Broadband for Economic and Community Development

- What we’ve done
- What we’ve learned
- Solutions
• Project Terms of Reference
• Broadband Report commissioned; completed December 2014
  – Establish “current state” ... maps, service levels
  – Envision a “desired state”
  – Identify strategies forward
• Broadband Report results presented to councils and municipal staff at 3 events throughout the region
• Additional support for communities to engage consultant support
• Regional Broadband Committee
• Met with O-NET board
• Met with Cybera, Van Horne Institute
• Fiber to the Home (FTTH) Council membership
• Attended key Conferences
  – Austin Broadband Summit
    April 2015 & April 2016 (upcoming)
  – FTTH Conference - Minneapolis
  – Digital Futures
    March 2015 - Edmonton and
    October 2015 - Olds
• Met with CRTC Commissioner to define issues, message, process and logistics re: submissions
• Invested in telepresence robot!
Policy Efforts

Information-sharing ...

- Digital Futures (Edmonton and Olds)
- REDA Managers (EDA Conference)
- Calgary Regional Partnership (Okotoks and Cochrane)
- Palliser Economic Partnership (Medicine Hat)
- Accompany SouthGrow: meet with Service Alberta/Agriculture
- Support SouthGrow: draft resolution to AUMA (supported by 16 REDA communities) that AUMA form a Broadband Committee and work with and through the REDAs to inform and educate and bring this issue to the provincial forefront

- Upcoming submissions to CRTC

* important!
Meetings with ISPs and WISPs ...
Defining Broadband

We feel like “Digital Immigrants” ... living in a new country learning a new language. *Source: Jay Slemp* 

*Bytes, bits, KBs, MBs, GBs ... upload .... download ...*

- CRTC - 5 mbps down 1 mbps up
- U.S. FCC - 25 mbps down 3 mbps up
- Economic Developers - 100 mbps symmetrical
- High speed broadband is considered to be 25 mbps symmetrical, for the moment; power users need more
- The more we have, the more we will use!!
Wireless and Fibre

• Current providers use a combination of copper, coaxial able and fibre
• The “gold” standard is “glass and light”: optical fibre

How do we get this to every business and residence?

❖ Determination .... vision, benefit, business case
❖ Installation ........ logistics of underground, overhead or wireless
❖ Regulation .......... CRTC, contracts, development and rights of way

• How wide is the “digital divide” between rural and urban?
• Rural towns and cities will not flourish without connectivity
• There is desire to maintain our WISPs and improve their business situation as opposed to detracting from it
Achievable Business Models

Source: Magellan Advisors

- Partner, No Assets
- Dark Fiber, Single Provider
- Dark Fiber, Open-Access
- Lit Fiber, Open-Access
- Direct Provider

More Community Benefit, Investment, Risk & Return

Cities:
- Vulcan, Taber
- Nanton
- Nobleford
- Kimberley BC
- Waterton Lakes
- Olds
Case Studies-Alberta

• Alberta SuperNet
  - seen from outside the province as a leading example
• Olds O-Net
  - a leading example in Canada/USA
• Waterton Community Broadband Network
  - business district connected August 2015; O-Net is ISP
• Axia FibreNet
  - Vulcan, Nanton, Nobleford; other towns/villages in AlbertaSW and SouthGrow regions are considering this option
• Overall ... Canada is lagging in gigabit communities...
Looking South …

U.S. has 163 gigabit communities …
what did they leverage?

- Owned their own electrical utility
- There was an existing telephone co-op
- Large public works projects leveraged
- Existing business(s) threatened to leave town
- Anchor institutions pushed for improved service

- Incumbent utility company granted free access to poles
- A highly skilled person with IT background as leader/Mayor
- U.S. telecoms offered services on community owned fibre
- New small and mid-sized telecoms emerged to fill gaps
- **Large federal stimulus grants since 2007- latest was $9 B Sept 2015!!!!**
Broadband as a Utility

Challenge...

• We need to consider full impact of social, educational and economic benefits;

• Perception that fibre is costly, yet is comparatively less than other kinds of municipal infrastructure.

Source: Taylor Warwick Consulting Limited
Why Fibre?

- Scalable ... a key advantage
- Durable ...
  30-50 year life expectancy
- “Future proofs” a community

Why Now?

- Build out will take years not months
- Current services already straining capacity; technology development is “exponential”
• Internet is a “disruptive technology”
• Usage is moving beyond convenience to necessity .... internet of things, connected homes ...
• Usage increasing rapidly- 25% -100% every year
• Broadband increasingly seen as a utility and as important infrastructure
• Realtors report connectivity is the 2nd question a family asks and the 1st question for commercial

* Note: access to fibre adds 3%-5% to home value
What can our communities do today?

• Start early - a fibre build is unique to each community and may take 3+ years for total build out
• Leverage electrical utility - large advantage
• Combine with other public works opportunities
• Have a shovel ready broadband plan - no one size fits all
• Change bylaws to prepare for future development
• Identify community champions
• Understand that this is a conversation about the future
What have we learned?

There is no such thing as a short conversation on Broadband
Future Proof!

Comparisons

Source: Taylor Warwick Consulting Limited/Ventus Developments

- **WiFi / WiMax** (per subscriber)
  - 64 kb/s Phone Line
  - 600 kb/s
  - 3 Mb/s
  - 1.544 Mb/s (T1)
  - 3.7 Mb/s
  - 128 kb/s (ISDN)
- **Copper** (to VDSL 2)
- **Coax** (to Docsis 3)
- **Fibre**
  - 20 Mb/s
  - 100 Mb/s
  - 1 Gb/s

True / Big Broadband

Fibre!
What is Trending?

Internet of Things

Industrial Internet

Internet of Everything
What exactly is the “INTERNET of THINGS”? 

Smart Systems and the Internet of Things are driven by a combination of:

1. SENSORS & ACTUATORS
2. CONNECTIVITY
3. PEOPLE & PROCESSES
These inputs are digitized and placed onto networks.
The interactions between these entities are creating new types of smart applications and services.

Starting with popular connected devices already on the market:

**SMART THERMOSTATS**
- *nest*
  - Save resources and money on your heating bills by adapting to your usage patterns and turning the temperature down when you’re away from home.

**CONNECTED CARS**
- *Car2Go*
  - Tracked and rented using a smartphone. Car2Go also handles billing, parking and insurance automatically.

**ACTIVITY TRACKERS**
- *BASIS*
  - Continuously capture heart rate patterns, activity levels, calorie expenditure and skin temperature on your wrist 24/7.

**SMART OUTLETS**
- *belkin*
  - Remotely turn any device or appliance on or off. Track a device’s energy usage and receive personalized notifications from your smartphone.

**PARKING SENSORS**
- *Streetline*
  - Using embedded street sensors, users can identify real-time availability of parking spaces on their phone. City officials can manage and price their resources based on actual use.
Maria and her daughter are picking up groceries for the week. Using packaging with printed sensors, the two can make sure the ground beef they are purchasing has never reached unsafe temperature levels while on the shelf or being transported.

The packaging also contains a QR code which they can use to query the cow’s RFID tag and bring up its history:

- Where it was raised  - Where it was slaughtered  - Where it was packaged
- What it was fed  - How it was transported  - The last time it was inspected.

A week later the U.S. Department of Agriculture’s Food Safety Service determines ground beef from originating from a regional packing company and sold at a neighboring store is contaminated with E. coli O157:H7. All packages from this distributor change their alert color and notification messages are sent to those shoppers that may have been impacted.
Connected Devices

In 2014 nearly **2 billion** connected devices will be shipped.

This number will grow to nearly **8 billion** devices for the year 2020.

*Not including mobile phones*

- **Home (Consumer)**: 3,745.71 (Devices millions)
- **Transport (Mobility)**: 392.72 (Devices millions)
- **Body (Health)**: 360.03 (Devices millions)
- **Buildings (Infrastructure)**: 1,726.59 (Devices millions)
- **Cities (Industry)**: 1,524.70 (Devices millions)
Revenue opportunities from the Internet of Things:

2014:
- CITIES: $129.8B
- BUILDINGS: $77.0B
- HEALTH BODY: $6.2B
- TRANSPORT MOBILITY: $10.4B
- HOME CONSUMER: $79.4B

2017:
- CITIES: $180.3B
- BUILDINGS: $76.1B
- HEALTH BODY: $18.5B
- TRANSPORT MOBILITY: $29.4B
- HOME CONSUMER: $25.0B

2020:
- CITIES: $397.8B
- BUILDINGS: $48.7B
- HEALTH BODY: $76.1B
- TRANSPORT MOBILITY: $77.0B
- HOME CONSUMER: $180.3B

180+ Billion in Revenue in 2014
By 2020 this opportunity will grow to more than >$1 Trillion
Each community
Various Models
Regional Wholesale Backhaul?
“If we do what we’ve always done, we’ll get what we always got”
Bob Dyrda- Project Lead
bob@albertasouthwest.com
403.627.3373
• Precision agriculture - John Deere *Farm Forward*
• Manufacturing - utilization of robots
• Tele-presence and tele-commuting
• UAV - surveillance, agriculture, engineering
• Healthcare - age in place
• Education - delivery and consumption
• Big data applications
10 jobs that didn’t exist 15 years ago

- Digital Marketing Specialist
- Social Media Manager
- Manager of Spectrum Advocacy - *John Deere*
- Blogger
- SEO Specialist
- App Designer/Developer
- Cloud Services Specialist
- Big Data Analyst
- Market Research Data Miner
Applications

- Cloud based gaming technology- larger than movie industry
- Immersive online educational opportunities
- PhD in Geo physics lands a job with the St. Louis Cardinals baseball team to analyze pitches.
- Immersive online healthcare
- Video conferencing will become ubiquitous- 93% of communication(non-verbal) is missed
- Tele-presence is fast emerging- medicine, multiple cameras, super hd
Disruption

Uber
- The world’s largest taxi company, owns no vehicles.

Facebook
- The most valuable retailer, has no inventory.

Alibaba
- The world’s largest accommodation provider, owns no real estate.

Airbnb

Something interesting is happening.

TOM GOODWIN
Accelerated Change

• Internet usage is moving beyond a convenience to a need—internet of things, connected homes
• Usage increasing rapidly—25% every year (AT&T and Telus)—low—others doubling every 2 years
• Broadband seen as a utility and important infrastructure piece.
• Residential realtors say it is the second question a family asks—commercial it is the first
The Connected Home

- Baby monitoring device connected to mobile phones: 6 Mbps
- Father teleconferencing with colleagues: 12 Mbps
- Wi-Fi-enabled washer and dryer: 12 Mbps
- Fiber-connected fridge: 8 Mbps
- Mother three-way Skyping with relatives across the country: 6 Mbps
- Daughter singing in shower to internet radio: 6 Mbps
- Outdoor home security connected to NG911: 6 Mbps
- 25 Mbps (250 Mbps)
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