Can Competition Help to Reduce the Digital Divide?

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The Need

• Information: finding, sharing, using
  – Needed to participate in the digital economy
  – Rural and remote areas have barriers of distance and cost

• Connectivity
  – Can overcome barriers of distance
  – Can yield significant social and economic benefits
    • Education and training
    • Health care
    • Fishing, mining, construction
    • Businesses and organizations
    • Transportation and logistics
    • Emergency services, e.g. video from drones of natural disasters

• Huge increase in demand during the pandemic

“The services provided to northern communities disconnect us from essential services like mental health support, education, and other opportunities. It results in feelings of isolation and as though we aren’t a part of Canada.”

-- Rural Internet user in Northern Canada
U.S. and Canada: Remote regions

Aboriginal peoples of North America's Boreal region

North America's Boreal region

Alaska Middle-Mile Infrastructure
Existing and Proposed in 2016
- Fiber
- Microwave

Population density
- 50 and above
- 10 to 50
- 5 to 10
- 0.4 to 9

Community aggregator model
- Internet access
- Fixed voice service
- Fixed voice service and Internet access
The Problem

• Serving unserved and underserved populations
• Serving rural and remote communities
  – Relatively high cost, low revenue regions
  – Small communities
  – Young population, crowded households
  – Seasonal/low incomes
• Major incumbents have duty to their shareholders, so limited incentive to serve these regions
  – But may also be reluctant to give up these franchises!
• Small providers may have limited access to capital
Competition: Part of the Solution

• Some competitors:
  – may offer innovative technical solutions
  – may be able to reduce installation and operating costs
  – may understand market, terrain, customer needs
  – May have local contacts as sources of employees, outreach

• Incumbents may discourage competitive entry
  – May anticipate reduced revenues
  – May claim they will have no incentive to invest or upgrade
  – BUT problems with reliability and affordability lead to consumer requests for additional providers
  – Also growing demand for broadband may exceed capacity projections by incumbent
Competition in Rural and Remote Regions

• Facilities-based competition
  – Expensive duplication?
  – Redundancy?
    • Fiber cuts – undersea, permafrost, muskeg, etc.
  – But different technologies offer opportunities: intermodal competition
    • Mobile services
    • Fixed wireless
    • Satellite connectivity, now especially LEOs
  – May also share facilities:
    • Mobile towers, poles, ducts
  – Fiber operated by electric utilities, railroads
Open Access

- Using existing facilities, especially fiber
  - Commercial fiber networks
  - Dark fiber – extra fiber strands
- Middle mile/backhaul
- FTTN, FTTP
- Canadian federal funding requires wholesale access
- Requires regulation
  - Terms and deadlines for access
  - Pricing
  - Alaska example

“I am happy with my recent switch to [a wholesale-based competitor]. I only wish there were more companies like them, willing to provide high quality services at lower prices.”

-- Rural Internet user
Disruption and Innovation

• Part of the continuing evolution of telecom technologies and services
• Starlink:
  – Very popular in rural Alaska and northern Canada
    • Residential use; some purchased by communities
      – Like picking up pizza boxes when they arrive!
    • Credit cards on ferries
    • Fishing boats
    • Construction crews
    • Emergency responders: drone video of disasters, etc.
• Other LEOs:
  – OneWeb, Telesat, Amazon, Google, etc.
• Short term or interim solutions?
  – Will be replaced by fiber?
  – Will become back-up?
GEO satellite antennas
- signals redistributed in community

LEO satellite antenna
- typically for individual household or business

Submarine fiber
Competition: Innovation in Technologies and Services in Rural/Remote Regions

• Mobile phones in developing world
  – Not only cheaper networks to install than wireline
  – Competition: cheaper phones, prepaid service

• Northern Canada: Indigenous Providers
  – FTTP in Cree communities along James Bay
  – Internet high school for adults to complete GED
  – Northwest Territories (NWT)
    • VOIP phones for community in NWT
    • Fixed broadband wireless for business in Yellowknife
    • WiFi phones for free access in homeless shelter

  – Alaska:
    • “smart” renewable power
    • Wind turbines outside villages controlled by computers at UA in Fairbanks
Creating Incentives

• Subsidies for users
  – Institutional: U.S. E-rate and rural health care programs
    • Subsidy goes to the user, NOT the provider
    • Approved schools, libraries, clinics request competitive bids
      – Examples: Oregon, Alaska
  – US Lifeline and Affordable Connectivity Program (ACP)
    • Individuals or households qualify for discounts
    • Portable subsidy: can be used with any provider
    • Provider is reimbursed

• Regulation
  – Requiring “reasonable rates” to allow competition
  – Setting terms and timelines for competitive access
Policy Challenges

Canadian Policy Direction (February 2023):

(a) encourage all forms of competition and investment;
(b) foster affordability and lower prices, particularly when telecommunications service providers exercise market power;
(c) ensure that affordable access to high-quality, reliable and resilient telecommunications services is available in all regions of Canada, including rural areas, remote areas and Indigenous communities …
(e) reduce barriers to entry into the market and to competition for telecommunications service providers that are new, regional or smaller than the incumbent national service providers….”
Smart Communities and Northern Ingenuity

“As Iñupiaq people ... we adapt. We always adapted.”
Thank You!

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