

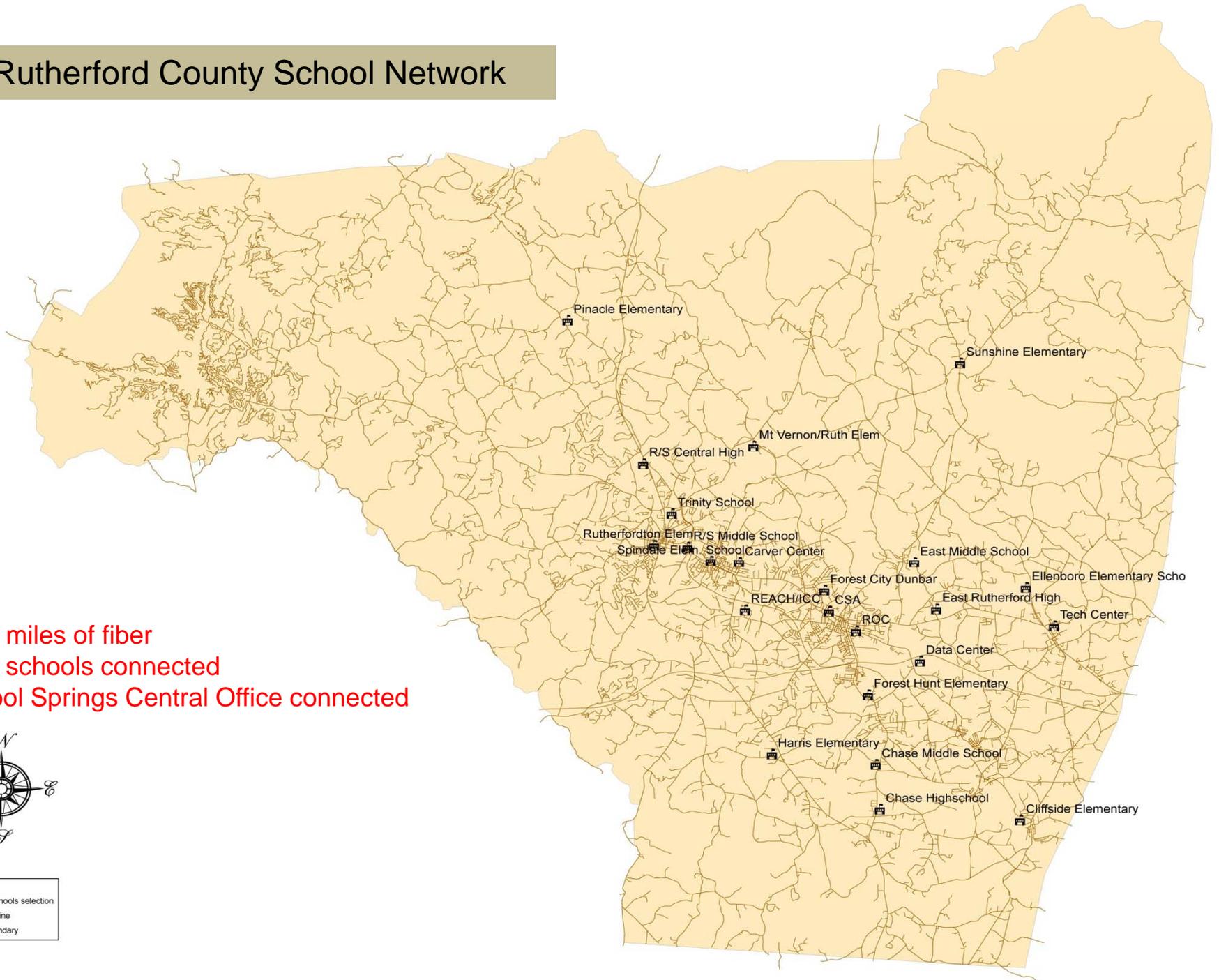
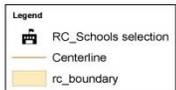
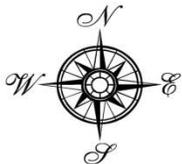
**Fiber Infrastructure Update
November 3, 2008**

Rutherford County School Fiber Network

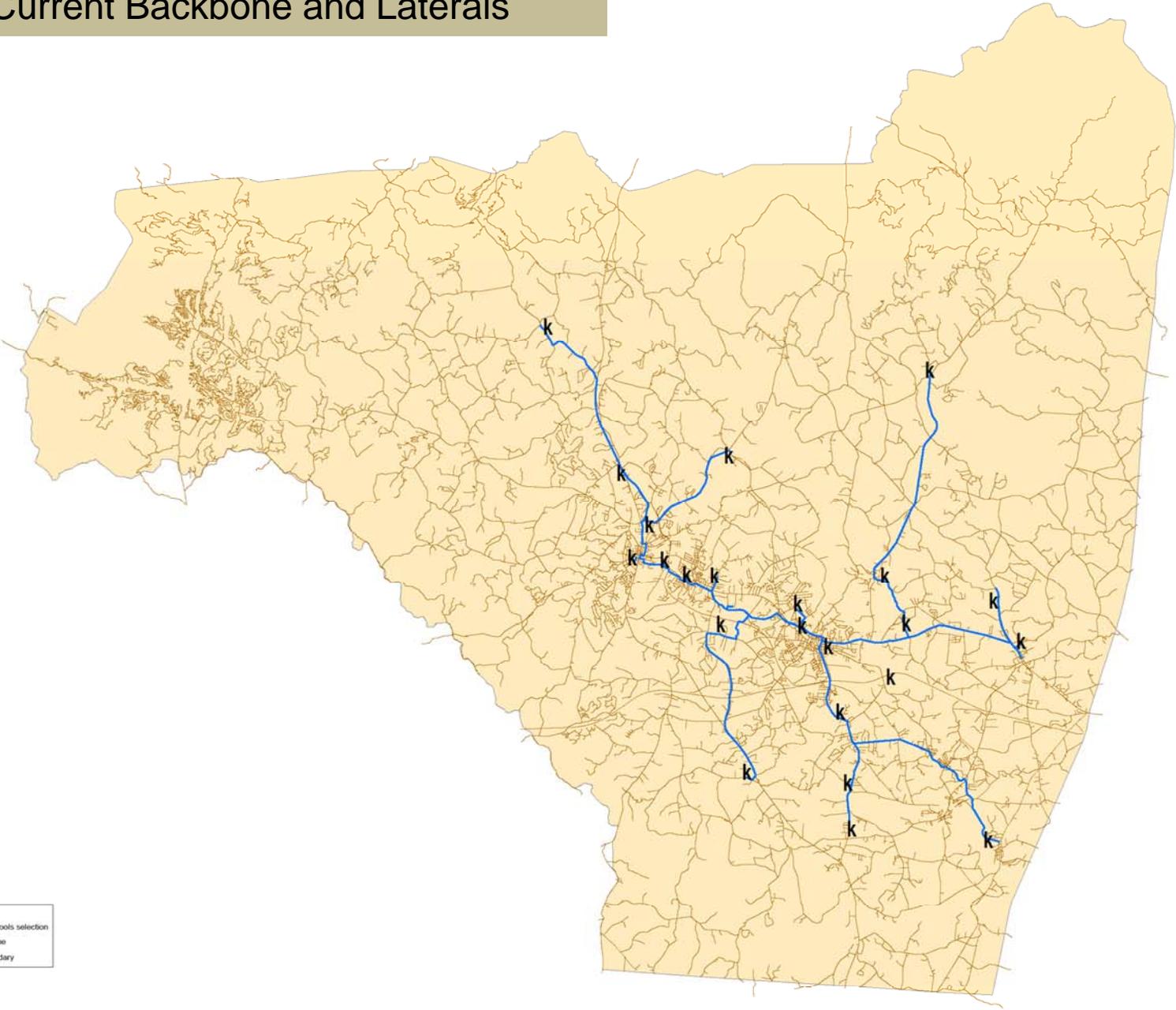
- In 2005, Golden LEAF Foundation funded \$400,000 to Pangaea to build 144 fiber trunk for connectivity of all Rutherford County Schools.
- Rutherford County Schools committed to fund \$380,000 to Pangaea to connect the schools and Cool Springs central office to the trunk lines via laterals
- School Connectivity funds paid \$300,000 for fiber connectivity to Sunshine, Pinnacle, and partially Cliffside.

Rutherford County School Network

62 miles of fiber
21 schools connected
Cool Springs Central Office connected



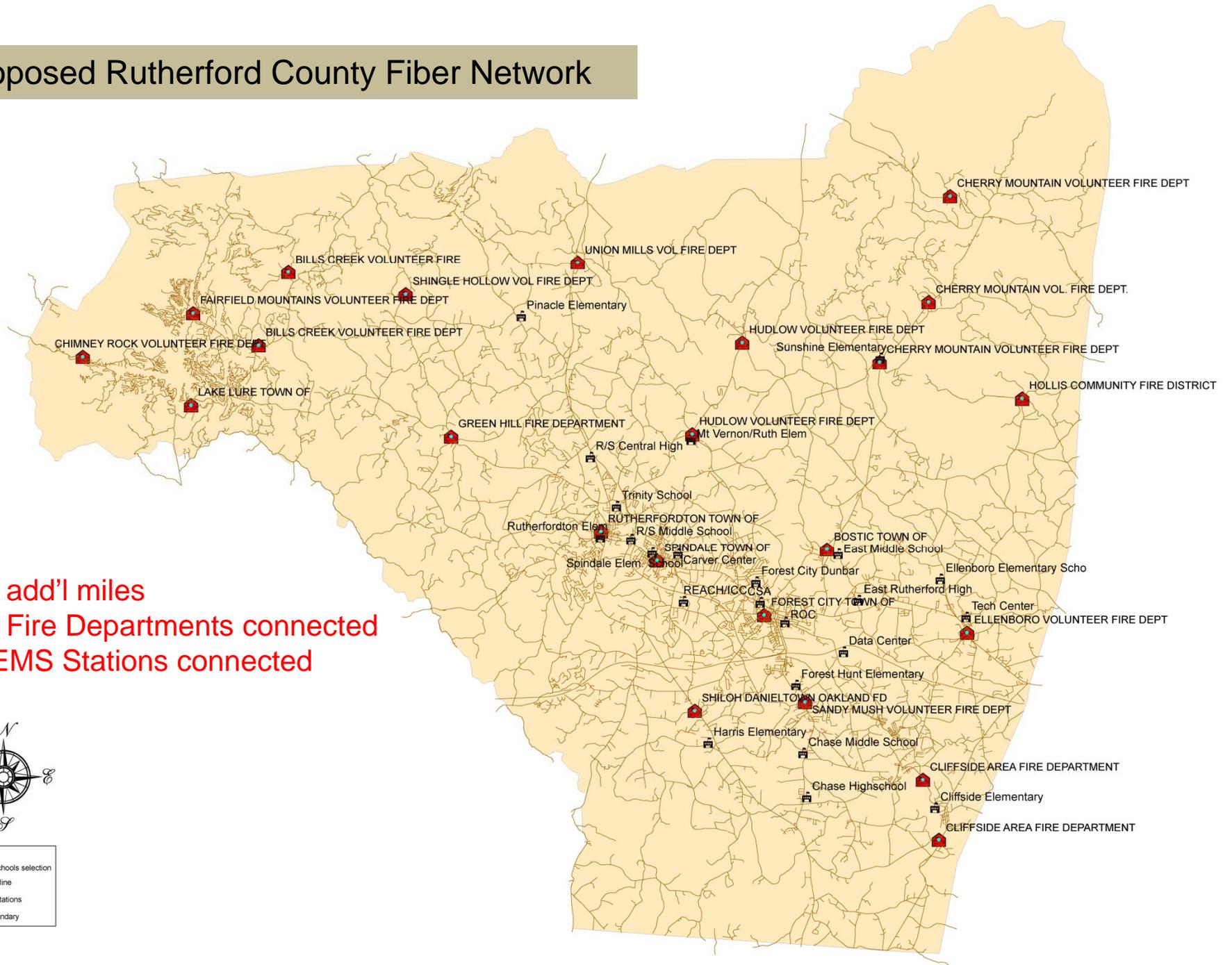
Current Backbone and Laterals



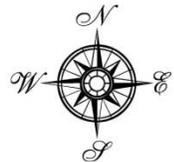
Rutherford County Emergency Services Fiber Network

- Golden LEAF Awarded \$1.4 million dollar grant in 2007, based on an application submitted by Foothills Connect.
 - \$300,000 used to complete school laterals
 - Leaving \$1.14 million to extend fiber to all Emergency Services buildings in Rutherford County
 - Grant must be completed by June 30, 2009

Proposed Rutherford County Fiber Network

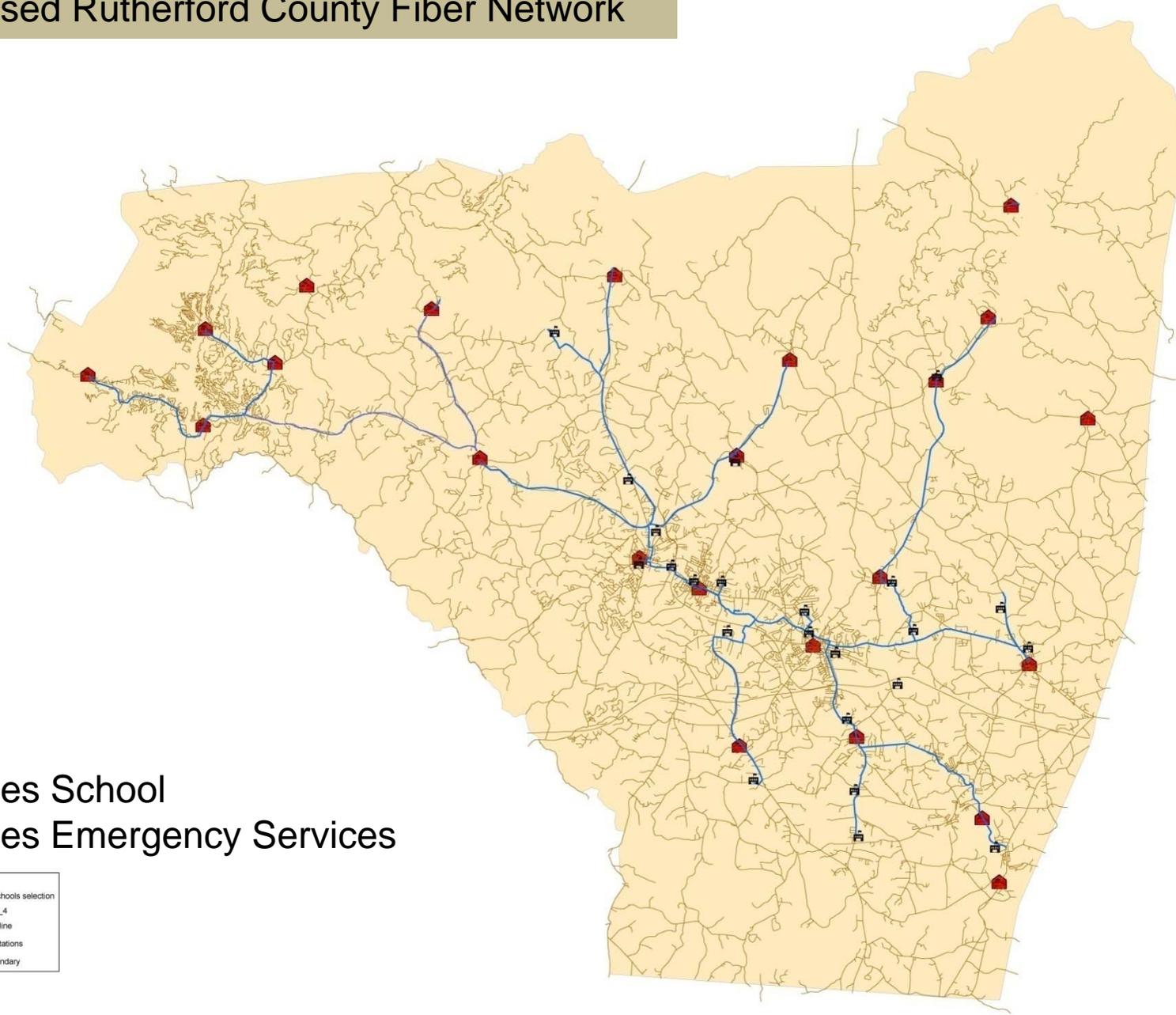


38 add'l miles
 17 Fire Departments connected
 4 EMS Stations connected



Legend	
	RC_Schools selection
	Centerline
	Fire_Stations
	rc_boundary

Proposed Rutherford County Fiber Network



62 miles School
38 miles Emergency Services





4.9 GHz

Emergency Services Network

Why separate Emergency Services Network?

- Dedicated frequency channel
- Exclusive data path via VLAN
 - Only devices defined on a VLAN will receive and send data.
- Traffic prioritization
- Dedicated radio
 - 100% Bandwidth
- Data encryption



Emergency Services Benefits of Fiber/Wireless Network

- ✓ Faster and secured reporting to State and County levels for EMS, Police and Fire Departments, Sheriff
- ✓ Future builds for traffic monitoring
- ✓ High Crime area surveillance
- ✓ Increased connectivity for isolated areas
- ✓ GIS Information for Emergency Services calls (example: The fire at Yellow Top, Project Lifesaver, chemical spills, power plant protection)

Securing Traffic



Public Internet Access

vs.

Emergency Services

Public use 2.4 GHz network.

Emergency Services 4.9 GHz network.



A Shared Network

Dedicated Network

JOINTLY

- Each frequency provides **separation** of traffic while providing dedicated bandwidth to both Public Internet Access & Emergency Services.
- Use of VLANs isolates data on public safety network from public network.
- Use of encryption can further enhance security of Emergency Services data. **Its like driving with tinted windows.**

Proposed Public Internet Hotspots in Rutherford County

Schools

ID	School 	Address
a	Carver Center	900 Carver St
b	Chase HS	1603 Chase High Road
c	Chase Middle	840 Chase High Road
d	Cliffside Elm	North Main Street
e	Cool Springs Admin	382 West Main Street
f	Dumbar	286 Learning Parkway
g	East HS	331 East High Road
h	East Middle	259 East Church Street
j	Elenborro Elm	813 Piney Mountain Ch. Rd.
k	Forrest Hunt Elm	100 Forrest Hunt Drive
l	Harris Elm	3330 US 221 South Hwy
m	Mt. Vernon Elm	2785 Hudlow Road
n	Old Elbr TCA	
o	Pinnacle Elm	1204 Painters Gap Road
p	RC Early	286 ICC Loop Road
r	RC Oppor	140 Old Caroleen Road
s	RS Central HS	641 US 221 North
t	RS Middle	545 Charlotte Road
u	Rutherfordton Elm	134 Maple Street
v	Spindale Elm	201 North Oak Street
w	Sunshine Elm	231 Toney Road

Fire Departments

ID	Station 	Address
A	Bostic Station	181 N Main St
B	Bills Creek Station	1118 Bills Creek Rd
C	Cherry Mountain Station	5841 Bostic Sunshine Hwy
D	Chimney Rock Station	109 Terrace Dr
E	Cliffside Station	4600 US Hwy 221A
F	Danieltown SDO Station	115 Toms Lake Road
G	Ellenboro Station	175 Depot St
H	Fairfield Station	1415 Buffalo Creek Rd
I	Forest City Station	186 S Church St
J	Green Hill Station	2711 US Hwy 64/74A
K	Hudlow Station	2910 Hudlow Road
L	Lake Lure Town Station	622 Memorial Highway
M	Rutherfordton Station	144 N Mitchell St
N	Sandy Mush Station	557 US Hwy 221A
O	Shingle Hollow Station	26621 Cove Road
P	Spindale Station	103 Reveley St

Example of Public Internet “Hotspots”

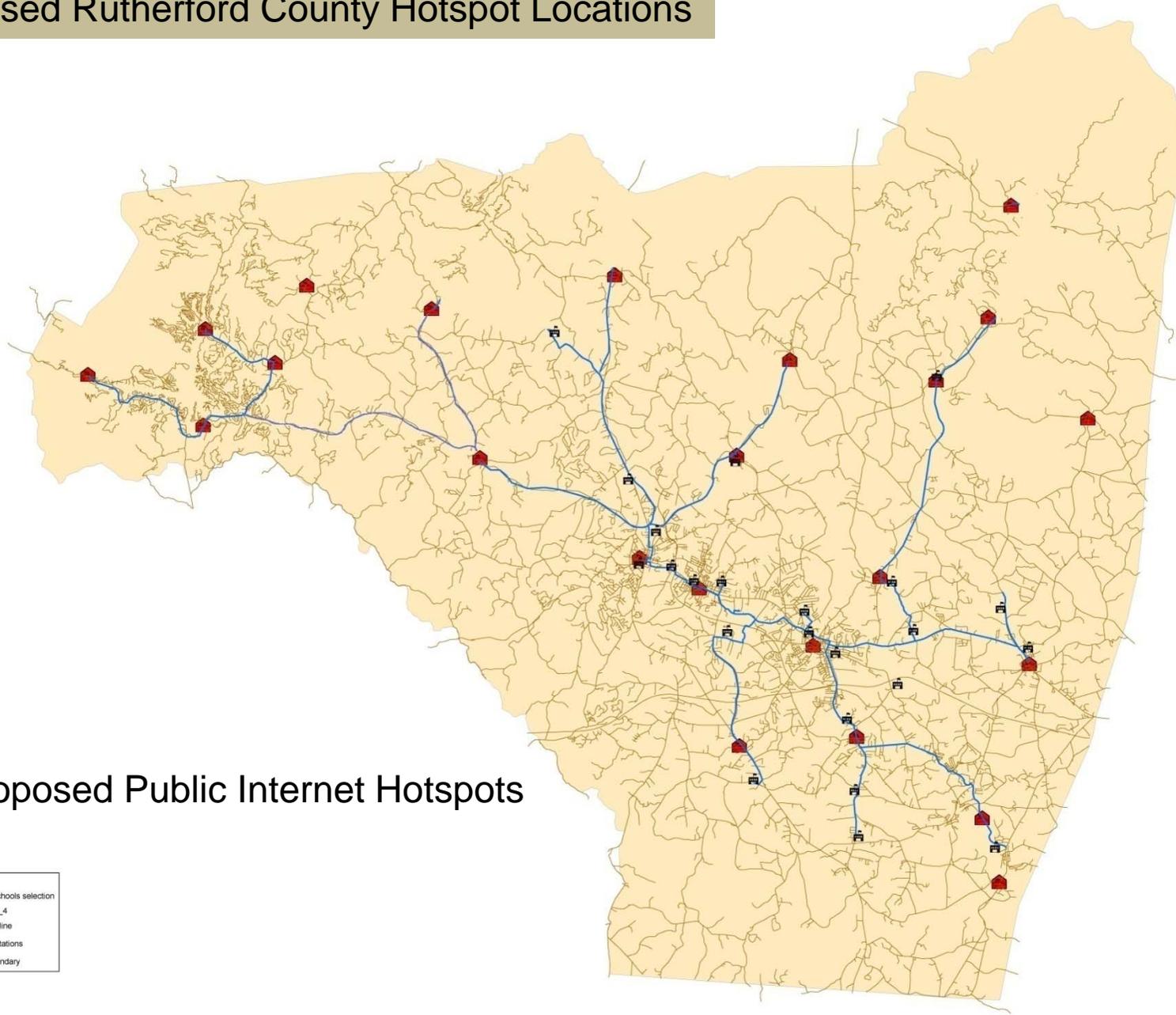


Rutherfordton
Fire Station

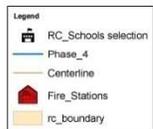
Rutherfordton
Elm School

Foothills
Connect

Proposed Rutherford County Hotspot Locations



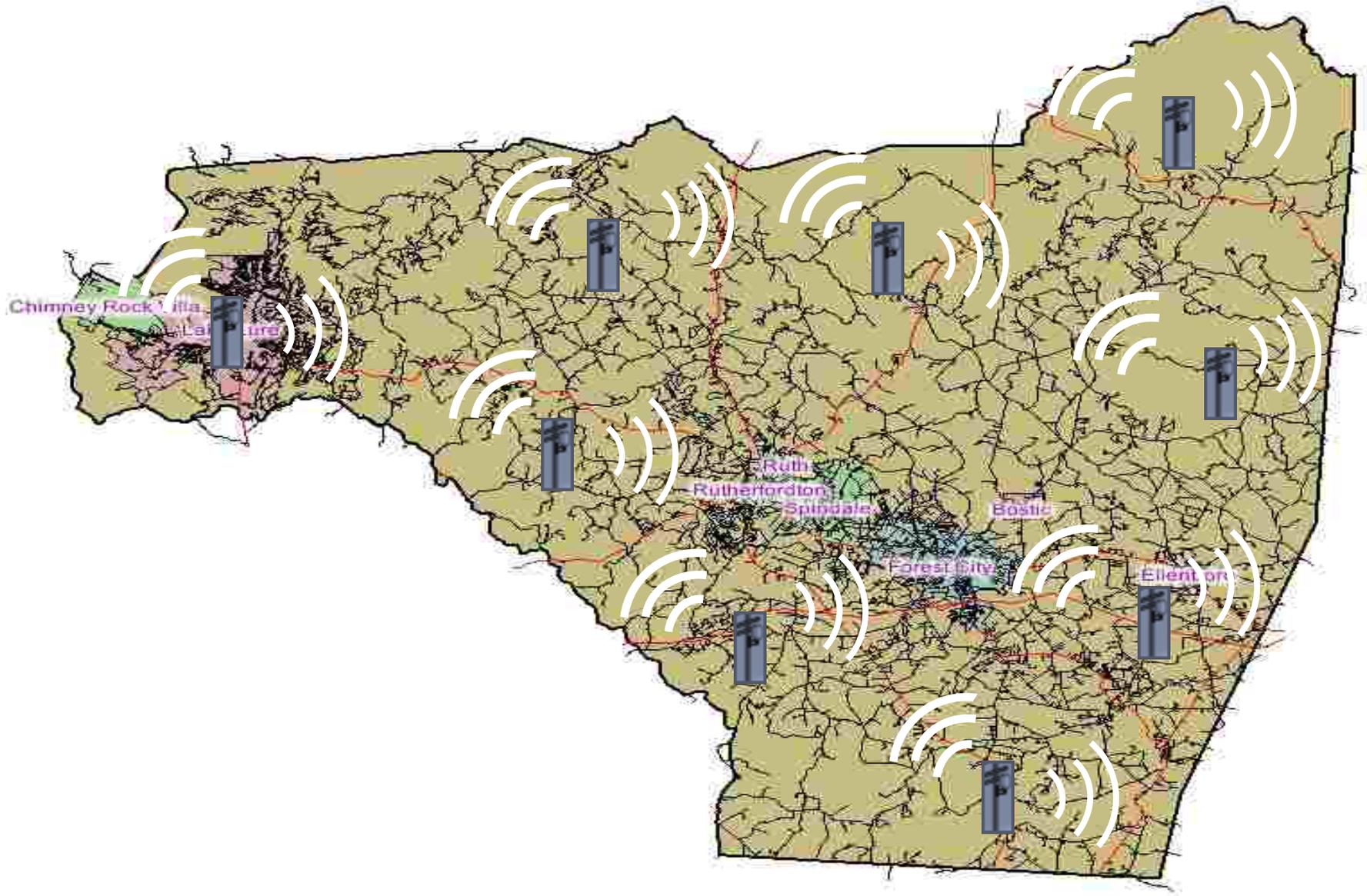
37 Proposed Public Internet Hotspots



ARC Emergency Services Wireless Grant

- October 2007, Appalachian Region Commission awards \$178,920 to Rutherford County to complement the fiber infrastructure to support a wireless network.
- Install wireless design Summer 2009
- Completion of this grant is September 2009.

ARC Emergency Services Wireless Backup



Implementation

- Board of Commissioners to approve an engineering proposal - November 2008
- Designing phase to be completed – Winter 2008
- Install Fiber Expansion to Emergency Service Locations – Winter 2009
- Install Wireless Dual Radio Access Points – Spring 2009
- Implement 4.9 GHz and 2.4 GHz Wireless Networks - Spring 2009
- All Grants completed June 30, 2009