Broadband Policies for the North: A Comparative Analysis

Heather E. Hudson

Director,

Institute of Social and Economic Research (ISER)

University of Alaska Anchorage

UAA UNIVERSITY of ALASKA ANCHORAGE

Historical Context

U.S. and Canada

- Both have recognized the importance of communications for social and economic development since the 1970s
- Both recognize needs and problems of reaching rural and isolated communities
- 1970s: satellite pilot projects
  - US: ATS-1, ATS-3, ATS-6 (Alaska, Hawaii, Rocky Mtn. States)
  - US and Canada: CTS (NASA and CRC)
- 1990s:
  - U.S. : National Information Infrastructure (NII): Al Gore, 1990s
  - Canada: Information Highway: 1990s
- 2009: Both announced broadband stimulus funding
- 2010/11: Both re-examined basic service to determine whether to include broadband

- **Greenland:**
  - Danish colonial model: Posts and Telecoms as essential services
  - Recent upgrades for domestic and international services

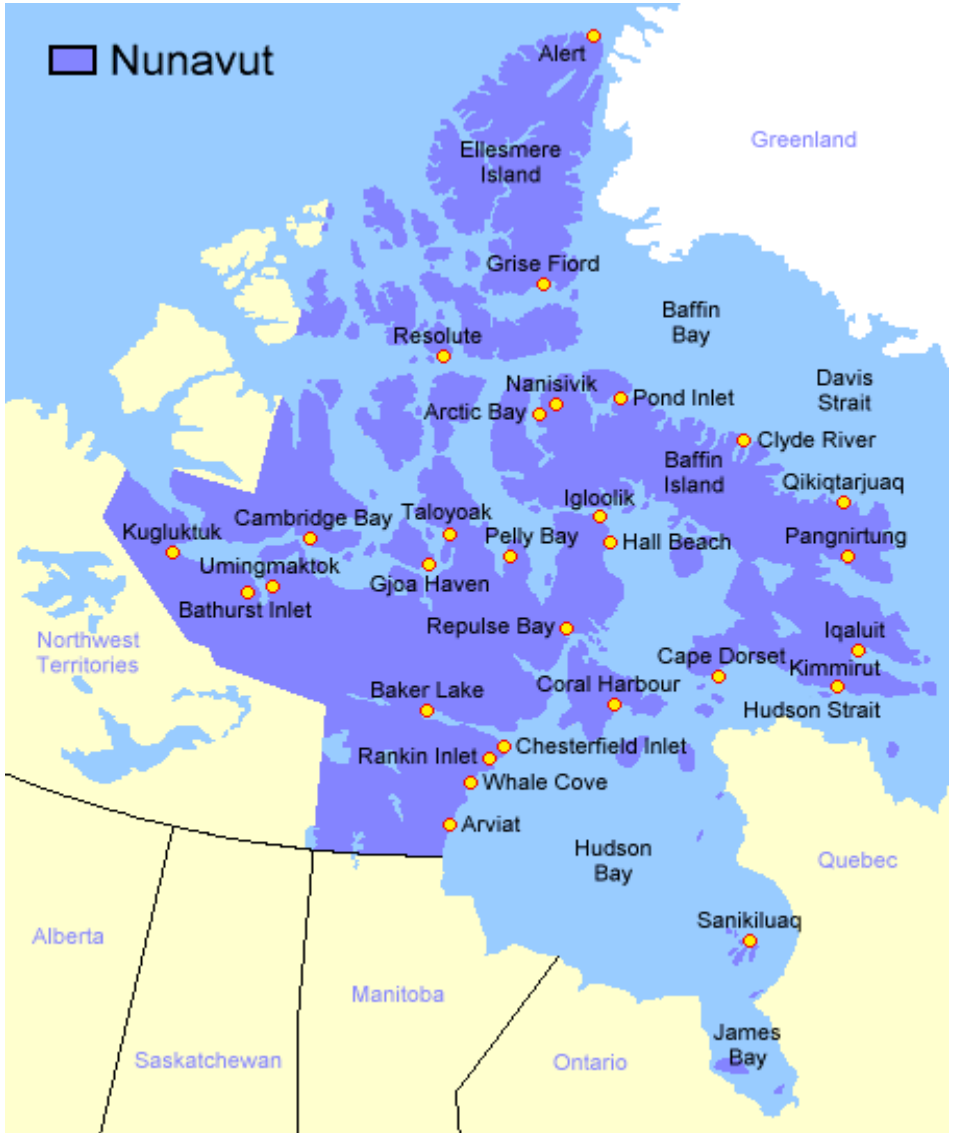
Canadian North

Remote Canadian North

- **Vast remote areas, small settlements**
  - **Yukon: pop: 34,000**
  - **NWT: pop. 44,000**
  - **Nunavut: pop. 30,000**
  - **Nunavik: pop. 12,000**
  - **Remote indigenous communities in provinces: ~30,000 ?**

- **Telecom Sector in the North: generally monopoly carriers**
  - **Northwestel (Yukon, NWT, Nunavut)**
  - **Bell Aliant (Northern Quebec, Northern Ontario, Nfld and Labrador)**
  - **Telus, Sasktel, MTS: Northern regions of BC, Alberta, Saskatechewan, Manitoba**
- **Limited competition, some resale in these areas**
- **Southern regions largely deregulated**

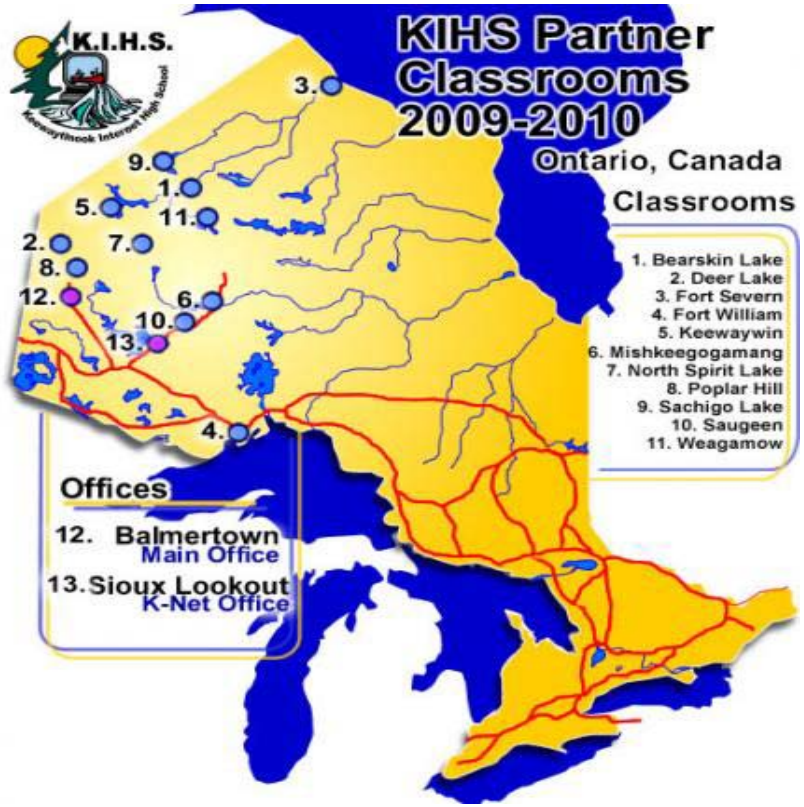
Nunavut: Qiniq Satellite Network



- QINIQ means "To Search".
- Advanced satellite and wireless network
- Broadband Internet services to all 25 communities in Nunavut Canada across 2 million sq. km.
- Mesh network: Anik F2, C band
- Local fixed wireless
- Operated by SSI Micro (based in Yellowknife)
- Local ISPs (called CSPs – Community Service Providers)

Much of Canada south of the tree line is also remote (without road access)

Nunavik: Arctic Quebec



KNet:

Native-owned provider in remote NW Ontario:

- High school completion for isolated students using Internet
- Telemedicine network
- Community WISPs
- Mobile phone services

Online marketing of native crafts

Canada: Extending Rural Broadband

- **Stimulus: "Connecting Rural Canadians"**
  - Extend "essential infrastructure" in remote and rural areas
  - C$225 million awarded
  - Preceded by mapping project
  - Requires 50% match (except First Nations)
  - Requires 5 year sustainability plan
- **Provinces:**
  - Federal/provincial partnerships: Eastern Ontario
  - Public/private partnerships:
    - Alberta, New Brunswick, Nova Scotia, PEI
- **Small fund for high cost areas:**
  - Collected from all carriers by regulator (CRTC)
  - Based on cost studies by rural carriers
  - Does not require broadband

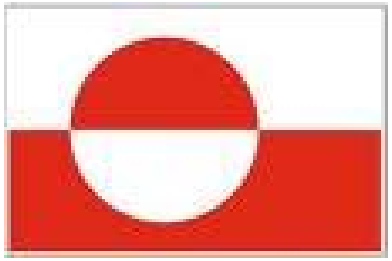
Broadband Access Policies

Canada: New Broadband Targets

- **CRTC Decision: May 2011 (CRTC 2011-291):**
  - **All Canadians to have access to broadband with *actual* speeds of 5 mbps downstream and 1 mbps upstream by end of 2015**
  - **Major implications for North where speeds are lower and service less reliable**
- **BUT:**
  - **Subsidies still available only to incumbents**
  - **No targets for affordability**
  - **Little enforcement of QOS (quality of service)**
  - **Little information on barriers to adoption**

Canada: Recent Policy Initiatives

- **Industry Canada: Digital Economy**
  - **"Improving Canada's digital advantage"**
  - **Focus on e-commerce, trade, innovation**
- **Study on Arctic Communications: April 2011**
  - ***Arctic Communications Infrastructure Assessment Report***
  - **Current facilities, pricing, government needs assessment**
- **Feasibility study for northern fiber: Nunavut**
  - **RFP from Nunavut Broadband Development Corp.**
  - **Requests info on technology, landing sites, costs, financing**

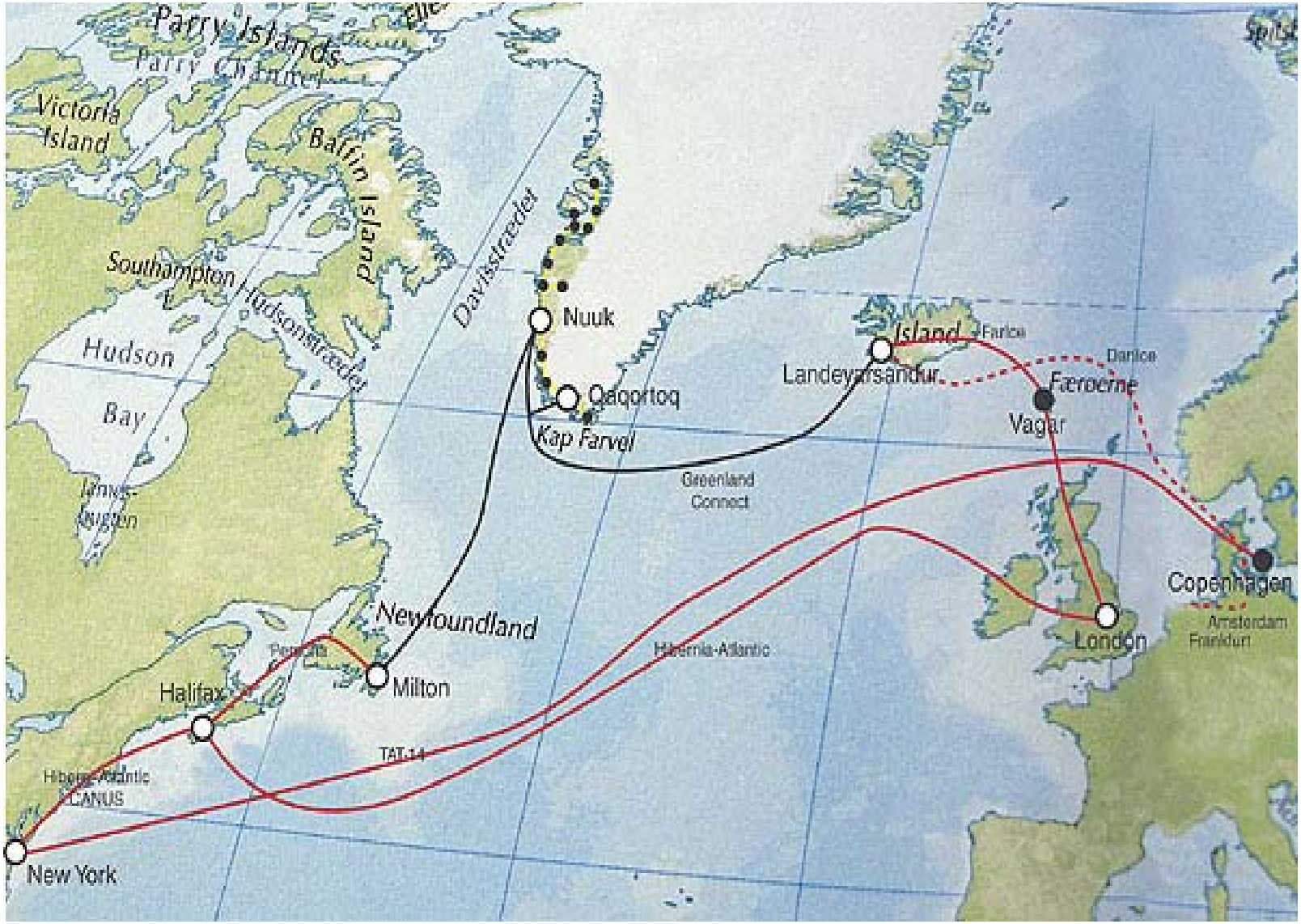


Greenland

- Population about 57,600
  - 80% indigenous: Inuit – related to people of Nunavut
  - Clustered in communities along the coast
- Home rule since 1979
- Still heavily subsidized by Denmark
- Referendum in support of independence: 2008

- TeleGreenland: government-owned monopoly
  - PTT model: Danish legacy
  - Viewed as “cash cow” by Greenland government
  - Pays dividend of DKK 30 million ($US 5.5 million) to government per year

Greenland Connect Submarine Cable



Greenland Facilities

- **Greenland Connect: Submarine fiber linking Greenland with Iceland and Europe**
  - **Links with Newfoundland and North America**
  - **Replaces satellite for most international traffic**

- **Upgrades to domestic network**
  - **Broadband microwave linking most communities**
  - **Satellite still used in far north**
  - **Local service via DSL**

Makes Greenland the center of the world?

Greenland: Domestic Broadband

- **Broadband Pricing: Fixed**
  - **Packages: 512 kbps, 1 mbps, 2 mbps, 4 mbps**
  - **All with usage caps**
  - **Prices from per .30 DKK ($.055) MB to .03 DKK ($.006) per MB in Nuuk and Qaqortoq (fiber landing sites) ,**
  - **Prices from .42 DKK ($.076) per MB to .11 DKK ($.02) per MB in remote communities**
  - **No discounts for schools**
  - **No universal service funds**
- **Mobile Broadband (where available)**
  - **1 Mbps: .52 DKK ($.09) per MB**
  - **2 Mbps: .35 DKK ($.06) per MB**
- **Limited domestic resale**
  - **Fixed wireless broadband in Nuuk**

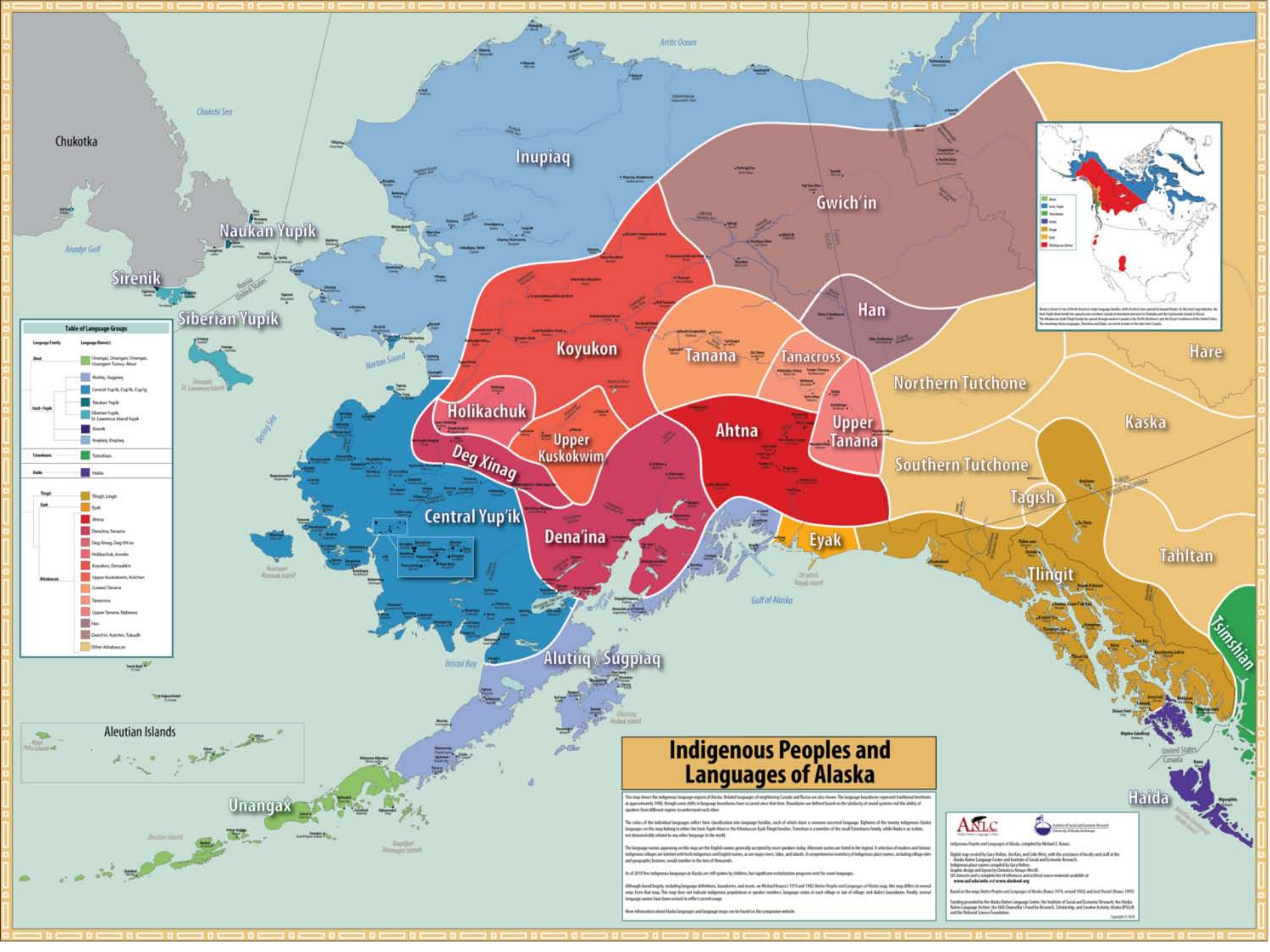
More capacity BUT many customers can't afford much broadband

- **Schools, university, municipalities all say they have to restrict access to afford services**
- **Need strategies to maximize usage, not maximize profit**

Alaska: Context

- Largest state: 571, 951 sq. miles
- Population: >710,000
- Lowest population density: 1.2 persons per sq. mile
- Half pop. in Anchorage

- Alaska natives: 14.8% of population
- 6 major linguistic/cultural groups, 226 tribes
- 2/3 live in more than 200 villages
- Very limited road system
- Many villages accessible only by boat or bush plane



Indigenous Peoples and Languages of Alaska

This map shows the indigenous language regions of Alaska. Related languages of neighboring Canada and Russia are also shown. The language boundaries represent traditional territories at approximately 1900, though some shifts in language boundaries have occurred since that time. Boundaries are defined based on the similarity of sound systems and the ability of speakers from different regions to understand each other.

The colors of the individual languages reflect their classification into language families, each of which share a common ancestral language. Eighteen of the twenty indigenous Alaska languages on this map belong to either the Inuit-Yupik-Aleut or the Athabascan-Eyak-Tlingit families. Tsimshian is a member of the small Tsimshianic Family, while Haida is an isolate, not demonstrably related to any other language in the world.

The language names appearing on this map are the English names generally accepted by most speakers today. Alternate names are listed in the legend. A selection of modern and historic indigenous villages are labeled with both indigenous and English names, as are major rivers, lakes, and islands. A comprehensive inventory of indigenous place names, including village sites and geographic features, would number in the tens of thousands.

As of 2010 five indigenous languages in Alaska are still spoken by children, but significant revitalization programs exist for some languages.

Although based largely, including language definitions, boundaries, and extent, on Michael Krauss's (1974 and 1982 Native Peoples and Languages of Alaska map, this map differs in several ways from that map. This map does not indicate indigenous populations or speaker numbers; language status in each village or size of village; and dialect boundaries. Finally, several language names have been revised to reflect current usage.

More information about Alaska languages and language maps can be found on the companion website.

ANLC

Institute of Social and Economic Research
University of Alaska Anchorage

Indigenous Peoples and Languages of Alaska, compiled by Michael E. Krauss.

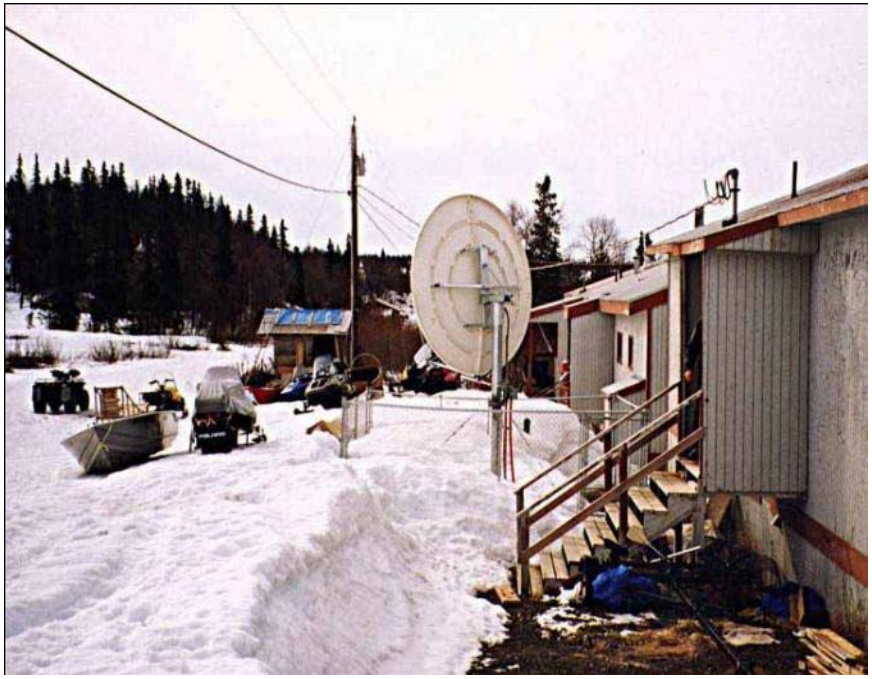
Digital map created by Gary Holton, Jim Kari, and Colin West, with the assistance of faculty and staff at the Alaska Native Language Center and Institute of Social and Economic Research.
Indigenous place names compiled by Gary Holton.
Graphic design and layout by Clementia Amaya-Morrill.
GIS datasets and a complete list of references and archival source materials available at
www.uaf.edu/anla and **www.alaskool.org**

Based on the maps Native Peoples and Languages of Alaska (Krauss 1974, revised 1982) and Inuit Nunat (Krauss 1995).

Funding provided by the Alaska Native Language Center, the Institute of Social and Economic Research, the Alaska Native Language Archive, the UAA Chancellor's Fund for Research, Scholarship, and Creative Activity, Alaska EPSCoR, and the National Science Foundation.

From “Bush Telegraph” to Broadband

- Early days: communication by HF radio
- Since 1980s, all permanent communities of at least 25 people have telephone service
- >95% of households have telephones
- Broadband in Anchorage and large towns
- Rural/remote service typically 768 kbps
- Remote service by satellite:
  - Generally reliable, but latency, high cost



Community Access in Rural Alaska:
At the post office, at the store, or under a tree…

Rural Broadband: Entrepreneurship and Services

- *Reach*
  - New markets, new audiences
- *Market Information*
  - Getting price information
  - Getting competitive bids
  - New sources of supplies
- *Government Information online*
  - Fishing, hunting licenses
  - Permanent Fund applications
  - Permits, etc.
- *Native Organizations: Management and Fundraising*
  - Grant applications online
  - Filing reports for federally funded projects

Broadband for access to funding and government services

Community managers and development workers must apply for grants and file reports for projects online

E-government: state licenses, forms available online

Entrepreneurship: Native Telephone Co-ops

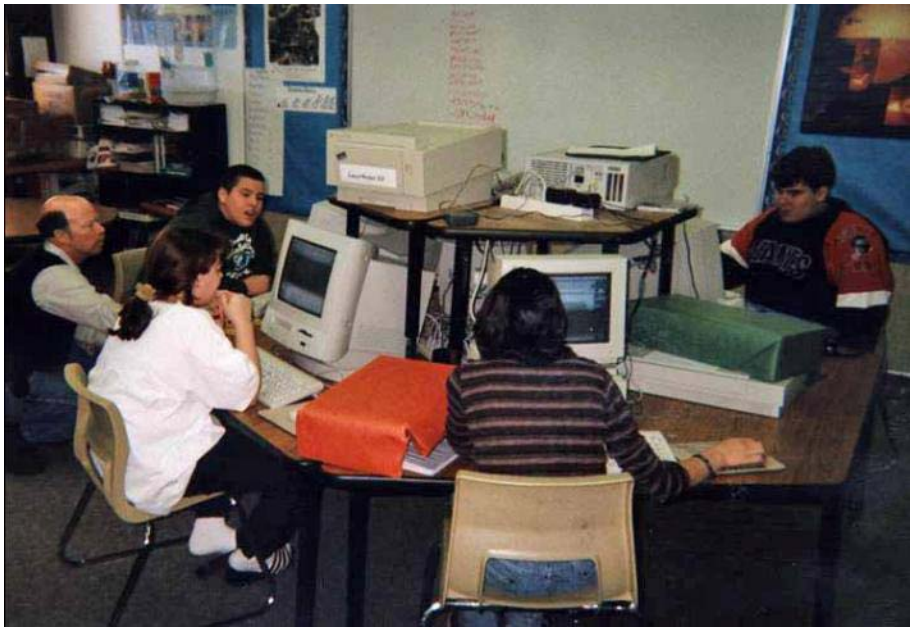
Internet Access in Rural Alaska Schools

Village schools must offer K-12 if at least 10 students

Lack of specialized teachers

Use of Internet for homework, course content, online classes

E-rate support: $29 m in 2010



Telemedicine in Alaska Today: The AFHCAN Network

AFHCAN Telehealth System:

253 sites; 70 member organizations

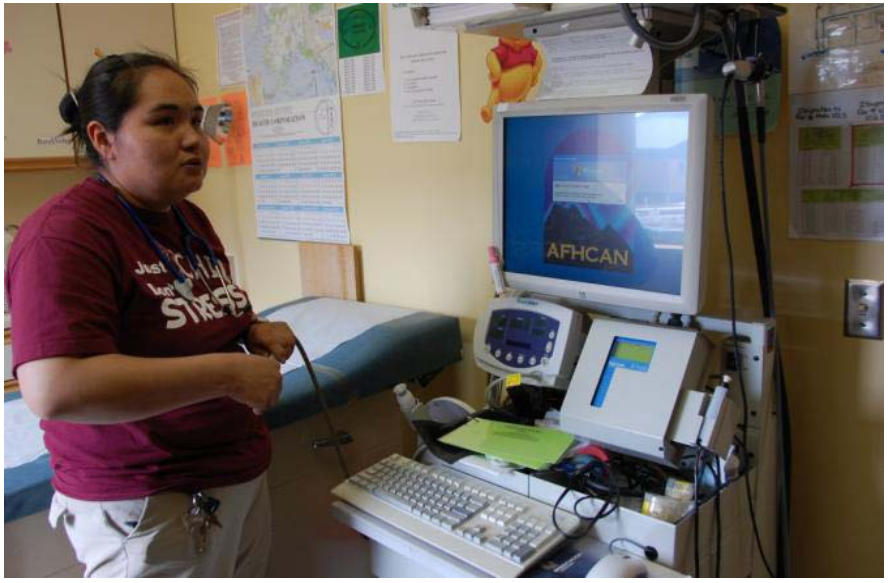
- **Village clinics: Native health aides**
- **Public Health clinics**
- **Regional hospitals**
- **Military installations, Coast Guard, Veterans Administration**

Covers more than 212,000 beneficiaries

- **About 40% of Alaska population**
- **Majority are in Alaska native villages**

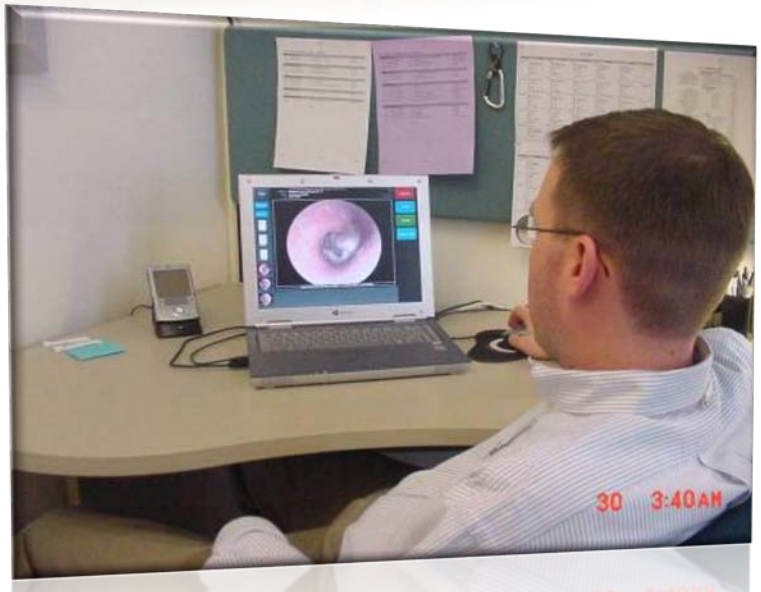
- **Supported by USF Rural Health Care Program**
  Alaska receives the largest amount of any State: $35.5m in 2010

Village of Wales: Clinic and Telemedicine Facilities



Case originated…

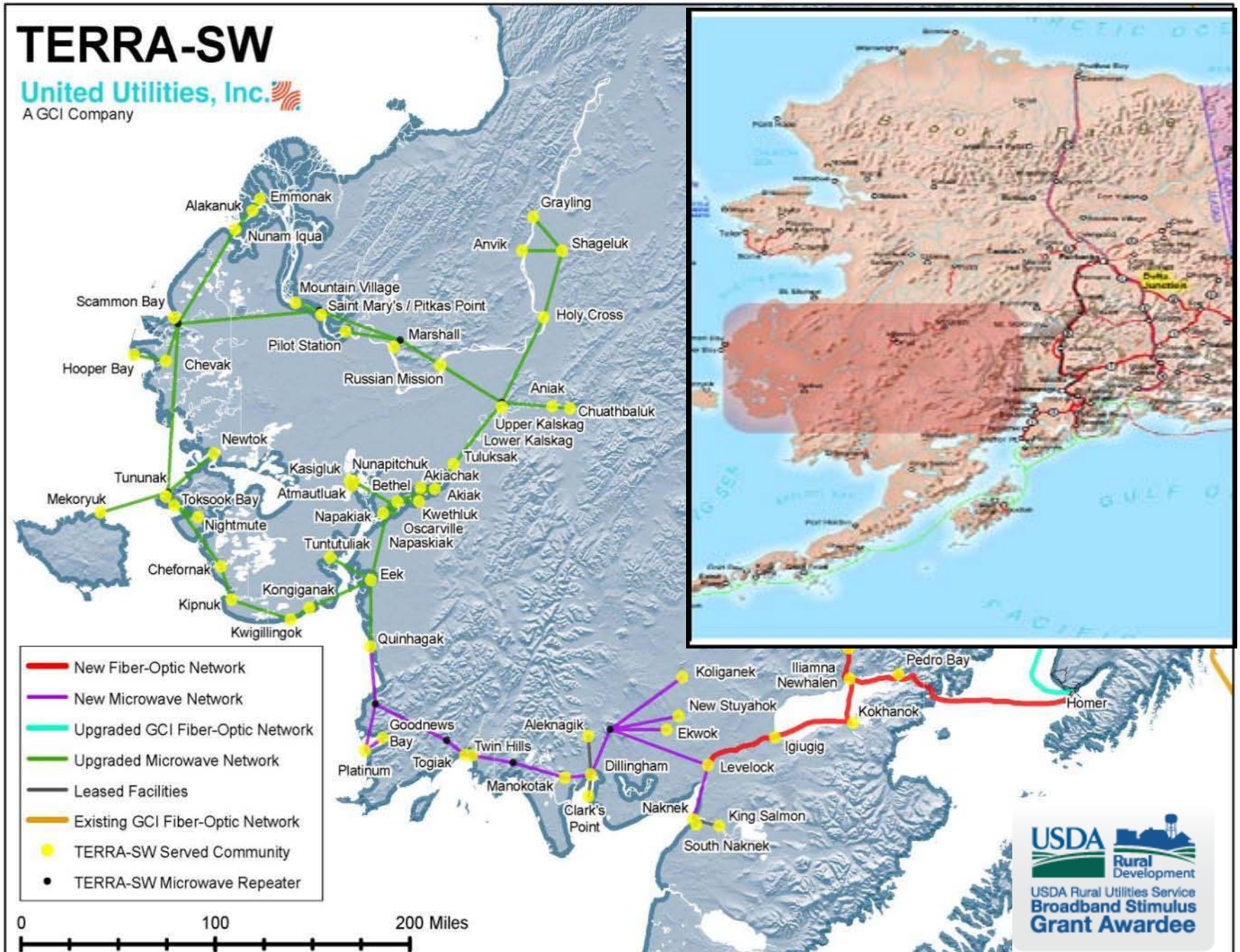
Case received…Alaska Native Medical Center, Anchorage



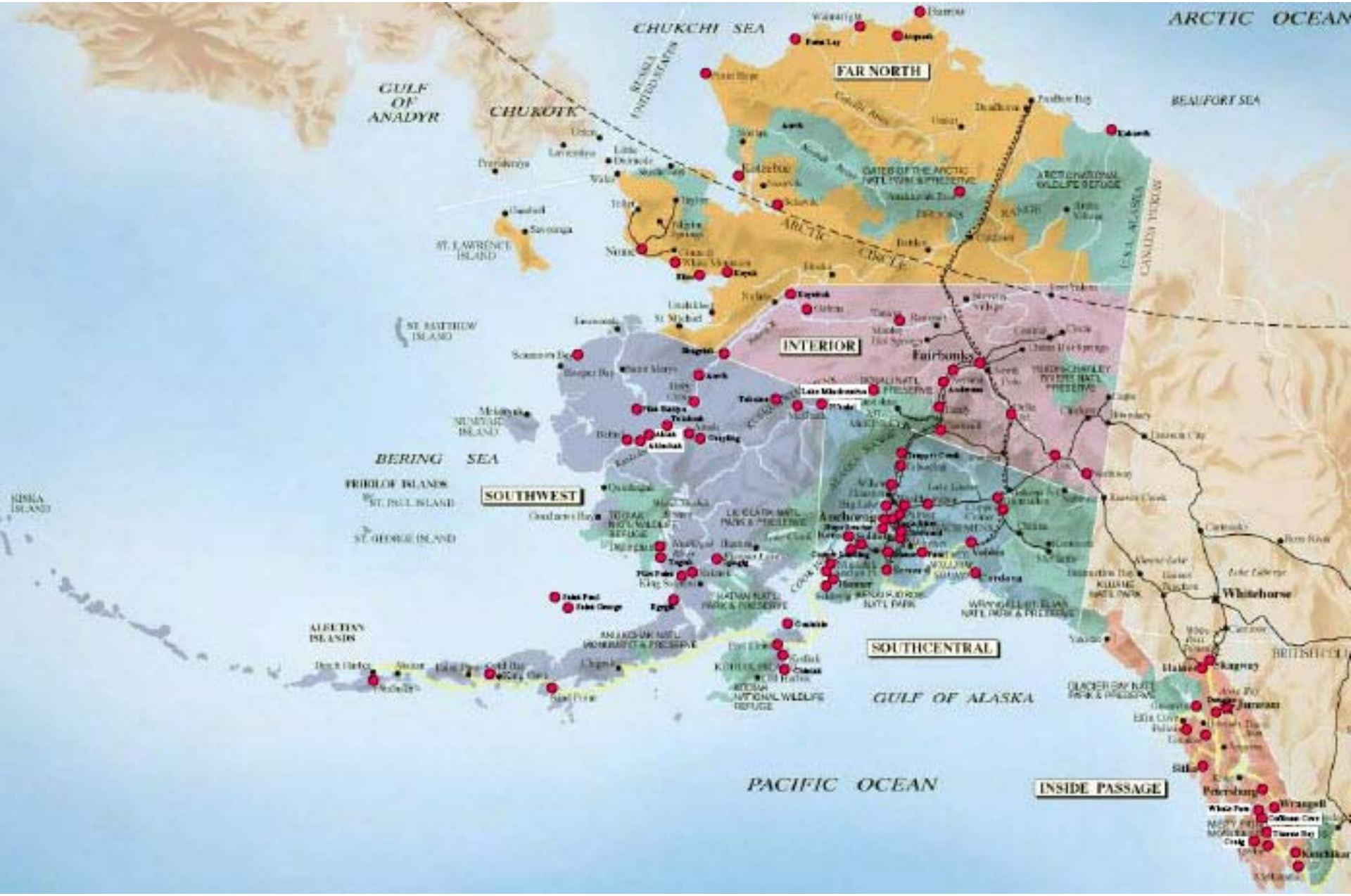
Broadband: U.S. Stimulus Projects

- NTIA (Dept. of Commerce):
  - BTOP (Broadband Telecom Opportunities Program) ($4.7 billion)
  - Alaska Projects:
    - OWL: Online with Libraries
    - Bridging the eSkill Gap: Community access, training, applications
    - Connect Alaska: Planning and Mapping
- Rural Utilities Service (RUS), Dept of Agriculture:
  - Broadband Infrastructure Program (BIP): grants and loans ($2.5 billion)
  - Alaska Projects:
    - TERRA (GCI/UUI): SW Alaska (middle mile)
    - Rivada Sea Lion: SW Alaska (wireless last mile)
    - Copper Valley: Cordova, McCarthy
    - Supervision: Tanana
- Other Stimulus Initiatives involving ICTs:
  - Electronic health record systems, other health IT
  - Energy: Smart Grids
  - Department of Education
  - Public Safety and Homeland Security

TERRA: $88 million RUS grants and loans, 65 communities



OWL (Online with Libraries) sites (NTIA BTOP)



Sustainability:
Universal Service Fund Support for Alaska

Federal Universal Service Fund

Surcharges on all telephone bills

In 2009, Alaskan subscribers contributed about $19 million and received $244 million, or more than $12 for every dollar paid in.

- ***Internet and Connectivity:***
  - **Internet for Schools and Libraries**
    - **Supported by the USF E-Rate program**
    - **Alaska received $29m in 2010; $155m from 1998 through 2009**
      - **Highest per capita of any state**
- ***Rural Telemedicine:***
  - **Supported by USF Rural Health Care Program:**
    - **Alaska receives the largest amount of any State: $35.5m in 2010**
- ***Voice Services:***
  - **High Cost Support:**
    - **Alaska companies received $219m in 2010**
  - **Low Income Subscribers:**
    - **Lifeline and Linkup: Alaska low income subscribers received subsidy of $26.8m in 2010**

FCC's National Broadband Plan: Goals

- **Speed: "100x100":** At least 100 million U.S. homes should have affordable access to actual download speeds of at least 100 Mbps and actual upload speeds of at least 50 Mbps.
- **Access and Skills:** Every American should have affordable access to robust broadband service, and the means and skills to subscribe if they so choose.
- **Anchor Institutions:** Every community should have affordable access to at least 1 Gbps broadband service to anchor institutions such as schools, hospitals and government buildings.
- **Mobile Innovation:** The United States should lead the world in mobile innovation, with the fastest and most extensive wireless networks of any nation.
- **Public Safety:** To ensure the safety of Americans, every first responder should have access to a nationwide public safety wireless network.
- **Energy Management:** To ensure that America leads in the clean energy economy, every American should be able to use broadband to track and manage their real-time energy consumption.

USF Reform: Connect America Fund

- High Cost Fund represented more than 70 percent of the USF subsidies for Alaska in 2010
- FCC's Connect America Fund Order
  - Executive Summary released Oct 26, 2011
  - Connect America Fund:
    - CAF to ultimately replace all high cost support
    - High Cost Fund will be frozen at $4.5b (same level as FY11)
    - Requires rate of return carriers receiving legacy high cost support for voice to also offer broadband with speeds 4 Mbps downstream and 1 Mbps upstream
    - Customers in service area must request broadband
  - CAF Mobility Fund:
    - $300 million for mobile voice and broadband in high cost areas, plus $500 million/year ongoing support
    - Tribal areas up to $100 million/year
  - Remote Areas Fund: $100 million/year

State Broadband Activities

- **Rural Alaska Broadband Internet Access Grant Program:**
  - Regulatory Commission of Alaska (RCA), funds from USDA
  - For low income communities
  - Required speed only 768 kbps
  - Carriers receive up to 75% of construction costs; must keep rates comparable to urban rates for 2 years
- **Connect Alaska:**
  - Stimulus funding from NTIA
  - State broadband map
  - Support for training, content development, digital literacy
- **State Broadband Task Force:**
  - Broadband planning funds from NTIA
  - To prepare state broadband plan for Alaska
  - See www.connectak.org

Beyond Infrastructure:

- ***From Access to Adoption:***
  - **Understanding non-adopters**
  - **Develop training, applications**
- ***Improve Skills:***
  - **Ensure Alaskans can use these tools**
- ***Develop Applications:***
  - **For rural businesses and Services**
- ***Involve Alaska Natives:***
  - **National goals/benchmarks may not reflect the needs of Alaska Native communities**
  - **Need to understand barriers to adoption**
  - **Need to collect and verify data on rural access**
- ***Evaluation: Learning about Broadband Impacts:***
  - **For consumers: adults and young people**
  - **For schools**
  - **For health care**
  - **For businesses and organizations**

Institute of Social and Economic Research

Thank You

For more information:
hehudson@uaa.alaska.edu

www.iser.uaa.alaska.edu

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