North Carolina's Next Generation Networks

NC STATE

The Opportunity for World-Class Broadband & the NCNGN Model

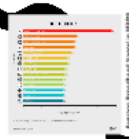
February 20th, 2016

Marc Hoit
Vice Chancellor for IT & CIO
NC State University

NC NGN

Bandwidth is THE Critical Infrastructure for the Future

- Bandwidth and high speed access is the modern equivalent of highways and electricity
- US is 14th in broadband access globally
- US residents gets half the speed for twice the price
- High Tech industry requires diverse bandwidth for site selection
- Most jobs require on-online application, students for HW
- Digital literacy is critical for "knowledge workers"
- Week and digital sharing of "big data" is the future of business



Average Broadband Speed in MBPS

How fast is gigabit ?

Best Connected State in the US

RFP Goals and Objectives

Next Steps

- Hold Local Planning Committee (Over-sight Oversight)
- Select a Project Manager
- Collect one map sheet by city & teacher
- Collect a potential "set-aside" density
- Create "Broadband Effectiveness" committee (Driving local sites, outreach, education, etc)
- Update & complete the RFP

Steering Committee Considerations

- Lack of SPV for support of collaboration
- Cheerleaders/advocates for each key community
- Great and effective sessions (+10 members)
- Agreement on economic (partial, marine, multiple workers, Shipline, etc)
- Focus on NCNGN/Shipline (and other)

Possible Asset Opportunities

- Assets
  - Fiber assets
  - Cell Sites
  - Transportation
  - Water Sewer (Tank)
- Deposits
  - Fiber
  - Sewer/Water
  - Transportation
  - Fiber
- Capabilities
  - Fiber
  - Sewer/Water/Transportation
  - Sewer/Water (Fire, Water, Sewer, etc)
  - Transportation
  - Fiber
  - Sewer/Water (Tank)
  - Fiber
  - Sewer/Water (Tank)

Economics

This is a wealth & technical economic development effort,

not a technology deployment

Questions?

North Carolina's Next Generation Networks

NC STATE

The Opportunity for World-Class Broadband & the NCNGN Model

February 26th, 2016

Marc Hoit
Vice Chancellor for IT & CIO
NC State University

NC NORTH CAROLINA NEXT GENERATION NETWORKS
NGN

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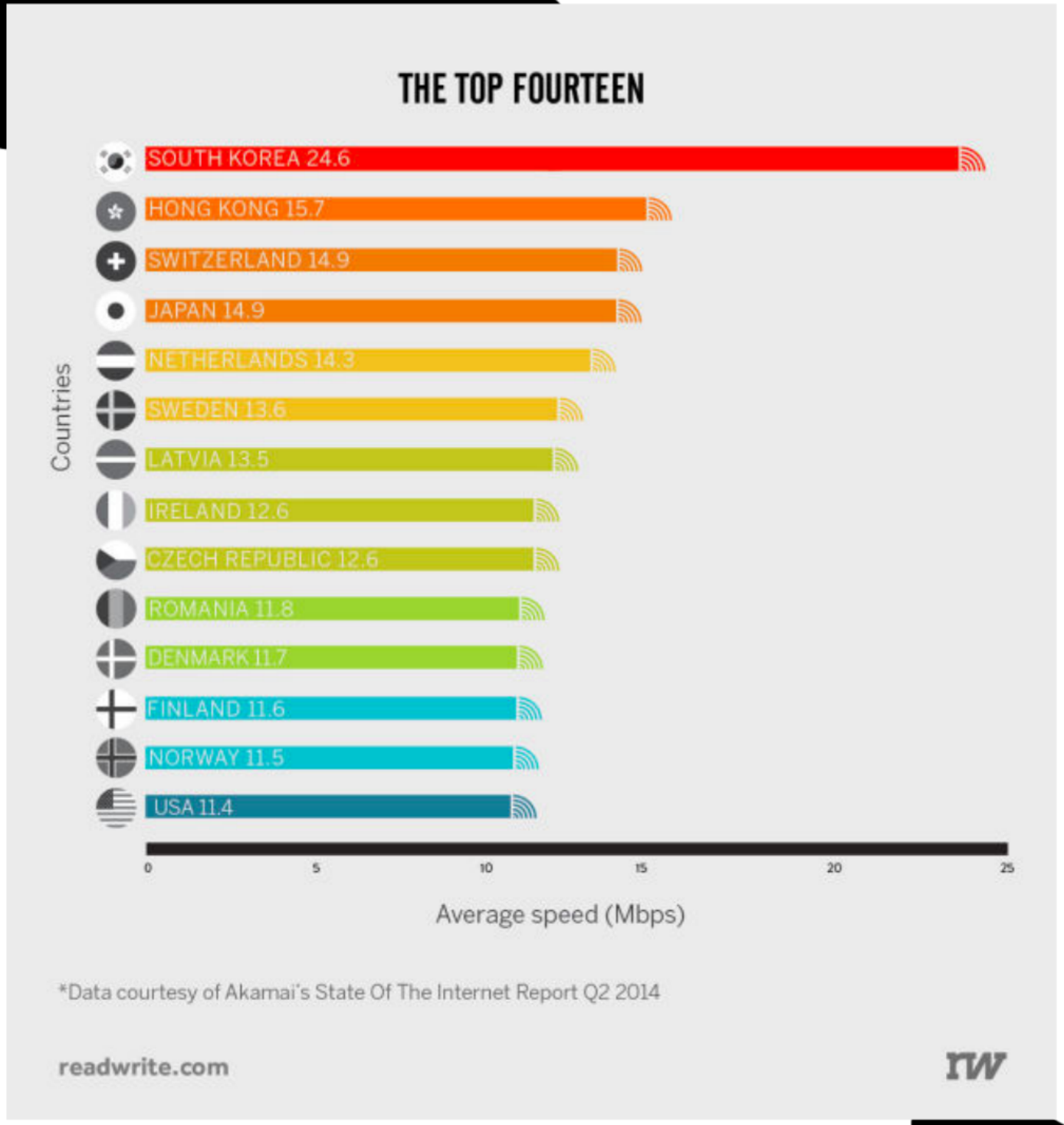
Average Broadband Speed in MBPS



Average Broadb

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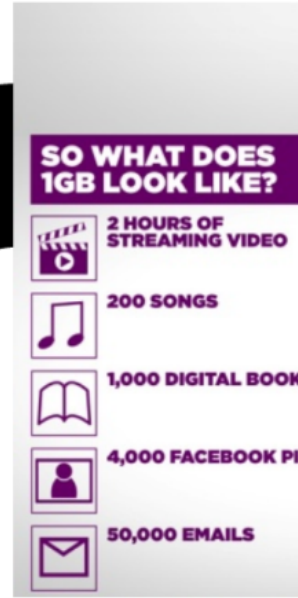


2020

SO WHAT DOES 1GB LOOK LIKE?

2 HOURS OF STREAMING VIDEO

200 SONGS

1,000 DIGITAL BOOKS

4,000 FACEBOOK PICS

50,000 EMAILS

AND WHAT WILL BE NEXT?

NETWORKS NEED TO BE READY FOR...

CLOUD COMPUTING

'ALWAYS ON' SOCIAL GAMING

VIDEO CALLING EVERYWHERE AND ANYWHERE

3D MOBILE VIDEO

FRIDGES, CARS, FLOWERPOTS, THE INTERNET OF THINGS

Next Gen Network: Applications

eGovernment	Health Care	Public Safety	Business/ Economic Dev	Education
Government to Consumer (G2C) Government to Business (G2B) -Communications -Information -Registrations -Fees and taxes -Civic engagement	Aging in place Telehealth Remote Surgery Databased, pre-surgery Genetic Sequencing analysis	Mobile alerts E911 Air quality monitoring Transit and traffic monitoring On-demand local information Cutting edge police investigative tools	Retail marketing Financial services State of the art modeling, animation and design Advanced manufacturing Entertainment	Distance learning –thru telepresence and visualizations Higher education research exchange platform

Gig.U: *The University-Community Next Generation Innovation Project*

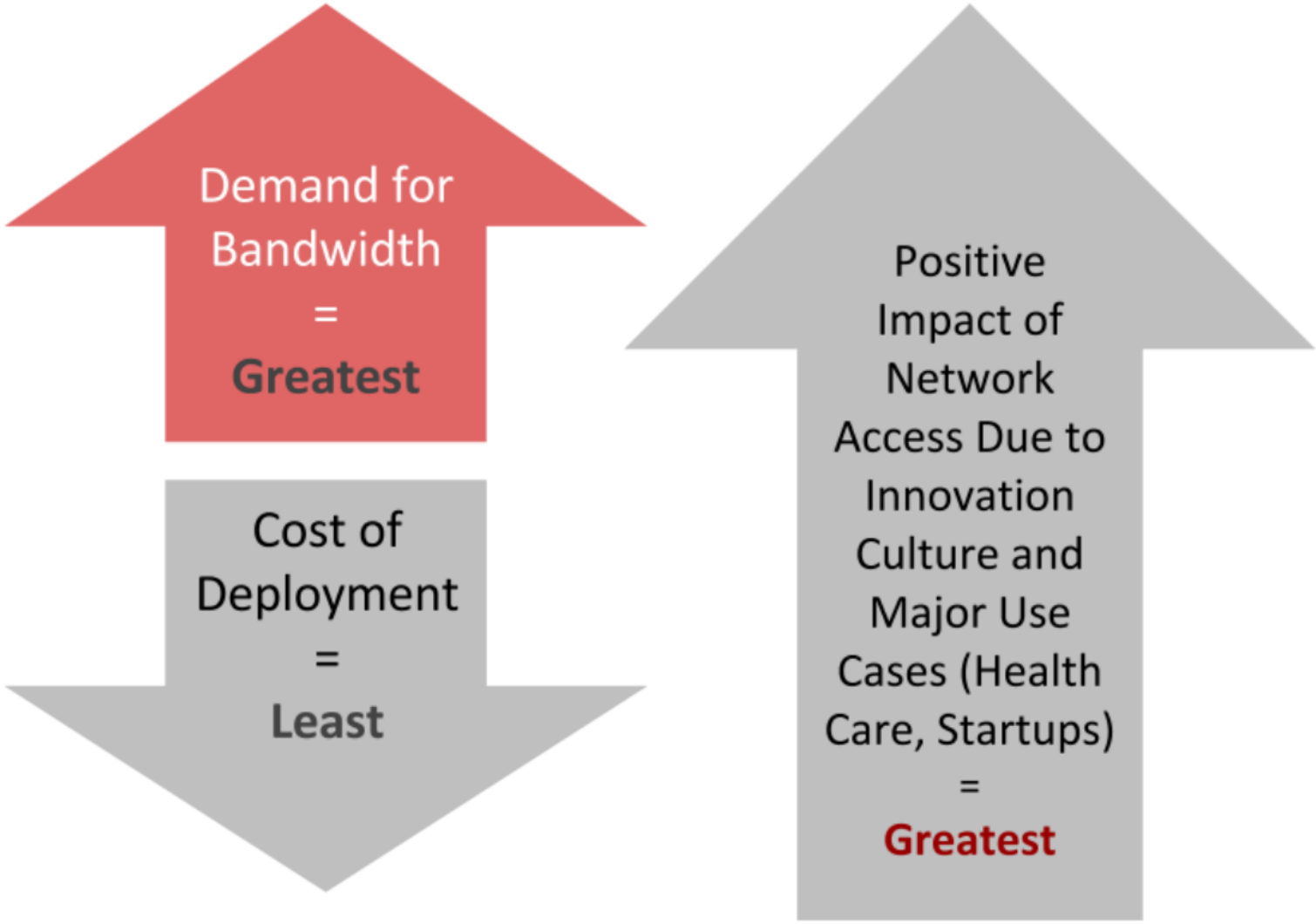
In 2011, 37 leading research universities and their local communities formed Gig.U

Mission: Accelerate the deployment of world-leading, next generation networks in the United States

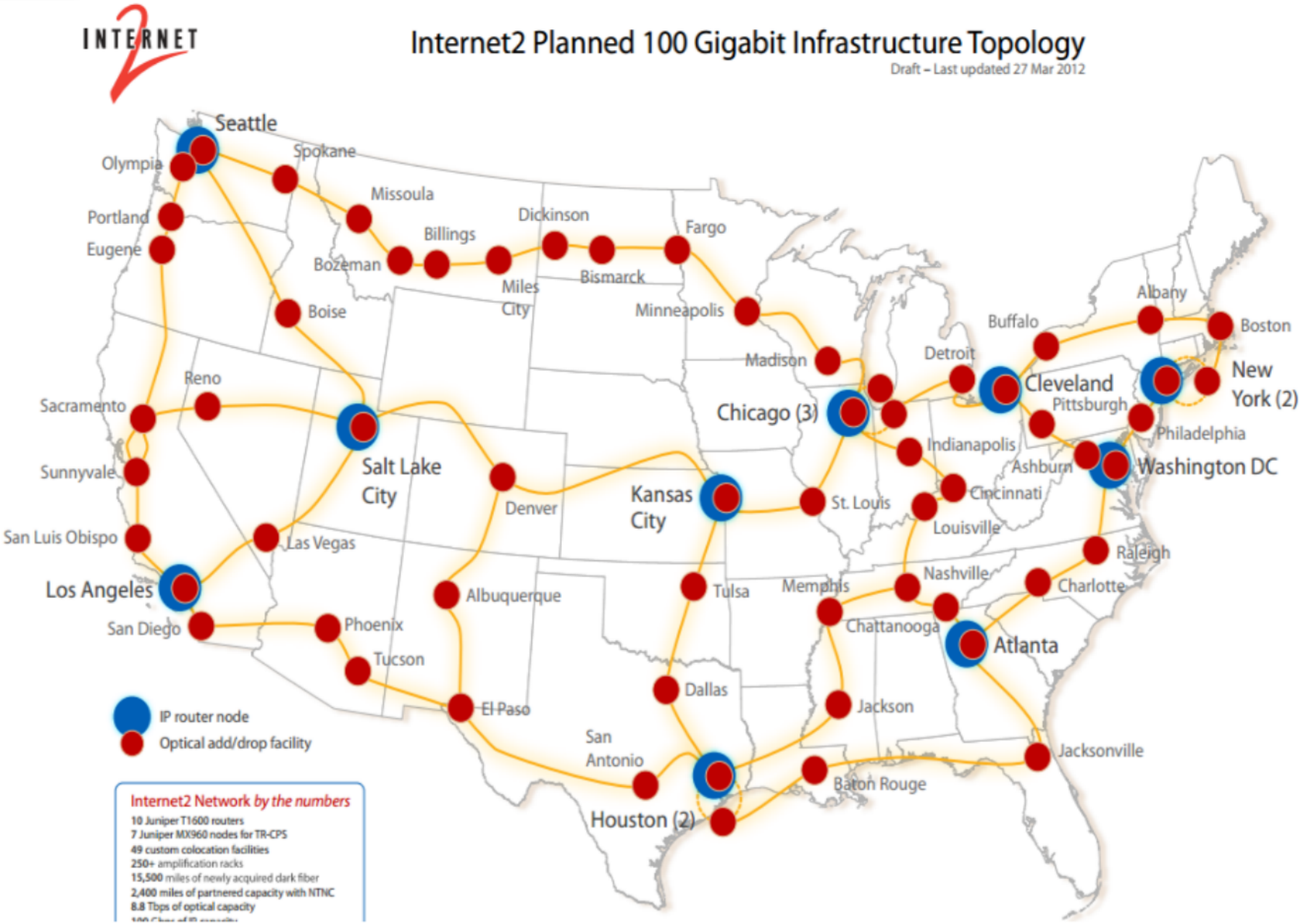
Strategy: Use university communities as test beds for the acceleration of deployment of ultra-high speed network services and applications

Gig.U: Focus on University Communities

University communities are incubators of networked-based innovations



Internet 2 National R&E Network



Best Connected State in the US

Golden LEAF Rural Broadband Initiative

Golden LEAF Rural Broadband Initiative

MCNC

MCNC
Connecting North Carolina's Future Today

NCNGN – A Regional Gig.U Initiative

- Focused on economic development and digital divide
- Sought private sector companies willing and able to deploy and operate local 1 gigabit wired and 100 Mbps wireless next generation networks
- Six municipalities, four universities partnered:
  - Chapel Hill, Carrboro, Cary, Durham, Raleigh, Winston/ Salem
  - Duke, NC-State, UNC-CH & Wake Forest
- Started collaboration reaching out to local chambers of commerce
- Received support from many local businesses (letters)
- Worked with Triangle-J Council of Governments (TJCoG)
  - Group that promotes collaboration of municipalities
- Used an open RFP process to attract widest possible solutions and vendors
- 8 submissions, evaluated & negotiated (result: AT&T)

RFP Goals and Objectives

Sought vendors or coalitions of vendors to achieve the following:

- Create a gigabit, fiber network to foster innovation, drive job creation, stimulate economic growth, and serve new areas of development in the community
- Provide an open access architectural framework that maximizes wholesale and retail service delivery and competition
- Provide a flexible menu of optional retail services
- Use public-private assets to reduce the digital divide, enhance workforce knowledge and skills, promote economic development, enhance access for anchor institutions, and serve other targeted social purposes identified by the participating municipalities
- Provide high speed internet service over a wired or wireless network at a substantial discount from current market prices

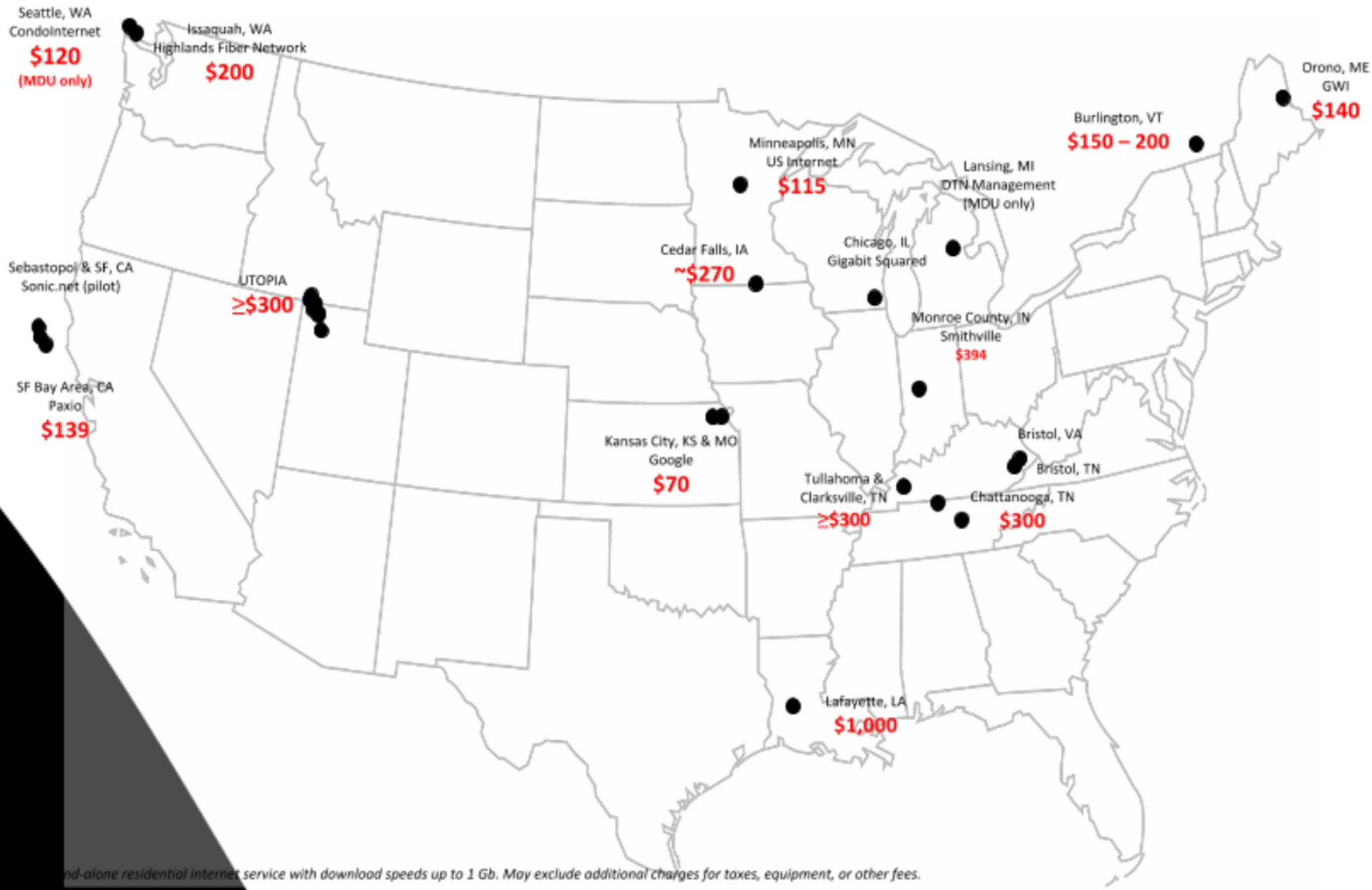
Collaboration for Benefit of Entire Community

- Digital inclusion is necessary to realize the network's full potential and maximize economic benefits
  - Requires concerted community effort
- Providers can help by providing access to discounted services, but that's not enough, may also need:
  - Additional support to lower cost of service
  - Free or discounted hardware
  - Training
  - Targeted awareness and outreach efforts
  - Relevant curriculum and content
- No one size fits all strategy for digital inclusion

Common Attributes Others Could Adopt

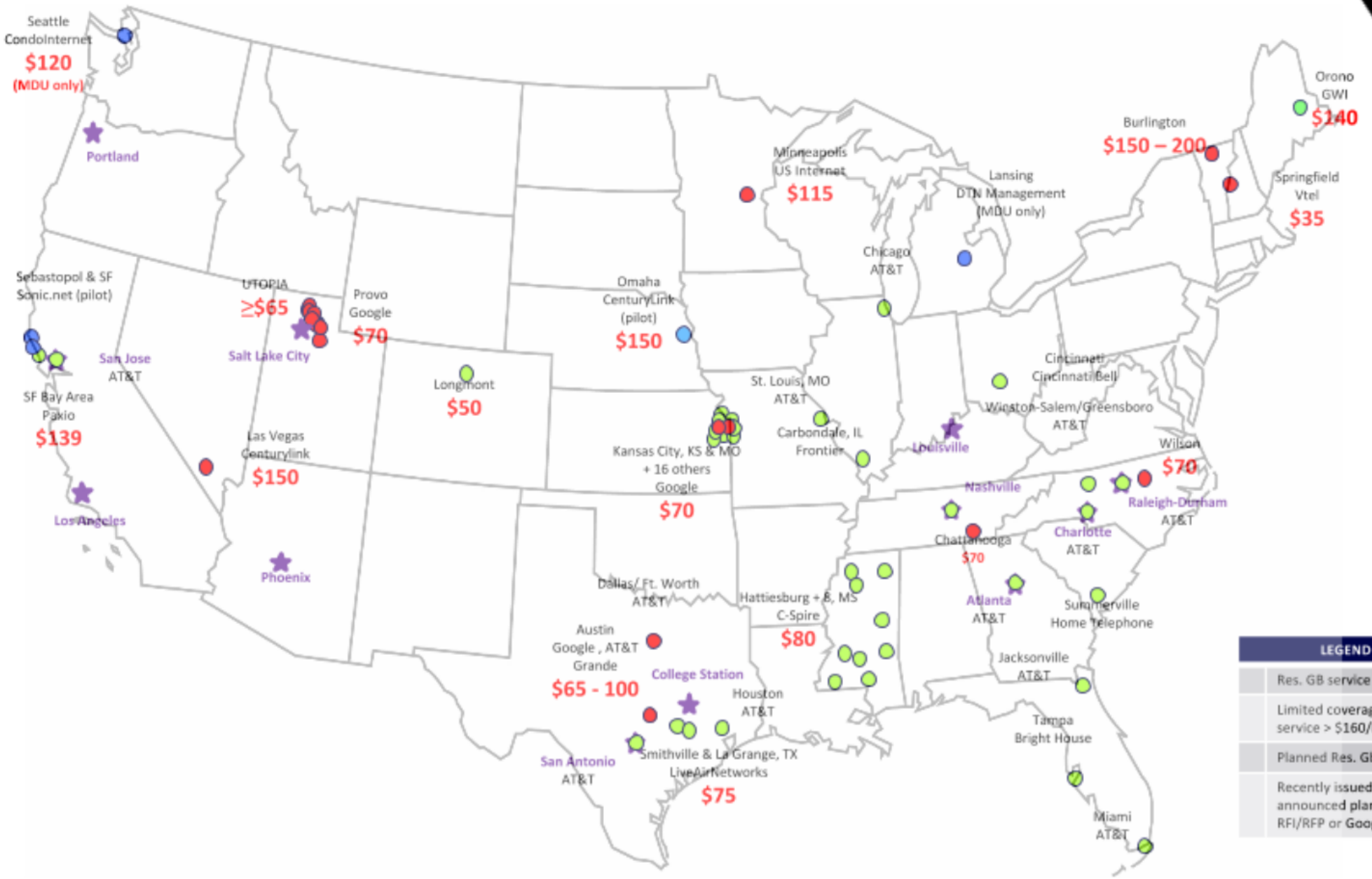
- This was a municipality effort, universities were facilitators
- Business community, community leaders and municipal administration are key stakeholders
- Municipalities need to develop:
  - Available assets (fiber, space rental, rights of way, permitting support, connection to utilities, legal support)
  - Demand aggregation (businesses, community anchors, business map, municipal locations, community locations, etc)
  - Agreed upon common pricing, unified negotiation & simplified contracting
- Need a strong & representative core team

Other communities in the gigabit game Feb. 2013



nd-alone residential internet service with download speeds up to 1 Gb. May exclude additional charges for taxes, equipment, or other fees.

Other communities in the gigabit game now



Pricing for stand-alone residential internet with download speeds up to 1 Gbps. Prices as advertised on provider websites or other publicly available sources as of 12/11/2013. May exclude additional charges for taxes, equipment, or other fees. Does not reflect plans for Anchorage, AK and cities throughout NC announced by GCI and RST Fiber, respectively.

Keys to Community Success

Build Local Support from...

- Research Universities
- Hospitals
- Major Foundations
- Start-up Communities
- Corporations
- Local ISPs
- Incumbent ISPs
- Complimentary policy organizations or local advocates in education, energy, etc.
- Public Utility System or Company
- Developers
- Surrounding municipalities (for a regional approach, if applicable)

Centralize Information on Existing Fiber Assets from...

- Public Safety
- Hospitals
- Research Universities
- Transportation Authorities
- Other parts of the city government with maps of fiber holdings

Be Aware of History...

- Has there been previous Broadband Technology Opporuntity Program Funding in your area - either through adoption or infrastructure work?
- What does connectivity look like in your city? What is the nature of your digital divide?
- Have there been previous successful connectivity projects?
- Have there been previous failed connectivity projects?
- Has your state passed legislation banning or limiting new public or partially public networks?

Leverage External Resources...

- CLIC - The Coalition for Local Internet Choice
- Next Century Cities
- U.S. Economic Development Administration
- National Telecommunications & Information Association
- Fiber to the Home Council
- State-level political champions
- State Broadband Initiative (SBI)
- Federal connectivity grants (e.g. NTIA, Department of Agriculture's Rural Utilities Service)
- Private grant programs (e.g. One Community's Big Gig Challenge)

Next Steps

- Form Local Steering Committee (see draft charter)
- Select a Project Manager
- Collect and map assets by city & location
- Collect a potential "subscriber" density map
- Create "Broadband Effectiveness" committee (develop local uses, outreach, education, etc)
- Update & complete the RFP

Steering Committee Considerations

- Land of Sky for support of collaboration
- One representative for each key community
- Small and effective structure (<10 members)
- Agreement on outcomes (partial, one or multiple vendors, timeline, etc)
- Re-use of NCNGN efforts to save time

Possible Asset Opportunities

- **Assets:**
  - Pole access
  - Conduits
  - Existing fiber?
  - Space for rental ("huts")
- **Support:**
  - Rights of way
  - Dig once strategy
  - Permit process
  - Legal
- **Opportunities:**
  - Locations needed for municipal connections? (fire stations, libraries, offices)
  - Community centers & libraries
  - MDU (under served areas & housing)

Remember:

This is a county & municipal economic development effort,

not a technology deployment!

Questions?