KOOTENAY CONNECTIVITY BENEFITS STUDY

PREPARED FOR MINISTRY OF CITIZENS' SERVICES

BRITISH COLUMBIA | BCStats

REPORT 1: FALL 2022

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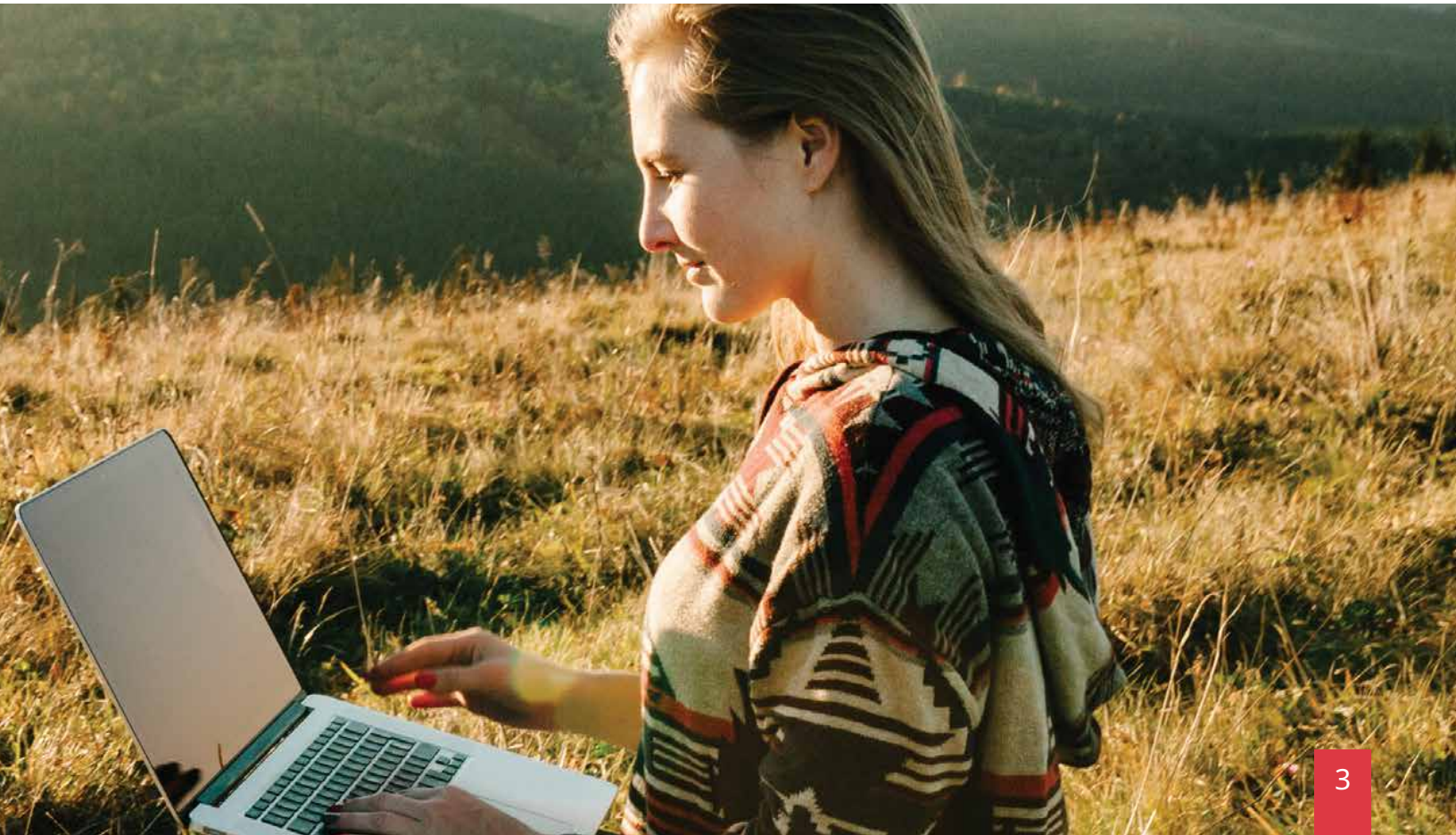

EXECUTIVE SUMMARY

The purpose of this study is to examine the economic impact of connectivity funding in rural B.C. The study analyzes connectivity investments using a model to estimate the subsequent economic impacts to the region and the province.

BC Stats conducted a study of the short and long-term economic impacts of new connectivity projects in rural B.C. and chose the Kootenay economic region for the study. This area was selected due to the investment in connectivity, its rural location, lower population density, and fewer urban centres.

The study showed that connectivity funding to support the expansion of high-speed internet to underserved rural areas can have both positive short and long-term impacts in Gross Domestic Product (GDP) for the region and for B.C.

For the Kootenay region this return was estimated to be 14 times the Province's initial investment in benefits to B.C.'s GDP in the long term.

BACKGROUND

Access to high-speed internet is foundational to economic, social, and environmental equity and prosperity. However, the cost of bringing high-speed broadband services to many rural, remote and Indigenous communities is beyond the reach of traditional private sector providers. The provincial and federal governments have responded with programs such as the Connecting British Columbia, Connecting Communities BC, and Universal Broadband Fund programs to help fund infrastructure required to deliver high-speed internet services to these communities.

In 2021, the Province hired Deloitte to develop an economic measurement framework through which the value of broadband connectivity can be measured, understood and included in future evaluation of project benefits, as well as to estimate the economic benefits of the investment. In 2022, BC Stats built on Deloitte's framework with this economic impact study examining the short and long-term economic impacts of connectivity infrastructure spending.

RURAL ECONOMIC BENEFITS

14x Generates 14x in rural economic benefit

5x Catalyzes 5x investment in rural broadband

$19.4M
Connecting British Columbia program investment

$105M
Total broadband investment

- Includes: provincial, federal, local and industry investment in the Kootenay region
- Investment will bring broadband connectivity to 10,574 households

$281M
Economic benefits

$67M
Short-term benefits

Resulting from the infrastructure building phase.

+

$214M
Long-term benefits

In GDP over 20 years, from the creation of new economic opportunities for local businesses, workers and residents.

$14,800 in economic benefit per connected person

Figure 1: Rural Economic Benefits Summary

The economic benefits were calculated as follows:

- The region received $19.4 million in funding since 2020 from the BC Government through the Connecting British Columbia program, funding 24 connectivity projects for over 10,000 households in the area.
- $19.4 million in provincial funding leveraged a total investment in connectivity for the region of $105 million, as the public and private sector work together to fund telecommunications projects. This is a ratio of 5:1 - $1 of provincial funds, to over $5 of total private and public sector investment in connectivity.
- Short-term economic benefits (defined here as the construction phase and the building of the infrastructure) are estimated at:
  - For the Kootenay economic region: $56.2 million increase in GDP, 429 new jobs and $777,000 in municipal tax revenue.
  - For B.C. (including the Kootenay region): $67 million increase in GDP, 500 jobs and $4.8 million in increased provincial taxes.
- Long-term impacts (defined here as increased GDP as a result of more productivity from improved access to broadband) are estimated at:
  - For B.C: $214 million in increased GDP over 20 years.

In total, it is estimated that the initial provincial investment of $19.4 million in connectivity in the Kootenay region will generate $281 million in short and long-term economic benefits to the province and the region. That is 14 times the initial provincial investment and creates a $14,800 benefit per capita for newly connected households.

METHODOLOGY

The Kootenay economic region in Southeast B.C. was selected as the area for the preliminary study as it is representative of rural B.C. with fewer major population centres, and allowed a focus on the economic impacts within a rural context. In addition, the number of telecommunications projects in the region, and the history of regional collaboration around connectivity, supported a detailed analysis of the impacts.

An economic analysis was completed utilizing available project data, local economic context, and existing empirical relationships, to establish measurement frameworks and estimates. BC Stats used an input-output model to estimate short-term impacts at the regional level. The longer-term impacts use a methodology developed based on academic research which identifies productivity increase (shown as GDP per capita) associated with increased access to broadband (see Appendix 1 for studies referenced).

Short-term impact

Broadband improvement projects, like any infrastructure project, contribute to the local economy by creating demand for products and services required to deliver the project and to operate the broadband infrastructure on an ongoing basis. BC Stats used the BC Input-Output Model to estimate the impacts of the construction phase of the broadband projects.

BC Stats worked with the Connectivity Division in the Ministry of Citizens' Services to identify 24 broadband projects in the Kootenay region that were used for the analysis. The 24 projects were selected based on the criteria that they received Connecting British Columbia funding, and that they took place in the Kootenay economic region.

The BC Input-Output Model is designed based on Statistics Canada supply use tables. It is a macroeconomic modeling tool that allows economists to estimate the impacts of increased industry spending on the rest of the economy of the region, province and country. The model estimates these impacts at three levels: direct, indirect, and induced as detailed below:

- Direct impacts are related to the spending on the project. These impacts occur as a result of purchasing material inputs for the project and paying wages to the employees that are building the infrastructure or doing the engineering design, if they are employed directly by the company. For this project the direct impacts at the provincial level were $47.9 million in GDP, $46 million in labour income, 424 jobs, and $5.5 million in taxes.
- Indirect impacts include money that is spent by contractors on wages and the goods they purchase. This would include an external firm contracted to design or build a piece of infrastructure. The indirect impacts of the analysis were $5.6 million in GDP, $3.5 million in labour income, 54 jobs, and $1.3 million in taxes.
- Induced impacts come from the spending of the employees building the project in the local economy. For example, if an employee takes a break from building an antenna tower and goes to a local café for lunch, the money they spend on lunch is an induced impact from the project. The induced impacts for the project were $13.1 million in GDP, $6.9 million in labour income, 114 jobs, and $3.9 million in taxes.

Long-term impact

By creating new economic opportunities for local businesses, workers and residents, broadband improvements can contribute to stronger economic growth for years after the construction phase. To describe this impact, BC Stats used empirical relationships established in economic literature to develop an approach to estimate these long-term economic impacts of the projects in scope of this study.

Based on the relationship between broadband use and productivity growth, long-term economic impacts have been estimated. Multiple studies were analysed to determine the impact on GDP of increased broadband availability.

Using four different studies to inform the decision, BC Stats estimated an increase of 10 percentage points in the number of fixed broadband subscriptions contributing 1.235 per cent to GDP per capita growth. This formula is applied to the increase in households with access to high-speed internet resulting from the Connecting British Columbia funding program. This was done in terms of net present value of resultant GDP growth.

For this approach a social discount rate of 3 per cent was used based on Statistics Canada data. A key limitation for this approach is the lack of GDP data at the Kootenay regional level therefore, the GDP per capita and the GDP per capita growth for the Kootenay region is assumed to be the same as at the British Columbia level. A key assumption for this approach, based on data from the Connectivity Division, is that 95 per cent of the targeted households of the projects would subscribe to the new service.

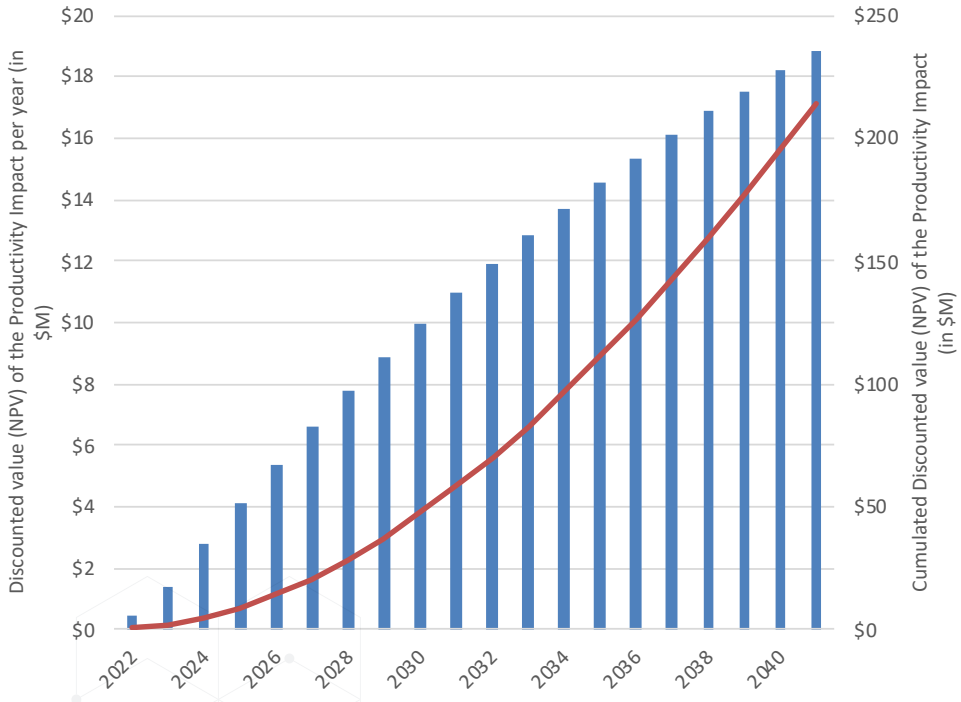

Figure 2: Productivity impact from the increase in broadband access

RESULTS

The study shows that from a provincial investment of $19.4 million, a total economic benefit over a 20-year timespan would be $281 million. This provincial investment is multiplied 14 times in long-term returns for the rural economy. The initial investment also leverages a total investment of public and private funds of $105 million. The total impact of the projects is expected to produce $14,800 in economic benefits per newly connected person in the region.

These economic outcomes can be broken out by short-term and long-term impacts. Economic contribution resulting from the project execution phase (short term, see figure 3 for more detail) including direct, indirect and induced impacts are expected to:

- Add $67 million to B.C.'s GDP;
- Create or sustain 500 jobs; and
- Contribute $4.8 million in provincial taxes.

Based on the relationship between investment in telecommunications infrastructure and productivity growth, we estimate the net present value of the impact on GDP growth in the Kootenay region to be $214 million over 20 years (long-term impact).

Assumptions and limitations:

- These impacts are derived from the total projects budget ($105 million). *Note - some budget items such as GST are not included in the expenditure.*
- 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 also subject to the standard assumptions and limitations applicable to Statistics Canada's Input-Output multipliers and BC Stats Input-Output model.
- Given that the expenditures are for infrastructure deployment in the region, all the direct economic contributions are considered to accrue to the region, while the input-output analysis allocates impacts for the indirect and induced contribution estimates.

	Estimated Economic Contribution in the Kootenay Region			Estimated Economic Contribution in the rest of B.C.		
	Direct	Indirect	Induced	Indirect	Induced	Total
Expenditure	**$100M**	**$19.9M**	**$12.2M**	**$24.3M**	**$15.7M**	**$40.0M**
GDP	**$47.9M** in GDP	**$2.1M** in GDP	**$6.2M** in GDP	**$3.4M** in GDP	**$6.9M** in GDP	**$10.4M** in GDP
Labour Income	**$46M** in labour income	**$1.3M** in labour income	**$2M** in labour income	**$2.2M** in labour income	**$4.9M** in labour income	**$7.0M** in labour income
Employment	**378** FTEs created or sustained	**15.6** FTEs created or sustained	**35.8** FTEs created or sustained	**29.2** FTEs created or sustained	**51.3** FTEs created or sustained	**80.4** FTEs created or sustained
Gov't Revenues	**$2.8M** in provincial taxes	**$169K** in provincial taxes	**$728K** in provincial taxes	**$313K** in provincial taxes	**$796K** in provincial taxes	**$1.1M** in provincial taxes

Figure 3: Short-term economic impacts

APPENDIX

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