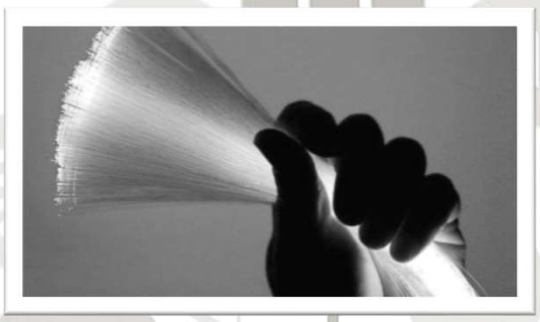
Addressing the Myths SuperNet & Rural Broadband Internet

Digital Futures
March 16, 2017

Why Am I Here?

These are exciting times.



SuperNet is at a crossroads.

Access to high-speed, reliable, well-priced rural broadband internet is high on the priority list of municipalities, counties and districts across Alberta.

However I need to address some of the comments I have heard during my travels around Alberta…

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Myth #1
SuperNet is the Internet

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SuperNet: A Digital Highway

SuperNet is the Government of Alberta's digital "highway" actively connecting over 3,300 government, schools, hospitals, libraries, and municipalities in 429 communities across the province.

It is not the internet, but it does enable private sector internet service providers (ISPs) to deliver internet to rural Albertans by riding over the SuperNet.

SuperNet today is made up of two connecting networks:

- Base Area Network (BAN): 27 urban communities
- Extended Area network (EAN): 402 communities (mainly rural and remote)

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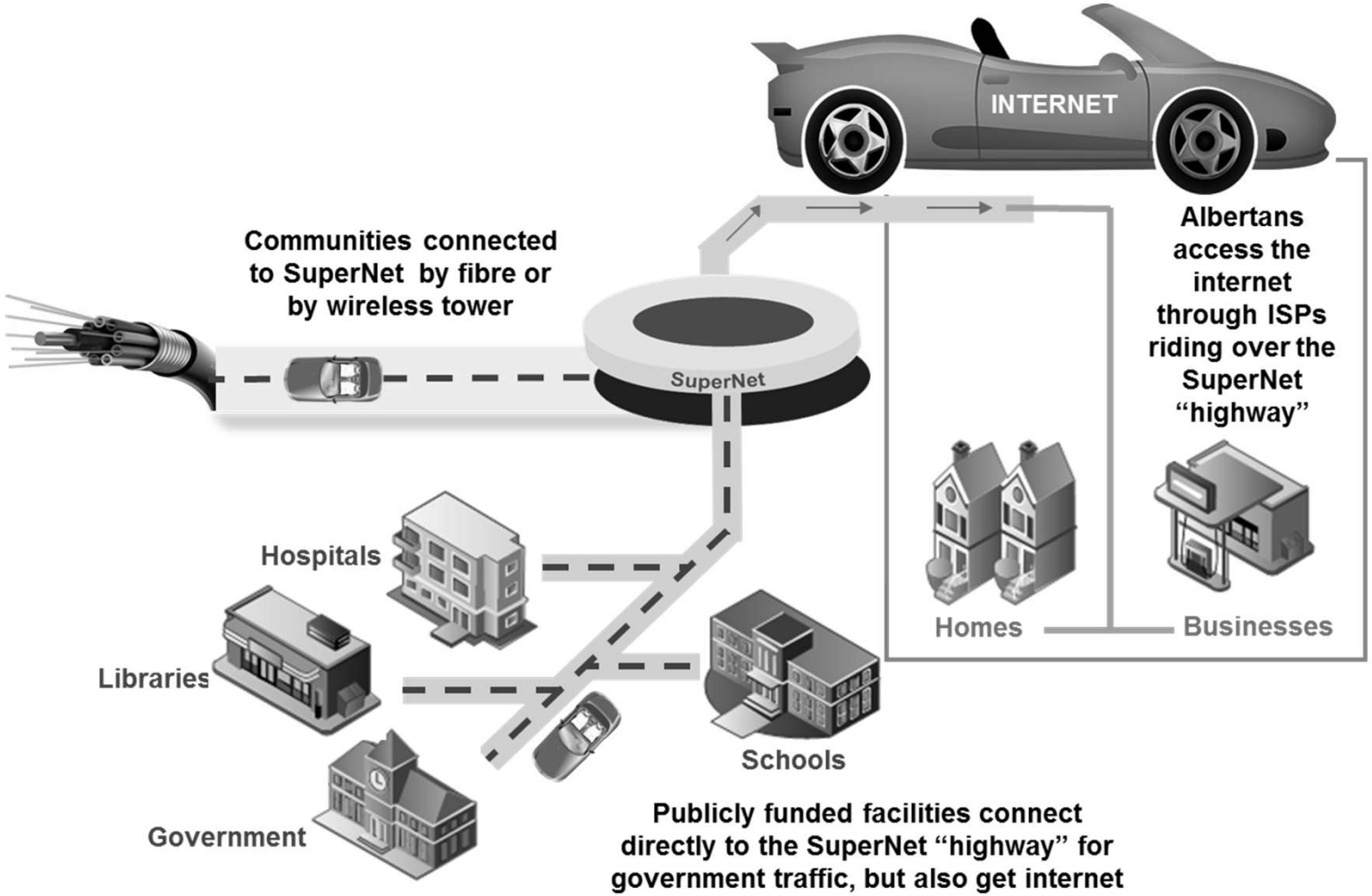
SuperNet Versus the Internet



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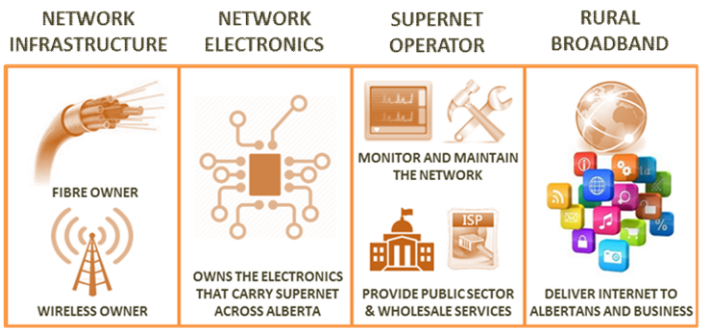
Myth #2
The Government owns the SuperNet

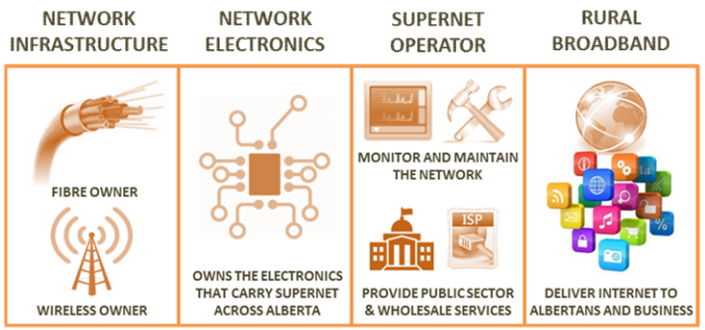
SuperNet: The History: 2001



- SuperNet: Fibre optic cables & wireless towers, formed into a network by electronics carrying signals to public facilities;
- SuperNet Operator: monitors and maintains the infrastructure and electronics; and
- SuperNet Operator: delivers services directly to the public sector, and sells wholesale services to rural ISPs to use in delivering internet to rural Albertans and businesses.

- In 2001, government committed $193 million to build, and own, a network connecting public sector facilities in 402 rural communities.
- This investment was made in 402 of 429 SuperNet communities, as few services or competition existed.
- Bell also committed $102 million to complete an urban network connecting 27 of the 429 SuperNet communities.
- Owned and operated by Bell, the urban network did not require government investment as services were already available in these communities.

SuperNet: The History: 2005



The two major 2005 changes to SuperNet agreements were:

- Bell provided a revenue shortfall guarantee through to the SuperNet operating agreement's original expiry date on June 30, 2015; and
- Change from direct government ownership to an Indefeasible Right of Use (IRU) - essentially an exclusive long-term lease through to 2045 - with buy-back options, for $1, in 2035.

- Although most of the rural network was initially owned by government, renegotiated contracts in 2005 transferred ownership of the majority of rural fibre and wireless infrastructure to Bell.
- Government holds exclusive rights to the infrastructure until 2045 through fibre and wireless leases.
- At the time, this recognized Bell's additional investment of over $300 million to complete the construction of the rural network.
- Leases offered government long-term ownership, without associated liabilities (i.e. Bell would provide 10 years maintenance at no cost to the government).
- However the 10 years are up and we now face annual financial liabilities of $15.3 million plus CPI.

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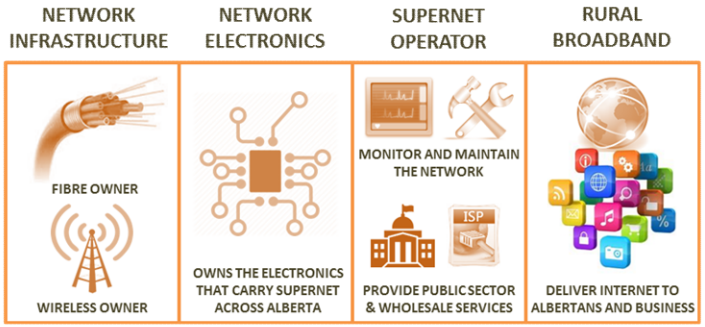
SuperNet: The History: 2015



RURAL FIBRE: Bell, Telus, Monarch and 360 Networks
RURAL WIRELESS: Bell
BOTH LEASED TO: GoA
URBAN NETWORK: Bell (Axia has begun to use their own fibre in places)

ELECTRONICS: GoA (Electronics have been upgraded, currently going through approval process)

OPERATOR: Axia Exclusive license to use and operate the SuperNet until June 30, 2018 (Contract extended from 2015 to 2018)

INTERNET: ISPs

- The SuperNet extension had been signed to keep the existing operating environment in place until a model review was completed.
- SuperNet suffers from poorly written contracts that are open to interpretation and provide few enforcement options for the government.

- In August 2013, the SuperNet operating agreement with Axia was extended to allow government to complete its due diligence on approaches for SuperNet 2.0.
- Axia created a retail ISP.
- An audit of SuperNet was initiated with PricewaterhouseCoopers to determine what has changed since 2005.
- The audit is currently underway.

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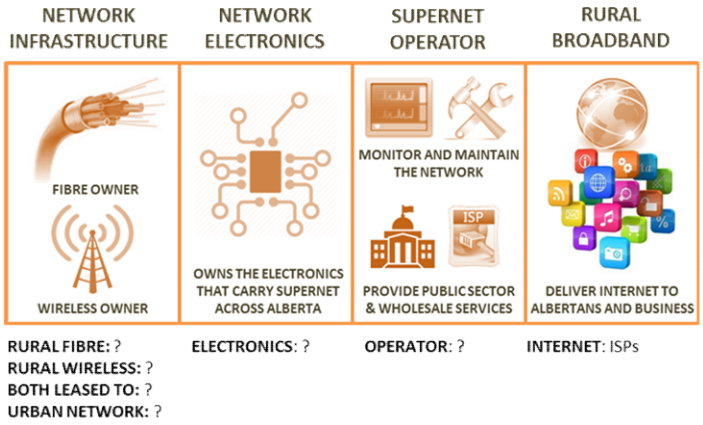
SuperNet: The Way Forward



There is a need to:

1. Review the business model for SuperNet 2.0;
2. Take steps to provide the SuperNet 2.0 operator with a stable revenue stream; and
3. Identify what, if any, role the government will take in advancing the interests of Albertans by enabling rural broadband funding as part of SuperNet 2.0.

- In November 2015 Service Alberta received approval to proceed with SuperNet 2.0 pre-qualification;
- In July 2016, while industry engagements were underway, Service Alberta received Cabinet approval to continue its dialogue with targeted stakeholders;
- On June 30th, 2018 the operating agreements with Axia will expire. A new contract will be needed to ensure that service continuity remains in place for the public sector, and rural ISPs.
- Thank you for the valuable insights provided by muncipalities.
- Government is currently discussing the approach for the future of SuperNet and potential rural broadband supports. Stay tuned for details.

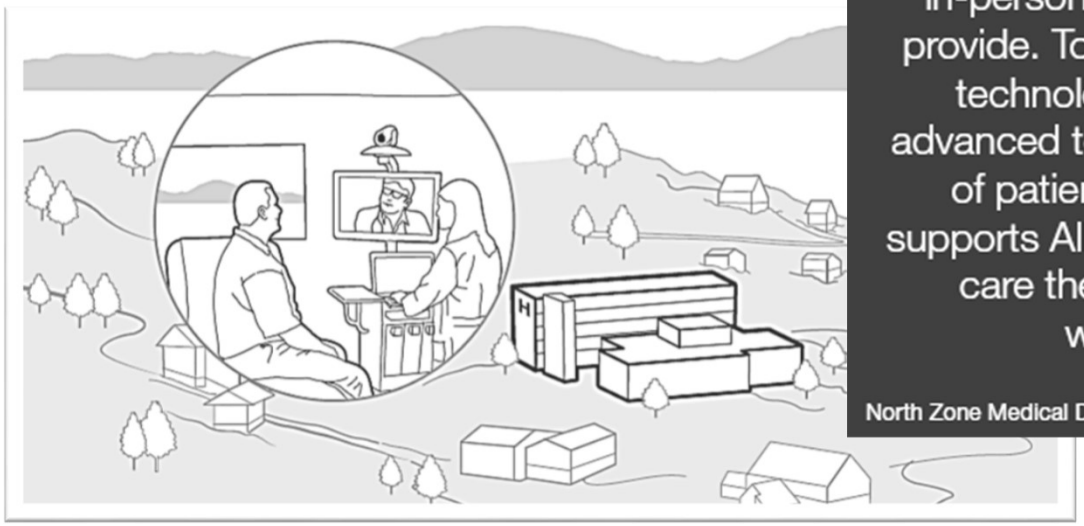
Myth #3
The internet is only used for movies, games and leisure

Internet Uses

Homework and Healthcare

"Through the Centre for Global Education, extraordinary education becomes ordinary education for all students everywhere."

Terry Godwaldt
Director, The Centre for Global Education



"Historically, it was challenging for Telehealth to provide the same level of patient care as an in-person practitioner would provide. Today with improved technology, Telehealth has advanced to being a standard of patient-centered care. It supports Albertans getting the care they need, when and where they need it."

Dr. Kevin Worry
North Zone Medical Director, Alberta Health Services

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Internet Uses

Remote Farming and Drones

"Using a wireless connection, our drone will give us detailed crop health info that I can quickly turn into management decisions."

Friedrich Niehoff
Timik Farms, Camrose

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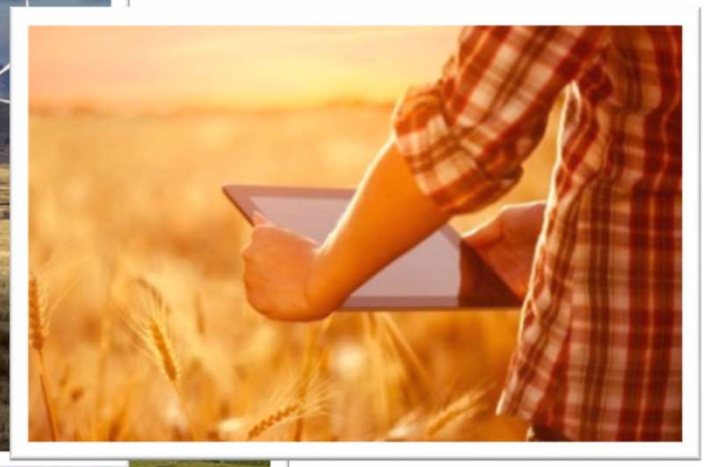
Internet Uses
Tourism & Business



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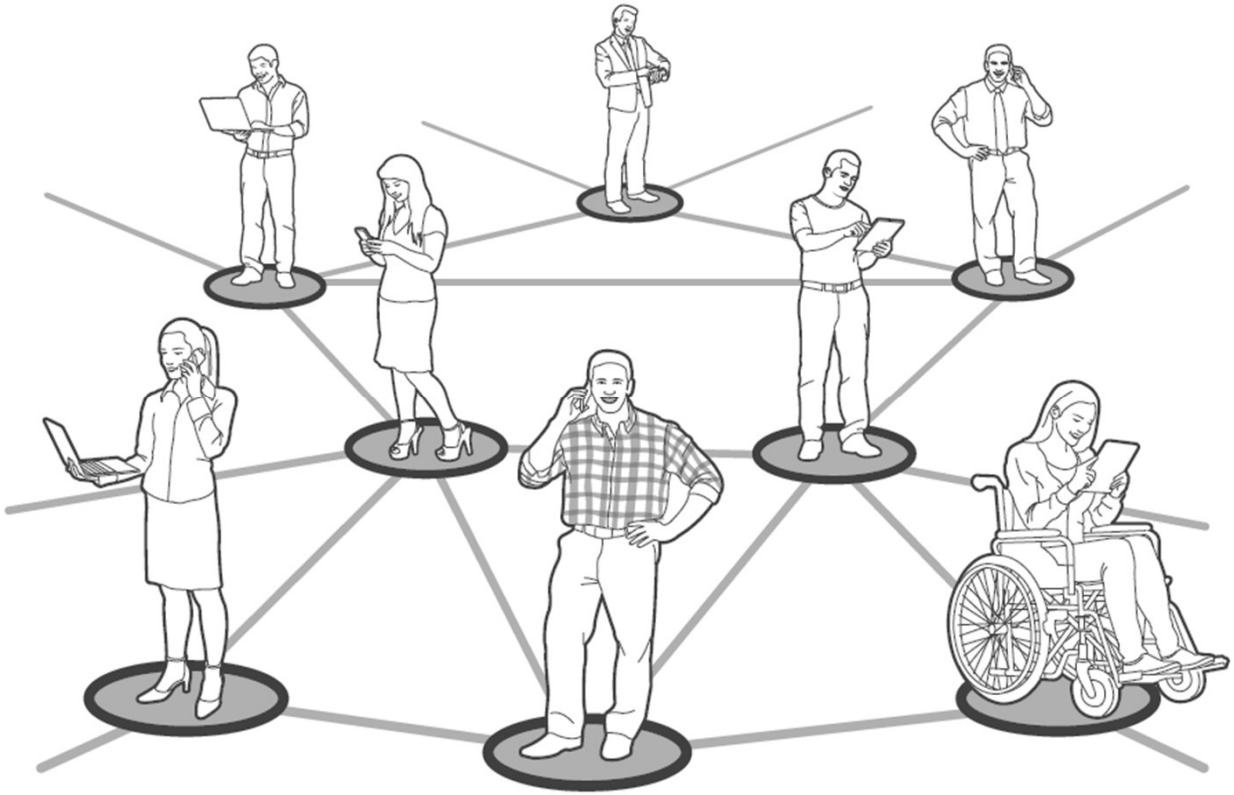
Internet is needed to enable a basic quality of life…it's a necessity.



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Speed Matters

500 Kbps – 1.5 Mbps

- Seniors can call their family using Skype
- Students can send their teacher a simple email
- Parents can browse the internet to find a doctor

1.5 Mbps – 5 Mbps

- College students can research complex websites with fancy graphics and streaming video
- Farmers can watch their livestock with remote surveillance or manage online auctions
- Rural accountants can send large documents to their clients

5 Mbps – 10 Mbps

- Rural children can develop motor skills and keep in touch with their friends playing online games
- Families can watch a movie online

10 Mbps – 100 Mbps

- Students can interact with teachers using real-time video streaming
- Families can watch movies online in high definition
- Farmers & business can remotely monitor building alarms with high definition surveillance

The Internet & Rural Alberta

Access to high-speed, reliable, reasonably priced broadband internet is a major key towards the long-term viability of rural Alberta

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Myth #4
Rural Alberta lacks internet transport infrastructure

Today in Alberta

- Current internet service depends how rural you are
  - Rural community – fibre/wireless
  - Rural outside community – wireless
  - Rural remote – satellite
- Some locations find it difficult to attract service providers
- Some locations lack competition

- Geography and competition impact cost
- Areas of the province are at or over infrastructure capacity
- Many rural locations encounter speed limitations
  - Some less than 1.5 Mbps
  - Some at 1.5 Mbps
  - Relatively few at the federal recommended 5 Mbps for residential broadband internet

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Current State Continued…

- For much of the province transport infrastructure isn't an issue
- SuperNet helped to address a gap back at the start of this century
- Now multiple options are available in many locations (but not all), including

ROGERS

SHAW

TELUS

ALBERTA SUPERNET

- We have 36 ISPs operating in Alberta
- BUT an outstanding problem is the middle mile and **especially** the final mile/local loop

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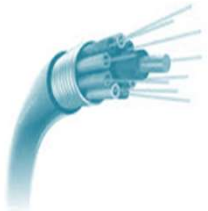
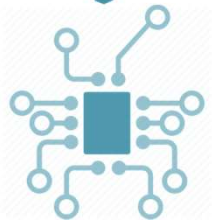
So What Do We Need?

What Do We Need?





- Solutions for the final mile/local loop
  - Technologies now and future
  - Determine what role you will play
  - Where will funding come from
  - Encourage ISPs to provide services
  - Depending on model, may encourage competition
- Address transport bottlenecks
  - Upgrade equipment
  - Fibre to the tower
  - Improve resiliancy
- The ability to access transport infrastructure outside points of presence e.g. hand holes

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Myth #5
Fibre is the only option

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Enhancing Rural Broadband

Fibre may not be the answer

Washington Post article from October 26, 2016 regarding Google Fiber

https://www.washingtonpost.com/news/the-switch/wp/2016/10/26/why-google-fiber-is-no-longer-rolling-out-to-new-cities/?hpid=hp_hp-more-top-stories_switch-google-1040pm:homepage/story

Google Fiber boxes rest on a sofa in the home of Becki Sherwood in Kansas City, Kan., in 2012. Sherwood's neighborhood was the first to receive Google Fiber. (Julie Denesha/Bloomberg News)

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Enhancing Rural Broadband

“Even as Google Fiber pays lots of money to lay down cables and secure access to TV programming, a different type of technology is coming down the pike: wireless fiber. In some respects, you can think of wireless fiber as similar to the 4G LTE you get on your cellphone. But in other ways, it's a totally different ballgame.

Verizon's version claims to be 50 to 100 times faster than LTE.

AT&T is working on something called AirGig, which envisions a network of wireless hotspots mounted on utility poles that constantly beam out high-speed wireless signals.

There are signs that Google is moving in this direction, too. In June, it acquired Webpass, a provider of wireless broadband.

And in its announcement Tuesday, Google Fiber said it would be looking at new technology and deployment methods to make superfast Internet more abundant than it is today.”

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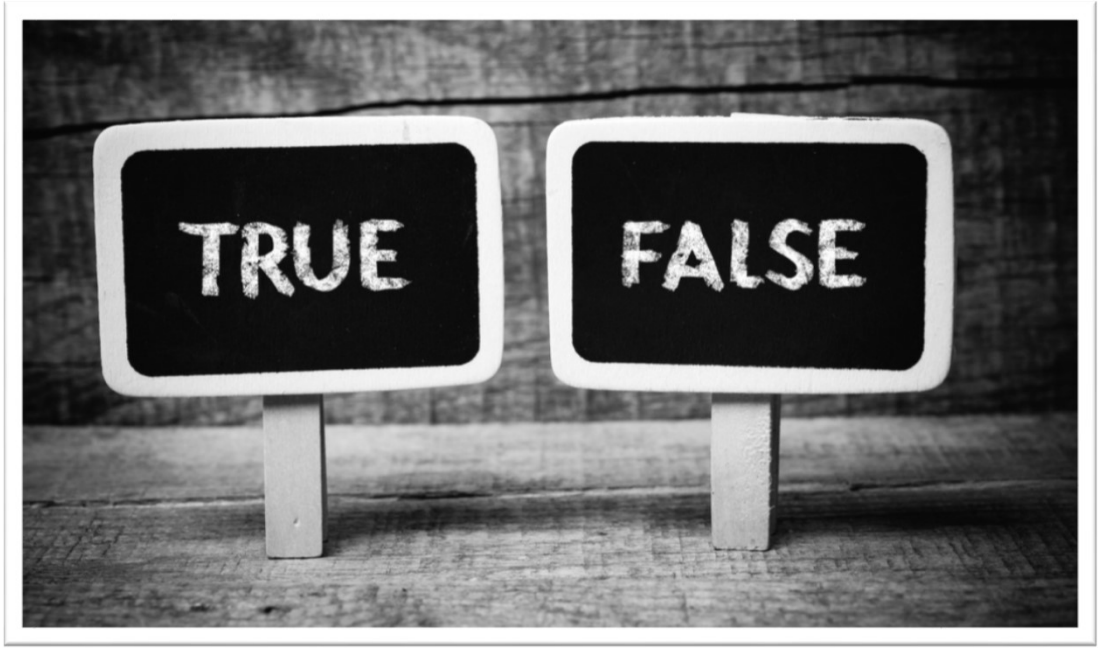
Myth #6
The private sector will solve this issue

Role of the Private Sector

- Most are profit making entities
- Investments will be based on business cases and the ability to make money in a reasonable amount of time
- Many opportunities for partnerships with the public sector
- Access to public sector grants will help; but unrealistic to expect that the private sector alone will be able to meet the needs of all Albertans in a reasonable timeframe
- Private sector has a finite capacity to expand services to rural areas

Myth #7
This is a federal or provincial problem



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Who Owns This Problem?

- Everyone will need to play a role
  - Federal
  - Provincial
  - Municipal
  - Private Sector

- In a perfect world the Federal government would create a broadband internet strategy for Canada
  - Addressing rural and remote communities
  - Ensuring no one is left behind
- The Federal government is doing something…

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Improving Services

- **Federal:** ISED Connect to Innovate program
  - Launched December 15, 2016
  - $500 million rural broadband internet program to be spent by 2021
  - Priority is middle mile (1 Gbps link to within 2km of an underserved community)
  - Portion of the fund will be made available to last-mile and resiliency initiatives
  - Funding is open to both public and private sector
  - Submission intake: January 16, 2017 to noon EST on April 20, 2017
  - https://www.canada.ca/en/innovation-science-economic-development/programs/computer-internet-access/connect-to-innovate.html

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Improving Services

- **Federal**: December 21, 2016 CRTC ruling
  - Internet is now considered a basic telecommunications service for all Canadians
  - Very ambitious target speeds; 50 Mbps download and 10 Mbps upload – interim steps will likely be required
  - Unlimited data options for fixed wireless broadband
  - Additional $750 million of funding will be available; appears that any broadband service provider with $10 million in annual Canadian telecommunications revenues will be required to contribute
  - Indications are that funding requests will need to include contributions from private sector and other levels of government
  - CRTC will meet in “early” 2017 to finalize the funding mechanism/procedures
  - CRTC didn’t set a price for basic service and isn’t regulating the ISP community

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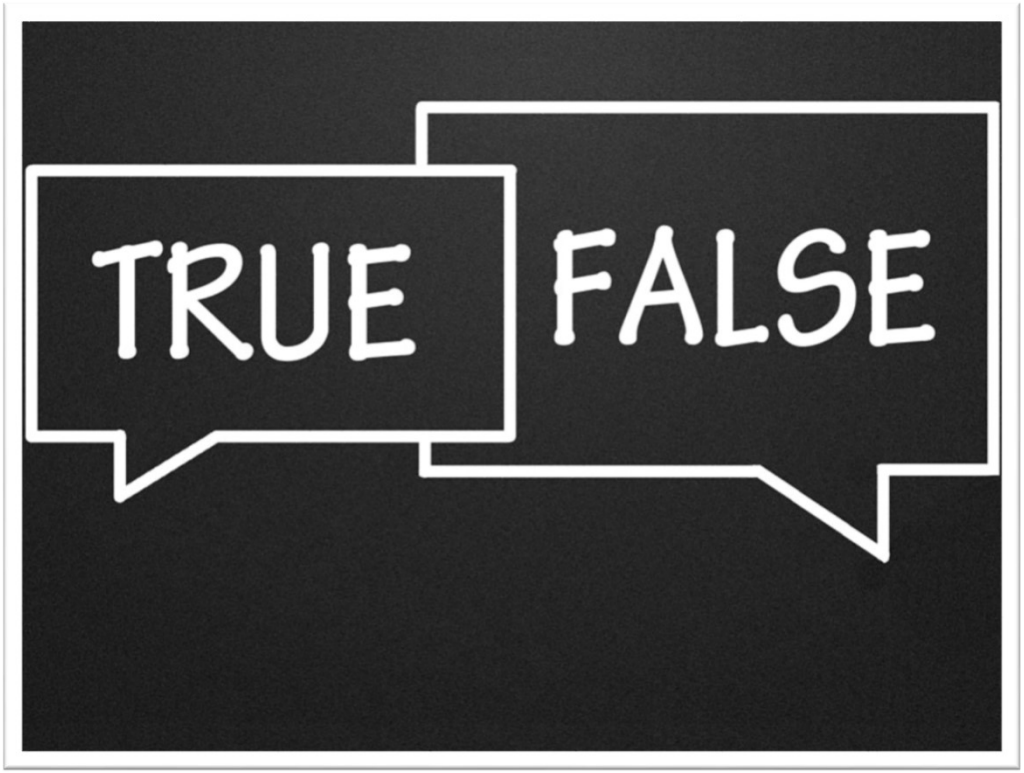
Myth #8
We can fix this quickly



This Will Take Time

- Fixing these problems will take time
- In many rural areas there will be incremental steps before we can achieve the CRTC's targets

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The Crossroads

- There are discussions underway to enhance the broadband file
  - I think we need a provincial broadband strategy
  - Funding is required at all levels of government

- Many municipalities are considering the role they should play in broadband internet:
  - Technology owner
  - Partner – funding, tower infrastructure, anchor user
- There are multiple options and opportunities
- Not advocating one model; there is a need for tools that help municipalities decide what is right for them
  - Looking at the problem from a regional or even a provincial perspective may be the best route to take

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My Advice

- If you haven't already, start thinking about your role:

  - If you chose to "build it so they will come", make sure you build the right things in the right places;
  - If you partner with an ISP be clear about roles. If the ISP is paying for the infrastructure at least make sure you have contract clauses that enable competition and give your municipality an option to buy the infrastructure, at an agreed price, should the ISP chose to leave your jurisdiction
  - Consider forming a cross-Alberta working group to look at coordination and prioritization
  - Think very carefully before entering into any long-term agreement with an ISP before the future of SuperNet is known; if in doubt contact my SuperNet Secretariat
- Apply for Connect to Innovate federal funding
- Don't dismiss partnering with TELUS for CRTC funding

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Myth #9
SuperNet is key to rural broadband internet

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SuperNet: Analysis

- In its early years SuperNet acted as the scaffolding for the emerging broadband environment in Alberta.
- There has been significant private broadband investment since 2005; but there are still areas where SuperNet is the best or only option for ISPs.
- SuperNet is only one piece of Alberta's internet infrastructure.
  - ISPs can purchase the wholesale services they need for internet delivery from SuperNet, Telus, Bell, Shaw, Rogers, and other telecommunications providers in the province.
- With telecommunications federally regulated, and in absence of a national broadband plan, Albertans have turned to the province for solutions.

SuperNet 2.0: Priorities

Job 1 is to ensure SuperNet service continuity, improve quality and support future growth needs for our schools, hospitals, libraries, government offices, and municipalities province-wide.

At the same time we can use our buying power and other innovative mechanisms to support the continued improvement of rural internet delivery.

During these tough economic times it is also important to achieve these SuperNet priorities without the need for long-term increased funding.

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Improving Services

Internet Service Providers (ISPs)

- SuperNet 2.0 will:
  - Help ensure a level playing field for ISPs
  - Look for ways to encourage the growth of ISPs
- The province is also exploring ways to assist with the creation and support for new ISPs in areas that are currently underserved

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QUESTIONS?