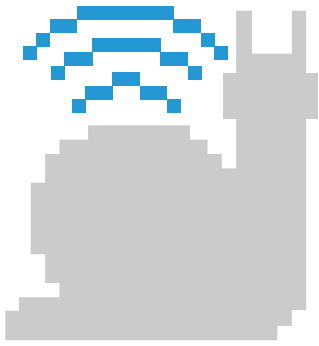# RMA Internet Speed Testing Summary Report

RMA

RURAL MUNICIPALITIES
of ALBERTA

November 2022

Current State of Rural Internet

Broadband is critical for modern life, including economic development, maintaining social connections, and participating in emerging opportunities like connected agriculture and tele-health. According to the CRTC, only 46% of rural households nationwide meet the 50/10 MBPS standard set by the Government of Canada. While the reasons for lower speeds in rural areas are complex, a common issue is the lack of investment from private internet service providers (ISPs). ISPs typically do not invest large amounts in rural areas as the business case does not exist due to low population densities and challenging geography.

While the CRTC recognizes that only 46% of rural households achieve 50/10 MBPS speeds, there are significant challenges to how the Government of Canada understands rural internet speeds. For example, Innovation, Science and Economic Development (ISED) hosts the data that informs the National Broadband Internet Service Availability Map. This map displays internet speeds across Canada as understood by ISED. However, this map is frequently challenged as being inaccurate and overstating internet speeds. This reported discrepancy was the catalyst for the RMA undertaking speed testing.

The RMA's Speed Testing Project

To collect data on internet speeds in RMA member municipalities, the RMA partnered with the Canadian Internet Registration Authority (CIRA). CIRA is a non-profit organization that is responsible for administering .ca domains. Additionally, CIRA has experience operating speed testing projects across Canada, including working directly with municipalities. CIRA worked with the RMA to develop a unique webpage that allowed users to test their internet speeds and reported median speed values by municipality. The CIRA test works with rural residents to run speed tests, which provides real-world and up-to-date results. As a result, the RMA collected data demonstrating true internet speeds that differ from the ISED approach, which works with ISPs to collect their reported speeds.

The RMA began collecting speed testing data in October 2020, with testing wrapping up at the beginning of October 2022. This two-year process saw over 35,000 tests run in RMA member municipalities. This significant number of tests was possible because RMA members saw a need to understand internet speeds in their regions, and answered the call to participate in and promote the test.

While testing began in 2020, the RMA gained access to historic data dating to 2018, which is included in the analysis on the next page.

RMA Internet Speed Testing

RMA Districts

The RMA groups its members into five districts. These districts are shown on the map below, and are used to compare speeds regionally.

District 1
District 2
District 3
District 4
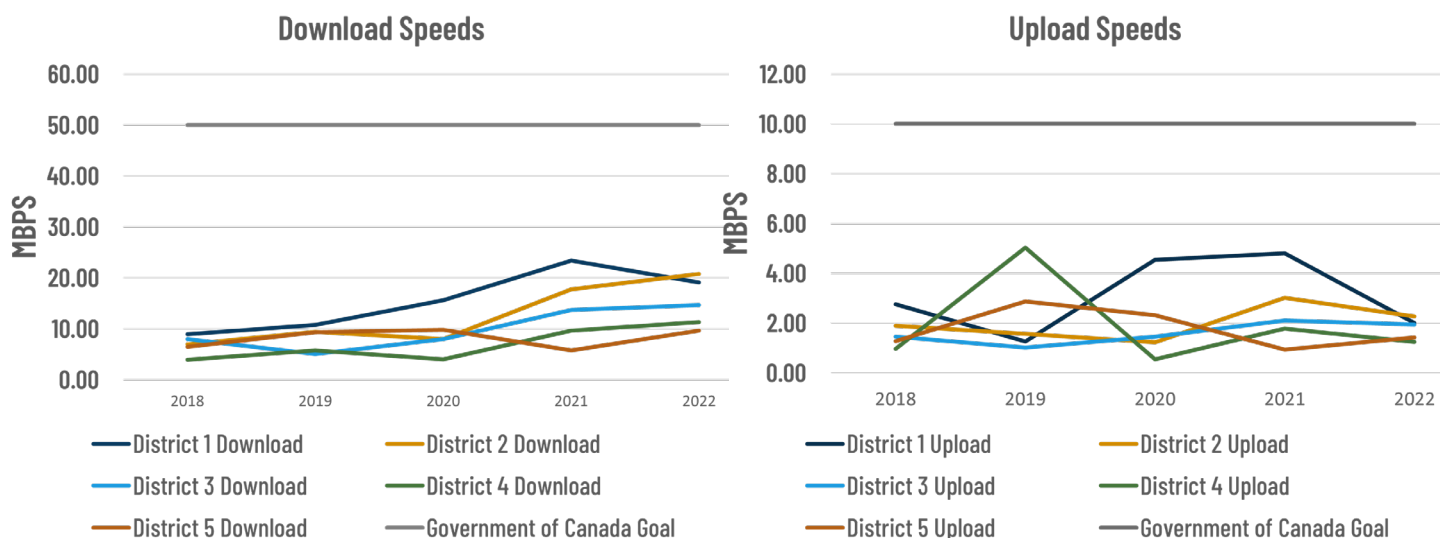**District 5**

RMA Internet Speed Testing
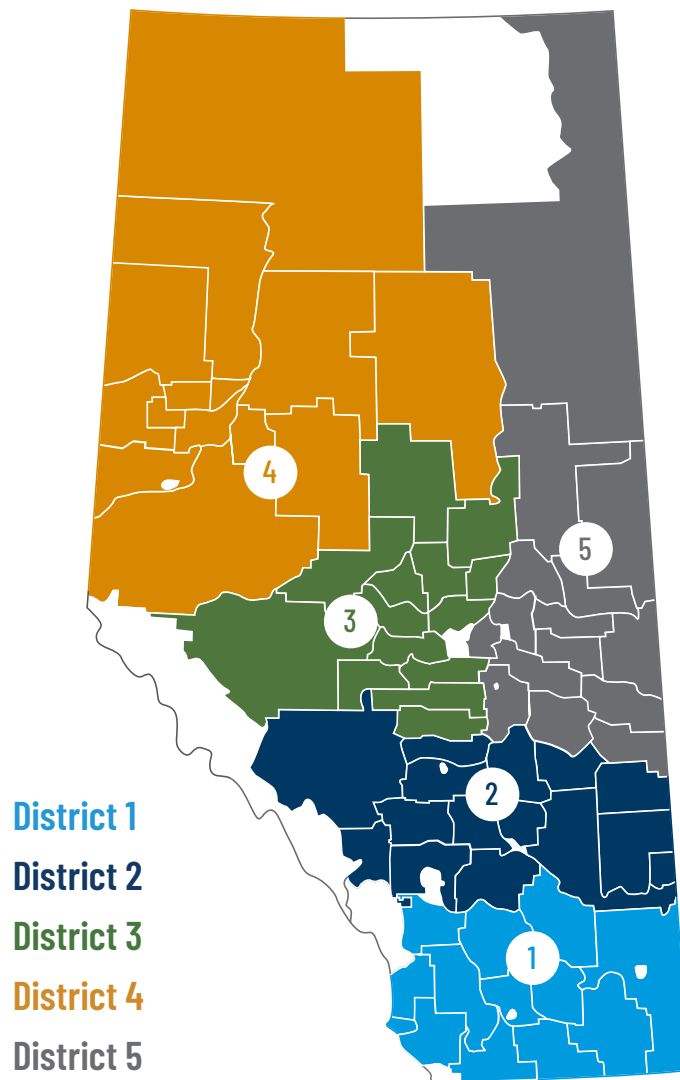
Tests Run

CIRA's test requires individual rural Albertans to run speeds tests through their home or business networks located in rural Alberta. While the RMA's speed testing project ran from 2020 to 2022, CIRA shared data with the RMA dating back to 2018. The increase in tests run beginning in 2020 corresponds with the start of the RMA's project and subsequent engagement with members.
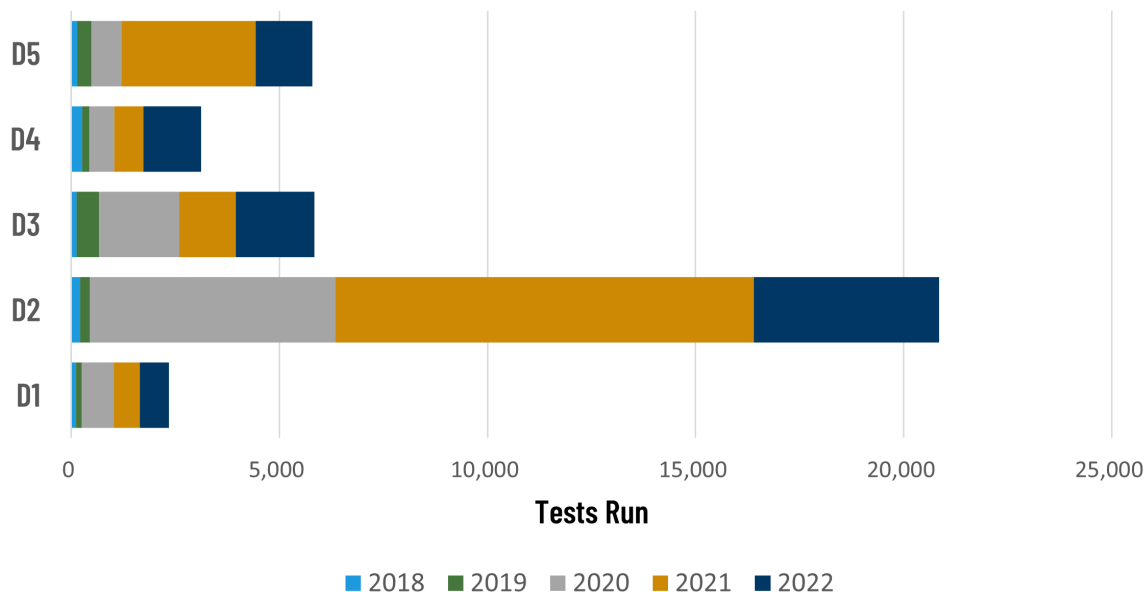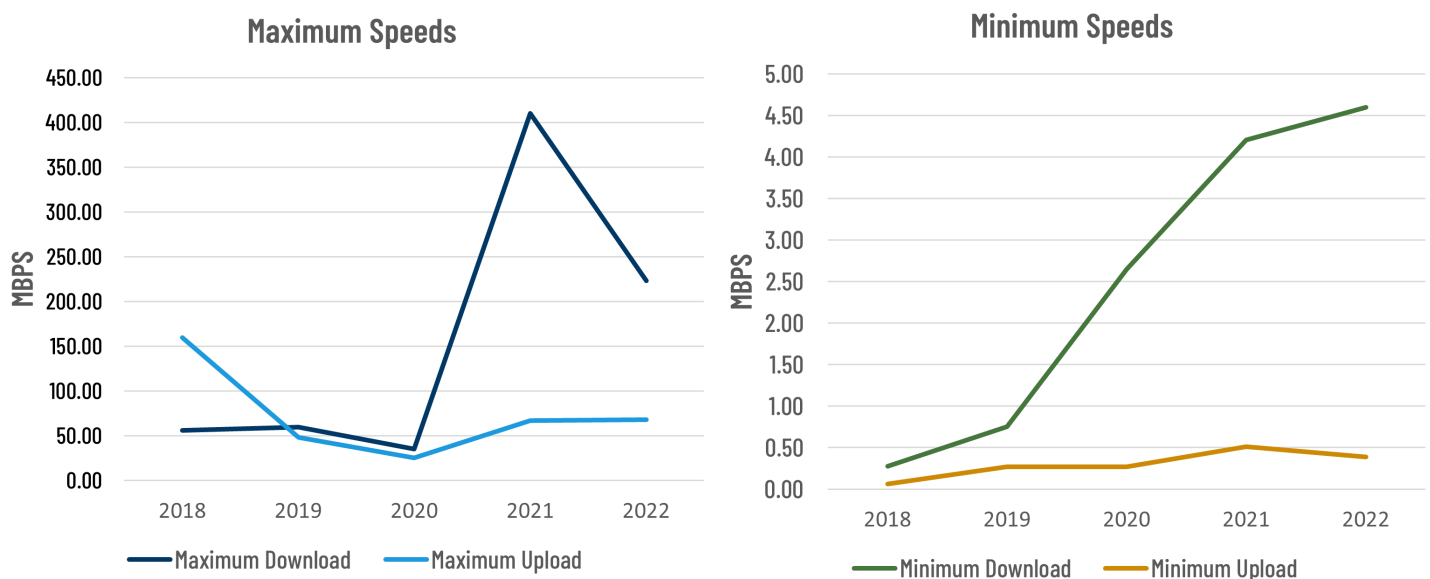

Speed Results

Download and upload speeds are shown in a variety of formats below. While most regions saw an increase in speeds from 2018 to 2022, none of them approach the 50/10 MBPS standard set by the Government of Canada.

	2018		2019		2020		2021		2022	
	Download	Upload	Download	Upload	Download	Upload	Download	Upload	Download	Upload
D1	8.96	2.75	10.79	1.26	15.60	4.54	23.40	4.80	19.07	2.01
D2	6.95	1.89	9.40	1.57	8.01	1.23	17.76	3.02	20.76	2.26
D3	7.95	1.45	5.08	1.02	7.94	1.45	13.67	2.10	14.69	1.94
D4	3.96	0.97	5.79	5.03	4.04	0.54	9.67	1.78	11.30	1.24
D5	6.43	1.27	9.36	2.87	9.80	2.32	5.79	0.93	9.62	1.42
RMA	6.97	1.62	7.41	1.98	7.96	1.27	14.78	2.16	14.94	1.96

Download Speeds

Upload Speeds

As can be clearly seen, median download speeds trended upward over the reporting period. However, no district ever reached even 50% of the 50/10 MBPS standard. The data on upload speeds is less consistent, showing that gains in download speeds have not necessarily correlated to upload speeds. Upload speeds are critical for the two-way communication required by many internet applications, notably video chat services.

The above analyses report average results, which paints a general picture of rural Alberta. However, it is important to recognize that the fastest and slowest speeds observed are also important metrics. Looking at the fastest speeds over time will reveal if there is a trend in the best getting better or if the speeds reported become more consistent as testing increases. Looking at the lowest speeds will show if there are improvements in the areas that need it most. These two analyses are presented here.

Maximum Speeds

Minimum Speeds

On the opposite end of the spectrum, since 2018 the municipalities with the slowest speeds have seen a modest increase in download speeds, with consistent upload speeds. While these results show the municipality with the lowest speeds in each year is well under the 50/10 MBPS goal, there have been continual, albeit small, gains.

Discussion

As shown in the summary analysis, actual rural internet speeds in Alberta are unacceptably low. While this issue is acknowledged by the Government of Canada, there are gaps in understanding current internet speeds in rural areas.

In the past and today, the Government of Canada has attempted to address under-investment in rural broadband infrastructure by providing direct funding to groups (mainly ISPs) for specific projects serving rural areas. Recent and current examples of these projects include:

- **Universal Broadband Fund (UBF)** – The Government of Canada's UBF makes $2.75 billion in funding available for broadband projects across the country. This includes $750 million for a rapid response stream, which has accounted for the UBF projects announced to date. The Government of Alberta has also contributed $390 million in funding for projects in Alberta, which will be matched by $390 million from the Government of Canada and administered through the UBF.

- **CRTC's Broadband Fund** – While this fund is closed for applications, projects continue to be announced using this funding. The CRTC's broadband fund made available $750 million to bridge the urban-rural digital divide.

- **Canada Infrastructure Bank** – The Canada Infrastructure Bank does not provide grant funding, but does provide loans for large broadband infrastructure projects. The Bank has $3 billion available for loans for broadband projects.

- **Low Earth Orbit Satellite** – $600 million of the UBF is set aside to support low Earth orbit satellite internet. This technology will be primarily used in areas that are difficult to serve using other technologies.

- **Connect to Innovate** – Connect to Innovate provides $585 million in funding beginning in 2016 and ending in 2023. This fund was established primarily to support the backbone of broadband: building infrastructure connecting communities. However, some funding was used for connecting individual buildings.

- **First Nation Infrastructure Fund** – This fund makes funding available to First Nations for infrastructure projects, including broadband. Notably, off-reserve projects may be considered if the project partners with a municipality.

- **Investing in Canada Program – Rural and Northern Communities Infrastructure Stream** – This fund provides infrastructure funding to rural and northern communities on a variety of projects. This includes broadband infrastructure projects.

While this funding has brought broadband internet to more Canadians, gaps persist, especially in areas far from large population centres. As a result, the RMA sought to understand internet speeds in its member municipalities. Doing so demonstrates where investment is still needed.

Funding for rural internet must take into account the different delivery models used in rural areas. In rural Alberta, broadband is delivered to houses and businesses primarily through four technologies.

- **Fibre to the premises** – This involves physically connecting buildings to fibre backbone to connect to the internet. This is the most reliable type of connection, however, it is also the most costly in rural settings.

- **Fixed wireless access** – Using this method, fibre is brought to a communications tower that sends out a signal wirelessly. This signal is then accessed by rural residents through a dish that brings the internet into the building. This method is lower cost than fibre to the premises, however, it requires towers be located strategically to provide service and utilizes a finite resource, spectrum, to distribute the signal.

- **Mobile access** – Similar to fixed wireless, mobile internet access delivers internet services remotely. However, unlike fixed wireless, mobile access does not require line of site, as it delivers service using the same technology used to deliver service to a cell phone.

- **Low Earth orbit satellites** – This is an emerging technology that uses many small satellites flying in low orbit to deliver internet. This functions by an earth station sending a signal to the satellites, which then redirect that signal towards users on the ground. Users on the ground pick up the signal using a satellite dish. The speeds achieved using this method are typically faster than fixed wireless, however, there is a large upfront cost for the satellite dish, the service can be unreliable, and it is not yet widely available.

As fixed wireless access is the most common method of delivering rural internet, it is important to understand challenges to this technology. Spectrum is used by ISPs to send internet from communications towers to rural buildings using a fixed wireless access delivery model.

From a practical perspective, spectrum in Canada is managed by the Government of Canada through the ISED. At a high level, the Spectrum Policy Framework (SPF) guides all federal government decisions made regarding spectrum. The SPF was last revised in 2007 and sets out the policy goal of relying on private ISPs to provide internet service to the greatest extent possible. (More on this in the following section.)

ISED allocates spectrum to ISPs using a competitive auction process. During this process, ISPs bid on units of spectrum within a specified bandwidth to provide service in a specific area. The geographic areas for each spectrum licence are determined by ISED. Therefore, in each service area, multiple blocks of spectrum are auctioned to ISPs that they can then use to deploy internet service. If ISPs want to expand their service in a given service area, they need to acquire more spectrum in that service area. If they want to expand their service to new areas, they must bid on spectrum in that service area.

As mentioned previously, spectrum is used for communicating a variety of information types for different uses, such as television, radio, internet, and cellphones. While different bandwidths of spectrum are better suited to some uses, there is competition within bands for different technologies. This is especially true for emerging technologies like 5G. 5G delivers internet services in a similar manner to traditional fixed wireless technology. However, because of its relatively short range and higher cost to implement, 5G is more likely to be deployed in urban areas where there are more potential customers. As a result, spectrum bandwidths traditionally used to provide rural wireless internet access are at risk of being made unavailable or inaccessible to rural internet users.

The RMA is advocating for spectrum policy reform in multiple ways:

◆ The RMA is advocating to ISED for a formal consultation on the Spectrum Policy Framework. As mentioned above, the SPF directs the perspective ISED is to use in making spectrum decisions. The current SPF was written in 2007 and is now 15 years old. Given the rapid changes in technology, the RMA is concerned a 15-year-old policy may not be addressing current needs. Additionally, the SPF requires decisions be made that rely on the private sector to the maximum extent possible. RMA members know that this policy has failed rural Alberta, as relying on the private sector to provide internet service has contributed to the current digital divide in internet speeds.

◆ ISED seeks to encourage competition amongst ISPs, including providing for tools that allow new entrants into the market. One of these tools is known as the "set aside policy." The set aside policy sees small blocks of spectrum protected from open bidding and are only available to be bid on by smaller ISPs. The idea is that smaller ISPs can gain access to spectrum without needing to compete with the big players. One of the conditions of participating in the set aside auctions is for the ISP to already be operating in the region (such as here in Alberta). The RMA supports the intent of the set aside policy, however, greater transparency is needed around eligibility and how ISPs prove their eligibility. The RMA is advocating for this increased transparency.

◆ The RMA joins the Government of Alberta and other stakeholders in calling for the creation of a "use it or lose it" policy with respect to spectrum. As previously discussed, spectrum is a finite resource necessary for providing internet in rural Alberta. Unfortunately, ISPs will sometimes buy spectrum with no intention of deploying it; rather, they are holding it to resell once it appreciates in value. The RMA is advocating for the creation of a use it or lose it policy that would see deployment requirements accompany the allocation of spectrum to put an end to speculating on spectrum.

RMA Internet Speed Testing

Summary

The RMA's internet speed testing project demonstrated that rural Albertans experience much lower internet speeds than the 50/10 MBPS goal. The reasons for this are complex, but they include:

- Government of Canada data overstating internet speeds, and therefore making rural areas ineligible for funding to improve speeds.
- Funding programs are not designed to specifically address challenges with rural internet.
- Policy challenges, like the Spectrum Policy Framework, present road blocks to improving rural internet.

The RMA will continue to advocate for changes to address these challenges. As part of this next step, the data gathered through the speed testing project will be used to inform new data-driven positions.