TENNESSEE
BROADBAND TASK FORCE

REPORT & RECOMMENDATIONS

January 10, 2007

The Honorable Phil Bredesen
Governor
The Honorable Ron Ramsey
Speaker of the Senate
The Honorable Jimmy Naifeh
Speaker of the House of Representatives
and Members of the Tennessee General Assembly
The Honorable Sara Kyle
Chairman of the Tennessee Regulatory Authority
and Directors of the Tennessee Regulatory Authority

Ladies and Gentlemen:

Transmitted herewith is the Report and Recommendations of the Tennessee Broadband Task Force with regard to the status of deployment of broadband in Tennessee. This report was prepared pursuant to the authority granted by the General Assembly in Public Chapter 413 of 2005. The authorizing legislation states as follows: "The task force shall prepare a baseline assessment of broadband deployment in Tennessee, and update such assessment as needed."

We hope that this report provides useful information about the deployment of broadband in Tennessee.

Sincerely,

Senator Roy Herron, Co-Chairman

Representative Mark Maddox, Co-Chairman

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This report was prepared by the Tennessee Regulatory Authority, Director Pat Miller and staff members, Jerry Kettles, Arnie Reed, Phil West and Jessica L. Johnson.

TASK FORCE MEMBERS

TENNESSEE BROADBAND TASK FORCE
THE MEMBERS

Roy Herron, Co-Chairman
Tennessee Senate

Mark Maddox, Co-Chairman
Tennessee House of Representatives

John Morgan
Comptroller of the Treasury

Pat Miller
Tennessee Regulatory Authority

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Office of the Governor

Stacey Burks Briggs
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Terry Dison
Cellular phone providers

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Kathy M. Harriman
Competitive local exchange carriers

Rex Hollaway
Tennessee Emergency Communications Board

Robert E. Mayfield
Internet service providers

Charles Stubblefield
Providers of direct-to-home satellite services

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

Rural Tennesseans traditionally are the last to benefit from technological advances, especially in education and health care. Such is the case with high-speed Internet access, or broadband, which simultaneously can stream pictures, voices and data with room to spare. For example, broadband allows patients with computers in rural areas to confer online with medical specialists in more urban areas or take college courses and never leave home. Broadband users can more efficiently use existing services like downloading photos, shopping online or surfing the World Wide Web.

But broadband service is not available to all Tennesseans, especially those in rural areas. The General Assembly approved legislation in 2005 that created the 14-member Tennessee Broadband Task Force, comprised of representatives from the telecommunications and cable television industries along with elected officials and government regulators. The Task Force was charged with preparing a baseline assessment of broadband deployment in Tennessee that includes, among other things, the number of digital subscriber lines, their location and use. Similar broadband deployment information was to be obtained from cable television systems in Tennessee. Industries were to provide baseline information without divulging proprietary information.

> "...to examine the deployment of broadband in the state including, but not limited to, the following aspects of broadband service: regulation, cost, access to facilities, and market competition."
> -Tennessee General Assembly

The General Assembly instructed the Tennessee Broadband Task Force "...to examine the deployment of broadband in the state including, but not limited to, the following aspects of broadband service: regulation, cost, access to facilities, and market competition." In its simplest terms, legislators wanted to know where we are, where do we want to go, and how do we get there?

These simple questions are not easily answered.

Traditional providers are doing a good job in supplying broadband service in Tennessee, especially in the state's high-density areas. Officials from Comcast and Charter Communications told Task Force members that cable television providers offer broadband service to all of their customers. A BellSouth executive testified that his company offers broadband to more than 80 percent of its customers. Various rural telephone cooperatives, like Ben Lomand in eastern Middle Tennessee, are currently providing high speed connections in rural communities.

Telecommunications and cable television providers are reluctant to share proprietary information about their deployment of broadband, which is a highly competitive product. Broadband deployment lags in rural areas of Tennessee, but gaps in deployment are impossible to identify without cooperation of the incumbent providers.

Other states have initiated programs to stimulate broadband deployment and adoption. Broadband Task Force members heard testimony from ConnectKentucky officials who said it has raised the availability of broadband from 60 percent of that state's households in 2003 to 87 percent in September 2006. Broadband availability in Kentucky was due to reach 90 percent of households by the end of 2006.

The current level of broadband adoption in Tennessee is unacceptable. Tennessee ranks 37th in the United States in broadband usage; only one in four Tennessee households has adopted its use.

EXECUTIVE SUMMARY

Tennessee's colleges and universities, state government, schools and libraries appear to be adequately served by broadband. Expanded broadband service to rural areas would provide greater educational opportunity and tools, which translates into a better-educated workforce and better-paying jobs. Rural physicians could use broadband service for consultations and diagnosis of injury and illness, which means improved health care in remote parts of the state. Extensive broadband availability would enable Tennessee farmers to obtain electronic imaging of their crops and lands. The list of improvements is immense.

Extending broadband to underserved areas will be useless if the public is not aware of its existence. Tennesseans need to be educated about the benefits of broadband technology. It doesn't make sense to extend the technology if no one plans on using it. The public and private sectors need to make a cooperative effort toward educating the public about broadband and its advantages. Then, the state needs to provide incentives for business to buy into this effort.

Tennessee needs to make a purposeful effort to serve rural areas with broadband service. Until that occurs, Tennessee will lose ground – and jobs and educational opportunities – to states willing to make that commitment. Therefore, the Task Force makes the following findings and recommendations.

FINDING 1

The Tennessee Broadband Task Force cannot determine specifically where broadband service is deployed. Broadband providers consider that information proprietary.

RECOMMENDATION

Establish a baseline of current broadband availability. The Task Force believes that proprietary concerns can be eased by using a public-private partnership model similar to ConnectKentucky, which can legally protect the providers' competitively sensitive information. Broadband service providers told the Task Force they would provide confidential information in such an environment.

FINDING 2

Broadband service is essential to the future of Tennessee's economy, the health of our citizens and the education of our children. Every Tennessee home and business should have access to broadband service.

RECOMMENDATION

Establish a program that promotes access to broadband service in every home and business.

FINDING 3

ConnectKentucky has increased broadband deployment and adoption in Kentucky.

RECOMMENDATION

Establish a public-private partnership similar to ConnectKentucky.

FINDING 4

Competition among broadband providers can spur additional deployment and result in better service.

RECOMMENDATION

Expand policies to promote competition.

FINDING 5

A variety of state initiatives currently promotes the deployment and adoption of broadband.

RECOMMENDATION

Identify and coordinate state efforts toward expanding broadband deployment and usage.

INTRODUCTION

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Broadband expansion is to the 21st century what rural electrification was to the 20th century – an advance that can enable people living in even the most remote parts of Tennessee, or the country for that matter, to have some of the same technological advantages as city residents. Broadband, the generic term for high-speed Internet access historically delivered over DSL (digital subscriber line) telephone lines or cable, is critically important to Tennessee's future, especially in jobs, education and health care.

Early in the 20th century, electricity was considered a luxury unreachable by residents of rural America. Rural electrification was achieved only after a coordinated effort by the public and private sectors, which succeeded in driving full deployment and adoption of that technology to farms and small towns across the country. Widespread deployment and adoption of broadband also will require a coordinated effort by the public and private sectors.

Rural Tennesseans traditionally are the last to benefit from technological advances, especially in jobs, education and health care. Such is the case with broadband, which simultaneously can stream pictures, voices and data with room to spare. For example, broadband allows patients in rural areas to confer online with medical specialists in more urban areas or participate in college courses without having to leave home. Broadband users can more efficiently use existing services like downloading photos, checking medical test results or surfing the World Wide Web.

Broadband technology can help keep all Tennesseans safe. Future emergency communications services will rely on broadband technology. Nashville Public Television has developed a wireless broadband service that can provide critical emergency alerts to the public. The Tennessee Emergency Communications Board recently voted to modernize the state's 911 infrastructure with Internet Protocol technology.

Broadband:

According to the International Telecommunications Union (ITU), broadband means transmission capacity that is faster than primary rate ISDN (i.e., 1.5 or 2.0 Mbps). The FCC chose 200 Kbps as its definition for broadband because, in their view, it is enough to enable the most popular forms of broadband to change Web pages as fast as one can flip through the pages of a book and to transmit full-motion video. Notwithstanding these definitions, **the term tends to be widely used simply as shorthand for high speed, always-on Internet access.**

The General Assembly approved legislation in 2005 that created the 14-member Tennessee Broadband Task Force and charged it with preparing a baseline assessment of broadband deployment in the state.

During their organizational meeting, the Task Force chairmen outlined the charge in plain language: "Where are we? Where do we want to be? And how do we get there?" The Task Force met five times over the last nine months and heard from numerous providers, experts and state programs in an attempt to answer these questions.

Broadband is quickly becoming a necessary communications technology like the phone. An April 19, 2006 report by the Pew Internet and American Life Project illustrates the extent to which the Internet is becoming integral to daily life. From January 2002 until March 2005 Internet use grew by:

- **54 percent** in the number of adults who said the Internet played a major role as they **helped another person cope with a major illness.** And the number of those who said the Internet played a major role as they coped themselves with a major illness increased 40 percent.
- **50 percent** in the number who said the Internet played a major role as they **pursued more training for their careers**.
- **45 percent** in the number who said the Internet played a major role as they made **major investment or financial decisions**.
- **43 percent** in the number who said the Internet played a major role when they **looked for a new place to live**.
- **42 percent** in the number who said the Internet played a major role as they **decided about a school or a college for themselves or their children.**
- **23 percent** in the number who said the Internet **played a major role when they bought a car**.
- **14 percent** in the number who said the Internet **played a major role as they switched jobs.**

WHERE ARE WE NOW ?

"The ITU (International Telecommunication Union) ranked the United States at 11.4 broadband subscribers per 100 inhabitants as of December 31, 2004, which is less than half that of South Korea - the most wired country in the world - with 24.9 broadband subscribers per 100 inhabitants."

-Thomas L. Friedman
The World Is Flat

WHERE ARE WE NOW?

Broadband service lets students go online for homework help. Physicians can diagnose injuries and illnesses from hundreds of miles away. Companies throughout Tennessee can connect with their global clients. Broadband internet is essential to improved education, health care, and economic development. Greater educational opportunities and tools translate into a better-educated workforce and better-paying jobs.

Broadband services are provided using several technologies. Phone companies generally use digital subscriber line (DSL) technology which provides speeds of 1.5 Million bits per second (Mbps). DSL connections are about 30 times faster than a dial-up Internet connection. Cable television operators provide broadband Internet service using cable modems at speeds between 3 and 4 Mbps. Tennesseans also receive broadband over fiber optic connections and wireless technologies.

The United States is 12th among industrialized nations in broadband subscribers per capita.[1] According to Commissioner Michael Copps of the Federal Communications Commission (FCC), the U.S. ranks as low as 21st when price and other factors are considered.[2] Further Copps said, "We do know this: nearly every industrialized country, except the United States, has a national strategy for broadband deployment. And they're cleaning our clock."[3]

Broadband Subscribers per 100 Inhabitants in OECD countries

Rank	Country	DSL	Cable	Other	Total	Total Subscribers
1	Iceland	25.9	0.1	0.6	26.7	78,017
2	South Korea	13.6	8.3	3.4	25.4	12,190,711
3	Netherlands	15.7	9.6	0.0	25.3	4,113,573
4	Denmark	15.3	7.2	2.5	25.0	1,350,415
5	Switzerland	14.7	8.0	0.4	23.1	1,725,446
6	Finland	19.5	2.8	0.1	22.5	1,174,200
7	Norway	17.8	2.9	1.2	21.9	1,006,766
8	Canada	10.1	10.8	0.1	21.9	6,706,699
9	Sweden	13.3	3.4	3.6	20.3	1,830,000
10	Belgium	11.3	7.0	0.0	18.3	1,902,739
11	Japan	11.3	2.5	3.8	17.6	22,[illegible]091
12	**United States**	**6.5**	**9.0**	**1.3**	**16.8**	**49,391,060**
13	United Kingdom	11.5	4.4	0.0	15.9	9,539,900
14	France	14.3	0.9	0.0	15.2	9,465,600
15	Luxembourg	13.3	1.6	0.0	14.9	67,357
16	Austria	8.1	5.8	0.2	14.1	1,155,000
17	Australia	10.8	2.6	0.4	13.8	2,785,000
18	Germany	12.6	0.3	0.1	13.0	10,706,600
19	Italy	11.3	0.0	0.6	11.9	6,896,696
20	Spain	9.2	2.5	0.1	11.7	4,994,274
21	Portugal	6.6	4.9	0.0	11.5	1,212,034
22	New Zealand	7.3	0.4	0.4	8.1	331,000
23	Ireland	5.0	0.6	1.1	6.7	270,700
24	Czech Republic	3.0	1.4	2.0	6.4	650,000
25	Hungary	4.1	2.1	0.1	6.3	639,505
26	Slovak Republic	2.0	0.4	0.2	2.5	133,900
27	Poland	1.6	0.7	0.1	2.4	897,659
28	Mexico	1.5	0.6	0.0	2.2	2,304,520
29	Turkey	2.1	0.0	0.0	2.1	1,530,000
30	Greece	1.4	0.0	0.0	1.4	155,418
	OECD	**8.4**	**4.2**	**1.0**	**13.6**	**157,719,880**

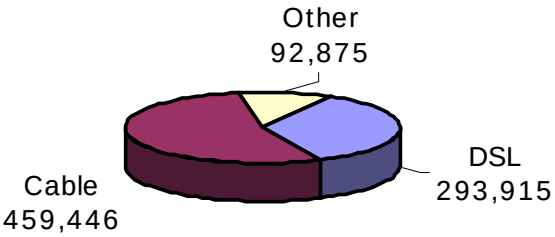
[1] See www.oecd.org/sti/ict/broadband.
[2] Copps, Michael J. "America's Internet Disconnect." *The Washington Post.* 8 November 2006..
[3] Copps, Michael J. "Remarks of FCC Commissioner Michael J. Copps Practicing Law Institue/FCBA. Washington, D.C.15 December 2006.

WHERE ARE WE NOW?

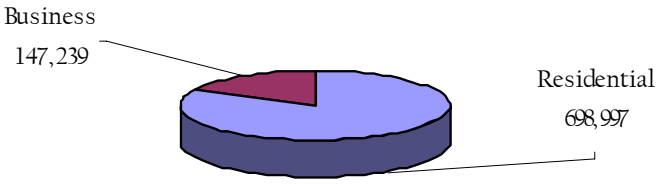
A May 2006 Government Accountability Office (GAO) report[4] found that 28 percent of American households (about 30 million) subscribe to broadband, 30 percent use the much slower dial-up access and 41 percent do not access the Internet from home. Income, education and age are the primary determinants of broadband adoption, according to the GAO. Households with higher incomes are 39 percent more likely to adopt broadband than lower-income households; those with a college-educated head of household are 12 percent more likely to adopt broadband than those headed by a non-college graduate. Households headed by people between 18 and 23 are more likely to adopt broadband than those headed by people over 50 years old.

Only one in four Tennessee households has adopted broadband, ranking the state 37th in the country.[5] In Tennessee, 846,236 broadband lines were in service at the end of 2005, according to the FCC. Market competition results in 35 percent of lines, 293,915, being provided using DSL and 459,446 connections, or about 54 percent, are provided by cable modem technology. Other technologies, like fiber optics, satellite, fixed wireless, and traditional wireline technologies comprise the remaining high-speed lines in Tennessee.

Tennessee Broadband Lines by Technology as of 12/31/05



Tennessee Broadband Lines by Customer Type as of 12/31/05



The FCC reports 698,997 residential broadband connections in Tennessee. The remaining 147,239 broadband lines serve business customers.

Access to broadband facilities is limited in rural areas. This is demonstrated by national statistics gathered by the GAO. Compounding the problem with rural deployment are low "take rates" in rural communities. Take rates refer to the percentage of subscribers in a given area where broadband is available. Only 17 percent of rural households have broadband compared with 29 percent in urban areas and 28 percent in suburban areas. Providers have not deployed broadband as extensively in rural areas primarily due to (1) a lower housing density, which raises the cost per subscriber, and (2) lower levels of income and education, which decrease the rate

[4] GAO, Broadband Deployment Is Extensive throughout the United States, but It Is Difficult to Assess the Extent of Deployment Gaps in Rural Areas, May 2006.

[5] Broadband adoption data was compiled from Table 13 of *High-Speed Services for Internet Access: Status as of June 30, 2005*, published by Industry Analysis and Technology Division, Wireline Competition Bureau, Federal Communications Commission, April 2006. Estimates of housing units were obtained from Table 1: Annual Estimates of Housing Units for the United States and States: April 1, 2000 to July 1, 2004 (HU-EST2004-01), Source: Population Division, U.S. Census Bureau, released July 21, 2005.

WHERE ARE WE NOW?

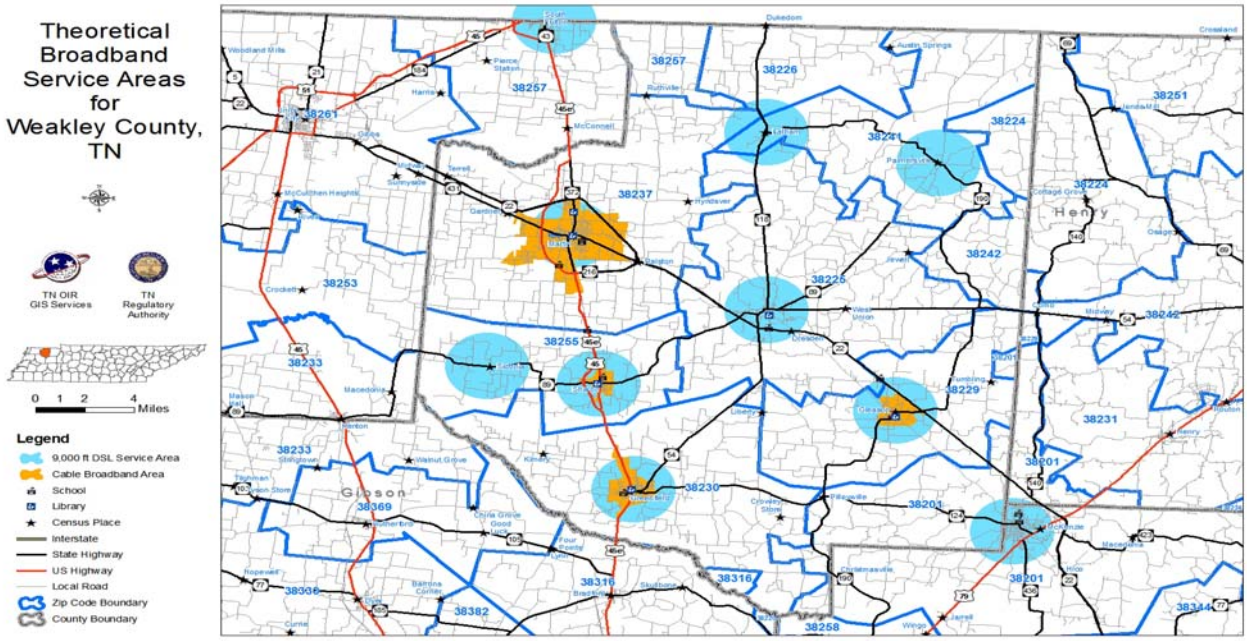
of adoption. The cost of equipping and conditioning one telephone line can cost as much as $5,000. High costs coupled with low take rates makes little or no business sense to private providers.

Although broadband is not regulated by the Tennessee Regulatory Authority (TRA), it sought in Fall 2005 to determine the extent of the deployment of broadband services and technologies in Tennessee. The TRA issued 104 data requests to wireline telephone companies, cable providers, wireless providers, including satellite, and other facilities-based providers. Only 45 providers responded to the TRA's data request, and many respondents merely provided partial information. While this survey was incomplete, the rural providers who responded reported that the subscription or take rate for broadband services is low (3.9 percent to 26 percent).

The Task Force was charged with creating a baseline assessment of deployment. However, broadband providers were unwilling to share proprietary deployment information necessary to create a baseline assessment. Without this detailed information, the Task Force cannot specifically identify underserved areas in Tennessee.

> Only 17 percent of rural households have broadband compared with 29 percent in urban areas and 28 percent in suburban areas.
>
> -Government Accountability Office

Consequently, the TRA staff tried to determine if a map of broadband deployment could be developed from information available to the Task Force. Selecting predominantly rural Weakley County as a model, the resulting map, found below, indicates that broadband is available to 66 percent of the population that is concentrated within the incorporated areas of the county. The remaining third apparently is not served by broadband.



While the FCC data indicates that 25 percent of the state subscribes to broadband, the Task Force was unable to determine where broadband is available in Tennessee because the industry considers

that proprietary information. Nevertheless, the information provided to the Task Force leads to the same conclusion reached by the GAO in its May 2006 report – there is significant deployment of broadband in urban areas, but assessment of deployment in rural areas is difficult. The first step in improving deployment is to establish a baseline, which this Task Force has been unable to accomplish.

FINDING 1

The Tennessee Broadband Task Force cannot determine specifically where broadband service is deployed. Broadband providers consider that information proprietary.

RECOMMENDATION

Establish a baseline of current broadband availability. The Task Force believes that proprietary concerns can be eased by using a public-private partnership model similar to ConnectKentucky, which can legally protect the providers' competitively sensitive information. Broadband service providers told the Task Force they would provide confidential information in such an environment.

WHERE DO WE WANT TO BE?

"In Japan, for instance, consumers pay the equivalent of $10 a month for service forty times as fast as 200 kbps. The smartest countries, and cities, in the world are offering their residents not just the fastest broadband, but at the lowest prices to the widest areas."

-Thomas L. Friedman
The World Is Flat

WHERE DO WE WANT TO BE?

The answer is simple—use the latest technology to make broadband available to all Tennesseans.

Universal Access to Broadband

The Task Force believes that every Tennessean should have access to broadband, but many do not. The broadband shortfall is most acute in rural areas of the state. Given that rural areas are more likely to be underserved than urban areas, the Task Force holds that focused efforts should be made to bring broadband access in rural areas to parity with access in urban areas. Therefore, establishing a state program that also stimulates demand in rural areas is essential to make these areas attractive for private investment in broadband infrastructure.

Affordable Broadband

Delivering broadband through wired DSL or cable modems is expensive and usually unworkable in remote areas. Satellite and wireless are alternatives. To enable satellite broadband service, consumers must often purchase dedicated equipment that is expensive when compared to the costs of establishing a wired broadband connection.[6] Affordable broadband should not be outside the reach of rural Tennesseans.

Raising the Speed Limit

The Task Force believes that all Tennesseans should have access to broadband, but a speed of 200 kbps is not fast enough, because technology is constantly evolving. Future Internet applications will require faster speeds, so higher minimum standards should be set.

Tennessee could follow Utah's ambitious approach. The Utopia broadband initiative aims to provide 100 Mbps connections to all homes and businesses.

As a matter of comparison, 100 Mbps Internet connection is 500 times faster than the minimum speed required to be called broadband by the FCC and 60 times faster than the current standard DSL connection. The FCC considers 200 kbps as broadband. A 200 kbps broadband connection is about four times faster than a dial-up Internet connection.

FINDING 2

Broadband service is essential to the future of Tennessee's economy, the health of our citizens and the education of our children, and every Tennessee home and business should have access to broadband service.

RECOMMENDATION

Establish a program that promotes access to broadband service to every home and business.

[6] Satellite consumer equipment and installation costs roughly $600 per subscribing household.

HOW DO WE GET THERE?

"The more you connect an educated population to the flat-world platform in an easy and affordable way, the more things they can automate, and therefore the more time and energy they have to innovate."

-Thomas L. Friedman
The World Is Flat

HOW DO WE GET THERE?

A Public-Private Partnership Approach

The Task Force heard extensive testimony on the ConnectKentucky program, a public-private partnership model that stimulates broadband deployment and demand with a market-driven approach. Officials from ConnectKentucky explained how they gathered highly sensitive competitive data, with the cooperation of providers to determine where broadband was available in Kentucky. Once that was determined, ConnectKentucky could identify communities that are underserved. ConnectKentucky then systematically set out to increase deployment by educating underserved communities on the value of broadband, thereby increasing demand. Increased demand makes it more attractive for private providers to supply broadband to those communities.

Vhere there's a will there's a way. Workers string fiber optic cable in Kentucky.

ConnectKentucky said the program has raised the availability of broadband from 60 percent of that state's households in 2003 to 87 percent in September 2006. Broadband availability in Kentucky was due to reach 90 percent of households by the end of 2006. Program officials reported a gain of more than 5,600 new high-tech jobs as broadband usage increased.

Results of surveys performed by ConnectKentucky indicate that one-third of respondents who don't subscribe to broadband service said they don't need the Internet. Industry officials testified that consumer education would raise the level of broadband adoption in Tennessee. The Task Force agrees with providers that broadband usage can be increased if consumers were educated about the benefits of broadband technology.

FINDING 3

ConnectKentucky has increased broadband deployment and adoption in Kentucky.

RECOMMENDATION

Establish a public-private partnership similar to ConnectKentucky.

Competition

Competition between broadband providers can stimulate deployment. The GAO reports that competition often causes incumbent cable and telephone companies to upgrade their networks to better compete. Municipal utilities and rural cooperatives can provide competition in the broadband market. Municipals, in some instances, may be the only provider of broadband. In other instances, municipal utilities may function as an additional competitor in markets.

FINDING 4

Competition among broadband providers can spur additional deployment and result in better service.

RECOMMENDATION

Expand policies to promote competition.

Coordination of State Efforts

Numerous state government initiatives involve broadband technology. For example, the governor's "Next Steps" jobs creation strategy calls for a new grant fund to help local communities develop custom strategies for expanding broadband technology.[7] The Department of Economic and Community Development is planning a program to increase deployment and adoption of broadband in partnership with Tennessee's five Technology Councils.[8] The Volunteer eHealth initiative involves extensive investment in information technology and will require broadband technology to allow stakeholders to effectively communicate.[9] Finally, Tennessee has been successful in providing Internet services to the K-12 education community through its relationship with Educational Networks of America (ENA).

The programs described above illustrate the importance of broadband technology in creating jobs and economic development, providing affordable health care and educating our children. Given that broadband technology is an essential element of each program, it is likely that synergies exist between the programs related to broadband. To capture and fully realize the shared benefits of broadband, the Task Force believes it would be beneficial to coordinate broadband policy.

FINDING 5

A variety of state initiatives currently promotes the deployment and adoption of broadband.

RECOMMENDATION

Identify and coordinate state efforts toward expanding broadband deployment and usage.

[7] http://www.tennesseeanytime.org/governor/viewArticleContent.do?id=865
[8] See http://www.state.tn.us/ecd/tech_councils.htm.
[9] http://www.volunteer-ehealth.org/index.php

APPENDICES

THE GREAT SEAL OF THE STATE OF TENNESSEE
XVI
AGRICULTURE
COMMERCE
1796

APPENDIX 1

ENABLING LEGISLATION

CHAPTER NO. 413

SENATE BILL NO. 2152

By Herron

Substituted for: House Bill No. 2130

By Maddox, Fitzhugh, Hargrove

AN ACT to amend Tennessee Code Annotated, Title 7, Chapter 52, Part 4; Title 40 and Title 67, relative to the creation of the Tennessee Broadband Task Force.

BE IT ENACTED BY THE GENERAL ASSEMBLY OF THE STATE OF TENNESSEE:

SECTION 1. Tennessee Code Annotated, Title 7, Chapter 52, Part 4, is amended by adding the following language:

Section 7-52-408. (a) There is hereby created the Tennessee Broadband Task Force to examine the deployment of broadband in the state including, but not limited to, the following aspects of broadband service: regulation, cost, access to facilities, and market competition.

(b) The task force shall be composed of fourteen (14) members as follows:

(1) One (1) member from the office of the governor;

(2) One (1) member of the House of Representatives appointed by the Speaker of the House;

(3) One (1) member of the Senate appointed by the Speaker of the Senate;

(4) One (1) member appointed by the governor representing the incumbent local exchange carriers;

(5) One (1) member appointed by the governor representing the competitive local exchange carrier;

(6) One (1) member appointed by the governor representing internet service providers;

(7) One (1) member appointed by the governor representing municipal utilities;

(8) One (1) member appointed by the chair of the Tennessee Regulatory Authority;

(9) The comptroller of the treasury or the comptroller's designee;

(10) One (1) member appointed by the governor representing a cellular phone provider;

(11) One (1) member appointed by the governor representing the Tennessee Public Television Council;

(12) One (1) member appointed by the governor representing a cable television provider;

(13) One (1) member appointed by the chair of the Tennessee Emergency Communications Board; and

(14) One (1) member appointed by the governor representing a provider of direct-to-home satellite services.

In making such appointments, the appointing authorities shall strive to ensure that the composition of the task force represents the diversity of persons in Tennessee by considering race, gender, age, and geographical and political interests.

Section 7-52-409. A majority of the members shall constitute a quorum. The speakers of the respective houses each shall appoint a co-chair from the members named to the task force. The task force shall meet quarterly and may meet more often upon a call of the co-chair.

Section 7-52-410. (a) The task force shall prepare a baseline assessment of broadband deployment in Tennessee, and update such assessment as needed. Such assessment shall be submitted to the governor, the Speaker of the Senate, the Speaker of the House of Representatives and the Tennessee Regulatory Authority by January 1, 2006.

(b) The assessment shall include, but not be limited to, the number of digital subscriber lines in Tennessee and their location and use. Comparable information shall also be obtained for broadband deployment through cable systems. Nothing in this act shall require private industries to release proprietary information, including the penetration of customers or customer information.

(c) Telephone utilities and cable service providers shall submit information to the task force as needed to enable the task force to prepare the baseline assessment and updates on broadband deployment.

(d) The staff of the Tennessee Regulatory Authority shall provide such support and services as will aid the task force in completing its study.

Section 7-52-411. The task force shall complete its report by January 1, 2006.

SECTION 2. This act shall take effect upon becoming a law, the public welfare requiring it.

PASSED: May 27, 2005

JOHN S. WILDER
SPEAKER OF THE SENATE

JIMMY NAIFEH, *SPEAKER*
HOUSE OF REPRESENTATIVES

APPROVED this 17th day of June 2005

PHIL BREDESEN, GOVERNOR

APPENDIX 2

TELECOMMUNICATIONS PROVIDERS MAP OF BROADBAND DEPLOYMENT

Notes on DSL Availability Map

1. The map shows the wireline industry's best information about the availability of DSL services in Tennessee.

2. Deployment information shown on the map is, by necessity, aggregated to a certain level of detail. Therefore, some customers may be located within some of the deployment areas shown in the map, but broadband service may not be available to certain customers. These limited situations do not represent an attempt by the industry to overstate deployment, or to mislead the Task Force.

3. This map does not reflect the deployment of data and transport services that generally serve business class customers. These services include, but are not limited to, Frame Relay Service, ATM-based service, SONET or Ethernet based services. These services are generally available anywhere on demand.

4. This map does not reflect the State of Tennessee's TNII project that has provided high-speed Internet access to all public schools and libraries in Tennessee. This access generally uses the services described in Item 3.

5. The following companies contributed deployment data to this map:

   Ardmore Telephone Company
   BellSouth Telecommunications, Inc.
   Ben Lomand Rural Telephone Cooperative
   Century Telephone of Adamsville, Inc.
   Century Telephone of Claiborne, Inc.
   Century Telephone of Ooltewah, Inc.
   Concord Telephone Exchange, Inc.
   Crockett Telephone Company, Inc.
   DTC Communications
   EMBARQ (formerly part of Sprint Nextel)
   Frontier Communications
   Highland Telephone Cooperative
   Humphreys County Telephone Company
   Loretto Telephone Company, Inc.
   Millington Telephone Company
   North Central Telephone Cooperative
   Peoples Telephone Company, Inc.
   Tellico Telephone Company
   Tennessee Telephone Company
   Twin Lakes Telephone Cooperative
   United Telephone Company
   West Kentucky Rural Telephone Cooperative

DSL AVAILABILITY

N
W E
S

0 10 20 40 60 80 Miles

Legend

DSL Availability

includes Co-op Service Areas

APPENDIX 3

TENNESSEE CABLE TELECOMMUNICATIONS ASSOCIATION MAP OF BROADBAND AVAILABILITY

TENNESSEE CABLE TELECOMMUNICATIONS ASSOCIATION

Memorandum

To: Members of the Governor's Broadband Taskforce
From: Stacey Burks Briggs, President and Executive Director,
Tennessee Cable Telecommunications Association
Ashley Eubank Cates, Government and Member Relations Director,
Tennessee Cable Telecommunications Association
Re: Supplemental Information to TCTA Broadband Availability Map
Date: July 18, 2006

On behalf of the cable industry in Tennessee, we are pleased to present information pertaining to cable Broadband availability in the State of Tennessee.

Boundaries Methodology and Availability

We have made our best efforts to identify "unfranchised areas" of Tennessee. Sources for this information include the Federal Communications Commission, local franchising authorities, cable operators, and the subscription web source MBC, the Bridge, http://www.mbc-thebridge.com/.

By way of background, every City and County in Tennessee has the federal right to require any provider of video services using their local rights-of-way to obtain a non-exclusive video franchise. These video franchises most always have a "density" provision, which requires the cable operator to build to every home in the City or County franchise area with a density of a number of homes per mile. These buildout/density requirements differ from community to community, but a common density is 20 homes per mile. There are over 600 cable franchises in Tennessee.

If Broadband is available, then it is available throughout a given cable franchise area under the terms of the franchise with the City or County. Homes, which are required to be served by a cable franchise, will have access to all services available in a given franchise area.

Areas Served by Cable Broadband

The areas of the map with cable Broadband availability meet the Federal Communications Commission definition of Broadband, which is at least 200 kilobits per second in both directions.

Planned Broadband Launches

- Millington Cable in Tipton County is launching Broadband this week, therefore, we included this area in the map.
- Access Cable in Campbell County is launching Broadband by 2007
- Celina Cable in Pickett County is launching Broadband by the end of 2006

Areas Not Served by Cable Broadband

The TCTA represents over 95% of cable operations in Tennessee. If the TCTA could not obtain the requested information either because the system failed to respond or the system was not an incumbent member, as is the case with Spring City Cable, Pickwick Cable, Dresden Cable, and Covington Electric Cable, and Bledsoe Telephone Cooperative, then the system was identified as no Broadband available.

Stacey B. Briggs, Esq., CAE PRESIDENT / EXECUTIVE DIRECTOR
Geoffrey Shook CHAIRMAN
Linda Brashear VICE-CHAIRMAN
Nick Pavlis SECRETARY / TREASURER

611 Commerce Street, Suite 2706, Nashville, Tennessee 37203
Telephone (615) 256-7037 Fax (615) 254-9710
www.tcta.net email: sb@tcta.net

Cable System Broadband Availability

June 2006

County	Broadband Availibility
Anderson County**	Yes
Bedford County**	Yes
Benton - Camden/ Areas	Yes
Benton County - Big Sandy **	Yes
Blount County - Friendsville	Yes
Blount County - Rockford, Townsend	Yes
Blount County**	Yes
Bradley County**	Yes
Campbell County - Jellico (plans to roll-out by 2007)	No
Campbell County**	Yes
Cannon County**	No
Carroll County**	Yes
Carter County - Elizabethton	Yes
Carter County - Stoney Creek/ Areas	Yes
Cheatham County - Kingston Springs	Yes
Cheatham County - Pleasant View, Ashland City, Chapmansboro	Yes
Chester County**	Yes
Claiborne County - Communicom (all of Claiborne except Clairfield & 50 miles in the service area)	Yes
Clay County**	Yes
Cocke County - all/No broadband in Parrottsville	Yes
Cocke County -**	Yes
Coffee County**	Yes
Crockett County - Alamo, Bells, Gadsden, Maury City	Yes
Crockett County**	Yes
Cumberland County -Fairfield Glade	No
Cumberland County - Crossville	Yes
Davidson County**	Yes
Decatur County	Yes
Decatur County - Scotts Hill	??
DeKalb County- Smithville	No
DeKalb County**	Yes
Dickson County**	Yes
Dyer County **	Yes
Dyer County- Newburn, Trimble	Yes
Fayette County**	Yes
Fentress County**	No
Franklin County - (Huntland)	No
Franklin County- Cowan, Decherd, Estill Springs, Winchester	Yes
Franklin County- North West Part only/Sewanee	Yes
Gibson County - Trenton	Yes
Gibson County- Dyer, Rutherford, Kenton, Bradford	Yes
Gibson County- Humboldt, Medina	Yes
Gibson County- Milan	Yes
Giles County - ** (Elkton&Ardmore)	Yes
Giles County- Pulaski	Yes
Grainger County - Blain	Yes
Grainger County - **(Rutledge, Bean Station	Yes
Greene County- County Only	Yes

**Denotes Cable System Serves Broadband in Entire Franchise Area

Greene County**	Yes
Grundy County**	Yes
Hamblen County -	Yes
Hamblen County -	Yes
Hamilton County**	Yes
Hancock County - **(Sneedville)	No
Hardeman County- Bolivar	Yes
Hardeman County**- Middleton, Saulsbury, Whiteville	Yes
Hardin County - Pickwick	??
Hardin County**	Yes
Hawkins County- Bulls Gap	Yes
Hawkins County**- all except Surgionsville	Yes
Haywood County- Brownsville	Yes
Haywood County- limited unincorporated areas	Yes
Henderson County** - Lexington, Parkers Crossroads - All Areas	Yes
Henry County -	No
Henry County- Henry	Yes
Henry County- Paris	Yes
Hickman County- Centerville	No
Houston County** - Erin, City of TN Ridge (all with exception of Eastern portion)	Yes
Humphreys County - McEwen	No
Humphreys County -**New Johnsonville	Yes
Humphreys County- Waverly	Yes
Jackson County - Gainsboro Cable	??
Jefferson County - **(JeffersonCity, New Market, Dandridge, White Pine, Baneberry	Yes
Jefferson County- County Residents Only - no incorporated cities	Yes
Johnson County - Areas	No
Knox County- Knoxville	Yes
Knox County- Farragut/	Yes
Lake County**- Tiptonville, Ridgely, Wynnburg	Yes
Lauderdale County** - Ripley, Halls, Gates, Henning	Yes
Lawrence County** - Lawrenceburg	Yes
Lewis County**- Howenwald	Yes
Lincoln County - (Park City & Ardmore	Yes
Lincoln County -	No
Lincoln County**	Yes
Loudon County**	Yes
Loudon County - county only	Yes
Loudon County - Greenback	Yes
Macon County**- LaFayette	Yes
Madison County- Humbodlt, Three Way	Yes
Madison County- Jackson, Medon/All Areas	Yes
Marion County - **	Yes
Marion County- county only	Yes
Marshall County	No
Marshall County - Lewisburg	No
Marshall County	No
Maury County - Mt. Pleasant, Columbia, Spring Hill	Yes

**Denotes Cable System Serves Broadband in Entire Franchise Area

McMinn County -	Yes
McMinn County**- Athens, Englewood, Etowah - all Comcast	Yes
McNairy County - Adamsville, Bethel Springs, Finger, Millegeville, Selmer	Yes
McNairy County - Michie	Yes
Meigs County - all cities except Ten Mile/	Yes
Monroe County**	yes
Monroe County**	No
Montgomery County**	Yes
Montgomery County**/Only Ft. Campbell	Yes
Moore County - (Lynchburg)	Yes
Moore County (only small corner of county)	Yes
Morgan - Oliver Springs	Yes
Obion County - Samburg, Hornbeak	Yes
Obion County- Obion, Rives, Troy, Union City, Woodland Mills	Yes
Obion County- South Fulton	Yes
Overton County	Yes
Overton County - Livingston	Yes
Pickett County - (plans to roll-out by the end of 2006)	No
Polk County**	Yes
Putnam County**	Yes
Rhea County -	??
Rhea County**not Ten Mile	Yes
Roane County**	Yes
Roane County**	No
Robertson County- Coopertown	Yes
Robertson County**- Greenbrier, Springfield, WhiteHouse, Orlinda, Cross Plains	Yes
Rutherford County** - Murfreesboro, Lavergne, Smyrna	Yes
Scott County	No
Sequatchie County- county only	Yes
Sevier County**	Yes
Sevier County**- portions of Sevierville, Gatlinburg & Pigeon Forge, Pittman Center	Yes
Shelby County** - Memphis, Arlington, Bartlett, Collierville, Germantown, Lakeland	Yes
Shelby County** - Millington	Yes
Smith County**- Carthage, So. Carthage	Yes
Smith County**- Gordonsville	Yes
Stewart County - Dover	Yes
Sullivan County**	Yes
Sullivan County**- County Only	Yes
Sumner County**- Gallatin, Millersville, Portland, Hendersonville, White House	Yes
Tipton County	??
Tipton County **	Yes
Tipton County**- serve limited unincorporated areas	Yes
Trousdale County **- Hartsville	Yes
Unicoi County**	Yes

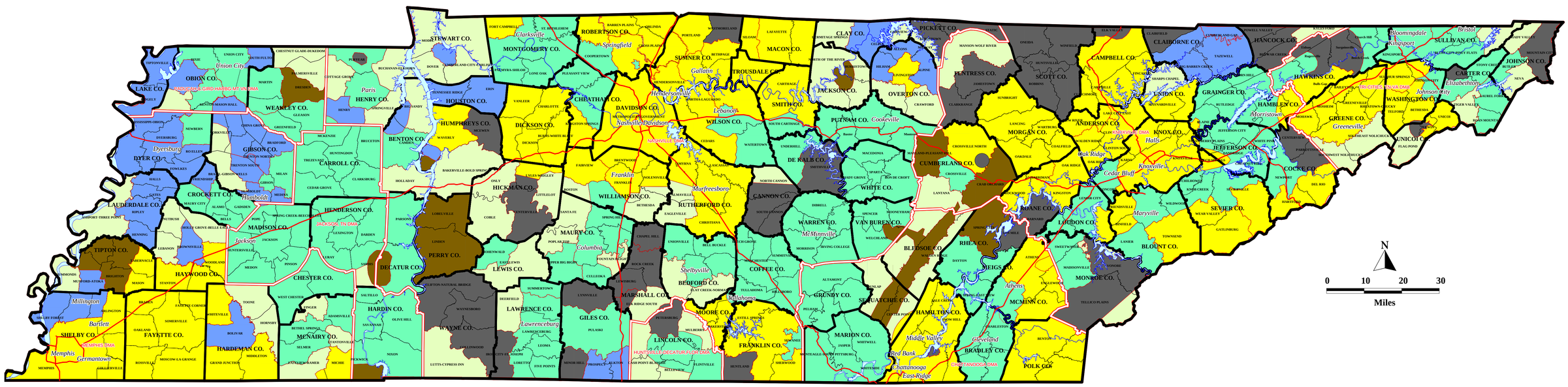
**Denotes Cable System Serves Broadband in Entire Franchise Area

Union County - **Maynardville & Luttrell	Yes
Van Buren County**	Yes
Warren County**	Yes
Washington County**	Yes
Washington County**- Jonesborogh & parts of Johnson City	Yes
Wayne County**	No
Weakley County - Dresden Cable	??
Weakley County** - Martin, Gleason, Greenfield, Sharon	Yes
White County**	Yes
Williamson County** - Thompsons Station,Spring Hill	Yes
Williamson County**- Brentwood, Fairview, Nolensville	Yes
Wilson County - Mt.Juliet Only	Yes
Wilson County** -	Yes

**Denotes Cable System Serves Broadband in Entire Franchise Area

TENNESSEE CABLE TELECOMMUNICATIONS ASSOCIATION

Broadband Availability



Legend

- Broadband Available - Comcast Systems
- Broadband Available - Charter Systems
- Broadband Available - Other TCTA Member Systems
- Broadband Not Available - TCTA Member Systems
- Non-TCTA Member Systems (Information not available)
- Non-Franchised Areas
- Lakes and Rivers

DATA MAPPING
1535 Parkwood Pointe Dr., Crescent Twp., PA 15046
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APPENDIX 4

SUMMARY OF GAO REPORT

Government Accountability Office (GAO) Study of Broadband Deployment & Adoption

Released May, 2006

"Broadband Deployment is Extensive Throughout the United States, but it is Difficult to Assess the Extent of Deployment Gaps in Rural Areas"

Why GAO did this study

- Congress and the President have indicated that access to broadband is critically important.
  - Economic engine
  - Vehicle for enhanced learning and medicine
  - Central component of 21st century news and entertainment
- Response to mandate included in Internet Tax Nondiscrimination Act of 2004.
  - Studied broadband deployment & adoption
    - Current status
    - Factors influencing
    - Options to help increase
  - Report released January 2006
    - Imposition of taxes did not significantly influence broadband deployment.

FCC publishes data on advanced telecommunications services

- Form 477 collects data from all providers
  - Includes cable modem and DSL
- Reports on subscribers by Zip code
  - not where facilities are deployed
- 99% of Americans live in the 95% of Zip codes that have at least one broadband provider serving at least one customer.
- GAO believes that Form 477 data may not provide an accurate depiction of local deployment of broadband infrastructure.
  - particularly in rural areas, where the largest gaps in broadband adoption exist
  - FCC says its data is not meant to measure deployment, but no other official data on deployment exist.

Form 477 data may overstate residential broadband deployment

- Companies report broadband service in a Zip code:
  - Even if they serve just one subscriber
    - Many households lie beyond the 3-mile radius of their telephone central office.
  - Even if they serve only businesses
- UNE providers are included.
  - may overstate the extent of local broadband infrastructure deployment

GAO's methodology

- Selected eight states & conducted case studies on status of deployment & adoption.
- Interviewed state & local officials, regulators & industry representatives.
- Used survey data from Knowledge Networks/SRI's *The Home Technology Monitor*.
  - SRI interviewed 1,500 randomly sampled households.
- GAO created two econometric models.
  - Factors influencing broadband deployment & adoption.
- Combined SRI data with information collected via FCC's Form 477.

Summary of results

- **28%** of households (30 million) subscribe to broadband service.
  - Equally divided between cable modem and DSL service
- **30%** subscribe to dial-up service
- **41%** do not access the Internet from home

Broadband adoption by household type

- 29% of urban households
- 28% of suburban households
- 17% of rural households

Why do rural areas lag?

- Households in rural areas are less likely to subscribe to broadband than those in urban and suburban areas.
  - Only **17%** of rural households subscribe to broadband
  - Rural adoption lags due to **lower availability**, not lower predisposition to purchase.
    - GAO discovered that rural households were just as likely to adopt broadband as their urban counterparts when availability and demographic characteristics were equalized.

Cost factors influencing deployment

- Population density
  - Cost per subscriber is higher in more sparsely-populated rural areas.
- Terrain
  - Infrastructure buildout can be costly in mountainous and forested areas.

Demand factors influencing deployment

- Ability to aggregate demand
  - Helped by a large “anchor tenant”
- Competition
  - New entrants avoid markets with several existing providers.
  - Deployment by a new entrant often spurs incumbents to upgrade their infrastructure.
- Technological expertise
  - Demand will be greater where potential customers are familiar with computers and broadband.

Technical factors influencing deployment

- DSL can generally be provided over copper plant within three miles of the central office.
  - In some cases the distance may be limited further due to old plant.
- Terrestrial wireless holds promise.
  - Spectrum is susceptible to interference by trees & buildings
- Satellite
  - Expense of equipment deters purchase
  - Generally limited to less than 200 kbps upstream
  - Delay interferes with VoIP and computer gaming
- Emerging technologies
  - WiMAX
  - Broadband over Power Lines (BPL)
  - 3G cellular

Factors influencing adoption

- Income
  - Households with high incomes are 39% more likely to adopt than those with lower incomes.
- Education
  - Households with a college-educated head of household are 12% more likely to adopt than those headed by someone who did not graduate from college.
- Age
  - Households headed by someone under 50 more likely to adopt.
- Availability
  - GAO found that rural households were just as likely to adopt broadband as their urban counterparts when demographic characteristics and availability were equalized.

Summary of GAO Report

- Broadband deployment is extensive.
  - But it is difficult to know the extent of gaps in deployment, particularly in rural areas.
- Broadband adoption lags in rural areas due to:
  - Availability
  - Cost to serve
  - Low demand
- FCC should improve its data collection to provide a more accurate picture of the deployment of broadband infrastructure for residential customers.

APPENDIX 5

BROADBAND ADOPTION, SOUTHEAST REGION

Residential Broadband Penetration

Southeastern States

State	High Speed Lines[1]	Housing Units[2]	Penetration	Rank
Florida	2,602,957	8,009,427	32.5%	1
Georgia	1,142,806	3,672,677	31.1%	2
North Carolina	1,124,284	3,860,078	29.1%	3
Louisiana	475,284	1,919,859	24.8%	4
Tennessee	613,574	2,595,060	23.6%	5
South Carolina	414,608	1,890,682	21.9%	6
Alabama	408,937	2,058,951	19.9%	7
Kentucky	330,975	1,842,971	18.0%	8
Mississippi	165,095	1,221,240	13.5%	9
Region	7,278,520	27,070,945	26.9%	
U.S. Total	38,259,720	122,188,861	31.3%	

[1] Residential High-Speed lines in service (defined as over 200 kbps in at least one direction); from Table 13 of *High-Speed Services for Internet Access: Status as of June 30, 2005*, published by Industry Analysis and Technology Division, Wireline Competition Bureau, Federal Communications Commission, April 2006.

[2] From Table 1: Annual Estimates of Housing Units for the United States and States: April 1, 2000 to July 1, 2004 (HU-EST2004-01), Source: Population Division, U.S. Census Bureau, Released July 21, 2005.

Prepared 12/29/2006 by Arnie Reed

APPENDIX 6

U.S. BROADBAND ADOPTION

Percentage of U.S. Households with Broadband

State	High Speed Lines[1]	Housing Units[2]	Penetration	Rank
Connecticut	641,329	1,414,433	45.3%	1
New Jersey	1,479,635	3,414,739	43.3%	2
Massachusetts	1,123,606	2,672,061	42.1%	3
California	5,378,549	12,804,702	42.0%	4
Rhode Island	177,393	446,305	39.7%	5
New Hampshire	223,102	575,671	38.8%	6
Nevada	360,627	976,446	36.9%	7
Maryland	822,436	2,250,339	36.5%	8
New York	2,833,478	7,819,359	36.2%	9
Washington	900,741	2,606,623	34.6%	10
District of Columbia	94,320	276,600	34.1%	11
Oregon	505,260	1,535,381	32.9%	12
Virginia	1,022,318	3,116,827	32.8%	13
Illinois	1,658,639	5,094,186	32.6%	14
Kansas	385,369	1,185,114	32.5%	15
Florida	**2,602,957**	**8,009,427**	**32.5%**	**16**
Georgia	**1,142,806**	**3,672,677**	**31.1%**	**17**
Colorado	623,716	2,010,806	31.0%	18
Texas	2,737,826	8,846,728	30.9%	19
Nebraska	228,965	757,743	30.2%	20
Arizona	738,322	2,458,231	30.0%	21
Alaska	80,556	271,533	29.7%	22
Minnesota	655,837	2,212,701	29.6%	23
North Carolina	**1,124,284**	**3,860,078**	**29.1%**	**24**
Michigan	1,256,759	4,433,482	28.3%	25
Ohio	1,395,062	4,966,746	28.1%	26
Wisconsin	682,073	2,463,802	27.7%	27
Delaware	100,381	367,448	27.3%	28
Utah	231,418	848,737	27.3%	29
Pennsylvania	1,445,509	5,385,729	26.8%	30
Oklahoma	409,046	1,572,756	26.0%	31
Missouri	653,590	2,564,340	25.5%	32
Vermont	76,895	304,291	25.3%	33
Indiana	678,417	2,690,619	25.2%	34
Louisiana	**475,284**	**1,919,859**	**24.8%**	**35**
Maine	165,428	676,667	24.4%	36
Tennessee	**613,574**	**2,595,060**	**23.6%**	**37**
Idaho	134,698	578,774	23.3%	38
Iowa	293,824	1,292,976	22.7%	39
South Carolina	**414,608**	**1,890,682**	**21.9%**	**40**
Wyoming	49,585	232,637	21.3%	41
Alabama	**408,937**	**2,058,951**	**19.9%**	**42**
West Virginia	166,454	866,944	19.2%	43
Arkansas	236,325	1,233,203	19.2%	44
New Mexico	155,493	825,540	18.8%	45
Montana	79,658	423,262	18.8%	46
Kentucky	**330,975**	**1,842,971**	**18.0%**	**47**
North Dakota	47,278	300,815	15.7%	48
South Dakota	51,283	342,620	15.0%	49
Mississippi	**165,095**	**1,221,240**	**13.5%**	**50**
U.S. Total	**38,259,720**	**122,188,861**	**31.3%**	

[1] Residential High-Speed lines in service (defined as over 200 kbps in at least one direction); from Table 13 of *High-Speed Services for Internet Access: Status as of June 30, 2005*, published by Industry Analysis and Technology Division, Wireline Competition Bureau, Federal Communications Commission, April 2006.

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Prepared 12/29/2006 by Arnie Reed

APPENDIX 7

INTERNATIONAL BROADBAND PER CAPITA

Broadband Subscribers per 100 Inhabitants in OECD[1] countries[2]

Rank	Country	DSL	Cable	Other	Total	Total Subscribers
1	Iceland	25.9	0.1	0.6	26.7	78,017
2	South Korea	13.6	8.3	3.4	25.4	12,190,711
3	Netherlands	15.7	9.6	0.0	25.3	4,113,573
4	Denmark	15.3	7.2	2.5	25.0	1,350,415
5	Switzerland	14.7	8.0	0.4	23.1	1,725,446
6	Finland	19.5	2.8	0.1	22.5	1,174,200
7	Norway	17.8	2.9	1.2	21.9	1,006,766
8	Canada	10.1	10.8	0.1	21.9	6,706,699
9	Sweden	13.3	3.4	3.6	20.3	1,830,000
10	Belgium	11.3	7.0	0.0	18.3	1,902,739
11	Japan	11.3	2.5	3.8	17.6	22,515,091
12	United States	6.5	9.0	1.3	16.8	49,391,060
13	United Kingdom	11.5	4.4	0.0	15.9	9,539,900
14	France	14.3	0.9	0.0	15.2	9,465,600
15	Luxembourg	13.3	1.6	0.0	14.9	67,357
16	Austria	8.1	5.8	0.2	14.1	1,155,000
17	Australia	10.8	2.6	0.4	13.8	2,785,000
18	Germany	12.6	0.3	0.1	13.0	10,706,600
19	Italy	11.3	0.0	0.6	11.9	6,896,696
20	Spain	9.2	2.5	0.1	11.7	4,994,274
21	Portugal	6.6	4.9	0.0	11.5	1,212,034
22	New Zealand	7.3	0.4	0.4	8.1	331,000
23	Ireland	5.0	0.6	1.1	6.7	270,700
24	Czech Republic	3.0	1.4	2.0	6.4	650,000
25	Hungary	4.1	2.1	0.1	6.3	639,505
26	Slovak Republic	2.0	0.4	0.2	2.5	133,900
27	Poland	1.6	0.7	0.1	2.4	897,659
28	Mexico	1.5	0.6	0.0	2.2	2,304,520
29	Turkey	2.1	0.0	0.0	2.1	1,530,000
30	Greece	1.4	0.0	0.0	1.4	155,418
	OECD	**8.4**	**4.2**	**1.0**	**13.6**	**157,719,880**

[1] Organisation for Economic Co-operation and Development.
[2] *OECD Broadband Statistics*, December 2005 (www.oecd.org/sti/ict/broadband)

APPENDIX 8

BROADBAND DEPLOYMENT IN TENNESSEE: A REVIEW OF FCC DATA

Broadband Deployment in Tennessee: A Review of FCC Data

Jerry Kettles
TRA Economist
Tennessee Regulatory Authority

Objectives

- Objective 1 – To provide perspective on the size and reach of the Tennessee broadband market relative to the southeast region and nation as a whole.
- Objective 2 – To provide a description of how broadband is provided, who is buying it, and who is providing it in Tennessee.

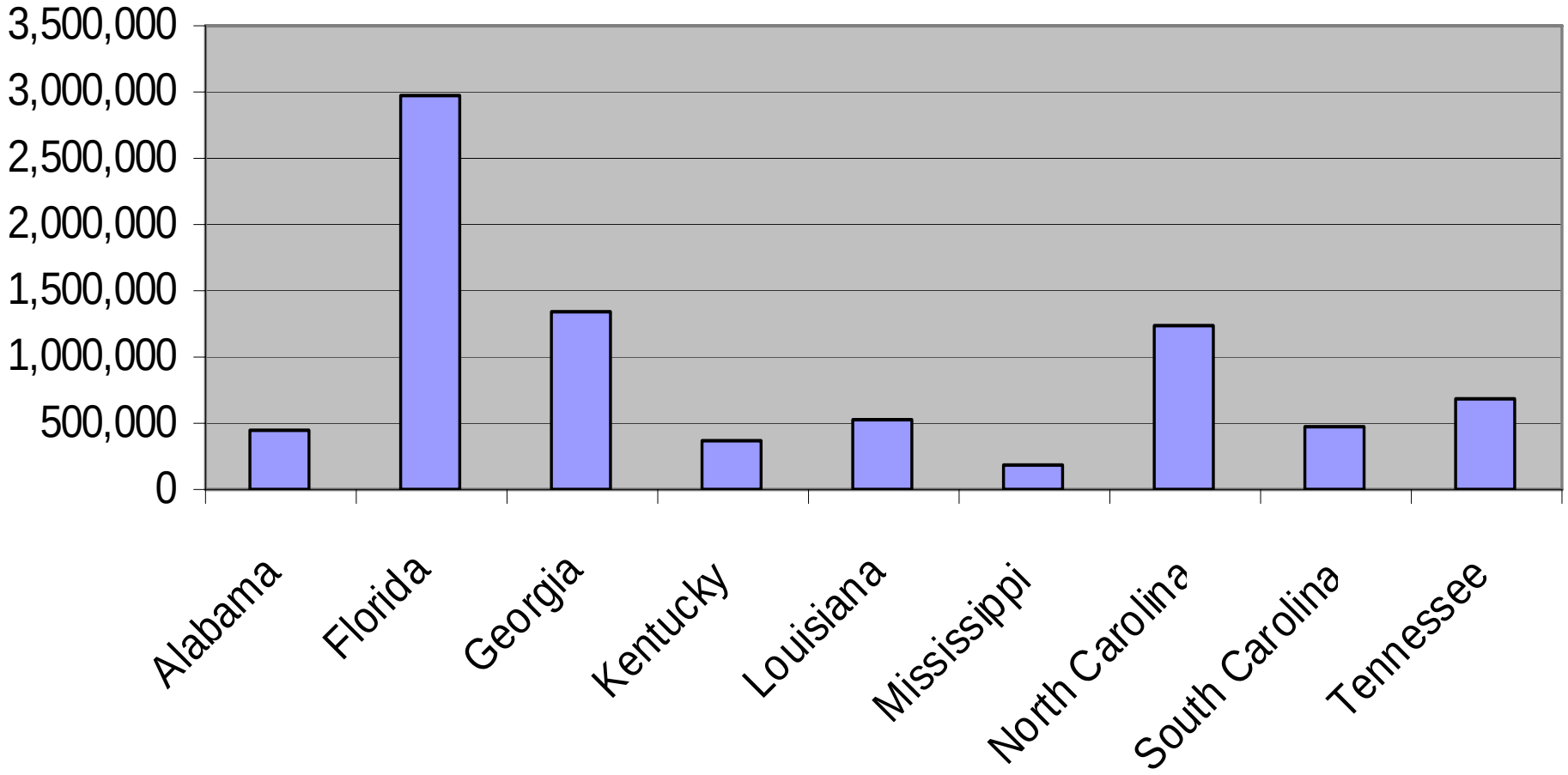
Caveat

- Arnie's discussion shows the difficulty in using FCC zip code data to make inferences about broadband deployment

FCC Broadband Data

- The FCC releases data on broadband deployment twice a year.
- The most recent data provided by the FCC was released in April 2006
- Data in report from June 30, 2005.
- Taken from FCC Form 477
- High speed lines are defined by the FCC as being capable of transmitting over 200kbs in at least one direction.

High Speed Lines by State
June 2005



How does Tennessee Compare?

- Tennessee ranks fourth in total high speed lines in the southern region.
- Another take: Tennessee is the fourth largest broadband market in the south.

Percentage of Residential End-User Premises with Access to High-Speed Services
What it means?

- Captures percentage of customers with access to broadband when they have access to the underlying “original” service
- Captures coverage by incumbents/franchise
- ILEC – voice
- Cable – Cable TV service

- Tennessee has third highest coverage in the south for ILEC in territory DSL
- Tennessee is tied for first in region for percent of cable TV customers that have access to cable modem service.

Percentage of Residential End-User Premises with Access to High-Speed Services

State/Region	xDSL - ILECs	Cable modem
Alabama	76%	91%
Florida	85%	94%
Georgia	77%	88%
Kentucky	60%	87%
Louisiana	85%	94%
Mississippi	73%	77%
North Carolina	75%	95%
South Carolina	73%	79%
Tennessee	**80%**	**95%**
Nationwide	76%	91%

How Broadband is Provided in Tennessee – June 2005

- Total TN Broadband Lines – 682,970
- 34.73% ADSL
- 61.80% Cable Modem
- 3.04% of Tennessee Broadband provided over traditional wireline technology, SDSL, fiber, satellite, fixed wireless, and mobile wireless.
- 0.44% fiber

Tennessee Growth in Broadband Lines

- June 2000 – 87,317
- June 2005 – 682,970
- Almost an 8 fold increase since 2000
- Can this growth continue?

Tennessee Broadband Usage by User Type

- 90% of broadband users in Tennessee are residential customers
- 10% of broadband lines are used by business customers

How many providers are there?

- Only 1% of Tennessee zip codes do not have a broadband provider.
- 92% of zip codes have at least two providers
- 60% of zip codes have four or more providers
- 16% of zip codes report 10 or more providers
- 48 total broadband providers in Tennessee
- Almost half use ADSL to provide service

APPENDIX 6

TENNESSEE INFORMATION INFRASTRUCTURE (TNII) PRESENTATION

Tennessee Information Infrastructure (TNII)

TENNESSEE
INFORMATION INFRASTRUCTURE

NASCIO Award Winner

Tennessee Information Infrastructure (TNII)

TNII – the cooperative telecommunications effort between the Office of Information Resources, the University of Tennessee, and the Tennessee Board of Regents to consolidate all large stand-alone data and video networks.

The Tennessee Information Infrastructure (TNII) was established through the competitive bid process, with a contract award to BellSouth/Qwest in 1999.

The TNII is a wide area network (WAN) designed for integrated Internet, voice, data and video traffic.

"TNII –the Backbone of Communications"

Tennessee Information Infrastructure (TNII)

- Objectives
  - Create a Public/Private Partnership
  - Create a Statewide Network Universally Priced and accessible
  - Take advantage of emerging technologies – Video – H.323, streaming video, VoIP, IP Telephony, Internet 2
  - Enhance Rural & Metropolitan E-Commerce

“TNII –the Backbone of Communications”

TNII Partnership

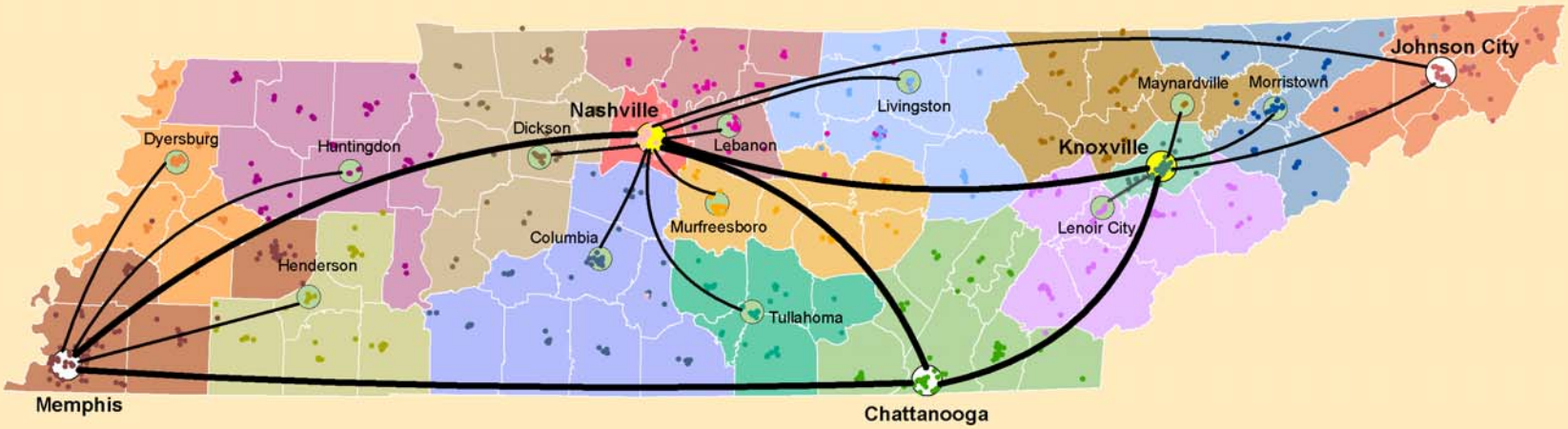
- TNII Association
- State of Tennessee
- Tennessee Board of Regents
- University of Tennessee (Martin)
- Libraries & Local Government
- K12
- TNTeam
- BellSouth
- Qwest
- EDS
- Cisco Systems
- Contracts with 26 ILEC's

(billing, single point of contact for ops & universal technology/pricing)

Today's TNII

- Carrier-Class Network
  - VPN (Virtual Private Network)
  - QoS (Quality of Service)
  - SLAs (Service level Agreements)
  - ATM/MPLS (Asynchronous Transfer Mode over Multi Protocol Label Switching
- 1300 Sites
- Broadband connections to all 95 counties – T-1+

Tennessee Information Infrastructure



LEGEND

NAPs & POPs

- NAP/Egress
- NAP
- POP

NAP Connections

- OC3
- DS3

Service Areas (County Based)

- Chattanooga
- Columbia
- Dickson
- Dyersburg
- Henderson
- Huntingdon
- Johnson City
- Knoxville
- Lebanon
- Lenoir City
- Livingston
- Maynardville
- Memphis
- Morristown
- Murfreesboro
- Nashville
- Tullahoma

Site Connectivity to POP or NAP

- Chattanooga
- Columbia
- Dickson
- Dyersburg
- Henderson
- Huntingdon
- Johnson City
- Knoxville
- Lebanon
- Lenoir City
- Livingston
- Maynardville
- Memphis
- Morristown
- Murfreesboro
- Nashville
- Tullahoma
- Assignment Unknown

0 15 30 60 Miles

BTG - Customer Intelligence Team
GEOGRAPHIC INFORMATION SERVICES
Contact: Debbie Morgan (205) 977-0154
Project: 04-49B/cc Date: 11-23-04

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TNII Scope

- 4 Logically separate Networks sharing the same physical backbone
  - OIR, UT, TBR and Local Governments
- Up to OC12 core backbone – OC3 (155Mbps) backbone with DS3's (45Mbps) to POPs
- Internet Access – 12 DS3's (540Mbps)
- Centralized 2, 3 level NOC

"TNII –the Backbone of Communications"

TNII Offerings

- Fully Managed Circuits
  - 384kbps up to OC12
- Metro Ethernet 100Mbps - $17,595.00
- Un-Managed Direct Internet – 100Mbps - $8,250
- Pt to Pt T1's – 1mile - $22.34, 5 miles - $111.70, 10 miles - $223.40
- DSL Services – 3Mbps X 384kbps - $74.41

TNII – Broadband Catalyst

- OIR
  - SNA/Small Office Replacement
- E-Health Initiative
  - Rural Medical Providers
- Local Government

TNII – What's Next

- TNII-2
  - RFP
    - Release
- Final Questions

"TNII –the Backbone of Communications"

APPENDIX 10

EDUCATIONAL NETWORKS OF AMERICA (ENA) PRESENTATION

K-12 Network Overview

Tennessee Broadband Task Force
July 18, 2006

ena

Presenters

Gayle Nelson, Vice President of Customer Services, ENA

Bob Collie, Chief Technology Officer, ENA

Dr. Tim Webb, Assistant Commissioner, DOE

Lisa Howard, Exec Dir. Technology, DOE

About ENA

- 10 year old Tennessee company

- Serving 450 K-12 school districts (4,000 schools) and 200 public libraries in Tennessee and Indiana
- Sustained high levels of customer satisfaction
- 62 employees
- Largest recipient of E-Rate funds for Internet Access from FCC on behalf of network members

About ConnecTEN

- Strong support by Governor Bredesen has led to best and most comprehensive K-12 network in the nation
- Fast growth expected to continue
  - **300,000 computers on ConnecTEN network today**
  - **Applications and content drive utilization and complexity**
    - Statewide Student Management System
    - Online Assessments
    - Distance Learning
  - **Teacher/administrator/parent Communication**
  - **Instructional Internet Access**
- Requires Quality of Service (QoS) and innovative caching solutions
- Established strategic peering relationships with educational resources ensure reliability and quality of access
- Equity of access for every site throughout the state

K-12 Unique Support Requirements

- 136 *independent* school districts plus 4 state schools, with resulting LAN/HW/SW complexity and different decision structures
- In K-12 ratio is 1 technical resource to 250 computers versus 1:40 in business environment
- Strong safety requirements: CIPA (Child Information Protection Act)
  - Protect children from inappropriate content
  - Preserve First Amendment rights of adults in classroom
- Protection of confidential student, teacher and administrative information traveling across the network is critical
  - Lack of standardization across school districts creates vulnerability to viruses, worms and hackers
  - Technical sophistication of students exceeds that of teachers/administrators; need to protect Internet from users as well as users from Internet
- Administrative support for primary funding mechanism (FCC E-Rate) is labor intensive

Today's Service

SDE and local school district requirements combined drive service growth

Key statistics

- 1,900 sites and 140 districts (including all 4 State special schools) covered by contract
- 96% of districts actively participate
- 32% of sites exceed 1.5mb service
- Average site receives 19.6mb of service

Despite this level of connectivity, the average Tennessee school computer only has 114k of service each

High Bandwidth Usage Today

- "High bandwidth" services (10mbps and greater) are rapidly increasing; well beyond FCC 200k broadband definition is required

- ENA's first 100 mb service delivered in 2004
  - Over 450 sites now with high bandwidth
  - At least additional 200 site upgrade requests expected this calendar year

- New mission critical applications, rich content, increased technology adoption and improving student to computer ratio drive growth

Current High Bandwidth Schools

- High bandwidth service requested from all corners of state
  - **22 of 33 districts ordering 100mb service are classified as rural**
  - **11 of 22 rural districts served by transport providers other than the incumbent telecommunications carriers**
  - **68% of high, 37% of middle, and 31% of elementary schools at 100mbps or higher by end of calendar 2006**
  - **Many rural districts have requested service pending availability**

- High bandwidth service requires flexibility
  - **ENA has cost effectively delivered these services using a combination of more than 9 vendors**
  - **Service technology used includes:**
    - Ethernet via telco and cable providers
    - Wireless
    - Lighting district-built fiber facilities

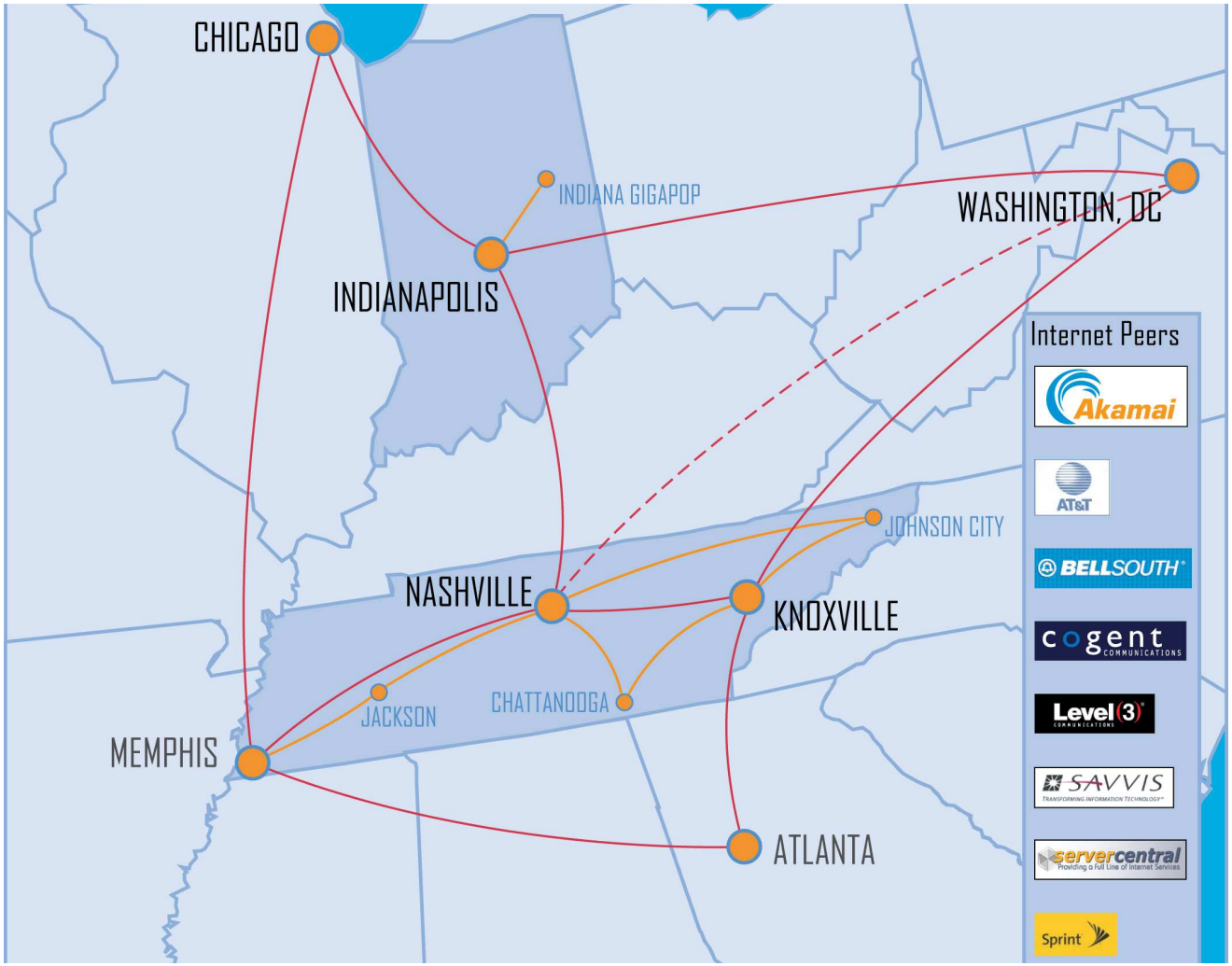
Vision: High Bandwidth Last Mile for All Schools

- Every school at 10mbps or more–most at 100mbps–within 3-5 years
- Transport provided through multiple carriers to achieve statewide equity:
  - Cable
  - Utility (power, water, traffic light fiber)
  - Telephone (incumbent and alternative)
  - Municipal Networks
  - Cellular/Wireless
- Underlying technology varies between transport providers
  - Fiber/FTTP – dark, dim, managed, purpose-built
  - Wireless – point to point (WiFi, licensed, laser), multipoint (WiFi, WiMAX, 3G/4G cellular)
  - Copper – distance-based
- Already achieved at 450 sites with mixed transport and last mile technologies; expect to reach 650 (34%) by calendar year end 2006

Catalyst for Improved "Last Mile"

- ENA orders high-bandwidth services for end sites statewide
- Our providers perform builds to support our needs, enabling advanced services to others in the community that would not otherwise be present
- Examples:
  - ISDN in independent phone company areas in 1997
  - Stony Fork School, Campbell County moved from ISDN to T1 to more
  - Henry, Maury, Sevier, Lauderdale county fiber builds

Regional Network



Substantial Network Traffic

- May 2005: ~300 mbps peak
- Wed 5/10 (typical busy day): 497.9 mbps peak
- **65.9%+ traffic growth in 1 year (consistent)**

Peer States:

- Florida – "Utilization has doubled consistently every 18-24 months"
- Kentucky – "Bandwidth needs are doubling every two years"
- Utah – Gigabit (1000mbps) to all middle and high schools now
- Indiana – 250% traffic growth after network transition in August 2005

Tennessee remains as the leader with the most comprehensive and equitable network but we cannot lose momentum in order to continue to provide our children the best opportunities.

World Class Delivery System

- Expansion to regional scope completed
  - OC3, OC12 and OC48 installed infrastructure
  - Scalable to multiple OC192 and beyond
  - 31gbps+ of last mile access
  - 2gbps+ of direct Internet egress and peering
- Extensive peering ensures best path
  - 9 different upstream Internet carriers
  - 54 different peers, 87 active peering sessions
    - 8 R&E, 26 ISPs, 17 Content, 3 International
  - Connectivity to OIR and Tennessee higher ed (UT & Univ. of Memphis)
- Locally hosted content
  - Akamai
  - United Streaming
- Distributed content caching

Current Service Metrics

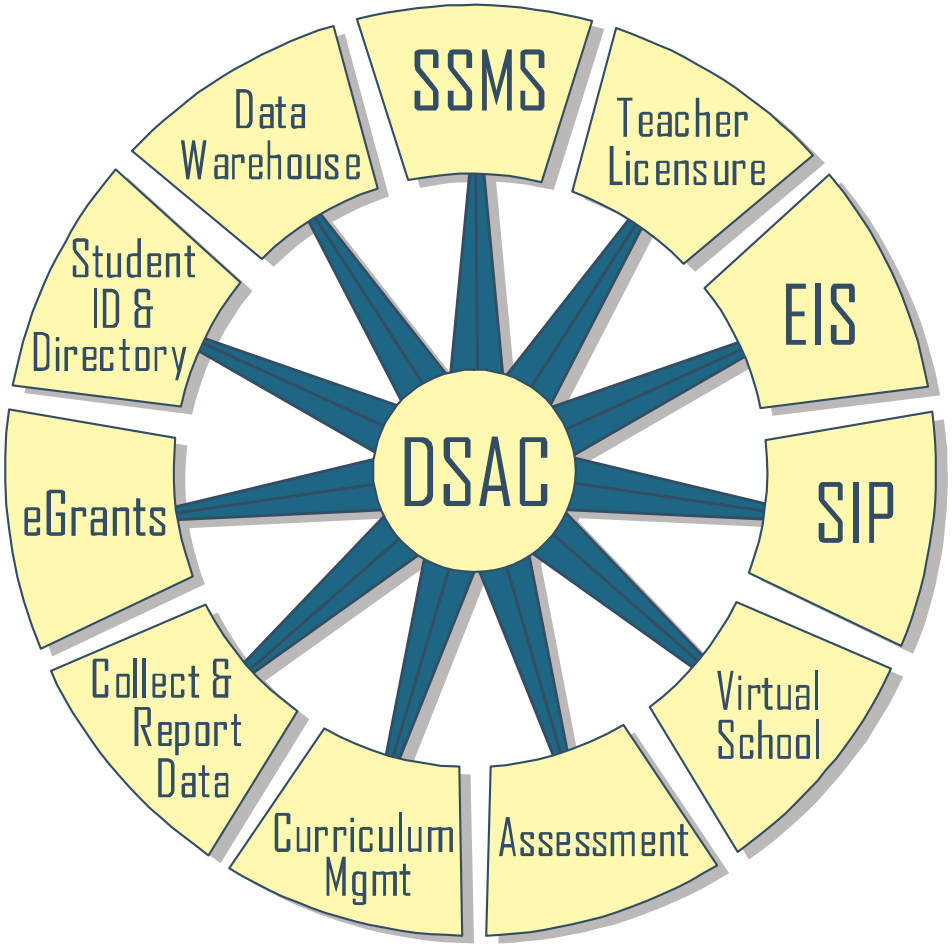
Network

- 100% backbone availability
- 99.9297% end site availability statewide
- 97% proactive resolution of all customer visible outages
- Met 100% of SLAs since the inception of the contract; far exceeded minimum requirements

Semi-Annual Customer Survey

- 99% overall customer satisfaction
- 60% stated service better year-over-year
- 100% would recommend our services to others

Supporting Educational Outcomes



Q & A

APPENDIX 11

NASHVILLE PUBLIC TELEVISION PRESENTATION

NPT and Datacasting

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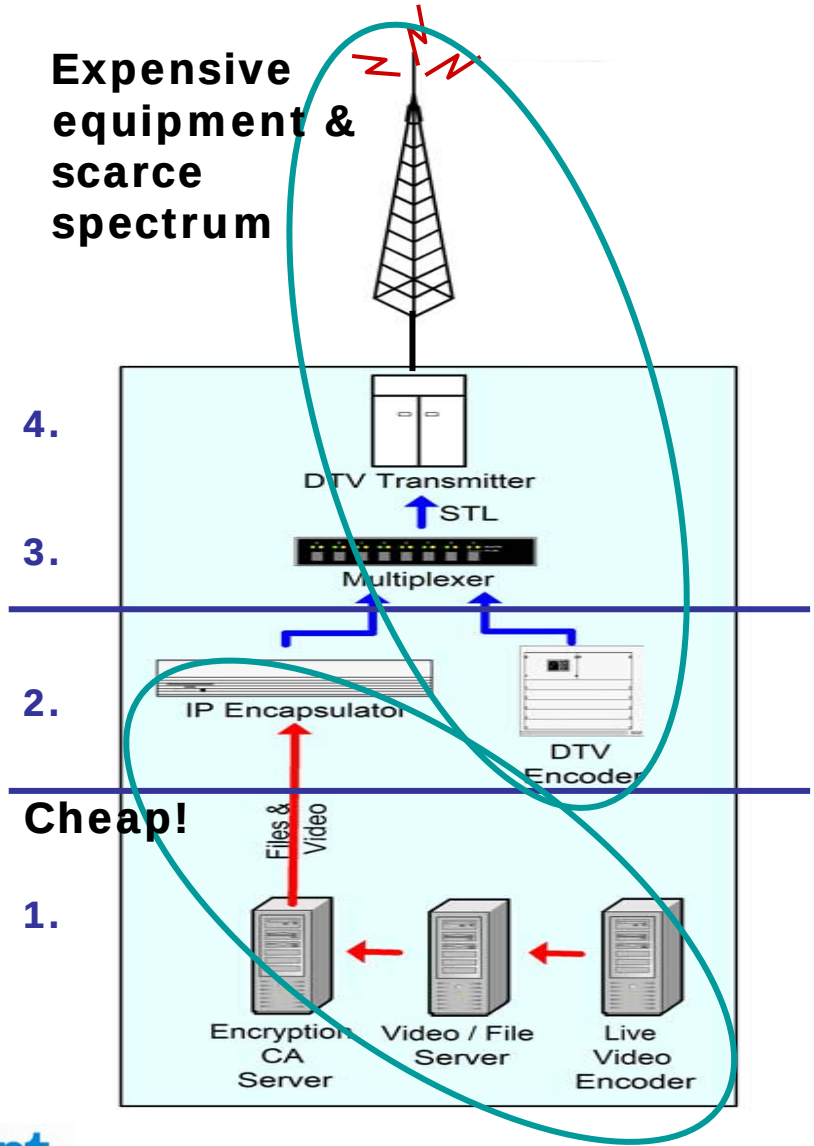
Npt
Nashville Public Television

Let's Start at the Beginning

- Congress mandated the digital television transition, requiring capitalization/activation of second channel
- Dual operation until 2009
- Unlike the color conversion of television, digital television is <u>not</u> compatible with analog receivers.
- Most stations focused on high definition and/or multicast TV
- We can now "manage" bandwidth and offer services that are subscription-based, addressable or secure/proprietary to both TV and computers

NPT now slices bandwidth to order

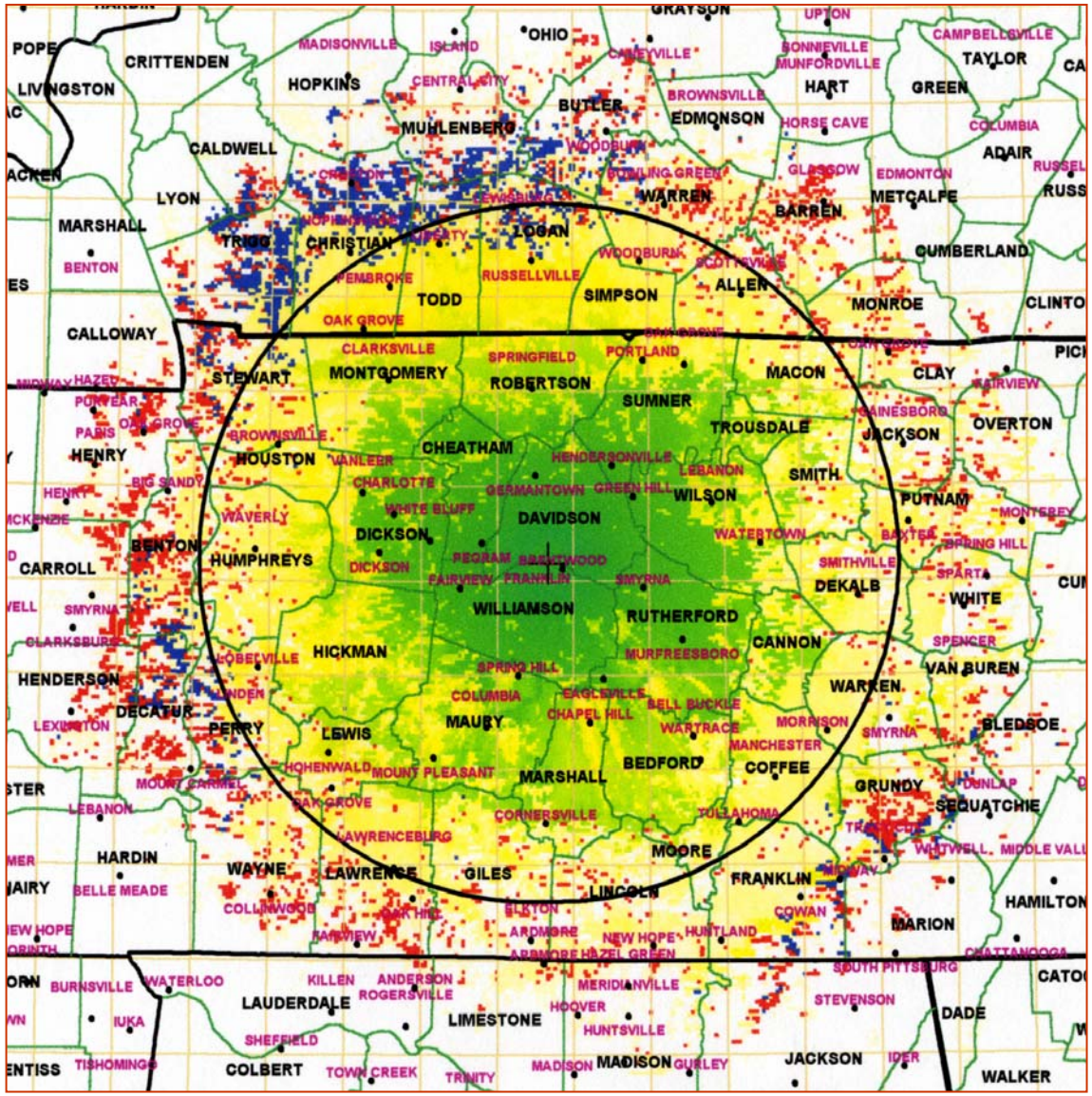
What is DTV Datacasting?



- Digital broadcast television: IP protocol content (high-quality videostreams, multimedia, audio, text, pictures in any digital format)
- PCs: Delivered to *computers*, not TV sets
- Secure: Addressable or encrypted basis
- Existing operations: Uses DTV broadcast signal (NPT-DT 46)
- Multi-cast enabled: Simultaneous content distribution to thousands of users using the same bandwidth
- Flexibility: Delivers any type of digital content wirelessly with the economics of broadcasting

Npt
Nashville Public Television

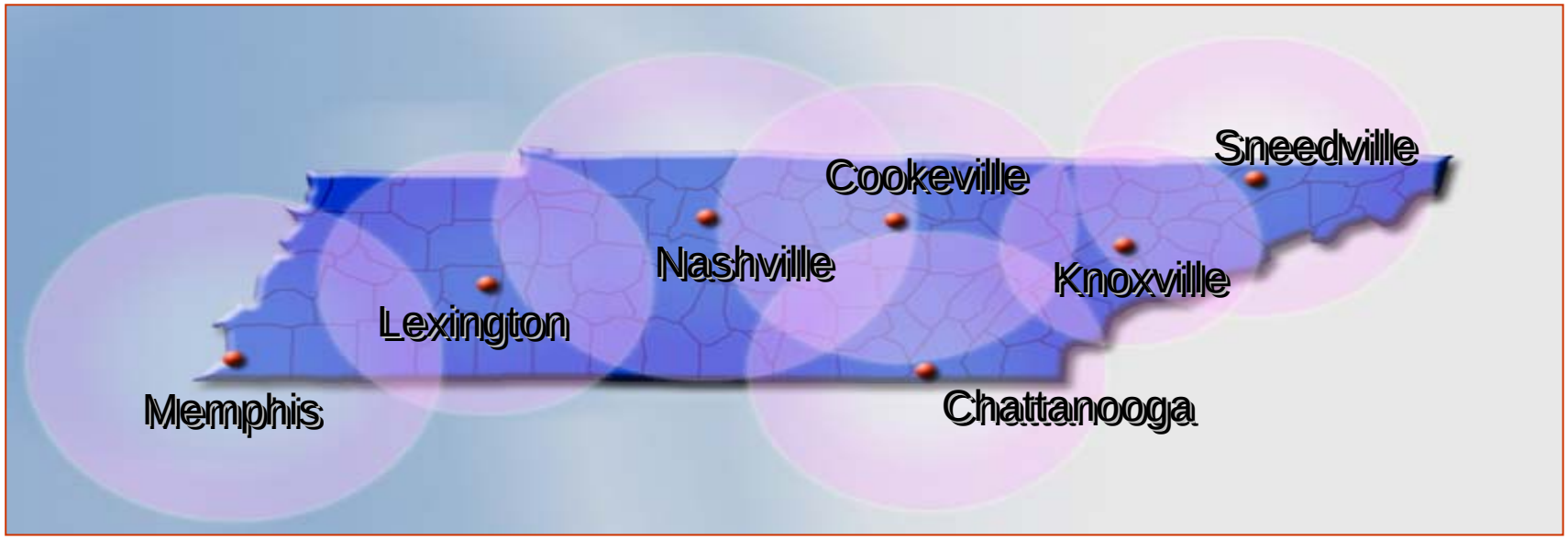
NPT Digital Coverage



Nashville Public Television

Deployable Statewide

Digital Public Television Coverage in Tennessee



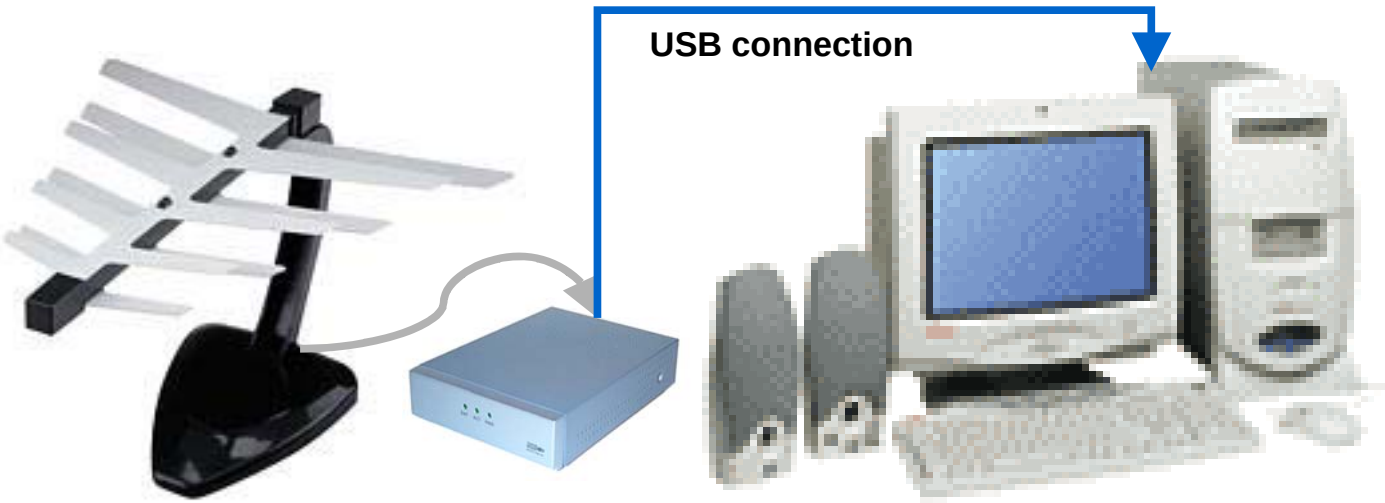
98% population reach

Npt
Nashville Public Television

Benefits of DTV Datacasting

- Capabilities of internet coupled with broadcast economics
  - Large data files to every receiver at same time (multicast enabled, rather than unicast)
  - Can bypass congestion of phone lines, internet, cellular
- Inexpensive & flexible receiver devices
  - Can be received on desktops and portable computers using DTV tuner card ($300 or less)
  - Can be addressable to selected receivers/users
- Transmission infrastructure and spectrum already exists and in use (marginal cost of capital required above investment for TV broadcasting)

Basic PC/Laptop Installation



directional UHF antenna

DTV datacast receiver

user's computer

It’s the Solution When You Need

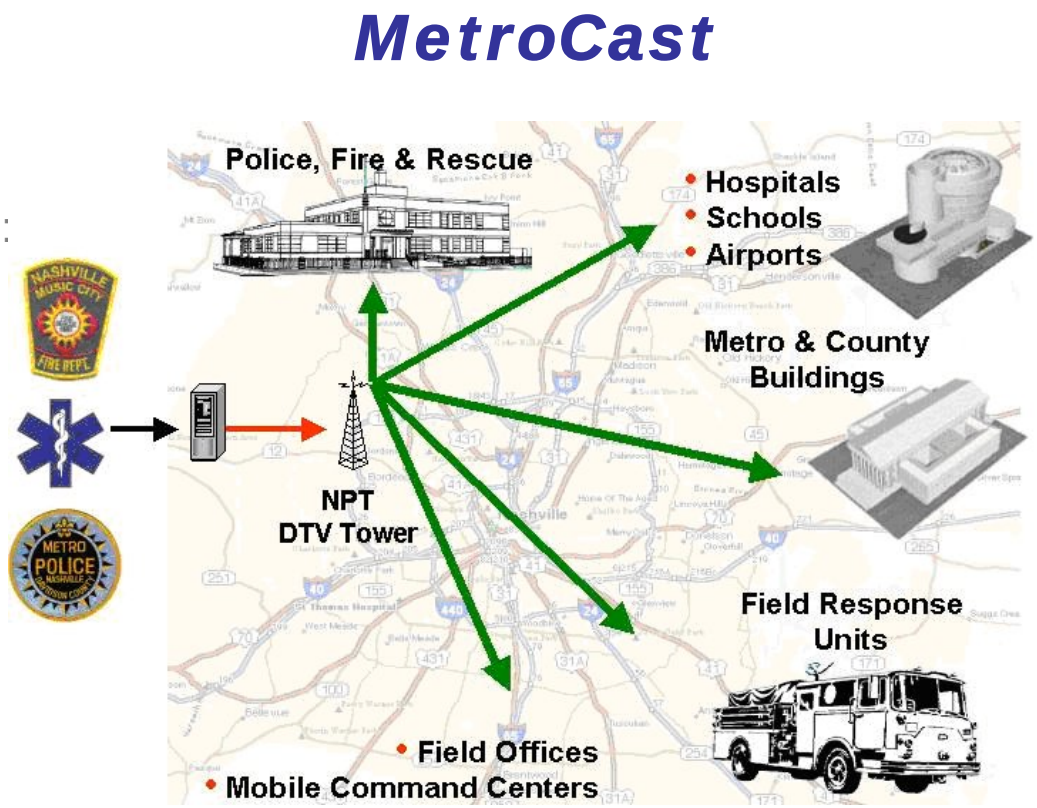
- Content Push … command-and-control situations where central authority needs to widely and quickly distribute information
- Multicast capability … one-to-many distribution of high-quality streaming video or bandwidth-intensive applications
- Broad geographic coverage … equal bandwidth in both urban and rural locations
- Flexibility … when bandwidth needs tend to ebb and flow and bandwidth needs to be flexibly recommitted to services/users at the touch of a button

Nashville MetroCast

- A powerful solution for
  - training,
  - alerting,
  - coordinating response

- Sponsoring organizations include:
  - Mayor's Office of Emergency Management
  - Nashville Fire Department,
  - Nashville Police Department, and
  - the Tennessee Emergency Management Agency.

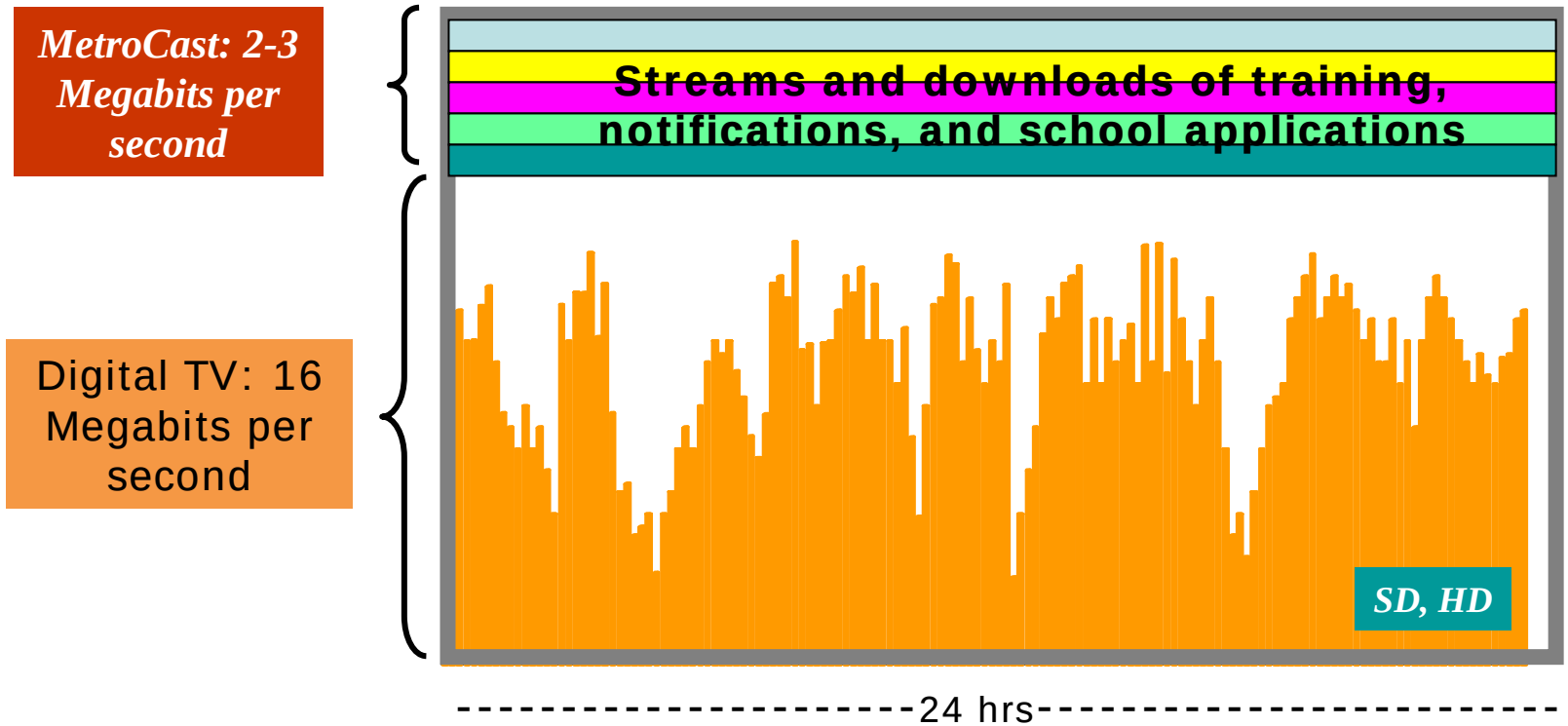
- Training programs from
  - Vanderbilt University Medical Center
  - University of Tennessee Law Enforcement Innovation Center
  - Tennessee Emergency Management Agency
  - and other resources.



Npt
Nashville Public Television

MetroCast "Rides" on DTV Spectrum

19.4 Megabits of potential

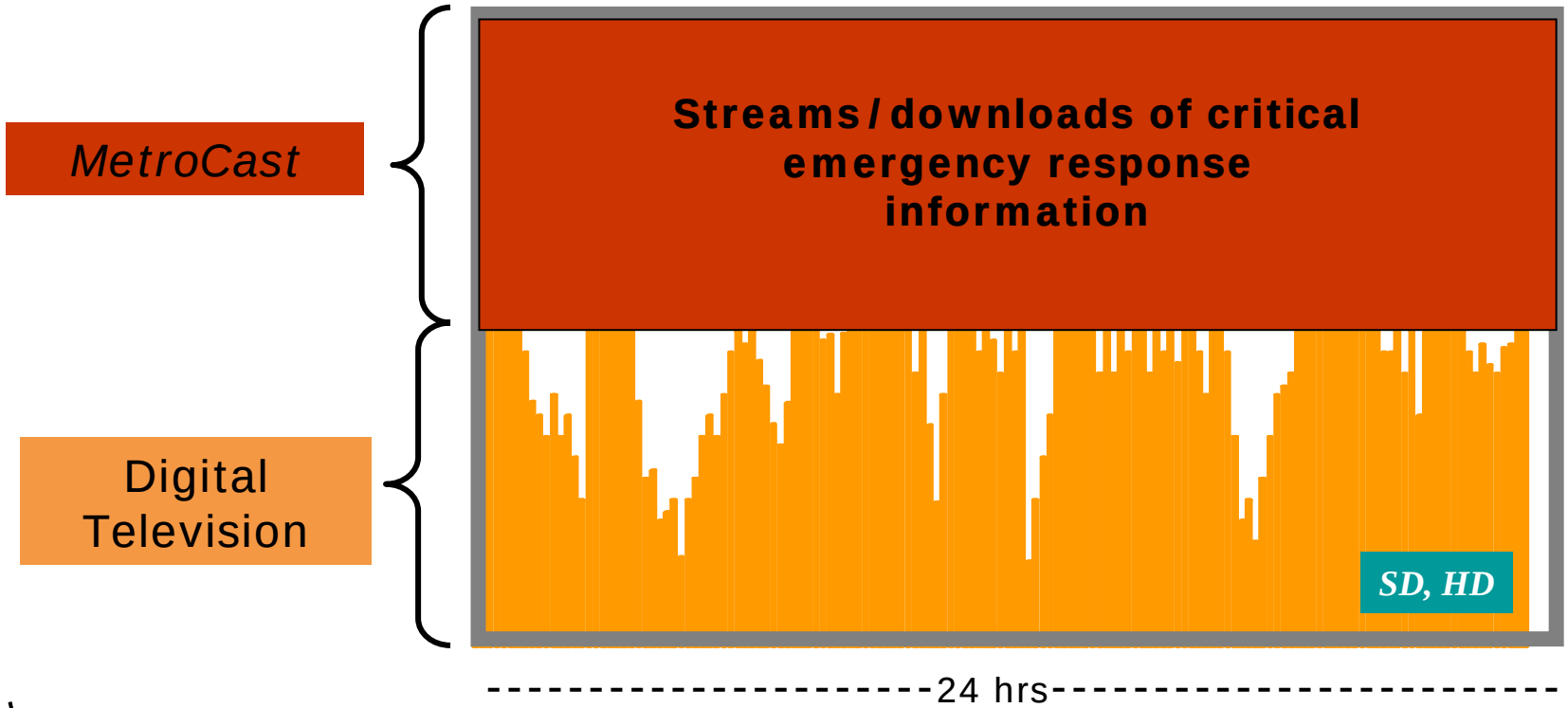


NPT manages a budget of 19.4 Mbps for Digital TV (HD, SD) and Digital IP

Npt
Nashville Public Television

Scaleable in Crisis Situation

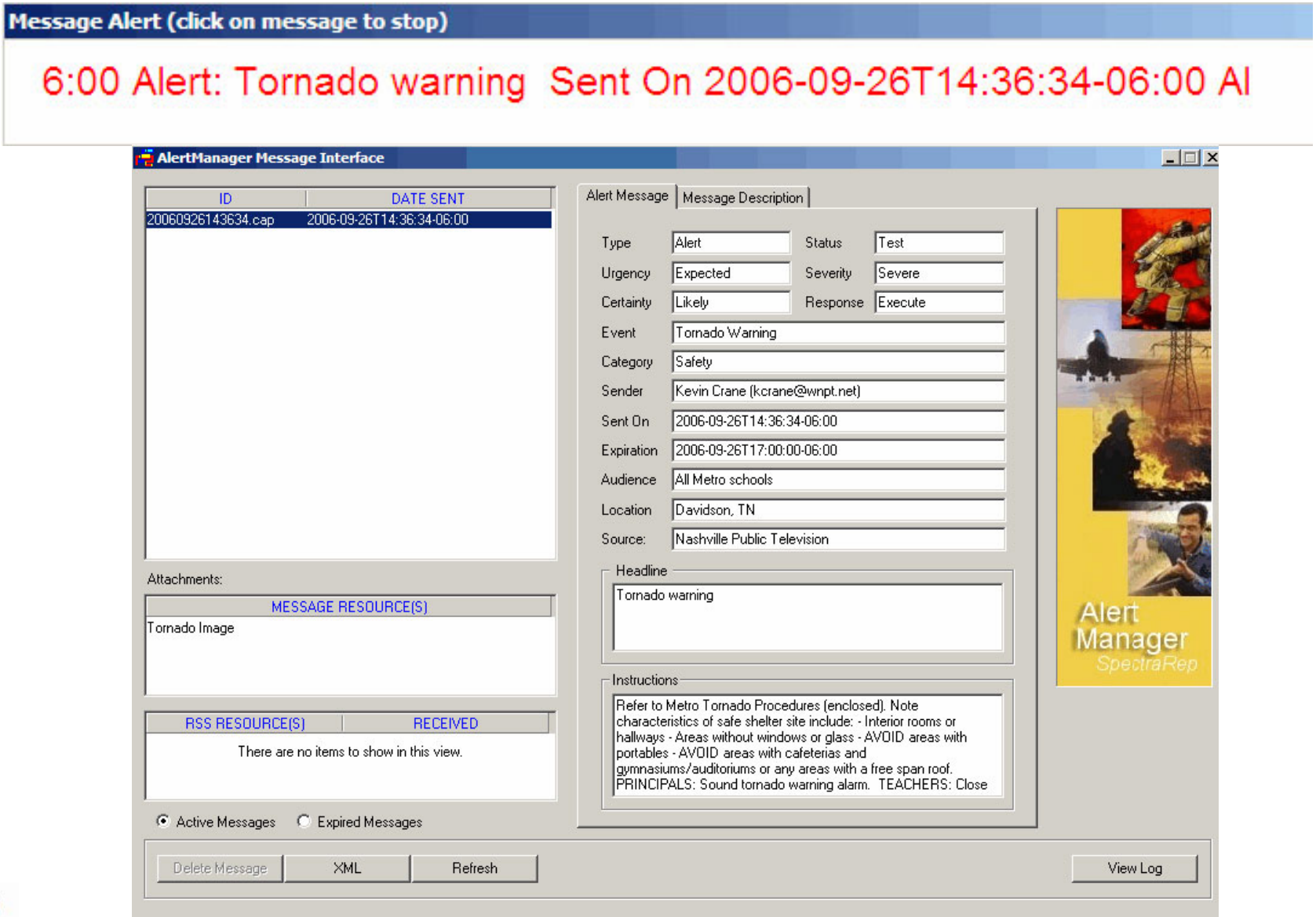
NPT adds more bandwidth in case of emergency



NPT manages bandwidth in a secure facility; OEM can have control over content sent

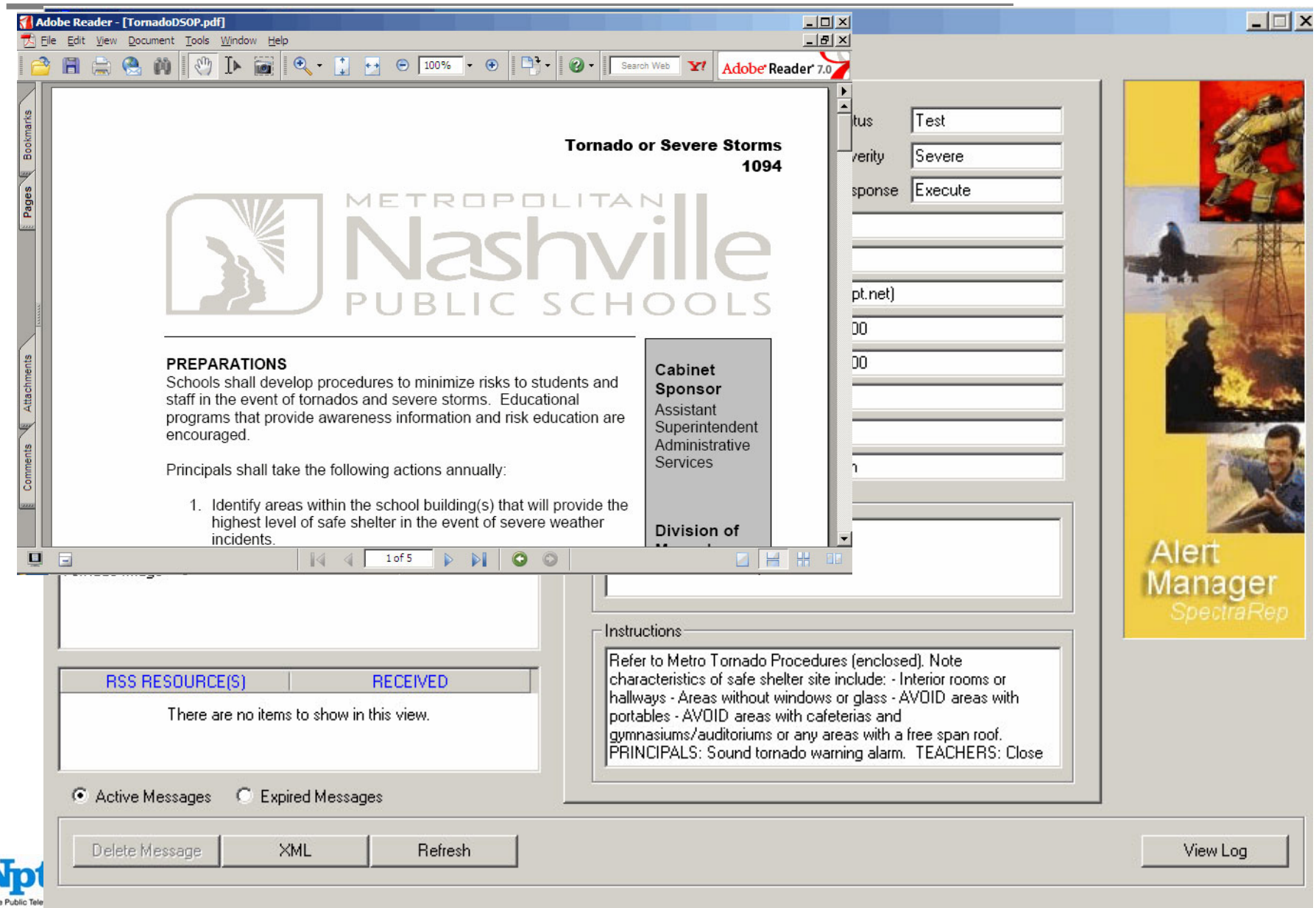
Npt
Nashville Public Television

AlertManager



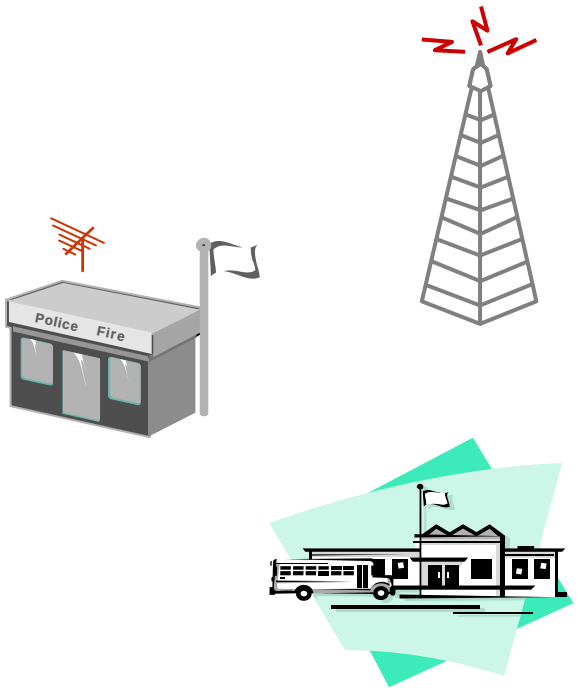
Npt
Nashville Public Television

AlertManager



Why Public Television?

- Commitment to the community
  - Universal access
  - Last locally-owned and controlled television stations
  - Digital television provides opportunity for new services



- Builds on long-term relationship with local, state and federal government
  - PTV's original focus was broadcast instructional television
  - Now can extend educational mission to day-to-day training and public safety
  - PTV is technological leader (satellite delivery, captioning, and now DTV)

More Information
www.wnpt.net/datacast

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Npt
Nashville Public Television

APPENDIX 12

WEAKLEY COUNTY THEORETICAL DEPLOYMENT MAP

Tennessee Regulatory Authority

Weakley County

Theoretical Broadband Service Areas

Prepared by Arnie Reed
Tennessee Regulatory Authority

Data Sources

- Telephone central office locations:
  - Tariff maps on file with the TRA, available for public inspection
- Cable TV franchise areas
  - Supplied by TN Cable TV Association

Assumptions

- Broadband is available within a radius of 9,000 feet from each central office.
  - The 18,000 foot theoretical limit can only be achieved if the cable runs in a straight line.
  - ConnectKentucky uses a 9,000 foot radius.
- Cable TV broadband is available within municipal boundaries of the CATV franchise.

Map Creation by OIR

- Including
  - Telephone central office locations
  - CATV franchise areas
- Overlay
  - ZIP code boundaries

Theoretical Broadband Service Areas for Weakley County, TN

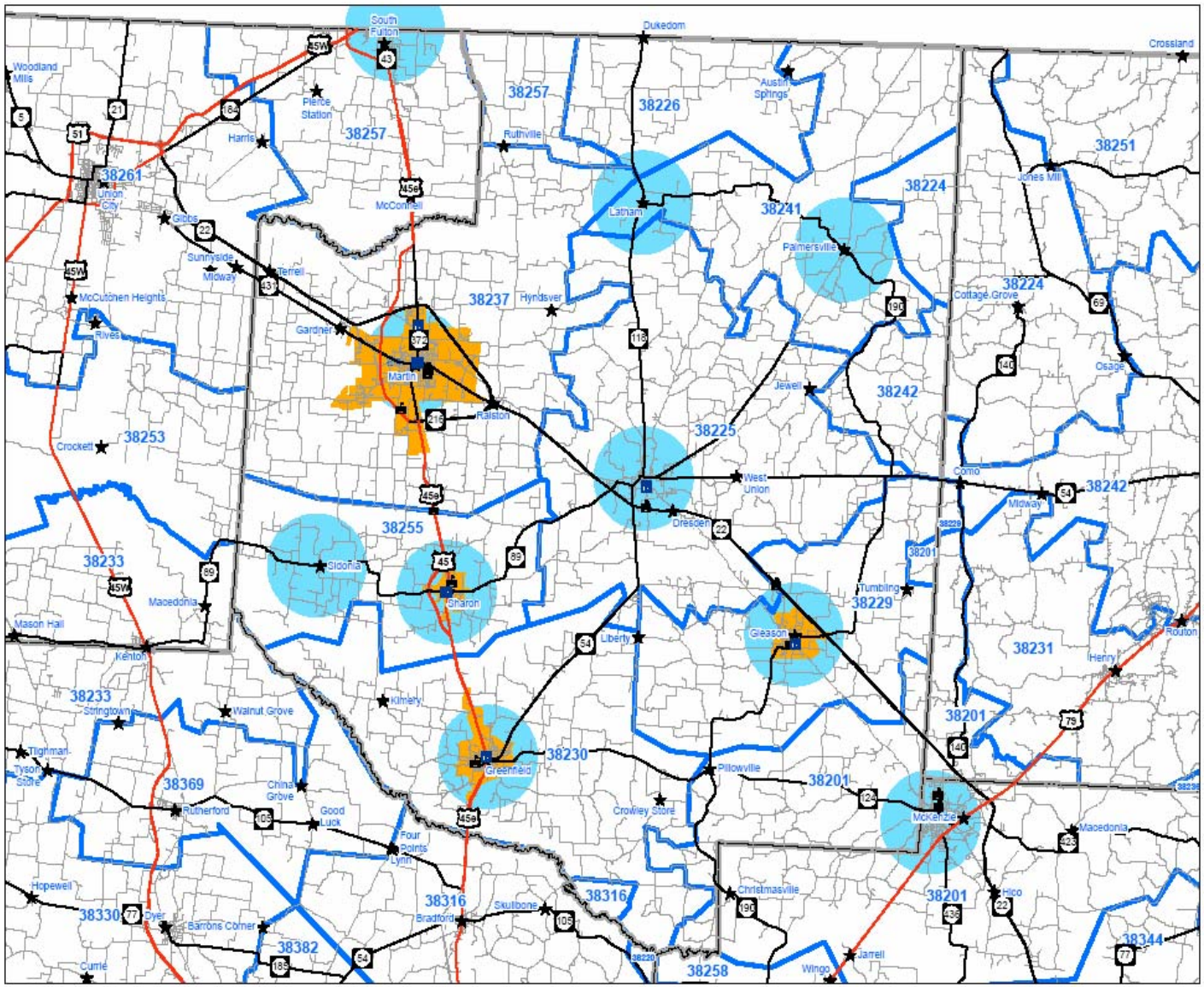
TN OIR GIS Services

TN Regulatory Authority

0 1 2 4 Miles

Legend

- 9,000 ft DSL Service Area
- Cable Broadband Area
- School
- Library
- Census Place
- Interstate
- State Highway
- US Highway
- Local Road
- Zip Code Boundary
- County Boundary



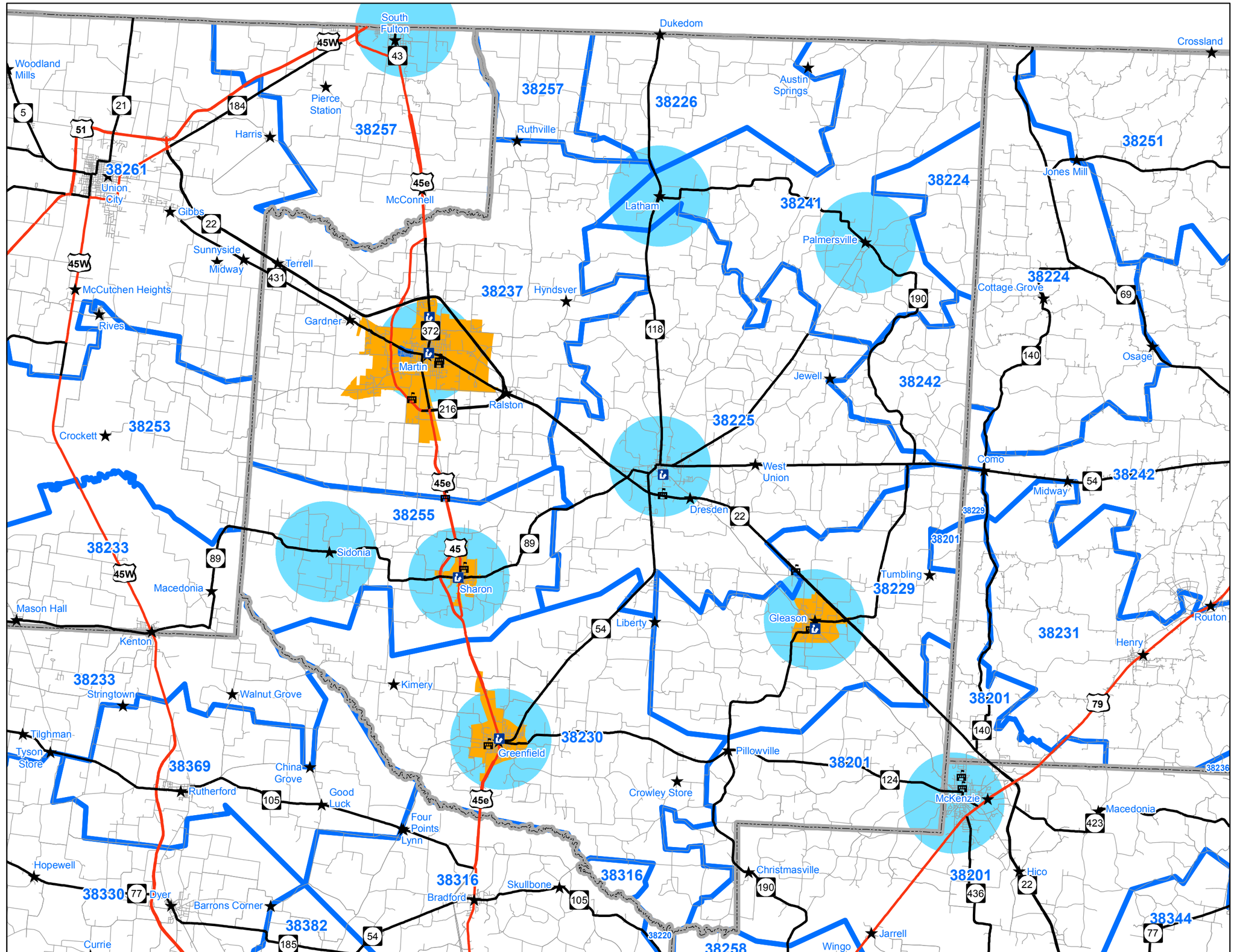
Weakley County
Demographic Summary

	Population	Households	Area in Sq. Miles
Served	23,195	9,012	74
%	66%	66%	13%
Unserved	11,700	4,587	500
%	34%	34%	87%
Total	34,895	13,599	574

Prepared by Arnie Reed
Tennessee Regulatory Authority

Broadband Service Areas for Weakley County, TN

September 26, 2006



TN OIR GIS Services

TN Regulatory Authority

0 1 2 4 Miles

Legend

- 9,000 ft DSL Service Area
- Cable Broadband Area
- School
- Library
- Census Place
- Interstate
- State Highway
- US Highway
- Local Road
- Zip Code Boundary
- County Boundary

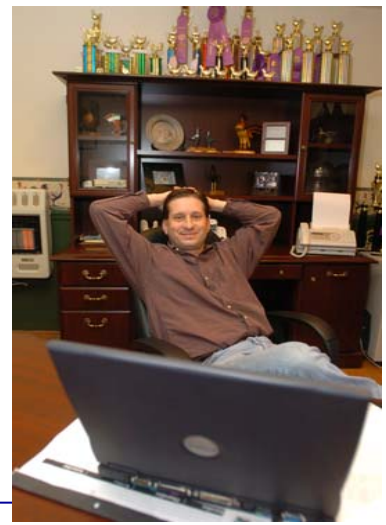
APPENDIX 13

CONNECTKENTUCKY PRESENTATION

CONNECTKENTUCKY

Tennessee Broadband Task Force Meeting

September 28, 2006



Who is ConnectKentucky?

ConnectKentucky is a public/private partnership, leading the way into a new economy for Kentuckians

ConnectKentucky leverages the latest in technology and networking to ensure Kentucky remains the place of choice to work, live, and raise a family.

2006 Awards

2006 United States Economic Development Administration's Excellence in Innovation

ConnectKentucky and Kentucky's *Prescription for Innovation*

2006 Southern Growth Policies Board Innovation Award

ConnectKentucky and *No Child Left Offline*

HUMANA
Guidance when you need it most

KACo

WildBlue Communications

Kentucky.gov

NORTEL

NetTango

Western Kentucky University

The Lane Report

University of Louisville
dare to be great

NASCIO
Representing Chief Information Officers of the States

NKU Northern Kentucky University

UK
University of Kentucky

windstream communications

KSTC
Kentucky Science & Technology Corporation

CSI Computer Services, Inc.

Microsoft

KCTCS

Murray
Kentucky's Public Ivy University

Morehead State University

JPMorganChase

Kentucky
Unbridled Spirit

USEC
A Global Energy Company

BellSouth

The Center
For Rural Development

Appalachian Regional Commission

KLC
Kentucky League of Cities

Kentucky Telephone Association

Kentucky State University

SouthEast Telephone

Lexmark

Keane

Crown Castle International
shaping the wireless world

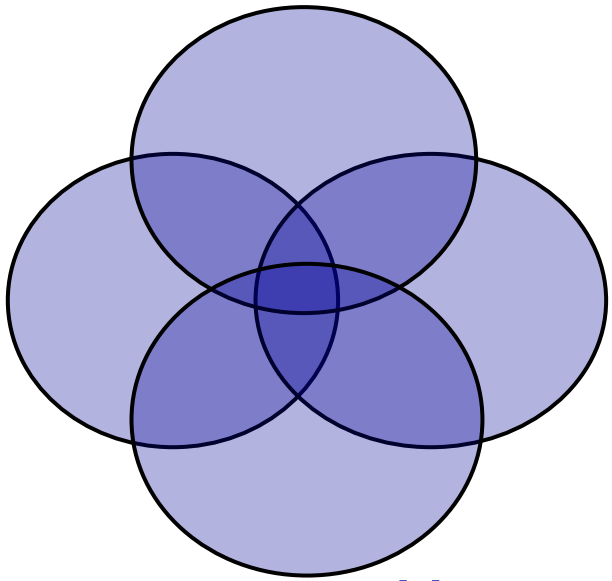
ca

•Business/Industry
•Government
•Education
•Healthcare
•Agriculture
•Tourism
•Community

Economic Development

Technology

•Information Tech
•Communications
•Software
•Hardware
•Training



Culture

•Relationships
•Local presence
•Tradition
•Politics

Partnership

•Public/Private
•Context: partners for progress
•C level
•Multiple industries
•Multiple sectors

Development has been Redefined

The Past 100 Years

Kentucky's economy was built on the backs of farmers, miners, and manufacturers

46,400

Kentucky manufacturing jobs that have disappeared since August 2000

Development Today

- Jobs/Business/Industry
- Government
- Education
- Healthcare
- Agriculture
- Tourism
- Community

Without Broadband …

…The world is passing you by (Really)

- New businesses aren't interested
- Entrepreneurs cannot compete
- Online education providers have decided to ignore dial-up users
- Healthcare costs more
- Tourists can't find you

Governor Fletcher's Prescription for Innovation:

- ✓ Full broadband deployment by 2007
- ✓ Dramatically improved use of computers and the Internet
- ✓ Meaningful online presence for every local community with ready-to-offer citizen services
- ✓ eCommunity leadership teams formed with business plan and applications identified for nine sectors: business, local government, education, healthcare, libraries, agriculture, tourism, NGOs

eCommunity Leadership Teams
Project Managers lead county level strategic technology planning for nine sectors: industry, local government, higher ed, k-12, healthcare, agriculture, tourism, libraries, non-government organizations.

No Child Left Offline
Refurbished state, surplus computers are delivered to the homes of underprivileged 8th graders throughout Kentucky. Nearly 1,000 computers distributed in five eastern Kentucky counties to date.

Key Metrics (previous 24 months)

$500,000,000+	Private capital invested in KY telecommunications (unprecedented)
20,000,000 +	Positive media impressions related to KY's *Prescription for Innovation*
429,000	Approximate number of new households that have received broadband access since start of Governor's plan (on track to have 100% coverage by end of 2007)
5,640	Number of new high tech jobs created (on track to exceed estimated 14,000 new tech jobs by 2007)
1,000	Number of home computers being delivered to under privileged households during the pilot phase of "No Child Left Offline"
116	Number of Kentucky counties actively engaged in the eCommunity Leadership Team process (assessing needs, building interest, planning)
46%	Growth rate of broadband usage in KY over last two years
45%	Growth rate of broadband availability in KY over last two years
17%	Growth rate of home computer ownership in KY over last two years
# 1	Kentucky's national ranking for expanding broadband

Market Planning & Network Design
Engineers and industry specialists work with communities and telecommunications providers to design effective network solutions.

Technology Solutions
Staff work with communities and companies to identify and deploy applications that utilize broadband (e-health, virtual education, e-government, etc.)

CK Steering Committee
Technology leaders from 40 public and private organizations collaborate to identify strategies to accelerate technology and advance tech-friendly policies in KY.

Research, Policy & Market Intelligence
Staff gather and analyze primary data; develop and maintain GIS-based telecom asset maps; cultivate technology market intelligence; promote technology policy through support of policy makers.

Communications
Industry specialists work with communities and statewide media to promote technology and build awareness of technology-based opportunities.

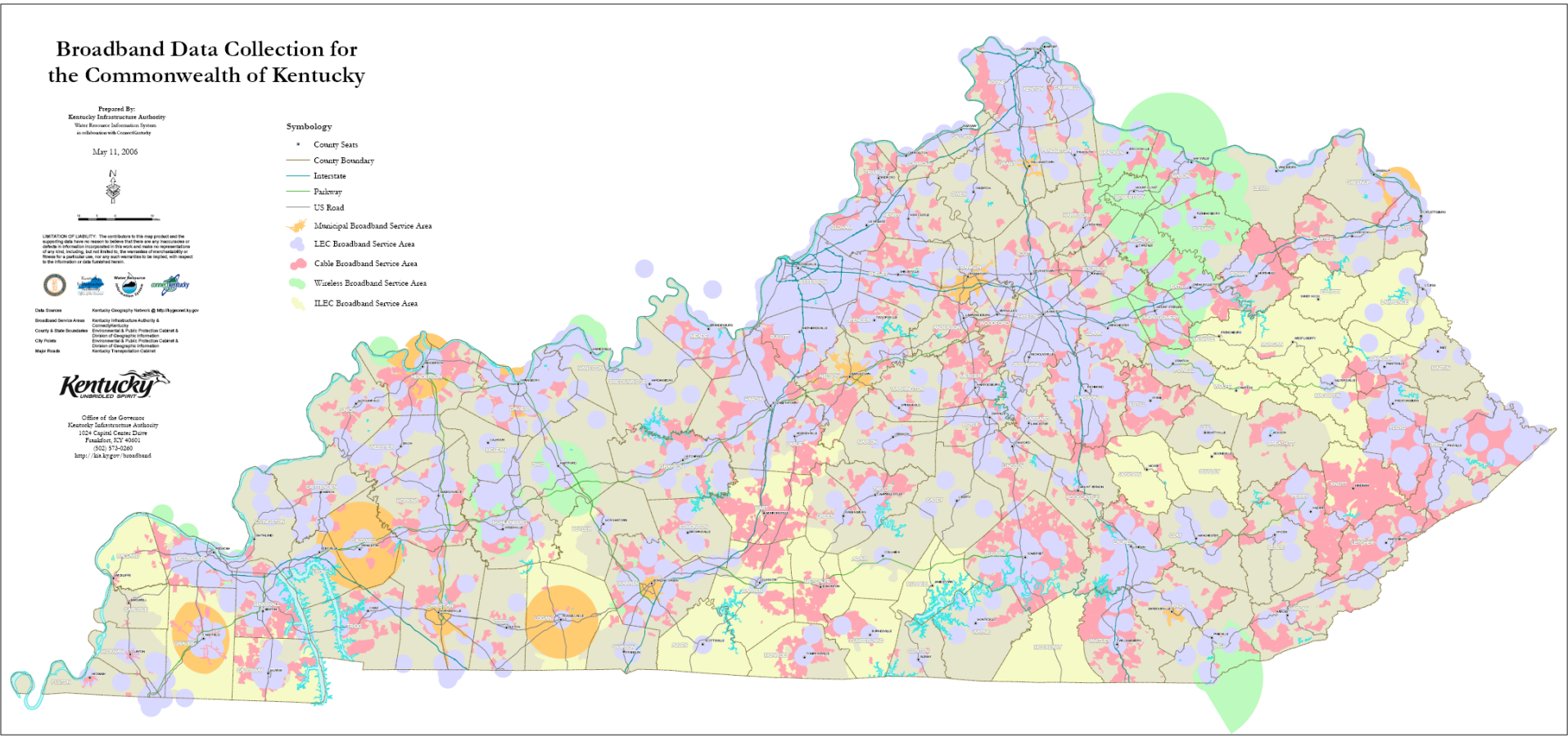
Broadband Acceleration: The Process

- ✓ Supply Side:
  - ✓ Understand current situation: build collaboration; gather data; map it
  - ✓ Build the business case for unserved areas – provide market intelligence and drive adoption
  - ✓ Respond to provider needs (policy/regulatory changes; funding

- ✓ Demand Side:
  - ✓ Understand current situation: gather data; understand needs
  - ✓ Engage locally (across sectors) to plan, build awareness, document and drive demand

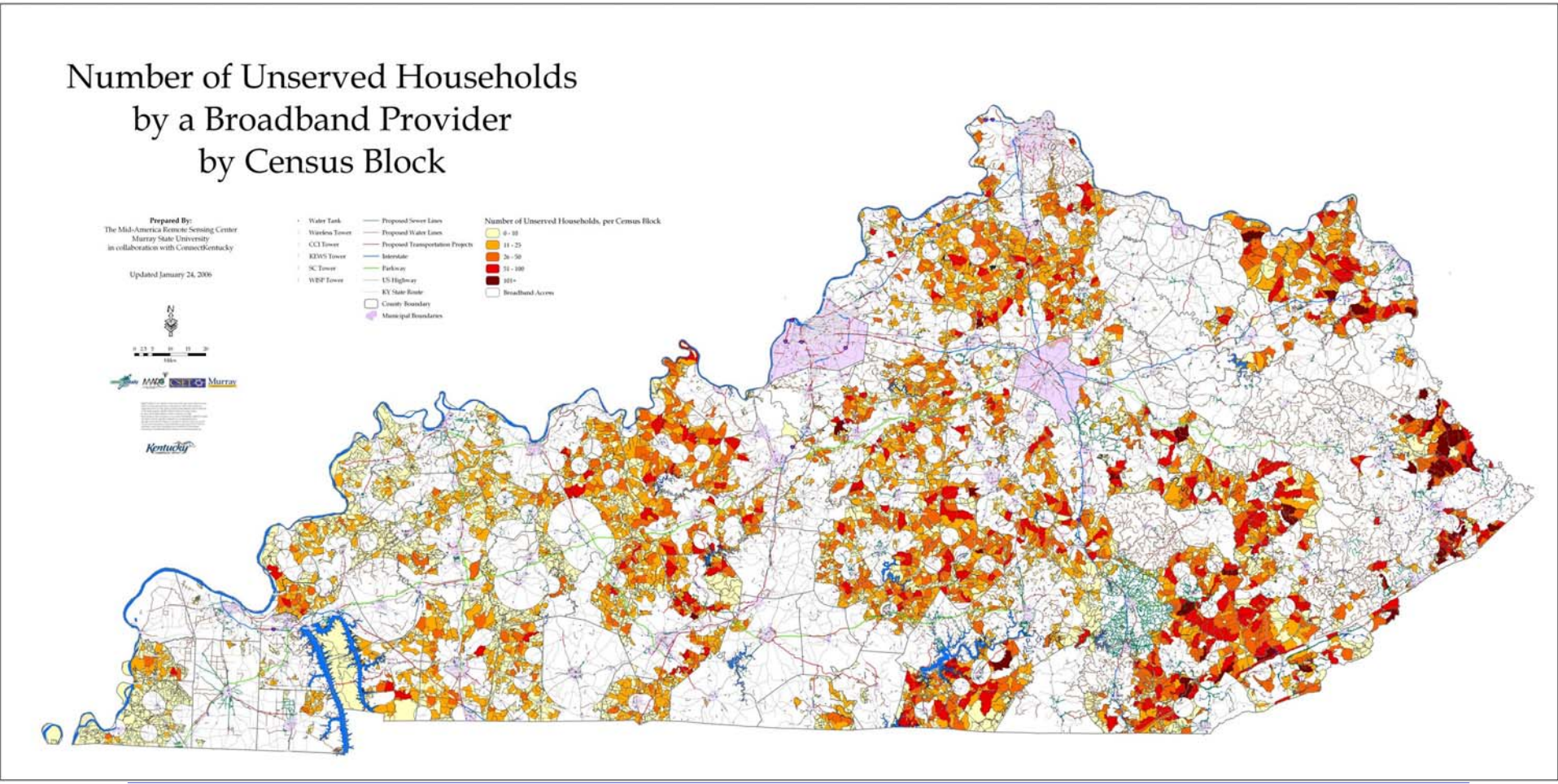
Process: Statewide Broadband Coverage Mapping

KIA takes all of the data provided to ConnectKentucky and incorporates it into a map showing statewide broadband availability.



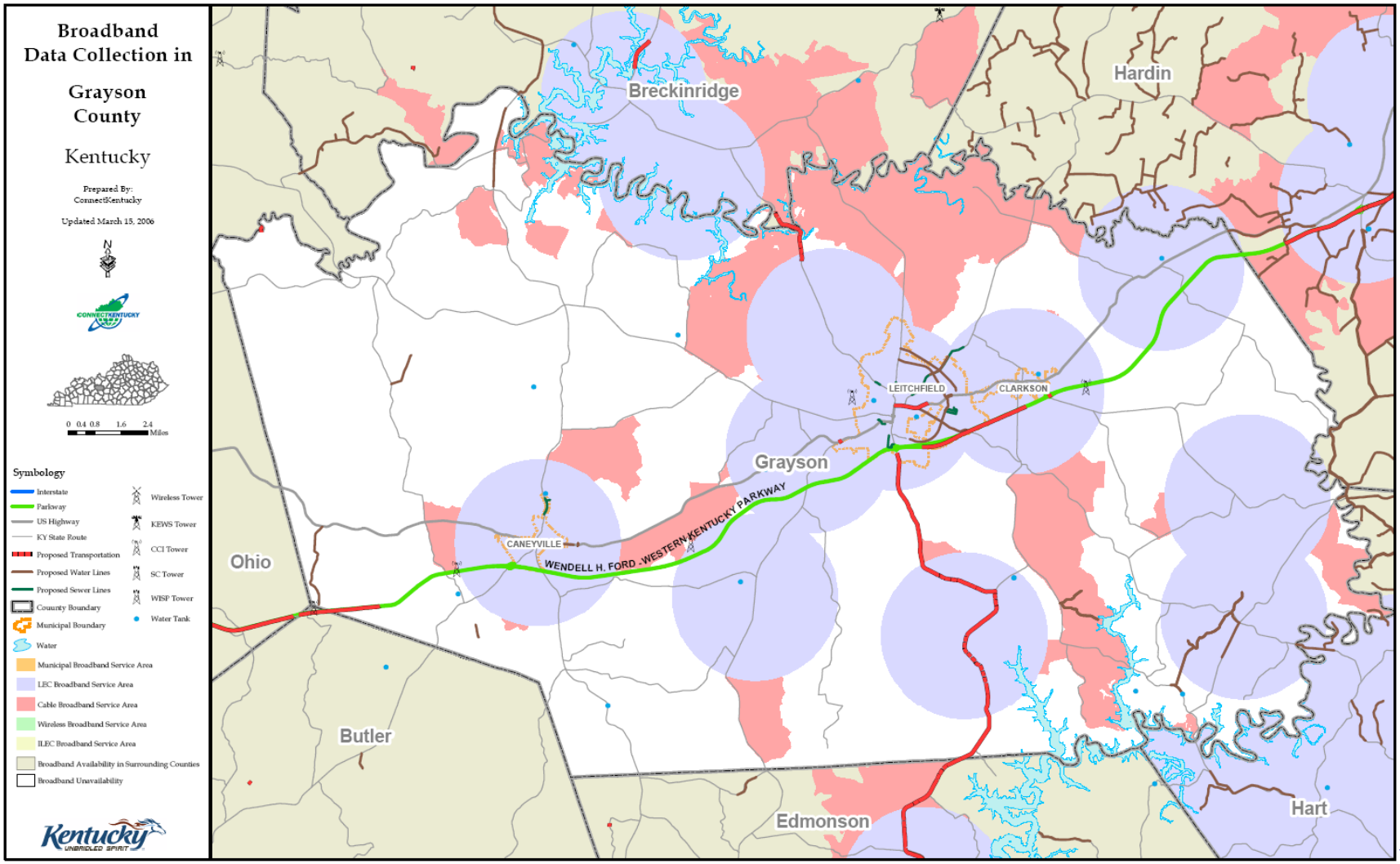
Process: Analysis of Homes Unserved in the Commonwealth

ConnectKentucky with assistance from Mid America Remote Sensing Center created a process that evaluates the number of homes unserved across the state, based on Census Block data.

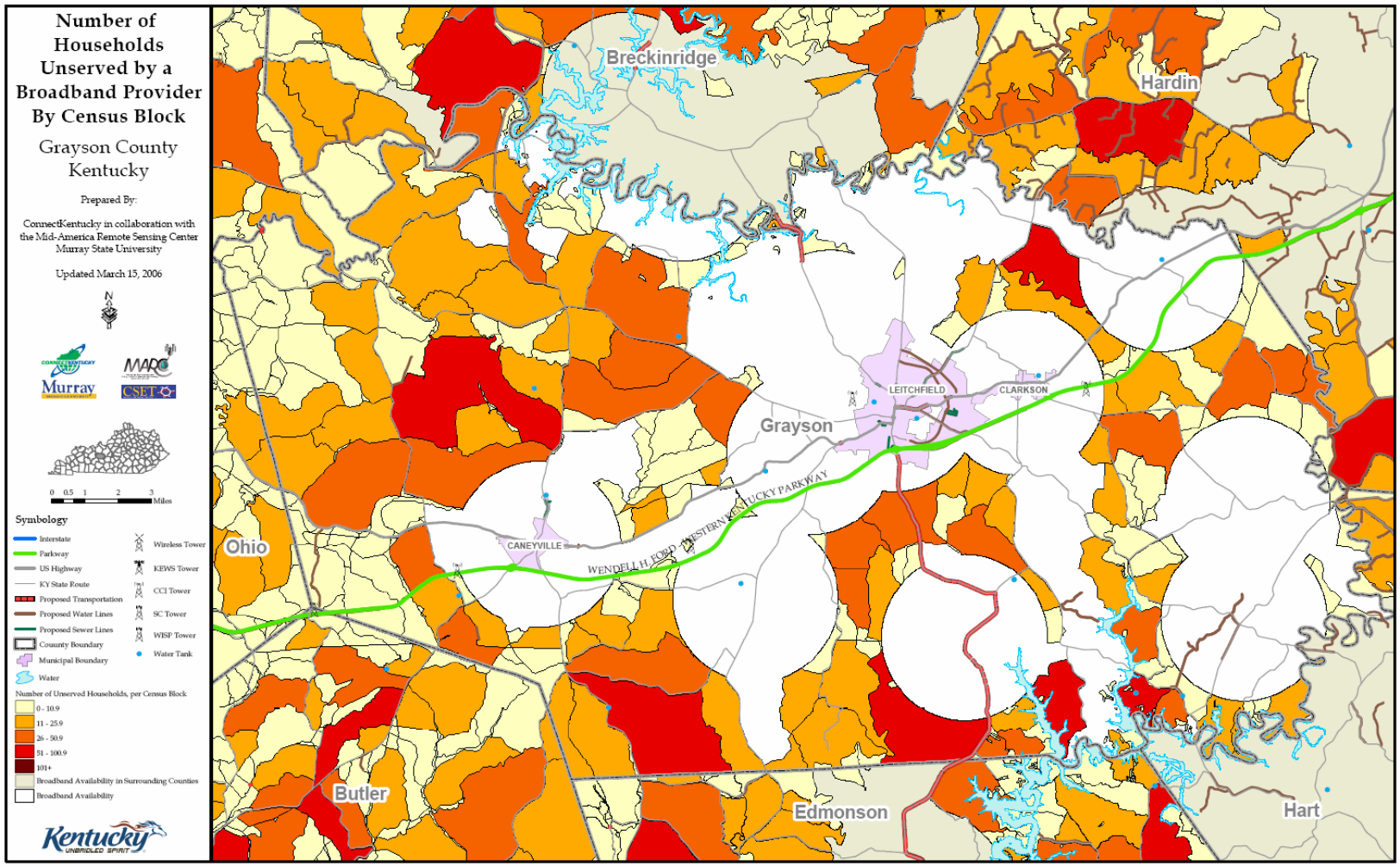


Process: Broadband Coverage - County Level

ConnectKentucky is able to look at very detailed maps of coverage areas and infrastructure to see what gaps exist that need to be filled and which providers are the most likely to build-out

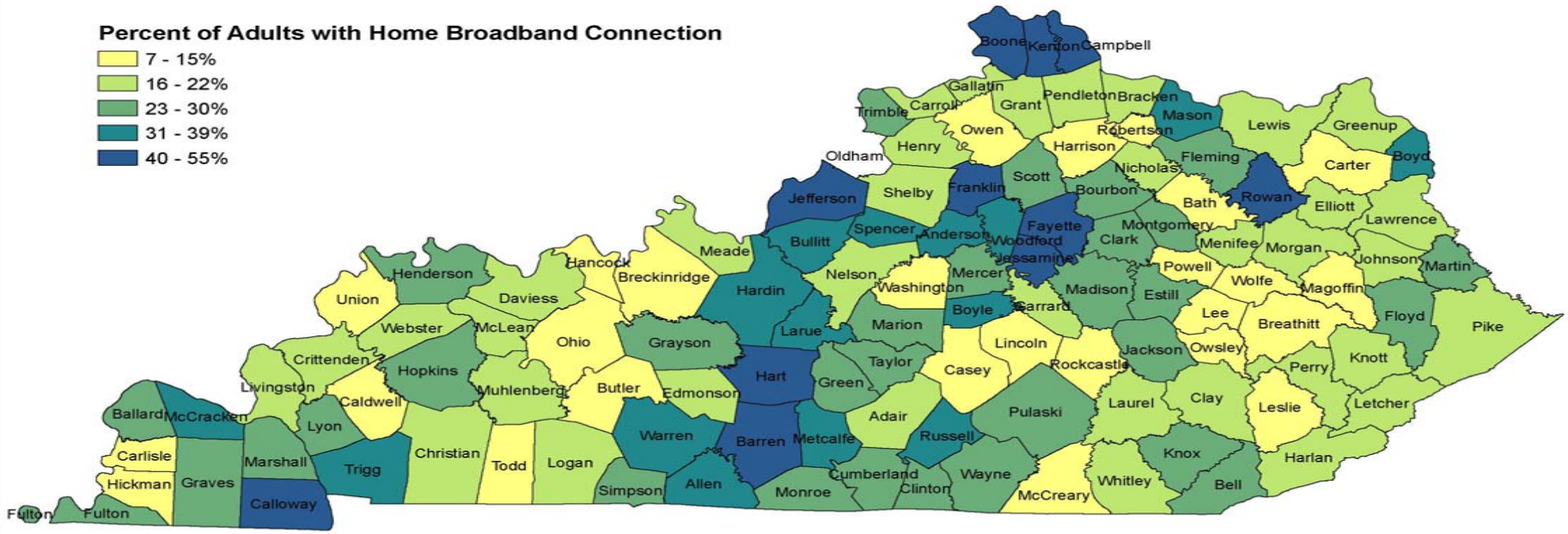


Process: Homes Unserved County Level



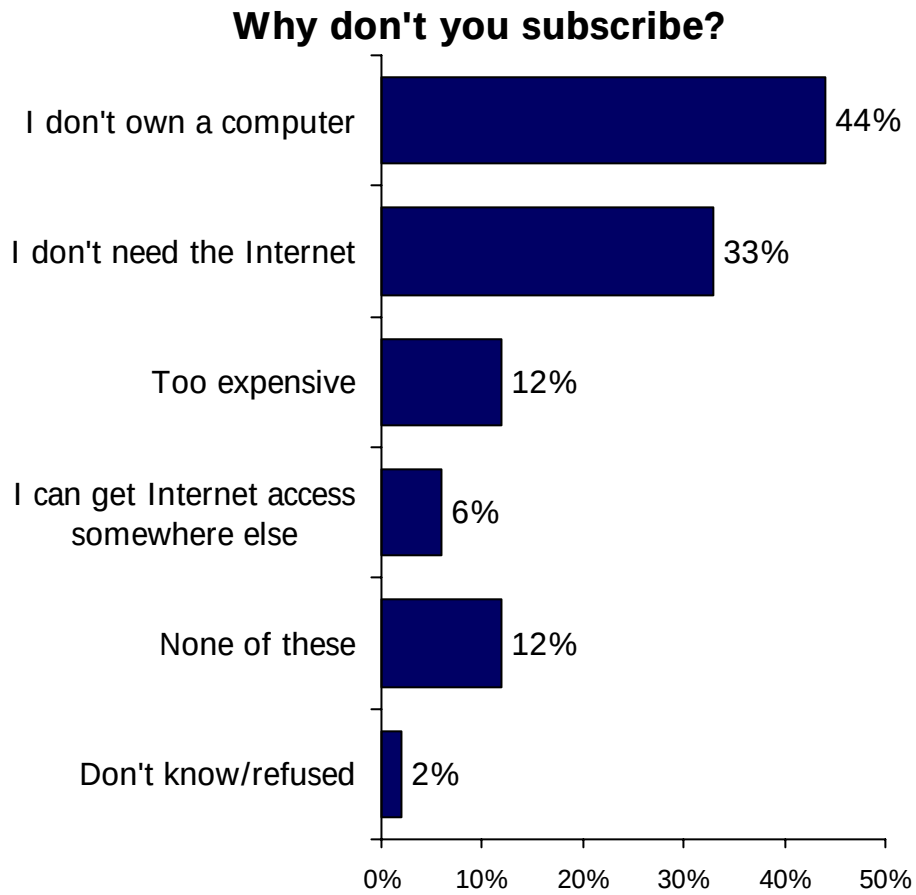
KY Broadband Landscape - Adoption

Broadband Adoption in Kentucky



Barriers to Internet Adoption

- Not having a computer at home and no perceived need for the Internet are the most common barriers to greater residential Internet use in Kentucky.
- However, 12% of today's non-users say obtaining Internet access at home would be too expensive and 6% say they can obtain access outside their own home.



Source: 2005 ConnectKY Technology Assessment Study, n=4,774 adults without access at home

It's All About Community

eCommunity Leadership Team

Community leaders from nine sectors provide the most comprehensive picture of the community in terms of broadband deployment. The team assesses and plans for broadband in each community.

- Business and Industry
- K-12
- Healthcare
- Libraries
- Higher Education
- Community-based Organizations
- Government
- Tourism, Recreation and Parks
- Agriculture

“5 A’s to accelerate technology in rural areas”

2007 - 2010

2004 - 2006

A

doption

pplications

wareness

ffordability

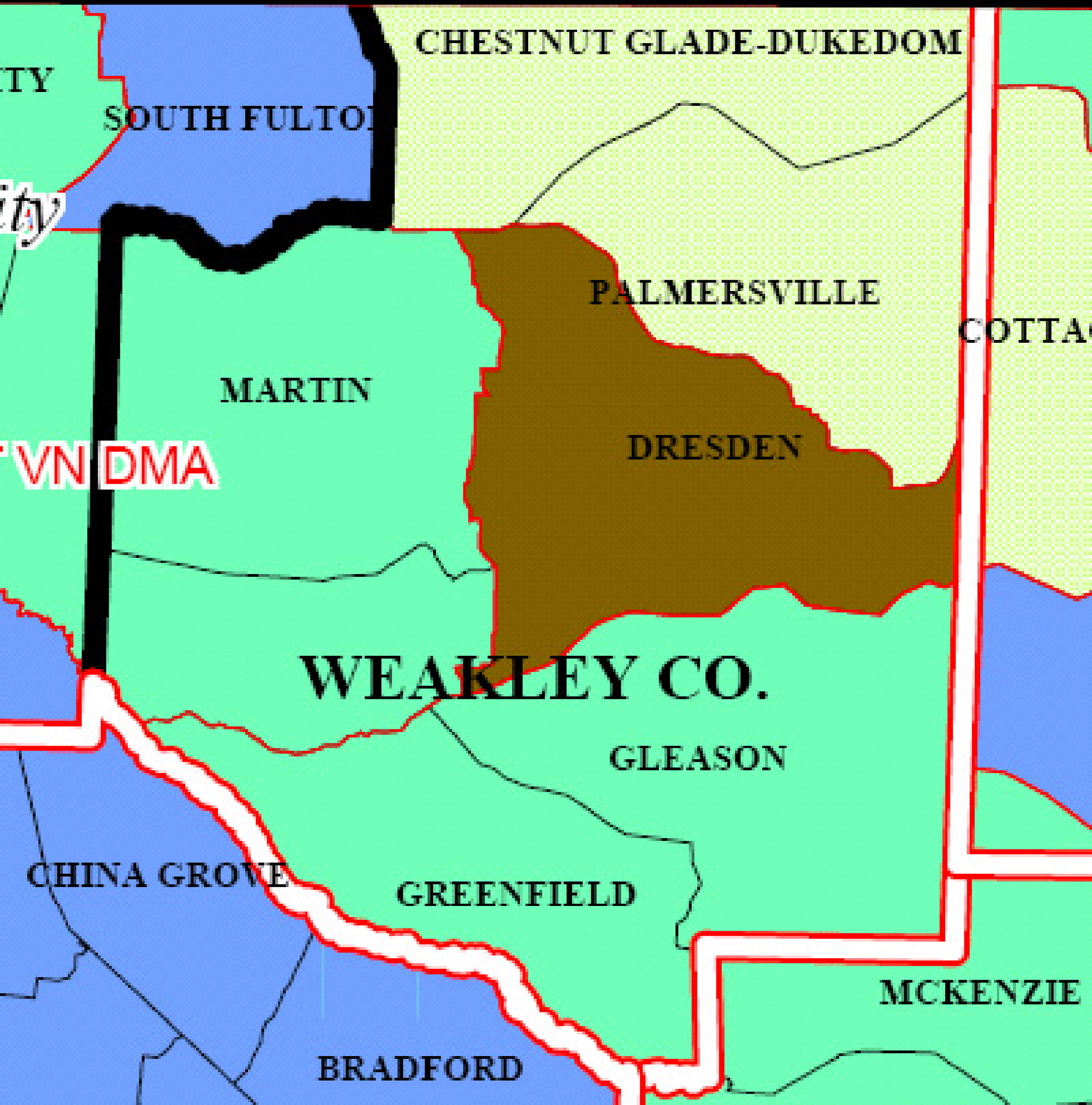
vailability

Where there is a WILL there is a WAY

Brian R. Mefford
President & CEO
ConnectKentucky
bmefford@connectky.org
877.781.4320

APPENDIX 14

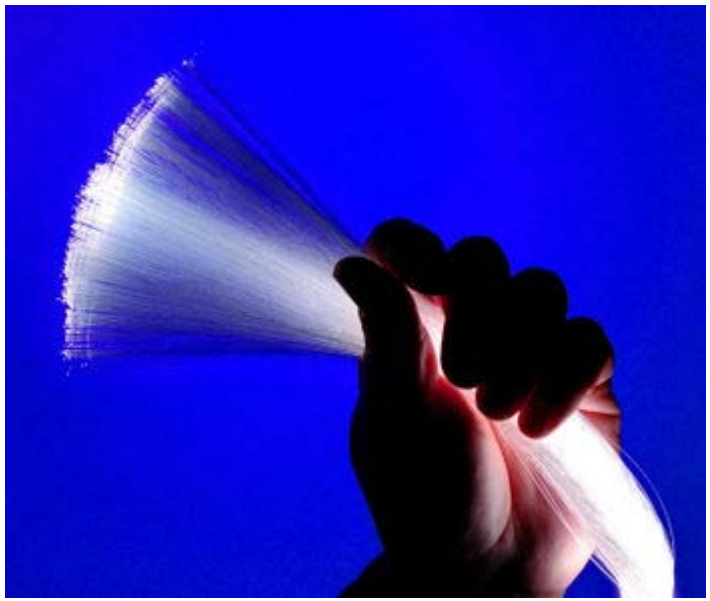
WEAKLEY COUNTY BLOW-UP OF TCTA MAP


CHESTNUT GLADE-DUKEDOM
SOUTH FULTO
PALMERSVILLE
COTTA
MARTIN
DRESDEN
VN DMA
WEAKLEY CO.
GLEASON
CHINA GROVE
GREENFIELD
MCKENZIE
BRADFORD

APPENDIX 15

ELECTRIC POWER BOARD OF CHATTANOOGA PRESENTATION

TENNESSEE FIBER OPTIC COMMUNITIES



The Value of Fiber Optic Communities in Tennessee

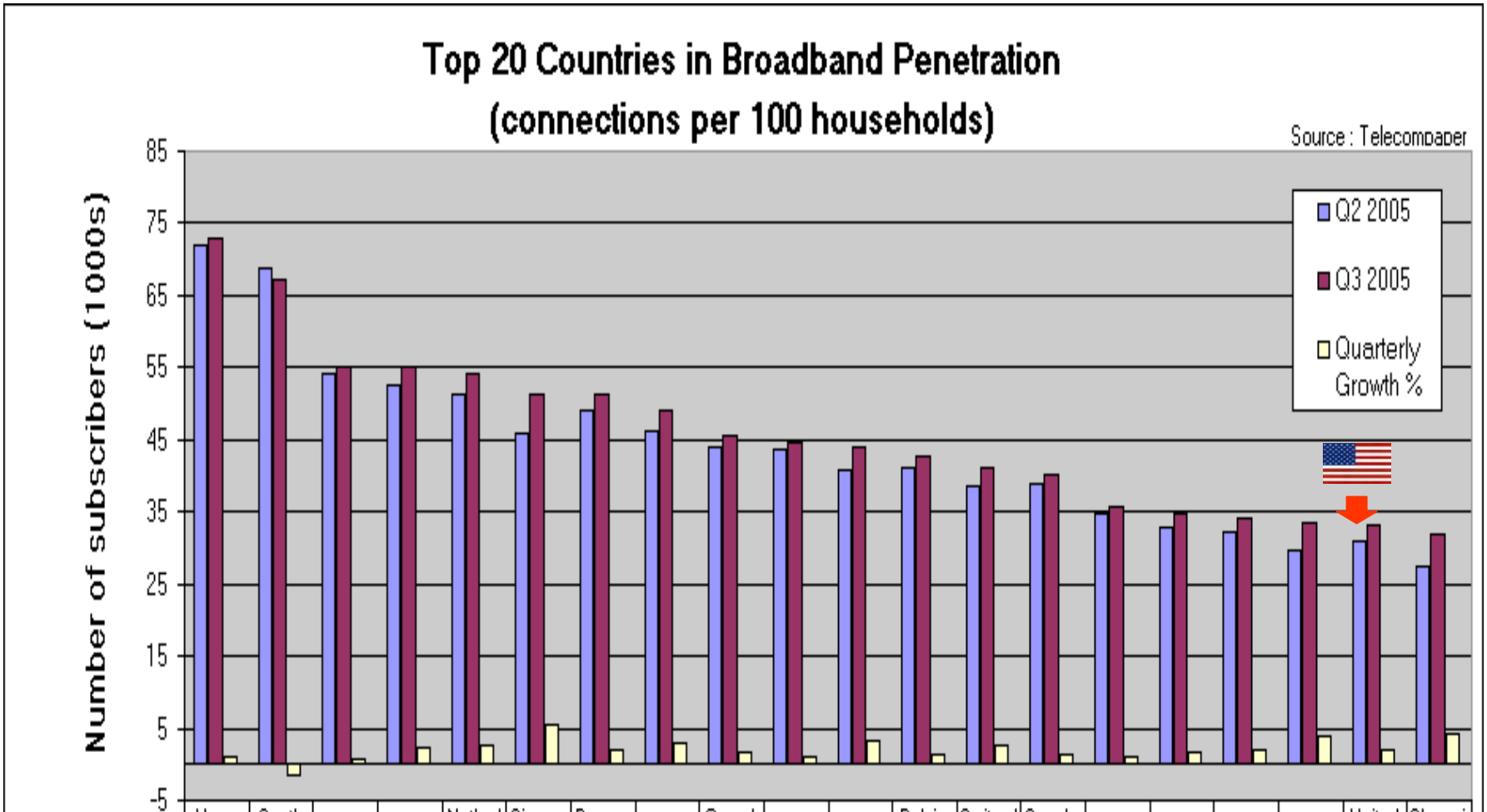
1. Economic Development Tool
2. Improved Quality of Life
3. Municipal Fiber-to-the-Home

Presentation: Tennessee State Government
The Governor's Broadband Taskforce
November 17, 2006
Nashville Tennessee

Prepared By: James A. Ingraham
Senior Manager Strategic Initiatives
EPB Chattanooga
On Behalf of Tennessee Fiber Optic Communities
ingrahamja@epb.net 423-648-1308

Economic Development Tool

TENNESSEE FIBER OPTIC COMMUNITIES

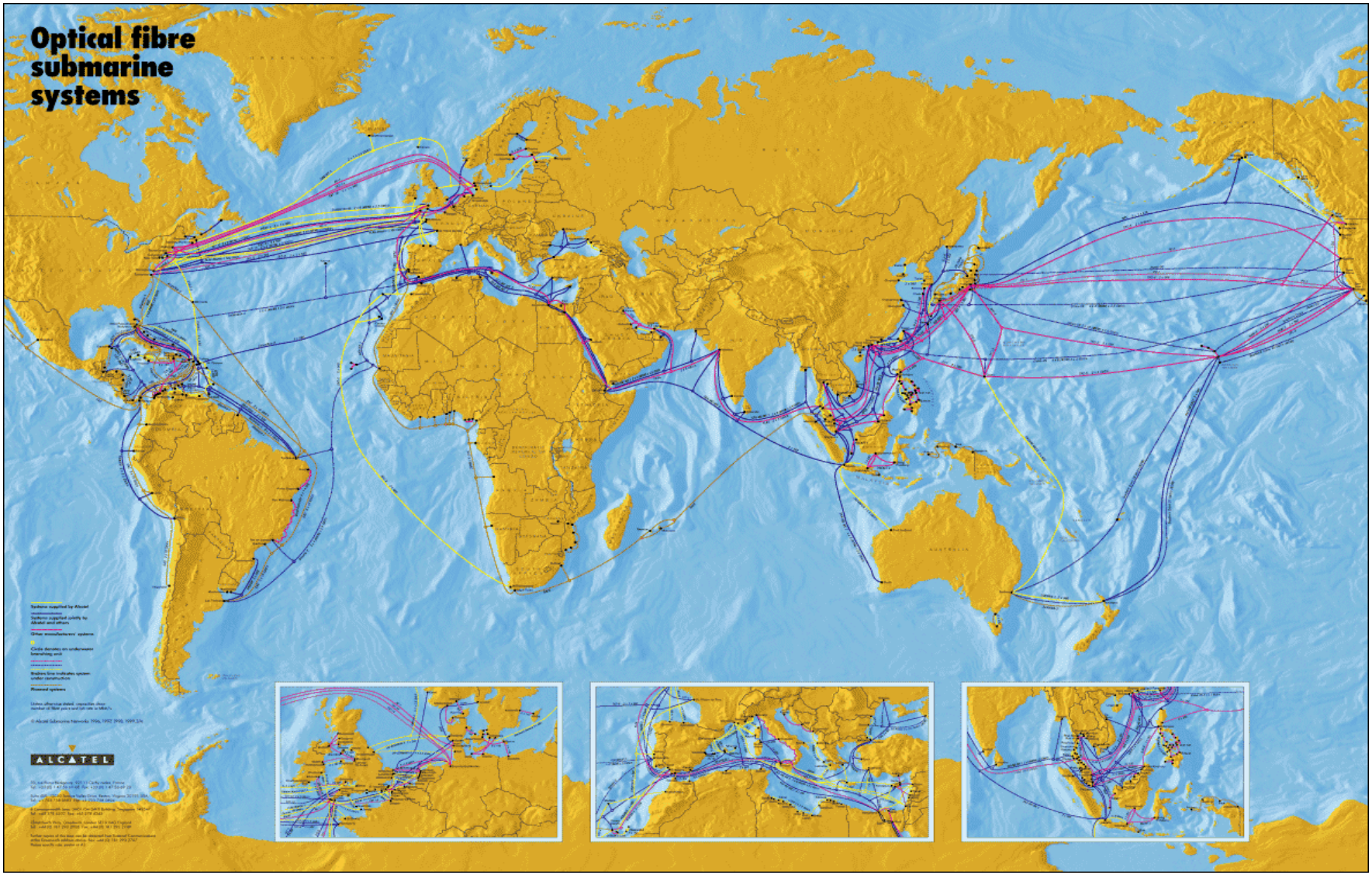


	Hong Kong	South Korea	Israel	Taiwan	Netherlands	Singapore	Denmark	Finland	Canada	Japan	Norway	Belgium	Switzerland	Sweden	Iceland	Estonia	France	UK	United States	Slovenia
Q2 2005	71.95	68.75	54.26	52.67	51.4	45.75	49.13	46.19	44.01	43.57	40.81	41.23	38.45	38.82	34.82	32.9	32.1	29.72	31.02	27.56
Q3 2005	73.03	67.32	55.06	55.05	54.2	51.38	51.15	49.05	45.72	44.46	44.12	42.74	40.98	40.25	35.77	34.68	34.12	33.52	33.09	31.84
Quarterly Growth %	1.08	-1.42	0.8	2.37	2.49	5.63	2.03	2.86	1.71	0.9	3.3	1.51	2.53	1.43	0.95	1.77	2.02	3.8	2.07	4.28

Source: See http://website optimization.com/bw/0601,viewed Feb. 2006

TENNESSEE FIBER OPTIC COMMUNITIES

Global Fiber Optic Transport Cable



Source: Alcatel Inc. 2006

Broadband Connections By State:

TENNESSEE FIBER OPTIC COMMUNITIES

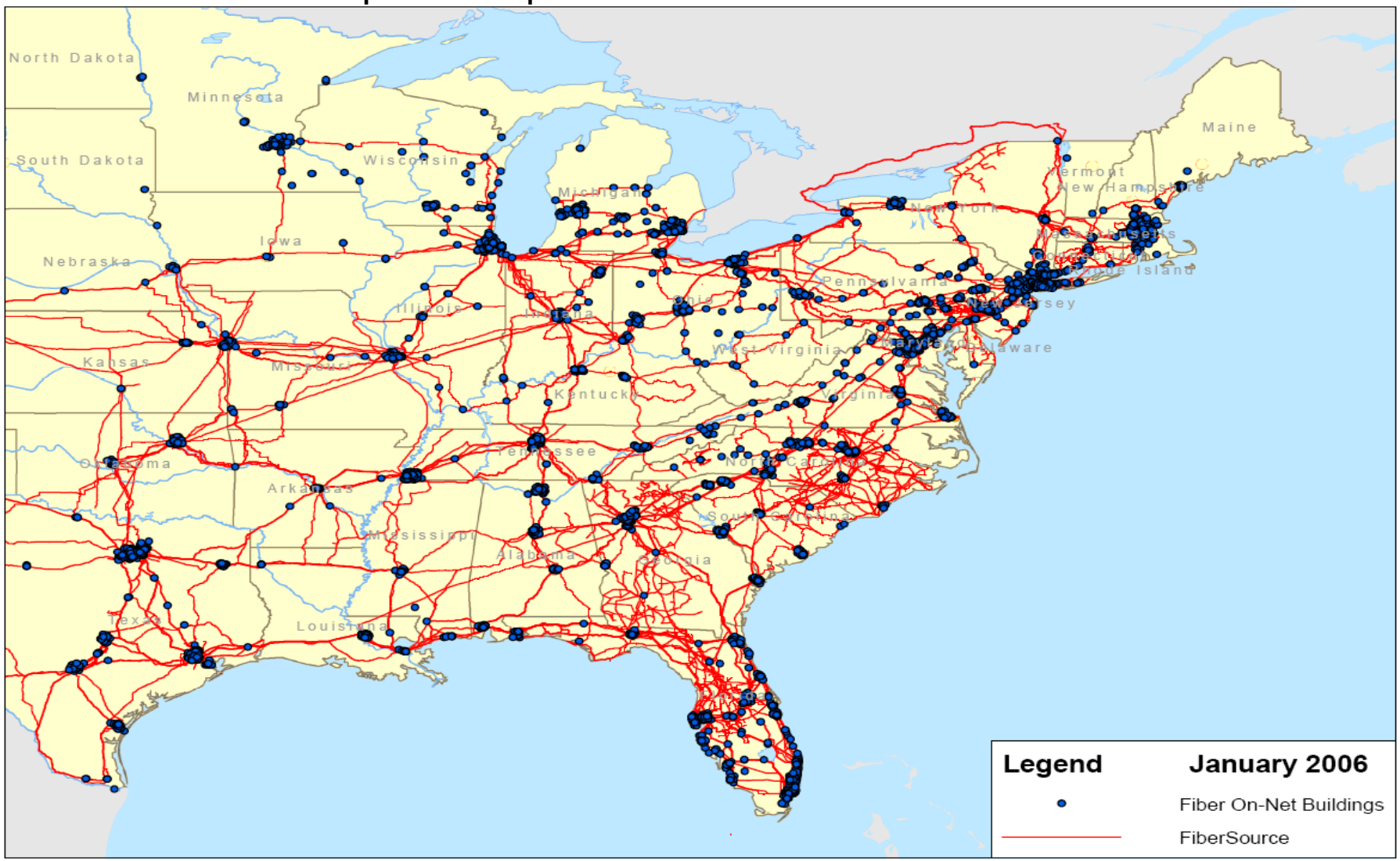
Rank	State	%BB	Rank	State	%BB
1	NJ	53.9%	25	NM	41.6%
2	CT	52.0%	26	NE	41.3%
3	MA	50.9%	27	RI	41.2%
4	CA	50.5%	28	WI	39.9%
5	NV	49.4%	29	ND	39.5%
6	AZ	48.6%	30	PA	38.9%
7	FL	48.0%	31	MI	38.9%
8	KS	47.5%	32	VT	37.7%
9	MD	47.5%	33	ME	37.4%
10	NH	46.5%	34	TN	37.2%
11	NY	46.1%	35	LA	36.7%
12	VA	45.8%	36	OK	36.5%
13	UT	45.6%	37	AL	36.2%
14	SD	45.2%	38	WY	36.0%
15	WA	44.6%	39	IN	35.7%
16	CO	44.1%	40	KY	35.4%
17	OH	44.0%	41	MO	35.4%
18	SC	43.4%	42	MN	34.7%
19	IL	42.9%	43	WV	34.1%
20	TX	42.7%	44	IA	34.0%
21	NC	42.2%	45	MT	33.9%
22	GA	42.2%	46	AR	33.2%
23	DE	41.9%	47	ID	31.4%
24	OR	41.6%	48	MS	22.3%

Source: RVA Render & Associates, LLC 2006

Economic Development Tool

TENNESSEE FIBER OPTIC COMMUNITIES

United States Fiber Optic Transport



CFN Services
Optimizing the power of your network

FiberSource
Eastern United States

0 50 100 200 300 400 Miles

Economic Development Tool

AREA DEVELOPMENT
SITE AND FACILITY PLANNING

TENNESSEE FIBER OPTIC COMMUNITIES

Top 10 Site Selection Factors	2005
1. Availability of Telecommunications Service	96
2. State & Local Incentives	95.9
3. Highway Accessibility	94
4. Labor Cost	93.8
4. Proximity to Major Markets	93.8
4. Availability of High Speed Internet	93.8
5. Availability of Skilled Workforce	89.6
6. Availability of Land	89.1
7. Tax Exemptions	86
8. Corporate Tax Rate	85.7
9. Occupancy or Construction Cost	84.3
10. Energy Availability and Cost	83.7

Source: APPA Economic Development Conference July 2006
Halcyon Business Publications, Inc.

Economic Development Tool

TENNESSEE FIBER OPTIC COMMUNITIES

The New York Times Friday, June 16, 2006

Hiding in Plain Sight, Google Seeks More Power

1. Rural Oregon – New Google Information Age Factory $1 billion capital investment
2. 1,000 Jobs Average income $65,000/yr.
3. Public Power Fiber Connectivity and Electricity Service
4. Microsoft and Yahoo Building Similar Facilities in Rural Washington

Economic Development Tool

TENNESSEE FIBER OPTIC COMMUNITIES

MAJOR BUSINESS ATTRACTION RELATED TO FTTH:

	Population		
Bristol, VA	17,271	(MUNI)	Northrop Grumman
Fort Wayne, IN	203,369	(RBOC)	Raytheon
Macon, MO	5,283	(ILEC)	Onshore
Mason County, WA	53,000	(PUD)	Louisville Slugger, Sims
Quincy, WA (Grant County)	5,326	(PUD)	MSN (Microsoft)
Salem, IL	7,569	(CLEC)	Midwest Ag Energy Ethanol Plant
Wenatchee, WA (Chelan Cty)	28,515	(PUD)	Yahoo

RVA Render & Associates, LLC 2006

COMING BUSINESS ATTRACTION RELATED TO FTTH:

Columbus, KS	(ILEC)	"New company coming with 400 jobs"
Utopia, UT	(MUNI)	"About a dozen companies to come"
North Kansas City, Mo	(MUNI)	"Major high tech firm looking"
Loma Linda, CA	(MUNI)	"Unprecedented inquires"
Sallisaw, OK	(MUNI)	"One coming and two considering"

RVA Render & Associates, LLC 2006

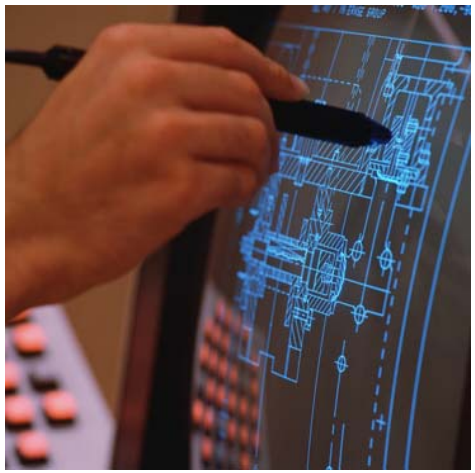
RETENTION AND EXPANSION RELATED TO FTTH:

Quincy, FL	(MUNI)	Big Bend Rebar
Dalton, GA	(MUNI)	Carpet Industry
Salem, IL	(CLEC)	Hyde and McKay
Jackson, TN	(MUNI)	Kirklands

RVA Render & Associates, LLC 2006

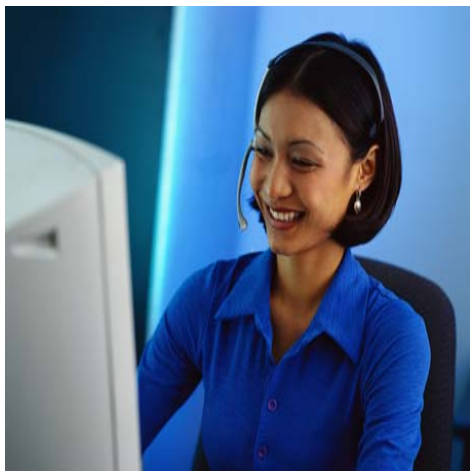
Economic Development Tool

TENNESSEE FIBER OPTIC COMMUNITIES



BROADBAND INVESTMENT
FORECAST CONTRIBUTION TO ECONOMIC GROWTH

United States Gross National Product	2003 - 2010	$500 Billion
Tennessee Gross State Product	2006 - 2010	$50 Billion



BROADBAND INVESTMENT
FORECAST CONTRIBUTION TO NEW JOB CREATION

United States New Jobs Created	2003 - 2010	1,200,000
Tennessee New Jobs Created	2006 - 2010	50,000

Source: Criterion Economics Washington DC. 2005
Study: Understanding the Benefits of Municipal Broadband in TN. Feb 2006

TENNESSEE FIBER OPTIC COMMUNITIES

HEALTHCARE

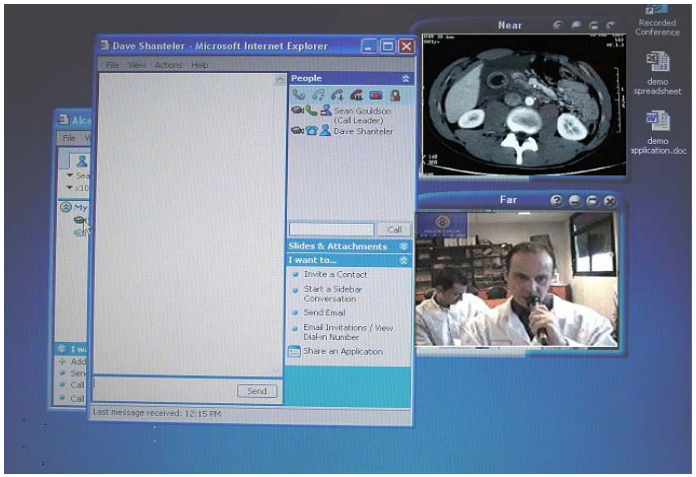
Berkshire County Medical Center a regional hospital in Massachusetts leveraged the new local fiber network "Berkshire Connect" to deliver Telemedicine services to regional Rural hospitals:

1. Improved Care
2. Raised Medical Productivity
3. Reduced Cost $470,000/year

Source: Understanding he Benefits of Municipal Broadband in Tennessee. Feb. 2006

TENNESSEE FIBER OPTIC COMMUNITIES

HEALTHCARE



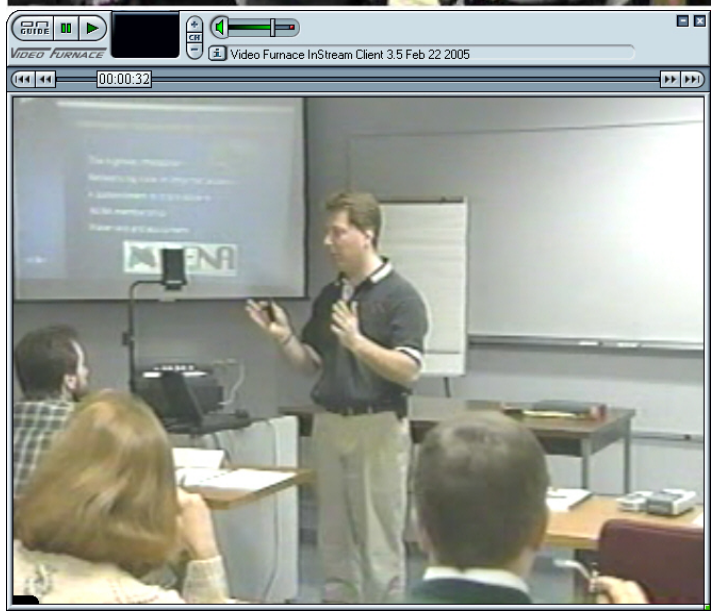
Forecast $800 billion in lower healthcare Cost from accelerated broadband Deployment:

1. Less institutional Living
2. The Elderly can stay in the workforce longer
3. Telemedicine to rural locations
4. Medical records sharing and storage
5. Service to the handicapped

Source: Understanding he Benefits of Municipal Broadband in Tennessee. Feb. 2006

TENNESSEE FIBER OPTIC COMMUNITIES

EDUCATION



Harvard music student train with masters in the Miami Symphony using Fiber Optic connections

The technology quality is that good!

Karen Adsit
Technology in the Classroom Director
University of Tennessee Chattanooga

“ 80% of our teachers are using the internet to teach their classes, but most of our students only have dial-up access and must do assignments on campus or at their work” .

Source: Making the Grade On-line Education in the United States 2006

TENNESSEE FIBER OPTIC COMMUNITIES

EDUCATION

Distance Learning is a reality with proven results

1. Core concept video clips
2. Digital library resources
3. Guest lectures
4. Live Educational Channels
    - PBS
    - History Channel
    - Discovery
    - Foreign language Channels
    - School Channels

Dramatic increase in memory retention
Improved test Scores
- 3-5% math score improvement
- 12.6% science and social studies score improvement

Source: Center for Children and Technology

TENNESSEE FIBER OPTIC COMMUNITIES

BUSINESS

Loudoun Magazine published by teleworker editorial staff located in 5 different cities.

Atlanta survey of 13 employers using teleworkers found:

1. **Morale improved 90%**
2. **65% less likely to look for another job.**
3. **20% productivity increase**
4. **All survey companies plan to expand the teleworker program.**

TENNESSEE FIBER OPTIC COMMUNITIES

BUSINESS

New high definition video conference systems and high speed connections:

- Connect Businesses to Global Community
- Reduce the demand and Cost of travel
- Work at Home Capability
- Ability to move and store Large files

Improved Quality of Life

TENNESSEE FIBER OPTIC COMMUNITIES

The Internet 1:

1. Written Text
2. Still Photographs

The Internet 2:

1. New Digital Video
2. New Digital Sound

Access will be as Important as your car

Improved Quality of Life

TENNESSEE FIBER OPTIC COMMUNITIES

Economic Impact Analysis Team

Bento Lobo PhD. University of Tennessee Chattanooga
Professor of Finance

Andy Novobliski PhD. University of Tennessee Chattanooga
Department Head Computer Science and Electrical Engineering

Soumen Goush PhD. Tennessee State University
Director, Office of Business and Economic Research

IMPLAN Economic Modeling Tool

10 Year Forecast Value of 2nd Generation Broadband Hamilton County TN.

Social Benefits	$252 Million
Economic Benefits	$352 Million
Total Benefit: Hamilton County	$604 Million
New Jobs Created	2,600
Electric System Value	$300 Million

Source: The Impact of Broadband in Hamilton County, TN. March 20, 2006

Municipal Fiber-to-the-Home

TENNESSEE FIBER OPTIC COMMUNITIES

Deployments by Provider Type

Source: Broadband Properties Magazine 2006

The 21st century critical infrastructure is fiber optic connectivity.

Verizon and AT&T deploy in New England, Texas, California, and Florida.

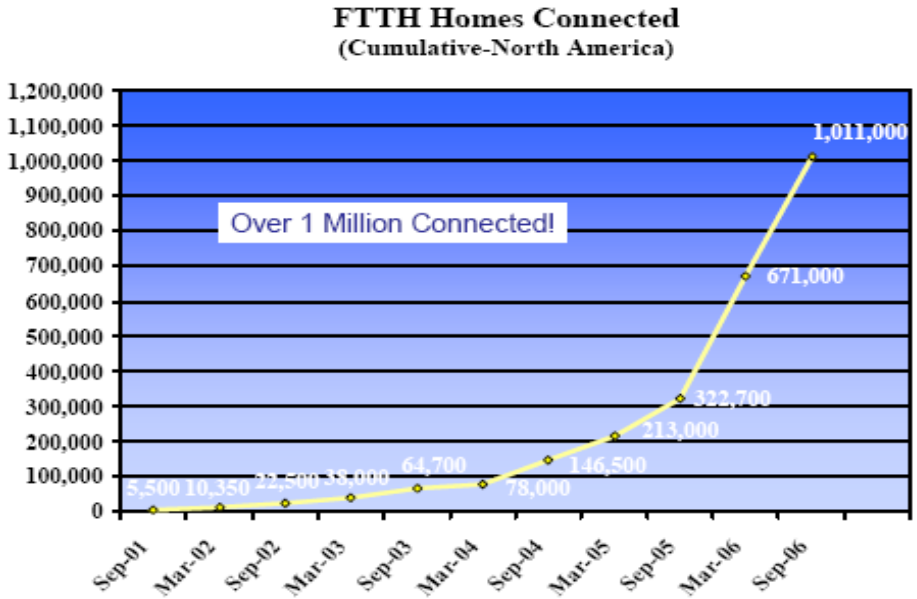
Tier 1 media markets
NFL franchise

Communities with median household income $85K
Or more

Municipals, independent telephone companies, public Utility districts are in the market too.

Municipal Fiber-to-the-Home

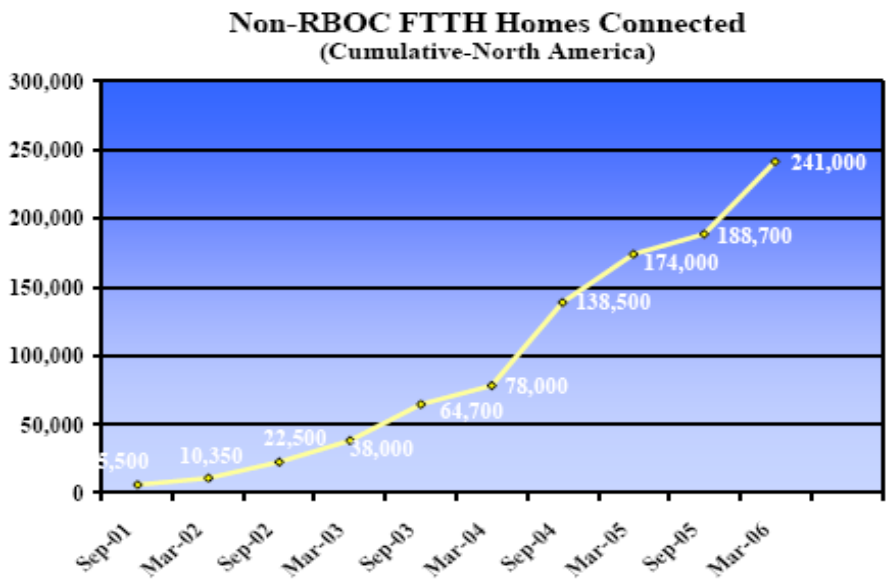
TENNESSEE FIBER OPTIC COMMUNITIES



Over 1 million US homes connected

Tennessee homes connected approximately 19,500

Tokyo 40 million homes connected



Over 240,000 homes connected by non-RBOC providers

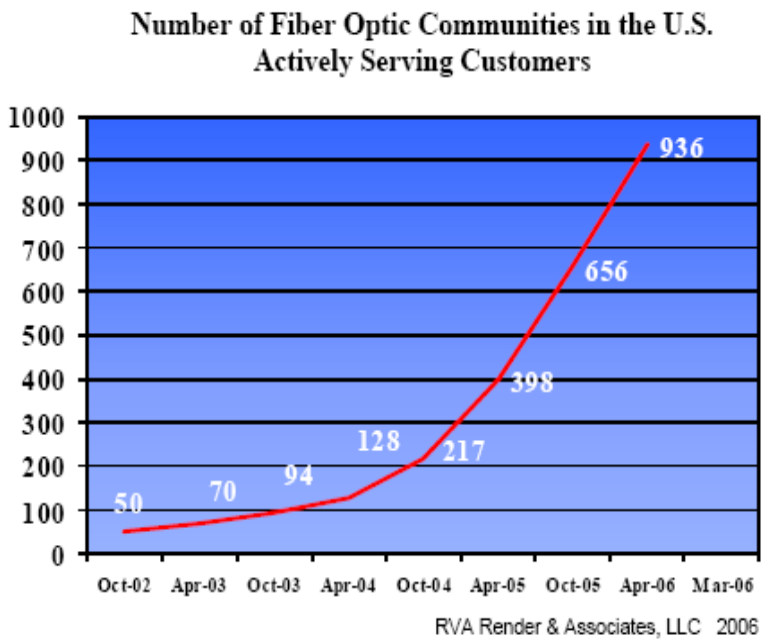
Municipals are deploying FTTH

Tennessee Municipal investment
To date $131 million projected
$200 million

RVA Render & Associates, LLC 2006

Municipal Fiber-to-the-Home

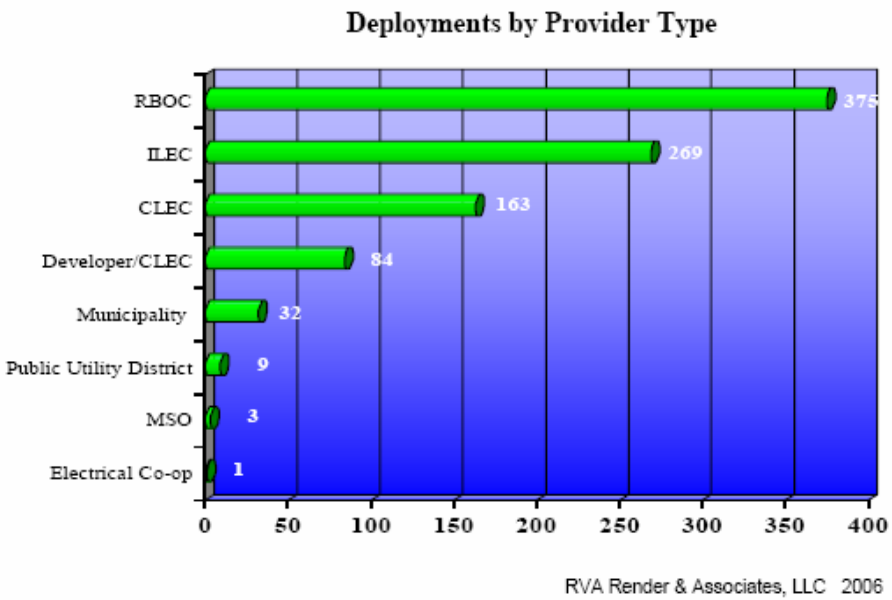
TENNESSEE FIBER OPTIC COMMUNITIES



936 U.S. Communities now connected with fiber optic infrastructure

14 in Tennessee

Communities and New Developments

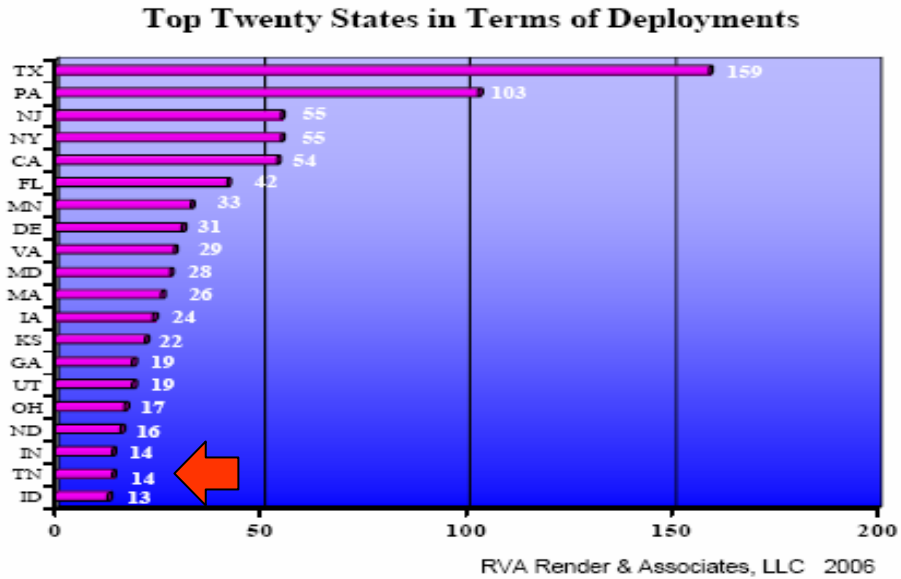


RBOCs are the largest investor In FTTH followed by Independent Telephone Companies

7 Tennessee municipal deployments operational and planned

Municipal Fiber-to-the-Home

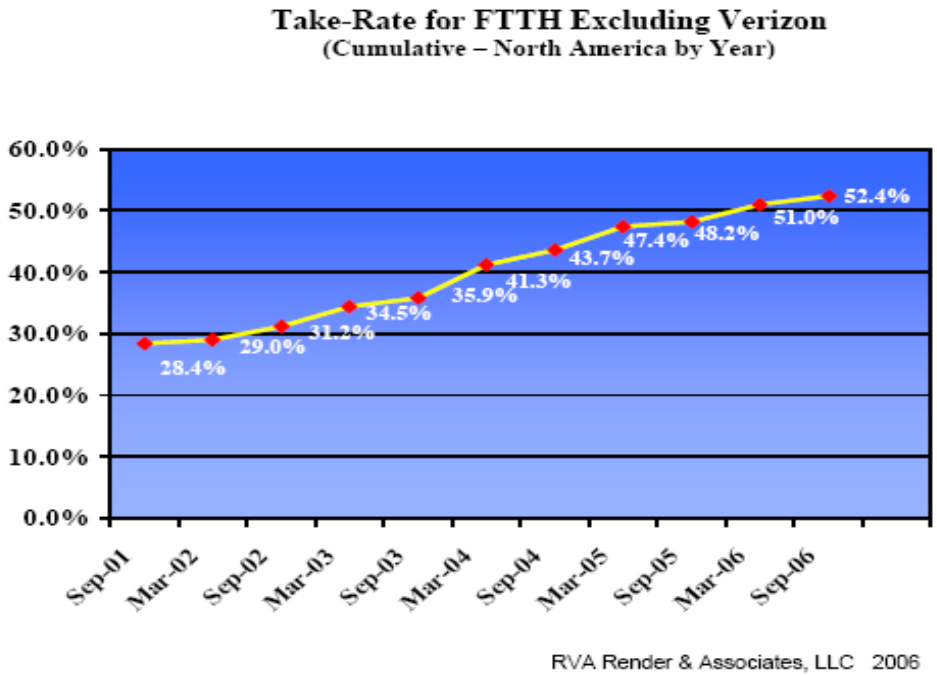
TENNESSEE FIBER OPTIC COMMUNITIES



Tennessee ranks 34th in broadband households

Tennessee ranks 19th in FTTH deployment

Encouraging future forecast



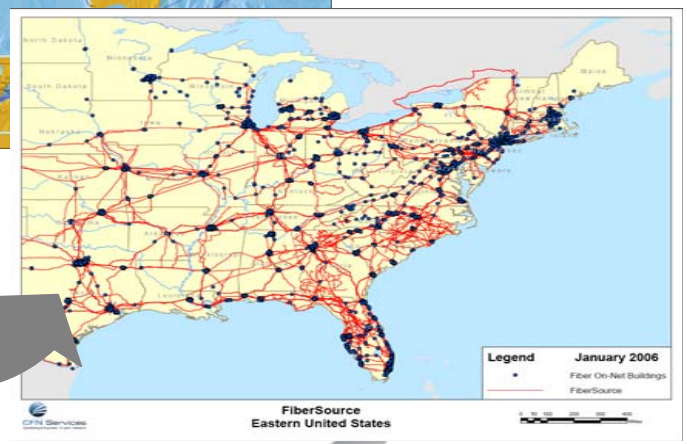
52% average FTTH national take rate excluding Verizon customers

44% Jackson JES municipal take rate
Most mature FTTH system in TN.

Public embraces FTTH

Municipal Fiber-to-the-Home

TENNESSEE FIBER OPTIC COMMUNITIES

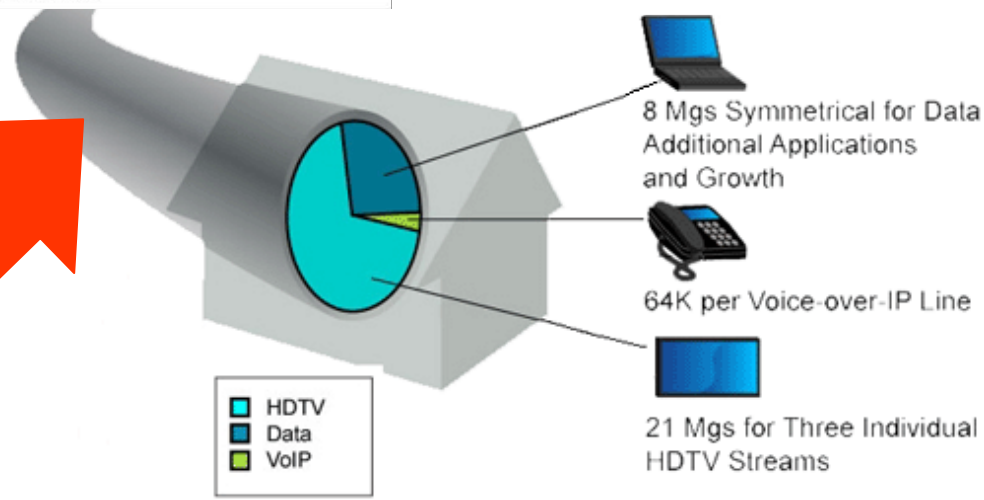


FTTH is the infrastructure of the 21st century for:

1. Economic development
2. Quality of life
3. Public service

This infrastructure will allow our kids and grandchildren the opportunity to live and work in their home town

THE LAST MILE
Fiber-to-the-Home



APPENDIX 16

INTERNET BUSINESS CONSULTING, INC. (IBC) PRESENTATION

IBC's Leadership

Jim Hollis, Business Development Manager

Jim is president and founder (1996) of Internet Business Consulting, Inc (IBC Wireless). Jim has also purchased, operated, and sold Sierra.Net and First Coast Online both Internet Service Providers during the 'dot com' boom and in 2004 launched AppState.Net, Llc, an operating WISP focusing on the difficult multi-tenant/dwelling markets in college town of Boone, NC. Last year IVI Communications (IVCM.OB) purchased both corporations from Jim to leverage his experience in deploying revenue generating, fixed broadband wireless solutions to their other service provider acquisitions and launch a nationally branded wireless service for data, voice, and high-bandwidth media applications. His understanding of fixed wireless broadband networks and knowledge of the technical and business issues, combined with his experiences and successes in technology provide Mr. Hollis with unique market strategies to increase a service providers growth, profitability, and net worth. Hollis has extended his knowledge beyond emerging Service Providers and at Part-15.org's Fall 2004 Tradeshow and exhibit was named Wireless Internet Service Provider Consultant of the Year.

Mr. Hollis has been a repeat session leader at several Internet related tradeshows (including WiNOG, WISPCON, ISPCON, FISPA, NTCA, NATOA, SEATOA, eNC Wireless Symposium and Internet World) and brings over 25 years of business experience – these include Tandem Computers (now HP) where he was responsible for launching Tandem's Internet strategy. Mr. Hollis received his Bachelor's of Science Degree in Business Education from Western Illinois University.

Clearly Mr. Hollis understands both the challenges and operating issues of a implementing wireless solutions where the benefits overwhelm the costs. He has the credentials to lead both the public and private sectors to be proactive in their planning and achieve successful deployments to maximize benefits.

2006 Conferences & Seminars
Industry Focus

- NCTA (telco & cable)
- NCTIA (telco)
- Wireless for Rural Telcos (Telco)
- ISPCON (ISP)
- FISPA (ISP)
- WiNOG (ISP)
- Safety Technologies Training (ISP)
- VoIP Executive Briefing (ISP/Telco/Cable)
- Manufacturer Technical Training (ISP)
- Wireless Training (ISP/Muni/Telco/Cable)
- eNC (Muni)
- SEATOA (Muni)
- NATOA (Muni)
- NCGLISA (Muni)
- NCWise (Education)

Projects of Interest

Windows on the World

Projects of Interest

Fastransit Communications

Projects of Interest

Bayou Internet

Local ISP located in Monroe, LA
Two year process working on a Grant project

This is a "USDA Rural Community Connect" Grant that is to provide high speeds Internet access to Dodson, LA.

<u>The scope of this Grant includes:</u>
(1) Deploying a total of three (Point-To-Point) wireless backbone links anywhere from fifteen to thirty miles in length.
(2) Outfitting a tower in Dodson, LA with a high speed multi-point broadband wireless system.
(3) Outfitting a community center with (10) PC's and staff to train community members.

Projects of Interest

SurfMasters Online

APPENDIX 17

UTOPIA PRESENTATION

UTOPIA Broadband Initiative

Technology Innovation

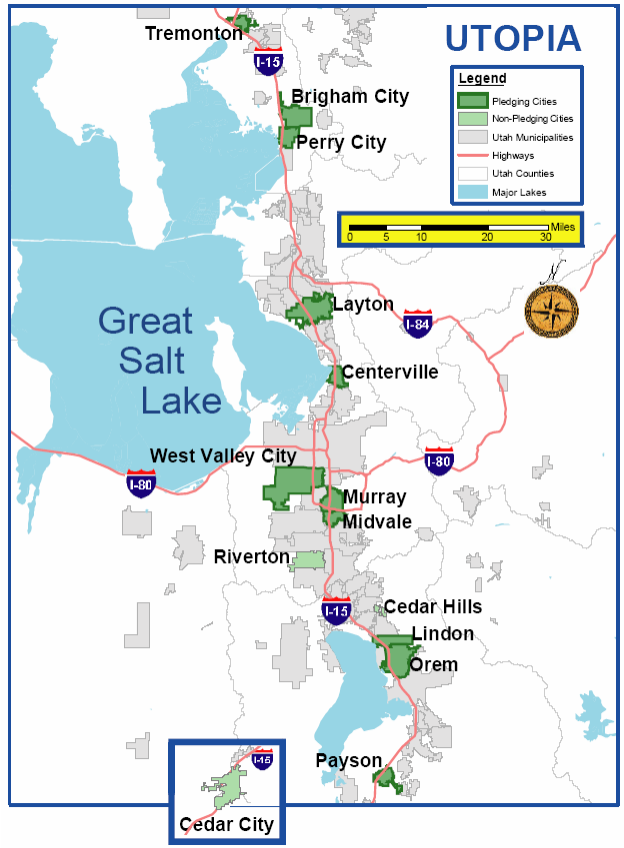
December 14, 2006

utopia
CONNECTING COMMUNITIES

Who is UTOPIA?

- The Utah Telecommunication Open Infrastructure Agency
- A governmental agency formed by 14 Utah cities (450,000 population)
- Tasked with building a community owned Metronet for 170,000 potential subscribers

  - Tremonton
  - Brigham City
  - Perry
  - Layton
  - Centerville
  - West Valley City
  - Murray
  - Midvale
  - Riverton
  - Cedar Hills
  - Lindon
  - Orem
  - Payson
  - Cedar City



utopia
CONNECTING COMMUNITIES

Why was UTOPIA formed?

- To promote **economic development**
- To provide enhanced **quality of life**

thru:

- Supporting advanced services (high quality voice, video, and data; telework; distance learning; telemedicine, etc.)
- Encouraging competition by adopting a wholesale open model leading to:
  - Better service
  - Lower prices
  - Greater innovation

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The Genesis of UTOPIA

- Response to unmet community needs
  - Low High Speed Broadband Penetration
  - Lagging US Broadband deployment resulting in poor Global Competitive position
  - Broadband Bandwidth Pricing in US approx 50X to 100X higher than Europe/Asia/Canada
  - High Likelihood of Positive Economic Impact
- Utah Legislature's Enthusiastic Support of Network Projects to empower Communities
- Enthusiastic Support from Joint Gov't and Economic Development agencies

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Advanced communication services are essential to the economic growth

"*The US Broadband competitive ranking against other industrialized nations can no longer be described as 15 or 16. When Service Quality and True Speed are included as criteria we more accurately rank about 22nd"*

FCC Commissioner Michael Copps, 2006

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Important questions surrounding governments' role in providing broadband

- Availability of Broadband Services Empowers Individuals and Communities
- A lack of Government Initiatives and Support at this critical time could magnify disadvantages in State and Community Global Economic Competitiveness for a Decade or More!

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Benefits to Community

- 100 MBPS Connectivity to all Residences and businesses
- Non-Discriminatory Access just as Open to all Service Providers as local roads and utility infrastructure.
- An Investment that will provide vast returns that include better educational opportunities and business opportunities that will attract next generation businesses and workers.
- Provide a true Global Economic Gateway for businesses and citizens.

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What should Government Do?

- Promote Progress that benefits constituents
- Treat Incumbent Providers Equitably
- Improve Opportunities for Local Competitors
- Create a Sustainable Future
- Empower Positive Community Initiatives

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What Role is Appropriate?

- Core local government competency
  - What are we best at – Infrastructure or providing competitive services?
- Will telecommunications infrastructure impact citizens more similarly to a road or airport versus a single source retail service?
- Can a local government ignore an opportunity to positively impact the ability of the Community to survive and thrive in an economy clearly empowered by telecommunications infrastructure?

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Wholesale vs. Retail

- Provide services like roads, water and sewer
- Provide Open, non-discriminatory access so as to avoid offering one or more providers unfair access
- Monopoly and franchise Laws are now being re-written at State and Federal Levels to reflect public needs.
- Municipalities must meet fair criteria without undermining the public need related to wholesale vs. retail stands.

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Ubiquitous broadband access is more likely under a new business model

- Non-Open Competition pitting a government entity against private sector providers is recognized as an undesirable and unacceptable option.
- Utah will support Community Plans that respect investments already made by incumbent providers but, subject to responsible oversight, will encourage plans likely to achieve order-of-magnitude leaps in progress toward economically sustainable, open community networks.

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Government can ensure economic development and promote the private sector

"There are a wide class of municipalities for which a municipal broadband network is not only viable but is essential if the deployment of broadband is ever to be achieved."

"By developing an open-access broadband infrastructure, the Town can unbundle the network and provide wholesale network access . . . This assures a level playing field and creates a competitive environment which in turn will likely manifest in low prices, high quality of service, and a diversity of broadband products and services to customers."

"The service providers need scale and efficiency in local distribution and they cannot each deploy such distribution. A municipal network is . . . the very most efficient and economically viable alternative to get service providers to homes and local businesses."

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"Municipal Broadband Networks: A Revised Paradigm of Ownership"
prepared as a working paper for the MIT Internet and Telephony consortium group **by Terrence P. McGarty, Ph.D 2002**

A principle based business model

Open Service Provider Networks™
Based on four principles

Open & Wholesale

Network ownership separated from services

Carrier-class

Highest levels of reliability and redundancy

Open & Independent Architecture

Standards-based solution to accommodate a broad range of service providers

High scalable bandwidth

Provides true broadband service

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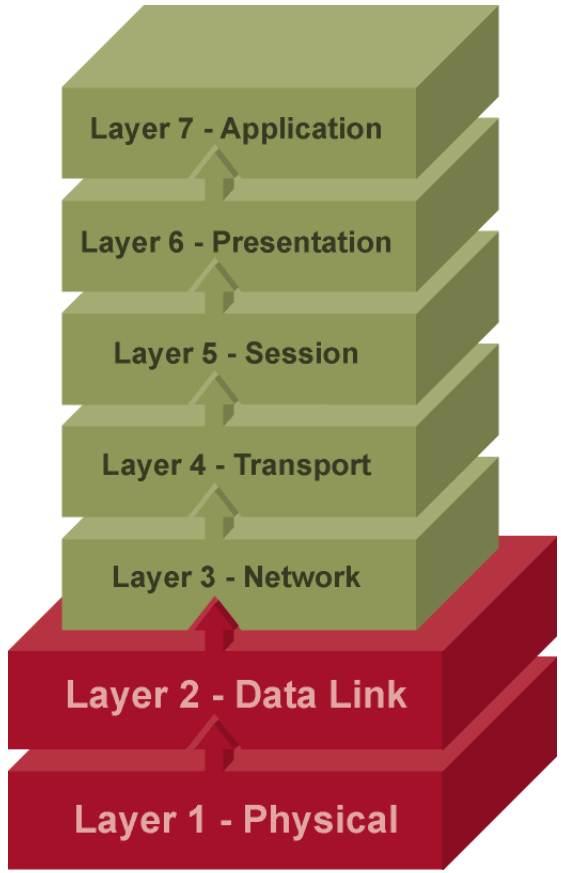
Fiber is the only technology that meets all of the criteria

- Fiber to the home and business is the key
- Active not PON network
- Network is lit and data is sent using IP/Ethernet protocol
- Network focus on layer 2 which greatly reduces its complexity and maximizes its capacity to service multiple providers
- This configuration also reduces barriers for both the consumer and the service providers
- Minimum initial offering is 100 Mbps symmetrical to 1 Gbps to each user



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Sharing infrastructure facilitates competition and lowers the cost for producers and consumers

Open Service Provider Airports

- Municipal governments build and operate airports as a shared infrastructure
- Private industry flies the planes and operates the concessions

Open Communications Infrastructure

- Communities provide the advanced communications network
- Private industry provides the voice, video, data and other services

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Connected Society Supply Chain

Content & App's	Packaging	Processing	Transport Management	Service Providers	Consumers
Content Owners	WEB Libraries	Encoding	Optical Provisioning By Fiber Network Owners	Plant Construction	Home Consumers
Studio & Distributors	Movies	Provisioning		Metro Network Integration	Home Office
Networks	Music	Credit Card Processing		Campus Networking	Business
Web Sites	Content Aggregators	Billing		CPE Rental	Apartment Owners/Mgr.'s
Application Developers	Game Distributors	Data Warehouse		Service Installation	Hotel/Motel
Game Developers	Advertising	Back Office Integration		Customer Service	Universities/ Schools
Product Mfg.	Product Catalogs				Hospitals

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Reprinted with permission from Patrick Robbins, CEO of SandStream

UTOPIA is a true public/private partnership

- The cities will own and finance the network through UTOPIA
- Virtually all work is contracted to the private sector:
  - Network construction
  - Subscriber hook-up
  - Service offerings
  - Network operations
  - Maintenance

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Financing objectives and principles

- Is it finance-able?
- Is it a legal structure?
- Is it politically acceptable?
  - Minimize downside risk
  - Check points
  - Financially self-sustaining based on reasonable, realistic assumptions
  - Ubiquitous deployment

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UTOPIA's Financial Success

- Not a Return on Investment model (ROI)
  - Industry requires an ROI in 3-5 years
- Using a Cost of Recovery (Return "of" Investment) model spread out over 20 years
  - Debt Service
  - O & M
  - Upgrades
  - Capital Fund
- UTOPIA's return on investment is having a state-of-the-art carrier class network that facilitates economic development

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Current service providers

- AT&T – voice and data
- MSTAR – triple play (voice, video and data)
- XMission – data (will add voice and video)
- Veracity – voice and data (business focus)
- SISNA – data
- Trillion – data for schools
- Actively working with other potential providers that understand the value of having vast and affordable bandwidth to the consumer

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Three key factors are necessary for a communications infrastructure to fulfill goals of economic development and quality of life

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Bandwidth and Speed Matter

Fiber Speed

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Price per megabit

- "For U.S. Consumers, Broadband Service Is Slow and Expensive" – WSJ, November 16, 2005
  - "The inferior value of U.S. broadband service becomes clear when you calculate the monthly "cost per megabit" of Internet access, or how much you pay to get a megabit's worth of download capability."
  - "While entry-level download speeds in the U.S. lag behind much of the world, the situation is worse with upload speeds."

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Dramatic savings for business & residential customers

Service	$/Mbps
Business T1	$ 211.04
Business DSL	$ 65.00
Business DSL	$ 38.00
Home DSL	$ 22.00
Cable Modem	$ 15.00
Verizon FiOS	$ 7.00
Business UTOPIA	$ 4.00
Home UTOPIA	$ 1.80

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What does ubiquitous high bandwidth at reasonable prices enable?

- Telemedicine
- Distance Learning
- Telework
- Video Chat
- Home or Business Security
- Community Building
- Enhanced Entertainment

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From a current home consumer's perspective

- 4 TV's – 3 are HD
  - SD – 4 Mbps
  - HD – 19 Mbps (MPEG2)
  - Total with 4 different channels – 61 Mbps
- Internet
  - 15 Mbps
  - Plus TVs equals 76 Mbps
- 100 Mbps connection leaves 24 Mbps
  - Telephones
  - Faster data connection
  - 4th HD TV
- Change to MPEG4 or Windows Media Player 9 will give more headroom but bandwidth needs continue to grow.

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APPENDIX 18

TENNESSEE eHEALTH PRESENTATION

State of Tennessee

Governor *e*Health Council

Executive Order # 35

Tennessee's Governor Phil Bredesen Signed Executive Order # 35 on April 6, 2006 to Establish the Governor eHealth Advisory Council.

Mission and Vision

Vision

The Tennessee eHealth Council initiative will accelerate the **adoption and use of Health Information Technology** to **improve healthcare quality**, increase **patient safety**, **reduce healthcare cost** and enable individuals and communities to make the best possible health decision.

We will do this by:

- Facilitating **connectivity** and electronic health information sharing between healthcare providers, clinicians and facilities to ensure a continuum of care for every patient
- **Empower consumers** to understand and access personalized health information to facilitate active management of their health
- Improve public health, primary prevention and enabling community preparedness
- Create an open forum to debate issues and resolve obstacles that may hinder our vision

Mission

To **drive improvement** in the quality, safety and efficiency of healthcare for the State of Tennessee healthcare consumers by providing leadership, education, support and engaging the entire community to accelerate the implementation of eHealth solutions.

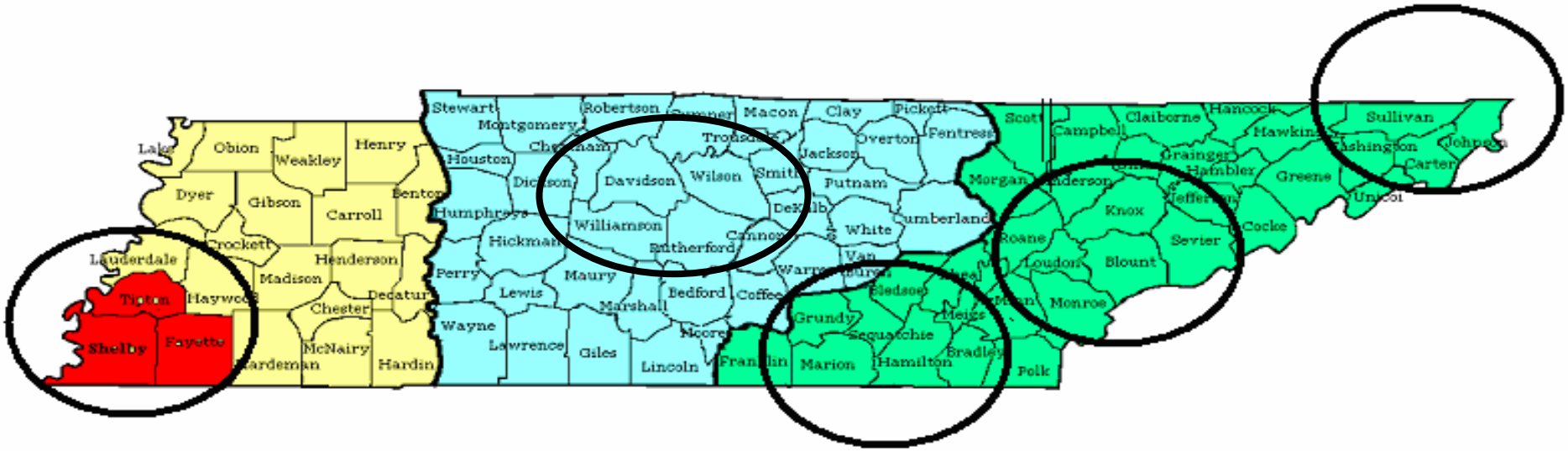
The six main components of our mission are:

1. **Interconnect clinicians** and providers for sharing of electronic health information
2. Ensure the **appropriate Security and Privacy** as required by State and Federal Law
3. **Ensure interoperability** between all healthcare stakeholders
4. Minimize and eliminate **redundant or duplicative services** among stakeholders
5. Define and implement policy and procedures to ensure proper use and **full transparency**
6. Ensure public **trust** through appropriate safeguard and transparency

Council Members

- Nissan North America
- FedEx Corporation
- Caremark Rx, Inc.
- Dell
- HCA Healthcare
- BlueCross BlueShield of Tennessee
- CIGNA HealthCare
- Centerstone
- Eastman Chemical Company
- SharedHealth
- Vanderbilt University Medical Center
- State of Tennessee, Bureau of TennCare
- The State RHIO organizations

County by County



**Circles represent existing or developing regional eHealth activities:*

- *Mid-South eHealth Alliance, Memphis*
- *Innovation Valley Health Information Network, Knoxville*
- *CareSpark, Tri-Cities*
- *Shared Health (working with TennCare statewide), Chattanooga*
- *Middle Tennessee Health Information Network (still in development)*

TN eHealth: Stair Steps to Progress

Common Portal

Coordinating organization facilitates rules of engagement:

- *Data-sharing Agreement*
- *Legal Framework*
- *Standards*
- *Interoperability*
- *Transparency*
- *Value*
- *Quality/Cost*

H.I.E.

EMR / EHR/PHR implementation

Access to clinical records

Administrative transactions (claims…)

Secure clinical messaging (labs, imaging, email….)

E-prescribing roll out

Broadband % of Access, Stakeholders, Automation

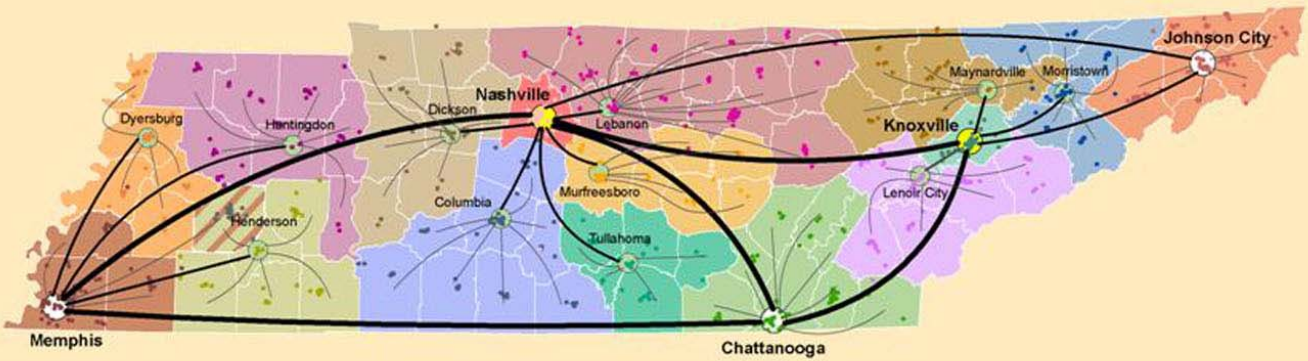
Framework for trust and collaboration

County-by-County Implementation that Progresses in Stages

** This graphic represents a framework but based on varying infrastructure capability and needs, the order of implementation may vary by county.*

TNII

Tennessee Information Infrastructure



LEGEND

NAPs & POPs

- NAP/Egress
- NAP
- POP

NAP Connections

- OC3
- DS3

POP Connections

- Channelized DS3

Service Areas (County Based)

- Chattanooga
- Columbia
- Dickson
- Dyersburg
- Henderson
- Huntingdon
- Johnson City
- Knoxville
- Lebanon
- Lenoir City
- Maynardville
- Memphis
- Morristown
- Murfreesboro
- Nashville
- Tullahoma

Site Connectivity to POP or NAP

- Chattanooga
- Columbia
- Dickson
- Dyersburg
- Henderson
- Huntingdon
- Johnson City
- Knoxville
- Lebanon
- Lenoir City
- Maynardville
- Memphis
- Morristown
- Murfreesboro
- Nashville
- Tullahoma
- Memphis & Henderson

Note: Site locations based on 2004 data.

0 15 30 60 Miles

Customer Intelligence Team
GEOGRAPHIC INFORMATION SERVICES
Contact: Debbie Morgan (205) 989-0841
Project: 06-020/cc Date: 01-18-06

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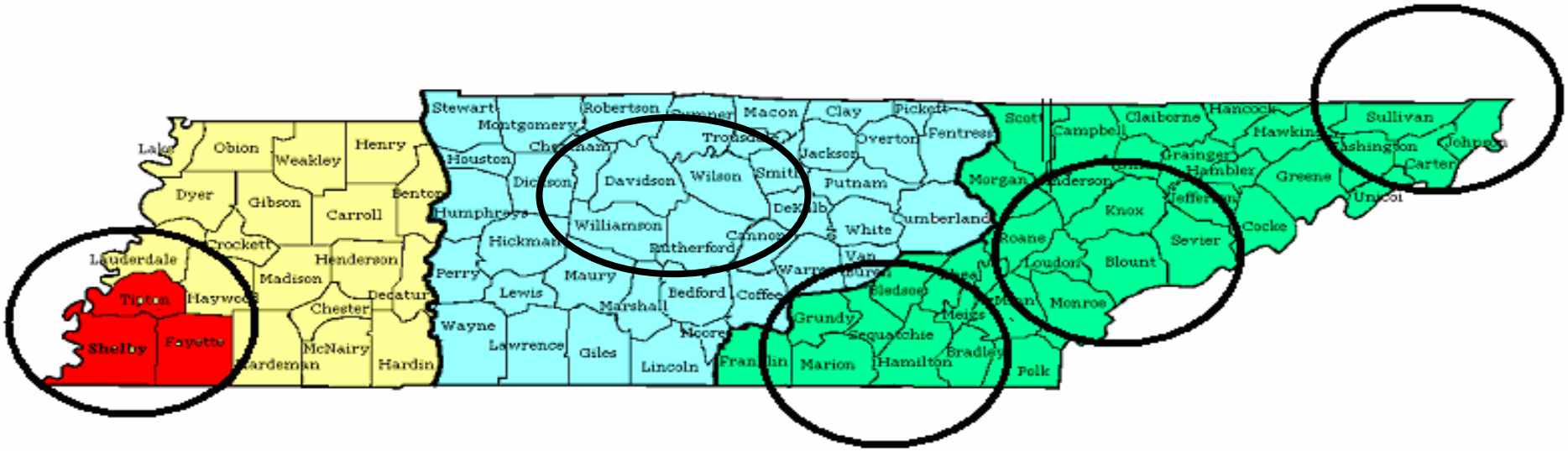
Lauderdale
Tipton
Shelby
Fayette
Haywood
Obion
Weakley
Henry
Dyer
Gibson
Carroll
Crockett
Henderson
Madison
Chester
Decatur
McNairy
Hardin
Hardeman
Stewart
Montgomery
Robertson
Houston
Humphreys
Dickson
Davidson
Wilson
Williamson
Hickman
Rutherford
Perry
Maury
Lewis
Marshall
Bedford
Coffee
Wayne
Lawrence
Giles
Lincoln
Macon
Clay
Pickett
Fentress
Jackson
Overton
Putnam
White
Van Buren
Warren
Sequatchie
Grundy
Marion
Hamilton
Bradley
Polk
Meigs
Monroe
Scott
Campbell
Claiborne
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Morgan
Anderson
Knox
Roane
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Thank You