

COMMONWEALTH OF KENTUCKY  
BEFORE THE PUBLIC SERVICE COMMISSION

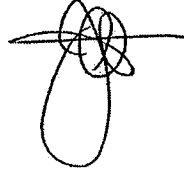
In the Matter of:

AN INVESTIGATION INTO THE	)	ADMINISTRATIVE
INTRASTATE SWITCHED ACCESS RATES	)	CASE NO.
OF ALL KENTUCKY INCUMBENT AND	)	2010-00398
COMPETITIVE LOCAL EXCHANGE	)	
CARRIERS		

**PREFILED DIRECT TESTIMONY OF GREGORY HALE  
FILED ON BEHALF OF  
THE RURAL LOCAL EXCHANGE CARRIERS**

July 8, 2011

Respectfully submitted,



---

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**COUNSEL TO THE RLECs**

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**I.  
BACKGROUND**

1 **Q.1. WHAT IS YOUR NAME?**

2 A1. My name is Greg Hale.

3 **Q.2. WHAT IS YOUR EDUCATIONAL AND PROFESSIONAL BACKGROUND?**

4 A2. I am the General Manager and Executive Vice President of Logan Telephone  
5 Cooperative, Inc. ("Logan Telephone") in Auburn, Kentucky. I have been with Logan  
6 Telephone since January 1994, where I began in the Engineering Department. Since that  
7 time, I have served as Staff Engineer, Internet Supervisor, Engineering Manager,  
8 Network Director, Commercial/Network Director and Assistant Manager before being  
9 named General Manager and Executive Vice President on April 1, 2003. Logan  
10 Telephone serves over 5,000 local exchange customers in Logan, Butler, Muhlenberg,  
11 and Simpson counties. I am also the current President of the Board of the Kentucky  
12 Telecom Association (formerly the Kentucky Telephone Association). I am on the Board  
13 of the National Telecommunications Cooperative Association as the Region 3 Director  
14 representing small companies in Kentucky, Tennessee, Mississippi and Alabama. I am a

1 member of the Auburn, Kentucky Rotary Club and a deacon and substitute worship  
2 leader at New Friendship Baptist Church in Auburn, Kentucky. I hold a Bachelor's  
3 degree in Electrical Engineering from the University of Kentucky.

4 **Q.3. WHAT ARE YOUR DUTIES AND RESPONSIBILITIES AT LOGAN**  
5 **TELEPHONE?**

6 A3. My principle duties and responsibilities at Logan Telephone are to manage the  
7 day-to-day operations of the company and to report to the board of directors.

8 **II.**  
9 **PURPOSE AND OVERVIEW OF TESTIMONY**

10 **Q.4. WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

11 A4. The purpose of my testimony is to provide the Public Service Commission of the  
12 Commonwealth of Kentucky (the "Commission") with a view of intrastate access reform  
13 and what is at stake from the unique perspective of the rural incumbent local exchange  
14 carriers or RLECs. The Commission must keep in mind that Kentucky is a unique state  
15 because of its geographic, economic, and population mix. It is a big state with a  
16 comparatively small population and, especially in the rural areas, relatively high poverty  
17 rates. In short, Kentucky should not be compared to other states, some national average  
18 or standard.

19 **Q.5. WHAT IS AT STAKE IN THIS PROCEEDING?**

20 A5. For the RLECs, what is at stake is our ability to provide high-quality, affordable  
21 telephone service to customers in our respective service territories. In many ways,  
22 intrastate access reform as conceived by AT&T's plan could deal a significant blow to  
23 the RLECs' ability to maintain the level of service we now provide as well as our ability  
24 to meet our continuing obligations to provide universal service. The RLECs understand

1 that intrastate access reform should be addressed in time. A plan can and should be  
2 developed that would not harm Kentucky consumers, especially those living in rural  
3 areas. Any reform plan must promote consumer interests, acknowledge the vast  
4 differences among types of carriers, and account, in particular, for the unique needs of  
5 rural customers and the carriers that serve them. As it stands, however, AT&T's plan is  
6 much too aggressive and short-sighted. AT&T claims to have Kentucky consumers in  
7 mind, but the real beneficiaries of its plan are AT&T's shareholders.

8 **III.**

9 **THE RURAL INCUMBENT LOCAL EXCHANGE CARRIERS IN KENTUCKY**

10  
11 **Q.6. IS LOGAN TELEPHONE A RURAL INCUMBENT LOCAL EXCHANGE**  
12 **CARRIER?**

13 A6. Yes, like the other RLECs who are parties to this administrative proceeding  
14 before the Commission, Logan Telephone is a RLEC.

15 **Q.7. HOW HAVE LOGAN TELEPHONE AND THE OTHER RLECS**  
16 **CONTRIBUTED TO THE ECONOMIC DEVELOPMENT OF THE AREAS**  
17 **THEY SERVE?**

18 A7. Logan Telephone and the other RLECs are economic engines in the areas we  
19 serve. We not only provide jobs as employers in our respective service territories, but we  
20 literally provide the infrastructure that allows individuals and businesses in the farthest  
21 reaches of the state to connect with others locally, nationally, and globally. We provide  
22 the pathway for economic development and innovation. The RLECs have invested  
23 substantial sums of money in the development of the telecommunications infrastructure  
24 of the areas we serve, including landline, broadband, and wireless. But for the  
25 contributions made by Logan Telephone and the other RLECs, the telecommunications

1 infrastructure of rural Kentucky would not be where it is today. This is true for landline,  
2 broadband, and wireless infrastructure.

3 **Q.8. WHAT DOES THE DESIGNATION OF RURAL INCUMBENT LOCAL**  
4 **EXCHANGE CARRIER MEAN?**

5 A8. The phrase has a technical meaning under the Telecommunications Act of 1996.  
6 But as a practical matter, this designation means that Logan Telephone and the other  
7 RLECs serve rural areas that are much less densely populated than those served by  
8 carriers in urban areas. Consequently, rural incumbent local exchange carriers, like the  
9 RLECs in particular, have unique costs that are not borne by other carriers, like AT&T,  
10 that serve large urban populations. Providing rural telephone service, by comparison, is  
11 difficult. It is also expensive, due to low population densities, large distances, and  
12 minimal infrastructure. As you would imagine, it costs tremendously more to maintain a  
13 line for two customers down a three-mile road in a rural hollow of Kentucky than it does  
14 to serve a neighborhood in the heart of Louisville.

15 **Q.9. IF PROVIDING SERVICE IN RURAL AREAS OF KENTUCKY IS SO**  
16 **DIFFICULT AND EXPENSIVE, WHY DON'T THE RLECS CHOOSE TO**  
17 **FOCUS ON THE MORE URBAN OR PROFITABLE POCKETS IN THEIR**  
18 **SERVICE TERRITORIES?**

19 A9. First, I would say that the very reason for the RLECs' existence is that other  
20 telephone companies have not historically been willing to serve the sparsely populated,  
21 less profitable rural areas served by the RLECs. In order to effectuate the very important  
22 policy goal of universal service, carriers like the RLECs stepped into the gap and made

1 universal service a reality in Kentucky. Without the RLECs, there simply would not be  
2 universal telephone service in this state.

3 Second, the RLECs do not have the luxury of choice. Due to the location of our  
4 service territories, the RLECs operate as carriers of last resort (“COLR”). The COLR  
5 designation is intended to effectuate universal service. By law, a COLR is required to  
6 make service available to every resident or business in its service territory upon request.  
7 As a result of our COLR obligations, the RLECs must maintain facilities “just in case” –  
8 regardless of whether a resident or business takes service. A COLR must stand ready to  
9 serve all individual customers who ask to return. A COLR may even be required to  
10 accept returning customers in a “mass migration” following a competitor’s failure. The  
11 RLECs, as COLR, must provide these services to any customer in our rural service area  
12 that requests it, even if serving that customer would not be economically viable at  
13 prevailing rates. In essence, the RLECs have committed to make universal service in  
14 Kentucky not just a goal, but a reality.

15 Put simply, the RLECs’ obligations to serve as COLR in our territories mean that  
16 the significant costs of providing service in rural areas of Kentucky are unavoidable, even  
17 in the face of competition, and cannot be escaped at a whim when the economics are  
18 unfavorable. We cannot simply choose to serve those areas that will cost us the least.

19 **Q.10. WHY ARE THE RLEC AND COLR DESIGNATIONS IMPORTANT IN THE**  
20 **CONTEXT OF INTRASTATE ACCESS REFORM?**

21 A10. When you combine the RLECs’ mandatory obligations as COLR with the fact  
22 that the RLECs service territories include some of the poorest, most sparsely populated,  
23 and expensive areas to serve in the United States, it is undeniable that the RLECs’ costs

1 of providing service are unique and higher than those of other carriers in the state.  
2 Intrastate access charges are a significant part of the RLECs'c cost recovery. Because of  
3 this, any plan to reform the intrastate access compensation regime must take the RLECs'  
4 obligations and unique costs into consideration.

5 **IV.**  
6 **THE IMPORTANCE OF THIS ADMINISTRATIVE PROCEEDING**  
7 **TO THE RLECS AND RURAL KENTUCKY**

8 **Q.11. GENERALLY SPEAKING, HOW IMPORTANT WOULD YOU SAY THIS**  
9 **PROCEEDING IS TO THE RLECS AND THE RURAL KENTUCKIANS THEY**  
10 **SERVE?**

11 A11. The outcome of this administrative case will have far-reaching effects on the  
12 RLECs and our customers for years to come. I would go so far as to say that this  
13 proceeding is the most significant proceeding to occur in the telecommunications  
14 industry in Kentucky in nearly twenty years – since at least the time of the Bell Operating  
15 Companies' divestiture in 1996. And, it is probably as significant as any proceeding in  
16 history involving the RLECs.

17 Thus, if intrastate access reform is going to happen, it must be done thoughtfully.  
18 It should not be rushed along in the manner AT&T has suggested to date. Above all, it  
19 must take into account the unique challenges facing rural Kentuckians and the carriers  
20 that provide service to them. Under no circumstances should it shift the costs onto the  
21 shoulders of rural Kentuckians. Otherwise, intrastate access reform, if done haphazardly,  
22 will only achieve the undoing of nearly eighty years worth of universal telephone service  
23 policy by making it financially infeasible to maintain and provide voice and broadband  
24 service to rural consumers at affordable rates.

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**Q.12. WHY NOT SHIFT THE COSTS OF PROVIDING SERVICE ONTO KENTUCKY'S RURAL CITIZENS BY RAISING THEIR RETAIL RATES AS AT&T'S PLAN PROPOSES?**

A12. The costs of providing service in rural Kentucky are simply too high to expect rural consumers to absorb them alone. As we are all painfully aware, rural Kentucky is, unfortunately, notorious for its low incomes and high poverty rates. Based upon 2010 census data, for instance, two of the five poorest counties in the entire country are located in Eastern Kentucky – one of them is served by Peoples Rural Telephone Cooperative. A full twelve Kentucky counties make up nearly 50% of the top 25 poorest counties in the country and many of them served by individual RLECs. A number of other Kentucky counties appear in the remainder of the list of 100 poorest counties. The point is that any intrastate access plan that proposes to shift a substantial amount of the costs of service onto the shoulders of rural Kentuckians, like AT&T's plan unquestionably does, is a recipe for disaster and a de facto repeal of universal telephone service.

Now, I recognize that AT&T and some of the other large carriers derisively call intrastate access rates a "subsidy." They claim that intrastate access rates are forcing certain end users to subsidize other end users. What these other carriers derisively describe as a "subsidy," however, is no less than Congress' decision to enshrine universal telephone service in the Telecom Act, itself, as an important social and economic goal. When a homeowner with no children pays property taxes that support local schools, we do not call that a subsidy. We recognize that universally available education is a social good that benefits us all, whether we have children or not.



1 Universal telephone service is no different. It ensures that every person in this  
2 country can connect with every other person, opening pathways for substantial economic  
3 growth, cultural exchange, and innovation. Universal telephone service is what allowed  
4 rural America to be able to call anyone from anywhere, and AT&T's attempts to  
5 disregard the significance of this is nothing short of revisionist history. Sure, the times  
6 change, but there has been no mandate that the now age-old policy decision of allowing  
7 anyone to call anyone from anywhere should fall by the wayside. These are social goods  
8 that we all benefit from. One only need to imagine what our country would look like  
9 without it – large pockets of economically and culturally disconnected communities.

10 AT&T seems to equate a new policy decision to encourage broadband growth as  
11 being mutually exclusive with the policy decision that motivated universal service in the  
12 first place, and that's not necessarily true. There's no reason those two objectives cannot  
13 exist symbiotically. The RLECs understand that better than anyone, as we have lead the  
14 way on that front in this state.

15 **Q.13. BUT HAVEN'T CONGRESS AND THE FEDERAL COMMUNICATIONS**  
16 **COMMISSION DECIDED THAT UNIVERSAL BROADBAND IS THE NEW**  
17 **UNIVERSAL TELEPHONE SERVICE?**

18 A13. Not exactly. There has been no pronouncement that I am aware of that would  
19 make universal telephone service obsolete. More important, and what is often  
20 overlooked, is the fundamental importance of the traditional wireline infrastructure to  
21 advanced services like broadband and wireless. Broadband simply cannot operate  
22 distinct from traditional, local wireline facilities. Even wireless communications are  
23 fundamentally dependent upon the wireline network. A wireless call is typically only

1 wireless for the very short distances between the mobile handset and the wireless tower.  
2 For the many miles in between, the wireless call actually travels over traditional wireline  
3 facilities.

4 As a result, any plan, like the AT&T Plan, that undercuts cost support for  
5 traditional wireline facilities also necessarily undercuts support for advanced services.  
6 Any intrastate access reform must protect the existing wireline infrastructure no less than  
7 it encourages new technological development.

8 **Q.14. AT&T HAS CLAIMED IN THIS PROCEEDING THAT INTRASTATE ACCESS**  
9 **REFORM IS NECESSARY IN KENTUCKY IN ORDER TO ENCOURAGE**  
10 **BROADBAND DEPLOYMENT. HOW WOULD YOU RESPOND?**

11 A14. Maybe this is true for AT&T or other carriers, but as for the RLECs we have led  
12 the way in making Kentucky a national model for broadband development in rural areas.  
13 The RLECs have invested and continue to invest millions of dollars in our respective  
14 network infrastructures to ensure that our customers have access to the same state-of-the-  
15 art, comparably priced technology as those who live in urban areas. As a part of that  
16 investment, the RLECs are aggressively building out our networks and providing  
17 universal broadband to our Kentucky customers. The RLECs were doing this well before  
18 the *National Broadband Plan* was drafted.

19 In fact, as early as 2007, Kentucky was already being heralded by the broadband  
20 development organization Connected Nation as a national leader in broadband  
21 development and adoption rates.<sup>1</sup> By that time, 95 percent of households in Kentucky

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<sup>1</sup> See generally, Connected Nation, "The Economic Impact of Stimulating Broadband Nationally," February 21, 2008, (hereinafter, "Connected Nation Report"); see also The Economist, "Wiring Rural America," [http://www.economist.com/node/9803963?story\\_id=9803963](http://www.economist.com/node/9803963?story_id=9803963) (last visited April 11, 2011) (by the end of 2007, 98 percent of Kentucky residents will have access to inexpensive broadband services); Consumers for Competitive

1 could subscribe to broadband, and that number only increases. The Connected Nation  
2 Report described Kentucky's growth in rural broadband, in particular, as "even more  
3 striking" considering its low national ranking for education and income. The direct  
4 economic impact of Kentucky's pioneering broadband development in 2007 was \$1.59  
5 billion annually.

6 **Q.15. HOW DOES THE RLECS' INVESTMENT IN BROADBAND**  
7 **INFRASTRUCTURE COMPARE WITH THAT OF OTHER CARRIERS IN**  
8 **KENTUCKY?**

9 A15. The RLECs implemented new technology to support broadband infrastructure  
10 both early and often. A comparison of the broadband coverage map provided by the  
11 Connected Nation Report to the "Incumbent Local Exchange Carriers" map located on  
12 the Commission's website<sup>2</sup> reveals two significant trends. First, with little exception, the  
13 areas in Kentucky that had broadband service in existence even prior to January 2004  
14 correlate with the service territories of the RLECs. Second, with little exception, the  
15 areas in Kentucky that remained either underserved by broadband facilities as of the time  
16 of the Connected Nation Report or that only received broadband service after January  
17 2004 correlate predominately with the large, nationally affiliated ILEC territories like  
18 AT&T's. Of course, a principal reason for this is that AT&T prefers to invest and focus  
19 on densely populated urban areas where it can get more bang for its buck.

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Choice, "Look to Kentucky for Broadband Success," <http://www.consumers4choice.org/c4cc-fcc-look-kentucky-broadband-success> (last visited April 11, 2011); *see also* Kentucky Cabinet for Economic Development, "Telecommunications in Kentucky," <http://www.thinkkentucky.com/kyedc/pdfs/telecommunications%20in%20ky.pdf> (last visited April 11, 2011) attached as Exhibit A.

<sup>2</sup> "Incumbent Local Exchange Carriers" <http://psc.ky.gov/agencies/psc/images/lecbcounty.pdf> (last visited April 11, 2011) attached as Exhibit B.

1           Additionally, the RLECs (every single one) have been forward thinking in our  
2 deployment of advanced technologies for our networks by investing in the latest version  
3 of IP switching technology. The RLECs have been eager to embrace IP-based network  
4 technology and only hope that the regulatory environment can keep pace (by including  
5 VoIP and data services in cost recovery so that this development can continue).

6           Thus, notwithstanding AT&T's claims to the contrary, even without intrastate  
7 access reform or guidance from *The National Broadband Plan*, the RLECs have  
8 successfully built the networks that provide the backbone for advanced services like  
9 broadband internet access to rural Kentucky. AT&T simply has no basis for its claim that  
10 intrastate access charges have created a disincentive for the development of broadband  
11 infrastructure. The RLECs have, instead, led the way.

12 **Q.16. FROM THE RLECS' PERSPECTIVE, WHAT DOES AT&T IN PARTICULAR**  
13 **STAND TO GAIN BY ITS VERSION OF INTRASTATE ACCESS REFORM IN**  
14 **KENTUCKY?**

15 A16.           It appears to the RLECs that if AT&T can lower intrastate access rates while at  
16 the same time drive up retail rates for traditional landline service, it will achieve two  
17 significant, self-serving goals.

18           First, by lowering the intrastate access rates it pays, AT&T's IXC business will  
19 squeeze what profit it can muster out of the citizens of Kentucky. We do not believe  
20 AT&T will pass on the savings to consumers.

21           Second, because retail rates for landline service would be required to increase  
22 drastically, more Kentuckians will be forced to leave behind their landline service for  
23 wireless service. With its \$39,000,000,000.00 offer to purchase T-Mobile, AT&T is

1 positioning itself squarely as one of two dominant carriers in the wireless industry. No  
2 doubt a certain (and substantial) percentage of those consumers will choose AT&T as  
3 their wireless carrier, providing AT&T with more market share, profit and even less  
4 reason to invest in its rural wireline infrastructure.

5 At the same time, wireless providers do not have COLR obligations. Likewise, as  
6 incumbent local exchange carriers, including the RLECs, continue to lose access lines  
7 and, as a result, revenues, it will become more and more difficult for them to meet their  
8 COLR obligations, dealing yet another blow to universal service.

9 **Q.17. ARE THERE ANY ISSUES THAT THE RLECS BELIEVE MUST BE**  
10 **ADDRESSED BY INTRASTATE ACCESS REFORM?**

11 A17. Yes. There are at least four.

12 First, any intrastate access plan must not be a one-size-fits-all approach. The  
13 RLECs believe that a balanced plan must take into account the costs incurred by carriers  
14 on a system- or network-wide basis, not a per-line basis. This approach will ensure that  
15 the unique costs incurred by carriers like the RLECs are adequately addressed. The  
16 economics are clear that moving full cost recovery from access rates to local retail rates  
17 will only create a downward spiraling effect: as local retail rates go up, the number of  
18 access lines will go down (as subscribers are forced from the market). Thus, cost  
19 recovery, especially for COLR like the RLECs, cannot be tied to a number of lines  
20 analysis.

21 Second, to the extent it reduces cost recovery through intrastate access rates, a  
22 state-level universal service fund is absolutely essential to any effort at reform. The  
23 RLECs' ability to recover our operating costs, under any plan for reform, will be

1 squeezed from at least four different directions: (i) by lower interstate rates (maybe even  
2 eventually reaching zero); (ii) by lower intrastate rates (if mirroring interstate rates, then  
3 also eventually reaching zero); (iii) by a smaller customer base as subscribers cancel  
4 wireline service due to exponentially higher retail rates; and (iv) by anticipated reductions  
5 in federal-level Universal Service Fund support. If the RLECs continue to lose customers  
6 and are constrained by competition from raising prices to restore lost revenues, state-level  
7 universal service funding is the only remaining tool that can ensure continued ubiquitous  
8 service. Without a robust state-level universal service fund, the RLECs simply will not be  
9 able to recover their costs.

10 Third, any intrastate access reform plan must take into consideration the looming  
11 reductions in interstate revenue – both in rates and in USF allocations. The FCC’s recent  
12 NPRM makes clear that these changes are coming and that interstate rates themselves  
13 may at some point be reduced to zero. The Commission must be fully aware of the  
14 ramifications that these reductions will have at the state level on rate-of-return carriers  
15 like the RLECs in particular. It will fall to the Commission to develop new cost recovery  
16 mechanisms that address these costs for rate-of-return regulated companies.

17 Fourth, a viable plan for reform must allow for a measured and gradual transition  
18 in intrastate rate levels as opposed to immediate cuts. As the RLECs’ separately-filed  
19 revenue shift data makes abundantly clear, a drop in intrastate rates to interstate rate  
20 levels will involve a significant amount of revenue loss. Such a drop should not occur  
21 overnight, but over the course of at least ten years.

22 **Q.18. IS THERE ANYTHING ELSE YOU WOULD LIKE TO ADD?**

1 A18. Yes. It is not at all clear that AT&T cares about the effect that intrastate access  
2 reform will have on the state of Kentucky. It operates globally and the Kentucky share of  
3 its revenue is comparatively quite small. What does appear to be clear, however, is that  
4 AT&T's end goal for reform is nothing less than to squeeze the last bit of profit out of the  
5 Kentucky IXC and wireline-based telephone market before it tacks hard toward  
6 dominance in providing wireless service, leaving universal service, COLR obligations,  
7 and the citizens of Kentucky, especially those in rural areas, behind it in its wake.

8 **V.**  
9 **CONCLUSION**

10 **Q.19. WOULD YOU PLEASE SUMMARIZE YOUR TESTIMONY FOR THE**  
11 **COMMISSION?**

12 A19. The outcome of this administrative case will have far-reaching effects on the  
13 economy and consumers of rural Kentucky for years to come. We ask the Commission to  
14 take its time and get it right. For inasmuch as the RLECs are not opposed to access  
15 reform as a general matter, the plan presented by AT&T is fatally flawed. Of its many  
16 flaws, the one that concerns the RLECs the most is that it would be harmful to Kentucky  
17 – disproportionately so to its rural citizens. Instead, a thoughtful approach to intrastate  
18 access reform must promote consumer interests, acknowledge the vast differences among  
19 types of carriers, and account, in particular, for the unique needs of rural customers and  
20 the carriers that serve them. Kentucky is a unique circumstance with a unique  
21 geographic, economic, and demographic make-up. Intrastate access reform should be  
22 addressed with these facts top of mind. In its current form, however, AT&T's plan has  
23 only its shareholders in mind, and is potentially disastrous for the Kentucky  
24 telecommunications market.

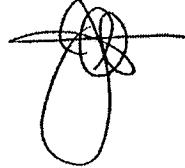
1 **Q.20. DOES THIS CONCLUDE YOUR TESTIMONY?**

2 A20. Yes, it does.



**CERTIFICATE OF SERVICE**

In accordance with Ordering Paragraph No. 5 of the Commission's March 10, 2011 Order, this is to certify that the RLECs' July 8, 2011 electronic filing is a true and accurate copy of the documents to be filed in paper medium; that the electronic filing has been transmitted to the Commission on July 8, 2011; that an original and one copy of the filing will be delivered to the Commission on July 8, 2011; and that, on July 8, 2011, electronic mail notification of the electronic filing will be provided through the Commission's electronic filing system.

A handwritten signature in black ink, consisting of a horizontal line with several loops and a large vertical oval shape below it.

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*Counsel to the RLECs*

**Tab A**



**CONNECTED  
NATION<sup>SM</sup>**

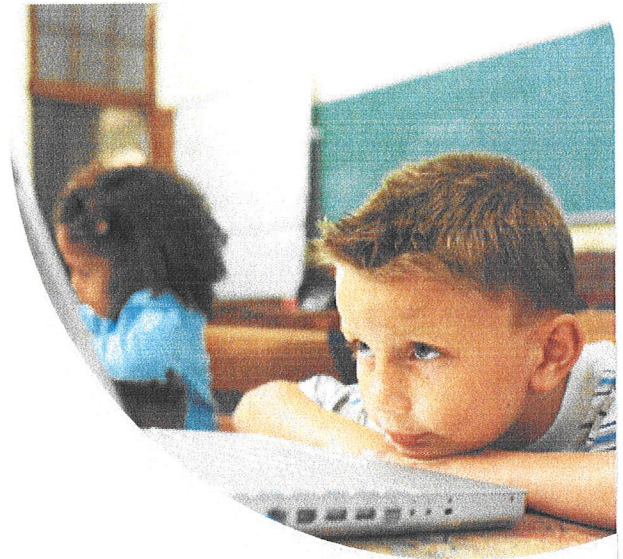
# **The Economic Impact of Stimulating Broadband Nationally**

A Report from Connected Nation, Inc.

February 21, 2008



**CONNECTED  
NATION** SM



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## Key Findings

- Kentucky's broadband adoption rate is higher than the national trends due to Connected Nation's first statewide broadband expansion program, ConnectKentucky.
- Adopting a national policy to stimulate the deployment of broadband in underserved areas of the U.S. could have dramatic and far-reaching economic impacts. For instance, just a seven percentage point increase in broadband adoption could result in:
  - › \$92 billion through 2.4 million jobs created or saved annually
  - › \$662 million saved per year in reduced healthcare costs
  - › \$6.4 billion per year in mileage saving from unnecessary driving
  - › \$18 million in carbon credits associated with 3.2 billion fewer lbs of CO2 emissions per year in the United States
  - › \$35.2 billion in value from 3.8 billion more hours saved per year from accessing broadband at home
  - › \$134 billion per year in total direct economic impact of accelerating broadband across the United States
- If Congress passes legislation (such as S. 1190/H.R. 3627, H.R. 3919, or S. 1492) to empower every state to implement programs modeled after ConnectKentucky and experience an increase in the growth rate of broadband adoption over what should be expected without a broadband focused program, the estimate of direct economic stimulus is more than \$134 billion per year for the nation.
- In 2007, the U.S. House of Representatives voted unanimously to pass such legislation, and the U.S. Senate passed a similar proposal as part of a renewal of the Farm Bill. The Senate and the House should complete negotiations on the Farm Bill, including broadband provisions as outlined in the bills listed above.



## Affirmations

“The Communications Workers of America has long been pressing for public policies that will allow all Americans to share in today’s telecommunications revolution and for our nation to fully utilize the economic engine of the 21st century. Economic growth, quality jobs and the tremendous opportunity for improvement in the personal lives of all Americans depends on substantial improvements in speed, quality and most critically, the build out of true high-speed Internet networks. At the current rates of broadband speed in the United States, the promise of telemedicine, distance learning and civic participation simply isn’t possible. And both developed and developing regions – Europe, Korea and parts of southeast Asia, eastern Europe and more – have moved far ahead of us. This economic impact study spotlights not only the positive benefits that will result from the build out of true high-speed broadband networks, but reinforces the critical need for a national broadband policy and the broadband mapping bills that Congress now is considering.”

**Larry Cohen, President**  
**Communications Workers of America**

“Connected Nation provides convincing evidence that the benefits of broadband adoption spill over to society as a whole. Moreover, the report rightly concludes that public policies to spur broadband are critical to ensure the best possible broadband future for the United States.”

**Dr. Robert D. Atkinson, President**  
**The Information Technology & Innovation Foundation**

“Through its experience in Kentucky, Connected Nation provides an incredibly successful model for stimulating broadband build out and demand that should be adopted nationally. Its comprehensive strategy of assessing broadband availability, identifying and aggregating demand through grassroots county planning teams, and bringing providers and users together through a public private partnership has resulted in an expansion of broadband availability that is significant and measurable. Connected Nation’s study identifies the economic benefits that can be expected if such a strategy is adopted nationally. This study should strengthen the growing, bi-partisan call in Washington, DC for a national broadband policy and specific legislation that would enable other states to participate in and benefit from this proven and successful model of economic development.”

**Kenneth R. Peres, PhD, President**  
**Alliance for Public Technology**

## Affirmations

"The Connected Nation approach to broadband is perhaps the most important public policy innovation for communications services in many decades. In an environment characterized by constant rhetorical divisiveness, Connected Nation pulls people together to share in their relentless focus on expanding broadband availability and subscription. As this new study shows, there is much to gain from expanding broadband availability and use in this country, and Connected Nation has proven itself up to the task."

**Lawrence Spiwak, President**  
**Phoenix Center for Advanced Legal & Economic Public Policy Studies**

"Connected Nation continues to blaze a trail toward a networked nation that works for everyone. This report demonstrates the powerful economic effects of broadband adoption. More to the point, Connected Nation has proven the tangible benefits of engaging the challenges of 21st Century infrastructure at the community level. The process begun by Connected Nation in Kentucky can and should serve as a model for efforts across the US."

**Charles Kaylor, Principal**  
**Public Sphere Information Group**

"To retain and gain jobs and to promote learning and earning, every city, town and rural community will need the connected power of broadband. Connected Nation's research shows that job generating power of having people connected to broadband. I look forward to learning more from their groundbreaking work as communities learn how, from them, to use broadband for improving these services and promoting economic development and job gains."

**Graham Richard, Former Mayor**  
**Fort Wayne, Indiana**

## Executive Summary

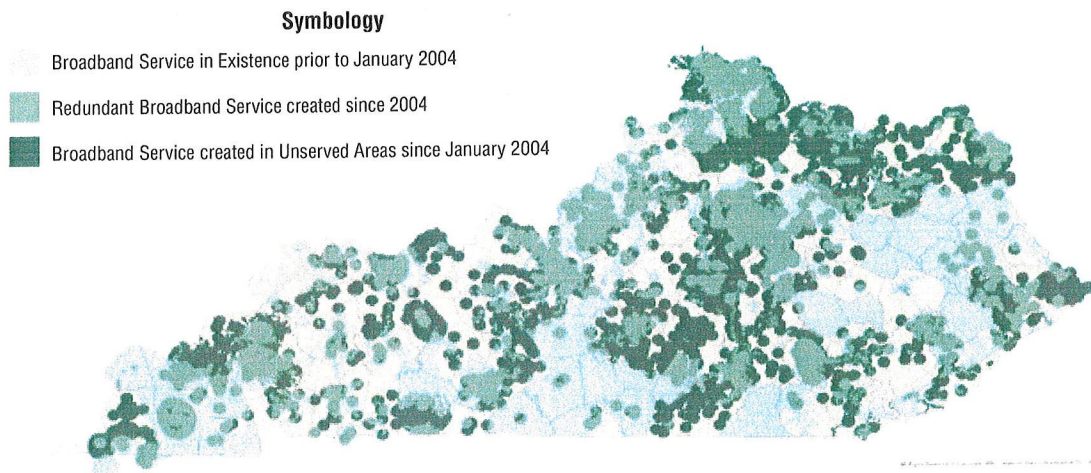
**If Congress passes legislation to empower every state to implement programs modeled after ConnectKentucky and experience an increase in the growth rate of broadband adoption over what should be expected without a broadband focused program, the estimate of direct economic stimulus is more than \$134 billion per year for the nation.**

It has been widely established that broadband networks provide a constructive platform for addressing a variety of public challenges including healthcare, education, homeland security and workforce/economic development.<sup>1</sup> Yet, at the beginning of 2008, many United States residents still cannot access broadband Internet service.

One state, Kentucky, has made measurable strides in expanding broadband networks. The broadband initiative in Kentucky led by ConnectKentucky brings together partners in the public and private sector to foster both the supply of and demand for broadband. The primary goal of ConnectKentucky is to increase the availability of technology by ensuring broadband service is available to each household and business in the state and to measurably improve computer literacy, ownership and overall technological literacy.

In 2004, only 60% of Kentucky households had broadband available for subscription. Three years later, in December 2007, 95% of households could subscribe to broadband, a statewide increase of nearly 60%. The map below identifies the growth of broadband investment from 2004-2007 (Figure 1)<sup>2</sup>. It is the result of a cooperative mapping effort among more than eighty Kentucky broadband providers (Table 1).

**Figure 1: Broadband Service Growth in Kentucky 2004-2007**  
**Household Coverage Grew from 60% to 95%**



<sup>1</sup> Robert W. Crandall, Robert E. Litan, and William Lehr, "The Effects of Broadband Deployment on Output and Employment: A Cross-Sectional Analysis Of U.S. Data," *Issues in Economic Policy: The Brookings Institution* No. 6, July 2007, p. 1.

<sup>2</sup> ConnectKentucky Broadband Service Growth Map, January 1, 2004 to December 31, 2007.



**Table 1: List of 81 Providers Represented on the KY Broadband Service Growth Map**

Access Cable Television	Henderson Municipal Power & Light Co.	Pritchtech
Access Kentucky	Highland Telephone Cooperative	Riverside Communications
Armstrong Utilities	Hopkinsville Electric System	Russellville Electric Plant Board
AT&T	Insight Communications	Salem Telephone Company
Ballard Rural Telephone Cooperative	Intermountain Cable	SCS Wireless
Barbourville Utility Commission	Irvine Community Television	Shelby Wireless
Bardstown Municipal Utilities	Ken-Tenn Wireless, LLC	Sit-Co (Formerly Ohio Valley Wireless)
Big Sandy TV Cable	Kvnet	South Central Rural Telephone Cooperative Corporation
Blueone.Net - Pendleton County	Kywifi	Southeast Telephone
Bowling Green Municipal Utilities	Kywimax	Speedbeam
Brandenburg Telephone Company	Leslie County Telephone	Ssinet
Burgin Wireless	Lewisport Telephone Company	Suddenlink
Cainpro Communications	Liberty Communications, Inc	TDS
Cebridge Connections	Limestone Cable Vision	Thacker-Grisby Telephone Company
Chapel Communications	Logan Telephone Cooperative	Time Warner Cable
Cincinnati Bell Telephone	Lycom	Tv Service & United Cable
City Of Bellefonte	Mayfield Electric And Water Systems	Us Digital Online
City Of Raceland	Mediacom	Vortex Wireless
Coalfields Telephone	Mega-Wi	VVDS
Comcast Cable	Monticello Plant Board	Webcats Networks
Duo County Telecom	Mountain Telephone Cooperative	West Kentucky Networks
Duo County Telephone	Netpower, LLC	West Kentucky Rural Telephone Cooperative Corporation
Cooperative CorpOration	Newwave Communications	Williamstown Catv
Foothills Rural Telephone	North Central Telephone Cooperative	Williamstown Utility Company
Cooperative Corporation	Ohio County Direct Net	Wimax Express
Frankfort Electric & Water Plant Board	Owensboro Municipal Utilities	Windstream
Galaxy Cablevision	Peoples Rural Telephone Cooperative Corporation	Worldwide Gap
Harlan Community TV	Princeton Electric And Plant Board	

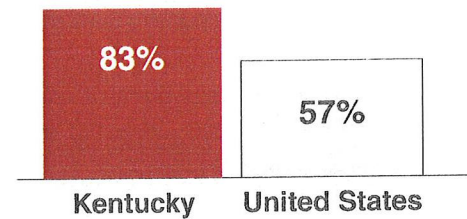
This important investment in technology infrastructure did not happen in a vacuum. It was fueled by fast growing demand promoted in large part by ConnectKentucky. From 2005-2007, broadband adoption (the number of homes subscribing to high-speed broadband service) in Kentucky increased 83%, a rate that exceeded what would naturally be expected when compared to nationwide trends for household broadband adoption. Clearly something unique has taken place in Kentucky (Figure 2)<sup>3</sup>.

<sup>3</sup> KY growth comes from 2 studies: 2005 University of KY E-Commerce Report - statewide digit dial telephone survey conducted March 2005. N=1,102 +/- 3% at the 95% level of confidence. And 2007 ConnectKentucky Residential Technology Assessment - statewide random digit dial telephone survey completed September 2007. N = 10,830 +/- 1.7% at the 95% level of confidence. National growth: "Home Broadband Adoption 2007" by John Horrigan and Aaron Smith, Pew Internet and American Life Project, June 2007

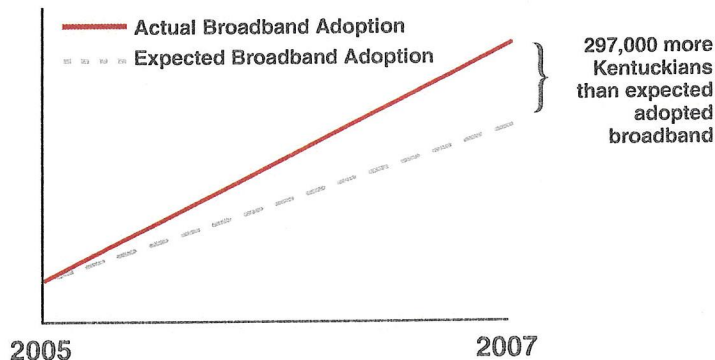
ConnectKentucky's success in promoting broadband adoption is the result of a comprehensive, targeted and locally relevant program that was repeated across each Kentucky county. It is a series of well designed and implemented supply and demand promoting programs that can be readily replicated in other states. Connected Nation, the national non-profit of which ConnectKentucky is a subsidiary, is now implementing the same kind of programming in other states.

Using the device of counterfactual analysis, this paper has conservatively quantified the direct impact of ConnectKentucky as the intervening factor in Kentucky. Additionally, the paper extrapolates this impact to other states to quantify the potential national impact of pending federal legislation that would empower states to accelerate broadband through similar public-private partnerships.

**Figure 2: Broadband Adoption Growth Rates 2005-2007**



**Figure 3: Kentucky's Actual versus Expected Broadband Adoption in 2007**



To measure the impact of the ConnectKentucky initiative on broadband adoption in Kentucky, this study compares the growth rate of adoption in Kentucky from 2005-2007 to what one would have expected if no ConnectKentucky program had been in place. In other words, what would we expect adoption rates to be in the absence of a coordinated public-private program such as ConnectKentucky. To this end, we compare Kentucky broadband adoption trends since the start of ConnectKentucky's program with national average broadband growth trends during the same period. In the identified time frame, Kentucky had 297,000 more subscribers than expected when compared

to national growth rates.<sup>4</sup> For Kentucky, this means 297,000 more subscribers are participating in the benefits of broadband today than would have without the ConnectKentucky program (Figure 3)<sup>5</sup>.

Many have recognized that broadband adoption represents an important source of gaining an economic advantage. A recent Brookings Institution study developed a formula for gauging the growth in jobs that can be associated with growth in broadband adoption.<sup>6</sup> This study uses the Brookings Institution formula along with direct consumer surveys to estimate the direct economic impacts associated with employment,

<sup>4</sup> If national broadband adoption rates between 2005 and 2007 were applied to Kentucky's 2005 baseline broadband adoption rate (24%), then Kentucky's expected statewide adoption would be only 37% in 2007. However, Kentucky's broadband adoption percentage is actually 44% in 2007, which is seven percentage points above the expected adoption rate. This additional 7% translates into approximately 297,000 more individuals accessing broadband in the state of Kentucky than expected.

<sup>5</sup> KY growth comes from 2 studies: 2005 University of KY E-Commerce Report - statewide digit dial telephone survey conducted March 2005. N=1,102 +/- 3% at the 95% level of confidence. And 2007 ConnectKentucky Residential Technology Assessment - statewide random digit dial telephone survey completed September 2007. N = 10,830 +/- 1.7% at the 95% level of confidence. National growth: "Home Broadband Adoption 2007" by John Horrigan and Aaron Smith, Pew Internet and American Life Project, June 2007

<sup>6</sup> Robert W. Crandall, Robert E. Litan, and William Lehr, "The Effects of Broadband Deployment on Output and Employment: A Cross-Sectional Analysis Of U.S. Data," Issues in Economic Policy: The Brookings Institution, No. 6, July 2007.

time saved, direct consumer healthcare savings and economic and environmental impact of fewer miles being driven due to online activity enabled by broadband.

To further understand the urgency of a concerted effort to promote broadband adoption and stimulate infrastructure investment, it is useful to extrapolate economic benefits gained through broadband acceleration onto the nation as a whole. By applying the dynamic equivalents to other state demographics and by assuming a similar higher than expected growth rate in broadband adoption, this study reports that if every state were to develop initiatives similar to ConnectKentucky, the United States could expect to gain:

- \$92 billion through 2.4 million jobs created or saved annually
- \$662 million saved per year in reduced healthcare costs
- \$6.4 billion per year in mileage savings from unnecessary driving
- \$18 million in carbon credits associated with 3.2 billion fewer lbs of CO2 emissions per year in the United States
- \$35.2 billion in value from 3.8 billion more hours saved per year from accessing broadband at home
- \$134 billion per year in total direct economic impact of accelerating broadband across the United States

Given the federal government's current search for constructive forms of economic stimulus, Connected Nation encourages the 110th Congress to consider the following bills that directly seek to replicate the ConnectKentucky model nationwide as a relevant means to both short and long term economic stimulus that provides an astounding return on investment.

- S. 1190/H.R. 3627 – the Connect the Nation Act of 2007
- S. 1492 – the Broadband Data Improvement Act
- H.R. 3919 – the Broadband Census of America Act of 2007

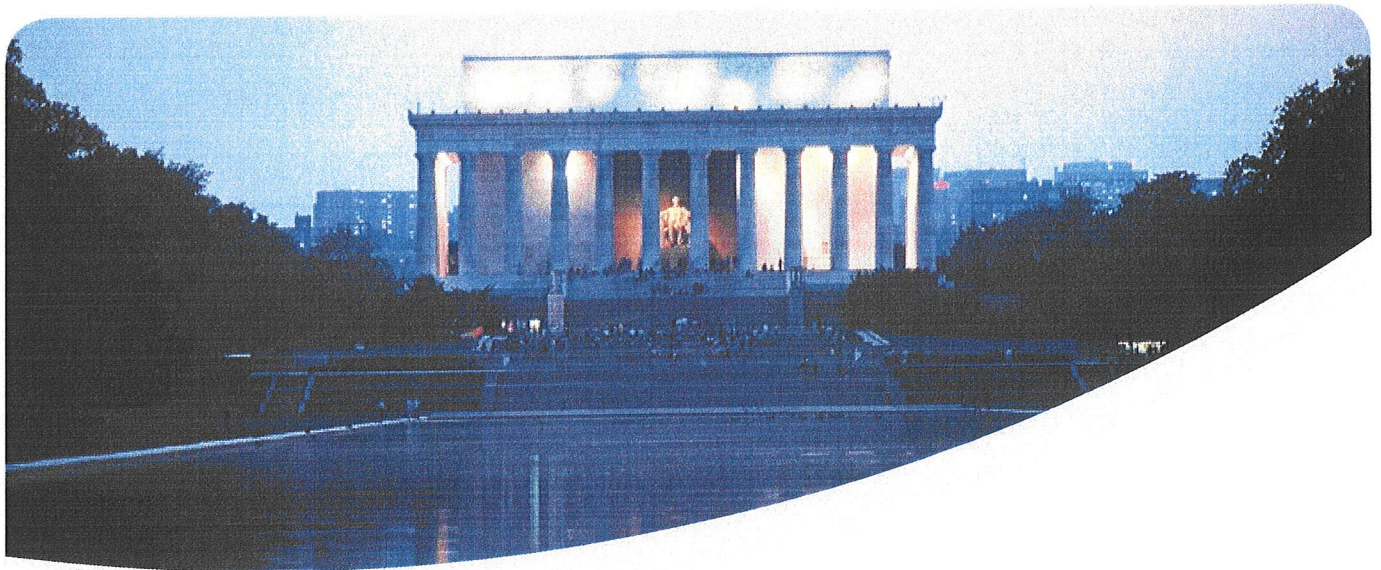
Each of these bills in various ways provides legislation that includes:

- Recognition of the critical role of public-private partnerships in broadband expansion
- Federal enabling of state/local response to broadband deployment and demand aggregation
- Recognition of the indispensable role non-profits play in program implementation

Time is of the essence. The United States can ill afford the passing of another year without policies that will stimulate broadband growth, particularly in previously underserved or overlooked areas. Much consensus building has occurred around broadband policy needs during this Congress. The time for action is now.

**Table 2: A State-by-State Summary of the Annual Economic Impact Associated with Accelerating Broadband for Each State**

	Total Annual Economic Impact	Jobs Created or Saved Annually	Direct Annual Income Growth from the Increase in Broadband	Average Annual Healthcare Costs Saved	Average Annual Mileage Costs Saved	Average Annual Hours Saved	Annual Value of Hours Saved	Average Annual lbs of CO <sub>2</sub> Emissions Cut	Value of Carbon Offsets
Alabama	\$1,692,307,789	33,451	\$1,118,595,872	\$10,187,810	\$99,216,165	57,715,987	\$464,036,535	50,255,886	\$271,408
Alaska	\$317,188,552	4,846	\$212,849,167	\$1,484,307	\$14,018,776	8,408,897	\$88,797,954	7,100,920	\$38,349
Arizona	\$2,498,704,035	46,358	\$1,680,954,424	\$13,659,679	\$129,327,410	77,384,824	\$674,408,744	65,508,111	\$353,778
Arkansas	\$963,684,222	20,577	\$635,196,771	\$6,226,667	\$60,352,819	35,275,319	\$261,742,869	30,570,465	\$165,097
California	\$17,287,110,398	262,042	\$11,577,026,715	\$80,761,066	\$768,277,259	457,527,657	\$4,858,943,717	389,154,873	\$2,101,641
Colorado	\$2,351,248,032	39,665	\$1,644,109,297	\$10,529,720	\$101,888,351	59,652,980	\$594,441,946	51,609,426	\$278,718
Connecticut	\$1,938,746,950	29,765	\$1,368,285,351	\$7,763,882	\$76,465,884	43,983,951	\$486,022,659	38,732,204	\$209,174
Delaware	\$452,660,929	7,796	\$324,919,691	\$1,890,627	\$18,478,024	10,710,782	\$107,322,040	9,359,659	\$50,547
Florida	\$7,531,595,950	143,405	\$5,136,752,665	\$40,072,871	\$399,029,270	227,020,858	\$1,954,649,591	202,119,981	\$1,091,554
Georgia	\$3,907,660,865	71,059	\$2,639,837,894	\$20,743,080	\$197,143,135	117,513,714	\$1,049,397,466	99,858,756	\$539,290
Hawaii	\$578,001,026	10,284	\$397,274,880	\$2,847,646	\$28,011,744	16,132,486	\$149,790,130	14,188,767	\$76,627
Idaho	\$565,942,345	10,859	\$378,002,347	\$3,248,525	\$30,661,907	18,403,549	\$153,945,689	15,531,152	\$83,876
Illinois	\$6,207,888,316	105,622	\$4,321,003,997	\$28,425,487	\$273,919,566	161,036,091	\$1,583,789,952	138,748,261	\$749,314
Indiana	\$2,679,847,808	52,863	\$1,860,248,442	\$13,985,762	\$134,940,477	79,232,151	\$670,303,994	68,351,293	\$369,133
Iowa	\$1,237,290,273	26,064	\$866,632,289	\$6,605,940	\$64,670,465	37,423,974	\$299,204,671	32,757,480	\$176,908
Kansas	\$1,154,893,120	22,828	\$798,081,721	\$6,123,002	\$58,974,133	34,688,036	\$291,552,939	29,872,121	\$161,325
Kentucky	\$1,587,239,467	31,699	\$1,061,603,244	\$9,317,330	\$91,153,941	52,784,546	\$424,915,597	46,172,134	\$249,354
Louisiana	\$1,556,816,993	31,313	\$1,030,199,954	\$9,498,299	\$91,233,861	53,809,773	\$425,635,307	46,212,615	\$249,572
Maine	\$544,607,277	10,577	\$371,878,460	\$2,927,562	\$29,575,200	16,585,225	\$140,145,152	14,980,703	\$80,904
Maryland	\$2,813,857,230	43,922	\$1,933,873,816	\$12,440,005	\$121,232,549	70,475,128	\$745,979,225	61,407,827	\$331,635
Massachusetts	\$3,840,751,425	5,411	\$2,765,167,106	\$14,259,724	\$141,613,044	80,784,197	\$919,324,165	71,731,143	\$387,386
Michigan	\$4,637,508,875	6,200	\$3,141,722,166	\$22,363,953	\$217,268,265	126,696,281	\$1,255,560,149	110,052,723	\$594,343
Minnesota	\$2,791,482,532	48,691	\$2,021,172,957	\$11,446,205	\$111,405,012	64,845,051	\$647,153,606	56,429,893	\$304,751
Mississippi	\$905,743,973	18,723	\$570,305,184	\$6,447,452	\$61,452,087	36,526,113	\$267,371,146	31,127,277	\$168,104
Missouri	\$2,501,367,723	48,592	\$1,733,262,586	\$12,942,827	\$126,066,630	73,323,711	\$628,750,822	63,856,431	\$344,858
Montana	\$337,218,046	7,198	\$225,220,226	\$2,092,557	\$20,700,888	11,854,754	\$89,147,748	10,485,604	\$56,628
Nebraska	\$783,129,301	16,280	\$558,411,615	\$3,917,222	\$37,725,489	22,191,847	\$182,971,776	19,109,062	\$103,199
Nevada	\$1,175,028,256	23,482	\$845,359,452	\$5,528,117	\$52,939,525	31,317,891	\$271,056,344	26,815,416	\$144,817
New Hampshire	\$634,062,329	11,374	\$446,419,295	\$2,912,766	\$28,960,278	16,501,406	\$155,690,768	14,669,227	\$79,222
New Jersey	\$4,636,703,229	71,109	\$3,231,890,665	\$19,326,718	\$188,794,006	109,489,738	\$1,196,175,390	95,629,679	\$516,451
New Mexico	\$694,119,894	13,184	\$447,977,912	\$4,329,844	\$41,293,689	24,529,436	\$200,405,489	20,916,460	\$112,960
New York	\$9,909,345,962	147,884	\$6,776,023,161	\$42,767,217	\$420,637,031	242,284,874	\$2,668,767,889	213,064,943	\$1,150,663
North Carolina	\$3,626,061,051	69,432	\$2,466,214,037	\$19,619,004	\$190,523,446	111,145,595	\$949,183,383	96,505,690	\$521,182
North Dakota	\$264,354,171	5,755	\$186,703,927	\$1,408,578	\$13,960,441	7,979,877	\$62,243,037	7,071,371	\$38,189
Ohio	\$5,165,789,104	96,312	\$3,598,197,715	\$25,426,175	\$247,968,322	144,044,384	\$1,293,518,569	125,603,198	\$678,323
Oklahoma	\$1,270,219,076	25,603	\$833,901,696	\$7,928,700	\$76,474,057	44,917,679	\$351,705,426	38,736,344	\$209,197
Oregon	\$1,653,094,131	29,383	\$1,133,296,659	\$8,197,950	\$80,851,438	46,443,033	\$430,526,912	40,953,615	\$221,171
Pennsylvania	\$5,618,124,596	103,916	\$3,905,168,316	\$27,558,567	\$274,060,290	156,124,817	\$1,410,587,724	138,819,542	\$749,699
Rhode Island	\$517,684,416	8,896	\$360,983,164	\$2,364,979	\$23,573,532	13,398,078	\$130,698,255	11,940,682	\$64,486
South Carolina	\$1,628,562,600	32,629	\$1,089,806,446	\$9,572,467	\$93,461,551	54,229,946	\$435,466,470	47,341,006	\$255,666
South Dakota	\$295,051,946	6,718	\$204,642,266	\$1,732,113	\$16,753,192	9,812,771	\$71,878,545	8,485,981	\$45,829
Tennessee	\$2,450,739,704	49,142	\$1,682,608,846	\$13,377,207	\$130,689,201	75,784,562	\$623,706,946	66,197,898	\$357,503
Texas	\$9,424,006,380	173,117	\$6,303,206,537	\$52,074,637	\$486,029,518	295,013,274	\$2,581,366,143	246,188,147	\$1,329,546
Utah	\$1,066,414,382	20,728	\$736,673,777	\$5,648,921	\$50,494,153	32,002,271	\$273,459,402	25,576,764	\$138,128
Vermont	\$275,359,624	5,270	\$191,553,395	\$1,382,086	\$13,953,557	7,829,796	\$68,432,416	7,067,884	\$38,170
Virginia	\$3,764,632,826	63,344	\$2,625,619,577	\$16,930,580	\$165,834,683	95,915,137	\$955,794,341	84,000,111	\$453,645
Washington	\$3,056,439,915	48,365	\$2,075,358,306	\$14,168,025	\$138,603,982	80,264,707	\$827,930,448	70,206,965	\$379,155
West Virginia	\$616,017,781	12,690	\$398,961,244	\$4,028,290	\$40,504,254	22,821,071	\$172,413,192	20,516,588	\$110,800
Wisconsin	\$2,613,219,462	50,748	\$1,863,975,895	\$12,308,818	\$120,871,181	69,731,928	\$615,732,922	61,224,784	\$330,646
Wyoming	\$215,933,328	4,383	\$150,308,706	\$1,140,841	\$11,197,254	6,463,094	\$53,255,896	5,671,736	\$30,630
<b>TOTAL</b>	<b>\$134,235,487,615</b>	<b>2,352,552</b>	<b>\$91,927,439,829</b>	<b>\$661,941,807</b>	<b>\$6,413,230,933</b>	<b>3,750,033,246</b>	<b>\$35,215,301,497</b>	<b>3,248,488,796</b>	<b>\$17,543,549</b>



## Introduction

It is widely understood that increased adoption of broadband technology speeds the flow of information and sparks innovation. According to the Brookings Institution, "Highspeed Internet access has developed rapidly in the last decade and is increasingly viewed as essential infrastructure for our global information economy."<sup>7</sup> However, at the beginning of 2008, many United States residents still cannot access broadband Internet service, especially in America's most rural areas.

One state, Kentucky, has significantly accelerated broadband availability and use. In fact, 95% of Kentuckians can now access broadband in their homes, up from just 60% in 2004.<sup>8</sup> The broadband initiative in Kentucky has been led by ConnectKentucky, an innovative non-profit that brings together partners from the public and private sector to foster the supply and demand of broadband and related technology.

The ConnectKentucky model is rooted in a community-driven technology planning process that creates demand for broadband and information technology services, which in turn drives the investment that extends the supply of those services. The point of contact between supply and demand is within communities themselves. The ConnectKentucky model attempts to foster a sustainable, grassroots coalition of community leaders representing education, healthcare, businesses, government, libraries, agriculture, tourism and community-based organizations. These "eCommunity Leadership Teams" utilize ConnectKentucky's community-level consumer research and other forms of market intelligence to develop customized technology programs, targeted awareness campaigns and community-oriented applications to increase adoption and generate demand for services. Meanwhile, best practices are shared across the state to encourage smart and cost effective investments. In Kentucky, this "human network" of local volunteers numbers greater than 4,000 local citizens, working together to make a better use of technology in their community.

ConnectKentucky pairs this local technology planning with a collaborative engagement among all broadband providers, which yields a statewide, household-level mapping of broadband "gaps" and

customized plans to fill those gaps with highly used services. Mapping these broadband gaps allows for an in-depth market analysis of unserved areas, including household densities, potential collocation resources such as water and cell towers, terrain analysis and proposed infrastructure such as water lines, sewer projects and future roads. *The combination of local knowledge and resources with an effective broadband map allows broadband providers and communities to accurately mesh technology deployment with potential users of application development, all while ideally increasing community awareness and adoption.*

ConnectKentucky has served as an important pilot model whose success and lessons learned are informing policy at the federal and state levels. Currently, there exists legislation in Washington, DC and in multiple states that aims to enable similar programs promoting demand and supply of broadband services. This report attempts to contribute to this discussion. First, this report evaluates broadband trends in Kentucky and compares them with national averages. This comparison helps to quantify the pent up potential for growth in the ITC sector that programs such as ConnectKentucky help to promote. Second, this study attempts to estimate the direct availability economic impact for Kentuckians of the increased growth in broadband adoption. It then extrapolates from these results to estimate the potential economic impact to the entire nation of a national program that similarly accelerates broadband.

This report follows a natural sequence of questions regarding the ConnectKentucky program from 2005-2007 and the implications for state national policy development:

- To what degree has broadband adoption increased in Kentucky?
- How has No Child Left Offline® affected broadband adoption?
- What are the direct economic benefits of this broadband acceleration effort?
- What would be the impact if current legislation passed to empower similar efforts in the rest of the United States to ensure access to affordable broadband?
- What government policies would foster supply and demand of broadband to underserved areas of the United States?



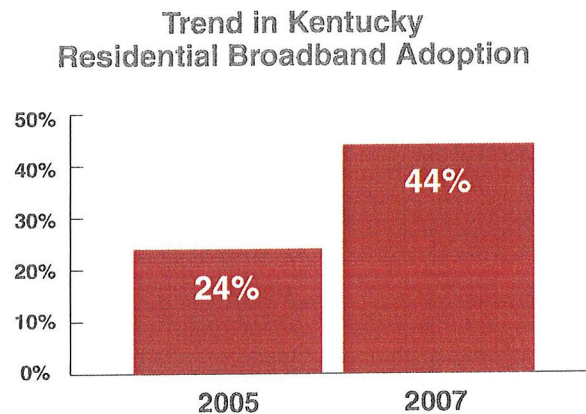
<sup>7</sup> Robert W. Crandall, Robert E. Litan, and William Lehr, "The Effects of Broadband Deployment on Output and Employment: A Cross-Sectional Analysis Of U.S. Data," *Issues in Economic Policy: The Brookings Institution*, No. 6, July 2007, p. 1.

<sup>8</sup> ConnectKentucky Broadband Service Availability Map, quarterly update, December 31, 2007.

## Broadband Adoption in Kentucky Grew While Grassroots Groups Created Demand Statewide

In March, 2005, only 24% of Kentucky residents subscribed to broadband service. By September 2007, that proportion had increased to 44% (Figure 4)<sup>9</sup>. This represents an increase of 83% in this 28 month period.

**Figure 4: Residential Broadband Adoption Rates in Kentucky**



In this time frame, ConnectKentucky implemented a statewide program that aimed to increase both the supply of and the demand for broadband. In each of Kentucky's 120 counties, eCommunity Leadership Teams were formed to accomplish the following:

- Create and aggregate demand for broadband
- Identify locally relevant applications
- Foster cooperation across both private and public sectors in order to address the local community's needs that are appropriately addressed through technology and broadband in particular

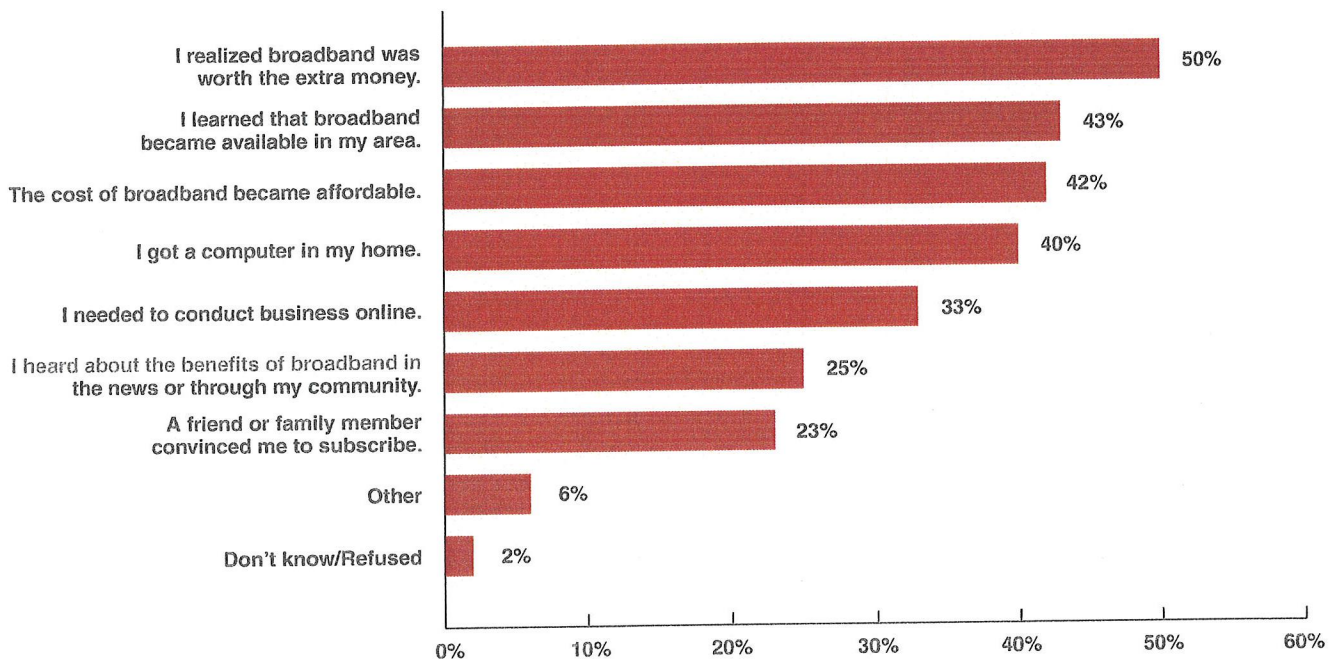
<sup>9</sup> 2005 University of Kentucky E-Commerce Report – statewide random digit dial telephone survey conducted March 2005; n = 1,102; +/-3.0% at the 95% level of confidence. 2007 ConnectKentucky Residential Technology Assessment – statewide random digit dial telephone survey completed September 2007; n = 10,830. +/-1.7% at the 95% level of confidence.

- Create local awareness of the benefits of broadband
- Work with providers of broadband to create a business case for extension of broadband to unserved areas

Constituted by 4,000 plus local volunteers, these ConnectKentucky teams have been successful in their mission to create awareness and drive demand. Extensive direct consumer surveys have also been conducted during the 2005-2007 time frame. Not only did demand for broadband increase, but awareness of its availability and recognition of its value were very important factors identified by those households who chose to subscribe. Note in the data below that availability of broadband and realization of its value are the two most often cited reasons for deciding to subscribe (Figure 5)<sup>10</sup>.

**Figure 5: Reasons for Broadband Adoption**

Which of the following contributed to your decision to subscribe to broadband?



<sup>10</sup> 2007 ConnectKentucky Residential Technology Assessment: "Which of the following contributed to your decision to subscribe to broadband?" n=3,776 Kentucky residents with broadband service at home.

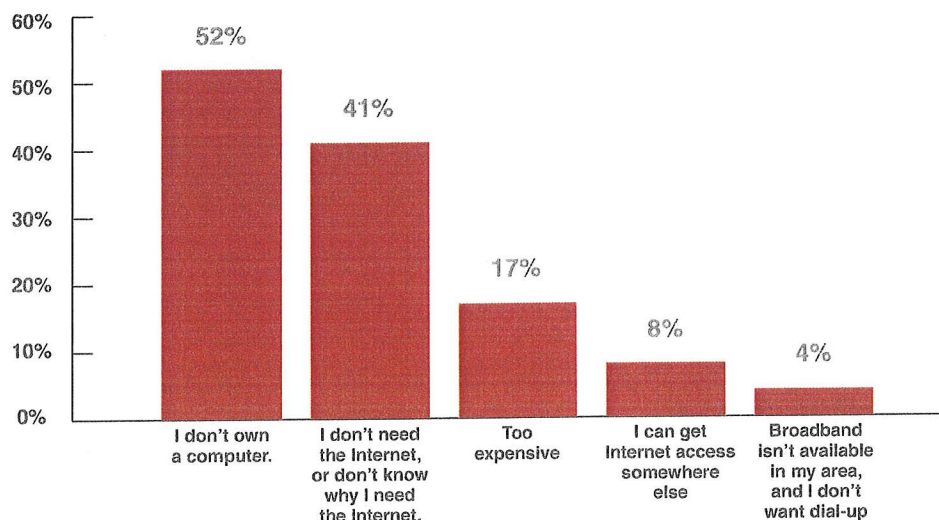


## No Child Left Offline® Program Accelerates Adoption Increases in Kentucky Communities

ConnectKentucky's local demand creating planning groups (eCommunity Leadership Teams) have been at work in every Kentucky community. This pervasive technology planning network created the opportunity for program extensions that went even further to address broadband subscription and computer literacy.

One such program extension is No Child Left Offline® (NCLO). No Child Left Offline is a response to consumer research conducted by ConnectKentucky among Kentucky households. That research indicates on a regular basis "lack of a computer" as the primary barrier associated with Internet adoption (Figure 6). According to a 2004 Department of Commerce Report, approximately 56% of Americans who do not access the Internet indicated that the lack of a computer at home was the primary reason for not being online.<sup>11</sup> ConnectKentucky research continues to support this finding – while the number of Internet users has risen in Kentucky over the last three years, the lack of a computer at home continues to be the primary barrier to Internet adoption (Figure 6)<sup>12</sup>.

**Figure 6: Barriers to Internet Adoption in Kentucky**



To address the computer ownership barrier in Kentucky, ConnectKentucky's No Child Left Offline program brings together public and private partners to provide computers for economically disadvantaged children. The program has not only increased computer ownership, but it has been tracked with remarkable increases in broadband adoption.

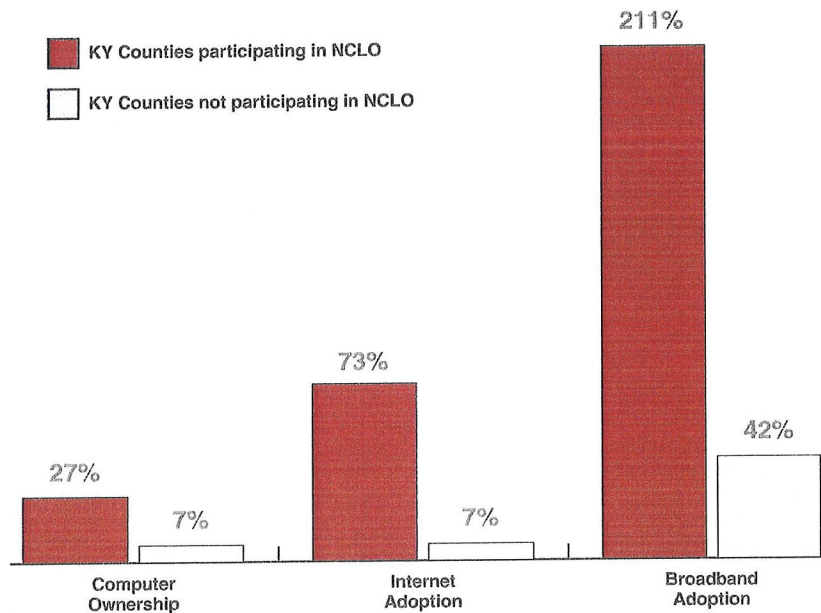
<sup>11</sup> National Telecommunications and Information Administration, United States Department of Commerce, A Nation Online: Entering the Broadband Age, September 2004.

<sup>12</sup> 2007 GK Residential Technology Assessment, October 2007. (N = 4,309 KY residents who do not have Internet service at home).

No Child Left Offline has had a dramatic impact on the lives of Kentucky families. According to the ConnectKentucky 2005 and 2007 Residential Technology Assessments:

- In the last two years, computer ownership among low-income families in No Child Left Offline counties grew nearly four times faster than these families in other counties.<sup>13</sup>
- During the same two-year period, Internet adoption among low-income families in No Child Left Offline counties grew more than ten times faster relative to these families in other areas of the state.<sup>14</sup>
- Broadband adoption among low-income families grew five times faster in counties that received computers through No Child Left Offline. In the last two years, home broadband adoption among low-income families has grown by over 200% in these participating counties (Figure 7)<sup>15</sup>.

**Figure 7: Home Technology Adoption Among Low-Income Families**



<sup>13</sup> Counties participating in No Child Left Offline include the Kentucky counties of Johnson, Clay, Wolfe, McCreary, Owsley, Carter, Lawrence and Morgan. Low-income is defined as annual household income below \$25,000.

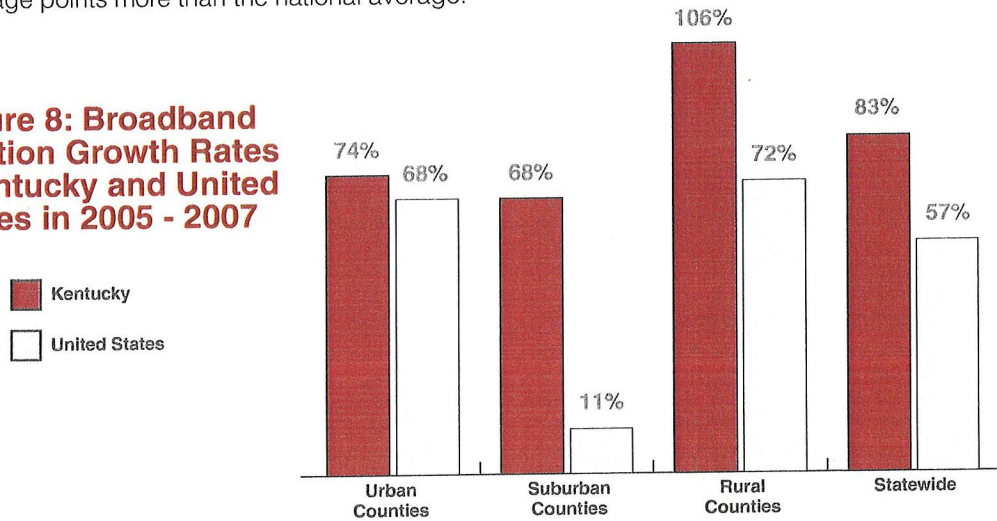
<sup>14</sup> Ibid.

<sup>15</sup> Ibid.

## Kentucky Significantly Outpaces National Averages for Broadband Adoption

One way to illustrate ConnectKentucky's impact on broadband adoption is to compare Kentucky's growth rates from 2005-2007 to national growth rates during this same period. As shown in Figure 8<sup>16</sup>, national broadband adoption growth rates were much smaller than Kentucky growth rates in broadband from 2005-2007.<sup>17</sup> For example, the statewide broadband adoption rate in Kentucky grew 83% from 2005 to 2007, while the national broadband adoption rate grew only 57%. Kentucky's broadband adoption grew 26 percentage points more than the national average.

**Figure 8: Broadband Adoption Growth Rates in Kentucky and United States in 2005 - 2007**



If we look at the rural broadband adoption in Kentucky versus the rest of the United States, it is clear that something significant happened in Kentucky from 2005-2007. Kentucky's growth in rural broadband is even more striking considering that Kentucky ranks 48th in educational attainment<sup>18</sup> and 47th in median income<sup>19</sup> in the nation - two indicators that have been shown to significantly affect broadband adoption.<sup>20</sup> Indeed, a 2006 GAO report showed that households with high incomes were 39% more likely to adopt broadband than lower-income households, and those with a college-educated head of household were 12% more likely to purchase broadband than households headed by someone who did not graduate from college.<sup>21</sup>

<sup>16</sup> United States adoption rate reported from John B. Horrigan and Aaron Smith, Pew Internet and American Life Project, HOME BROADBAND ADOPTION 2007, June 2007. [http://www.pewinternet.org/pdfs/PIP\\_Broadband%202007.pdf](http://www.pewinternet.org/pdfs/PIP_Broadband%202007.pdf)  
Kentucky adoption rate reported from the 2005 University of Kentucky E-Commerce Report and 2007 ConnectKentucky Residential Technology Assessment.

<sup>17</sup> Ibid.

<sup>18</sup> American Community Survey, 2003, "Percent of People 25 Years and Over Who Have Completed High School (including Equivalency), Population 25 years and over (State level) Table" United States Census Bureau.

<sup>19</sup> American Community Survey, 2003, "Median Household Income," United States Census Bureau.

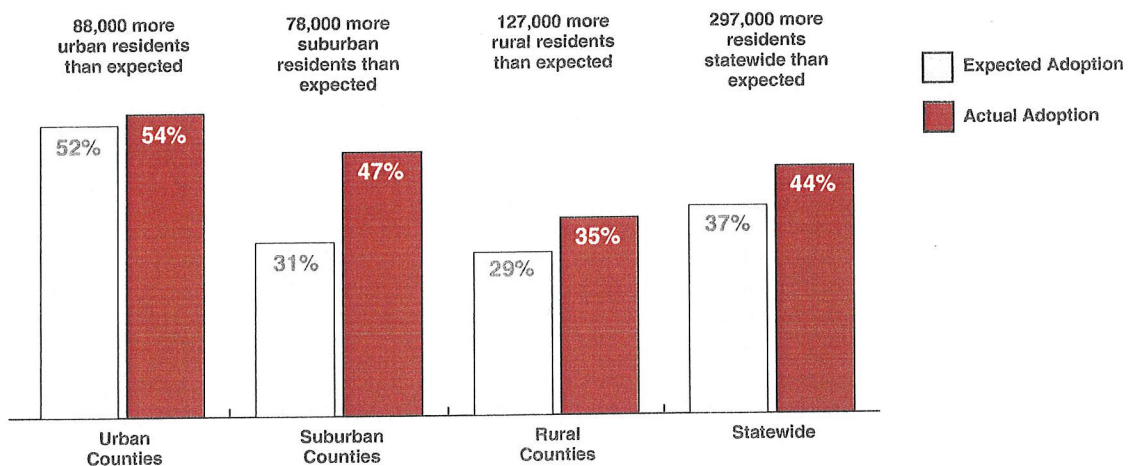
<sup>20</sup> John Horrigan and Aaron Smith, "Home Broadband Adoption 2007," Pew Internet and American Life Project, HOME BROADBAND ADOPTION, June 2007, p. 4 and George S. Ford, Thomas M. Koussy and Lawrence J. Spiwak, The Demographic and Economic Drivers of Broadband Adoption in the United States, PHOENIX CENTER POLICY PAPER, No 31 (November 2007).

<sup>21</sup> United States Government Accountability Office, Broadband Deployment Is Extensive throughout the United States, but It Is Difficult to Assess the Extent of Deployment Gaps in Rural Areas, May 2006, p. 29

The much larger growth rates in KY household broadband adoption versus national growth (especially in rural areas) as well as Kentucky's lagging levels of education and income – indicate that it is conservative to use the 7% figure. Instead of using the net difference between Kentucky adoption growth and national adoption growth, the study applies a counterfactual analysis to derive the seven percentage point direct ConnectKentucky impact on adoption. Applying the growth rate of the nation to the starting point in the KY time series demonstrates that had Kentucky performed similarly to the rest of the country in terms of broadband adoption growth, the resulting level of household adoption would have been seven percentage points less than what actually occurred. The higher than expected adoption levels that occurred in Kentucky despite the above mentioned negative contributing indicators is attributed to the ConnectKentucky initiative. In other words, what would we expect adoption rates to be without the ConnectKentucky initiative?

If the national growth rate between 2005 and 2007 were applied to the 2005 Kentucky baseline (24%), then Kentucky's expected statewide adoption in 2007 would be 37%. However, Kentucky's broadband adoption percentage is actually 44% in 2007, which represents 297,000 more subscribers above the expected adoption rate.<sup>22,23</sup> The intervening factor has been ConnectKentucky. (Figure 9)<sup>24</sup>.

**Figure 9: 2007 Actual vs. Expected KY Broadband Adoption**



<sup>22</sup> 2007 ConnectKentucky Residential Technology Assessment.

<sup>23</sup> United States Population Estimates, 2006. United States Census Bureau.

<sup>24</sup> Expected Kentucky adoption rates derived from John B. Horrigan and Aaron Smith, Pew Internet and American Life Project, HOME BROADBAND ADOPTION 2007, June 2007. [http://www.pewinternet.org/pdfs/PIP\\_Broadband%202007.pdf](http://www.pewinternet.org/pdfs/PIP_Broadband%202007.pdf)  
 Actual Kentucky adoption rates reported from the 2005 University of Kentucky E-Commerce Report and 2007 ConnectKentucky Residential Technology Assessment. Sum of urban, suburban and rural figures will not equal total state figure as a result of rounding.

## The Economic Impacts of Increased Broadband Availability and Adoption in Kentucky

By conservative measurement, Kentucky had 297,000 new broadband subscribers above and beyond the number of subscribers one would anticipate if Kentucky had followed the national trends for growth in broadband subscription. From 2005-2007, the one question that remains is how the online activity of an extra 297,000 broadband subscribers in Kentucky translates into a specific economic impact. In this section, we examine the impact of an additional 297,000 Kentuckians accessing broadband on the following five economic variables: 1) employment 2) healthcare cost savings 3) mileage costs saved 4) environmental pollution and 5) time saved.

These five basic variables were chosen as the most uniformly realized benefits of broadband subscription and represent a conservative appraisal of the estimated impact. There are additional benefits associated with broadband adoption such as improved education, a more technologically literate workforce and more efficient government services.

**Employment:** There have been various studies on the impact of broadband growth on employment. While they have had varying conclusions, all indicate a positive correlation between broadband and employment. A recent study by economists at the Brookings Institution concluded that “non-farm private employment and employment in several industries is positively associated with broadband use. More specifically, for every one percentage point increase in broadband penetration in a state, employment is projected to increase by 0.2 to 0.3 percent per year.”<sup>25</sup> By using this study that is widely recognized for its relevance and conservative coefficient of estimation and by applying it to the data from Kentucky, the seven percentage point growth in broadband adoption in Kentucky over the expected has resulted in an additional 63,417 jobs created or saved in Kentucky between 2005 and 2007.<sup>26</sup> **The average annual economic value of these jobs can be estimated at \$1.06 billion in direct wages.**<sup>27</sup>

**Healthcare Cost Savings:** According to the 2007 ConnectKentucky Residential Technology Assessment, 72% of home broadband users who use the Internet for healthcare purposes report that access to online health information has empowered them to become healthier.<sup>28</sup> Of the residents who have become healthier, 63% report that doing so has saved them money, with an average self-reported savings of \$217 per person.<sup>29</sup>

To conservatively estimate the impact of the boost in broadband adoption resulting from the ConnectKentucky initiatives, only the actual healthcare costs savings among broadband subscribers are analyzed – and this analysis is limited to broadband adoption above the expected rate. **An estimated 35% of all broadband users report saving an average of \$217 as a direct result of becoming healthier through**

<sup>25</sup> Robert W. Crandall, Robert E. Litan, and William Lehr, “The Effects of Broadband Deployment on Output and Employment: A Cross-Sectional Analysis Of U.S. Data,” *Issues in Economic Policy: The Brookings Institution*, No. 6, July 2007, p. 2.

<sup>26</sup> For a two-year time frame, the Crandall et al. paper (pages 9-10) generated .593 as the coefficient for a two-year time span from the regression results from the effect of broadband on employment during 2003-2005. Therefore, we used .593 as the coefficient for the two-year effect from 2005-2007. According to the United States Bureau of Labor Statistics, Kentucky’s employment was 1.51 million in 2005.

<sup>27</sup> Using Kentucky’s average annual wage of \$33,490 in 2006, as reported by the United States Bureau of Labor Statistics ([www.bls.gov](http://www.bls.gov)).

<sup>28</sup> 2007 ConnectKentucky Residential Technology Assessment: “Q15D. Obtaining healthcare information online has empowered me to be healthier?” n= 191 respondents with broadband service at home who obtain healthcare information online.

<sup>29</sup> 2007 ConnectKentucky Residential Technology Assessment: “Q16D1. About how much money would you estimate you have saved by becoming healthier in this way?” n= 191 respondents with broadband service at home who obtain healthcare information online.

obtaining healthcare information online. This translates into a \$9.4 million dollar annual self-reported healthcare cost savings for the additional 297,000 broadband users above the expected in Kentucky. This does not account for savings to the state in Medicaid or other indirect health savings.

The ConnectKentucky survey also found that 47% of Kentuckians who use broadband to access healthcare information agree that by doing so, they have prevented potentially unnecessary trips to doctors, hospitals, emergency rooms or other healthcare professionals. Each patient's visit to a physician, emergency room or other medical facility costs money. Among Kentucky broadband users, 37% report that online access to healthcare information has prevented an average of 4.2 unnecessary trips to receive medical care.<sup>30</sup> This equals more than 462,000 medical visits avoided among the 297,000 additional broadband users as a result of ConnectKentucky efforts.

**Mileage Costs Saved:** The ability to conduct transactions online also means that Kentuckians with broadband spend less time in their cars.<sup>31</sup> Instant information and broadband-based access to relevant government services means not having to stand in line at shops and at town hall. In the 2007 ConnectKentucky residential survey, 66% of broadband users report driving an average of 102 fewer miles per month because of their online activity.<sup>32</sup> This yields a total annual savings of more than 1.2 billion vehicle miles. Of these savings, approximately 190 million miles per year can be attributed to larger than expected growth in broadband adoption. Using the United States General Services Administration reimbursement rate for driving of \$0.485 per mile, it can be said that the ConnectKentucky initiative has yielded an annual savings of \$92.1 million in consumer driving costs.

**Environmental Pollution:** Broadband adoption creates other positive externalities with respect to transportation, such as reduced gasoline consumption and reduced emissions. The estimated cost savings associated with a reduction in miles driven does not account for the significant environmental cost savings that result from fewer cars on the road. According to the World Resources Institute, the average 2005 fuel fleet economy was 21 miles per gallon.<sup>33</sup> According to the Center for Environmental Economic Development, 1 gallon of gas equates to 5.159 lbs. of carbon.<sup>34</sup> Given these figures and the savings of 190 million vehicle miles attributed to broadband adoption above expected, it can be estimated that ConnectKentucky efforts generated an annual reduction of 46.7 million pounds of carbon emissions. In addition to the positive environmental impact and using the standard measurements for CO2 emissions credits, the annual economic impact of 46.7 million pounds of carbon emissions can be estimated at \$252,200.<sup>35</sup>

**Time Saved:** According to the 2007 ConnectKentucky statewide survey, 75% of Internet users agree that conducting online transactions has saved them time.<sup>36</sup> Broadband users are significantly more likely

<sup>30</sup> 2007 ConnectKentucky Residential Technology Assessment: "Q16E. About how many trips to a doctor, hospital or medical center have you saved by finding information online?" n= 191 respondents with broadband service at home who obtain healthcare information online.

<sup>31</sup> 2007 ConnectKentucky Residential Technology Assessment: "Q15C. I need to drive less often or fewer miles because of the things I do online" n=243 respondents with broadband service at home.

<sup>32</sup> 2007 ConnectKentucky Residential Technology Assessment: "Q16C. About how many miles of driving per month do you save by having internet service at home?" n=157 respondents with broadband service at home who agree that Internet service at home reduces the amount they need to drive.

<sup>33</sup> <http://embarq.vri.org/documents/Schipper-VehicEfficiency.pdf>.

<sup>34</sup> <http://ceedweb.org/PDFs/CO2Worksheet.pdf>.

<sup>35</sup> Using the average cost of carbon emission offsets charged by the 21 major U.S. carbon offset providers, as reported by Carbon Catalog ([www.carboncatalog.org](http://www.carboncatalog.org)) on 1/23/2009.

<sup>36</sup> 2007 ConnectKentucky Residential Technology Assessment.

than dial-up users to agree that doing things online saves them time. Broadband users report saving nearly 40% more time than dial-up users. The average broadband user reports saving 15 hours a month by conducting transactions online.<sup>37</sup> The time saved by the additional 297,000 individuals accessing broadband in Kentucky above the expected amount translates into approximately 53.4 million hours saved each year. Assuming that one hour saved is equal in value to at least one half hour of wage earned, these saved hours can account for an estimated \$429.8 million in value.<sup>38</sup>

**Summary of ConnectKentucky Impact:** The direct economic impacts of the additional 297,000 individuals accessing broadband in Kentucky can be quantified directly as follows:

- \$1.06 billion in annual direct wages from jobs created or saved in Kentucky
- \$9.4 million in annual self-reported healthcare costs savings
- \$92.1 million per year in mileage savings from broadband preventing unnecessary driving
- 46.7 million lbs of CO<sub>2</sub> emissions reduction per year in Kentucky (\$250,000 emission credits)
- \$429.8 million value in the 53.4 million hours saved per year from accessing broadband at home

Taken together, the combined estimate for the direct economic impact in Kentucky associated with a higher than expected statewide gain in broadband adoption is \$1.59 billion annually.

**Looking forward, if Kentucky continues to invest in an effective statewide broadband adoption strategy through ConnectKentucky, the state can expect to realize<sup>39</sup>:**

- **\$1.06 billion** in annual direct wages from jobs created or saved in Kentucky
- **\$9.3 million** in annual self-reported healthcare costs savings
- **\$91.1 million** per year in mileage savings from broadband preventing unnecessary driving
- **46.1 million** lbs of CO<sub>2</sub> emissions reduction per year in Kentucky (\$249,000) emission credits)
- **\$424.9 million** value in the 52.8 millions hours saved per year from accessing broadband at home

**The total estimated impact of continuing the ConnectKentucky program in Kentucky is \$1.59 billion annually.**

<sup>37</sup> 2007 ConnectKentucky Residential Technology Assessment: "Q15B. Doing things online saves me time?" n=243 respondents with broadband service at home, and 113 respondents with dial-up service at home.

<sup>38</sup> The estimates regarding the value of time saved is based on the assumption that broadband subscribers can use their extra free time to work more hours, contribute to communities through volunteer time or simply enjoy additional leisure time which has been shown to enhance productivity while on the clock.

<sup>39</sup> See Table 3. Kentucky impact figures for future years compared to the Kentucky 2005-2007 impact period will be similar, but not exact, as a result of using consistent methodology with varying employment data from year to year. Additionally, forward projections are rounded down from the exact 7.08 percentage point growth to a seven percentage growth point across states.

## Estimating The Economic Impact of A Connected Nation

Despite the widely recognized benefits associated with broadband in the United States,<sup>40</sup> there are still many areas in the United States where broadband is simply unavailable.

Accentuating the challenge is an overall lack of dependable data regarding exactly where broadband is and is not available.<sup>41</sup>

A 2006 GAO report concluded that “when the availability of broadband to households, as well as demographic characteristics, are taken into account, rural households no longer appear less likely than urban households to subscribe to broadband. That is, the difference in the subscribership to broadband among urban and rural households appears to be related to the difference in availability of the service across these areas, and not to a lower disposition of rural households to purchase the service.”<sup>42</sup> Therefore, it appears that with the universal availability of broadband, the current 31% rural broadband adoption rate would eventually become much closer to the urban broadband adoption rate of 52%.

If the rest of the states in the U.S. were empowered to develop initiatives similar to accelerate broadband, one would expect to see increased adoption in suburban and urban areas, but especially in rural areas, as rural areas are most significantly affected by broadband availability increases. In fact, if every state could accelerate their broadband adoption by seven percentage points above the expected, like Kentucky did with the ConnectKentucky initiative, one would expect the following impact for the United States as a whole (for individual state results see Table 3):

- **\$92 billion** through 2.4 million jobs created or saved annually<sup>43</sup>
- **\$662 million** saved per year in reduced healthcare costs
- **\$6.4 billion** per year in mileage savings from preventing unnecessary driving
- **\$18 million** in carbon credits associated with 3.2 billion fewer lbs of CO<sub>2</sub> emissions per year in the United States
- **\$35.2 billion** in value from 3.8 billion more hours saved per year from accessing broadband at home
- **\$134 billion** per year in total direct economic impact for the United States

**If every state were to implement programs modeled after ConnectKentucky and experience a modest increase in the growth rate of broadband adoption over what should be expected without a broadband focused program, the estimate of direct economic benefit is more than \$134 billion per year (Table 2).**

<sup>40</sup> Robert W. Crandall, Robert E. Litan, and William Lehr, “The Effects of Broadband Deployment on Output and Employment: A Cross-Sectional Analysis Of U.S. Data,” Issues in Economic Policy: The Brookings Institution, No. 6, July 2007.

<sup>41</sup> According to a report by John Horrigan, Associate Director of Research for the Pew Internet and American Life Project, “When the Pew Internet Project asked dial-up users in 2004 whether broadband was available where they live, 15% said it was not available, a figure that stood at 27% for rural Americans. Those numbers might be lower in 2007, but there is a dearth of reliable nationwide information on where broadband is unavailable,” U.S. Lags behind Why It Will Be Hard to Close the Broadband Divide by John B. Horrigan, page 3-4. [http://www.pewinternet.org/pdfs/Broadband\\_Commentary.pdf](http://www.pewinternet.org/pdfs/Broadband_Commentary.pdf). Friday, 10 August 2007.

<sup>42</sup> General Accounting Office: Broadband Deployment Is Extensive Throughout the United States, but It Is Difficult to Assess the Extent of Deployment Gaps in Rural Areas, May 2006, p. 30.

<sup>43</sup> Job growth is calculated using 2006 private, non-farm employment from the Bureau of Labor Statistics in accordance with Crandall et al. methodology, using a coefficient of .593 to calculate job growth over a two year period. Job growth is estimated over a two year period assuming a seven percentage point increase in broadband adoption above expected growth. Direct income growth is estimated using May 2006 wage estimates for each state from the Bureau of Labor Statistics. All figures are annualized.



**Table 2: A State-by-State Summary of the Annual Economic Impact Associated with Accelerating Broadband for Each State**

	Total Annual Economic Impact	Jobs Created or Saved Annually	Direct Annual Income Growth from the Increase in Broadband	Average Annual Healthcare Costs Saved	Average Annual Mileage Costs Saved	Average Annual Hours Saved	Annual Value of Hours Saved	Average Annual lbs of CO <sub>2</sub> Emissions Cut	Value of Carbon Offsets
Alabama	\$1,692,307,789	33,451	\$1,118,595,872	\$10,187,810	\$99,216,165	57,715,987	\$464,036,535	50,255,886	\$271,408
Alaska	\$317,188,552	4,846	\$212,849,167	\$1,484,307	\$14,018,776	8,408,897	\$88,797,954	7,100,920	\$38,349
Arizona	\$2,498,704,035	46,358	\$1,680,954,424	\$13,659,679	\$129,327,410	77,384,824	\$674,408,744	65,508,111	\$353,778
Arkansas	\$963,684,222	20,577	\$635,196,771	\$6,226,667	\$60,352,819	35,275,319	\$261,742,869	30,570,465	\$165,097
California	\$17,287,110,398	262,042	\$11,577,026,715	\$80,761,066	\$768,277,259	457,527,657	\$4,858,943,717	389,154,873	\$2,101,641
Colorado	\$2,351,248,032	39,665	\$1,644,109,297	\$10,529,720	\$101,888,351	59,652,980	\$594,441,946	51,609,426	\$278,718
Connecticut	\$1,938,746,950	29,765	\$1,368,285,351	\$7,763,882	\$76,465,884	43,983,951	\$486,022,659	38,732,204	\$209,174
Delaware	\$452,660,929	7,796	\$324,919,691	\$1,890,627	\$18,478,024	10,710,782	\$107,322,040	9,359,659	\$50,547
Florida	\$7,531,595,950	143,405	\$5,136,752,665	\$40,072,871	\$399,029,270	227,020,858	\$1,954,649,591	202,119,981	\$1,091,554
Georgia	\$3,907,660,865	71,059	\$2,639,837,894	\$20,743,080	\$197,143,135	117,513,714	\$1,049,397,466	99,858,756	\$539,290
Hawaii	\$578,001,026	10,284	\$397,274,880	\$2,847,646	\$28,011,744	16,132,486	\$149,790,130	14,188,767	\$76,627
Idaho	\$565,942,345	10,859	\$378,002,347	\$3,248,525	\$30,661,907	18,403,549	\$153,945,689	15,531,152	\$83,876
Illinois	\$6,207,888,316	105,622	\$4,321,003,997	\$28,425,487	\$273,919,566	161,036,091	\$1,583,789,952	138,748,261	\$749,314
Indiana	\$2,679,847,808	52,863	\$1,860,248,442	\$13,985,762	\$134,940,477	79,232,151	\$670,303,994	68,351,293	\$369,133
Iowa	\$1,237,290,273	26,064	\$866,632,289	\$6,605,940	\$64,670,465	37,423,974	\$299,204,671	32,757,480	\$176,908
Kansas	\$1,154,893,120	22,828	\$798,081,721	\$6,123,002	\$58,974,133	34,688,036	\$291,552,939	29,872,121	\$161,325
Kentucky	\$1,587,239,467	31,699	\$1,061,603,244	\$9,317,330	\$91,153,941	52,784,546	\$424,915,597	46,172,134	\$249,354
Louisiana	\$1,556,816,993	31,313	\$1,030,199,954	\$9,498,299	\$91,233,861	53,809,773	\$425,635,307	46,212,615	\$249,572
Maine	\$544,607,277	10,577	\$371,878,460	\$2,927,562	\$29,575,200	16,585,225	\$140,145,152	14,980,703	\$80,904
Maryland	\$2,813,857,230	43,922	\$1,933,873,816	\$12,440,005	\$121,232,549	70,475,128	\$745,979,225	61,407,827	\$331,635
Massachusetts	\$3,840,751,425	5,411	\$2,765,167,106	\$14,259,724	\$141,613,044	80,784,197	\$919,324,165	71,731,143	\$387,386
Michigan	\$4,637,508,875.7	6,200	\$3,141,722,166	\$22,363,953	\$217,268,265	126,696,281	\$1,255,560,149	110,052,723	\$594,343
Minnesota	\$2,791,482,532	48,691	\$2,021,172,957	\$11,446,205	\$111,405,012	64,845,051	\$647,153,606	56,429,893	\$304,751
Mississippi	\$905,743,973	18,723	\$570,305,184	\$6,447,452	\$61,452,087	36,526,113	\$267,371,146	31,127,277	\$168,104
Missouri	\$2,501,367,723	48,592	\$1,733,262,586	\$12,942,827	\$126,066,630	73,323,711	\$628,750,822	63,856,431	\$344,858
Montana	\$337,218,046	7,198	\$225,220,226	\$2,092,557	\$20,700,888	11,854,754	\$89,147,748	10,485,604	\$56,628
Nebraska	\$783,129,301	16,280	\$558,411,615	\$3,917,222	\$37,725,489	22,191,847	\$182,971,776	19,109,062	\$103,199
Nevada	\$1,175,028,256	23,482	\$845,359,452	\$5,528,117	\$52,939,525	31,317,891	\$271,056,344	26,815,416	\$144,817
New Hampshire	\$634,062,329	11,374	\$446,419,295	\$2,912,766	\$28,960,278	16,501,406	\$155,690,768	14,669,227	\$79,222
New Jersey	\$4,636,703,229	71,109	\$3,231,890,665	\$19,326,718	\$188,794,006	109,489,738	\$1,196,175,390	95,629,679	\$516,451
New Mexico	\$694,119,894	13,184	\$447,977,912	\$4,329,844	\$41,293,689	24,529,436	\$200,405,489	20,916,460	\$112,960
New York	\$9,909,345,962	147,884	\$6,776,023,161	\$42,767,217	\$420,637,031	242,284,874	\$2,668,767,889	213,064,943	\$1,150,663
North Carolina	\$3,626,061,051	69,432	\$2,466,214,037	\$19,619,004	\$190,523,446	111,145,595	\$949,183,383	96,505,690	\$521,182
North Dakota	\$264,354,171	5,755	\$186,703,927	\$1,408,578	\$13,960,441	7,979,877	\$62,243,037	7,071,371	\$38,189
Ohio	\$5,165,789,104	96,312	\$3,598,197,715	\$25,426,175	\$247,968,322	144,044,384	\$1,293,518,569	125,603,198	\$678,323
Oklahoma	\$1,270,219,076	25,603	\$833,901,696	\$7,928,700	\$76,474,057	44,917,679	\$351,705,426	38,736,344	\$209,197
Oregon	\$1,653,094,131	29,383	\$1,133,296,659	\$8,197,950	\$80,851,438	46,443,033	\$430,526,912	40,953,615	\$221,171
Pennsylvania	\$5,618,124,596	103,916	\$3,905,168,316	\$27,558,567	\$274,060,290	156,124,817	\$1,410,587,724	138,819,542	\$749,699
Rhode Island	\$517,684,416	8,896	\$360,983,164	\$2,364,979	\$23,573,532	13,398,078	\$130,698,255	11,940,682	\$64,486
South Carolina	\$1,628,562,600	32,629	\$1,089,806,446	\$9,572,467	\$93,461,551	54,229,946	\$435,466,470	47,341,006	\$255,666
South Dakota	\$295,051,946	6,718	\$204,642,266	\$1,732,113	\$16,753,192	9,812,771	\$71,878,545	8,485,981	\$45,829
Tennessee	\$2,450,739,704	49,142	\$1,682,608,846	\$13,377,207	\$130,689,201	75,784,562	\$623,706,946	66,197,898	\$357,503
Texas	\$9,424,006,380	173,117	\$6,303,206,537	\$52,074,637	\$486,029,518	295,013,274	\$2,581,366,143	246,188,147	\$1,329,546
Utah	\$1,066,414,382	20,728	\$736,673,777	\$5,648,921	\$50,494,153	32,002,271	\$273,459,402	25,576,764	\$138,128
Vermont	\$275,359,624	5,270	\$191,553,395	\$1,382,086	\$13,953,557	7,829,796	\$68,432,416	7,067,884	\$38,170
Virginia	\$3,764,632,826	63,344	\$2,625,619,577	\$16,930,580	\$165,834,683	95,915,137	\$955,794,341	84,000,111	\$453,645
Washington	\$3,056,439,915	48,365	\$2,075,358,306	\$14,168,025	\$138,603,982	80,264,707	\$827,930,448	70,206,965	\$379,155
West Virginia	\$616,017,781	12,690	\$398,961,244	\$4,028,290	\$40,504,254	22,821,071	\$172,413,192	20,516,588	\$110,800
Wisconsin	\$2,613,219,462	50,748	\$1,863,975,895	\$12,308,818	\$120,871,181	69,731,928	\$615,732,922	61,224,784	\$330,646
Wyoming	\$215,933,328	4,383	\$150,308,706	\$1,140,841	\$11,197,254	6,463,094	\$53,255,896	5,671,736	\$30,630
<b>TOTAL</b>	<b>\$134,235,457,615</b>	<b>2,352,552</b>	<b>\$91,927,439,829</b>	<b>\$661,941,807</b>	<b>\$6,413,230,933</b>	<b>3,750,033,246</b>	<b>\$35,215,301,497</b>	<b>3,248,488,796</b>	<b>\$17,543,549</b>

## Policy Recommendations

Many have recognized the need for a national broadband policy. The case for such a policy has been eloquently captured in Dr. Robert Atkinson's recent "Framing a National Broadband Policy." In that report, Dr. Atkinson suggests that if left to market forces alone and with no intervening factor, broadband is not likely to be adopted at a rate that is universally pleasing or constructive. It stands to reason that national policy-makers would make broadband expanding policy a priority as a platform for developing solutions in a number of critical areas: healthcare, education, environmental degradation and even homeland security.

As federal policy attempts to provide solutions to the need for a nationwide ubiquitous broadband, the data from the Kentucky experience and the assessment of Connected Nation analysts conclude that the most constructive national solution for broadband expansion is to enable state governments to implement demand creating and supply enhancing programming. Given the cultural, structural, regulatory and topographical variables that influence how broadband can expand, a state is the largest subsystem that can be identified in which to enact effective and cost efficient solutions. Supporting this assumption is once again the data from the ConnectKentucky program. From 2005 to 2007, the time frame under consideration for this study, more than \$740 million in private capital was invested in Kentucky telecommunications infrastructure. The public investment in the program implementation and research that encouraged private telecommunications investment was approximately \$7 million dollars. The household availability of broadband in Kentucky went from 60% to 95% during that time.

Based on Connected Nation's experience in Kentucky and after launching similar initiatives in other states, Connected Nation advocates for passage and enactment of legislation that includes:

- Recognition of the critical role of public-private partnerships in broadband expansion
- Federal enabling of state/local response to broadband deployment and demand aggregation
- Recognition of the indispensable role non-profits play in program implementation

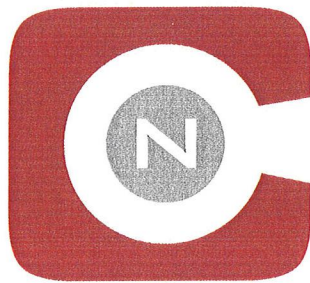
Connected Nation has supported the following bills in the 110th Congress that directly seek to replicate and help export the ConnectKentucky model nationwide:

- S. 1190/H.R. 3627 – the Connect the Nation Act of 2007
- S. 1492 – the Broadband Data Improvement Act
- H.R. 3919 – the Broadband Census of America Act of 2007

**Connected Nation is encouraged that each of these broadly supported efforts would effectively enable statewide broadband initiatives that can accelerate broadband growth. The stated level of funding authorization among the four currently viable bills ranges from \$40 million per year (S. 1190 or S. 1492) to H.R. 3919's \$145 million for FY2010 (with \$70 million and \$120 million authorized in the two preceding fiscal years). Relative to the expected annual impact of \$134 billion, the return on investment related to the legislation provides a compelling case for passage.**

Time is of the essence. The United States can ill afford the passing of another year without policies that will stimulate broadband growth, particularly in previously underserved or overlooked areas. Much consensus building has occurred around broadband policy needs during this Congress. The time for action is now.





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**Tab B**

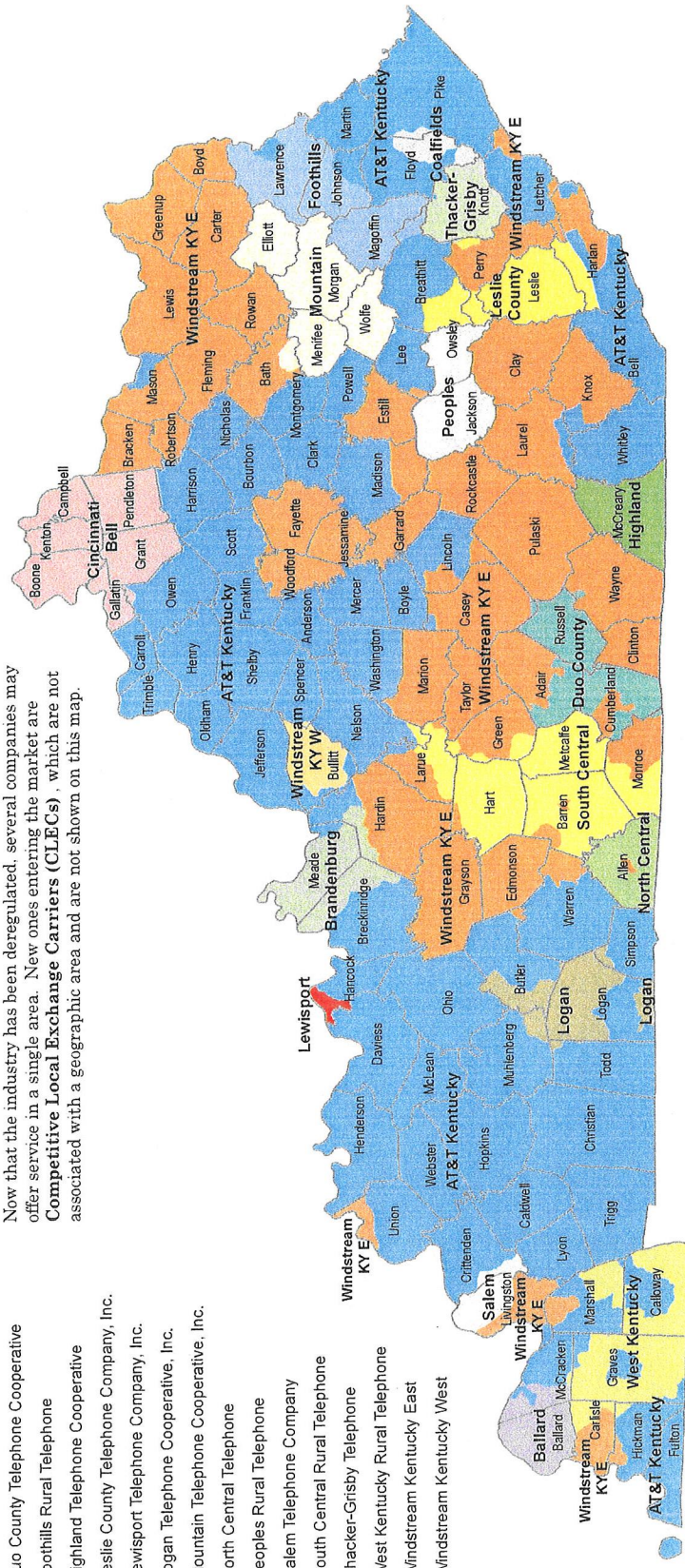
# Incumbent Local Exchange Carriers

The colored areas are based on the exchange area, the geographic area in which telephone prices and services are the same for an incumbent local exchange carrier. These areas do not necessarily coincide with county boundaries.

**Incumbent Local Exchange Carriers (ILECs)** are the companies originally franchised by the Kentucky Public Service Commission as the sole provider of local telephone service within a specific geographic area. This map shows those companies that were providing service on the effective date of the Telecommunications Act of 1996 or their successor companies.

Now that the industry has been deregulated, several companies may offer service in a single area. New ones entering the market are **Competitive Local Exchange Carriers (CLECs)**, which are not associated with a geographic area and are not shown on this map.

- Legend**
- Counties
  - AT&T Kentucky
  - Ballard Rural Telephone Cooperative
  - Brandenburg Telephone Company, Inc.
  - Cincinnati Bell Telephone Company
  - Coalfields Telephone Company
  - Duo County Telephone Cooperative
  - Foothills Rural Telephone
  - Highland Telephone Cooperative
  - Leslie County Telephone Company, Inc.
  - Lewisport Telephone Company, Inc.
  - Logan Telephone Cooperative, Inc.
  - Mountain Telephone Cooperative, Inc.
  - North Central Telephone
  - Peoples Rural Telephone
  - Salem Telephone Company
  - South Central Rural Telephone
  - Thacker-Grisby Telephone
  - West Kentucky Rural Telephone
  - Windstream Kentucky East
  - Windstream Kentucky West



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