

Progress and Challenges for Remote and Indigenous Broadband

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*ISER: More than 60 years
of public policy research*



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Infrastructure Funding: Billions for Broadband!

- **US:**
 - About \$97 billion in federal funds
 - Also some state programs
- **Canada:**
 - CRTC Broadband Fund
 - Up to C\$675 million over 5 years
 - ISED
 - Universal Broadband Fund: \$3.225 billion
- **Now questions become:**
 - Are there other barriers to bridging the digital divide?
 - Whether funded projects are sustainable
 - What happens after infrastructure is installed?

AND

WHAT DIFFERENCE DID IT MAKE?

Billions for Broadband!

Funding Program	Federal Agency	Amount
BEAD: Broadband Equity Access and Deployment Program	NTIA	\$42.5 Billion
ARPA: American Rescue Plan Act	Treasury	\$20 Billion
RDOF: Rural Digital Opportunities Fund	FCC	Up to \$20 Billion
CPF: Capital Projects Fund (ARPA)	Treasury	\$10 Billion
Tribal Broadband Connectivity	NTIA	\$3 Billion
Reconnect Round 4	USDA	\$1.15 Billion
Middle Mile Program	NTIA	\$1 Billion
Total		~ \$97 Billion

Connectivity: Necessary but not Sufficient

Context

Economic:

existing economic activities

Cultural

Languages, traditions such as consulting with elders

Infrastructure:

Electricity: availability, reliability, affordability

Transportation: roads, aviation, public transportation

Content

Relevance

To local population and conditions

Languages

Is content available in local languages?

Capacity

Digital literacy:

Finding information

Assessing quality and veracity of content

Using popular software and apps

Organizational capacity

- Putting information tools to use



Challenges: Sustainability

- **Challenge:**
 - Covering operating and maintenance costs
 - **Strategies:**
 - Building costs into operational budgets
 - Subsidies
 - Providing services to anchor tenants
 - Charging users
- **Funding:**
 - Capex vs. Opex
 - Short term vs. longer term
- **Subsidies**
 - May go to providers (e.g. for high cost regions)
 - May go to users:
 - Individuals, households, institutions

Subsidy Programs

- **U.S. has several programs that can contribute to operating costs**
 - Subsidies may go to providers or directly to users
 - High Cost Fund – for carriers in rural and remote regions
 - Institutional subsidies for major public service customers
 - E-Rate: schools and libraries
 - Rural Health Care: rural clinics and hospitals
 - Institutions can become anchor tenants – source of predictable revenue
 - **ACP: Affordable Connectivity Program**
 - Discounts for broadband access: \$30 per household; \$75 per Tribal household
 - BUT no new Congressional funding – UNSUSTAINABLE!
- **Canada – has no federal Opex programs**
 - Some funding for telemedicine from provinces
 - Some industry support:
 - voluntary participation
 - Connecting Families

Small/Indigenous Providers

- **Canada: Indigenous ISPs**
 - Provide “first mile” services in some communities
 - Internet, some also VOIP and mobile
- **U.S.: Rural telecom co-operatives**
 - Originally established to provide telephone service with REA loans
- **Challenges:**
 - **Qualifying for funding as providers**
 - U.S.: ETCs (Eligible Telecom Provider)
 - Collateral and matching funds
 - **Access to poles, conduit**
 - Delays, pricing
 - Canada: Barriers to Rural Broadband addressed in CRTC hearing
 - **Pricing services**
 - High costs for access to backhaul
 - U.S.: no regulation of middle mile pricing (Alaska)
 - **Partnerships without Equity**
 - Alaska: carriers partner with Native corporations/organizations to qualify for funding
 - Yukon: carrier partners with group of First Nations organizations
BUT Native participants have no control and no equity

Challenges: Engagement

- **Consultation with community**
 - Explain proposed project
 - Discuss benefits including new or improved services, possible jobs
 - Explain requirements including access to land or facilities
- **Get “buy-in” from community**
 - Donated facilities, people to be trained, etc.
- **U.S.:**
 - FCC requires consultation for projects on Tribal land
 - Appears to be little enforcement
- **Canada:**
 - CRTC now requires evidence of consultation for Broadband Fund applications
 - Previously just “attempt to consult”
- **Neither country requires local training or hiring to receive federal funding**

Challenges: Digital Literacy

- **Training for Users**
 - Use of popular software, platforms, apps
 - Searching for information
 - Evaluating content
 - Privacy, security of personal data
- **Infomediaries (digital navigators)**
 - To help users
- **Technical skills for jobs:**
 - Installation of equipment
 - Operation and maintenance
 - Local customer support
- **Funds for user training**
- **and support**
- **Training and hiring of locals for jobs**



Technology and Competition

- Incumbents argue for no competition
 - Competition: facilities and services based
 - Canada: Northern incumbents assume no competition when applying for government funding
 - U.S.: federal funding prioritizes fiber
- **BUT:**
 - LEO services are proliferating (Starlink and some others)
 - Fiber backbone subject to cuts
 - Ocean ice scouring in Alaska; permafrost in Canada
 - So satellite backup is required



Need for Research

- **Need for evaluation of funding initiatives**
- **Rigorous research designs**
 - Starting now!
 - Before/after, multiple measure field research
- **Demographic data**
- **Historical data**
- **Sustainability analyses**
- **Important for:**
 - Identification of success factors
 - Identification of gaps and barriers
 - Evidence for policies and regulation
- **Sources of research funding?**
 - From project funds
 - From government, other agencies
 - From foundations
 - Other?



Research...

What difference did it make – or could it make?

Natural Disasters

Monitoring climate, water levels, weather

Coordinating relief activities, monitoring damage

Distance education:

How to improve completion rates at all levels

How online courses can enhance rural education

What difference these offerings can make:

In future careers? In savings? In economic impact?

Telemedicine and Telehealth

Analysis of cost savings

Analysis of patient impact

Businesses and organizations

Savings in time and/or money

Employee recruitment/retention

New economic activities or jobs

Monitoring renewable energy, crops, fisheries



Conclusions:

- **Barriers beyond infrastructure funding**
 - Sustainable business models
 - Subsidies where necessary
 - Engagement with communities, users
 - Promotion of competition: facilities and services
 - Digital skills
 - Disrupting technologies
- **Still many unanswered research questions:**
 - Can short term outcomes contribute to long term benefits?
 - What do we know about diffusion and adoption; do demographics of adopters change over time?
 - How should externalities or indirect benefits be assessed?
 - Under what conditions is connectivity necessary but not sufficient to achieve socio-economic benefits?
 - What conditions are necessary for networks to be sustainable?

Mahalo!

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