

# Internet Performance Testing for Government Funding Programs

CIRA Proposal for Internet Test Data  
For Project Analysis, Reporting and Mapping

## Introduction

Canadian Internet Registration Authority (CIRA) is proposing that their Internet Performance Test and “**Lander Pages**” become the standard measurement tool for all levels of government funded Internet projects.

Within this document all *italicized* text is quoting either ISED (Innovation, Science and Economic Development Canada) or CRTC (Canadian Radio-television and Telecommunications Commission) exact wording. **Bold** text is for emphasis by CIRA. Footnotes and imbedded links are provided for ease of reference.

ISED has been, to-date, the primary Federal Government provider of funding for the purpose of improving rural Internet through different funding programs including Connecting Canadians, Connect to Innovate (CTI), and more recently, the upcoming Universal Broadband Fund (UBF). ISED coordinates their Internet investment programs with Infrastructure Canada’s Rural Economic Development department who have primary responsibility to execute the UBF. There are also multiple Federal/Provincial/Territorial/Municipal shared funding activities to build/upgrade broadband networks.

## [ISED – Canada’s Connectivity Strategy](#)

[In Budget 2019](#), the government announced \$1.6 billion in new funding to establish the [UBF](#) to be designed specifically to meet the connectivity needs of rural Canadians.

The Strategy commits to the **Universal Service Objective** defined by the CRTC as follows:

- **Download Speeds** - at least 50 Mbps.
- **Upload Speeds** - at least 10 Mbps.
- **Latency** - a round-trip latency threshold of 50 milliseconds (ms).
- **Jitter** - a threshold of 5 ms or less.
- **Packet Loss** - a threshold of 0.25% or less.
- **Unlimited Data** - option is from a service provider in a funded project.

[The CRTC determined in Telecom Decision CRTC 2018-241 that](#), “... to meet the broadband portion of the Universal Service Objective, fixed broadband Internet access service is defined as a high-quality service if it provides the subscriber with a smooth experience when using real-time QoS-critical (Quality of Service) applications.”

To verify that a project has met these Universal Service Objectives, the CRTC defined measurement methods and **further ruled** in Telecom Decision CRTC 2018-241, “...these measurements should be **performed by an independent 3<sup>rd</sup> party and measured through a connection from the customer premise modem to an Off-Net server**”.

This definition exactly meets the specifications of **CIRA’s Internet Performance Test (IPT)**.

To that end, ISED and CIRA have been working together to gather data regarding Internet performance in relation to the Universal Service Objective. CIRA created a unique [Lander Page URL for ISED](#) imbedded on ISED's website and CIRA/ISED work together defining **Best Practices** and methods for measuring the success of projects executed through Federal Government funding programs. The CRTC is a critical partner in these discussions and has been invited to participate.

On June 3, 2019, the CRTC launched its [\\$750 million Broadband Fund](#) with an [Initial Call for Applications](#) providing up to \$100 million for projects within Canada's territories and satellite-dependent communities. A [Second Call for Applications](#) was released November 13, 2019 to support all project types in underserved rural and remote areas throughout Canada to a maximum total of \$125 Million.

The CRTC has held numerous consultations to define what constitutes a high-quality service for the purpose of qualifying what projects should be supported with CRTC originated funding. These consultations, rulings and findings are summarized here and their full content is linked throughout this document.

**The Rural and Northern Stream** of the [Investing in Canada Infrastructure Program](#) provides up to \$2 billion to support various infrastructure projects that improve the quality of life in rural and northern communities, including improved broadband connectivity.

These **Federal** funding programs, joint **Federal-Provincial** programs, individual **Provincial** programs, **Municipal** programs and as yet future undefined programs **all share the need to measure performance to demonstrate funded project objectives are met**, tax payer dollars are spent wisely, project funding is not duplicated and all Canadians have access to high quality, reliable Internet connections.

## Internet Performance Measuring

**"Measuring"** is defined herein as collecting data from individual internet connections within a funded project to prove that Universal Service Objectives are being met. It includes accumulating, analyzing and retaining of data in a format that supports easy understanding and confirmation of the measured results. Done correctly it provides an ongoing standard methodology to measure performance at project milestone events including the pre-project evaluation of an areas specific need for improved services. This methodology can be applied now, for future assessment of additional funded projects, and the ongoing reporting on the existing state of the Internet in Canada.

Ongoing discussions between ISED and CIRA and reviews of the CRTC Consultations, Rulings, and Decisions have identified that these milestones are as follows:

1. **Pre-surveying:**<sup>1</sup> demonstrate a planned project area is currently underserved and does not have the existing capacity or capability to meet the Universal Service Objectives. The existing 600,000 tests collected to date could help with this evaluation.

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<sup>1</sup> CRTC Application Guide - Section 6.2.2(f) - Current gap

2. **Progress Report:**<sup>2</sup> *“a report outlining project details such as the project’s implementation status and an update on the project’s costs.”* **CIRA Recommends** progress reports should include QoS test reports for all Internet subscribers connected to a funded network.
3. **Final Implementation Report:**<sup>3</sup> *“a report, to be filed by a funding recipient once the project is complete and broadband services are offered, that will provide details of the completed project, such as whether the project **meets the conditions set out in the funding decision**, as well as any other information such as project delays, the level of service uptake, and open access requests.”*
4. **Holdback Report:**<sup>4</sup> *“a report to be filed one year after project completion, indicating that services have been offered for a full year and providing details on **whether the project continues to meet the conditions of funding** set out in the funding decision.”*
5. **Scalability:**<sup>5</sup> *“Demonstration of the applicant’s future **intent to meet or exceed the Universal Service Objective** in cases where the project does not initially commit to meeting that objective.”* Applicant must agree to upgrade 25/5 speed performance to 50/10 within 5 years of Project Completion **at the Applicant’s own expense**.
6. **Compliance Reports for 8 Years**<sup>6</sup> - *“... and any other information necessary to **ensure compliance with the terms and conditions of the funding decision** for a period of eight years from the project completion date.”* Thus continued project measuring is required.
7. **Ongoing:**<sup>7</sup> The CRTC deemed their ongoing Broadband Measurement Project should be part of a continuing QoS monitoring system lead by the Commission. This ensures that *“...the same measurement software is used consistently across all measurement probes.”*

**Footnote:** *“The **measurement probe could be**<sup>8</sup> a dedicated piece of equipment **or software** running on a broadband service subscriber’s computer.”*

*“The Commission’s **goal is to increase ISPs’ participation** in the Project.”<sup>9</sup>*

To further this goal all measurements should be done with the single tool and cost effective methodology provided by a CIRA Landing Page for each project that is set up as soon as a funding award is made for that project.

## Conclusions and Recommendations

All measurement requirements, reporting, and data storage can be achieved utilizing **CIRA’s IPT Custom Landers**.

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<sup>2</sup> CRTC Application Guide -Progress Report - Section 9.3 and Appendix 1

<sup>3</sup> CRTC Application Guide - Final Implementation Report - Section 9.4, 10.2(i), 10.3(k) and Appendix 1

<sup>4</sup> CRTC Application Guide - Holdback Report - Sections 9.4, 10.2(j) and Appendix 1

<sup>5</sup> CRTC Application Guide - Scalability - Sections 6.1.3(e) and 6.2.1(a)

<sup>6</sup> Telecom Regulatory Policy CRTC 2018-377 - Section 330

<sup>7</sup> CRTC 2018-241 - Telecom Decision - Sections 44 to 47

<sup>8</sup> Measurement Probe - Footnote 11

<sup>9</sup> CRTC 2018-241 - Telecom Decision - Item 45

To simplify and standardize access and data collection for the purpose of assessing the success of a funded project to meet the Universal Service Objectives, **CIRA Recommends** that as part of the conditions for receiving funding, service providers be required to present a custom Lander Page URL provided by CIRA to all subscribers in a funded project area. A dedicated IPT Lander Page by project area allows the creation of individual test, map and data reporting for each specific area, thus creating a **structured project reporting process, Canada-wide mapping, and detailed performance results publicly visible to all Canadians for all funded internet projects.**

Standardized third party monitoring by CIRA ensures that **data is collected, analyzed, and reported on independently for the full lifecycle of the project.** This will result in **significant savings on internal government expenditures** with less need for overall engineering assessment of plans, **and increased focus on the results** that would be collected, summarized and **reported by CIRA, directly to government project managers.**

Other Federal funding programs will develop. Provincial/Territorial Government partners in some programs (Investing in Canada, Gas Tax Refund, FedNor and others) **need to show concrete and measurable results**, plus wholly Provincial/Territorial programs would benefit from a **universally standard and industry accepted test program.**

There are many opportunities to benefit from standard method reporting.

With a ten (10) year timeline to complete the ISED Universal Broadband Fund (2030), 5 years for the CRTC Broadband Fund (2023) and with individual project completion(s) to happen some months/years after funding has been awarded, **ongoing network status Measuring and Reporting is a significant project in its own right.**

Additionally, each CRTC and likely ISED (fund process not yet released) funded project extends one additional year for the applicant to apply for release of holdback payment(s) and up to 5 years for the final 50/10 service levels to be completed for those awarded projects that did not initially meet the Universal Service Objective. There is also the government's stated desire to perform ongoing performance evaluation into the future (8 year compliance).

**In conclusion**, measuring and results reporting facilitated by the CIRA IPT custom landers will reduce government project management and analysis costs, definitively prove the success of each project with hard data, and demonstrate that the use of public funds successfully met the project funding and Universal Service Objectives. CIRA's IPT is a proven and continuously developing product that already meets, and in fact exceeds existing reporting requirements as set by the CRTC and will continue to grow and develop as needs are further identified with our partners.

CIRA, as a member-based not-for-profit, Canadian organization with a goal to "Building a Better Online Canada", provides the least expensive (cost recovery as opposed to profit generating) testing solution utilizing industry accepted, best practice methodology for analyzing Internet Performance.