RURAL B.C. CONNECTIVITY BENEFITS STUDY

PREPARED FOR MINISTRY OF CITIZENS' SERVICES
BY BC STATS

BRITISH COLUMBIA | BCStats

REPORT 5: SUMMER 2024

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ACKNOWLEDGEMENTS
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PUBLISH DATE
June 2024

Cover picture: Slocan Lake - site of an internet transport project bringing 125km of fibre to the Kootenay region. The project is partly funded by the Province and led by Columbia Basin Broadband Corporation.
Photo credit: Columbia Basin Broadband Trust

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Great Bear Rainforest

EXECUTIVE SUMMARY

Since 2017, the B.C. government has invested $584 million into expanding high-speed internet and cellular services in the province. This funding has facilitated the expansion of high-speed internet services to rural areas in B.C., providing some communities with internet access for the first time.

The introduction of high-speed internet services can be transformational for rural communities. While qualitative impacts on connectivity benefits are well understood, there are limited academic studies available that look at the economic impacts of new services, specifically in rural areas.

To better understand this, BC Stats developed a model to estimate the short- and long-term economic impacts of high-speed internet[1] funding in rural British Columbia.

The Rural B.C. Connectivity Benefits Study is the final installment in a five-part series examining the economic impact of provincial funding for connectivity projects in rural areas. This study examines the economic impact of provincial spending on connectivity expansion in rural B.C. using the Statistics Canada definition of a rural area – an area with less than 1,000 people and a population density of less than 400 persons per square kilometre for the analysis.[2] Previous studies focused on defined regions of the province.

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[1] Projects selected for the study are partly funded by the Province, occur in the defined rural area, and deliver speeds of a minimum 50 megabits per second download and 10 megabits per second upload (50/10 Mbps).

[2] Statistics Canada: https://www23.statcan.gc.ca/imdb/p3VD.pl?Function=getVD&TVD=113331&CVD=113332&CLV=0&MLV=2&D=1&adm=0&dis=0

The results of this province-wide study align with those of previous reports focused on specific regions; funding to support the expansion of high-speed internet to under-served rural areas is expected to positively impact B.C.'s Gross Domestic Product (GDP) in the short- and long-term. A breakdown of the investment and economic benefits of high-speed internet expansion for the defined rural area of B.C. is as follows:

- The Province partly funded 132 connectivity projects in rural areas to deliver high-speed internet services to under-served communities in B.C. The Province's total investment for these projects was **$289.4 million,** which will benefit over **73,000**[3] **households** in rural British Columbia when projects are complete.
- The **$289.4 million** in provincial funding leveraged approximately **$808.5 million** from other sources, which equals **$1.1 billion** in total funding for broadband internet projects in rural B.C.
- Leveraged funding is from private sector internet service providers who build and operate the infrastructure, as well as public sector organizations, including the federal government. This equates to a ratio of **$1** of provincial funds, to **$3.79** of total private and public sector investment leveraged to support rural connectivity expansion.
- Short-term economic benefits (defined here as benefits accrued during the build phase of the infrastructure) are summarized as follows:
  - **$223.7 million** increase in GDP.
  - **1,820 jobs.**
  - **$66 million** in provincial tax revenue.
- Long-term impact (defined here as increased GDP attributed to enhanced productivity from improved access to high-speed internet services) is estimated at **$2.3 billion** in increased GDP, calculated to 2045.
- In total, it is estimated the initial provincial investment of **$289.4 million** in connectivity in rural B.C. will generate **$2.5 billion** in short- and long-term economic benefits to the province. This translates into:
  - **8.6 times** the initial provincial investment; and
  - a **$13,900 benefit per connected person** for newly subscribed households calculated to 2045.

[3] Estimated households benefitting is calculated as 95 per cent of households served by provincially funded high-speed internet projects in the study area. This reflects the estimated number that will subscribe to the new services.

FIGURE 1: SUMMARY OF ECONOMIC BENEFITS FOR RURAL B.C.

The initial provincial investment of $289.4 million into connectivity projects in rural B.C. is generating/will generate significant short- and long-term economic benefits for rural areas and the province.

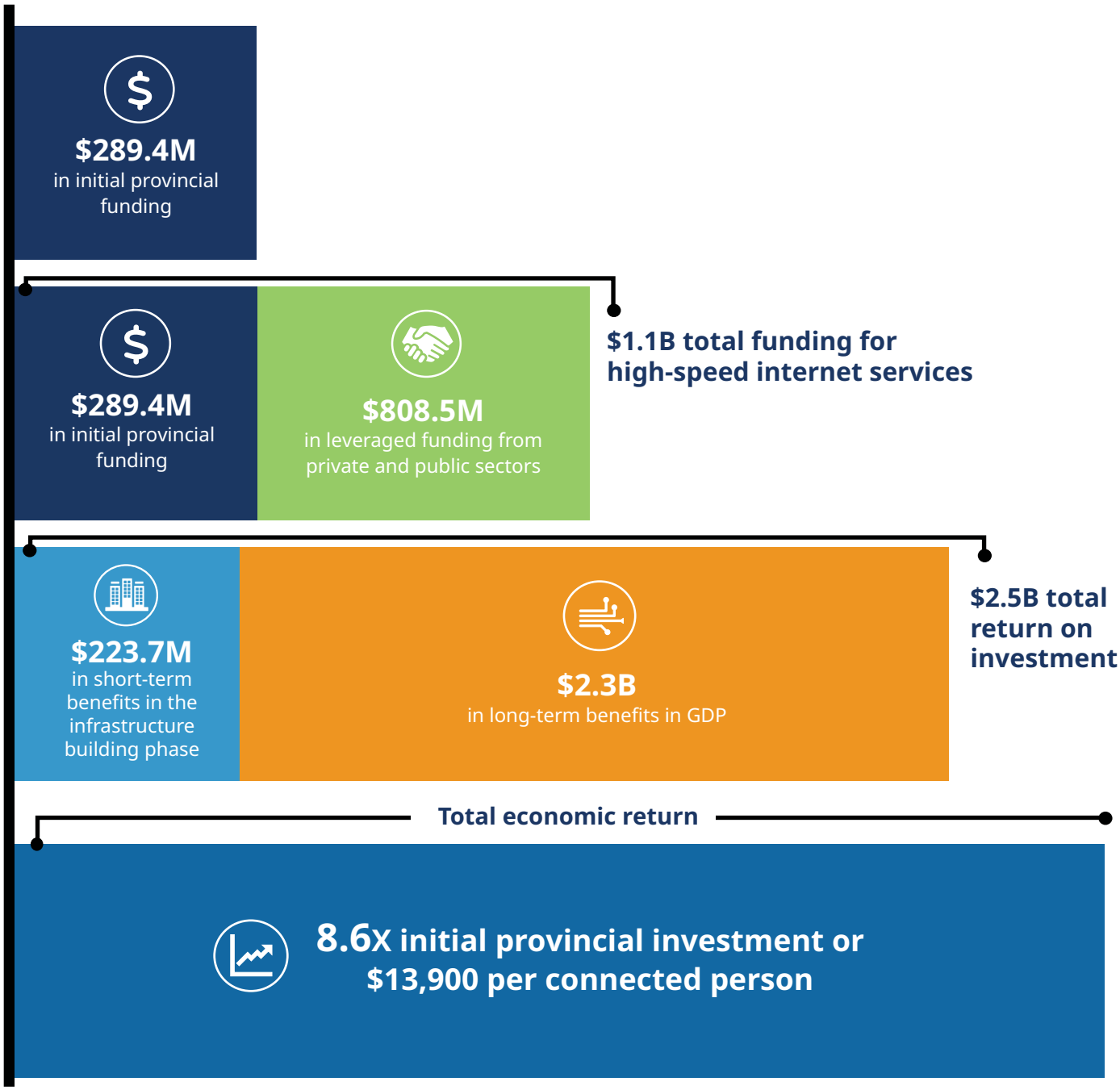
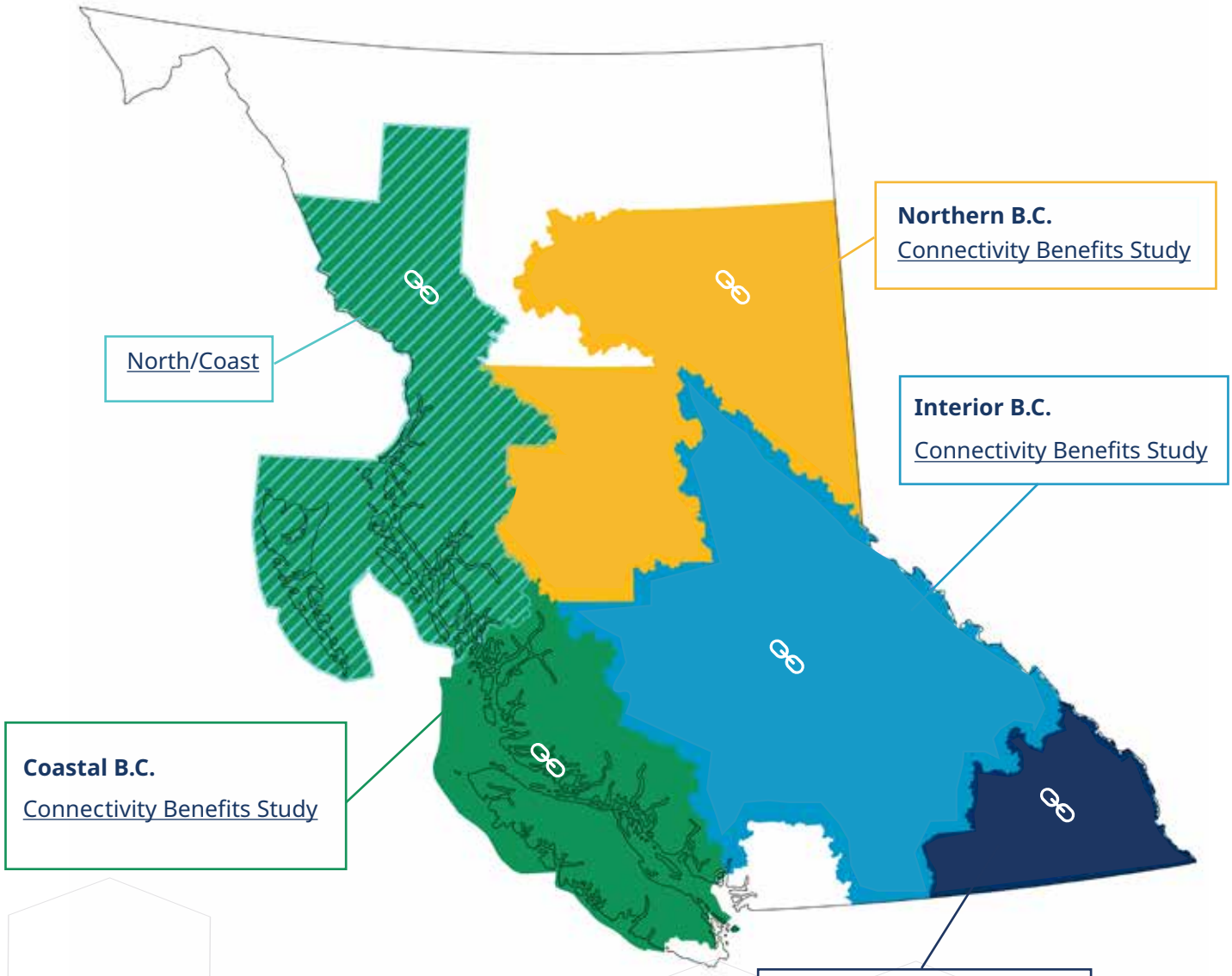


FIGURE 2: MAP OF PREVIOUS STUDY AREAS

This report is the fifth and final in a series of connectivity benefit studies for rural B.C. Previous studies examined the economic impact of connectivity investment in four regions of the province. Study areas are shown in the map below with links to the previous studies. Note: Northern and Coastal B.C. Connectivity Benefits Studies have an overlapping study area on the north coast.

Click on study areas or on the links below to view the reports



Northern B.C.
Connectivity Benefits Study

North/Coast

Interior B.C.
Connectivity Benefits Study

Coastal B.C.
Connectivity Benefits Study

Kootenay B.C.
Connectivity Benefits Study

BACKGROUND

Access to high-speed internet is vital in today's modern world, especially for rural and remote communities. Connectivity plays a foundational role in shaping the economic well-being and resiliency of rural communities in British Columbia, supporting individuals to access services, seek employment opportunities and start businesses regardless of their geographic location.

High-speed internet services can be transformative for rural areas. Connectivity supports thriving communities and the development of diverse local economies, especially crucial for regions facing impacts of industry changes like mill closures or climate-related weather emergencies.

Since 2017, the B.C. government has invested $584 million into expanding high-speed internet and cellular services in the province. Combine this with federal funding and over $1 billion has been committed to expand connectivity. This funding supports connecting every household in the province to high-speed internet services by 2027 and expanding cellular service along major highways.

Government funding programs play an important role in expanding internet services to rural areas as they incentivize private sector providers to build in regions where population density alone does not create a business case.

This final report in the series examines the economic impact of provincial funding in rural areas by analyzing projects partly funded by the Province that deliver high-speed internet services within the defined area of study. High-speed internet projects are those that deliver internet speeds meeting or exceeding the federal universal service objective of 50 megabits per second download and 10 megabits per second upload.

The study is not a summary of previous reports, but rather an analysis of the total economic impact of connectivity investment in rural B.C. using current project information and a methodology that allows for a granular analysis of rural benefits.

The report also contains case studies from people talking about the benefits of connectivity in their community in their own words.

Sea to Sky Highway

National universal service objective

In Canada, telecommunications are federally regulated by the Canada Radio-television Commission (CRTC). In 2016, the CRTC established a universal service objective that Canadians in urban areas, as well as rural and remote areas, should have access to broadband internet services on both fixed and mobile wireless networks.

To measure the achievement of this objective, the CRTC established several criteria, including that Canadian residential and business fixed broadband internet service subscribers should be able to access speeds of at least 50 megabits per second download and 10 megabits per second upload (50/10 Mbps) and be able to subscribe to a service offering with an unlimited data allowance.

Government funding programs support the initial build cost for service providers to expand their services to hard-to-reach areas to meet this CRTC universal service objective. This report measures projects delivering the CRTC minimum speeds of 50/10 Mbps.

Source: CRTC website.

PROFILE OF RURAL BRITISH COLUMBIA

Rural B.C. encompasses expansive, diverse and vibrant regions of the province and is home to a variety of communities, from remote coastal areas, accessible only by plane or boat, to those in the far north. Nearly 18 per cent of British Columbians live in rural B.C., and these communities are a powerful economic driver in the province.[4]

There are over 200 First Nations[5] (including Modern Treaty Nations) in British Columbia and many reserves or Modern Treaty Nation lands are in rural and remote areas of the province. These Nations are an integral part of the rural B.C. economy.

Although urban areas experience nearly complete coverage of high-speed internet services, some rural areas remain under-served. At time of publication, 76.5 per cent of houses in rural B.C. have access to internet speeds of 50/10 Mbps or higher. When current projects partly funded by the Province are complete, that figure will increase to 91 per cent. Government funding will support connecting the remaining under-served homes to high-speed internet services by 2027.

Connections with broader national and global economies, as well as access to essential services and employment, support rural communities to diversify and flourish. High-speed internet services can make life easier and services more accessible in remote communities.

Rural communities are not a single homogenous group and some face specific challenges, such as severe weather conditions and climate-related weather changes.

It is anticipated rural areas will exhibit varied economic responses to the introduction of high-speed internet services. However, studies highlight a general trend that investing in connectivity infrastructure fosters growth and supports positive economic outcomes. It is anticipated therefore that communities with new or improved high-speed internet services will experience some boost in economic growth.

FIGURE 3: B.C. RURAL POPULATION AND INTERNET ACCESS	Totals
Rural population	634,232[4]
Number of primary residences	261,079[6]
Average number of people per primary residence	2.43[6]
Per cent of rural households with access to high-speed internet services (Jan. 2024)	76.5%[6]
Per cent of rural households with B.C. funded projects in progress (Jan. 2024)	14.5%[6]

[4] Statistics Canada https://www12.statcan.gc.ca/census-recensement/2021/as-sa/98-200-x/2021002/98-200-x2021002-eng.cfm

[5] Source BC Assembly of First Nations https://www.bcafn.ca/about-bcafn/vision-mission

[6] Analysis by the Connectivity Division, Ministry of Citizens' Services

CASE STUDY

CONNECTING CHAWATHIL FIRST NATION

East of Vancouver in the Fraser Valley along the Fraser River lies the territory of the Chawathil First Nation.

Despite two major highways and the province's largest urban centre just to the West, Chawathil First Nation was without high-speed internet access until recently. A TELUS fibre project, partly funded with $2.9 million by the Province, extended services in 2023 to 11 communities between Yale and Ruby Creek, including Chawathil First Nation.

Before internet connectivity, the Chawathil First Nation's geographic region and distance was seen as a challenge for community members to strengthen community ties and access resources.

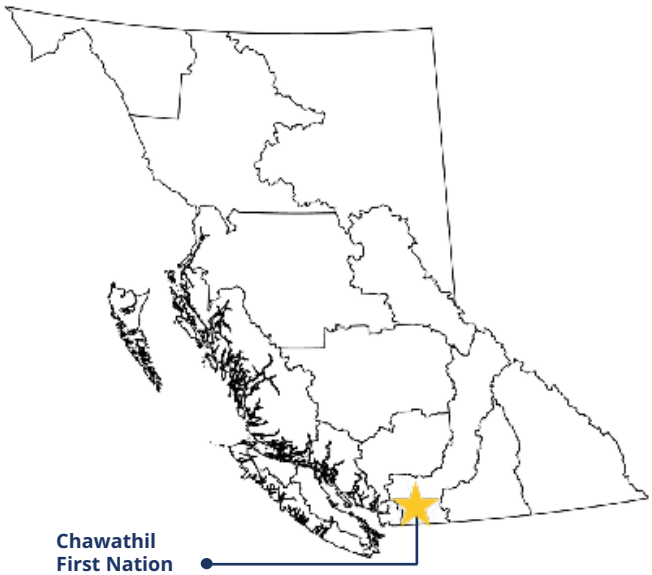
With recent internet upgrades to their fibre optics, people can better access services and economic opportunities, including working from home.

"*Now, I think with resources like this, having internet connectivity, there are no excuses to get something done,*" said Aaron Pete, Chawathil First Nation elected leader, podcaster, court worker. *"We're able to have faster voting, connect our members better, be more transparent with them, and make sure we're acting in their best interest. I'm so proud that Chawathil has access to this resource and that we're able to start to show who we are.*"

See Aaron Pete discuss connectivity in Connecting Chawathil First Nation on YouTube.

Chawathil First Nation Band Office
Picture credit: Kingtide Films

Connecting Chawathil First Nation
Scan the QR code to watch on YouTube



METHODOLOGY

This study examines the economic impact of high-speed internet projects partly funded by the Province in the defined area of study in rural British Columbia. The report's analysis is based on 132 projects that deliver, or will deliver, high-speed internet services in the defined rural area of study. These projects include both transport and last-mile internet projects,[7] designed to meet or exceed the universal service objective speeds of 50/10 Mbps speeds. This analysis excludes certain provincially funded projects implemented during the COVID-19 pandemic designed to give relief to communities by improving internet service, but potentially not delivering speeds meeting the CRTC's universal service objective of 50/10 Mbps. Additionally, the report does not include cellular or connectivity planning project funding.

The 132 projects were selected for provincial funding either through the Connecting British Columbia program, administered by Northern Development Initiative Trust, or the Connecting Communities BC program, administered by the Ministry of Citizens' Services. Most projects also receive funding from the federal government, as well as from other sources such as the private sector, community, First Nation, or local government investment.

Analysis of the projects by the Connectivity Division in the Ministry of Citizens' Services estimates the specific portion of the households benefitting in the rural area, as per the Statistics Canada definition. For example, in cases where a last-mile project was primarily in a rural area but extended into a more densely populated centre, only the households within the rural area were counted for the long-term impacts of the study. Project construction spending data was used to estimate economic impacts of the work in the short term during the years that projects are built.

Long-term impacts were estimated starting at project completion and extending to 2045. Projects in the study were scheduled to begin construction between 2018 and 2025, and complete by 2027. At time of report publication, 46 of these projects are complete, with the remainder in progress.

The analysis of economic impacts used project spending data, local economic data, and existing empirical relationships between spending and economic impact, to establish measurement frameworks and estimates of short-and long-term impacts.[8]

It is important to note both transport and last-mile projects are required to connect communities to high-speed internet services. Transport lines (usually fibre) bring high-speed internet capacity to an area, and last-mile projects connect that capacity to homes. In this analysis, both projects are measured in terms of investment and short-term impacts of the builds, but the long-term productivity impact is based on households connected from last-mile projects only and the estimated number that subscribe to new or upgraded internet services.

Transport projects bring fibre from major Internet Exchange Points in large cities, like Vancouver, and are essential to get new services to remote communities. These projects can be costly as they may be complex and cover large geographical areas. While not reflected in the long-term economic benefits in this report, transport projects create the internet network we rely on and investment in these services is necessary for resiliency and expanding services to rural communities. New transport projects also improve service to existing infrastructure, so the number of households benefitting from new services is likely higher than reflected in this study.

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[7] All projects in the analysis occurred in the study area. Transport (or backbone) infrastructure consists of high-capacity lines (generally fibre optic lines) that can transmit large amounts of data from Internet Exchange Points in major cities, such as Vancouver, Calgary or Seattle, to community points.
Last-mile infrastructure connects from the service provider's community point of presence to households. Last mile can be achieved using multiple technologies including both wired and wireless methods, such as fibre, digital subscriber lines (DSL), coaxial cable and fixed wireless.

[8] Project spending data includes the commodities and services that will be purchased to complete the project in each year of construction. Local economic data includes labour force, population, tax, immigration, business and other available data. Existing empirical relationships are derived from the BC Input Output Model (BCIOM) and the supply use tables from Statistics Canada.

Examples of last-mile and transport projects

In recent years, B.C. has made progress extending its backbone (transport) network through a combination of government funding programs and private investment. Examples of backbone projects partly funded by the Province include the Connected Coast project, which is under construction, Tahltan Nation Development Corporation's transport fibre project in the north, which is also under construction, and completed projects such as Columbia Basin Broadband Corporation's Slocan Valley Fibre project. All three projects are administered by Northern Development Initiative Trust. These transport projects provide pathways for high-speed internet from a central Internet Exchange Point to carrier networks, thereby expanding services to communities. Additionally, B.C. funding programs have supported many last-mile projects to bring internet to the home. For instance, projects led by Kaslo InfoNet Society will serve six communities around northern Kootenay Lake, and a TELUS project in the Sheridan Lake area, completed in May 2024, provides high-speed internet to more than 390 households. These projects are just a few of the 208 projects selected for provincial funding since 2017.

A map of announced projects funded by the Province can be found on the Connectivity in B.C. web pages.

Construction of the Connected Coast network
Photo credit: Connected Coast

CASE STUDY

CONNECTING GRANISLE

Granisle is a village in the northern interior of B.C. on the shores of Babine Lake. The community was incorporated in the 1970s and grew to house workers from the nearby copper mine and their families. When the mine closed in 1992, the population rapidly shrank from 2,500 to under 500 people. The village then went through a period of reinvention and economic diversification to help attract people back to the community. Today, fishing, boating, snowmobiling and hiking make tourism the village's biggest industry.

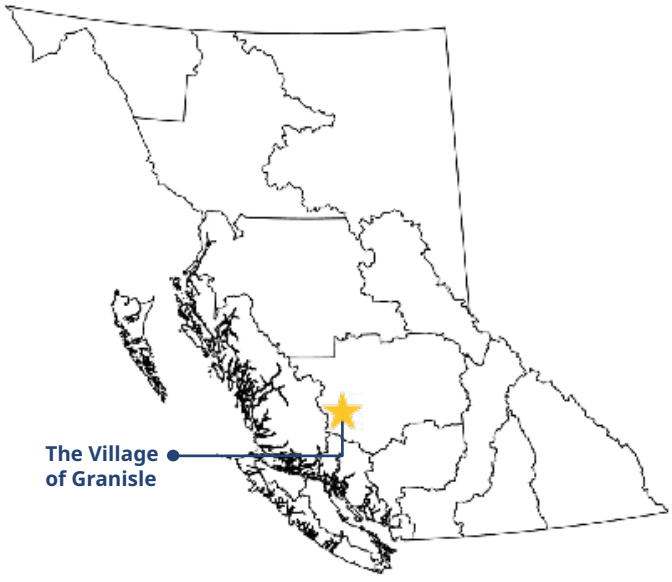
To support community members in 2015, the village sought funding from the Connecting British Columbia program to build some initial internet infrastructure.

Once internet connectivity was established, the village further enhanced the community's access to resources and medical care. The community could now support a virtual pharmacy, making it easier for community members to access prescriptions. "*I was struck by the fact that people here, who are mainly seniors, have to drive two hours to fill an amoxicillin prescription,*" said Shadi Al-Hawari, pharmacist and entrepreneur.

"*I thought it would it be a good idea to start up a tele-pharmacy. Now, the pharmacy is linked to a central pharmacy through a Cisco video-audio unit,*" adds Al-Hawari. "*Without connectivity, we can't operate. It's not just about filling prescriptions. It's actually about providing that care. Connectivity means more businesses, more taxes paid, and more growth and employment.*" The pharmacy has been operational since 2017.

"*It [connectivity] is not the piece that drives the economy but is a platform on which you build your economy,*" added Brenda Anderson, community member.

Now the Village of Granisle will soon install high-speed fibre optic cable to nearly 300 households which will deliver speeds of over 50/10 Mbps. This project is partly funded by the B.C and federal governments and will ensure the residents of Granisle have access to high-speed internet for many years to come. See the people in Granisle talk about their experiences with connectivity in Connecting Granisle on YouTube.



Village of Granisle
Photo credit: Village of Granisle

Connecting the Village of Granisle

Scan the QR code to watch on YouTube

ASSESSING SHORT-TERM IMPACTS

High-speed internet expansion projects, like any large infrastructure projects, stimulate the local economy in the short term by generating demand for products and services during the construction phase.

BC Stats collaborated with the Connectivity Division in the Ministry of Citizens' Services to identify 132 high-speed internet projects throughout rural B.C. to use for the analysis. The projects were selected based on criteria that they:

- receive provincial funding between 2017 and 2024;
- deliver, or support delivery, of high-speed internet services of a minimum of 50/10 Mbps; and
- take place in the defined rural area of the study.

BC Stats used the British Columbia Input-Output Model (BCIOM – see Appendix B) to estimate short-term impacts for rural economies and the province.

The BCIOM serves as a tool for generating regional economic impacts stemming from various projects and economic events. It is based on Statistics Canada supply use tables[9] and is a macroeconomic modeling tool that allows economists to estimate the impacts of increased industry spending on the economy in the region, and province in the short term. The BCIOM has been used over the years to assess the economic impact of both public and private investments, including a range of initiatives such as hydroelectric infrastructure, ports, transportation projects, and residential construction projects.

The model estimates these impacts at three levels: direct, indirect, and induced as detailed below:

- **Direct impacts** are related to the direct spending on the project. These impacts occur because of purchasing material inputs for the project and the payment of wages to employees building the infrastructure or doing the engineering design if directly employed by the company.

- **Indirect impacts** include money that is spent by contractors on wages and the goods they purchase. For example, this would include an external firm if contracted to design or build a piece of infrastructure.

- **Induced impacts** come from the spending of the employees building the project in the local economy. For example, if a construction employee takes a break and buys something from a local establishment, the money spent is an induced impact from the project.

The model also generates estimates of tax revenues associated with a change in demand for one or more commodities, or a change in the output of an industry. These tax revenue estimates include personal and corporate income taxes, as well as taxes on commodities.

[9] More information about Statistics Canada supply use tables: https://www150.statcan.gc.ca/n1/pub/13-607-x/2016001/1067-eng.htm

ASSESSING LONG-TERM IMPACTS

New or improved high-speed internet services can foster long-term economic growth by opening up new opportunities for local businesses, workers and residents. This growth in productivity can continue for years beyond the completion of the construction phase and availability of internet services. To describe this impact, BC Stats developed a model based on empirical relationships established in literature to estimate the long-term economic impacts of the projects in scope of the study.

Four different academic studies were analyzed to inform the impact on GDP from increased high-speed internet availability (listed in Appendix A). GDP is expected to increase incrementally over time (see Figure 4) as increased connectivity leads to increased productivity.

The fundamental premise underlying this analysis is that increased access to high-speed internet supports individuals to boost productivity, thereby stimulating economic growth. This effect is particularly significant in areas where internet access was previously unavailable, but it can also be observed when internet speeds are increased.

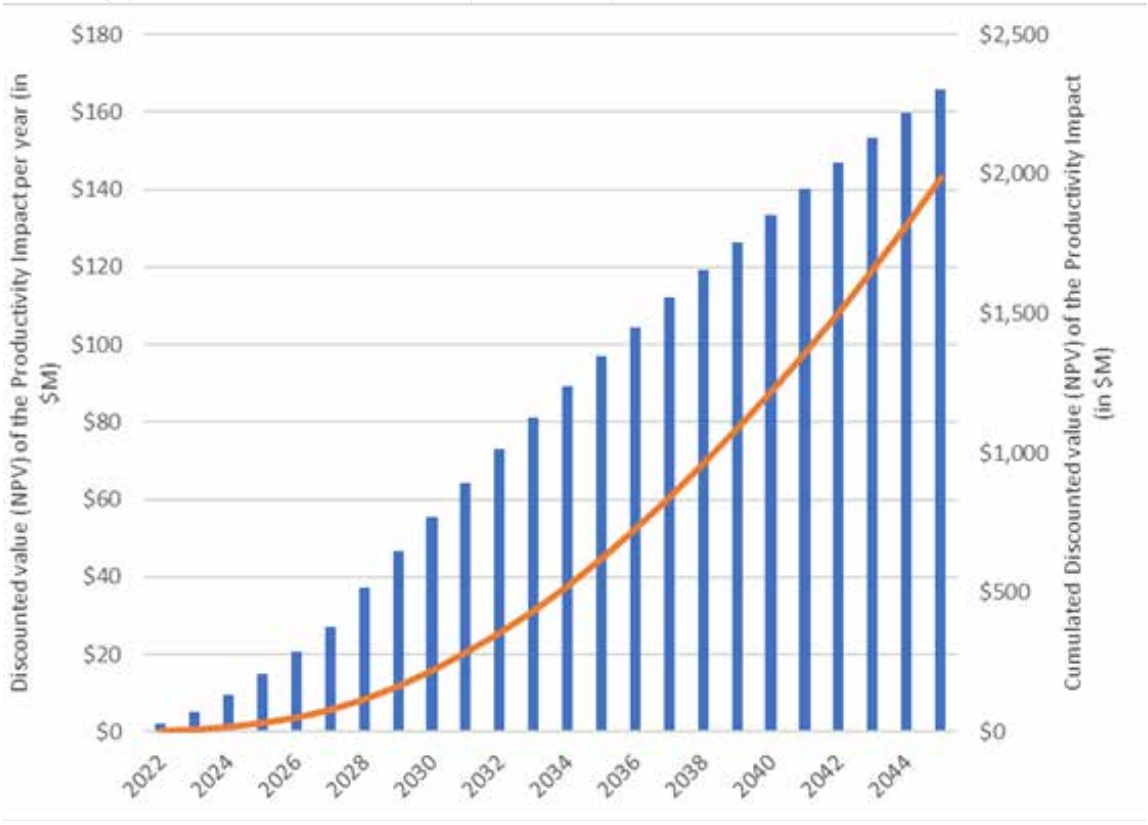
An increase in productivity can occur in multiple ways. It can result from reduced time commuting to work when telework is an option. Transitioning from dial-up to high-speed internet, for example, can enable professionals to work faster and more efficiently. High-speed internet can also pave the way for new business or employment opportunities with new access to national and global markets.

Based on the literature and available data, BC Stats estimates:

- An increase of 10 percentage points in the number of broadband subscriptions would contribute 1.23 per cent to GDP per capita growth.[10] This formula is then applied to the increase in households with access to high-speed internet, resulting from projects funded by the Province.

- The calculation is done in terms of net present value of resultant GDP Growth.[11] For this approach, a social discount rate[12] of three per cent was used based on Government of Canada data.[13] The social discount is used to adjust future costs and benefits to values in current terms.

FIGURE 4: PRODUCTIVITY IMPACT FROM THE INCREASE IN ACCESS TO HIGH-SPEED INTERNET SERVICES



The Ministry of Citizen Services' Connectivity Division estimates that, on average, 95 per cent of households benefitting from the projects would eventually subscribe to the new service once available. GDP data produced by Statistics Canada for sub-provincial geographies[14] was not detailed enough to use in this analysis, but suggests that GDP growth in B.C. is relatively in line with population share.

Figure 4 shows the anticipated productivity impact of high-speed internet services over a period from 2022 to 2045. This period of time allows for the calculation of impact after the completion of most projects.

In addition to heightened productivity, increased access to high-speed internet is expected to have social and environmental benefits. These benefits include increased access to healthcare and other services, ability to connect with loved ones, and improved safety and resiliency for communities. Environmental effects might include decreased emissions resulting from reduced travel due to the ability to work and conduct meetings from home. While these factors may indirectly impact productivity, they are not directly measured in this report.

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[10] This estimate is developed by BC Stats based on the studies listed in Appendix A.

[11] Net present value is a calculation of the value of future dollars in the current year. This is derived by applying a social discount rate to future productivity increases to reflect the value of those increases as a current value.

[12] A social discount rate is a mathematical calculation used to adjust future economic benefit for consumer preference for spending that produces outputs in the present rather than the future.

[13] Government of Canada. https://www.canada.ca/en/government/system/laws/developing-improving-federal-regulations/requirements-developing-managing-reviewing-regulations/guidelines-tools/cost-benefit-analysis-guide-regulatory-proposals.html

[14] Statistics Canada. https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=3610046801

Kaslo. The Province has partly funded four projects led by Kaslo InfoNet Society to bring high-speed internet to Kaslo and the surrounding area

RESULTS

The study concludes that from an initial provincial investment of **$289.4 million**, a total economic benefit to GDP calculated to 2045 is estimated at **$2.5 billion**. This initial provincial investment is thus multiplied **8.6 times** in short- and long-term returns for the rural economy and for B.C.

A breakdown of the investment and economic benefits of high-speed internet expansion for the province is as follows:

- The **$289.4 million** in provincial funding leveraged approximately **$808.5 million** from other sources, which totals **$1.1 billion** for internet projects in rural B.C.
- This leveraged funding is from private sector internet service providers who build and operate the infrastructure, as well as public sector organizations, including the federal government. It equates to a funding ratio of **$1** of provincial funds, to **$3.79** of total private and public sector investment leveraged to support rural connectivity expansion.
- The province will experience **$223.7 million** in increased GDP in the short term from connectivity infrastructure construction between 2017 and 2027. This is from 132 connectivity projects which will benefit over 73,000 households when complete.
- Long-term impacts (defined as increased GDP attributed to enhanced productivity from access to high-speed internet services) are estimated at **$2.3 billion** in increased GDP, calculated to 2045.
- In total, it is estimated that the initial provincial investment of $289.4 million in connectivity in rural B.C. will generate **$2.5 billion** in short- and long-term economic benefits to rural areas and the province.

Short-term economic benefits

As a result of the construction phase of the projects, BC Stats estimates short-term impacts will increase GDP in the province by $223.7 million. These short-term impacts also increase income earned by workers (labour income), add jobs to the economy, and increase tax revenue both locally and provincially.

The economic impacts are estimated to be:

- **$223.7 million** increase in GDP
- **$138 million** increased labour income
- **1,820 new jobs**
- **$66 million** in provincial tax revenue
- **$10 million** in municipal and regional district tax revenue

A further breakdown of short-term economic impacts is in Figure 5.

FIGURE 5:
SHORT-TERM ECONOMIC IMPACTS[15]

	Estimated economic impact in B.C			
	Direct	Indirect	Induced	Total
Business expenditure	$674M	$149M	$80M	$902M
GDP	$118.2M	$67.7M	$37.8M	$223.7M
Labour income	$71.5M	$45.4M	21.1M	138M
Employment - Full Time Equivalent (FTEs)[16]	780	525	240	1,550
Employment - number of jobs	870	635	315	1,820
Gov't revenues - provincial taxes	$56.9M	$5.4M	$4.0M	$66.3
Gov't revenues - municipal and regional taxes	$6.7M	$1.3M	$1.6M	$9.6M

[15] Numbers in the table are rounded.
[16] Full time equivalent (FTE) is a translation of all part-time and seasonal jobs to a full-year, full-time job. The number of jobs above will be total roles that need to be filled, some of which will be part-time or seasonal.

Long-term economic benefits

Long-term economic impacts of new connectivity infrastructure for rural B.C. are estimated to 2045 using methodology outlined. Based on new high-speed internet services being available, BC Stats estimates productivity growth between project completion and 2045 will incrementally result in a **$2.3 billion** total increase in GDP.

This estimate describes the net present value of the impact on GDP growth in rural B.C. and the province combined. This is **7.86** times the return on initial provincial investment in the long term.

Overall economic benefits

This study shows the Province's initial connectivity investment will deliver substantial returns for rural regions and B.C.

Over the short- and long-term combined, this return is **$2.5 billion** – **8.6 times** the initial B.C. investment and a **$13,900 increase in provincial GDP per connected person** for newly connected households within the study time span.

Some key metrics from the study are outlined in Figure 6.

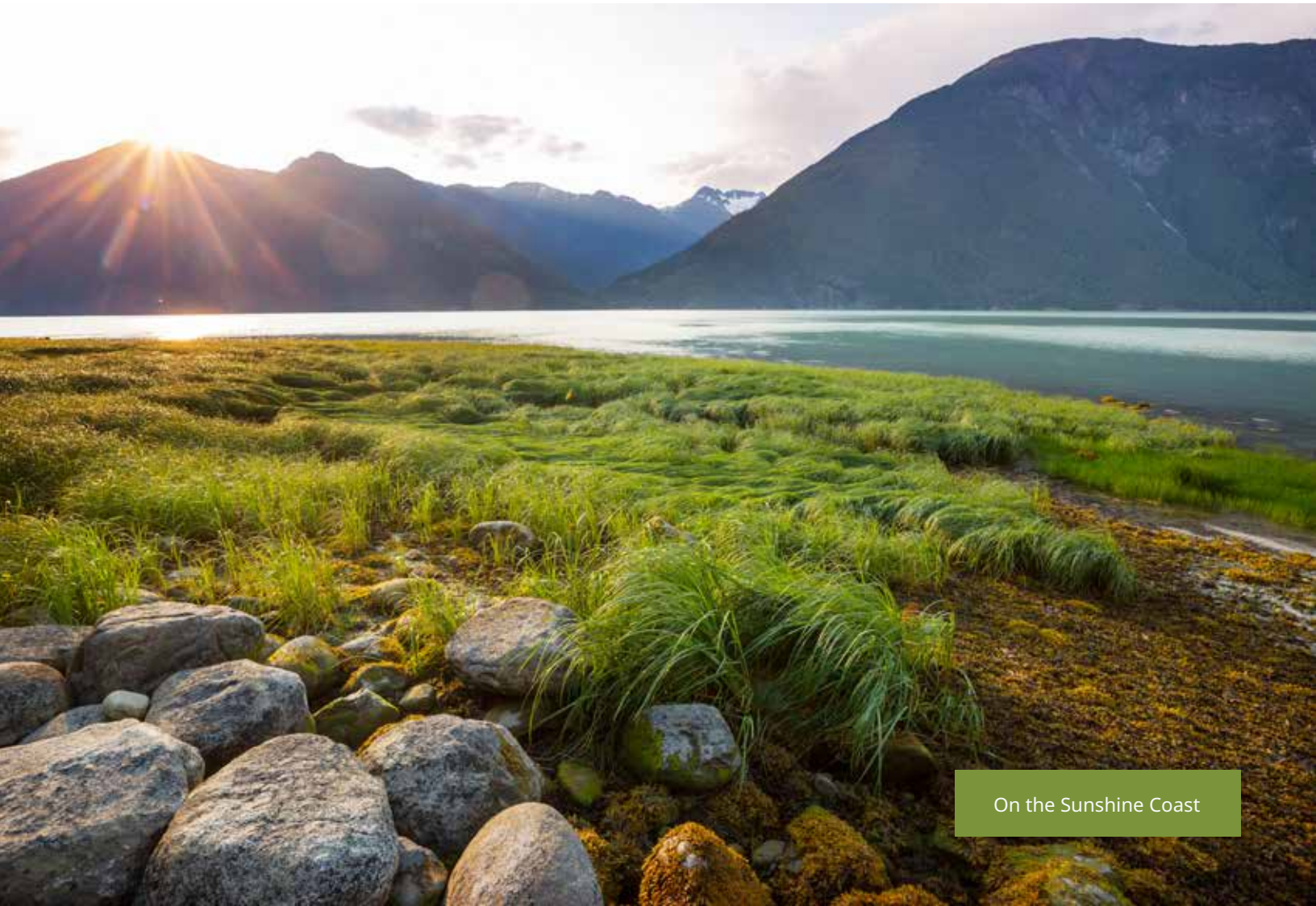
FIGURE 6: BREAKDOWN OF RESULTS

Type	Amount
BC investment ($million)	**289.4**
Total investment (including leveraged investment) ($billion)	**1.1**
Investment leveraged per dollar of provincial investment	**3.79**
Total multiplied return on initial investment	**8.6**
Total rural population (2021)	**634,232**
Total rural land area (km^2)	**945,650**
Rural population density (per km^2)	**0.67**
Rural private dwellings (per km^2)	**0.33**
Total increase in GDP short-term ($million)	**223.7**
Total increase in GDP long-term ($billion)	**2.27**
GDP as ratio of B.C. investment short-term	**0.77**
GDP as ratio of B.C investment long-term	**7.86**
Total economic benefit from initial investment ($billion)	**2.5**
Estimated households that subscribe to the new service	**73,000**
Economic benefit per newly connected person ($)	**13,900**

Assumptions and limitations to the study

The assumptions and limitations behind this analysis include the following:

- Some budget items such as GST are not included in the expenditure data used for the model.
- This analysis is based on an input-output methodology and therefore estimates "gross" contribution to the economy, which does not account for the opportunity cost of employing capital and labour in alternative ways. It is subject to the standard assumptions and limitations applicable to Statistics Canada's Input-Output multipliers and BC Stats Input-Output model (see Appendix B).
- Given that expenditures are for infrastructure deployment in rural B.C., direct economic contributions are considered to largely benefit the region in the short term. The input-output analysis then allocates indirect and induced impacts in the short term for the whole of the province.
- The number of households benefitting is calculated as 95 percent of estimated households served by new internet services.
- Some data availability limitations also exist, such as lack of GDP data at the sub-provincial level. Therefore, the GDP per capita and the GDP per capita growth rates for the coastal region is assumed to be the same as at the provincial level.



On the Sunshine Coast

CONCLUSION

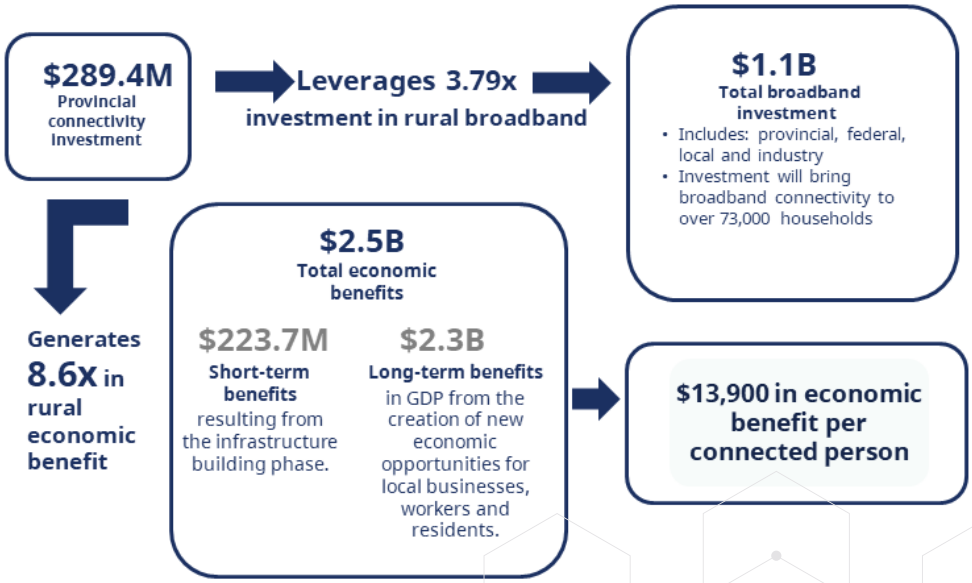
This study shows the Province's connectivity investment delivers substantial returns for rural areas and B.C. This return is **8.6 times** the initial provincial investment in the short- and long-term, creating significant economic impacts for local economies and provincial GDP.

The study also finds the return on provincial investment in rural B.C. is in line with results from other studies:

- **B.C.'s investment in high-speed internet leverages considerable federal, private and other investment** — The $289.4 million in provincial funding, leverages $808.5 million from other sources, which totals **$1.1 billion** for internet project expansion in rural B.C. This multiplies every provincial dollar by **3.79**, which generates value for B.C. investment.
- **Results are in line with other studies** — This analysis shows a return of **8.6 times** the initial provincial investment, which demonstrates connectivity investment in rural areas generates a considerable amount of economic return to the community and the province's GDP in the short and long term. Increased economic activity in the short term in the construction phase, plus increased productivity in the long term from the provision of internet services, shows investment in connectivity supports the growth of rural communities, helps diversify economies, and increases provincial GDP.
- **The power and value of high-speed transport projects** — Fibre transport networks are required to bring high-speed internet services to remote and rural communities across the province from Internet Exchange Points in major cities. Last-mile projects bring this service to homes. While economic modelling in the long term measures estimated benefits to households that receive new internet services from last-mile projects, transport fibre projects are important as they add resiliency to the network, bring fibre and capacity to communities, and improve internet speeds for existing infrastructure already in place. New households served by existing infrastructure, or private sector providers using provincially funded transport projects, would not be captured in this study.

It is worth noting there are many additional benefits to connectivity expansion, including the ability to access services, stay connected to community members and loved ones, and keep updated in an emergency, that are not measured in this study.

FIGURE 7: SUMMARY OF RESULTS



CASE STUDY

CONNECTING HAIDA GWAII

Haida Gwaii is an archipelago of islands situated off the north Pacific coast. It is the home of the Haida Nation.

The Province has invested over $5.5 million to support improved connectivity on Haida Gwaii. Last-mile projects will be powered by the new Connected Coast network that is bringing high-speed capacity to the islands from an Internet Exchange Point in Vancouver.

Bringing high-speed internet to Haida Gwaii creates more accessible opportunities for community members to pursue education and careers that were not typically possible in rural areas with slow-speed connectivity.

"With the internet, it's allowed me to start a multitude of businesses and hire local people to help build a new economy that wasn't possible with slow internet", says Nang K̲'uulas, Patrick Shannon, film director, photographer, and social entrepreneur.

With access to other First Nation communities and the larger Canadian population, the internet has opened doors for personal growth, relationships within and between Nations, and the economy.

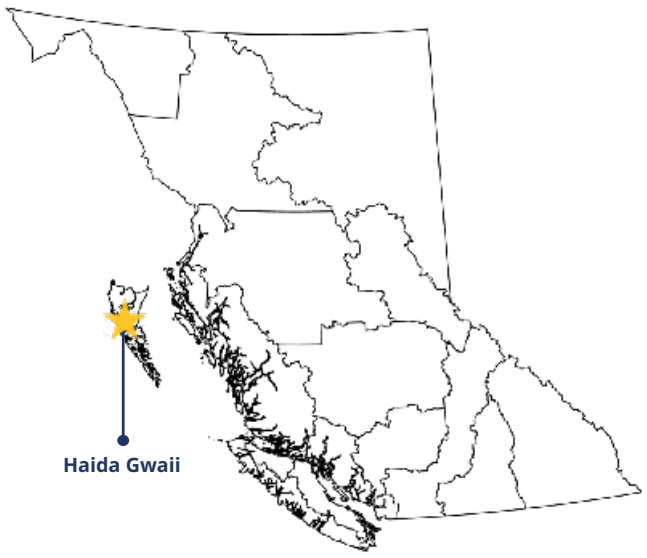
"We're able to start moving forward in this modern world in a way that stays true to our values and our integrity, and don't have to compromise that," added Shannon.

See Patrick Shannon talk about connectivity in Haida Gwaii on YouTube.

Haida Gwaii

Connecting Haida Gwaii

Scan the QR code or watch on YouTube



APPENDIX A: ACADEMIC STUDIES

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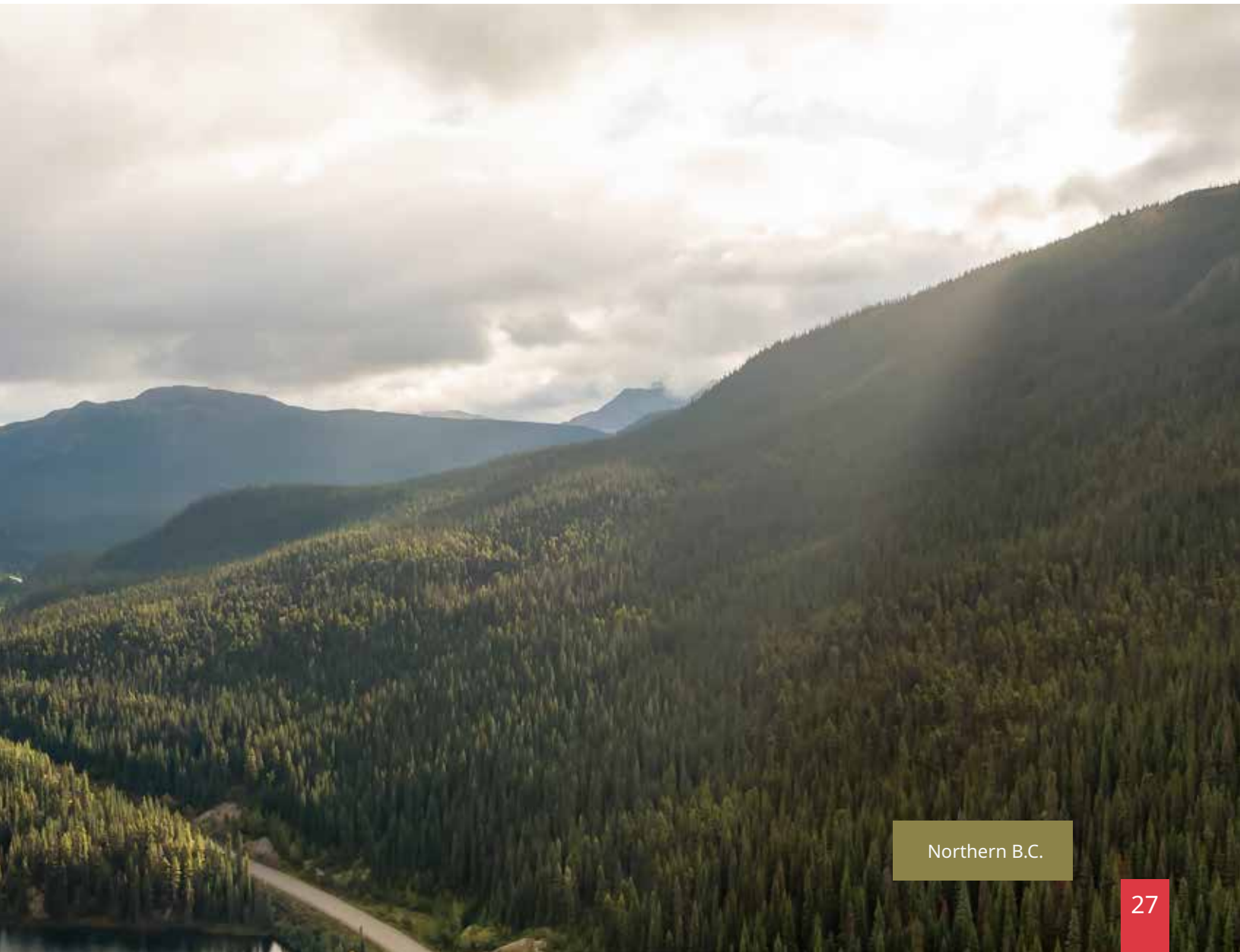


Northern B.C.

APPENDIX B: BC INPUT-OUTPUT MODEL

Overview of the B.C. Input-Output Model

BC Stats maintains an input-output (IO) model based on the structure employed by Statistics Canada. The IO model is updated annually by BC Stats using the most up-to-date data from Statistics Canada. Starting in 1996, Statistics Canada began releasing updated IO information on an annual basis. The most recent release in December of 2022 was incorporated into the BC Stats IO (BCIOM) in summer 2023. Each report in the series uses the most up to date BCIOM at time of study, which results in slight differences in the model calculations from report to report. The final connectivity benefits study will look again at all areas of the province using the same model and factors to end the series, which will allow for a like-for-like comparison between regions.

The 2019 BCIOM was the first to incorporate data sets with post pandemic data in them. As a result, estimates may be structurally different from previous model iterations. The final report in this series will use the same model base year for all regions to provide outputs that are more accurately comparable.

The BCIOM is a structural model of the B.C. economy. The core of the BCIOM is a set of three tables (supply, use, and final demand) that present the most detailed accounting of the provincial economy available. The tables together detail the supply and disposition of commodities, industries output delineated by commodity composition, and the complete costs of production of B.C. industries. The tables comprise of detailed information obtained from administrative data, and Statistics Canada's surveys of establishments and enterprises. In essence, the supply use tables (SUT) provide a snapshot of the complete economy and all its industrial interconnections at a specific point in time.

SUT are produced at various levels of aggregation: the least detailed set of tables are presented at the "summary level" of aggregation, representing 35 industry groupings and 74 commodity groupings. The most detailed aggregation represents 240 industries and 501 commodities. The detailed-level SUT information is shared with the BC Stats by Statistics Canada, and is the information used in the BCIOM.

Purpose and uses

The purpose of a BCIOM is to estimate the total economic impact of a project, or economic shock, by presenting estimates of direct, indirect, and induced impacts associated with the project or shock (meaning any change or departure from the status quo). Based on the observed inter-connection between industries in the economy, the multiplying of demand is traced through these industrial linkages to yield a set of aggregate impacts.

One of the most common uses of the IO model is to simulate the impact of a demand shock on the economy. Any increase in consumption of goods and services will generate direct, indirect, and induced economic production.

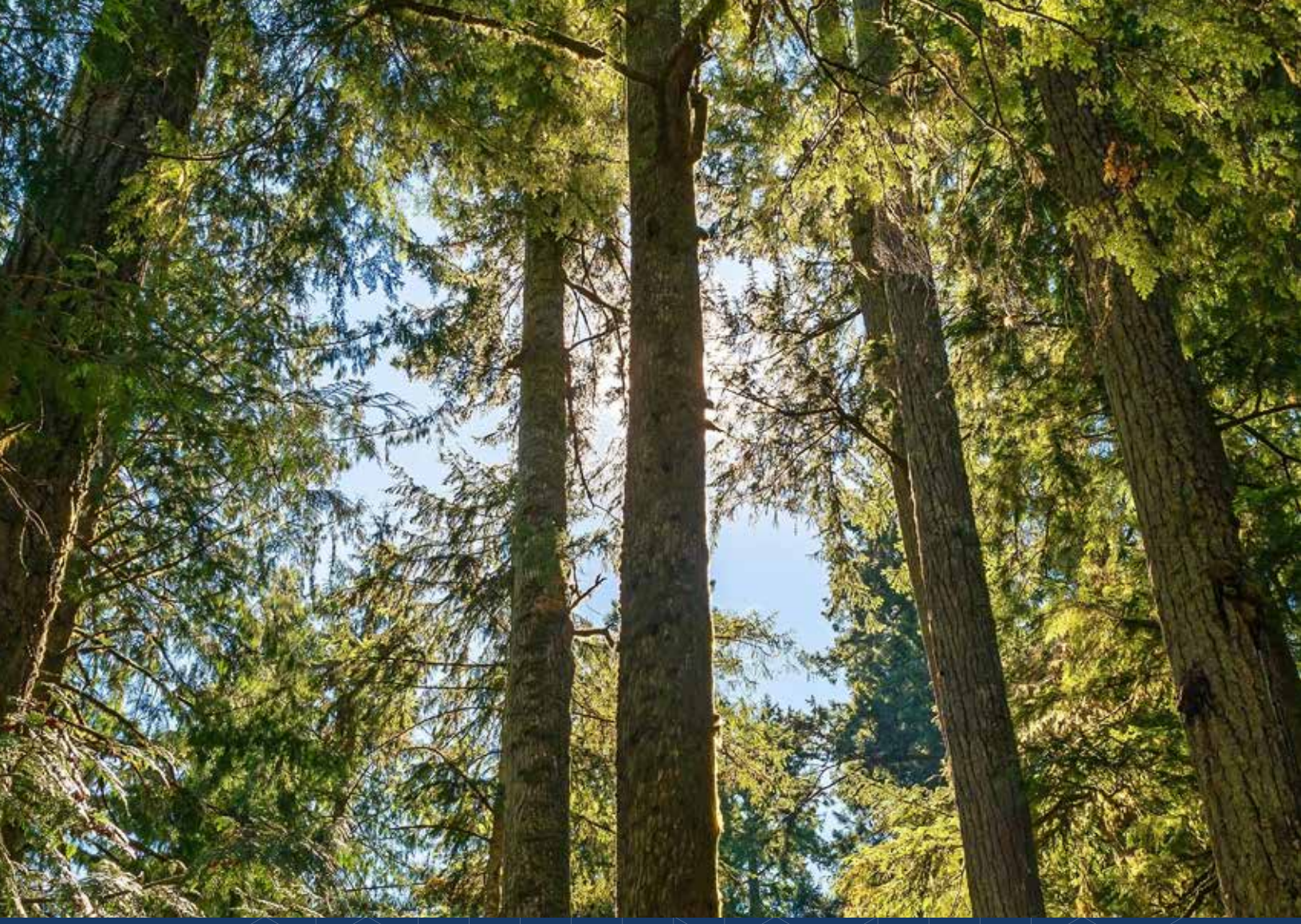
Limitations of the Input-Output Model

Although the BCIOM can be a very useful tool in the decision-making process, users should be aware of the limitations of input-output analysis. Some of the limitations that should be taken into consideration when using IO models are:

1. Technical coefficients are assumed to be fixed. That is, the amount of each input necessary to produce one unit of each output is constant. The amount of input purchased by a sector is determined solely by the level of output. No consideration is made to price effects, substitution, changing technology or economies of scale.
2. It is assumed that there are no constraints on resources — supply is infinite and perfectly elastic.
3. It is assumed that all local employment resources are efficiently used and at full capacity, there is no underemployment of resources.
4. IO models are flow models. Stocks are not explicitly represented, which implicitly assumes that goods can be produced without additions to capital stock.
5. The industrial structure and linkages of the represented economy are based on information that lags the current economy — typically a three to four-year time lag in Canada.

When estimating economic impacts, it is preferable to use economic multipliers to make relative, rather than absolute, comparisons. Economic multiplier analysis is more properly used to determine which of several activities would have the largest economic impact rather than to estimate the absolute level of economic impact for a single activity. Where economic multipliers are used to estimate the impacts of a single activity, the results should be treated as general estimates only, indicating the order of magnitude of the impacts rather than exact levels.

Orca off the coast of Quadra Island



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Back photo: Trees near Cathedral Grove