Research ICT Solutions

REGIONAL CONNECTIVITY INFRASTRUCTURE STRATEGY

DRAFT PROPOSAL FOR THE
FRASER VALLEY REGIONAL DISTRICT

ABOUT RESEARCH ICT SOLUTIONS

- For the last three years, we've been focused on articulating a new business model to profitably connect everyone within mobile coverage to the Internet. We've published multiple papers in peer reviewed journals on Universal Basic Internet and next generation business models.

- We were one of the finalists in the Mozilla Equal Rating Innovation Challenge, a competition to find the best way to provide access to all. Research ICT Solutions has experience in both analysing and rolling out last mile initiatives:

  - Currently working on a broadband rollout for the universal service arm of the Ugandan Communications Commission;

  - We've advised the World Bank on how to target an investment of $150 million into the ICT sector in Zambia.

- For this project we have teamed up with Steve Song, who is an experienced consultant with twenty years of experience and who has developed Open Source, Open Hardware technology that enables anyone to set up their own telephone and Internet company called Village Telco (http:// villagetelco.org).

RIS

PROCESS

1. Apply for funding from Northern Development Trust for consulting services to develop a connectivity strategy

2. Once funding approved, complete the application for funding to develop Connectivity Infrastructure Strategy

RIS

OBJECTIVE

- Draft proposal for the Fraser Valley Regional District

- Develop a Connectivity Infrastructure Strategy that meets the requirements of the Connecting British Columbia Program - Phase 2

- The Strategy would have three components:

  1. Connectivity & technology assessment

  2. Governance structure and potential vendors

  3. Funding application

RIS

ASSUMPTIONS

	Median income after tax	Population	Average age	# of households
Census 2016	$69,289	295,934	41	108,393

- Large but spread-out population means that a range of options needs to be investigated

- Collaboration with technology providers, other municipalities and provincial government is crucial

RIS

BROADBAND EXPANSION PROBLEM

Cost of Supply (MNO)

CAPEX **+** **OPEX**

>

Demand
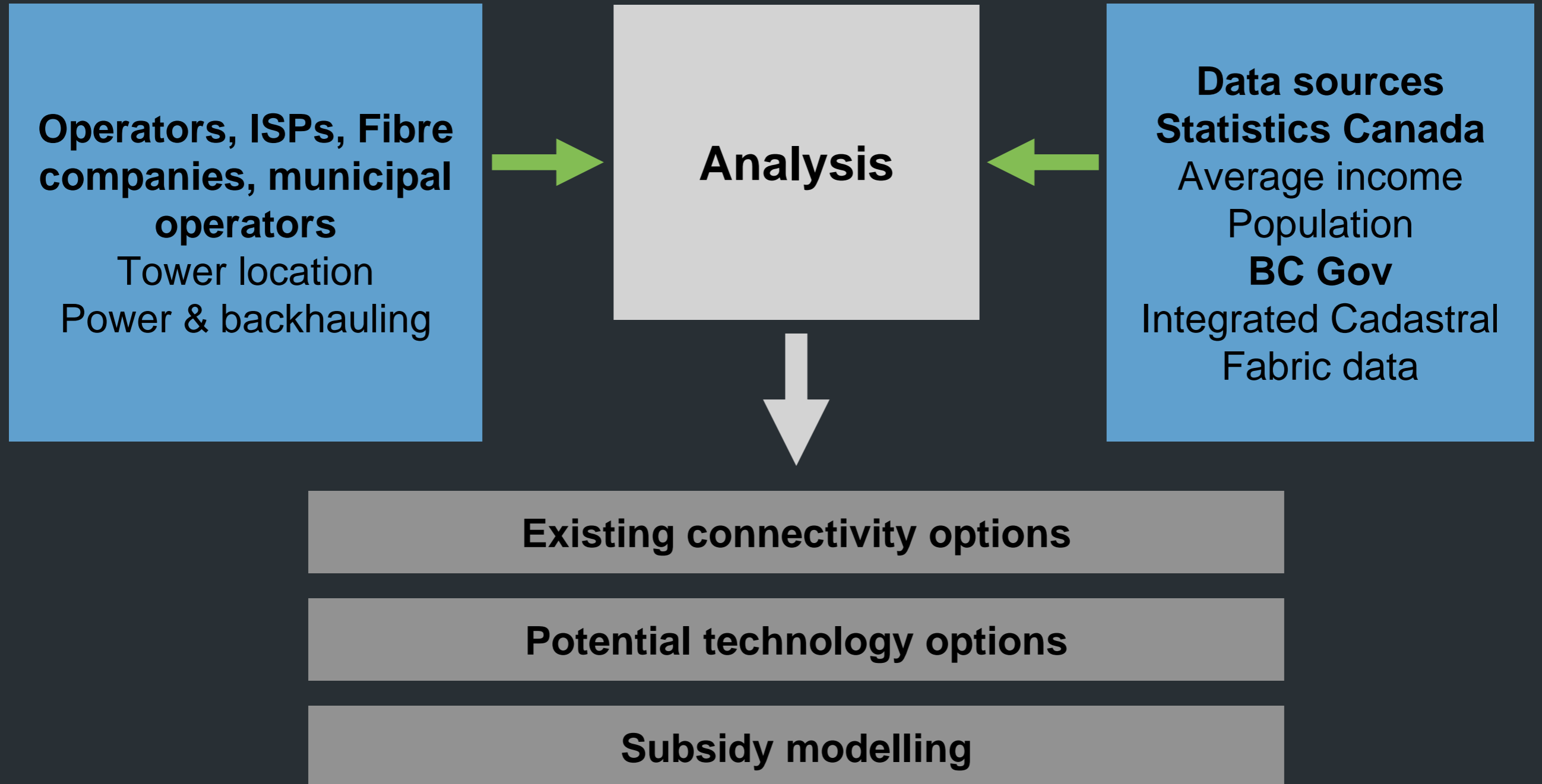Population * 5% of disposable income for 5 Years

- The cost of supply is currently greater than demand

- The challenge is to change the equation so that income is greater than supply, either by reducing the cost of supply or increasing income
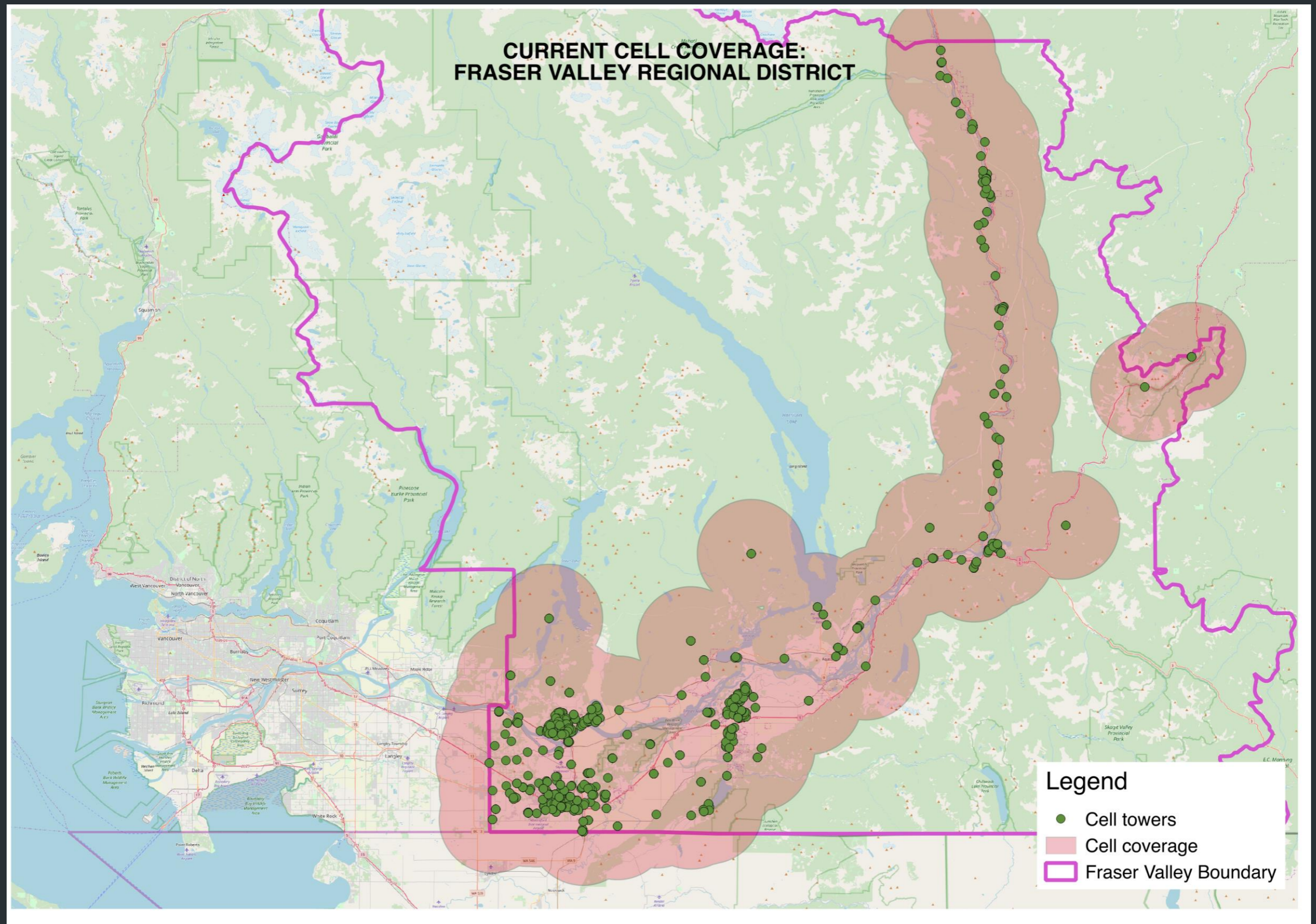
RIS
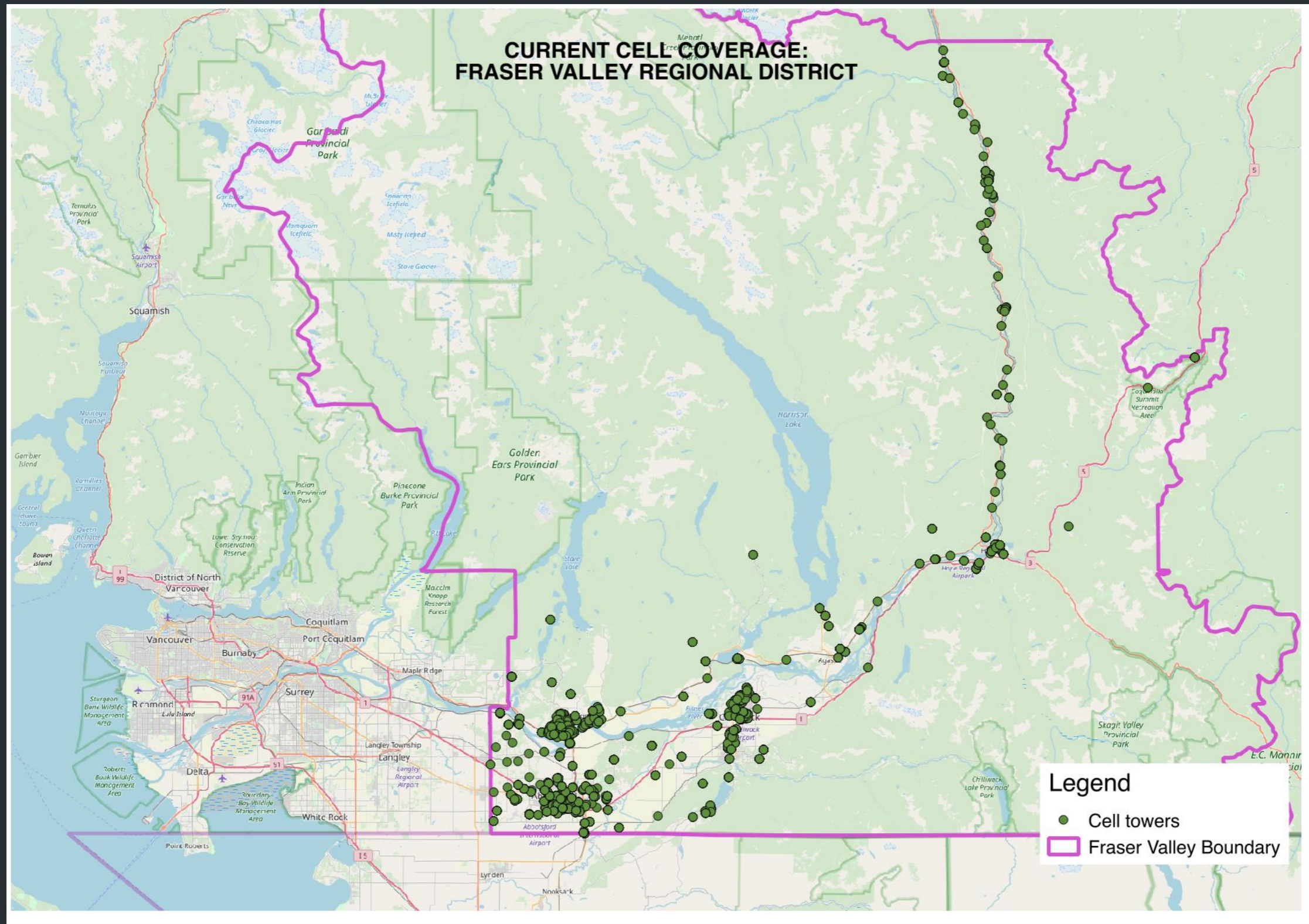
STEP 1

CONNECTIVITY & TECHNOLOGY ASSESSMENT

RIS

PROCESS

Operators, ISPs, Fibre companies, municipal operators
Tower location
Power & backhauling

→ **Analysis** ←

Data sources
Statistics Canada
Average income
Population
BC Gov
Integrated Cadastral
Fabric data

↓

Existing connectivity options

Potential technology options

Subsidy modelling

EXISTING CELL COVERAGE

CURRENT CELL COVERAGE:
FRASER VALLEY REGIONAL DISTRICT

Legend

- Cell towers
- Cell coverage
- Fraser Valley Boundary

CURRENT CELL COVERAGE:
FRASER VALLEY REGIONAL DISTRICT

Legend

● Cell towers

▭ Fraser Valley Boundary

CADASTRE LOCATIONS

CADASTRE LOCATIONS

- BC has made available all cadastre locations via iMap BC

- Using this tool, we are able to plan at a granular level what the technology options could be for broadband access around the FVRD

- All data would be combined into a single map to enable better planning and decision-making for broadband access.

EXISTING CONNECTIVITY OPTIONS

- Who are the current ISPs, mobile operators, cable providers operating around the Fraser Valley Regional District?

- Of these, mapping the existing fibre connectivity is the most critical

- Data is relatively scarce, but maps can be built using a combination of:

  - Interviews with existing cable providers

  - Web scraping to find out where major cable companies (Shaw, Telus etc.) offer fibre connectivity

- Output is a map showing fibre connectivity, suppliers, planned fibre rollout

- Once this information is in one place, we can analyse which communities are the most viable and what funding arrangements best suit them.

OPTIONS

- There are several technology options and combinations of options and these would need to be assessed based on cost, willingness to pay as well as appropriate governance structures (see Step 2). Fibre access:
  - Fibre to the town boundaries (we'll need confirmation of where fibre currently sits)
  - Fibre to the curb (FTTc)
  - Fibre to the Neighbourhood (FTTn)
  - Fibre to the Home (FTTh)

- Last mile access:
  - Fixed Wireless Access at 3.5 GHz
  - Wifi 802.11 ac (2.4 GHz and 5 GHz)
  - Urban mmWave 802.11ad (60 Ghz)

STEP 2

GOVERNANCE STRUCTURE AND POTENTIAL VENDORS

RIS

GOVERNANCE

Some kind of partnership model is necessary because the FVRD doesn't have the resources to roll out fibre infrastructure by itself. There are essentially two key variables:

1. Who owns the network? There are 3 possible models:

    a. Local government-owned through some sort of municipal corporation (Valley Community Fibre Network http://vcfn.ca/ as an example in Nova Scotia)

    b. Citizen's cooperative operating with the tacit support of local government (e.g. B4RN model in UK)

    c. Private network operator that enters into an agreement with the municipality

The appropriate option is dependent upon the mix of technology and funding that is available.

GOVERNANCE (2)

2. Who operates the network?

    a. Outsourced to the private sector (Valley Community Fibre Network)
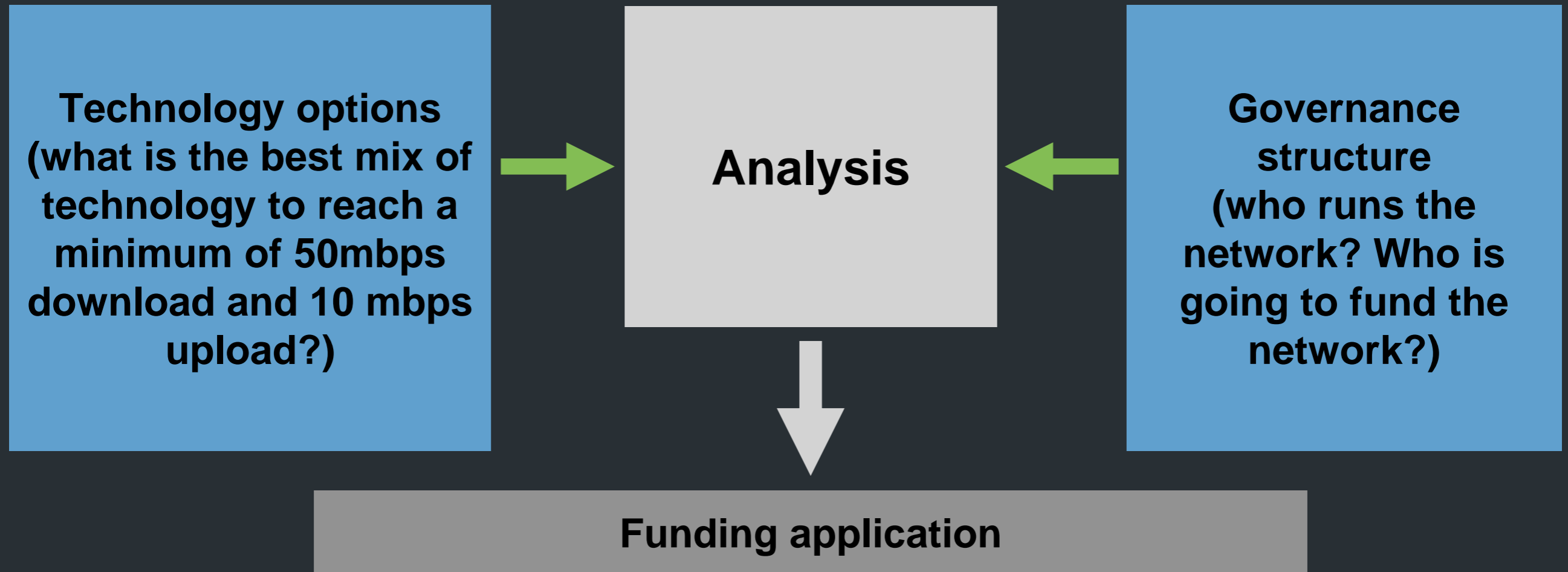
    b. Operated by a community organisation (B4RN)

The type of technology chosen will determine who operates the network (as an example, fibre last-mile networks are generally easier to operate than wireless networks).

Each of these options (ownership & operation) will be considered as part of the study taking into consideration the circumstances of the FVRD.

STEP 3

FUNDING APPLICATION

RIS

FUNDING APPLICATION

Technology options (what is the best mix of technology to reach a minimum of 50mbps download and 10 mbps upload?) → **Analysis** ← **Governance structure (who runs the network? Who is going to fund the network?)**

Funding application

- RIS provides inputs into the FVRD's funding application to the Northern Development Trust Initiative and the Economic Diversification Infrastructure Fund.

- Funds are used to rollout the broadband network.

FUNDING (2)

This cost can be reduced by:

- Getting funding from Northern Development Trust for a percentage of costs

- Reducing cost of provision by having FTTx and running wifi or urban mmWave wifi for other last mile connectivity

- Funded by the FVRD and amortized over a number of years

IMPLEMENTATION

15 JANUARY

31 JAN

22 FEB

| DESK RESEARCH | CONNECTIVITY ASSESSMENT | GOVERNANCE | VENDOR ASSESSMENT | APPLICATION DEVELOPMENT | FINAL REPORT |

15 JAN - 31 JAN

10 FEB

28 FEB

BUDGET

	Rate CAD	Units	Total CAD
Desk research	600	5	3,000
Meeting stakeholders	600	5	3,000
Technology options	600	5	3,000
Vendor discussions	600	3	1,800
Funding application	600	4	2,400
Transport, accommodation and per diems			300
			13,500

RIS

Research ICT Solutions

DR. CHRISTOPH STORK
PARTNER, RIS
PHD, ECONOMICS

STEVE SONG
ASSOCIATE, RIS
FOUNDER OF VILLAGE TELCO

ANDY DYMOND
SENIOR CONSULTANT, RIS
MSC (DEVELOPMENT ECONOMICS) AND P.ENG. (BC) TELECOMS

STEVE ESSELAAR
PARTNER, RIS
MBA

CONTACT DETAILS

www.researchictsolutions.com

Tel. +1 778 865 5695

steve@researchictsolutions.com

RIS