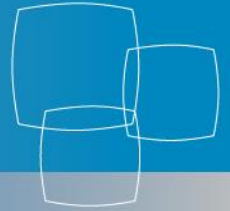




Industry  
Canada

Industrie  
Canada



# Broadband in Canada: Initiatives, Challenges and Lessons

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“Alternatives for Broadband Infrastructure  
and Access Development” Seminar  
Brasilia, Brazil

November 16, 2009



Canada 

# Outline



- **Context – The Canadian National Broadband Task Force (2001) and subsequent developments**
- **Networked Infrastructures**
- **Digital Economy and Broadband Infrastructure Platform**
- **Issues and Challenges – Geography, Demographics, Technologies & Costs**
- **Digital Divides**
- **Broadband Initiatives**
- **What Roles for Governments?**



# Networked Infrastructures



- **Railways (19<sup>th</sup> century)**
- **Highways (20<sup>th</sup> century)**
- **Electricity Grids & Distribution Infrastructure (20<sup>th</sup> century)**
- **Telephone Networks (20<sup>th</sup> century)**
- **Broadband Infrastructure (21<sup>st</sup> century)**
- **Lessons from the Past and Roles Played by Governments**





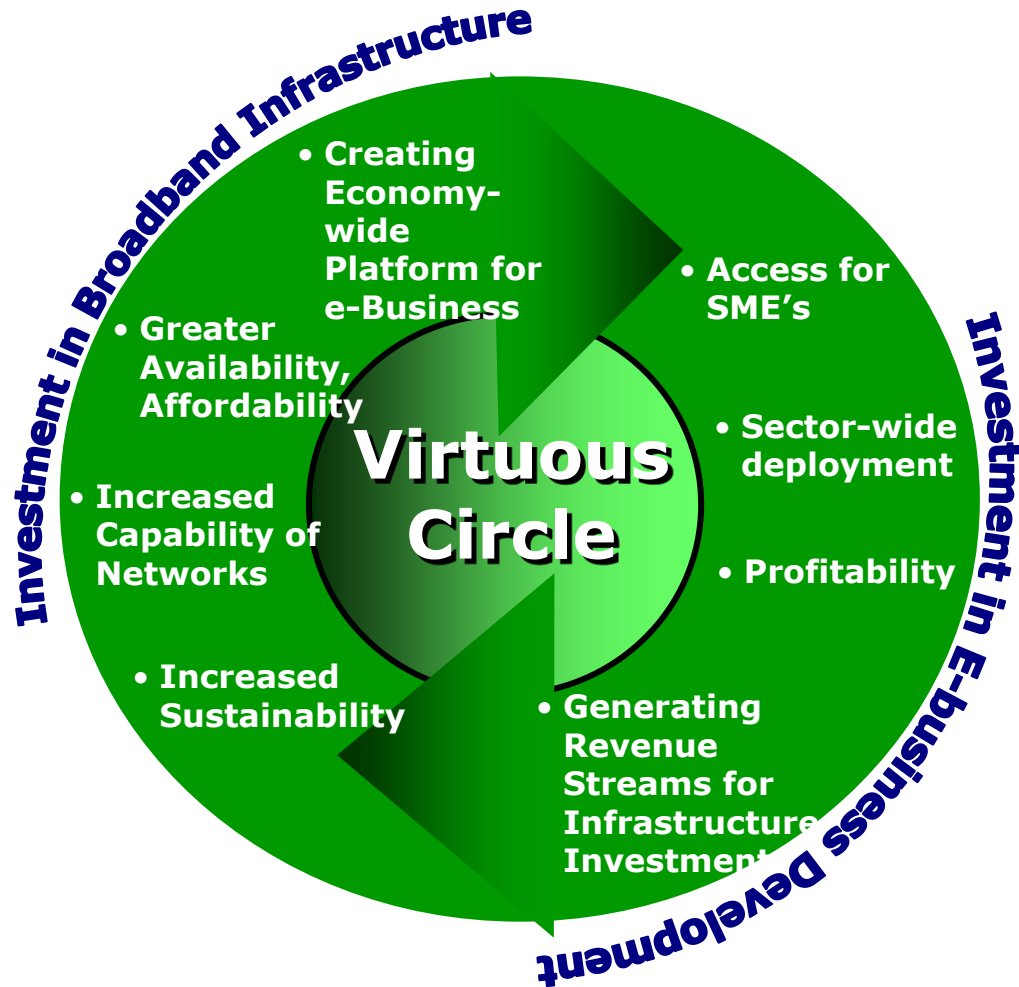
# Broadband Infrastructure is Essential for the Digital Economy

*“Broadband is our central infrastructure challenge. High-capacity networks are to the Twenty-first century what roads, canals and railroads were to the Nineteenth and highways and basic telecommunications were to the Twentieth. Our economy and our future will be driven by how quickly and completely we deploy broadband.”*

FCC Commissioner Michael J. Copps,  
(Fourth Broadband Report to Congress, Sept. 2004)

*“... We will build the roads and bridges, the electric grids and digital lines that feed our commerce and bind us together.”*

President Barack Obama, Inaugural Address, January 21, 2009)





# The Challenge of Defining Broadband

- No internationally agreed upon definition
- The Canadian Radio-television and Telecommunications Commission (CRTC) defines broadband as ‘an always-on, high-speed connection to the Internet’
- The *Broadband Canada: Connecting Rural Canadians* program uses ‘a minimum download speed of 1.5mbps’ as a definition
- Statistics Canada uses a more generic definition of a ‘high-speed connection’ that is based on characteristics
- US Federal Communications Commission (FCC) uses a tiered definition of broadband, starting with 768 Kbps

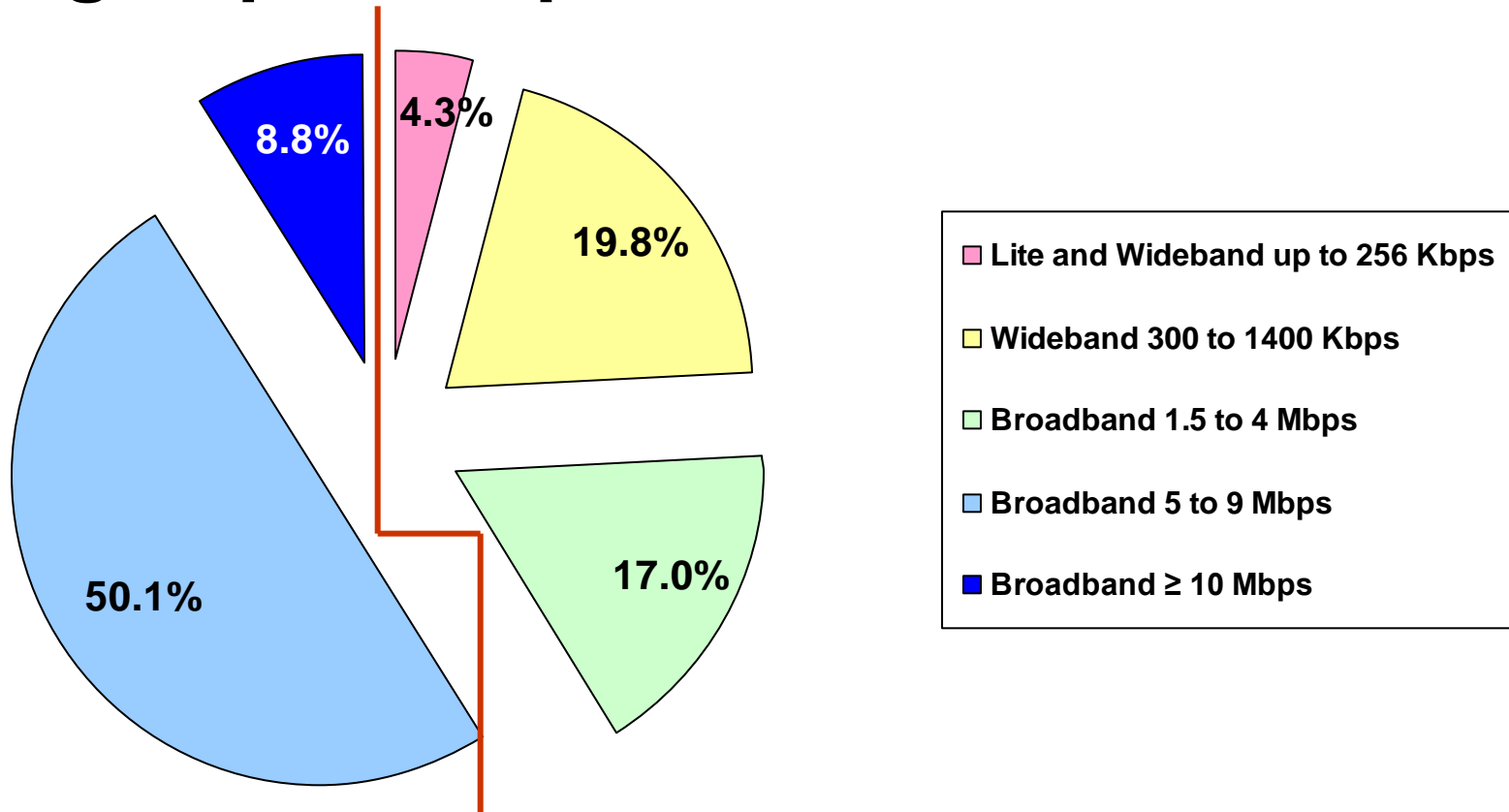
*“Broadband can be defined in myriad ways.”*

- FCC, ‘A National Broadband Plan For Our Future’





# 'High-speed' Uptake in Canada



Types of high-speed Connections in Canadian Households  
(69% uptake with 59% of these connections  $\geq$  5 Mbps)

CRTC *Communications Monitoring Report* 2009 (2008 data)



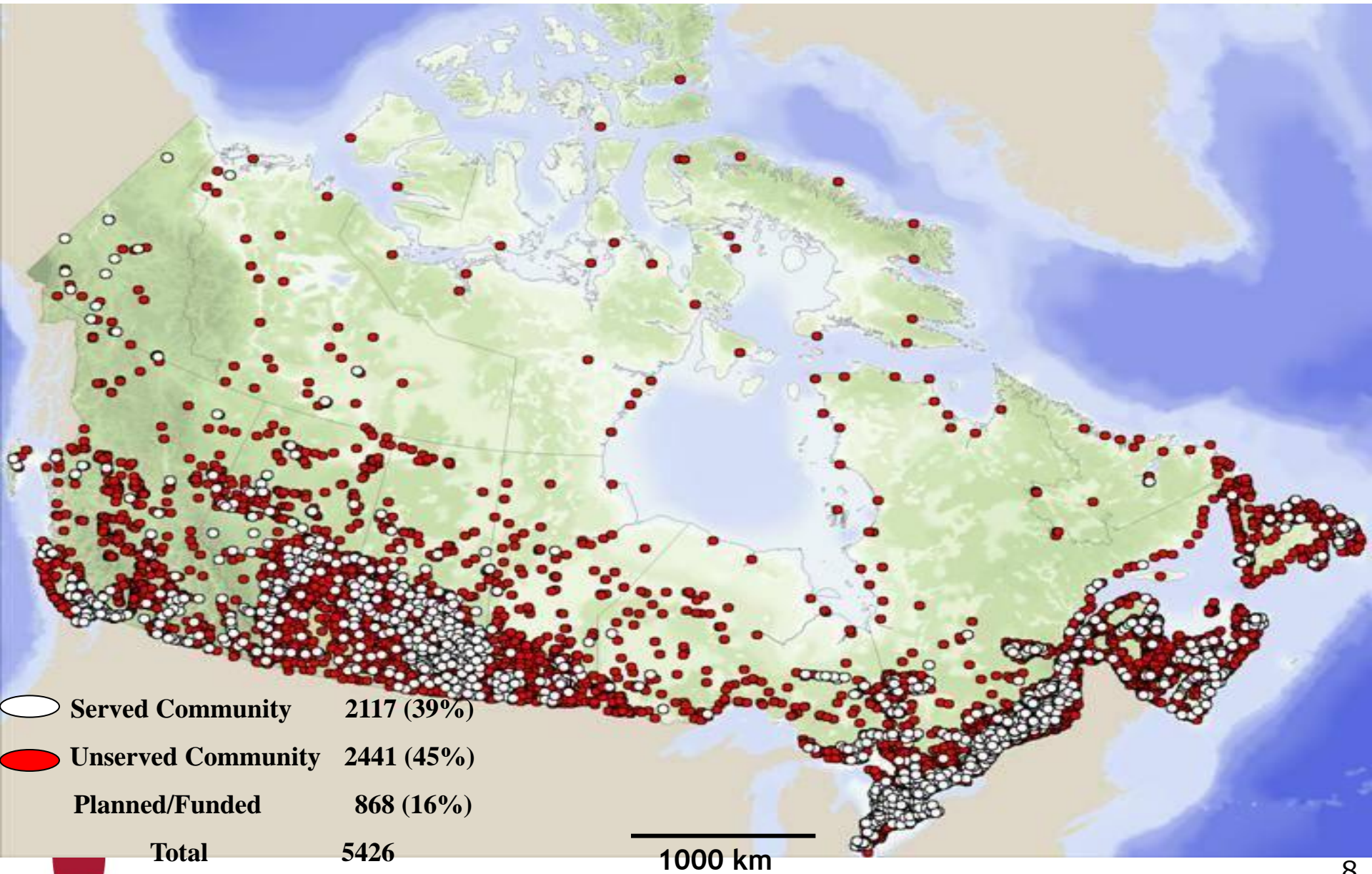


# Digital Divides - Various Kinds

- **Concepts of the digital divide**
  - Geographic (urban vs. rural) and Demographic
  - Socio-economic
  - Divides due to technological change (dial-up/broadband)
- **Digital Divides within and between Countries**
- **Need to measure the digital divide over time and assess whether it is growing**
  - Problems of Measurement (Availability vs Penetration Indicators)
  - Problems of Comparability across countries
  - Use of OECD and ITU Indicators



# In Canada, Broadband Access Is Uneven

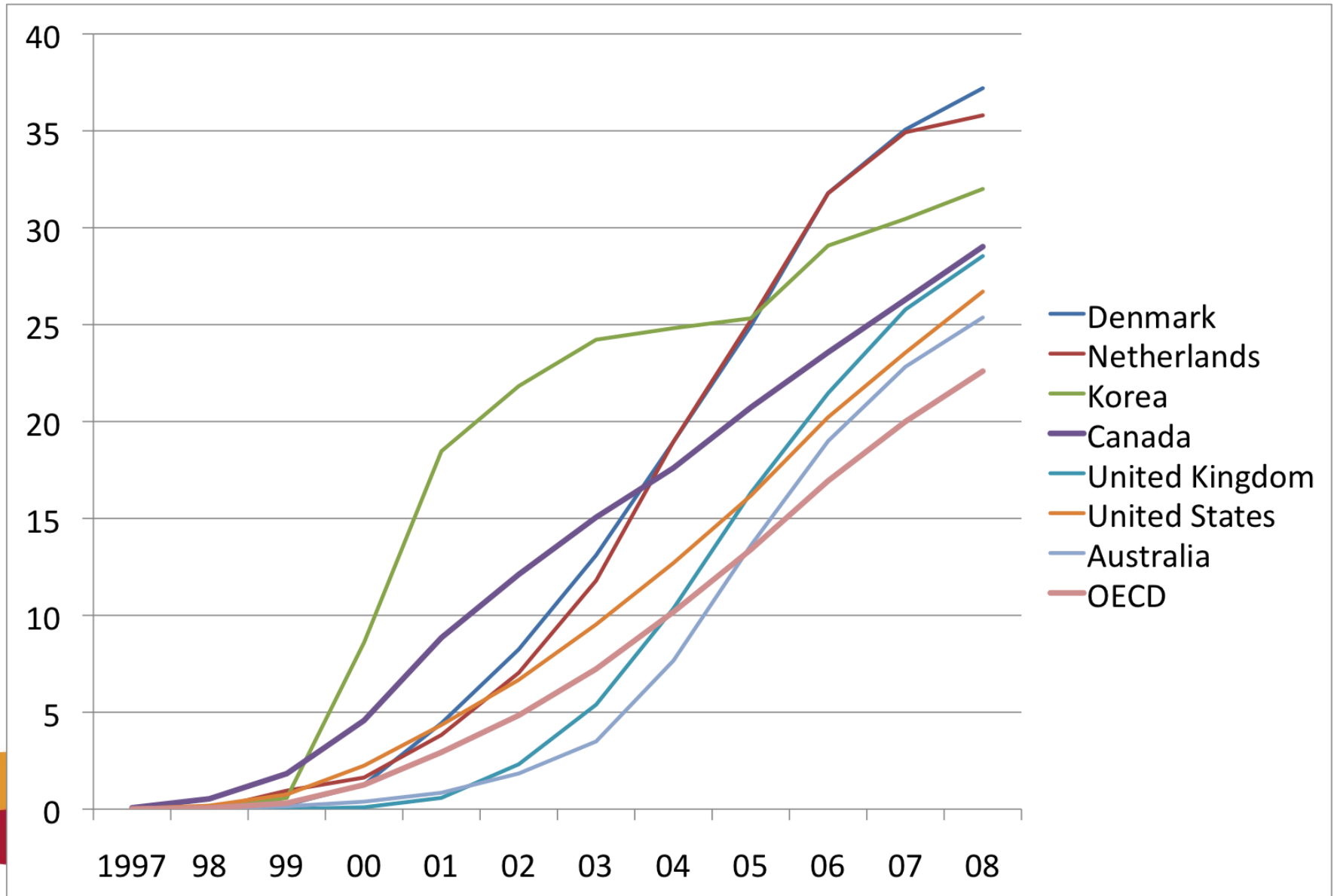


As of June 2005



# OECD Comparisons (subscribers/100)

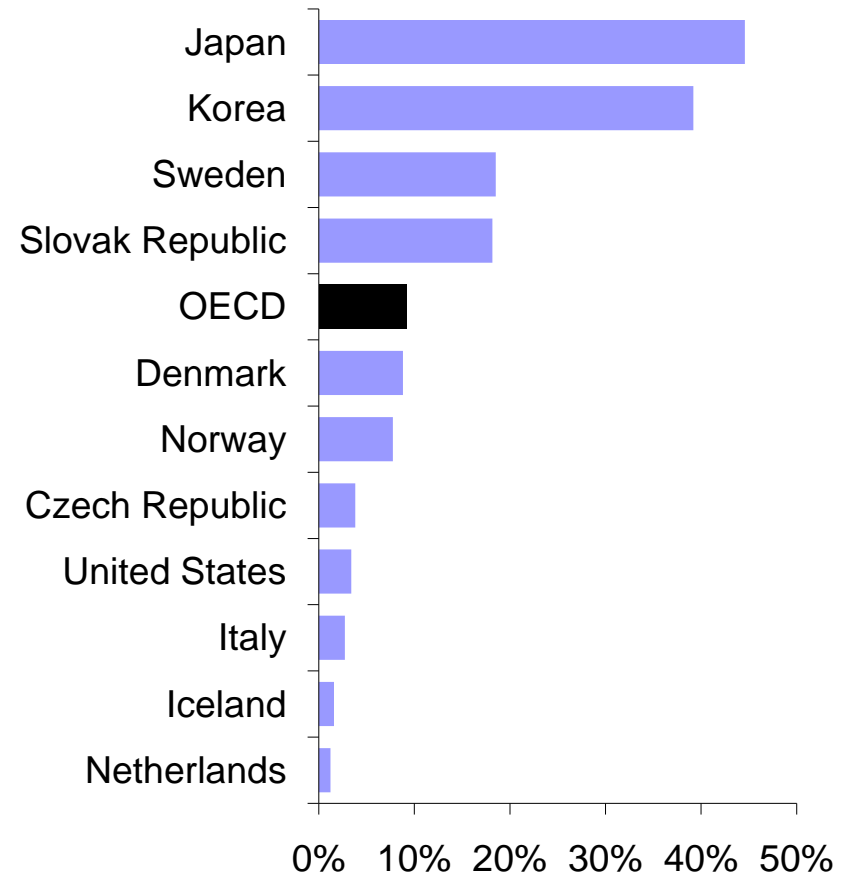
Source: OECD Broadband Portal





# Percentage of fibre connections in total broadband among countries reporting fibre subscribers

- **December 2008 early estimates for OECD**
- **Total BB: 268 million**
  - DSL: 60%
  - Cable: 28%
  - Fibre: 10%
  - Other : 2%
- **FTTH penetration**
  - Japan : 11.3 per 100
  - Korea : 13.8 per 100
  - Sweden: 6.5 per 100
- **FTTH as percentage of total**
  - Japan: 48% of all bb
  - Korea: 43% of all bb
  - Sweden: 20% of all bb
  - OECD: 10%



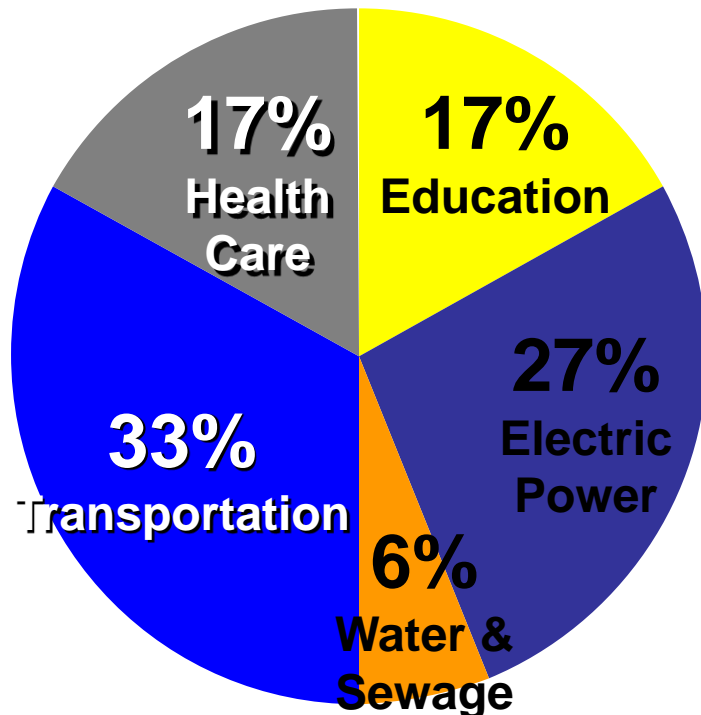
Source: OECD Broadband Portal

June 2008



# Public investments in Infrastructures

**Total Capital Expenditure  
by Asset - \$34 B**



- **Broadband is essential infrastructure – needs investment comparable to other infrastructure**
- **Average annual spending for Broadband Pilot Program and National Satellite Initiative (\$86 M) equivalent to just 0.25 % of total \$34B infrastructure investment**

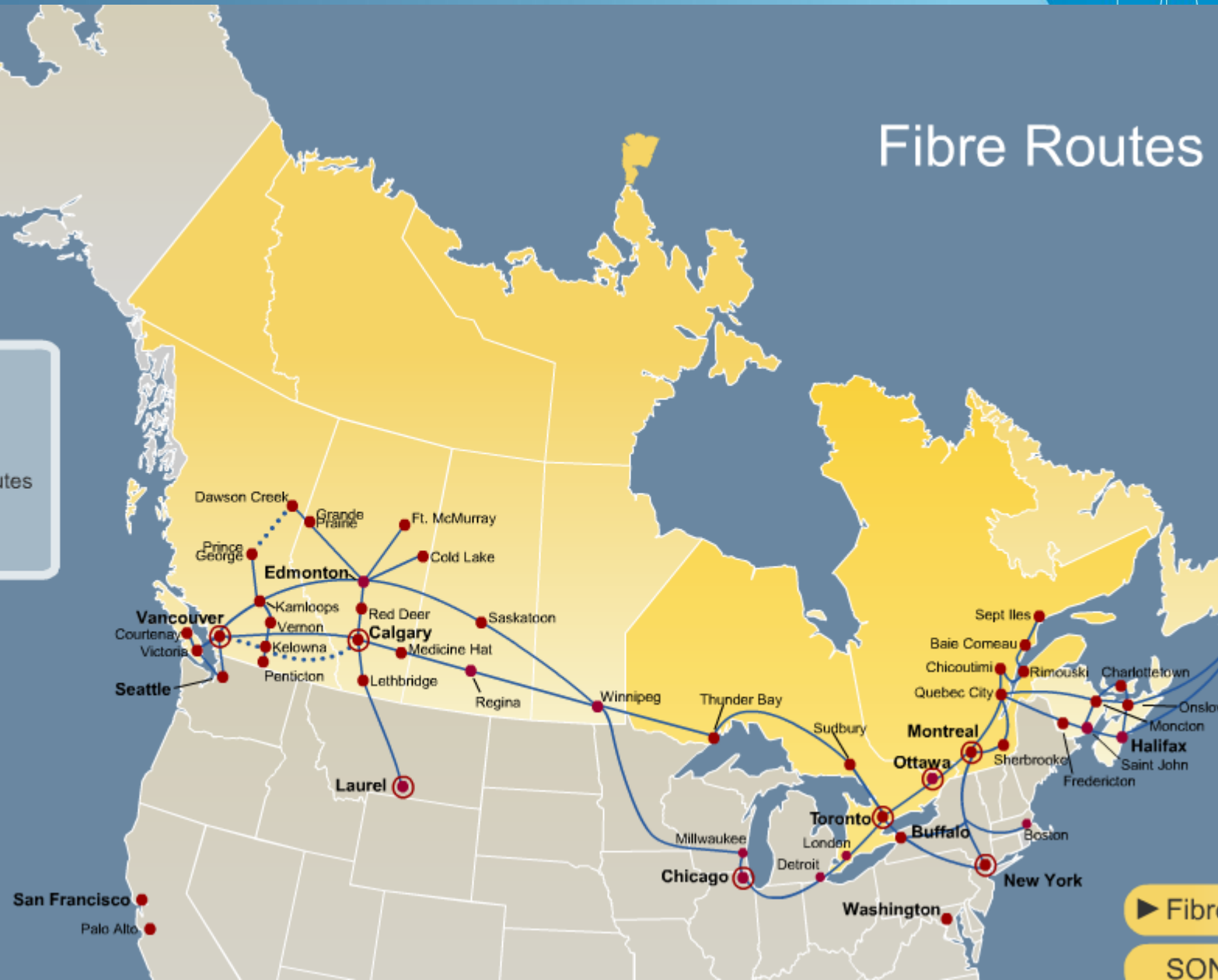
Source: Statistics Canada, Capital Expenditure by Type of Asset, 2003



# Fibre Routes

**Legend**

- Cities with Colocation
- BCE Nexxia's Fiber Routes
- Leased Fiber Routes



▶ Fibre  
SON



# Broadband Investment in Canada – Federal Government

## *Broadband Canada: Connecting Rural Canadians* initiative:

- \$225 million over 3 years (2009 – 2012)
- For unserved /underserved communities
- Funding covers up to 50% of project costs, applicants must find funding for the rest
- 1.5 Mbps download speed
  - “For unserved Canadians, this is a dramatic improvement over no service or only dial-up service.”





# Broadband Investment in Canada – Provincial and Territorial Governments

**Most Provinces & Territories have or have had  
broadband network deployment initiatives:**

- **Alberta - SuperNet [Province, Bell Canada & Axia] (\$193/300 million) / operational since 2005**
- **Nova Scotia - Broadband for Rural Nova Scotia Initiative [Province, Fed. Govt., 3 ISPs] (\$19.6/14.5/41.4 million)**
- **Saskatchewan - Rural Infrastructure Program [Province with SaskTel] (\$42.4/220 million)**
- **Nfld. & Labrador - Government Broadband Initiative [Province, Eastlink & Axia] / under negotiation**





# Next Generation Networks

- **Japan**
- **Korea**
- **Singapore**
- **Sweden**
- **Netherlands**
- **New Zealand**
- **Australia**
- **United States**

## ***FTTH/FTTP networks***

- Offer speeds of 100 Mbps, up to 1 Gbps (Korea)
- Enable healthcare, education, smart grids – more than just Internet access





# Broadband Investment in Australia

- **National Broadband Network (NBN) announced April 2009, 8 year roll out schedule**
- **Largest infrastructure project in Australian history - A\$43 billion projected total investment (part of stimulus package)**
- **Will provide FTTP to 90% of Australian homes, schools, businesses (up to 100 Mbps)**
- **Next Generation terrestrial or satellite wireless connections to remaining 10% (up to 12 Mbps)**
- **A\$4.7 billion committed by Australian Government as an initial investment**
- **New company set up by Australian Government to deploy and manage the NBN - public-private sector partnership model**



Selected Govt. expenditure on infrastructure (Stimulus Packages *or in Parallel*)

Country	US\$ Billion	
<i>Australia</i>	<i>30 (PP over 8 years)</i>	<i>FTTH, 90% Pop. 100 Mbps, 10% Pop 12 Mb</i>
Canada	0.211 [C\$225M over 3 years]	Broadband Canada: Connecting Rural Canadians Program
Finland	0.096 (of 266 PP)	Extend 100 Mbps to every HH by 2016
France	n.a. (0.02 TGV only)	<i>France Numerique: High speed to every HH by 2010 (max price \$47)</i>
EU	1.46	Rural community focus - 100% coverage HH 2010
Germany	0.150 (est)	Broadband to all areas by 2010. 50 Mbps
<i>Greece</i>	<i>5.47 (PP over 7 years)</i>	<i>National fibre network</i>
<i>Ireland</i>	<i>0.106</i>	<i>Target underserved areas, 1.2 Mb down- 200kb up by 2012</i>
Japan	31 (not comparable)	Intelligent transport, health IT infrastructure, e-gov etc
<i>Korea</i>	<i>25 (by 2012)</i>	<i>IT Boost aims at 1 Gbps by 2012</i>
Lux.	0.258	Accelerate Luxconnect
Spain	na (expenditure on NGN)	Up to 30 mb throughout Spain (at cost oriented prices)
<i>NZ</i>	<i>1.7 (PP Govt 50%)</i>	<i>100 Mb to 75% Pop</i>
Portugal	0.066	Subsidised investment in NGN broadband (+0.088 schools)
UK	0.146 (Yorkshire only)	2 Mb to every HH by 2012
US	7.2	BTOP & BIP- Unserved/Underserved areas, schools; libraries, healthcare

**Singapore and Malaysia: \$ 672 m and \$4 billion respectively. FTTH rollouts. 100 Mbps - 1 Gbps**



# Broadband Resources: Canada and Beyond

- <http://www.oecd.org/sti/ict/broadband>
- <http://www.ic.gc.ca/broadband>
- <http://www.broadband.gov>
- <http://www.broadbandusa.gov>
- [http://www.dbcde.gov.au/communications\\_for\\_business/funding\\_programs\\_and\\_support/national\\_broadband\\_network](http://www.dbcde.gov.au/communications_for_business/funding_programs_and_support/national_broadband_network)

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