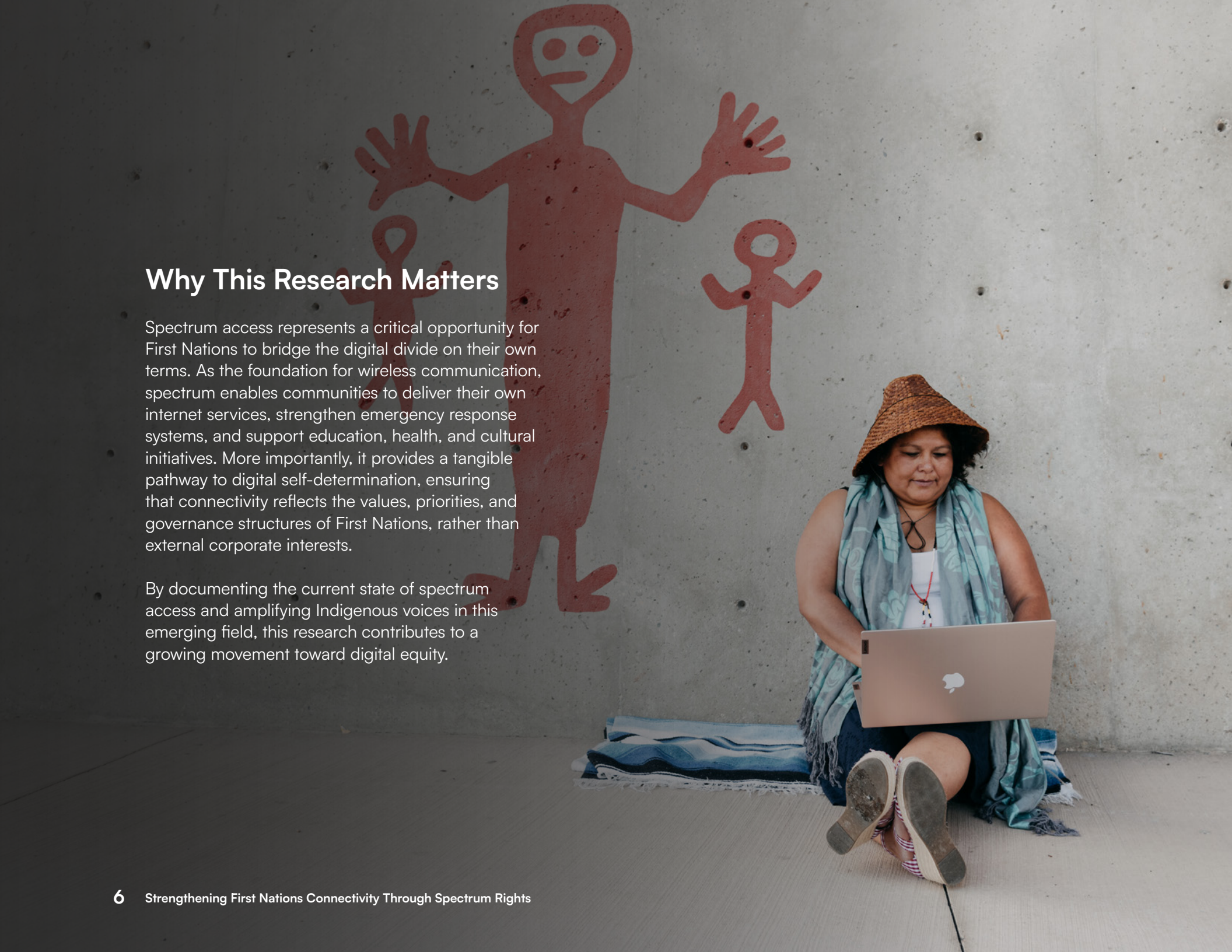
Learning from Indigenous and International Examples

Case studies from Mexico, Aotearoa (New Zealand), and Canada demonstrate that Indigenous communities can lead the way in designing and managing connectivity solutions when empowered with the right tools and authority. Examples such as the Māori Spectrum Working Group and Tū Ātea Ltd. show how sustained advocacy, partnerships, and dedicated funding can transform access to spectrum into economic and cultural self-determination. In Canada, initiatives like Kuhkenah Network (KNet) and Eeyou Mobility demonstrate the power of Indigenous-owned networks to reinvest revenues into local jobs, training, and community growth.

Why This Research Matters

Spectrum access represents a critical opportunity for First Nations to bridge the digital divide on their own terms. As the foundation for wireless communication, spectrum enables communities to deliver their own internet services, strengthen emergency response systems, and support education, health, and cultural initiatives. More importantly, it provides a tangible pathway to digital self-determination, ensuring that connectivity reflects the values, priorities, and governance structures of First Nations, rather than external corporate interests.

By documenting the current state of spectrum access and amplifying Indigenous voices in this emerging field, this research contributes to a growing movement toward digital equity.



Introduction

17.1% **of First Nations households on reserve and Modern Treaty Nation lands in BC** still do not have access to the recommended internet speeds[2]

As of March 2025, 17.1% of households on First Nation reserves and Modern Treaty Nation lands in BC still do not have access to the recommended internet speeds, down only slightly from 19.7% in 2024.[2] This connectivity gap matters: reliable internet access is essential for safety, education, health, cultural revitalization, and economic development. Without it, many First Nations in British Columbia remain excluded from the opportunities and benefits of the digital age.

This report addresses that gap by focusing on radiofrequency spectrum, or spectrum, which are the invisible range of electromagnetic frequencies that carry wireless signals and are an important element of making internet connectivity possible. Accessing spectrum can open doors for First Nations communities to deliver their own internet and connectivity solutions, when coupled with the right infrastructure and local capacity. The timing of this report is significant. Innovation, Science and Economic Development Canada (ISED) is creating new opportunities for Indigenous communities to access spectrum. Yet the process remains highly technical, costly, and time-intensive. This report, alongside the First Nations (Technology Council)'s broader work to advance connectivity and digital skills, is designed to support communities in breaking down those barriers and identifying solutions that best meet their needs.

For First Nations in British Columbia, access to spectrum represents a significant opportunity to bridge the digital divide. It ensures that connectivity is not left to corporate interests, but is instead shaped by the priorities, values, and visions of First Nations themselves. In this way, spectrum is more than a technical resource. It becomes a pathway to self-determination, cultural revitalization, and intergenerational prosperity.

This report is intended for First Nations communities interested in spectrum as a connectivity solution. Through the Indigenous Digital Enablement Series (IDES), the Technology Council is advancing systemic change by equipping First Nations with the knowledge and tools to advocate and make decisions that best suit their unique needs and contexts. As part of the Technology Council's research and policy work, IDES contributes to a growing body of evidence that centres Indigenous experiences and priorities in the digital space. By documenting barriers, highlighting community-led solutions, and analyzing emerging policy opportunities, the Technology Council's research supports the development of practical strategies and data-driven advocacy for digital equity in British Columbia. This is the second IDES report, continuing our commitment to ensuring that digital futures are shaped by First Nations, for the benefit of First Nations.

[2] Ministry of Citizens' Services, "Connectivity Coverage in B.C.", accessed October 24, 2025, www2.gov.bc.ca/gov/content/governments/connectivity-in-bc/20358.

Methodology

The Technology Council worked with Archipel, an Indigenous-led research firm, to conduct research and write the report. The information presented in this report was collected by reviewing existing sources on spectrum use and case studies on the practicalities of accessing it. We engaged with Indigenous and non-Indigenous persons with various breadths of knowledge on spectrum through a series of interviews. The individuals interviewed included both those who agreed to be named and those who wished to remain anonymous. Archipel interviewed a total of 12 participants, of whom seven are Indigenous, and five are non-Indigenous. A list of those who agreed to be named is included at the end of the report. The data gathered through these stages is presented here to help provide communities with useful reference material about how they can navigate the current policies and procedures which govern spectrum access in Canada.

It is important to note that the findings related to spectrum that are shared in this report are based on the above-mentioned phases of Archipel's research, including interviews with knowledgeable individuals. The recommendations at the end of the report, and interpretations throughout, are based solely on review of existing literature, the case studies, and the enriching conversations that took place.

We are grateful to all the experts and community members who either conducted previous research and spectrum initiatives or who took the time to speak to us.

12 interview participants

7 Indigenous
5 Non-indigenous

What is Spectrum?

Spectrum is the range of invisible frequencies that travel through the air and allow us to use cell phones, Wi-Fi, and other forms of wireless communication.[3] Spectrum can be understood as the invisible bridge between devices and towers whenever you're connecting wirelessly. But spectrum alone cannot deliver connectivity; it only works when combined with physical infrastructure like towers, routers, and fibre cables that connect communities to the internet. It is not an unlimited natural resource, but instead, is a resource that must be allocated and licensed for use.

Licensing and allocation of spectrum help ensure efficient use of radio frequencies and minimize the risk of interference between users. Interference in spectrum usage occurs when multiple users occupy the same frequency band simultaneously, leading to disruption of signal integrity or loss of connection, which prevents users from using the spectrum as intended. Regulatory policies and technical standards are established to assign specific spectrum bands, separating different types of usage to reduce these risks, and sometimes guard bands are implemented between services as an extra precaution.[4]

Access to spectrum, which enables internet connectivity, ensures that communities can respond to local needs such as natural disaster alerts, emergency response services, education, access to resources, social and familial connection and well-being, and cultural and language revitalization.

The right to connect is increasingly recognized as a fundamental aspect of participation in society.[5] However, Indigenous Peoples face disproportionate barriers to participating in this right and are underserved when it comes to connectivity.[6] They face challenges establishing the infrastructure and resources needed for their communities to connect, particularly in the digital realm. Equitable digital access means every community can connect wirelessly when the supporting infrastructure, tools, workforce, and capacity are in place.

[3] Government of Canada, "An Introduction to the Radio Frequency Spectrum", Government of Canada, Innovation, Science and Economic Development Canada, August 23, 2024, ised-isde.canada.ca/site/spectrum-management-telecommunications/en/licences-and-certificates/introduction-radio-frequency-spectrum.
[4] International Committee on Global Navigation Satellite Systems, *Introduction to Interference*. accessed October 24, 2025. www.unoosa.org/documents/pdf/psa/activities/2019/UN_Fiji_2019/IDM/1-05-1040.pdf.
[5] Office of the Auditor General of Canada, "Connectivity in Rural and Remote Areas: Independent Auditor's Report", no. 1, www.oag-bvg.gc.ca/internet/docs/parl_oag_202303_02_e.pdf.
[6] First Nations Technology Council et al., *Indigenous Leadership in Technology: Understanding Access and Opportunities in British Columbia (2022)*, ictc-ctic.ca/sites/default/files/ictc-admin/resources/admin/indigenous-leadership-in-technology.pdf.

Spectrum is a vital resource which can unlock opportunities for future growth. It can enable First Nations communities to build their own connectivity services, create jobs, and decide how their communities connect, representing huge potential for economic development and the promotion of First Nations entrepreneurship that meets the needs of these diverse communities. In addition, those communities that build and monetize their own internet and cellular services can use revenue to help fund other community development projects and create local jobs for community members.

The telecommunications sector promises significant growth in the years to come,[7] which has the potential to positively influence the lives of First Nations people for the next seven generations, including First Nations youth. Spectrum plays a vital role in wireless telecommunications, and First Nations' access to spectrum cannot be established where there is little awareness of its presence, what it does, the opportunities it promises, and how access can be obtained.

[7] Government of Canada, "Spectrum Outlook 2023 to 2027", Government of Canada, Innovation, Science and Economic Development Canada, March 5, 2025, ised-isde.canada.ca/site/spectrum-management-telecommunications/en/spectrum-allocation/spectrum-outlook-2023-2027.

How Spectrum Allocation Works

Spectrum is divided geographically and by frequency.[8] Each area and frequency of spectrum is covered by a licence. Spectrum licensing in Canada is governed and facilitated by the Government of Canada's Department of Innovation, Science, and Economic Development (ISED). Licences are typically obtained through auctions to the highest bidder.[9] However, ISED recently launched a non-competitive local licensing (NCLL) process, and an engagement on a draft framework for an Indigenous Priority Window (IPW) as alternative modes to access spectrum. Understanding spectrum and its regulation is not easy, especially when its application and access involve understanding the policies, laws, application processes, and infrastructural requirements to obtain it.

Spectrum Auctions

The predominant mode of obtaining spectrum has been through auctions.[10] In these auctions, ISED awards portions of the spectrum to the highest bidder. Those who wish to bid must purchase bid points to register for the auction. Typically, Indigenous communities and small operators struggle to outbid larger telecoms for valuable and expansive portions of spectrum. According to one research participant, "a lot of people are locked out of these auctions because they either don't know, they can't afford it, or the big carriers will come in and scoop everything." Another participant noted that because "spectrum has become so valuable, the prices paid at auction for that spectrum effectively exclude all small operators."

[8] Steve Song and Phil Steinhauer-Mozejko, "Radio Frequency Spectrum Basics", Indigenous Connectivty Institute (2025), indigenousconnectivity.org/wp-content/uploads/2025/08/CSKY-001_SpectrumExplainer_01_SpectrumBasics_F.pdf

[9] Government of Canada, *Government of Canada Invests an Additional $10.3 Million to Bring High-Speed Internet Access to More than 1000 Indigenous Homes*, August 15, 2023.

[10] Government of Canada, *Framework for Spectrum Auctions in Canada*, no.3 (2011), ised-isde.canada.ca/site/spectrum-management-telecommunications/en/spectrum-allocation/spectrum-auctions/spectrum-auction-publications/framework-spectrum-auctions-canada. ISED conducts auctions when demand is expected to surpass supply. If demand is low, spectrum is allocated on a first-come, first-served basis instead.

Non-competitive local licensing (NCLL)

To address the inequity between small and large internet service providers and operators, ISED officially launched a non-competitive local licensing (NCLL) process in May 2025 to provide a simple licensing approach to allow small operators access to wireless technology like 5G networks, and enhance connectivity in Canada.[11] NCLL is marketed as offering a simpler license application process, affordable license fees, and a distinctive solution for small providers to meet their unique needs. They can be used to deliver wireless internet services in areas where traditional wired connections are not available or feasible, improve medical device connectivity for monitoring healthcare devices, support telemedicine services, and provide fixed wireless access, which delivers a wireless connection to homes and small businesses.[12]

[11] Fortinet. "What Is 5G? Definition, Key Benefits and 5G vs 4G Comparison." accessed October 24, 2025, www.fortinet.com/resources/cyberglossary/what-is-5g. 5G stands for the fifth generation of mobile networks. It is a new global wireless standard after 4G networks. 5G enables a new type of network designed to connect virtually everyone and everything, including machines, objects, and devices. 5G wireless technology uses radio waves to transmit data, operates at higher frequencies, and provides faster speeds and lower latency, meaning less delay.

[12] Government of Canada, "Non-Competitive Local Licensing (NCLL): Easy Access to Spectrum".

The Indigenous Priority Window (IPW)

In the Spectrum Outlook 2023 to 2027, the government signalled that Indigenous Connectivity will be one of the key priorities for the spectrum program going forward. The proposed Indigenous Priority Window (IPW) is intended as a positive step towards addressing Indigenous access to spectrum and supporting economic reconciliation. The IPW aims to make spectrum more accessible to Indigenous communities in Canada. The development of the IPW framework was largely influenced by the United States government's Federal Communications Commission's (FCC) release of a Tribal Priority Window, designed to provide an opportunity for Tribes in rural areas to access unassigned 2.5 GHz spectrum over their rural Tribal lands.[13] The draft IPW was published in January 2024, initiating a six-month engagement period, calling on the public (in particular, members of the Indigenous community) for feedback and commentary on the framework. The engagement period, which was extended to eight months, has since concluded, and the final policy framework is currently under development.

Canada's proposed IPW framework aims to enable access to portions of unused licensed spectrum on a priority basis to interested Indigenous communities, organizations, and representatives. This will help reduce the barriers that interested Indigenous partners may currently face. For instance, rather than competing with large telecommunications companies in auctions, Indigenous representatives could apply for available unused spectrum licences through the IPW. ISED plans to apply it to select frequency bands, with the first being the 800 MHz (Cellular) and the 1900 MHz Personal Communications Services (PCS) band licences. Typical use cases for these bands include wireless connectivity of cell phones, home internet, and connectivity for mines and farmland. The aim is to apply the IPW to more frequencies and more licensed spectrum in the future. The framework proposes that applicants will have one year from the opening of the IPW to apply for these licences, before the availability is opened more broadly.

While this framework is meant to address the challenges within the current system of spectrum licensing, the IPW is not without its own weaknesses.

[13] Federal Communications Commission, "2.5 GHz Rural Tribal Window", Federal Communications Commission, January 19, 2021, www.fcc.gov/25-ghz-rural-tribal-window.

Limitations of the NCLL and IPW

Research participants expressed mixed feelings and opinions about the IPW. Some expressed approval and excitement that Indigenous communities would be given the opportunity to apply for available spectrum before it is made available to all applicants. However, the majority of those interviewed expressed concerns about what they believe to be shortcomings of the proposed framework. Participants described the framework as inadequate in responding to their need for digital equity. Research participants emphasized that in its current form, the IPW framework is not strong enough to provide an equal playing field for First Nations in Canada due to the following reasons.

During engagements, a recurring concern was that the proposed 12-month application window to apply for the IPW is insufficient to properly assess the feasibility of operationalizing the spectrum they hope to acquire.[14] One First Nations community member also expressed disappointment in the portion and quality of the spectrum that the IPW sets aside for communities. This is compounded by the unequal opportunities that the IPW presents to Indigenous people across Canada. While there are many licenses available in parts of Canada, in certain regions, such as Alberta, there are very limited licenses available.

We frequently heard about the lack of awareness building as part of the IPW. More opportunities for rural and remote communities to engage in the development of the window and non-technical background information could open doors for Indigenous Peoples to engage in this important work.

ISED has emphasized that this framework is a first attempt and intends to develop more opportunities for Indigenous communities, organizations, and representatives to access spectrum in the future. They also intend to create a more automated and user-friendly spectrum licensing process.

[14] Government of Canada. "Spectrum and the Indigenous Priority Window". Government of Canada, 2024. ised-isde.canada.ca/site/spectrum-manageme, in its current form, the IPW framework is not strong enough to provide an equal playing field for First Nations in Canada fornt-telecommunications/en/spectrum-allocation/spectrum-and-indigenous-priority-window.

Barriers to First Nations Access to Spectrum

First Nations communities may face significant capacity challenges when attempting to access spectrum, stemming from a lack of access to financial resources, technical expertise, and institutional support.[15,16] Central to the capacity issues flagged by participants in this research was the need for partnerships and collaboration to address them. Participants expressed the need for partnership among First Nations, as well as in the public and private sectors. This section of the report outlines what we heard from participants about the current challenges that First Nations need to address in order to acquire and utilize spectrum in ways that benefit their communities. It also highlights the distinction between internal and external requirements, emphasizing that First Nations communities may have limited control over some external factors.

Administrative Capacity

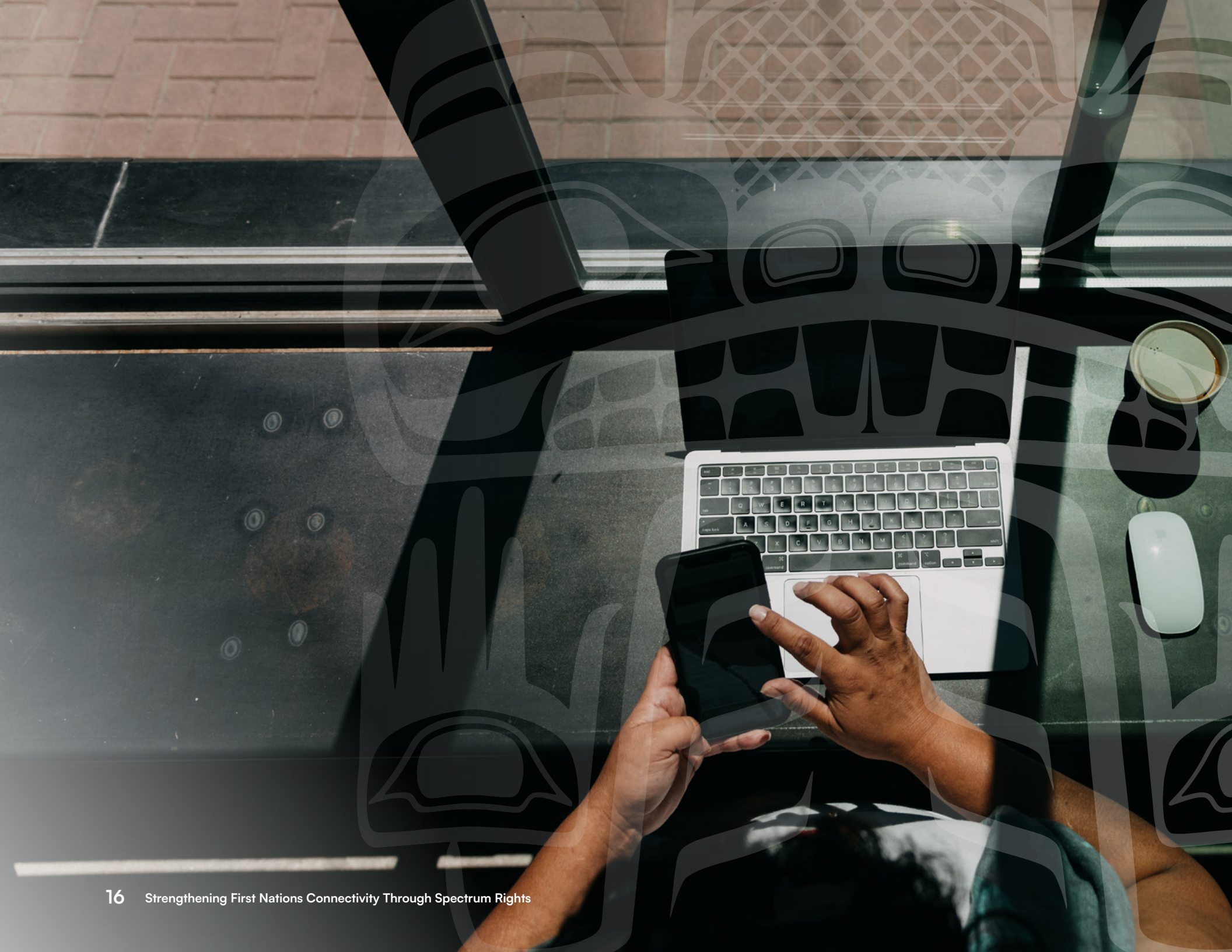
Administrative capacity was identified by participants as a critical area of concern. First Nations are navigating various competing priorities and urgencies, such as ongoing efforts towards reconciliation, economic development, and health-related and environmental crises. The administrative burden involved with accessing spectrum in terms of understanding policy and meeting regulatory requirements can be prohibitive when overshadowed by more critical issues.

> ***"Capacity building to own and manage network infrastructure is critical on the technical deployment level as well as the policy and regulatory policy [...] level to have a seat at the table for spectrum management decisions"***
>
> ~ Non-Indigenous Telecommunications Expert

Technical Knowledge Needed

A foundational challenge to overcome in gaining access to spectrum is the deep technical expertise required to plan, operationalize, develop and troubleshoot the software, hardware, and infrastructure needed to maximize the utility of spectrum. These elements form the backbone of an institution or community's ability to make effective decisions, coordinate activities, and deliver services. Strengthening foundational knowledge of spectrum among the diverse First Nations communities in British Columbia will ensure that they are equipped to plan and respond accordingly.

[15] Tricia Toso and Scott Forward, "Dispatches From Eeyou Istchee: Cree Networks, Digital, and Social Inclusion", *Cogitatio Press*, Social Inclusion, vol. 11, no. 3 (2023): 298—308.
[16] Heather Hudson and Rob McMahon, "Remote and Indigenous Broadband: A Comparison of Canadian and U.S. Initiatives and Indigenous Engagement", *Journal of Information Policy* 12 (2022): 165—94, doi.org/10.5325/jinfopoli.12.2022.0004.



Infrastructure

A central challenge in First Nations communities is the lack of infrastructure required to connect communities with spectrum. According to research participants, such considerations could include determining whether any existing infrastructure is available to identify gaps. Where there are gaps, communities may require one-time funding for the establishment of infrastructure (notably, towers are often required for remote communities) or ongoing funding for the maintenance of infrastructure and the training of technicians to do so. Building infrastructure may also require technical capacity to maintain infrastructure over a long period, and environmental assessments or permitting.

Timelines

Assessing how much time will be required to install infrastructure may be a challenge for First Nations communities wishing to access spectrum. This is due to the many contributing factors such as applying for permits, becoming familiar with any applicable zoning bylaws, the size of the team available to install the infrastructure, and estimating any wait times associated with getting permit applications approved. The time needed to install infrastructure may also vary according to the types of spectrum connectivity being sought. Providing an accurate assessment for timeline purposes can be difficult, as it is difficult to predict whether all of the elements involved will align. Keeping these points in mind, First Nations communities may wish to plan additional contingency in their timeline for any unexpected hurdles that may delay the completion of infrastructural builds.

> ***"The time it takes for permits — especially in the North. I know there was a funding application a number of years ago where there was a one-month window for the funding application, but with the funding application they wanted the permits. Well, it takes six weeks for a permit to the North. So, we would have got the permits two weeks after the application closed if we bothered to apply."***
>
> ~ Bill Murdoch, Executive Director at Clear Sky Connections

Funding

Accessing spectrum is a costly undertaking. Therefore, most First Nations communities will likely need support through government grants or by forming collaborative partnerships with neighbouring communities, aligned organizations, or internet service providers. However, barriers such as limited awareness of opportunities and the complexity of applications can prevent First Nations from receiving funding.

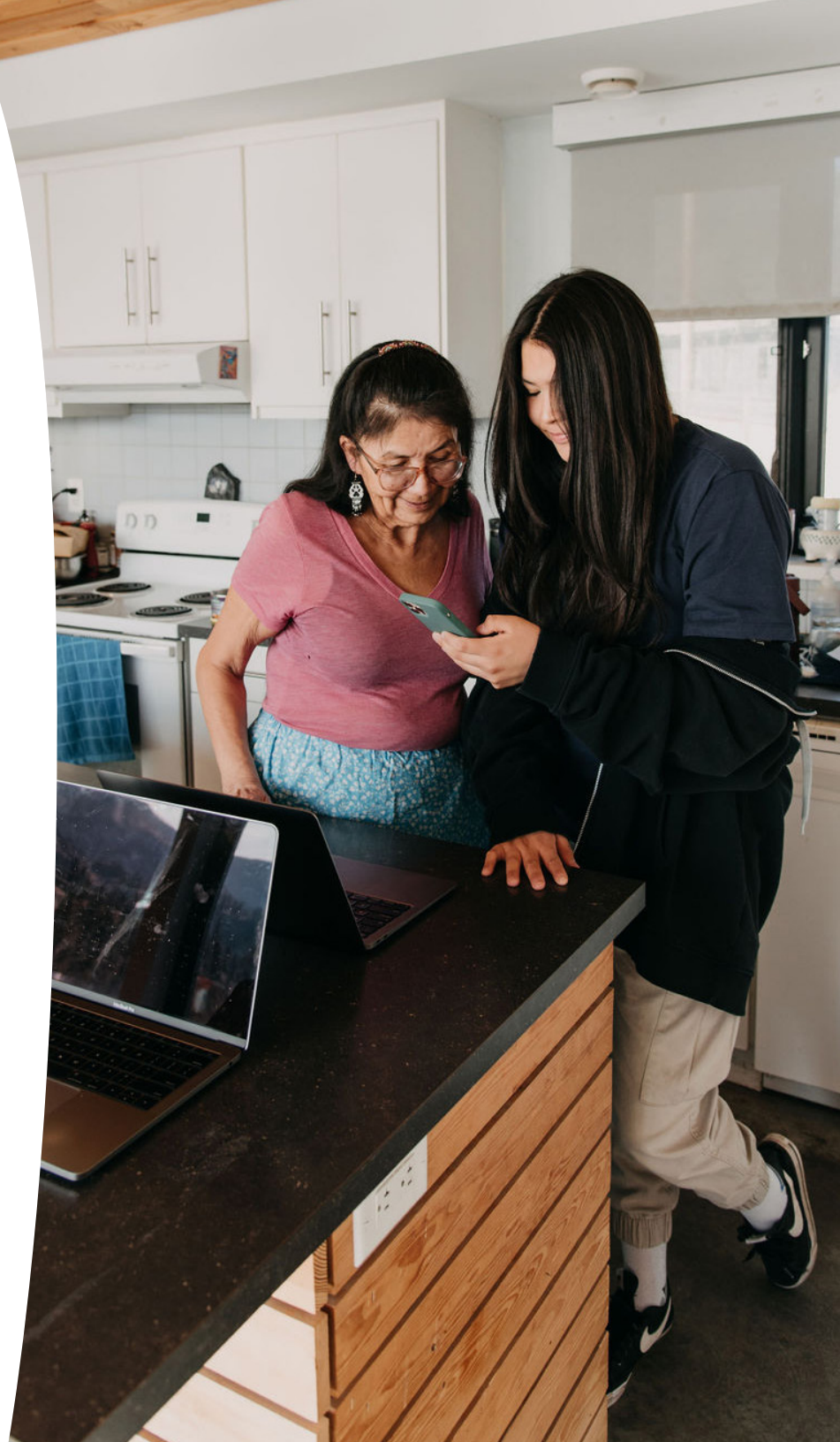
Funding opportunities are often shared online, but due to limited internet access in many First Nations communities, they may not be aware of them in time, leaving little or no opportunity to apply. Moreover, for some funding applications specific to infrastructure, the application cost is not accessible. They require substantial amounts of capital to secure funding, particularly in terms of staff time. Bill Murdoch noted that it can cost tens of thousands of dollars to even undertake the "effort to put in the funding application, and that's even before you receive any funding." For those actively addressing issues in their communities, it may be that such uncertain and time-consuming funding application efforts cannot be prioritized.

> ***Indigenous communities and First Nations a) have to be aware of the information that's being put out [and] b) is there someone we can talk to get more details on whatever the initiative is and if there's an application-based approach, what does that look like?"***
>
> ~ Sandra George, Senior Advisor, Indigenous Connectivity Institute

Regulatory Realities

To access spectrum, Indigenous communities must meet regulatory requirements, which include demonstrating how their community will benefit from it and that they have the capacity to manage and establish the technology.[17] This regulatory burden is also quite demanding for smaller communities.

Furthermore, some participants shared that some funding applications have required applicants to demonstrate their ability to utilize spectrum to connect their communities. This requires applicants to first secure the permits required to establish connectivity, and receiving permit approval can be extremely time-consuming. This presents a significant barrier for communities that may already be financially constrained, making it even more difficult for them to access the funding needed to establish their spectrum operations. Navigating the complexities of the regulatory and technical landscape of spectrum allocation requires specialized knowledge and significant investment to acquire and utilize. While participants highlighted both the challenges and importance of addressing these issues in order to be able to access and utilize spectrum, they remained optimistic about the future and inspired by the recent shifts in the spectrum realm, including the coming introduction of the above-mentioned IPW, and rising awareness of successful approaches in other countries, outlined below.

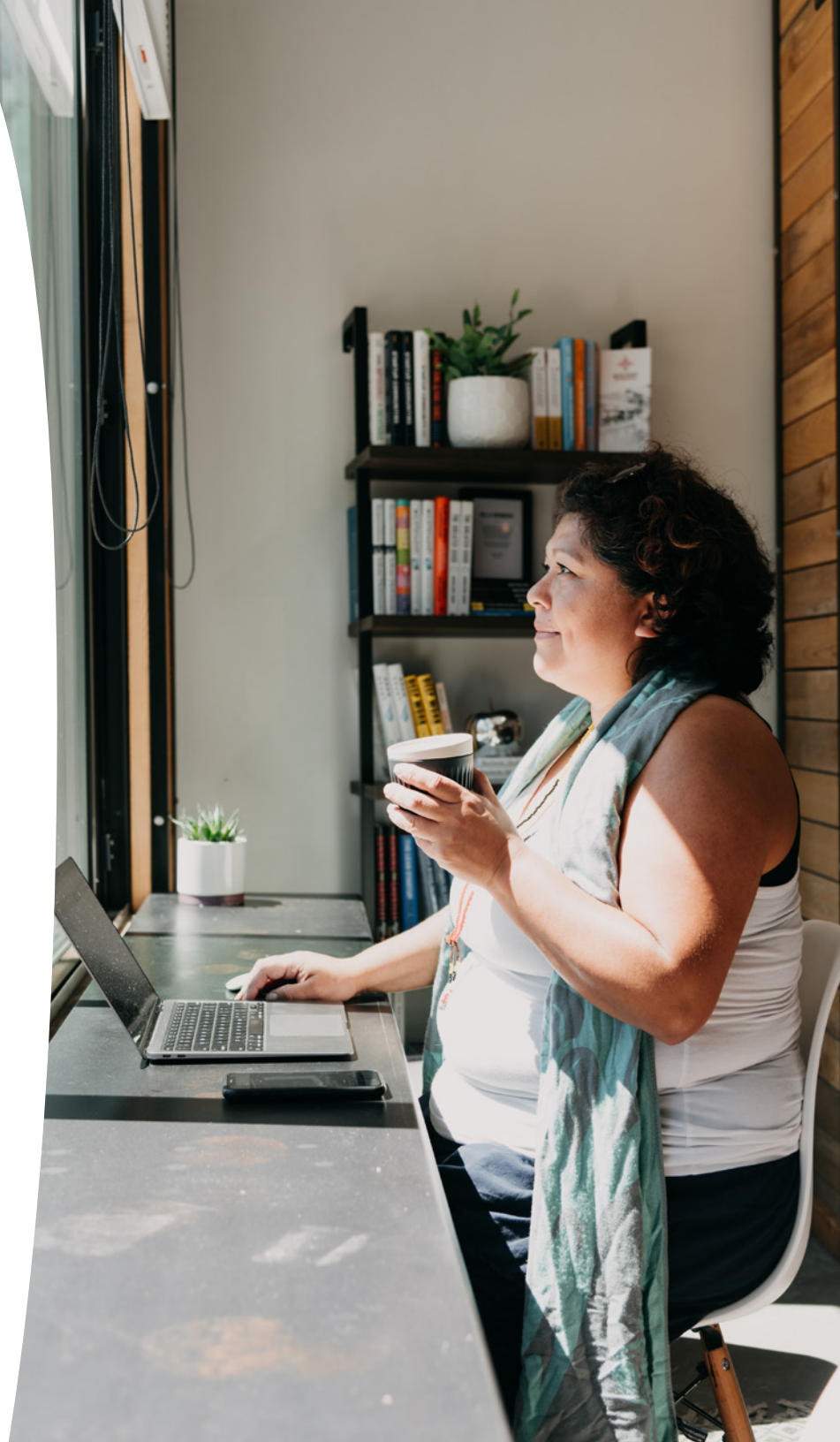


[17] Government of Canada, "Decision on New Access Licensing Framework, Changes to Subordinate Licensing and White Space to Support Rural and Remote Deployment", ISED, January 2024, ised-isde.canada.ca/site/spectrum-management-telecommunications/en/spectrum-allocation/decision-non-competitive-local-licensing-framework-including-spectrum-3900-3980-mhz-band-and.

Paths to Spectrum Access for First Nations: Case Studies

Mexico

In Mexico, the spectrum access of Indigenous communities is a recognized right. Indigenous peoples are at the table with the government discussing spectrum policy and licensing to provide Internet connectivity in their communities. To use spectrum, these Indigenous communities have partnered with organizations to build and manage their own low-cost telecommunications infrastructure to provide high-bandwidth connections.[18] By doing so, they have covered the costs that would otherwise be associated with utilizing the spectrum through leasing infrastructure from large telecom companies.



[18] APCNews, "Landmark Ruling in Mexico Allows Communities to Provide Service in Areas That the Telecoms Market Does Not Reach", Association of Progressive Communications, February 2, 2021, www.apc.org/en/news/landmark-ruling-mexico-allows-communities-provide-service-areas-telecoms-market-does-not-reach.

First Nations-led connectivity solutions in Canada

In Canada, both Kuhkenah Network (KNet) in northern Ontario and Eeyou Mobility in Quebec are examples of paths to spectrum access for First Nations. Kuhkenah, meaning “for everyone, everywhere” in Oji-Cree, a “First Nations owned and operated information and communication technologies (ICT) Service Provider leading the way for rural and remote First Nations of Ontario into the ever-growing world of information communication technologies.”[19] They set up subordinate licensing agreements, licensing spectrum from larger license holders to provide internet services to their community, and “partner [with] First Nation communities to create a unique community owned network [where] each First Nation owns and controls their local network infrastructure and is their own Internet Service Provider.”[20] Eeyou Mobility is a Cree company that was established in 2019 “to develop, deploy and operate a 4G-LTE mobile voice and broadband network to the Eeyou Istchee and James Bay region.”21

Ultimately, some of the key lessons that First Nations in British Columbia can take away from these domestic and international case studies includes: returning investments from spectrum access back to the community for capacity building, including skills development and increasing technical knowledge; subordinate licensing agreements, (such as in the case of KNet is doing) and thinking creatively about how to gain access to spectrum.

Use it or Share it Model

The United Kingdom has adopted a “use it or share it model,” whereby license holders who are not using some, or all, of their spectrum have it opened to others. This model addresses the issue of licenses that are left unused by large corporations. Bill Murdoch expanded on the potential of the use it or share it model, observing that if large companies are not providing adequate service to First Nations communities, “then the community should have access to that spectrum to use it how they see fit." This use it or share it model has the potential to lead to increased First Nations stewardship, essential for spectrum access solutions that are successful and sustainable for First Nations.

[19] KuhKenah Network, “Vision and Mission”, Kuhkenah Network, 9 March 2023, knet.ca/vision-and-mission/.
[20] KuhKenah Network, “Home”, March 9, 2023, knet.ca/.
[21] Eeyou Mobility, “About Us”, Eeyou Mobility, accessed July 23, 2025, www.eeyoumobility.com/about-us/.

The Māori in Aotearoa (New Zealand)

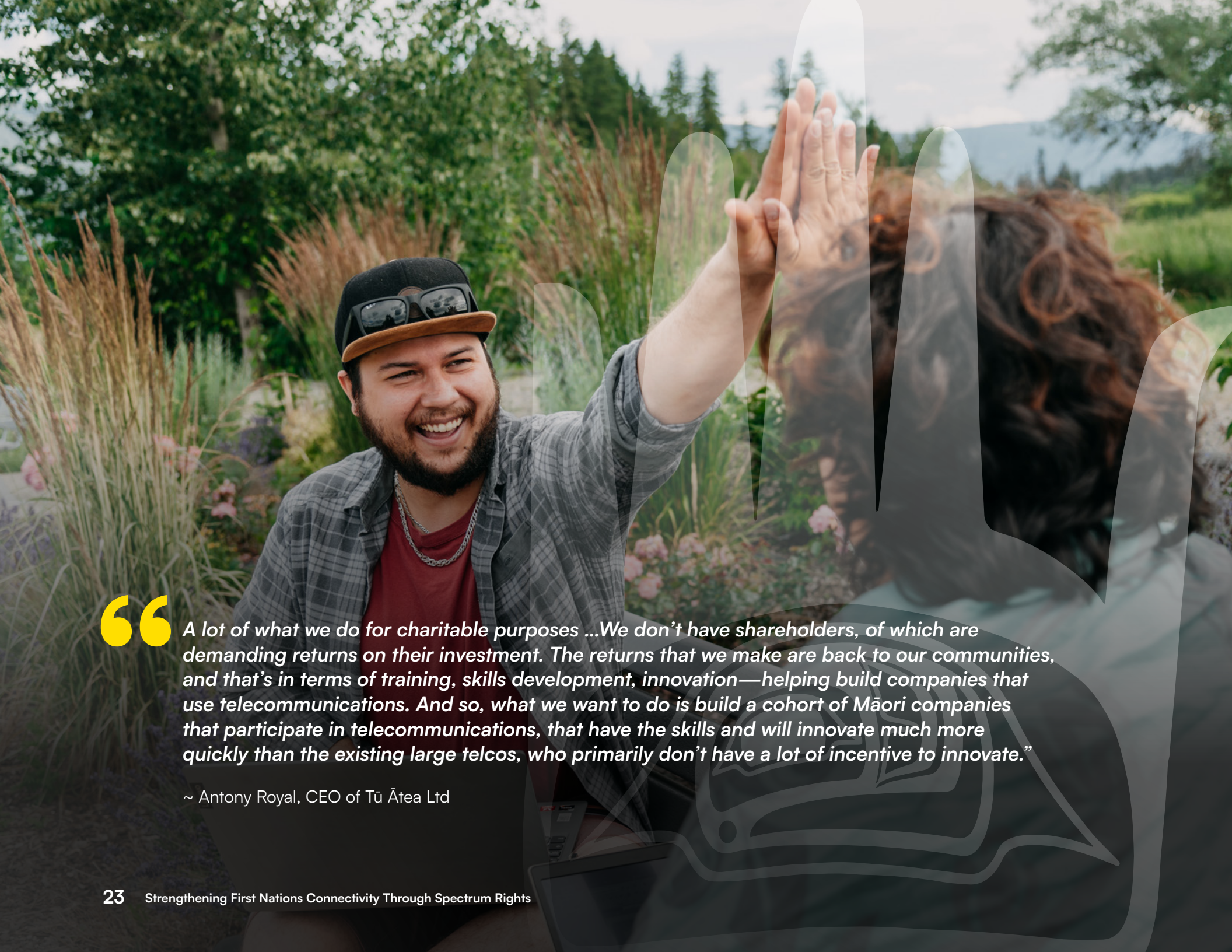
Tū Ātea Ltd., the Māori Spectrum & Telecommunications Service, was born out of decades of advocacy by the Māori Spectrum Working Group, a major leader and innovator in the realm of spectrum, to ensure that their business model is rooted in Māori participation, education, and social and cultural wellbeing.

Māori are internationally recognized as pioneers in the concept of spectrum sovereignty for Indigenous peoples. Over the last 20 years, Māori have campaigned for access to spectrum and sovereignty. The Aotearoa (New Zealand) government allocated 100 MHz of the 3.5 GHz spectrum to Māori. A Memorandum of Understanding (MoU) is in place between the Māori and Aotearoa government, which includes millions of dollars to support Māori capacity building and networking, as well as strengthening Māori sovereignty.[22]

Although the MoU is non-legally binding, it sets a strong policy framework for the Crown, including key commitments around spectrum allocation, funding and capacity building, the policy participation of Māori, including annual meetings with Ministers, participation in technical working groups and quarterly engagement, and a review and dispute process. The MoU represents a milestone achievement in relations between the Crown and Māori in the realm of spectrum rights and has been instrumental in underpinning the establishment of thriving Māori spectrum leadership. The example set by the Māori Spectrum Working Group and Tū Ātea serves as a rich source of learning in terms of the kind of advocacy that is needed in the realm of spectrum and highlights the positive outcomes that can result from advocacy, which is spoken about more in the section on the application of spectrum and how to work towards spectrum sovereignty. In addition to generating revenue to support the strengthening of connectivity and capacity building in their communities, the Māori have set aside revenue funds in a charitable trust.

The Māori purchased a company in 2020 that provides engineering services to telecommunications and broadcasting, and they have grown the company from three employees to over 100 people, and are now looking to build a national Māori workforce. They have done this by providing training and skills development to Māori who want to be part of the company and build careers in the telecommunications sector. They also have a charitable trust set aside because the returns they make go back to the communities in terms of training, skills development, and innovation to help build companies that use telecommunications to ultimately build up a cohort of Māori companies that participate in telecommunications and that have the skills and training to innovate faster than the existing large telecommunications companies.

[22] Māori Spectrum Working Group and Crown of New Zealand, *Memorandum of Understanding on Radio Spectrum*, (2022), www.mbie.govt.nz/dmsdocument/18702-memo,randum-of-understanding-maori-spectrum-agreement. The Māori Spectrum Working Group (MSWG), which comprised of the Nga Kaiwhakapūmau i Te Reo, the New Zealand Māori Council, the Te Huarahi Tika Trust, the National Iwi Chairs Forum, and Māori telecommunications and technology industry representatives, including Antony, negotiated a Memorandum of Understanding (MOU) on Radio Spectrum with the Crown in New Zealand that was signed on February 2, 2022, and negotiated "at no cost 20% of all future Commercial Spectrum allocations that are allocated under the Management Rights regime" (Memorandum of Understanding on Radio Spectrum 2022, art. 9.1), operating funding for five years, an investment fund for telecommunications infrastructure, legislation, and create an independent organization that enabled the Māori to develop their own workforce, to innovate, and to engage with the government directly on matters relating to spectrum policy, amongst other things.



A lot of what we do for charitable purposes ...We don't have shareholders, of which are demanding returns on their investment. The returns that we make are back to our communities, and that's in terms of training, skills development, innovation—helping build companies that use telecommunications. And so, what we want to do is build a cohort of Māori companies that participate in telecommunications, that have the skills and will innovate much more quickly than the existing large telcos, who primarily don't have a lot of incentive to innovate."

~ Antony Royal, CEO of Tū Ātea Ltd

Importance of access to spectrum

Gaining access to spectrum gives First Nations the opportunity to have more say about the telecom services operating over their areas.[23] They have the opportunity to economically flourish by building and monetizing their own internet and cellular services, creating revenue streams, local jobs, and opportunities to create and support local businesses.

Furthermore, there is some evidence that when spectrum is set aside for social use, small operators and community networks provide affordable mobile services to underserved areas. However, it is important to stress that many factors can influence the cost and quality of internet and cellular services. Ultimately, accessing spectrum is a step towards asserting spectrum sovereignty. It can reinforce Indigenous self-determination and governance in the digital age.

Advocating for Spectrum Sovereignty

Throughout the course of our interviews with participants, the need for advocacy to achieve spectrum sovereignty arose again and again. Remote First Nations face persistent issues with unreliable access to spectrum-enabled services such as telecommunications and internet, and this, according to participants, is becoming a major roadblock to Nation-building. Waiting for the government or the large monopoly service providers to fully consider their right to access leaves these communities in a state of forced dependence. When these entities step in to provide the services, there is the perpetuation of the exclusion of First Nations from ownership over this finite resource. Thus, there is a strong need for advocacy in the realm of First Nations spectrum access and spectrum sovereignty.

Participants also spoke about the need for understanding any emerging jurisdictional issues that may arise in seeking spectrum rights in certain geographical areas. Having a First Nations-led organization that can work to aid in navigating these issues within and among communities while also working to gain access to spectrum was seen as a viable path to achieving spectrum sovereignty.

[23] Rey-Moreno et al., "Policy and Regulatory Guidelines to Enable Complementary Last Mile Communication Providers", October 18, 29, people.ac.upc.edu/leandro/walc19/Guidelines-draft.pdf.

Conclusion

Participants articulated the challenges and opportunities inherent in achieving spectrum sovereignty. Through extensive engagement, we explored current policy landscapes, such as the IPW framework and NCLL, critically assessing their efficacy and identifying persistent barriers. We also delved into the lack of spectrum information and awareness within communities, capacity constraints, including financial, technical, and institutional support, and the historical power imbalances that have disproportionately affected rural and remote First Nations.

Future research could broadly consider how evolving digital technologies might create new pathways for localized spectrum management and utilization, moving beyond current paradigms. There is also fertile ground to delve deeper into the socio-economic impacts of community-led broadband initiatives that leverage Indigenous-controlled spectrum, documenting how such foundational infrastructure can foster cultural revitalization, language preservation, and localized economic diversification.

Drawing on lessons from nations like Aotearoa (New Zealand), the United States, and Mexico can offer valuable insights into adaptable models for the Canadian context, without prescribing direct replication. Ultimately, the insights shared by participants throughout this research underscore that spectrum is not merely an abstract technical concept, but a tangible resource, much like land or water, intrinsically linked to the well-being and future of communities. Several participants noted that spectrum is a resource like other more traditionally defined resources, and Indigenous sovereignty and prosperity must be inclusive of access and control over spectrum.

While this research does not aim to provide communities with complete information vital to advancing and advocating for spectrum sovereignty, First Nations communities gaining awareness and understanding of how to gain access to spectrum licenses under the currently available policies and procedures offers a vital first step in reinforcing Indigenous self-determination and governance in the digital age. First Nations communities obtaining access to spectrum will create pathways for economic expansion and create local jobs. Moreover, it will ensure that youth and growing Indigenous populations can fully participate in a sector which is well-positioned to help future generations flourish. It is an important first step toward increased sovereignty in this area.

Recommendations

Strengthening First Nations Spectrum Access

To advance digital self-determination, First Nations must have the tools, knowledge, and partnerships to manage and benefit from spectrum resources. These recommendations focus on strengthening internal capacity, fostering collaboration, and building pathways toward spectrum sovereignty. By investing in education, partnerships, and capacity, First Nations can assert leadership in spectrum management and ensure that access to this critical resource aligns with community values, priorities, and rights.

These recommendations are aimed at increasing opportunities to improve spectrum access for First Nations.

Share knowledge across First Nations

First Nations in British Columbia may benefit from establishing a collaborative space to exchange information, share experiences, and discuss spectrum access and stewardship. Such an initiative could help communities learn from one another, identify common challenges, and explore potential solutions grounded in their own priorities.

Create a basic spectrum learning module

Create an online, free course to increase awareness of spectrum amongst community members and First Nations decision makers who may not be aware of it or its potential.

Spectrum point-people

Identify individuals, such as Nation staff or technicians, who are interested in learning about spectrum and sharing knowledge internally. These local learners or champions can help build internal understanding by engaging with the training materials and supporting their community's decision-making processes. This approach ensures that knowledge remains community-driven and grounded in local needs, while enabling Nations to build capacity at their own pace.

Interjurisdictional knowledge circles

Establish circles of knowledge exchange with other Indigenous nations in other parts of Canada, as well as the USA, Mexico, and Aotearoa (New Zealand).

Build internal capacity

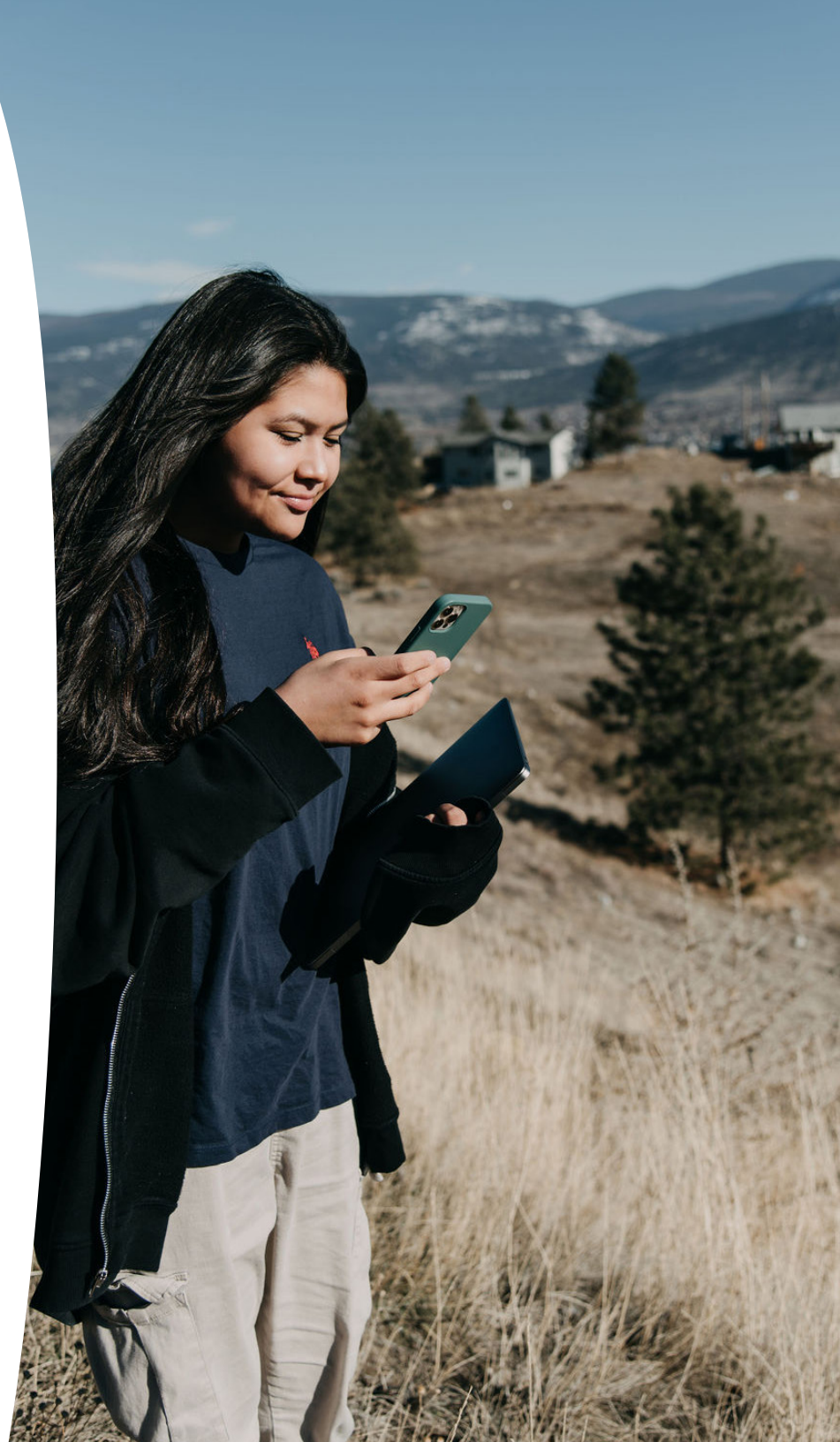
Build technical expertise from within community to aid in operationalizing spectrum licenses. This could be achieved by hiring technical experts, providing training, education and building technical and administrative capacities from within community.

Look at funding opportunities to build capacity

Examine current opportunities for economic development funding, and if any existing or new funding can be earmarked for capacity development in the area of spectrum access.

Private sector partnerships

Establish partnerships with small Indigenous internet service providers, and where possible, larger companies willing to collaborate with First Nations. Many participants emphasized the importance of partnership between different entities that can help to prevent exclusion and ease access, including “multiple different entities in a similar geographic area that are working together to get that connectivity into a particular region.” Partnerships can also lead to innovative solutions, such as subordinate licensing.



Transforming the System for Equitable Spectrum Access

Meaningful and sustainable change requires systemic reform. These recommendations identify the actions needed within federal, regulatory, and institutional systems to remove barriers and create equitable pathways for First Nations to access and steward spectrum. This includes improving policy design, simplifying administrative processes, increasing transparency, and ensuring long-term funding. Together, these systemic shifts can help enable a future where spectrum access is recognized as a right—not a privilege—and where First Nations leadership is embedded within Canada's digital infrastructure landscape.

Reform spectrum application processes

Align processes with regulatory realities by extending application periods to account for the actual time required to obtain necessary permits and eliminating permit approval requirements from the application package, allowing applicants to proceed without pre-approved permits.

Increase knowledge mobilization efforts

Ensure that all information about the utility of spectrum, and all related elements, is shared widely and in plain language.

Work to decrease the administrative burden on First Nations communities

Simplify requirements for access and actively reduce the administrative burden on First Nations communities seeking to access spectrum licensing.

Funding

Provide long-term, low-barrier, multi-year funding opportunities to enable the development of enduring First Nations-led spectrum sovereignty efforts, including infrastructure, education, administrative capacity, social enterprise incubators and legal fees.

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