NTCA
NATIONAL TELECOMMUNICATIONS COOPERATIVE ASSOCIATION
The Voice of Rural Telecommunications
www.ntca.org

October 17, 2012

***Ex Parte* Notice**

Ms. Marlene H. Dortch, Secretary
Federal Communications Commission
445 12th Street, S.W.
Washington, D.C. 20554

***Connect America Fund,* WC Docket No. 10-90; *A National Broadband Plan for Our Future,* GN Docket No. 09-51; *Establishing Just and Reasonable Rates for Local Exchange Carriers,* WC Docket No. 07-135; *High-Cost Universal Service Support,* WC Docket No. 05-337; *Developing a Unified Intercarrier Compensation Regime,* CC Docket No. 01-92; *Federal-State Joint Board on Universal Service,* CC Docket No. 96-45; *Lifeline and Link-Up,* WC Docket No. 03-109; *Universal Service Reform – Mobility Fund,* WT Docket No. 10-208**

Dear Ms. Dortch:

On Monday, October 15, 2012, the undersigned, on behalf of the National Telecommunications Cooperative Association ("NTCA"), together with Archie Macias, General Manager of Wheat State Telephone Company, and Brian Boisvert, Chief Executive Officer/General Manager of Wilson Communications, met separately with Commissioner Ajit Pai and his Legal Advisor, Nicholas Degani, and with Priscilla Delgado Argeris, Legal Advisor to Commissioner Jessica Rosenworcel.

In each meeting, the companies provided an overview of how lingering regulatory uncertainty was frustrating their efforts to deliver the promise of quality broadband services as contemplated by the Federal Communications Commission (the "Commission") and as demanded by consumers. Each company described the sparsely populated nature of the areas they serve, the lean operations they maintain to help deliver services in these areas, the steps they have taken to share resources and obtain greater efficiencies, and the many benefits they deliver to the communities they serve and to the broader state and national economy through their investments and operations. The companies explained that, while they are each in the process of performing necessary upgrades to their networks to ensure the ability to deliver at least 4/1 Mbps broadband in rural areas, these plans are on hold pending greater transparency and visibility into the effects of the regression analysis-based caps and the possibility of further changes arising out of the Further Notice of Proposed Rulemaking pending in the above-referenced proceedings.

The companies urged the Commission to take concrete steps in short order to provide more predictable support mechanisms that would enable them to finalize further deployment plans, and to keep in mind as reforms continue the needs of the many consumers in small company serving areas that do not yet have access to even 4/1 Mbps broadband. The companies indicated strong support for updates to universal service mechanisms, but asked the Commission to ensure that such reforms build upon the best aspects of those mechanisms that have demonstrated success in lieu of replacing proven systems altogether. In particular, the companies encouraged the Commission to take steps to address fundamental and still-unsolved questions relating to a broadband-focused reform roadmap, such as providing universal service support in high-cost areas where consumers desire to obtain broadband without being required to take legacy services as well.

Copies of materials provided during the meetings are attached hereto. Pursuant to Section 1.1206 of the Commission's rules, a copy of this letter is being filed via ECFS. If you have any questions, please do not hesitate to contact the undersigned.

Sincerely,

/s/ Michael R. Romano
Michael R. Romano
Senior Vice President – Policy

Enclosures

cc: Commissioner Ajit Pai
Nicholas Degani
Priscilla Delgado Argeris

50*th* Anniversary
1961-2011

ECONOMIC POLICY / BRIEFING PAPER

Hudson Institute

The Economic Impact of Rural Telecommunications: The Greater Gains

Hanns Kuttner

October 11, 2011

Prepared for the
Foundation for Rural Service

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The Foundation for Rural Service (FRS), in cooperation with the National Telecommunications Cooperative Association (NTCA), seeks to sustain and enhance the quality of life throughout rural America by advancing an understanding of rural telecommunications issues.

FRS educates the public on the benefits of a nationwide telecommunications network, and promotes rural connectivity as an essential link in this network. FRS believes that rural communities—regardless of their size or location—deserve the same connection to the world as do residents of larger, urban environments. To carry out its educational and advancement mission, FRS develops and disseminates information about rural telecom issues and encourages support of community based telecom providers and the communities they serve.

Established in 1994 by NTCA, FRS is a non-profit, 501(c)(3) organization. http://www.frs.org.

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Executive Summary

- Rural telecommunications companies contributed $14.5 billion to the economies of the states in which they operated in 2009. Of this, $10.3 billion was through their own operations and $4.2 billion was through the follow-on impact of their operations. The cumulative $14.5 billion can be referred to as "final economic demand."

- While the industry's output is telecommunications services in rural areas, the economic activity it generates accrues both to the rural areas served and also to urban areas as well.

    - Surprisingly, only one-third (34 percent or $4.97 billion) of the $14.5 billion final economic demand generated by rural telecom companies accrues to rural areas; the other two-thirds (66 percent or $9.57 billion) redounds to the benefit of urban areas.

- The rural telecommunications sector supported 70,700 jobs in 2009, both through its own employment and the employment that its purchases of goods and services generated.

    - Jobs supported by economic activity created by rural telecommunications companies are more concentrated in urban areas: 54.3 percent are in rural areas; 45.7 percent are in urban areas. Relatively higher wages in the telecommunications sector drive this result.

- This level of economic activity and employment is consistent with the values underpinning access to advanced telecommunications and advanced services in all regions of the nation, as supported by the Universal Service Fund (USF).

    - If USF support declined or disappeared, the result would draw from two scenarios. In one, companies would raise prices paid by customers and rural users would pay more for telecommunications service. In the other, companies would cut capital investment and the network would shrink over time.

Introduction

This study presents evidence about the direct and indirect economic effects of the rural telecommunications industry. The direct effects consider the industry from the perspective of national income accounting (the approach used to calculate the Gross Domestic Product (GDP) measure). The indirect economic effects are not measured in income accounting. They reflect telecommunication's role as a catalyst and limiting factor in the production of other goods and services. Another set of indirect effects stem from the nature of rural economies where rural telecommunications companies are some of the relatively largest and most complex companies.

The economic effects reflect the industry's current scale. This scale follows from the level of support it receives from the Universal Service Fund (USF). If USF support declined or disappeared, the industry would change. The nature of that change would draw from two scenarios the study presents. In one, companies respond by raising prices. In the other, companies cut capital investment, a step that would lead to shrinkage of the network over time.

All companies have direct effects on the economy. They employ workers and they buy goods and services from other parts of the economy. One way rural telecommunications companies have an impact on the economy is through these direct effects.

Other impacts are indirect. Models of economic markets often employ the simplifying assumption that markets costlessly link buyers and sellers. However, the real economy is distributed across space; in the case of the United States economy, this space is 3.79 million square miles that includes densely populated cities and sparsely populated regions.[1] The indirect effects reflect how geography and the economy interact. Telecommunications enable other goods and services to be sold. Another indirect effect is the role that telecommunications providers play in rural communities. This report presents evidence on both the direct and indirect economic impacts of rural telecommunications.

The size of the economic impacts reflects the commitment Congress has made to universal telecommunications service, a commitment that "quality services . . . be available at just, reasonable, and affordable rates;" that "[a]ccess to advanced telecommunications and information services should be provided in all regions of the Nation;" and, that "[c]onsumers in all regions of the Nation . . . should have access to telecommunications and information services . . . that are reasonably comparable to those services provided in urban areas and that are available at rates that are reasonably comparable to rates charged for similar services in urban areas."[2] The statutory mandate reflects the reality that in thinly populated places, the cost of delivering service—the cost for each household or business or school or hospital—is higher than in urban or suburban areas.

Without the policies that flow from our current commitment, the scale and scope of rural

[1] At the state level, the most densely populated state (New Jersey) is almost 1,000 times more densely populated than the least densely populated state (Alaska) and is more than 200 times as densely populated as the second least densely populated state (Wyoming). U.S. Census Bureau, "Resident Population Data," September 2011, http://2010.census.gov/2010census/data/apportionment-dens-text.php.
[2] 47 U.S.C. § 254(b).

telecommunications would be smaller, as would its economic impact. Without the policies, service would cost more in rural areas. With current policies, household spending on telephone service is similar across urban and rural areas.[3]

The short-run impact of higher prices would be higher costs for consumers. The long-run impact would be fewer people served by the telecommunications network as some consumers respond by dropping services. Unfolding price spirals or capital spending decreases could threaten the end of viability for parts of the network in rural areas. The diminished network would reduce the value of the telecommunications network. Those who lose access would lose the most. Those who retain access would lose the value of connecting to those no longer on the network.

The mechanism for making good on the commitment to universal access is a set of policies administered through the Universal Service Fund (USF). The USF is funded by companies that provide access to the network. The USF then distributes funds through multiple mechanisms to increase access to the network. (The details of how the fund works appear in Appendix A.)

The services supported by the USF have an economic impact on both rural and urban areas. When looking at rural providers as companies that buy goods and services to produce their services, the larger share of the direct economic impact of rural telecomm providers results in economic activity in urban rather than rural areas. This urban-favoring result arises because much of the services and equipment that local-service telephone companies require are produced in urban areas. Rural local-service telephone companies spend a good deal of their revenues to buy services and equipment that comes from distant cities. USF disbursements to rural providers, made to support universal service at comparable prices, thus flow to urban areas, sometimes to places within the same state, sometimes to neighboring states, and sometimes to distant regions of the United States.

This report quantifies the current size of these impacts, as measured by economic activity and jobs. While the report focuses on current impact, technology change is rapid in the telecommunications sector. The future economic impact will be different. Understanding the economic impact of rural telecommunications requires both looking at flows within the current economy and the role telecommunications might play in the future.

Expanded telecommunications capacity in rural places will also increase the ability of urban areas to sell services to rural customers and vice versa. In this way, the economic linkages between rural and urban areas will deepen, enhancing communications, commerce and employment. “Telehealth” and distance learning are two examples of how this effect already works. “Telehealth” allows images and clinical data to flow from patients in rural areas to doctors in cities, making it possible for patients to receive diagnoses and advice without traveling long distances. Distance learning allows students in rural—and urban—places to take online courses at distant schools. The doctors provide their services to additional patients, and the

[3] In 2010, the average expenditure for telephone service across consumer units (roughly, households) was $1,184 in urban areas and $1,113 in rural areas, amounting to 2.4 percent of total expenditures for urban and 2.8 percent for rural consumers. Bureau of Labor Statistics, “Housing Tenure and Type of Area: Average Annual Expenditures and Characteristics, Consumer Expenditure Survey, 2010,” Washington, DC, 2011, http://www.bls.gov/cex/2010/Standard/tenure.pdf.

schools enroll more students. The consumers of these services benefit from having opportunities to improve their health and pursue learning opportunities that they otherwise could not pursue. In these cases, fees paid to health-care professionals and to schools represent economic activity made possible by telecommunications. These cases where telecommunications provides the catalyst for other economic activity are not measured in the direct economic effects of rural telecommunications.

The Impact

Rural telecommunications providers directly added $10.4 billion dollars to the U.S. economy in 2009 (Table 1).[4] Taking account of spending by telecom employees of their wages and the impact of purchases by telecom companies of goods and services, the total economic effect was $14.5 billion of annual final demand in the states where the companies are located. The "multiplier effect" takes account of secondary and subsequent spending. For example, a telecom employee spends a dollar at the bakery and the baker spends an additional sum that is less than a dollar at the hardware store. In this way, an infusion of outside money—the transfers to the telecom company—generates economic activity that is greater than the initial sum. This multiplier effect can be seen in Table 1 in the difference between "direct impact" and "total impact."

[4] Rural telecommunications providers are, in this report, the incumbent exchange carriers who serve areas that the Federal Communications Commission has designated as "rural." While other companies provide service in these areas, there is no data available about the expenses these firms have in rural areas and thus it is not possible to distinguish their impact across rural and urban areas. Appendix B, "Analyzing Economic Impacts," discusses data sources and their limitations.

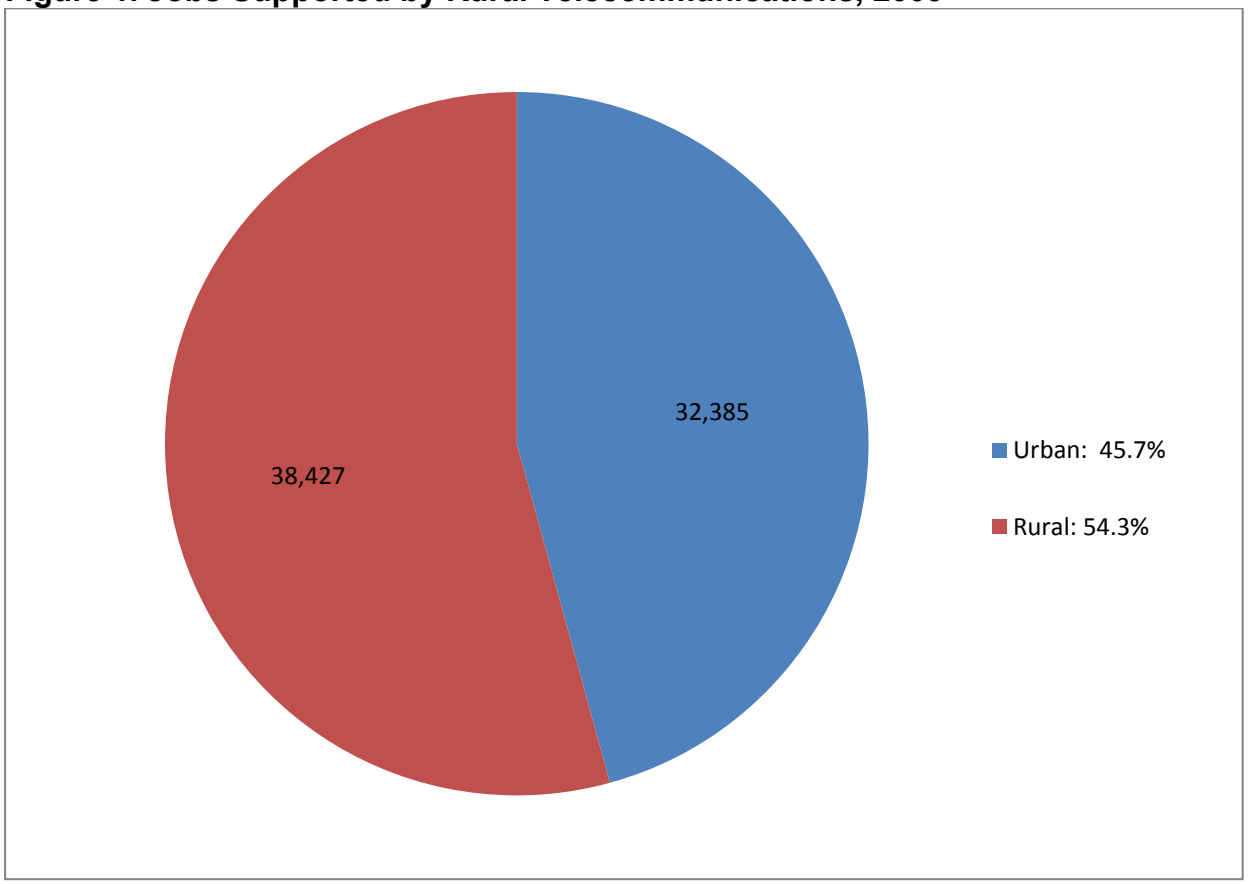
Table 1. Economic Impact of Rural Telecommunications, 2009

	Direct Impact ($, millions)	Additional Impact ($, millions)	Total Impact ($, millions)	Employment (number of jobs)
Alabama	144.8	52.1	196.9	1,031
Alaska	197.5	65.6	263.1	1,044
Arizona	154.8	60.0	214.8	1,103
Arkansas	287.5	88.9	376.3	1,535
California	217.9	127.6	345.5	1,643
Colorado	117.5	62.3	179.8	853
Connecticut	0.0	0.0	0.0	0
Delaware	0.0	0.0	0.0	0
DC	0.0	0.0	0.0	0
Florida	743.8	322.5	1,066.3	6,051
Georgia	431.7	221.0	652.8	3,263
Hawaii	26.5	10.4	36.8	178
Idaho	139.4	37.6	177.0	917
Illinois	187.6	91.7	279.4	1,339
Indiana	201.1	65.6	266.7	1,271
Iowa	257.0	57.5	314.4	1,454
Kansas	280.6	102.7	383.4	1,303
Kentucky	187.0	61.2	248.2	1,259
Louisiana	172.2	64.4	236.6	1,293
Maine	68.4	21.3	89.7	460
Maryland	4.1	2.0	6.1	29
Massachusetts	1.5	0.7	2.1	9
Michigan	140.5	51.2	191.6	976
Minnesota	395.0	150.8	545.8	2,567
Mississippi	79.1	21.5	100.6	499
Missouri	315.9	140.7	456.7	1,948
Montana	154.6	45.5	200.1	1,073
Nebraska	123.0	32.5	155.5	689
Nevada	52.2	16.9	69.1	332
New Hampshire	24.3	9.2	33.5	152
New Jersey	62.1	31.6	93.7	382
New Mexico	112.5	40.7	153.3	858
New York	265.8	123.6	389.4	1,442
North Carolina	746.7	285.9	1,032.6	5,324
North Dakota	136.5	29.0	165.6	626
Ohio	271.7	108.5	380.2	1,893
Oklahoma	252.3	106.3	358.6	2,002
Oregon	155.5	55.7	211.3	1,046
Pennsylvania	476.4	224.4	700.8	3,285
Rhode Island	0.0	0.0	0.0	0
South Carolina	370.2	137.9	508.1	2,768
South Dakota	141.4	30.1	171.5	746
Tennessee	318.9	148.2	467.1	2,648
Texas	800.6	431.2	1,231.7	6,491
Utah	65.7	29.2	94.9	601
Vermont	40.2	12.5	52.6	243
Virginia	241.2	117.5	358.8	1,477
Washington	185.8	81.6	267.3	1,148
West Virginia	92.9	27.2	120.2	527
Wisconsin	412.8	131.7	544.6	2,667
Wyoming	49.2	11.6	60.8	266
Total	10,304.0	4,148.0	14,452.0	70,712

Source: Hudson Institute modeling using data from Federal-State Joint Board on Universal Service, *Universal Service Monitoring Report: CC Docket No. 98-202 (Data Received Through October 2010)*, Washington, DC: Federal-State Board on Universal Service, 2010; and an unpublished Bureau of Economic Analysis table containing Regional Input-Output Modeling System (RIMS II) data from 2008.

This economic activity created demand that supported 70,700 jobs spread throughout the economy.[5] While some are jobs held by people employed by telecom companies, more are jobs that rely on the goods and services purchased by telecom companies and their employees. The supplier sector, discussed in more detail below, ranges from companies that erect poles and string wire and fiber to engineers and lawyers who design network expansions and assure regulatory compliance. It is moreover extended through the actions of telecomm employees spending their wages and generating tax revenues.

Figure 1. Jobs Supported by Rural Telecommunications, 2009



Source: Hudson Institute modeling using data from Federal-State Joint Board on Universal Service, *Universal Service Monitoring Report: CC Docket No. 98-202 (Data Received Through October 2010)* Washington, DC: Federal-State Board on Universal Service, 2010; and an unpublished Bureau of Economic Analysis table containing Regional Input-Output Modeling System (RIMS II) data from 2008.

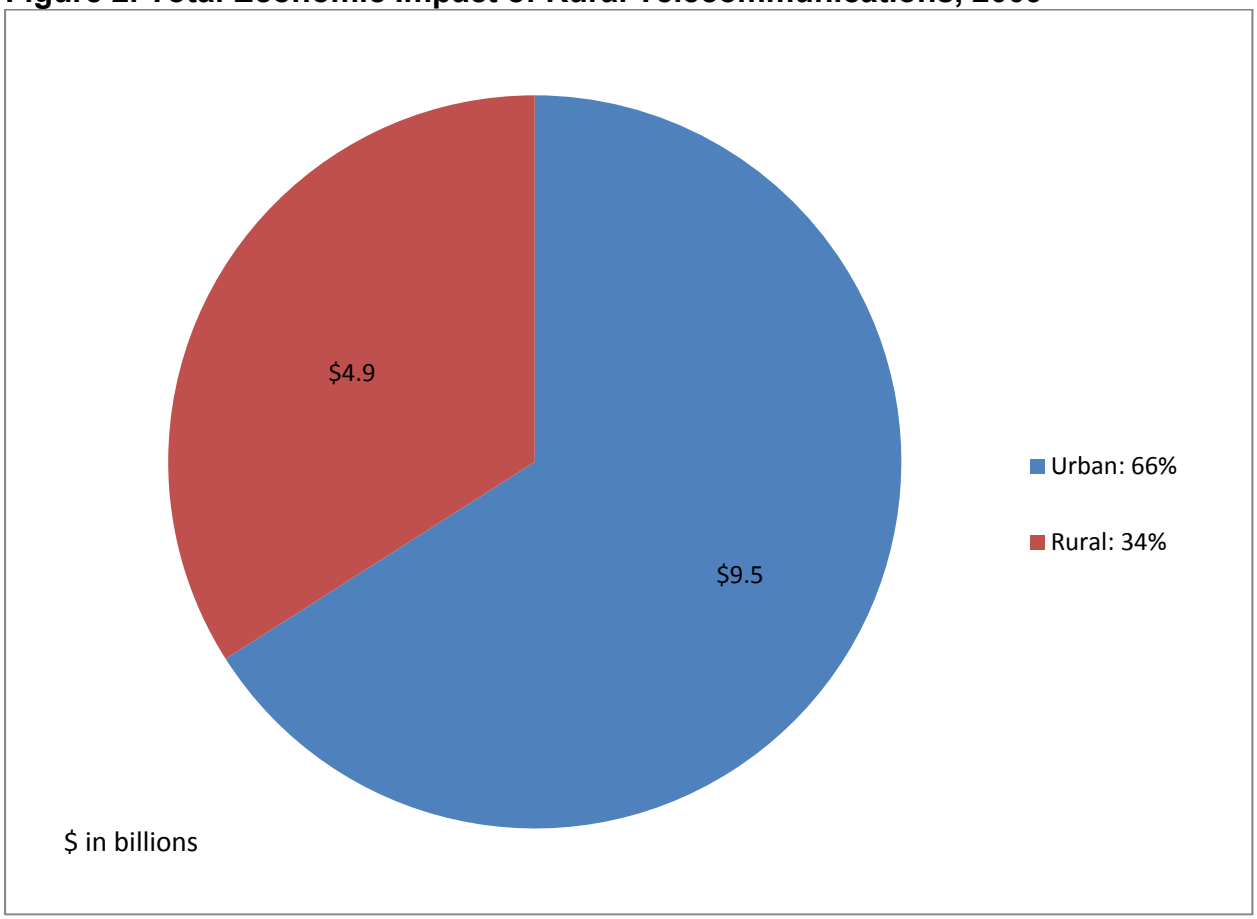
[5] This number of jobs reflects the observed relationship between the number of employees and the level of economic activity across the companies from which telecommunications providers purchase goods and services. The underlying assumption is that there is a stable relationship between the level of output and employment. Dividing output by employment produces an average amount of output per employee; the assumption is that if output is $X per employee, increasing output by $X will lead to one more employee in the industry. Appendix B, "Analyzing Economic Impacts," provides additional details about the methods used to make these calculations.

Jobs supported by the rural telecommunications industry are more concentrated in rural areas than the economic activity they create. Of all jobs, 54.3 percent are in rural areas and 45.7 percent are in urban areas.[6]

The economic activity generated by rural telecom companies accrues both to local areas where the services are produced and delivered to customers and to urban areas as well. Surprisingly, only one-third (34.0 percent) of final economic demand generated by rural telecom companies accrues to rural area; the other two-thirds (66.0 percent) redounds to the benefit of urban areas (Figure 2). This reflects the strength of the interactions between rural and urban economies. A job may be on the payroll of a rural seller of telecom services or of a rural construction company that installs poles and wires, but much of the goods and services those workers buy will come from outside the area.

[6] This difference reflects the relatively higher level of wages in the telecommunications sector. In data reported to the Bureau of Labor Statistics, average annual pay in 2009 in the wireline telephone sector was $73,730, while wages in the economy overall averaged $45,136 (Bureau of Labor Statistics, *Quarterly Census of Employment and Wages,* September 2011, http://www.bls.gov/cew/#databases).

Figure 2. Total Economic Impact of Rural Telecommunications, 2009



Source: Hudson Institute modeling using data from Federal-State Joint Board on Universal Service, *Universal Service Monitoring Report: CC Docket No. 98-202 (Data Received Through October 2010)*, Washington, DC: Federal-State Board on Universal Service, 2010; and an unpublished Bureau of Economic Analysis table containing Regional Input-Output Modeling System (RIMS II) data from 2008.

States vary in how much total impact they get from economic activity in the rural telecommunications sector (Table 3). This reflects variation in capability in the local economy. The impact of one dollar added to or subtracted from the telecommunications sector is lowest in North Dakota and highest in California (Table B-1). This reflects the extent to which companies in those states generate the goods and services telecommunications companies require. For a company operating in North Dakota, a purchase of computer servers is more likely to mean buying from out-of-state than it is to a company operating in California.

Inputs Used in the Telecommunications Sector

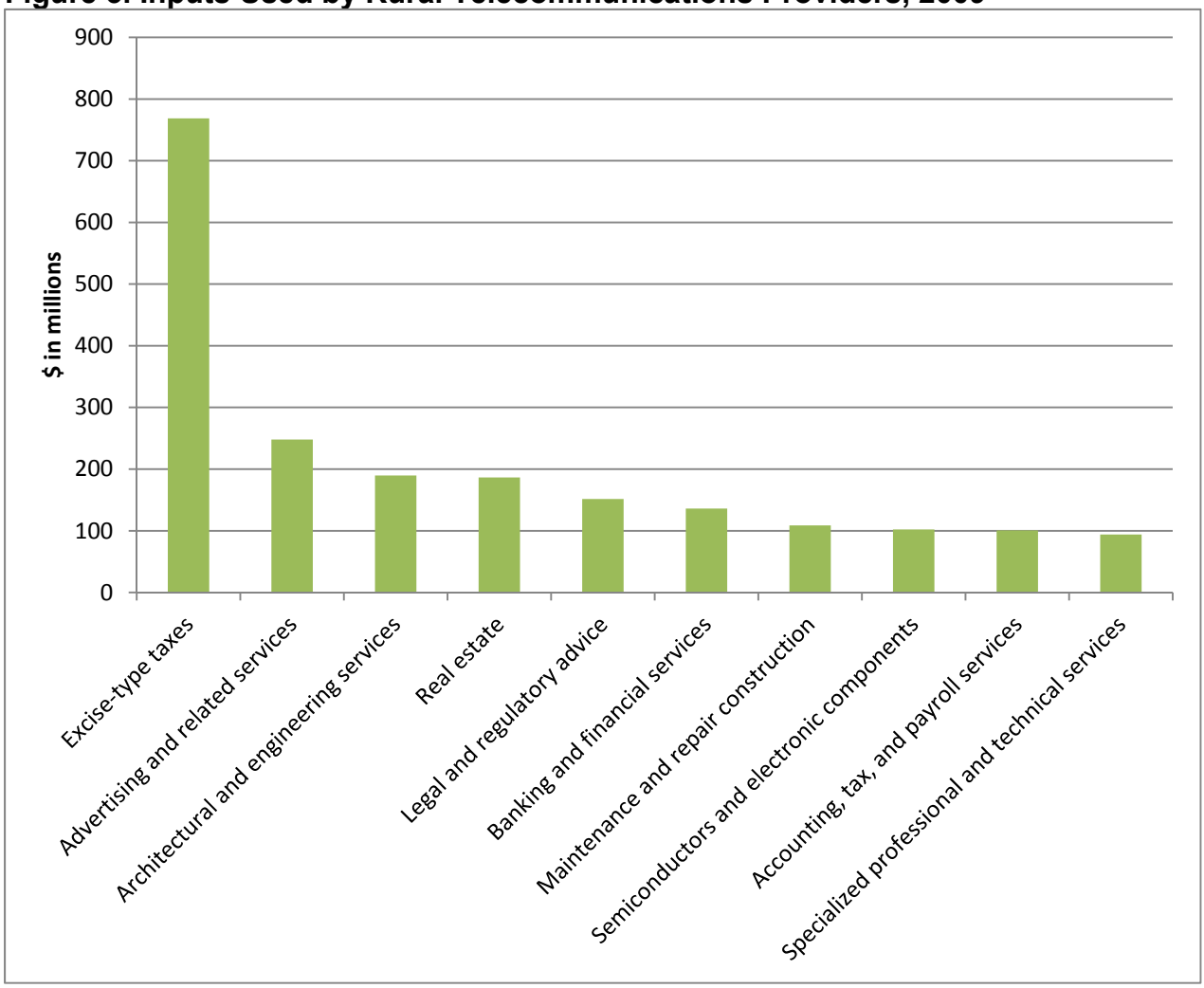
The geographic division of economic activity generated by rural telecom sellers between urban and rural areas reflects the nature of the inputs these companies must buy to produce and deliver their services. The largest single category, as in most industries, is compensation of labor, which represents about 21 percent of expenditures.[7]

Many of the inputs purchased by rural telecom service sellers are more likely to be found in urban settings. Figure 3 shows the ten largest categories of inputs that come from outside the telecommunications sector.

The largest "purchase" is an input required to produce telecommunications services that is required not by the technology of producing telecommunications services but rather the choices government has made about how to finance government spending. This largest category is the taxes that telecommunications sellers collect and remit to governments. The other categories of inputs are goods and services more likely to be produced outside the provider's service area, either in the state's urban areas or out-of-state. Many are specialized professional services (those of engineers, architects, lawyers, accounts, and bankers) that concentrate in urban areas, where overall demand is higher.

[7] Hudson Institute analysis using Bureau of Economic Analysis, *2002 Standard Make and Use Tables at the Detailed Level*, 2008, http://www.bea.gov/industry/io_benchmark.htm.

Figure 3. Inputs Used by Rural Telecommunications Providers, 2009



Source: Hudson Institute modeling using Bureau of Economic Analysis, *2002 Standard Make and Use Tables at the Detailed Level*, Washington, DC, 2008, http://www.bea.gov/industry/io_benchmark.htm.

Example of Goods and Services Purchased

Rural telecom companies often must draw on markets outside their own service areas to find the goods and services they require.

However, one service that is commonly sourced locally or from adjacent rural areas is construction services to install poles and wires.[8] This reflects the kind of service that involves techniques and methods that are not specific to the telecommunications sector and thus can achieve the minimally efficient size in a rural area.

Most other kinds of goods and services required by telecommunications companies simply are not available within the local market. For example, Hill Country Telephone Cooperative operates in the area west of Austin, Texas. It operates a vehicle fleet with 59 vehicles. Of these, 23 are cars and pickups; 20 were produced by Ford and three by GM. In addition, the company has four large GMC work trucks and nine Sterling bucket trucks. All were produced in urban areas. The Ford vehicles are leased through a credit facility offered by a bank based in an urban area. Other motorized equipment in the company's fleet includes two John Deere bulldozers and a John Deere backhoe, also produced in out-of-state urban areas.[9]

Hill Country's public reporting of its five largest outside contracts showed four of the five largest went to construction firms. While the largest amount went to a local firm, the next largest went to a Florida firm that specializes in telecommunications work.

Many categories of services come from sellers that target a statewide or national market. The same Texas provider uses regulatory consultants in Austin and near Washington, DC. These are examples of services where the demand in rural areas is not large enough to allow a firm providing those services to be economically viable.

The suppliers of capital equipment used by Skyline Membership Corp., a rural telecom company in western North Carolina, are scattered in nine states across the country. Skyline's purchases range from electronic telecommunications devices to general business equipment, such as trucks. Skyline purchased six vehicles in 2010; all were Chevrolets, five pick-ups and one truck. Skyline bought the vehicles from a dealer in one of North Carolina's urban areas. The dealer in turn had acquired them from General Motors which produced them in urban areas such as Flint, MI, and Arlington, TX. Technology purchases included mapping software from a company in Richmond, VA, and computers and servers purchased from Dell and Hewlett-Packard, all in urban areas.[10]

Pioneer Telephone Cooperative in Philomath, OR, regularly buys equipment such as modems, conduit for cabling systems, and protective devices for its network through Communications Supply Service Association (CSSA) located in Little Rock, AR.[11] Only the "value added" by

[8] Based on a sample of IRS Form 990 filings by rural telecommunications co-operatives, looking at what they report as the five largest outside contractors.
[9] Delbert Wilson, Hill Country Telephone Cooperative, personal communication, September 2011.
[10] Neal Tugman, Skyline Membership Corp., personal communication, September 2011.
[11] Jerry Schlachter, Pioneer Telephone Cooperative, personal communication, September 2011.

CSSA becomes part of Little Rock's economy; the balance goes to the places where the products CSSA sells are produced.

Current Role to Future Opportunities

The focus of this report thus far has been the level of current economic activity directly supported by rural telecommunications companies. This does not cover the full range of their economic impact, either now or what that impact could become as new technologies emerge.

Telecommunications can be a catalyst to economic activity. The measurement of economic activity, as reported in the Gross Domestic Product measure, for example, pays attention only to the dollars that flow to and from the telecommunications sector and from there further out into the economy. For some activities, telecommunications are a limiting or enabling factor. Dollarwise, telecommunications may be only a small part of the cost of a service. Without telecommunications, however, the service might either not be provided or be provided less efficiently. Effects of this type that would only be felt if capacity in the telecommunications sector expands or contracts are not part of the measures of economic activity that describe the economy as it is today.

Consider again the case of a medical specialist at an academic health center who "sees" a patient at a rural health facility via telehealth. Without the telecommunications service, the patient would not have had the encounter with the medical specialist. The telecommunications connection was a necessary catalyst for the service. The kind of income accounting which underlies Table 1 includes only the cost of the telecommunications component of the transaction. Changes in telecommunications capacity—whether they add to or diminish the range of services that are available in rural areas—are examples of indirect economic effects that are not captured by measures of direct effects that follow dollar flows to and from the telecommunications sector.

The economic activity of rural telecom companies, as measured by the inputs they purchase, also does not include the value of the support they provide to development of rural economies and institutions. To maintain and expand their own businesses, rural telecom organizations depend on what happens in the local economy. For example, in the late 1990s, the local hospital in Roosevelt County, New Mexico, closed. This county, along the Texas border, had a population of 19,846 in 2010. Compared to state-level population density, only three states—Montana, Wyoming, and Alaska—are less densely populated. The local telephone and electric cooperatives organized to support a special hospital district and impose a gross receipts tax to support the hospital. They also helped the hospital to obtain financing to obtain equipment, something they did again in 2004 to expand the medical office building and 2006 to acquire new imaging equipment.[12]

As the Roosevelt County example shows, the economy requires entrepreneurs who spot opportunities and pursue them. In areas where economic activity is denser, entrepreneurship is also more specialized. However, in less densely populated areas, like Roosevelt County,

[12] Foundation for Rural Service, *Rural Economic Development: Building a Sustainable Community*." (Arlington, VA: Foundation for Rural Service, 2008).

telephone and electric cooperatives are some of the largest local companies and thus most capable to engage in complex projects like organizing a hospital district.

Support for Rural Telecommunications: The Future

The nature of telecommunications makes population density an economic advantage and sparse population a disadvantage. Density determines the number of potential customers in a defined geographic area. More density allows the fixed cost of service to be spread over a larger customer base.

Many places in America are better characterized by distance than by dense population. With 97.7 percent of housing units having telephone service of some kind, telephone service is nearly ubiquitous.[13] This achievement continues in current technology the idea of a nation in which communications flows to and from all points, a concept embodied in the Constitution's reference to the communications technology of the time, the post office.[14] By the time of the introduction of the telephone, the post office had brought communication to the furthest point in the land, even to places where the cost of providing service exceeded the price charged to consumers. This commitment provided a model carried forward into a new era of technology through the establishment of a national telephone network.

Before the Telecommunications Act of 1996, support mechanisms were generally managed internally within the telecommunications sector. Since 1996, they have been made more visible through the operation of the Universal Service Fund (USF). Many local service companies identify payments into the USF in separate lines on bills to customers.

Of the USF's disbursements in 2010, 41.8 percent went to offset the higher cost of providing service in rural areas. (Appendix A offers more detail about the USF and where the rest of USF disbursements go.)

The Impact of Larger Change

The analysis in this paper presents the economic impacts of the rural telecommunications sector at its current scale. It does not capture what would happen under more disruptive scenarios.

Payments through the USF mechanisms are a substantial source of revenue to rural telecommunications companies. How would rural telecommunications companies respond if this support diminished or disappeared?

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[13] Federal-State Joint Board on Universal Service, *Universal Service Monitoring Report: CC Docket No. 98-202 (Data Received Through October 2010),* Section 6. Washington, DC: Federal-State Board on Universal Service, 2010 Federal-State Board on Universal Service.

[14] In the enumerated powers given to Congress by the US Constitution, listing areas where Congress might properly assert national authority (Article I, Section 8), the framers included the power "To establish Post Offices and post Roads."

Two scenarios bracket the range of responses. In one, telecommunications companies which experienced loss of payments would continue to operate at the same scale and scope of services. They would replace lost USF revenue with higher charges to customers. In the other, companies would respond to a decline in expected return on investments by curtailing capital investment.

Payment losses passed on to consumers as price hike scenario

The size of the rate increase would depend on the per customer size of payment lost. Among 8.8 million households in areas where companies serve fewer than 100,000 lines, 1.7 million would have faced increases of at least $485 in 2006 absent USF support.[15]

Customer response would depend on how much consumers valued telephone service relative to other things they could buy. Recent studies have placed the elasticity of demand for having telephone service range at between -.065 and -.25, suggesting that if the price of service doubled, between 6.5 and 25 percent of customers would drop service.[16]

The burden of higher costs would vary according to a consumer's income. A study which mapped the payments to rural telecommunications companies to the income distribution in rural areas defined households that would face increases that were greater than 1, 2, and 3 percent of income as "moderate," "high," and "severe" risk of losing affordable telephone service, respectively. One in three rural households faced some level of losing affordable service. Within this group, 45.4 percent faced moderate risk, 18.1 percent high risk, and 36.5 percent severe risk in 2006. A household in the lowest income quintile at severe risk would be looking at an increase in cost of telephone service that approached that group's average annual expenditure on fruits, vegetables, and dairy products.[17]

One result of the "pass it on to consumers" scenario could be a rate spiral. Companies could find themselves caught in a cycle of raising rates to keep revenue in line with costs and customers responding to increasing rates by dropping service.

Cut capital investment scenario

A reduction in support from the USF would have an immediate impact on expectations about future returns from investment in rural telecommunications infrastructure. Fewer investments could be expected to be economically worthwhile.

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[15] Robert F. Wescott, Robert Cohen, and Mark W. McNulty, *Consumers at Risk: The Impact of Reduced Universal Service Fund Support on Telephone Service Affordability in Rural America*, 2007 (Washington, DC: Keybridge Research LLC, 2007).

[16] The -.065 elasticity estimate is from Daniel A. Ackerberg, Michael H. Riordan, Gregory L. Rosston, and Bradley S. Wimmer "Low-Income Demand for Local Telephone Service: The Effects of Lifeline and Linkup," Paper presented at Telecommunications Policy Research Conference, Arlington, VA, September 23, 2003; revised March 28, 2005. The -.25 elasticity estimate is from M. H Riordan, "Universal Residential Telephone Service," in *Handbook of Telecommunications Economics* ed. M. Cave, S. Majumdar, and I. Vogelsand (Amsterdam: Elsevier Science, 2002). Both are cited in Wescott, Cohen, and McNulty, *Consumers at Risk*.

[17] Wescott, Cohen, and McNulty, *Consumers at Risk*.

Reduced investment would mean less spending for maintenance, replacement of old equipment and investment in new equipment to expand the range of services offered and the number of households served. The effect would be to pinch off improvements in service for continuing customers and allow the quality of service to degrade as providers face the difficult choices involved in avoiding costs while still providing service.

Some service companies, especially those organized as cooperatives and the smallest for-profit entities may have to consider their capital structure. If they carry significant debt on their books, they might be able to use the bankruptcy process to reduce their capital costs.

Losses from a diminished network

A loss of revenue from the USF would diminish the economic activity of rural telecommunications providers, causing negative ripple effects to spread outward locally, regionally, and nationally.

In addition to the direct economic effects from lower employment and lower levels of purchases of goods and services, responses that lead to contraction in the telecommunications network would make the network less valuable as it contracted through the loss of rural customers. The key insight from the economic analysis of network industries, like telecommunications, is that the value of the network goes up or comes down by more than one for each additional or fewer users.[18] For example, among ten telephone subscribers, there are 45 possible connections; among eleven, 55; and among 12, 66.

The degree of loss depends on the nature of the customer. For individuals, the impact would depend on proximity of the losses, either geographically or in their social network. For businesses, the loss would reduce the potential number of customers who it could reach through the network and the number of potential customers who could reach the business.

Conclusion: Measurable Direct Effects; Further Indirect Effects

The economic effects of the rural sector of the telecommunications industry are both direct and indirect. It was responsible for $14.5 billion in economic activity in 2009, an amount that supported 70,700 jobs. A majority of the economic effect is demand outside the service area of the telecommunications provider. The current patterns show how much change in economic activity could be expected if the sector expanded or contracted in response either to changes in demand or changes to the current mechanisms that support universal service.

The indirect economic effects are diverse and more difficult to quantify. They include the impact on consumer well-being from changes in the level and scope of telecommunications services, the

[18] Oz Shy, *The Economics of Networked Industries* (New York: Cambridge University Press, 2001). In addition to the economics literature, there are several more popular names that refer to the number of connections growing more rapidly than the number of users, such as "Metcalfe's Law," attributed to Robert Metcalfe, co-inventor of Ethernet.

impact of any change on economic activity that is feasible in the area, and the role of telephone companies as entrepreneurs.

Some of these indirect effects are suppressed by the assumptions in the accounting methods that measure direct economic effects. These methods assume that economic output goes up or down in fixed proportions. However, if telecommunications service is a necessary input, as, for example, in telehealth, then changes in telecommunications capability in an area make it technologically impossible to produce the service in that area.

Other effects may not be observed at the level of overall economic activity but only in the location of economic activity. For example, if the highest quality match between location and economic activity could no longer be sustained because telecommunications service withdrew, the activity might continue at another rural or urban location that offered a lower match quality. Location changes would not have an impact on the national economy.

Quantifying the indirect effects would require observations that compare differences between areas that have and do not have telecommunications service. While it is the case that some areas do not have or recently have not had access to telecommunications service, the USF has meant that these areas have not been as large as the smallest units in which economic data is measured in the U.S. As a result, indirect effects can be described but their magnitude is difficult to measure.

Table 2. Economic Impact, By State, and Urban/Rural Location (Dollars in Millions)

	Rural	Urban	Total
Alabama	63.4	133.5	196.9
Alaska	117.6	145.5	263.1
Arizona	41.3	173.5	214.8
Arkansas	230.2	146.1	376.3
California	48.6	296.9	345.5
Colorado	40.9	139.0	179.8
Connecticut	0.0	0.0	0.0
Delaware	0.0	0.0	0.0
DC	0.0	0.0	0.0
Florida	184.6	881.7	1,066.3
Georgia	183.9	468.9	652.8
Hawaii	12.7	24.1	36.8
Idaho	79.5	97.5	177.0
Illinois	55.6	223.7	279.4
Indiana	126.4	140.3	266.7
Iowa	172.5	142.0	314.4
Kansas	267.2	116.2	383.4
Kentucky	163.4	84.8	248.2
Louisiana	66.8	169.8	236.6
Maine	38.1	51.6	89.7
Maryland	1.3	4.8	6.1
Massachusetts	0.4	1.8	2.1
Michigan	49.3	142.3	191.6
Minnesota	167.1	378.7	545.8
Mississippi	59.8	40.7	100.6
Missouri	195.9	260.7	456.7
Montana	131.7	68.4	200.1
Nebraska	65.7	89.8	155.5
Nevada	16.8	52.4	69.1
New Hampshire	23.6	9.9	33.5
New Jersey	15.3	78.4	93.7
New Mexico	61.8	91.4	153.3
New York	62.0	327.4	389.4
North Carolina	305.3	727.3	1,032.6
North Dakota	145.9	19.7	165.6
Ohio	98.7	281.5	380.2
Oklahoma	134.2	224.4	358.6
Oregon	41.4	169.9	211.3
Pennsylvania	195.6	505.2	700.8
Rhode Island	0.0	0.0	0.0
South Carolina	189.9	318.2	508.1
South Dakota	94.9	76.6	171.5
Tennessee	163.0	304.1	467.1
Texas	241.0	990.7	1,231.7
Utah	22.7	72.2	94.9
Vermont	34.1	18.6	52.6
Virginia	110.4	248.4	358.8
Washington	62.3	205.1	267.3
West Virginia	86.7	33.5	120.2
Wisconsin	200.4	344.2	544.6
Wyoming	43.1	17.7	60.8
Total	4,913.1	9,538.9	14,452.0

Source: Hudson Institute modeling using data from Federal-State Joint Board on Universal Service, *Universal Service Monitoring Report: CC Docket No. 98-202 (Data Received Through October 2010)*, Washington, DC: Federal-State Board on Universal Service, 2010; and an unpublished Bureau of Economic Analysis table containing Regional Input-Output Modeling System (RIMS II) data from 2008.

Table 3. Jobs Supported by Rural Telecommunications Providers, by State and Rural/Urban Status

	Rural	Urban	Total Employment
Alabama	545	486	1,031
Alaska	728	306	1,034
Arizona	458	618	1,076
Arkansas	1,214	321	1,535
California	648	995	1,643
Colorado	397	456	853
Connecticut	-	-	-
Delaware	-	-	-
District of Columbia	-	-	-
Florida	2,303	3,748	6,051
Georgia	1,597	1,667	3,264
Hawaii	100	77	177
Idaho	582	336	918
Illinois	603	736	1,339
Indiana	845	426	1,271
Iowa	1,072	382	1,454
Kansas	1,131	173	1,304
Kentucky	970	288	1,258
Louisiana	626	668	1,294
Maine	282	178	460
Maryland	14	15	29
Massachusetts	4	4	8
Michigan	481	495	976
Minnesota	1,414	1,154	2,568
Mississippi	370	130	500
Missouri	1,265	683	1,948
Montana	821	253	1,074
Nebraska	461	228	689
Nevada	171	161	332
New Hampshire	124	28	152
New Jersey	187	195	382
New Mexico	486	373	859
New York	790	652	1,442
North Carolina	2,720	2,604	5,324
North Dakota	593	33	626
Ohio	938	955	1,893
Oklahoma	1,075	926	2,001
Oregon	485	561	1,046
Pennsylvania	1,696	1,588	3,284
Rhode Island	-	-	-
South Carolina	1,524	1,244	2,768
South Dakota	567	179	746
Tennessee	1,346	1,301	2,647
Texas	2,631	3,859	6,490
Utah	238	363	601
Vermont	190	53	243
Virginia	856	621	1,477
Washington	605	542	1,147
West Virginia	442	85	527
Wisconsin	1,571	1,096	2,667
Wyoming	223	43	266
Total	**38,427**	**32,285**	**70,712**

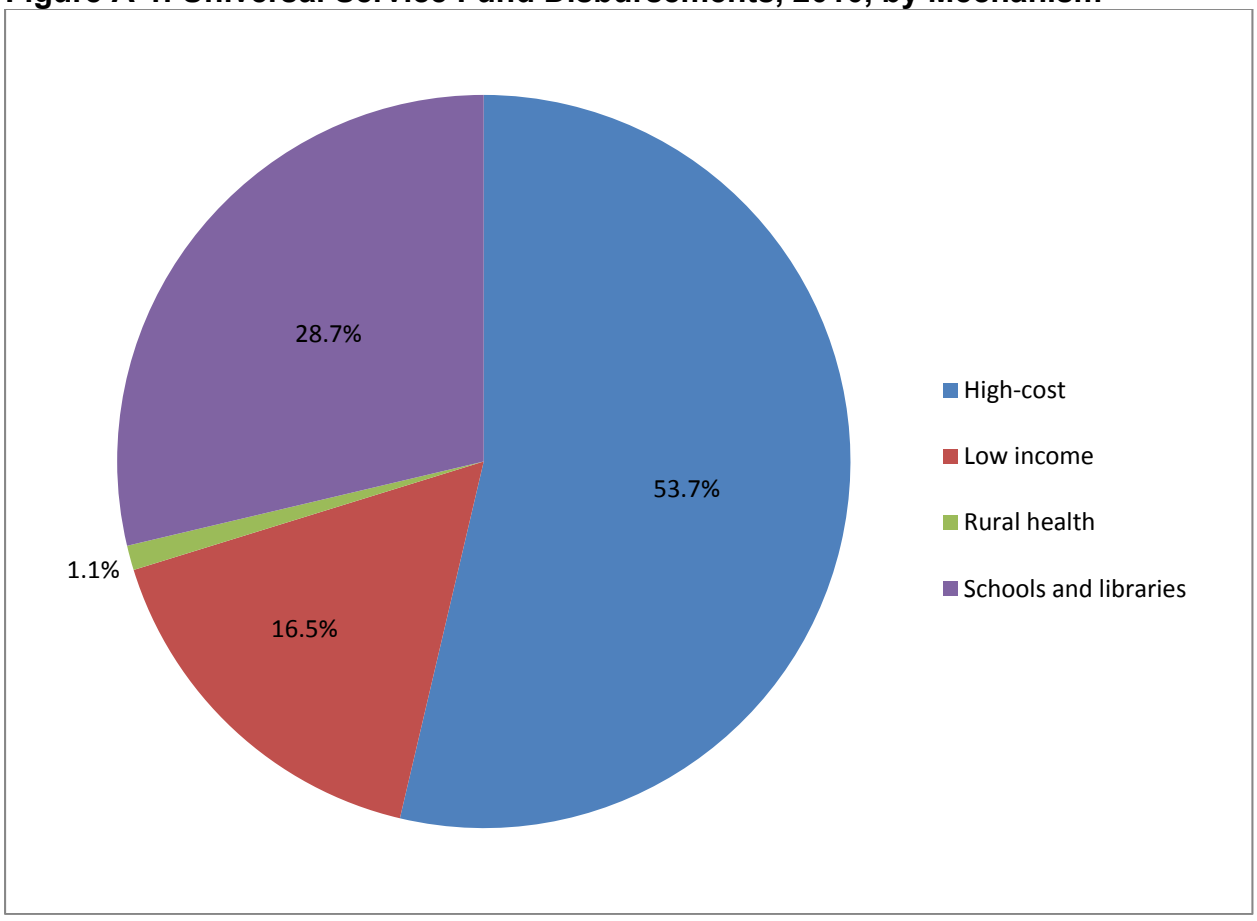
Source: Hudson Institute modeling using data from Federal-State Joint Board on Universal Service, *Universal Service Monitoring Report: CC Docket No. 98-202 (Data Received Through October 2010)*, Washington, DC: Federal-State Board on Universal Service, 2010; and an unpublished Bureau of Economic Analysis table containing Regional Input-Output Modeling System (RIMS II) data from 2008.

Appendix A:
The Universal Service Fund

The Universal Service Fund (USF) disbursed $8.0 billion in 2010 to entities in all 50 states and in U.S. territories and possessions to promote universal access to telecommunications services.

The USF works through four distinct and different mechanisms (Figure A-1). The largest amount goes to support access in high-cost, usually rural, areas. The next largest sum subsidizes purchase of telecommunications services and infrastructure by schools and libraries, often referred to as the "e-rate" program. The third-largest payment allows low-income households to obtain telecommunications services at a reduced price. The fourth and smallest provides funds to increase access to telecom services for health-care providers in rural places.

Figure A-1. Universal Service Fund Disbursements, 2010, by Mechanism



Source: Universal Service Administrative Company, *2010 Annual Report*, http://usac.org/about/governance/annual-reports/.

Universal Service Fund: One fund, four purposes[19]

After the Telecommunications Act of 1996 became law, the Federal Communications Commission developed four mechanisms to carry out the law's instruction to "preserve and advance universal service."[20] Each serves a particular need and works in its own way.

High-cost program. Payments from the high-cost program allow consumers in high-cost service areas to obtain service at rates reasonably comparable to those that prevail in lower-cost markets; the services in rural areas must also be "reasonably comparable" to those that are available in urban areas. In 2010, payments supported 22 million lines. An illustration: In some rural areas, a mile of telephone line might connect two households to the telephone network, while in an urban area the same length may connect 100. Obviously, the cost for each household is higher where there are fewer customers over the course of a mile.

Schools and libraries. This program, sometimes referred to as the "e-rate" program, helps schools and libraries pay for telecommunications, Internet access, maintenance, and internal connections. Support ranges from 20 to 90 percent of costs, depending on what share of the population served is poor and whether the school or library serves a rural or urban area. In 2010 these payments supported service at more than 115,000 schools and libraries.

Low income. The program supports discounted service rates for 10 million low-income households. One service, Lifeline, reduces the charge for basic telephone service. Another, Linkup, reduces the amount a new customer must pay to initiate service.

Rural health. This program supports comparable prices for service for rural health care providers. It also supports the Rural Health Care Pilot Program for state and regional telehealth networks.

High-Cost Support

The Federal Communications Commission has created a series of high-cost mechanisms, each to accommodate a different set of factors that lead to high costs.

The largest share is payments for interstate access charges. These payments go to local telephone companies that have higher costs and recognize the value they provide to the national telephone network through connection to their subscribers. Telephone networks increase in value with the number of points the network connects. Two mechanisms tied to interstate access charges are Interstate Common Line Support (ICLS) for carriers regulated at the state level under rate-of-return rules. The other, Interstate Access Support (IAS), goes to carriers regulated under price cap regulation. Together these mechanisms distributed $2.220 billion in 2010.

Another group of mechanisms recognizes the differences in cost per subscriber level for providing service in less densely populated areas for small companies that cannot realize scale

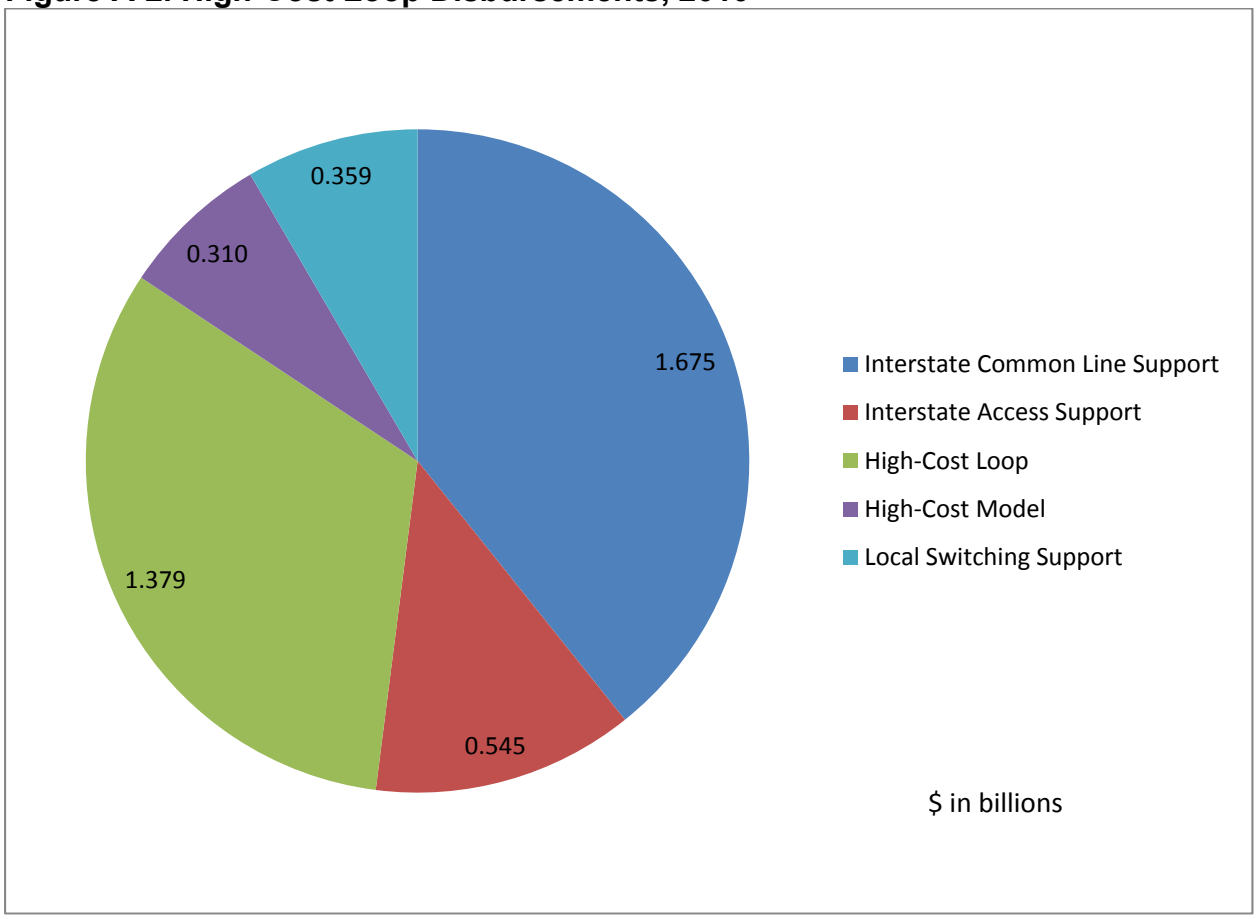
[19] The facts in this section are from the Universal Service Administrative Company, *2010 Annual Report*, http://www.usac.org/about/governance/annual-reports.
[20] 47 USC 254(b)(5).

economies. These mechanisms distributed $2.048 billion in 2010. The largest, high-cost loop support, recognizes some service areas have higher fixed costs such as for telephone wire outside the home and poles are examples. Carriers can recover a portion of their network costs when certain costs exceed 115 percent of the national average. The payments go up in steps as costs increase relative to the national average, reaching a maximum of 75 percent. The maximum goes to carriers with costs that are 150 percent or more of the national average if the area serves fewer than 200,000 customers (loops) or at least 250 percent of the national average if the area serves 200,000 or more. Not every company meets the high-cost test; for example, in New York, 13 out of 42 carriers in rural areas qualify.[21] Non-rural carriers can receive support based on a forward-looking cost model developed by the FCC. Finally, local switching support recognizes higher costs for equipment requirements that are sensitive to overall volume. Local switching support goes to carriers who serve 50,000 or fewer access lines.

Following the 1996 Act, the FCC has allowed new entrants (competitive eligible telecommunications carriers, or CETCs) to receive payments based on the per-line support amounts received by the incumbent local exchange carrier, or ILEC. The share of high-cost support paid to CETCs has grown from less than one percent in 2000 to 37.1 percent in 2010. It would be higher but for an order released by the FCC on May 1, 2008 that capped support at the March 2008 level.

[21] Federal-State Board on Universal Service, *Universal Service Monitoring Report,* Table 3-31.

Figure A-2. High-Cost Loop Disbursements, 2010



Source: Universal Service Administrative Company, *2010 Annual Report*, http://usac.org/about/governance/annual-reports/.

Where does the money come from?

Telecommunications companies make payments to the Universal Service Fund based on a percentage of revenues as prescribed by the FCC. Telephone companies then recoup this cost as a discrete line on customer bills. This percentage, or contribution factor, applies to interstate and international revenues including telephone, mobile wireless, and toll service.

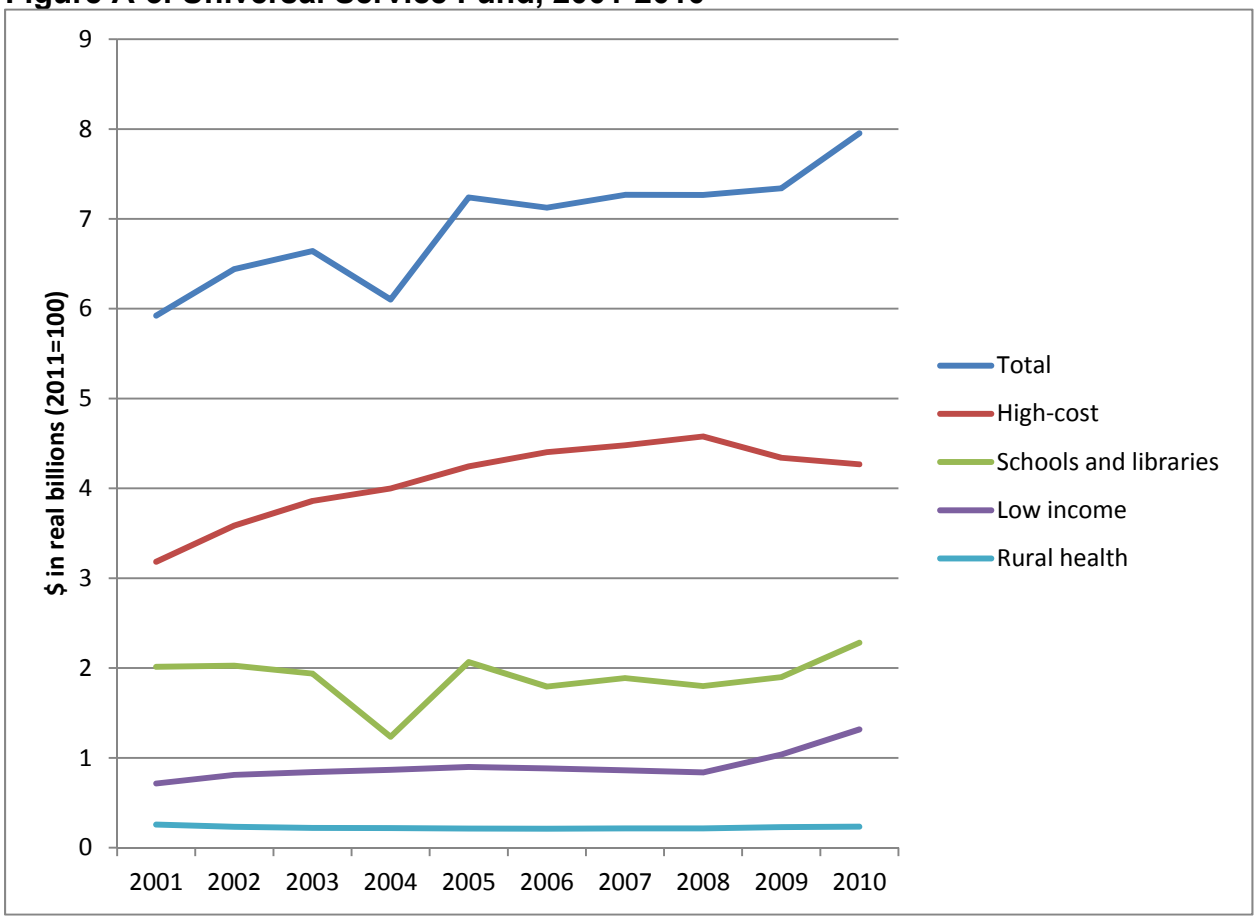
The Universal Service Administrative Corporation (USAC) makes quarterly estimates of how much money must be paid to satisfy the disbursement needs of the USF and how much revenue subject to the contribution factor will be generated in the telecommunications industry. USAC projected in September 2011 that the USF will need $2.2 billion in the fourth quarter of 2011.

The FCC then determined that the contribution base would be $14.3 billion. The contribution rate is thus 15.3 percent.[22]

Financial trends

Disbursements under the four universal service mechanisms totaled $8.0 billion in 2010. In real, inflation-adjusted terms, the total disbursements were stable from 2005 to 2009. Each mechanism has followed a different pattern over the past decade. While high-cost support to incumbent carriers remained stable over the first half of the decade as CETCs entered the market, then slowed to a near stop once the FCC released its order capping the amount available for CETCs; low income grew rapidly then slowed, only to pick up again in the past year; the schools and libraries program shrank at times but grew rapidly in the last (2009 to 2010) year; the smallest, health care, has consistently grown (Figure A-3).

Figure A-3. Universal Service Fund, 2001-2010



Source: Universal Service Administrative Company, *Annual Report*, 2000-2010, http://usac.org/about/governance/annual-reports/.

[22] FCC Public Notice, "Proposed Fourth Quarter 2011 Universal Service Contribution Factor," DA 11-1543, Washington, DC, September 13, 2011, http://www.fcc.gov/document/proposed-fourth-quarter-2011-universal-service-contribution-factor.

Appendix B:
Analyzing Economic Impacts

The analysis of direct effects in this paper is based on national income accounting, a way of calculating the size of an economy. The most common national income accounting measure is Gross Domestic Product (GDP). In this approach, value added is summed across all producers to yield a comprehensive measure of national output. Value added is the difference between the value of a unit of output and the sum of intermediate inputs, or costs. Intermediate inputs include raw materials, services, and operating expenses of the producer.

The Bureau of Economic Analysis (BEA) of the Department of Commerce analyzes the input and output of producers across the economy to create a baseline understanding of what inputs are required to produce the observed level of output in each industry. The bureau compiles an input-output table that shows the requirements in each industry for goods and services produced elsewhere in the economy. These relationships can be thought of as a recipe: to produce $1 worth of output in a particular industry requires so many cents of labor, so many cents of electrical equipment, etc.

Data and sources

Regional Input-Output Modeling System. The estimates for direct effects of the rural telecommunications sector use a set of state-level analyses called the Regional Input-Output Modeling System, or RIMS. RIMS provides state-level analyses of the change in final demand that occurs for each dollar delivered by an industry. With RIMS, one can assess the relationship between change in one industry (for example, telecom) and state-level change in output, earnings, employment, and value-added.

BEA makes available RIMS multipliers for 406 sectors of the economy. The analysis in this Appendix are those for the telecommunications industry. Table B-1 shows these state-level RIMS multipliers for the telecommunications industry.

Inputs used by the telecommunications sector. The analysis of inputs used by rural telecommunications companies uses another BEA analytic product. The BEA's analytic product is its benchmark input-output table showing direct requirements of the telecommunications industry (industry code 517 in the North American Industry Classification System). (The "Supplementary Make, Use, and Direct Requirement Tables" are available from the BEA web site, http://www.bea.gov/industry/io_benchmark.htm.)

Expenses of rural telecommunications providers. The annual "Universal Service Monitoring Report" includes a number of useful tables. Table 3.31, "ILEC High-Cost Loop Support Data for 2009 by Study Area," presents an expense number for each carrier. The relationship between each company's total expenses (and thus demand for goods and services from elsewhere in the economy) was derived by comparing data from a survey of Kansas rural telephone companies reported in *Kansas Rural Local Exchange Carriers: Assessing the Impact of the National*

Broadband Plan, prepared by the Center for Economic Development and Business Research (CEDBR), W. Frank Barton School of Business, Wichita State University, June 2011, http://www.cedbr.org/content/KRLEC.pdf. The CEDBR value was 76.4 percent of the total expenses reported in *Universal Service Monitoring* Report, Table 3.31 for the same firms.

As noted in Appendix A, 37.1 percent of payments under the high-cost mechanism go to other companies, the competitive eligible telecommunications carriers (CETCs). These amounts are independent of actual expenses. With payments independent of expenses, it is not possible to use payment data to discern how much of the economic activity of the CETCs accrues to rural economies.

Gross product. The Bureau of Economic Analysis provides data on gross product at the state and metropolitan levels. Hudson Institute calculated rural output as gross state output minus the sum of metropolitan area gross product. For metropolitan areas which cross state lines, we allocated product to states proportional to the state's share of the metropolitan area's population.

Table B-1. State Level Multipliers

	Ouput	Earnings	Employment
Alabama	1.3599	0.2311	5.2348
Alaska	1.3323	0.2171	3.9672
Arizona	1.3878	0.2465	5.1329
Arkansas	1.3092	0.2107	4.0789
California	1.5856	0.3024	4.7556
Colorado	1.5302	0.2846	4.7443
Connecticut	1.4512	0.2450	4.0284
Delaware	1.3423	0.1777	3.6943
District of Columbia	1.3666	0.0493	0.7919
Florida	1.4335	0.2596	5.6746
Georgia	1.5120	0.2759	4.9995
Hawaii	1.3914	0.2368	4.8249
Idaho	1.2698	0.2122	5.1816
Illinois	1.4888	0.2667	4.7941
Indiana	1.3264	0.2165	4.7654
Iowa	1.2236	0.1901	4.6234
Kansas	1.3661	0.1893	3.4000
Kentucky	1.3270	0.2076	5.0711
Louisiana	1.3740	0.2407	5.4673
Maine	1.3113	0.2317	5.1280
Maryland	1.4816	0.2502	4.6503
Massachusetts	1.4604	0.2497	4.0516
Michigan	1.3642	0.2421	5.0925
Minnesota	1.3819	0.2373	4.7036
Mississippi	1.2721	0.2019	4.9653
Missouri	1.4455	0.2154	4.2658
Montana	1.2941	0.2143	5.3638
Nebraska	1.2644	0.2033	4.4299
Nevada	1.3249	0.2219	4.8072
New Hampshire	1.3776	0.2239	4.5526
New Jersey	1.5082	0.2557	4.0779
New Mexico	1.3620	0.2312	5.6003
New York	1.4651	0.2375	3.7038
North Carolina	1.3829	0.2412	5.1561
North Dakota	1.2124	0.1775	3.7809
Ohio	1.3993	0.2374	4.9791
Oklahoma	1.4212	0.2456	5.5817
Oregon	1.3585	0.2269	4.9517
Pennsylvania	1.4710	0.2500	4.6871
Rhode Island	1.3767	0.1864	3.7499
South Carolina	1.3726	0.2303	5.4487
South Dakota	1.2125	0.1866	4.3510
Tennessee	1.4647	0.2580	5.6686
Texas	1.5386	0.2829	5.2695
Utah	1.4449	0.2661	6.3310
Vermont	1.3105	0.2120	4.6136
Virginia	1.4873	0.2410	4.1160
Washington	1.4390	0.2439	4.2934
West Virginia	1.2932	0.1978	4.3826
Wisconsin	1.3191	0.2224	4.8975
Wyoming	1.2367	0.1934	4.3809

Source: Unpublished Bureau of Economic Analysis table containing Regional Input-Output Modeling System (RIMS II) data from 2008.
Note: BEA does not calculate multipliers for Puerto Rico, Virgin Islands, Guam, and American Samoa. These areas received 4.3 percent of USF disbursements in 2010.

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Contents

Summary

The Center for Economic Development and Business Research, W. Frank Barton School of Business, Wichita State University (CEDBR) conducted this study to evaluate the economic impact of proposed changes in funding of Kansas Rural Local Exchange Carriers (RLECs). The Notice of Proposed Rulemaking (NPRM), to implement the National Broadband Plan (NBP), released by the Federal Communications Commission (FCC) in March 2010, proposes to reallocate Federal Universal Service Funds (USF) currently distributed to RLECs. This study estimates the economic and fiscal impact of the Kansas RLECs currently and with the redistribution of the USF funds on the regional and state economy.

With the exception of Wyandotte County, a Kansas RLEC provides services in 104 of the 105 Kansas counties. In general, the areas served by the 37 Kansas RLECs have lower average annual incomes, a declining population base and the lowest population densities of the state. Collectively, Kansas RLECs serve more than 50% of the geographic area and less than 10% of the telephone customers in Kansas.

The direct jobs and the service that the Kansas RLECs provide have a significant impact on the communities and local governments. In 2010, Kansas RLECs directly employed 1,005 people and created a total of $53,724,040 of wages in rural Kansas. Those same 1,005 jobs create and support an additional 1,627 jobs within the economies they serve. The total employment impact of Kansas RLECs is 2,632 jobs, which supports $92,700,831 of total wages in 2010.

It should be noted that this study, when looking at the impact of the NPRM, takes a limited-direct approach to evaluating the impact. The authors of this study recognize that this does not completely estimate the full impact this regulatory action will have on the local economies served by the Kansas RLECs. Other potential impacts that should be noted, but were beyond the scope of this study, include the following:

- Intercarrier Compensation Reform
- Community Donations
- Volunteer Time
- Community Leadership
- Economic Development Leadership
- Disruption of telecommunication/broadband services provided to anchor institutions (e.g. schools, libraries, hospitals, and health clinics)

As a basis for this analysis, CEDBR used survey data from 35 of the 37 RLECs located in Kansas. This data was provided by each Kansas RLEC and included information about its business, employees, payroll and taxes paid, as a basis for the analysis. The results were calculated using the Fiscal Benefit Cost Model. The model takes into account industry substitution and multipliers. In addition, it looks at the flow of money from a company or entity to taxing districts and the flow from the taxing district to the company. CEDBR looks at income streams

from sales and purchases of the entity under review, employees and the payrolls associated with employees.

The reduction in funding to Kansas RLECs from the NPRM is estimated to average $28,715,201 a year between 2012 and 2016, for a projected loss of funding during the five years totaling $143,576,054.

As a result of the loss of funding, the Kansas RLECs will in turn reduce services and associated staff. The estimated total direct jobs lost between 2012 and 2016 are 140. This will result in a loss of $29,615,044 in wages during the same time period.

The direct job losses are amplified in the economy due to indirect and induced effects, more commonly referred to as an employment multiplier. The employment multiplier is 2.6, which means for every one job lost, there are an additional 1.6 jobs also removed from the economy. Therefore, the total employment impact in rural Kansas is 367 jobs by 2016, with a total wage impact of $51,100,757 over the five-year period.

As a result of these job losses, the State of Kansas is estimated to lose personal income taxes in the total amount of $1,434,472 during the five years covered by the projections.

The reduction in funding to Kansas RLECs from the NPRM will also have an effect on the local governments and the state in the form of sales and property taxes. Over the five-year period, the local governments and the state will lose $1,109,201 in property tax and $1,577,737 in retail sales tax collections.

The proposed loss of over $143 million of USF will require Kansas RLECs to dramatically change their operations and likely cause defaults on loan obligations owed to the federal government and other lending institutions. It is expected that Kansas RLECS will, at minimum, cease operations in numerous highly rural communities across the state. The total employment impact will be a loss of 367 jobs by 2016 and a total wage impact of $51,100,757 over a five-year period. Consequently, this will have a significant negative economic impact on rural Kansas.

Introduction

The Center for Economic Development and Business Research, W. Frank Barton School of Business, Wichita State University (CEDBR), was given the task of analyzing the economic impact of the Federal Communications Commission (FCC) Notice of Proposed Rulemaking (NPRM) to implement the National Broadband Plan (NBP) as it relates to the proposed reduction of Federal Universal Service Funds (USF) distributed to the Kansas Rural Local Exchange Carriers (RLECs). In doing so, CEDBR was able to model the flow of money from businesses to individuals, companies and taxing entities in the state.

Each Kansas RLEC provided CEDBR with survey data about its business, employees, payroll and taxes paid, as a basis for analysis. Survey data for 35 out of 37 of the Kansas RLEC businesses are included in this report.[1]

Background

In March 2010, the FCC released the NPRM, which proposes to change the current federal mechanisms that support deployment of voice and broadband services in high-cost areas. This could shift up to $15.5 billion nationally during the next decade from the existing USF funded programs to support broadband deployment in underserved areas.[2] The plan would expect to be completed in three stages: phase one, 2010-2011, would focus on rulemakings to set the framework; phase two, 2012-2016, would focus on major initial implementation; and phase three, 2017-2020, would complete the transition.[3]

According to an article from Washington Telecom, Media & Tech Insider, to shift the money to broadband, without raising overall costs, the NPRM proposes two changes in the funding for RLECs. Price-capped RLECs would have $457 million in annual USF interstate access support (for past access charge cuts) shifted over from voice to broadband. The Rate of Return RLECs would be shifted to incentive regulation (presumably price caps), with per-line access replacement frozen.[4]

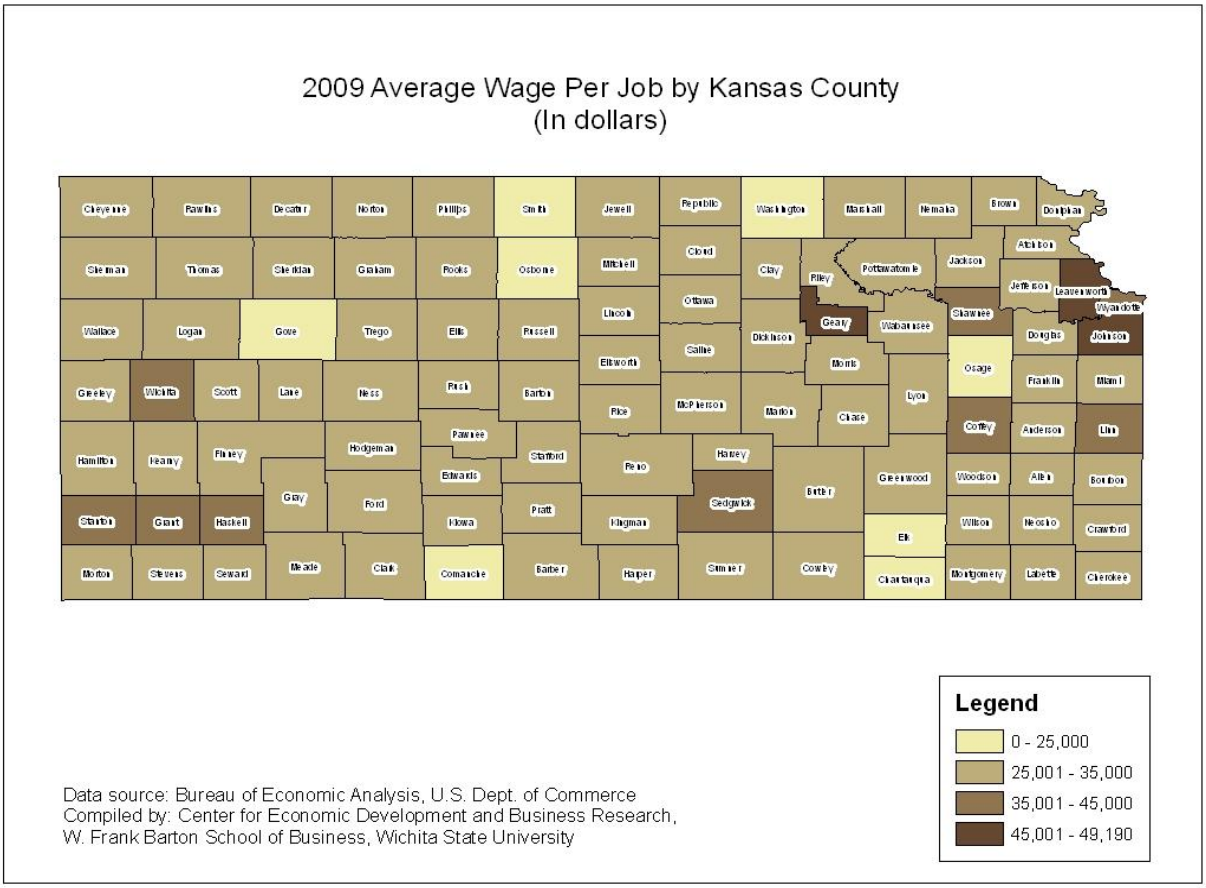
Service Area

All telephone exchange service areas are considered rural for state purposes in Kansas, except those served by AT&T or CenturyLink. For federal purposes, in Kansas, all exchanges except those served by AT&T are considered rural.[5] The geographic boundaries of these service areas do not coincide with county or city boundaries. For the purpose of this study, CEDBR looked at population and wage information at the county level.

[1] Appendix A has a full list of the Kansas RLECs participating in the study
[2] Federal Communications Commission – National Broadband Plan, Executive Summary, Pg. XIII
[3] Washington Telecom, Media & Tech Insider, FCC National Broadband Plan – First Look, March 16, 2010
[4] Washington Telecom, Media & Tech Insider, FCC National Broadband Plan – First Look, March 16, 2010
[5] Kansas Corporation Commission

Kansas is one of the most rural states in the nation, ranking 42nd highest in population density based on 2010 census data.[6] Its counties range in density from Johnson County with a density of 1,133 persons per square mile to Greeley County, with an estimated 1.6 persons per square mile.[7] With the exception of Wyandotte County, a Kansas RLEC provides services in at least some portion of each county.

The customers of Kansas RLECs live in and around rural communities. The average wage per job is lower in counties that are predominately rural than in more urban counties. The average wage per job in metropolitan areas in Kansas is $42,373, while in rural areas the average falls to $31,155.[8]



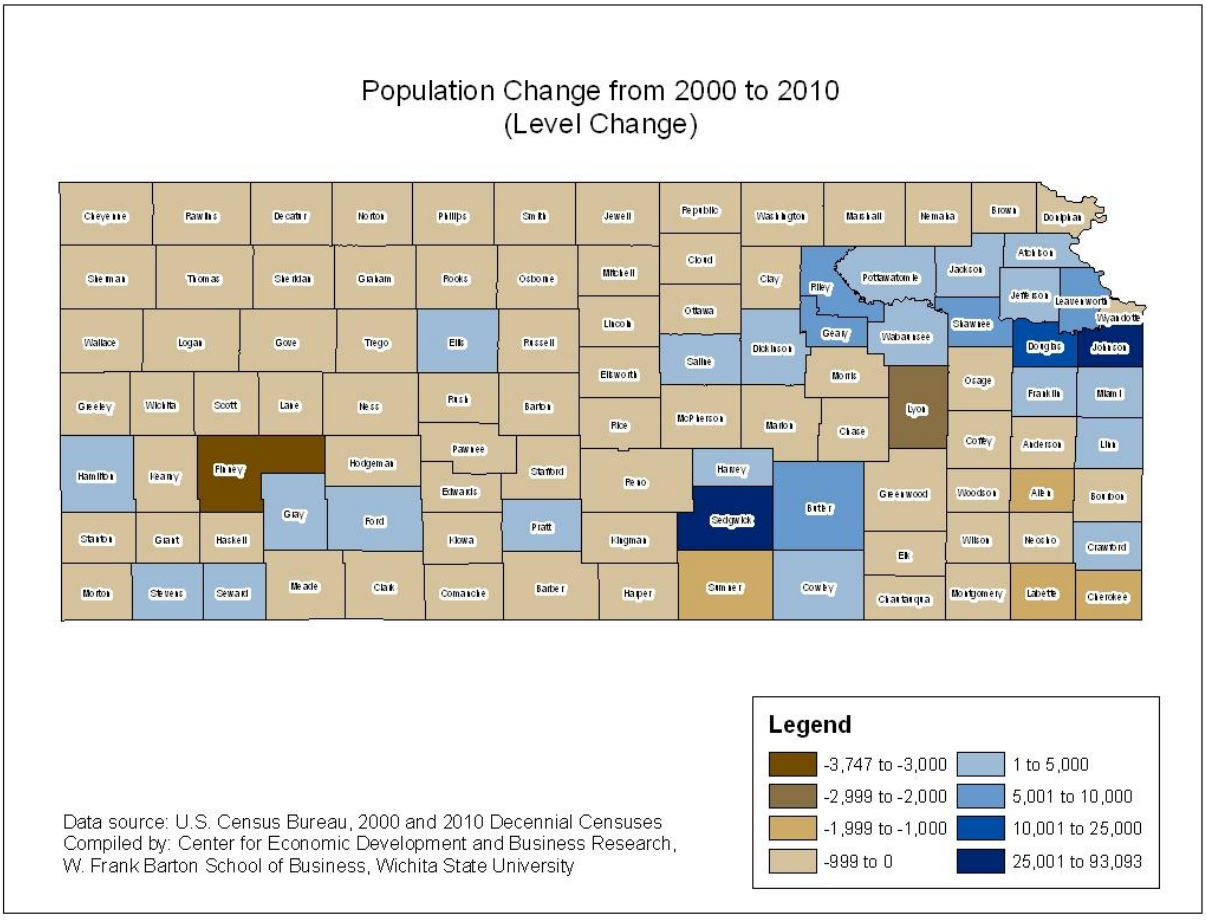
[6] U.S. Census Bureau

[7] U.S. Census Bureau, 2010 Population counts, 2000 Area in square miles

[8] Regional Economic Information System, Bureau of Economic Analysis, U.S. Department of Commerce http://www.bea.gov/regional/docs/footnotes.cfm?tablename=CA34 , 'December 2010.'

In general, the communities served by the Kansas RLECs have seen population declines in the last ten years. The Kansas City and Wichita Metropolitan areas have seen the majority of the population growth in Kansas.

Kansas RLECs provide low cost services in areas where telephone rates would be higher due to the regions being sparsely populated. This lower cost service is attributable, in part, to USF support.



In Kansas, each RLEC receiving USF is designated by the FCC as a Carrier of Last Resort (COLR). COLRs are required by law to provide service to any customer in a service area that requests it, even if serving that customer would not be economically viable at prevailing rates. As stated in a study by The National Research and Regulatory Institute, these policies were established to provide service to low income, low population areas because competition by itself cannot ensure broad-based access to telephone service. Competitors may avoid serving areas that are

high cost, sparsely populated or filled with subscribers of limited means, while incumbent providers may seek to discontinue service in those same areas.[9]

Low Cost Services

The services or functionalities that are currently supported by USF are: voice-grade access to the public switched telephone network; local usage; dual tone multi-frequency signaling or its functional equivalent; single-party service or its functional equivalent; access to emergency services; access to operator services; access to long distance services; access to directory assistance; and toll limitation for qualifying low-income consumers.[10] The FCC is attempting to modify this focus to include broadband deployment. The reduction of USF distributed to Kansas RLECs proposed in the NPRM could create the need to increase fees for existing services.

An increase in fees may impact consumers in rural areas differently depending on carrier options in their area. Across the state, there are a variety of markets served by Kansas RLECs. They are sometimes, but not always, the only provider of telephone service. Depending on the availability of alternative service providers, consumers will react differently to a potential increase in the cost of phone service. Telephone calls are highly elastic between service options.[11] This means that as the price of service increases, consumers will easily move between available service providers to find a lower price. However, access to telephone service is inelastic.[12] In areas where there is only one provider, consumers are not sensitive to price. As the price of the service increases, they will pay the higher price to keep the service and reduce their spending in other areas. The impact of the reduced spending in other areas is beyond the scope of this report.

Access to the Internet supported by USF can be important to the development of rural communities. From the National Telecommunications and Information Administration, Research Preview, February 2011, in a survey of 54,000 households and 129,000 people, more than 68 percent of U.S. households currently use high-speed broadband access. However, rural America lags behind urban areas by ten percentage points (60% versus 70%) in the adoption of broadband. From this same survey, the number one reason (38.7%) households do not have an Internet connection at home is cost.[13]

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[9] Bluhm, Peter, Phyllis Bernt, *Carriers of Last Resort: Updating a Traditional Doctrine,* National Regulatory Research Institute, 09-10 July 2009, http://www.nrri.org/pubs/telecommunications/COLR_july09-10.pdf.

[10] Kansas Corporation Commission

[11] Train, Kenneth E., Daniel L. McFadden and Moshe Ben-Akiva, The demand for local telephone service: A fully discrete model of residential calling patterns and service choices, *The Rand Journal of Economics,* Spring 1987, Vol.18 NO. 1, ABI/INFORM Global, pg. 109

[12] Ellig, Jerry, Costs *and Consequences of Federal Telecommunications and Broadband Regulations,* Washington: Fall 2005, Vol. 28, No.3, pg. 40-44.

[13] Digital Nation – Expanding Internet Usage, NTIA Research Preview, February 2011, U.S. Department of Commerce, National Telecommunications and Information Administration.

Methodology

Fiscal Benefit Cost Model

CEDBR calculates benefits and costs using the Fiscal Benefit Cost Model. The model takes into account industry substitution and multipliers. In addition, it looks at the flow of money from a company or entity to taxing districts and the flow from the taxing district to the company. CEDBR looks at income streams from sales and purchases of the entity under review, employees and the payrolls associated with employees.

For the purpose of this project, average regional tax rates were used when calculating impacts to the region. The actual impact could vary based on the specific location of the Kansas RLEC.

The model takes each benefit and applies the appropriate tax scenario. As an example, an employee is paid a wage on which income taxes are paid. The employee spends their income on housing, which is assessed a property tax, and on retail trade, which is assessed a retail sales tax. It is assumed that 50 percent of all wages are subject to retail sales tax. It is further assumed that 100 percent of wages are subject to federal income tax, as well as state income tax.

In the Fiscal Benefit Cost Model, all data used in the model are subject to a substitution and a multiplier effect.

Substitution Effect

Substitution occurs when new investment displaces current resources and jobs from one entity to another. This study includes this effect, except for USF, an inflow of federal funds within the state and region. All USF are new to the area and would not currently exist within Kansas without the Kansas RLECs.

RIMS II Multipliers

RIMS II multipliers from the Bureau of Economic Analysis, aggregated for the State of Kansas, were used to calculate total economic impacts from industry expansion, net of substitution. The notion of a multiplier effect arises due to the interrelatedness of local industries. For example, if the demand for aviation products increases, this will lead to an increase in demand from industry suppliers. Therefore, payroll increases as a direct result of the expanding firm's operations and indirectly as a result of the expanding firm's increase in demand for locally supplied inputs. The multiplier also addresses the relationship between wages and employee demands on supporting industries, such as retail trade. There is a need for additional employees, who earn wages, as sales in retail trade industries increase. This induced effect measures the impact of expenditures of direct and indirect employees to retail and other industries. The total effect of expansion is the sum of these direct, indirect and induced effects.

RIMS II multipliers are available for final demand output, earnings and employment and were used to assess the economic impact of the 35 Kansas RLECs in this study. Final demand multipliers are used to assess the effect a change in output in one industry has on other

industries within an economic region. Direct effect employment multipliers can range in value from 1.2 for child day care services to 5.6 for petroleum refineries.

Direct effect multipliers are reported for both employment and earnings impacts and were used in determining the direct effect of employment and wages. Direct effect multipliers calculate the change in total employment based on a change in a specific industry's employment.

For the purpose of this report, the North American Industry Classification System (NAICS) code for telecommunication carriers was used.

Employee Residence

The methodology used assumes that 100 percent of the Kansas RLECs employees live within the Kansas RLEC's region. Furthermore, it was assumed that, if the Kansas RLECs did not exist, half of the employees living in the region would have to leave. In other words, 50 percent of Kansas RLEC employees live in the region due to the location of their employer. In addition, 70 percent of individuals are assumed to own a home.

Limitations

It should be noted that this study, when looking at the impact of the NPRM, takes a limited-direct approach to evaluating the impact. The authors of this study recognize that this does not completely estimate the full impact this regulatory action will have on the local economies served by the Kansas RLECs. Other potential impacts that should be noted, but were beyond the scope of this study include the following:

- Intercarrier Compensation Reform
- Community Donations
- Volunteer Time
- Community Leadership
- Economic Development Leadership
- Disruption of telecommunication/broadband services provided to anchor institutions (e.g. schools, libraries, hospitals, and health clinics)

If USF were not used to provide Kansas RLEC support, it would be available for alternative use. Estimating the potential economic impact of alternative uses of these opportunity costs was beyond the scope of this analysis.

Data Estimates

The initial phase of the project required CEDBR to define the time period under analysis. The time period was defined by the availability of comparable data; the analysis uses data from 2010 and projected data for 2012 through 2016. Data was held constant between 2010 and 2011. This analysis focuses on the economic impact of a decline in business activity within Kansas.

In order to calculate the fiscal and economic impact of business activity to Kansas, the following data was used:

- Gross Revenue
- Expenditures
- Employment
- Annual Payroll
- Customer Counts

Projected Revenues and Expenditures

Actual revenue, USF funding and expenditure data were provided for 2010. Revenue and USF funding estimates for years 2012 through 2016 were provided. CEDBR assumed that non-USF revenues would remain constant through the analysis period. Pre-NBP revenues were calculated by adding non-USF revenues to estimated USF revenues during the analysis period. Post-NBP revenues were calculated in the same manner, only using NBP adjusted USF data.

Expenses were provided for 2010. In 2010, expenditures were approximately 83 percent of revenues. CEDBR forecasted both pre-NBP and post-NBP expenditures by taking revenues for the given time period times the 83 percent. That being said, it is likely, given current capital expenditures, total expenses will grow to a greater percentage of revenues than in 2010. It should be noted that using 83 percent is a conservative estimate.

The estimated percent change from the proposed NBP is calculated by year.[14] In other words, the proposed change in USF will decrease total revenues by 13.6 percent in 2016.

	Estimated Revenue				Estimated Expenses	
	Pre-NBP	Post-NBP	$ Change	% Change	Pre-NBP	Post-NBP
2010	$261,108,847				$216,088,081	
2012	$268,580,172	$251,354,697	-$17,225,475	-6.4%	$222,271,189	$208,015,756
2013	$274,945,460	$250,065,792	-$24,879,668	-9.0%	$227,538,965	$206,949,086
2014	$276,701,743	$244,235,411	-$32,466,332	-11.7%	$228,992,427	$202,123,987
2015	$273,782,538	$241,185,299	-$32,597,239	-11.9%	$226,576,556	$199,599,780
2016	$267,112,440	$230,705,149	-$36,407,291	-13.6%	$221,056,526	$190,926,633
Total	$1,361,122,352	$1,217,546,348	-$143,576,004	-10.5%	$1,126,435,663	$1,007,615,242

Wages and Employment

Wages and full-time equivalent employment data were provided for 2010. Employment data was estimated based on revenue per employee. In 2010, revenue per employee was approximately $259,900, indicating that to hire an additional employee revenues would need to increase by $259,900. On the other side, each time revenue declines by $259,900, a

[14] Estimated percentage change from NBP was calculated by the percentage change from Pre-NBP revenue to the Post-NBP revenue.

company would need to reduce employment by one employee. Using this assumption, CEDBR estimated employment in 2012 through 2016 prior and post NBP proposed funding changes.

Total wages paid were based on the average annual wage of Kansas RLEC employees and total employment. In 2010, the average annual wage of a Kansas RLEC employee was approximately $53,457. The national annual earnings for wired telecommunication carriers in 2010 were $61,113, according to the Current Employment Statistics from the Bureau of Labor Statistics.

	Wages		Employment	
	Pre - NBP	Post - NBP	Pre - NBP	Post - NBP
2010	$53,724,040		1,005	
2012	$55,242,045	$51,699,079	1,033	967
2013	$56,551,269	$51,433,975	1,058	962
2014	$56,912,504	$50,234,772	1,065	940
2015	$56,312,077	$49,607,419	1,053	928
2016	$54,940,160	$47,451,844	1,028	888

Sums may not add to totals due to rounding.

Economic Impact

The reduction in funding to Kansas RLECs from the NPRM is estimated to total $143,576,054 between 2012 and 2016. The total impact of this loss of USF to the Kansas RLECs in the local economy combines direct loss of jobs at the Kansas RLECs with the indirect and induced effects. The indirect and induced effects are due to: industry substitution; multipliers; the flow of money from the Kansas RLECs to taxing districts; the flow from the taxing district to the Kansas RLECs; income streams from sales and purchases of the Kansas RLECs; employees; and the payrolls associated with employees.

The direct loss of employment as a result of the loss of funding is estimated to be 67 jobs in 2012, with lost wages estimated to be $3,581,603. Job losses are estimated to increase each year. In 2013, there is projected to be 96 jobs lost, with lost wages estimated to be $5,131,849. In 2014, projected losses are 125 jobs with lost wages estimated to be $6,682,095. In 2015, projected losses are 126 jobs with lost wages estimated to be $6,735,551. In 2016, projected losses are 140 jobs with lost wages estimated to be $7,483,946. The total estimated direct loss of jobs between 2012 and 2016 is 140 jobs. This will result in a direct loss of approximately $29,615,043 in wages during the same time period.

The direct job losses are amplified in the economy as a result of the indirect and induced effects, more commonly referred to as an employment multiplier. The employment multiplier is 2.6, which means for every one job lost, there are an additional 1.6 jobs also removed from the economy. The total loss of employment including these effects is estimated to be: 175 jobs and $6,180,055 in wages in 2012; 251 jobs and $8,855,005 in wages in 2013; 327 jobs and $11,529,954 in wages in 2014; 330 jobs and $11,622,194 in wages in 2015; 367 jobs and

$12,913,549 in wages in 2016. As a result of these job losses, the State of Kansas is estimated to lose personal income taxes in the total amount of $1,434,472 during the five years covered by the projections.

Based on the assumption that the job losses will reduce property tax collections, CEDBR estimated the total loss of property taxes at the regional level to be $931,775 and $177,426 at the state level between 2012 and 2016, with the majority of losses occurring in the later years.

The loss of wages in the economy will also reduce retail sales tax collections by an estimated amount of $223,567 at the regional level and $1,354,170 at the state level in the years covered by the projection.

Economic Impact of Total Employment - Pre - NBP									
	Direct Employment	Total Employment	Direct Wages	Total Wages	Property Tax Collections Region	Property Tax Collections State	Retail Sales Tax Region	Retail Sales Tax State	KS Personal Income Tax
2010	1,005	2,632	$53,724,040	$92,700,831	$630,171	$321,864	$405,566	$2,456,572	$2,602,245
2011	1,005	2,632	$53,724,040	$92,700,831	$1,260,343	$321,864	$405,566	$2,456,572	$2,602,245
2012	1,034	2,708	$55,274,286	$95,375,780	$1,908,698	$331,152	$417,269	$2,527,458	$2,677,335
2013	1,058	2,771	$56,557,248	$97,589,531	$2,572,102	$338,838	$426,954	$2,586,123	$2,739,478
2014	1,065	2,790	$56,931,445	$98,235,209	$3,239,895	$341,080	$429,779	$2,603,233	$2,757,603
2015	1,054	2,761	$56,343,421	$97,220,573	$3,900,792	$337,557	$425,340	$2,576,345	$2,729,121
2016	1,028	2,693	$54,953,545	$94,822,342	$4,545,385	$329,231	$414,848	$2,512,792	$2,661,799

Economic Impact of Total Employment - Post - NBP									
	Direct Employment	Total Employment	Direct Wages	Total Wages	Property Tax Collections Region	Property Tax Collections State	Retail Sales Tax Region	Retail Sales Tax State	KS Personal Income Tax
2010	1,005	2,632	$53,724,040	$92,700,831	$630,171	$321,864	$405,566	$2,456,572	$2,602,245
2011	1,005	2,632	$53,724,040	$92,700,831	$1,260,343	$321,864	$405,566	$2,456,572	$2,602,245
2012	967	2,533	$51,692,683	$89,195,725	$1,866,686	$309,694	$390,231	$2,363,687	$2,503,852
2013	962	2,520	$51,425,399	$88,734,527	$2,469,895	$308,093	$388,214	$2,351,465	$2,490,906
2014	940	2,462	$50,249,351	$86,705,255	$3,059,309	$301,047	$379,335	$2,297,689	$2,433,941
2015	928	2,431	$49,607,870	$85,598,379	$3,641,199	$297,204	$374,493	$2,268,357	$2,402,869
2016	888	2,326	$47,469,599	$81,908,794	$4,198,007	$284,394	$358,351	$2,170,583	$2,299,297

Difference between Pre and Post NBP									
	Direct Employment	Total Employment	Direct Wages	Total Wages	Property Tax Collections Region	Property Tax Collections State	Retail Sales Tax Region	Retail Sales Tax State	KS Personal Income Tax
2010	0	0	$0	$0	$0	$0	$0	$0	$0
2011	0	0	$0	$0	$0	$0	$0	$0	$0
2012	-67	-175	-$3,581,603	-$6,180,055	-$42,011	-$21,458	-$27,038	-$163,771	-$173,483
2013	-96	-251	-$5,131,849	-$8,855,005	-$102,207	-$30,745	-$38,741	-$234,658	-$248,573
2014	-125	-327	-$6,682,095	-$11,529,954	-$180,586	-$40,033	-$50,444	-$305,544	-$323,662
2015	-126	-330	-$6,735,551	-$11,622,194	-$259,593	-$40,353	-$50,847	-$307,988	-$326,252
2016	-140	-367	-$7,483,946	-$12,913,549	-$347,378	-$44,837	-$56,497	-$342,209	-$362,502

Appendix A

Kansas Rural Local Exchange Carriers Participating in the Study

Blue Valley Tele-Communications, Inc., Home, KS 66438

Columbus Telephone Co., Inc., Columbus, KS 66725

Craw-Kan Telephone Cooperative, Inc., Girard, KS 66743

Cunningham Telephone Co., Inc., Glen Elder, KS 67446

Elkhart Telephone Co., Inc., Elkhart, KS 67950

FairPoint Communications (Sunflower Telephone Company and Bluestem Telephone Company) Dodge City, KS 67801

Golden Belt Telephone Assn., Rush Center, KS 67575

Gorham Telephone Co., Inc., Gorham, KS 67640

H & B Communications, Inc., Holyrood, KS 67450

Haviland Telephone Co., Inc., Haviland, KS 67059

Home Telephone Co., Inc., Galva, KS 67443

JBN Telephone Company, Inc., Holton, KS 66436

KanOkla Networks, Caldwell, KS 67022

LaHarpe Telephone Co., Inc., LaHarpe, KS 66751

Madison Telephone, LLC, Madison, KS 66860

Moundridge Telephone Co., Inc., Moundridge, KS 67107

Mutual Telephone Company, Little River, KS 67457

Peoples Telecommunications, LLC, LaCygne, KS 66040

Pioneer Communications, Ulysses, KS 67880

Rainbow Telecommunications Assn., Everest, KS 66424

Rural Telephone Service Co., Inc., Lenora, KS 67645

S & A Telephone Company, Allen, KS 66833

S & T Telephone Coop Assn., Inc., Brewster, KS 67732

South Central Telephone Assn., Inc., Medicine Lodge, KS 67104

Southern Kansas Telephone Co., Inc., Clearwater, KS 67026

Totah Telephone Company, Inc., Ochelata, OK 74051 (serving telephone exchanges in Southeast Kansas)

Tri-County Telephone Assn., Inc. (and Council Grove Telephone Company)
Council Grove, KS 66846

Twin Valley Telephone, Inc., Miltonvale, KS 67466

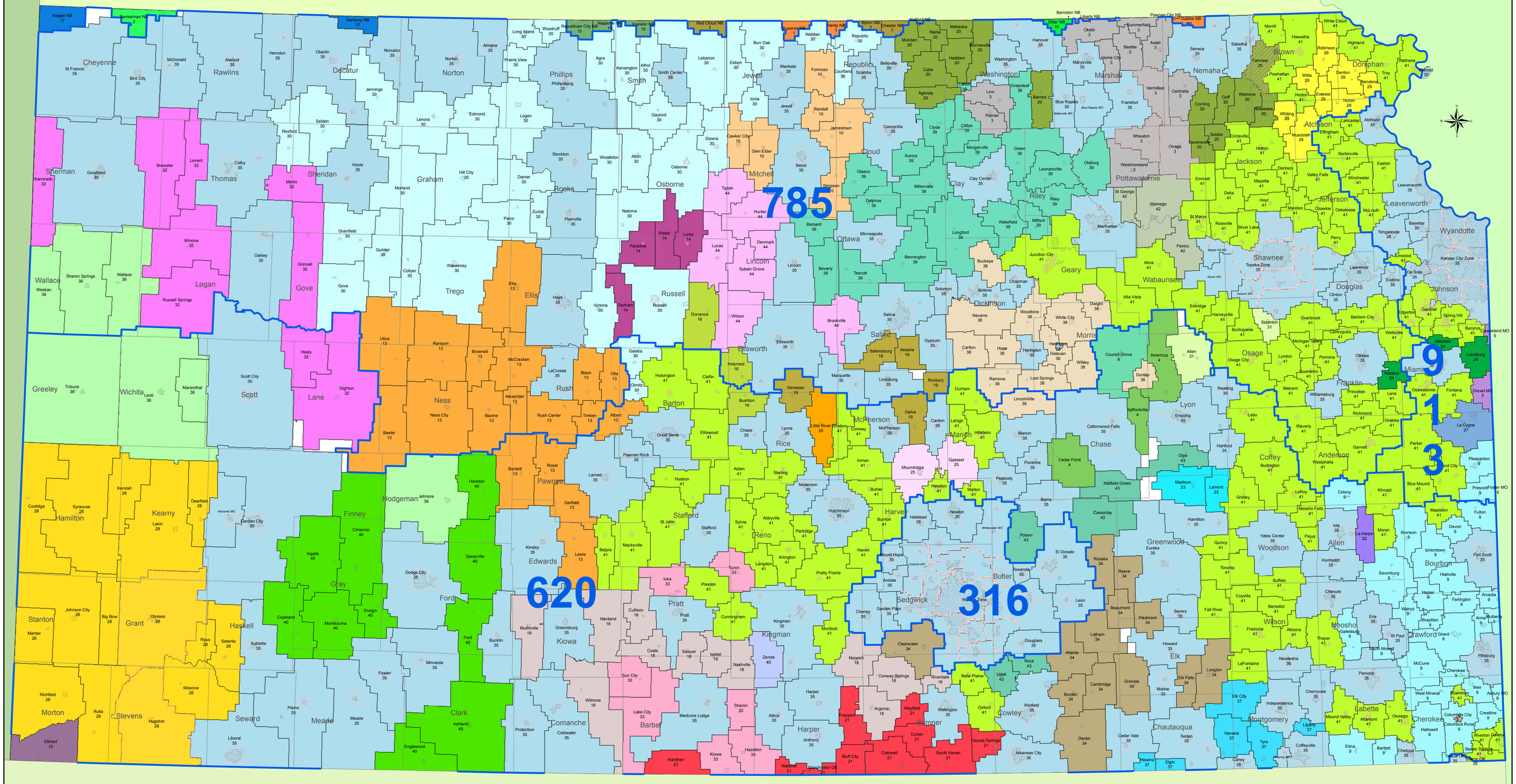
United Telephone Assn., Inc., Dodge City, KS 67801

Wamego Telecommunications Co., Inc., Wamego, KS 66547

Wheat State Telephone, Inc., Udall, KS 67146

Wilson Telephone Co., Inc., Wilson, KS 67490

Zenda Telephone Co., Inc., Zenda, KS 67159



Boundary Type

- Area Code
- Zone
- Exchange
- Base Rate Area Zone 1
- Cities and Towns

Dearing WC — Represents a wire center area used for KUSF support

Company Name

1 ALLIANT TELEPHONE COMPANY OF NB.
2 BENKELMAN TELEPHONE COMPANY INC.
3 BLUE VALLEY TELE-COMMUNICATIONS, INC.
4 BLUESTEM TELEPHONE COMPANY, INC.
5 CASS COUNTY TELEPHONE COMPANY
6 COLUMBUS TELEPHONE CO. INC.
7 CONTIENTAL TELEPHONE COMPANY OF NB.
8 COUNCIL GROVE TELEPHONE COMPANY
9 CRAW-KAN TELEPHONE COOPERATIVE, INC.
10 CUNNINGHAM TELEPHONE COMPANY, INC.
11 DILLER TLELPHONE COMPANY OF NB.
12 ELKHART TELEPHONE COMPANY, INC.
13 GOLDEN BELT TELEPHONE ASSOCIATION
14 GORHAM TELEPHONE COMPANY
15 GTE NORTH NB
16 H&B COMMUNICATIONS, INC.
17 HARTMAN TELEPHONE COMPANY OF NB.
18 HAVILAND TELEPHONE COMPANY, INC.
19 HOME TELEPHONE COMPANY, INC.
20 J.B.N. TELEPHONE COMPANY, INC.
21 KAN-OKLA TELEPHONE ASSN., INC.
22 LAHARPE TELEPHONE COMPANY, INC.
23 MADISON TELEPHONE LLC
24 MO-KAN DIAL, INC.
25 MOUNDRIDGE TELEPHONE COMPANY
26 MUTUAL TELEPHONE COMPANY
27 PEOPLES TELECOMMUNICATIONS, LLC
28 PIONEER TELEPHONE ASSN., INC
29 RAINBOW TELECOMMUNICATIONS ASSOCIATION, INC.
30 RURAL TELEPHONE SERVICE COMPANY, INC.
31 S&A TELEPHONE COMPANY, INC.
32 S&T TELEPHONE COOPERATIVE ASSOCIATION, INC.
33 SOUTH CENTRAL TELEPHONE ASSN. INC.
34 SOUTHERN KANSAS TELEPHONE COMPANY, INC.
35 SOUTHWESTERN BELL TELEPHONE CO.
36 SUNFLOWER TELEPHONE COMPANY, INC.
37 TOTAH COMMUNICATIONS, INC.
38 TRI-COUNTY TELEPHONE ASSOCIATION, INC.
39 TWIN VALLEY TELEPHONE, INC.
40 UNITED TELEPHONE ASSN., INC.
41 UNITED TELEPHONE CO. OF KANSAS
42 WAMEGO TELECOMMUNICATIONS COMPANY, INC.
43 WHEAT STATE TELEPHONE COMPANY, INC.
44 WILSON TELEPHONE COMPANY, INC.
45 ZENDA TELEPHONE COMPANY, INC.
NO SERVICE

CERTIFIED AREAS OF TELEPHONE EXCHANGES IN KANSAS

Miles
0 3 6 12 18 24

Kansas Corporation Commission
July 2012

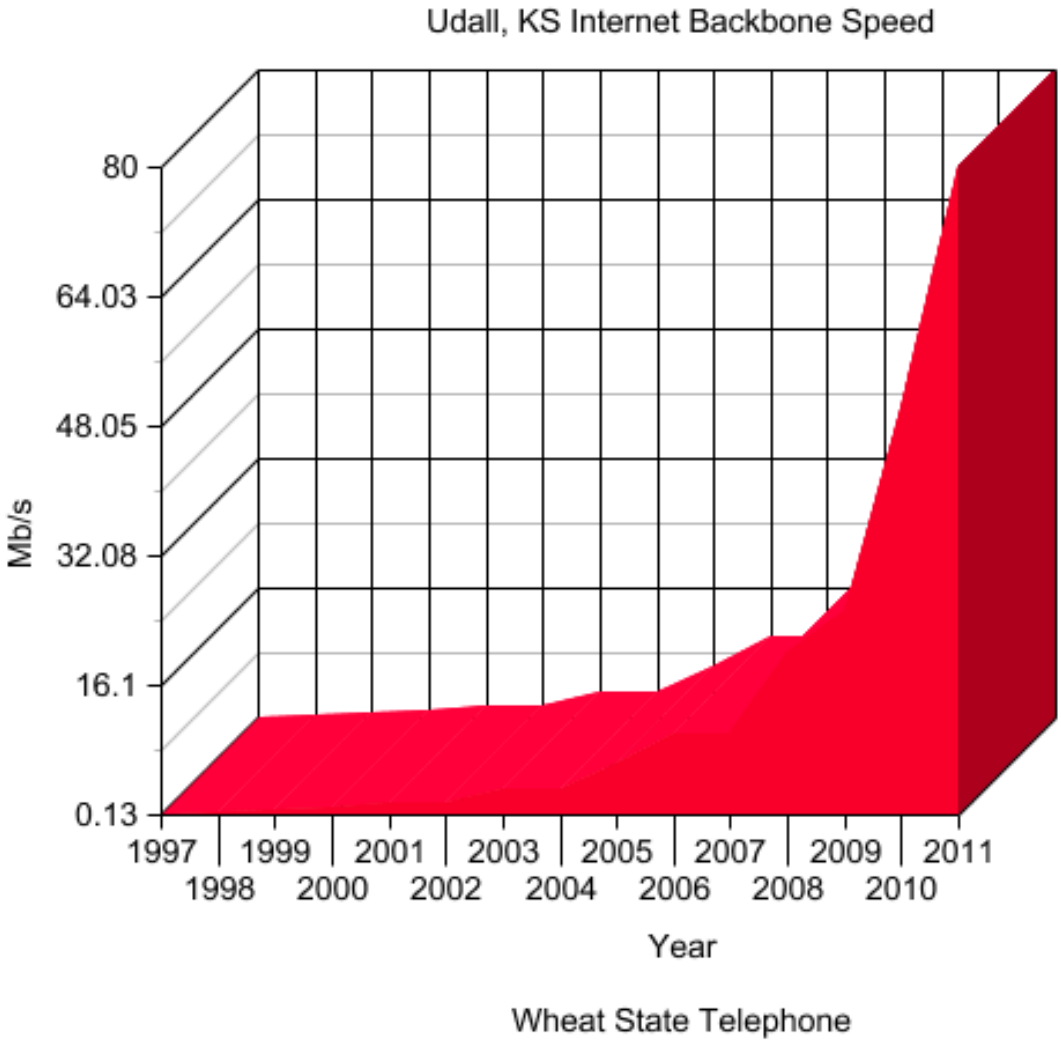
Wheat State Telephone began operations in 1950 with one exchange in South Central Kansas. Since then the company has grown to 6 exchanges covering 722 square miles, much of it in prime cattle country of the Flint Hills. By 1979 100% of Wheat State's cable plant was buried. We provide service to those communities where AT&T chose not to invest. For the rural communities in which we serve, we are the carrier of last resort.

In the 1980's Wheat State deployed its first fiber, serving as interoffice connections. In February, 2002 Wheat State introduced Digital Subscriber Line (DSL) service. Our network is comprised of fiber fed nodes with copper completing the connection to our customers. Wheat State Telephone has a substantial amount of copper plant in service. More than half of the copper plant is in excess of 40 years old, creating substantial maintenance challenges. This copper plant is a hindrance to providing the necessary bandwidth mandated by the FCC and what our customers need. A graph shows the bandwidth demand in the 15 years that Wheat State Telephone has provided internet service. Recent increases have been dramatic. To answer this ever increasing demand for greater network bandwidth and to replace an aging copper plant, Wheat State is deploying fiber to the home to all of its customers. We are currently in year 1 of a four year fiber project. This project is funded by Rural Utilities Service, although the uncertainty created by the reforms makes continuation of the project more difficult.

Wheat State Telephone provides economic support to 6 rural communities through local wages, payroll and property taxes and capital expenditures. Wheat State Telephone also impacts urban areas that have the products and services we need.

Predictable and sufficient support ensures that Wheat State Telephone will be able to meet the mandates contained in the FCC's USF and ICC Transformation Order. Below are illustrative statistics of Wheat State Telephone's area, broadband adoption and company demographics.

- Exchanges: 6
- Square Miles Covered: 722
- Total Customers: 1,507
- Density: 2.09 customers per square mile
- Access Lines: 1,674
- Broadband: 1,136 - 68% adoption rate
- Employees: 18 full-time
- Services offered: Broadband Internet Access, Local Telephone Service, and Long Distance Service
- Local Rates: $16.25 residential and $19.25 business


Udall, KS Internet Backbone Speed
80
64.03
48.05
32.08
16.1
0.13
Mb/s
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
Year
Wheat State Telephone

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Wilson Communications is a commercial RLEC operating in North Central Kansas. The company has been in business for more than sixty years. We build and operate efficient networks. We serve where the Bell companies would not. We have provider of last resort responsibilities.
Wilson Communications buried its copper plant back in the `70's to reduce weather related service interruptions and provide one party service. In the 1980's and `90's Wilson upgraded its interoffice network to fiber optic cable and its switching from mechanical to digital. This investment provided equal access to long distance carriers of the customers' choosing.
During the last decade fiber to the node was installed to meet the need for broadband capable networks. Wilson achieved 100% availability to its customers providing the then current standard of 768Kb/s down. Demand for greater network bandwidth continues.
Wilson now is investing in fiber to the premise. This undisputed technology provides the most reliable and technologically advanced medium for meeting the mandates contained in the Communications Act of 1996 and the FCC's USF and ICC transformation order.

Predictable and sufficient support ensures that Wilson will continue providing services and operational efficiencies to the rural communities we serve. We have the experience and knowledge to provide the best long term return on USF and ICC support. Below are illustrative statistics of Wilson's area, broadband adoption and economic impact.

- 7 Exchanges covering approximately 1,000 square miles.

- Average customer density is 1.4 customers per square mile.

- Exchanges include:
  - Wilson, 458 customers, 180 sq. miles, 2.5 customers/mi^2
  - Sylvan Grove, 222 customers, 142 sq. miles, 1.6 customers /mi^2
  - Lucas, 238 customers, 171 sq. miles, 1.4 customers /mi^2
  - Denmark, 33 customers, 49 sq. miles, 0.67 customers /mi^2
  - Hunter, 97 customers, 170 sq. miles, .57 customers /mi^2
  - Tipton, 188 customers, 127 sq. miles, 1.5 customers /mi^2
  - Brookville, 172 customers, 149 sq. miles, 1.5 customers /mi^2

- Total Customers: 1408

- Access Lines: 1559

- Broadband: 849 - 60% adoption rate

- Employees:
  - 16 Full-time
  - 4 Part-time

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- Services offered include Broadband Internet Access, Local Telephone Service, and Long Distance Service.

- Currently offer ADSL broadband services to 100% of our customer base. In 2009 began constructing fiber-to-the-premise. This network modernization is planned to take seven years to reach our entire customer base.

- Local telephone rates of $16.25 residential and $19.25 business are well above the USF/ICC transformation order floor of $10.00.

- Long term debt held by RUS.

- Economic activity impact
    - Payment of wages
    - Payment of local, state and federal taxes
    - Property taxes
    - Insurance
    - Support of area and remote businesses for supplies, utilities, vehicles, equipment, tools, furniture, cleaning, maintenance, transportation, shippers, repair shops, newspapers, radio stations, computers, network equipment, software, printers, paper goods and others.
    - Capital investments employ construction companies, engineering firms, material suppliers, construction equipment manufacturers and dealers.
    - Construction activity provides jobs for skilled and unskilled workers. It creates business for area restaurants, lodging, fuel and service stations, convenience stores, mechanics, tire dealers, banking, and insurance companies among others.