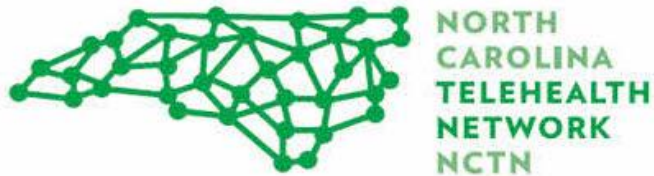


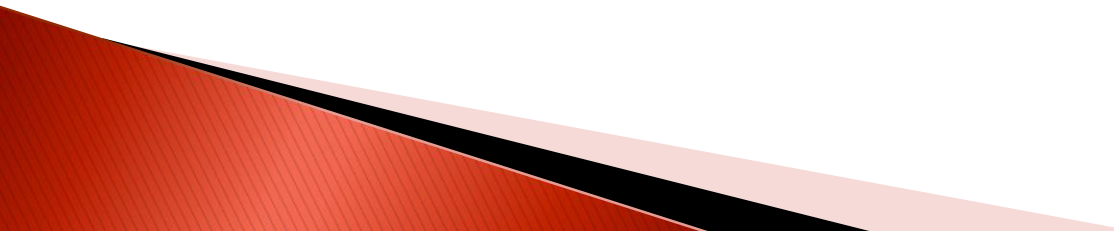
NC Telehealth Network: A Statewide Project for High-speed Reliable Affordable Broadband Services in North Carolina

BBC Conference - 4/15/2015

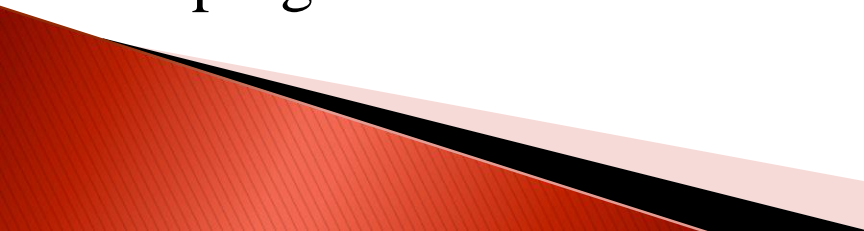


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**NCTN – a dedicated state-wide
broadband system for NC health
and care:
Concept and History**



Key Needs Driving NCTN Development

- ▶ Increasing dependence in healthcare, research, and education on wide availability and use of high-speed, highly available, and affordable broadband.
 - ▶ Key usage examples – networked EHR usage, HIE access, telehealth consulting/therapy, remote monitoring of patients, teleeducation, image xfer, voice services.
 - ▶ Key program examples – ACO integration, expansion of health systems, meaningful use of HIT program, state/federal/private drives to reduce healthcare cost and improve outcomes, multi-center and large center research programs.
- 

NCTN Concept

- ▶ A dedicated broadband network with Internet and Internet2 connections to support health and care in NC
- ▶ “Dedicated” means that traffic among NCTN subscribers does not transit Internet or Internet2; (improves security- i.e. confidentiality, data integrity, and data availability)
- ▶ Focus on public and non-profit health care providers
- ▶ Key design goals:
 - Available everywhere in the state
 - Low cost (mostly via volume purchase and discounts)
 - Very high reliability (disaster-resistance)
 - High bandwidth with no over-subscription
 - Support key communications among healthcare stakeholders eliminating or minimizing Internet usage.
 - High user community collaboration in designing, building, and operating the NCTN.
 - Statewide intranet model allows for NCTN control over engineering needed to support the technical goals.
 - Control of NCTN by users assures long-term alignment with user interests.

Key Initial Collaborators

- ▶ **Making the network's development a community project has been key to its success -**
- ▶ Cabarrus Health Alliance (Program Admin and fiscal agent)
- ▶ NC Association of Local Health Directors
- ▶ NC Association of Free Clinics
- ▶ NC Hospital Association
- ▶ NC Community Health Center Association
- ▶ University Health Systems of Eastern NC(Vidant)
- ▶ Albemarle Regional Health Services
- ▶ Western Carolina University
- ▶ Southwestern Commission
- ▶ The e-NC Authority (currently NC Broadband)
- ▶ NC Division of Public Health
- ▶ NC Institute for Public Health (UNC)
- ▶ Golden Leaf Foundation
- ▶ FCC and USAC
- ▶ NCHICA
- ▶ **NCTN – won 2011 NCTA Public Leadership Award.**

NCTN – Pilot phase

NCTN Pilot – energized by FCC’s Rural Healthcare Pilot Program (RHCPP)

- ▶ Competitive nationwide program to:
 - Jump start regional health networks for non-profits and public entities and
 - Inform FCC deliberations about the features of a permanent subsidy program
- ▶ NCTN got a total of \$12.1 M in subsidies (discounts).
- ▶ Pays for 85% of broadband service costs.
- ▶ Does not pay for program development/admin costs.
- ▶ MCNC (Microelectronics Center of NC) won competition to be state-wide integrator/provider.
- ▶ NC Information Technology Services (ITS) is large sub-contractor to MCNC.
- ▶ Pilot funds end on 10/21/2016.
- ▶ Participation has provided access to national experts.

NCTN Pilot History Key Points:

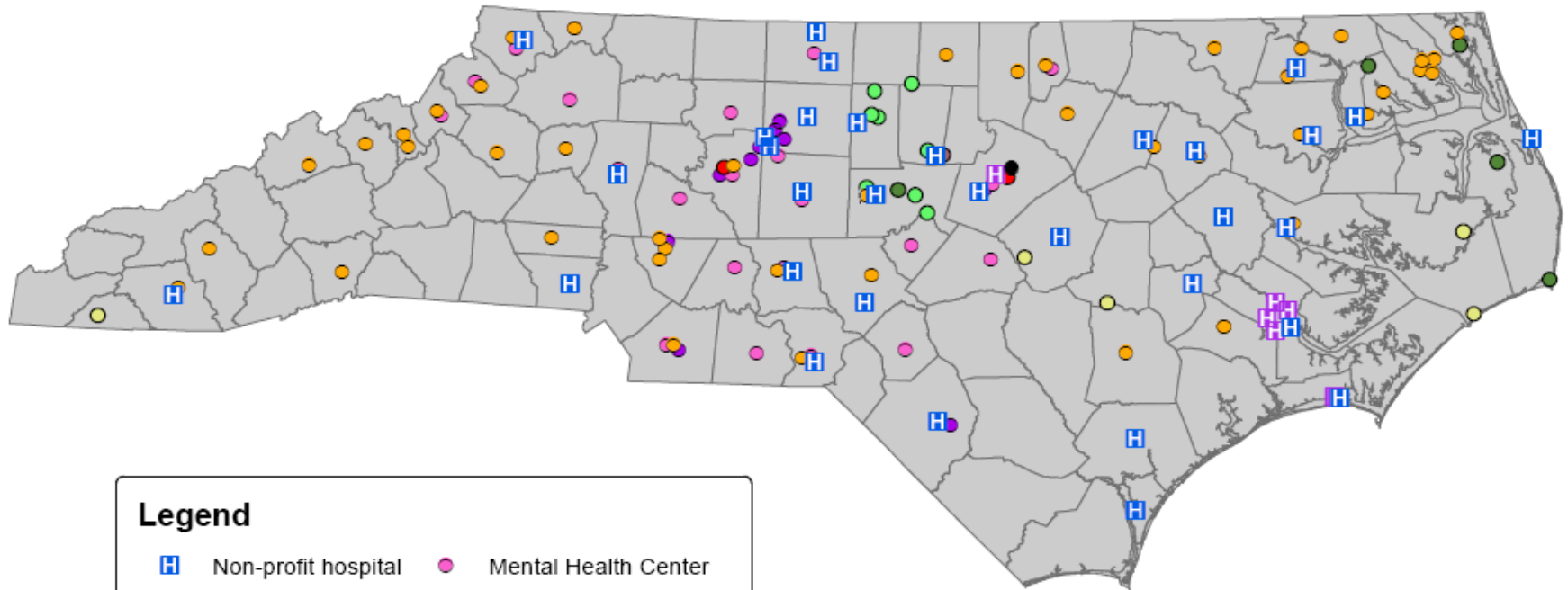
- ▶ Conceived in late 2007
- ▶ Pilot Phase 1 – NCTN-Public Health
 - Two rounds of recruiting of public health, free clinics, and (a few) community health centers
 - Operational – started late 2010
- ▶ Pilot Phase 2 - NCTN-Hospitals
 - Recruitment of hospitals
 - Operational - 2011
- ▶ Pilot Phase 3 – NCTN-EXtension
 - Extension – more sites (hospitals , CHCs, public health Contract applicability through 2025).
- ▶ Funding:
 - 85% Discounts for subscribers for broadband services from FCC's RHCPP (5 years); USF source. \$12.1M (not dependent on Congressional allocation)
 - NC Division of Public Health – admin startup for public health
 - Golden Leaf – admin startup for hospitals
 - Admin Fees- to support future development and operations.

Current Health Care Constituents- NCTN Status March 2015













Community health center	9
Community mental health center	24
Rural health clinic	4
Local health department/agency	50
Non-profit hospital	51
Off-Admin Office	1
Off-Site Data Center	12
Urban Clinic (RHCPP- eligible)	9
Urban Clinic (Ineligible)	11
Not eligible	4

- ▶ Is 175 sites (March 2015); was 135 total in September 2014. Expecting 70-120 over the next 5 months.
- ▶ Wide array of services from 10mbps to 2gbps, NCTN/Internet connect, PTP, spoke and hub, dark fiber service.

North Carolina Telehealth Network Sites



Legend

- | | |
|---|---|
|  Non-profit hospital |  Mental Health Center |
|  Hospital Clinic |  Urban Clinic (Ineligible) |
|  Critical PHS site |  Rural Health Center |
|  FQHC |  Non-critical PHS site |
|  Free Clinic |  Data Denter |
|  Other |  County Boundaries |



Map Updated: 4/9/2015

Key Applications for NCTN

- ▶ HIE - Health Information Exchange
 - Needs very high reliability for optimal value
 - Uses paths between providers and to/from HIE; Internet connectivity.
- ▶ EHR - especially for ASP/remote models
 - Requires very high reliability; low jitter/response time.
 - Business stops, clinics stop when not available/responsive. Internet connectivity for off-NCTN traffic.

Key Applications for NCTN

▶ TeleEducation –

- With live video/audio needs low jitter, high reliability, medium bandwidth(minimum 10mbps), to high bandwidth (for telepresence); Internet connectivity (maybe I2 connection)
- Web-based education (enduring materials) – needs responsiveness, high reliability. ; Internet connectivity.

Key Applications for NCTN

- ▶ **TeleHealth -**
 - Live medical imaging (e.g. telepsych, telestroke, echocardiography, orthopedics, ICU monitoring) needs low jitter, medium bandwidth, high reliability. Internet and I2 connectivity where needed.
 - Store and Forward (e.g. MRI, radiographs, CAT, Derm) need high bandwidth, high reliability. Internet and I2 connectivity where needed.
- ▶ **Voice service**
 - (between sites via VOIP for subscribers with several sites)

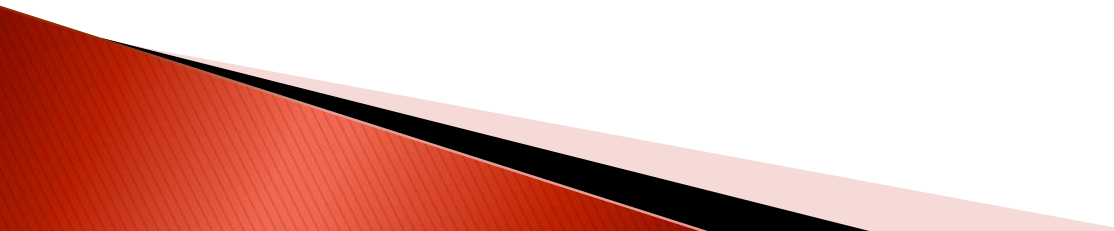
Key Applications for NCTN

- ▶ Disaster response –
 - Most public non-profit healthcare providers have key roles in responding to community disasters (e.g. hurricanes, tornadoes, ice storms, earthquakes, bio-events)
 - Requires disaster-resistant level of reliability; high bandwidth; low MTTR; Internet and perhaps I2 connectivity.

NCTN Broadband Service Providers

- ▶ **MCNC (Microelectronics Center of NC):**
 - Prime NCTN vendor. Long history of service in the state.
 - An independent, non-profit corporation that operates the North Carolina Research and Education Network (NCREN).
 - Helps improve teaching, learning, research, health care, and collaboration throughout North Carolina in a cost-effective environment for constituents.
 - Serves only the public and non-profit sector.
 - Provides access to broadband and fiber-optic infrastructure to end users.
 - Provides fiber assets to the private sector to help support broadband service development.
- ▶ **NC ITS (Information Technology Services)**
 - Provides technology services to state agencies, local governments, and educational institutions across North Carolina.
 - Operates as a major sub-contractor under MCNC, serving a significant portion of the sites.
- ▶ **Other Commercial Service Providers (as subs under MCNC or ITS)**
 - e.g. ATT, CenturyLink, TW, TWC, ... (long list)
 - Local loop providers for many sites.

Who does MCNC serve?

- ▶ 17 UNC System Institutions
 - ▶ 26 of 37 independent colleges and universities
 - ▶ 58 Community Colleges
 - ▶ 115 Local Education Agencies (School Districts)
 - ▶ 36 Charter Schools
 - ▶ Public and Non-Profit Healthcare (NCTN)- 135 subscriptions to date;
 - ▶ RTI, NISS, NHC, Burroughs Wellcome Fund, Bio Tech Center, other research institutions
- 

**NCTN Phase 4 :
Healthcare Connect Fund (HCF) - a
permanent highly expanded
network.**



HCF Relation to RHCPP (Pilot)

- ▶ FCC considered RHCPP to be a way of jump-starting regional nets and a way to create and monitor experiments to inform policy changes for a permanent discount program.
- ▶ FCC conferred heavily with RHCPP program managers in developing HCF in 2011.
- ▶ Key RHCPP community recommendations were included in HCF.

FCC Healthcare Connect Fund (HCF) Program

- ▶ Order issued in late December 2012
 - **Big.** The HCF is capped at \$400M per year nationwide. We are not likely to come anywhere close to this cap in the foreseeable future.
 - **Large discount:** Eligible sites can receive a 65% discount for their NCTN-based broadband leased services. Can also get discounts for infrastructure (e.g. building fiber paths). This type of activity has program-wide limit of \$150M per year
 - **Consortia (like NCTN):** have more latitude than individual HCPs
 - **Funds from Universal Service Fund (USF)** – not annual allocation from Congress.

HCF Program

- **Eligible Site types:** public and non-profit - rural medical clinics, urban medical clinics(with limits), FQHCs, free clinics, public health, hospitals(with limits for large hospitals), medical schools, teaching hospitals, post-secondary healthcare training facilities, mental health centers, centers for migrant care.
- **Not just care sites:** data centers and administrative sites supporting eligible healthcare providers are also eligible for discounts. Public health sites can be of any type.
- **When:** Funding for HCF nominally available starting 7/1/2013, but practically available fall of 2014.
- **Positioning:** NCTN's current contract for services with MCNC under the Pilot program qualifies for usage under the HCF.

HCF Program

- **Longish subscriptions:** The HCF allows for multi-year discount allotments (3 yr max).
- **Lots of HCF Admin Documents needed (mostly designed to allocate responsibility for program compliance):** Letters of Agency, Membership agreements, third party admin agreements, community mental health checklists, exemption letters.
- **Not fixed svc/location:** The HCF allows for discounts for site and service substitutions (e.g. bandwidth upgrades, site moves)
- **Ruralness:** A consortium (such as NCTN) must have at least 50% rural sites among all eligible sites in the consortia to obtain discounts. Currently, NCTN is 60% rural. Although we expect to do a more quantitative look at the number of rural vs. non-rural sites of each type, we don't see this as a serious limitation in NC.

Rough scale of Eligible NC sites

- ▶ FQHCs – (approx 190 in NC)
- ▶ Rural Health Centers (under ORH) – (approx 25)
- ▶ Additional public health sites (approx 200)
- ▶ Additional hospitals per se (approx 60)
- ▶ Non-profit Health system/IDN clinics (approx 1500)
- ▶ Mental health centers (approx 900)
- ▶ State prisons/county jails – (approx 200)
- ▶ AHEC sites (approx 15)
- ▶ "post-secondary educational institutions offering health care instruction, teaching hospitals, and medical schools;" (approx 200)
- ▶ Site collection implies between \$10M-40M per year in HCF funds to support broadband services.

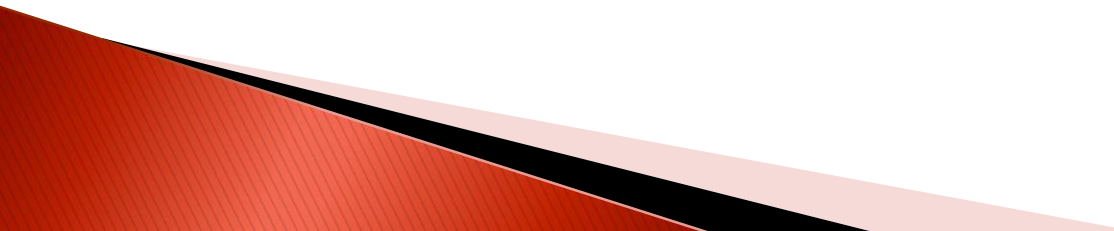
Steps Taken in Preparation for HCF (in 2011-2013)

- ▶ **Contract coverage:**
 - Existing contract designed to be applicable to HCF (no new re-compete needed)
 - Subscription agreements anticipated a transition to a permanent program.
- ▶ **Scaling Challenge:**
 - MCNC/ITS- implementation and operations
 - CHA- administration
 - NCIPH/KirbyIMC- development
- ▶ **Listening Tour- most large constituency liaisons recruited.**
 - Significant inputs to features of the HCF program by likely constituents

Other Development Steps for HCF Phase

- ▶ Scaling plan development (for 2000-3000 sites)
- ▶ Formation of an NCTN advisory group
- ▶ Formation of an NCTN Association (501(c)(3)) of subscribers
- ▶ Support from GLF for phase development
- ▶ Transition of Pilot sites to HCF
- ▶ CRM System Development

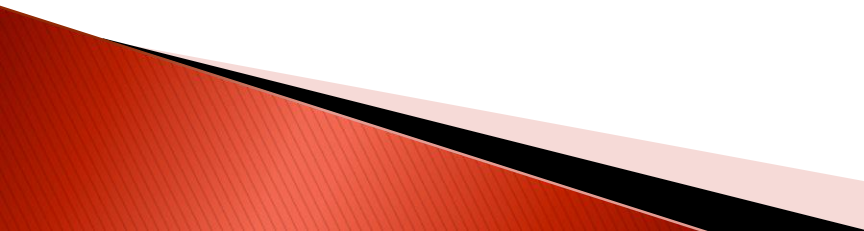
Other Potential HCF Program Elements

- ▶ Connect key national/regional applications/data centers (outside NC)
 - ▶ Interest in offering low-cost attachment to for-profit entities (without discounts) – under separate contract.
- 

Development Process From a Subscriber Point of View

- ▶ Orientation – call(s), materials, webinar
- ▶ Provide site list, with requirements, speeds etc. and timing of desired installation.
- ▶ NCTN provides not-to-exceed pricing (36 months) and rurality status (with starting date accommodating end of current services).
- ▶ Site/svc selection (with 51% rural requirement)
- ▶ Admin Docs Completion – SA, LOA, MA, TPAs, EL, CMHCs
- ▶ HCF fund provision (where needed)
- ▶ Implementation and operation, renewal

Impact potential

- ▶ Viable opportunity to build and maintain a broadband network for public and non-profit healthcare providers in NC with excellent benefits and low cost (to the subscribers).
 - ▶ Opportunity for major NC HCPs to work together on this common infrastructure.
 - ▶ Move \$10M-\$40M to the bottom lines of NC non-profit and public healthcare providers (equivalent bottom line impact to generating new revenues of \$333M to \$1.3B (at 3% operating margin)).
- 

Next steps

- ▶ Implement first wave of HCF subscribers (approximately 200)
- ▶ Scale up development efforts:
 - Advisory group
 - Form NCTN Association (501(c)(3)) of NCTN subscribers
 - Recruit next wave of sites.

Questions & Answers

