

Further Telecom Reform Needed in Tennessee

Hidden Subsidies Threaten Competition and Broadband

By Hance Haney and George Gilder | March 2011

Summary

Restricting broadband investment in Tennessee is a legacy cost-shifting arrangement that inflicts significant overcharges on consumers of in-state long-distance services. At a time of turbulent competition and innovation in telecommunications, this shuffling of costs is no longer sustainable.

Over-priced intrastate long-distance services traditionally have subsidized local service. But competition that erodes in-state long distance revenues – probably by 50% or more already – depletes the source of the subsidy, while new broadband opportunities make it unnecessary.

The best way to ensure affordable voice service is to remove barriers to broadband investment. A prime example is inflated intrastate access charges that hobble the creation of new multifunctional broadband platforms. These platforms allow telecommunications service providers to offer voice service at lower cost and to develop new sources of revenue, such as Internet access and video.

Interstate access charges have been significantly reduced already. Intrastate access charges can be manageably transitioned to mirror the interstate rates, which fully compensate telecommunications service providers for originating and terminating in-state long-distance calls. Eliminating the hidden subsidies in intrastate access charges would remove impediments to investment in broadband and also result in lower prices for in-state long-distance calls for Tennessee consumers.

- **Introduction**

Some smaller telecom providers in Tennessee are charging intrastate access rates which are at least three times higher than their interstate access charges.

Access charges are a vestige of the monopoly era, in which carriers could easily shift costs because they were protected from competition. The telecommunications market is now one of the most competitive arenas in the global economy. And legacy voice network traffic has declined by half.¹ The intrastate access revenues traditionally required to generate cross-subsidies for local phone service are rapidly declining. The system is imploding.

Congress directed the states to eliminate implicit subsidies in 1996. In recognition of the fact that the telecommunications industry has transitioned from monopoly to competition, the legislature has updated legacy telecommunications regulation in Tennessee in several important ways – most recently

in 2009.ⁱⁱ However, previous reform efforts have not eliminated pernicious hidden cross-subsidies which distort competition and discourage investment in efficient broadband networks.

Although broadband offers new opportunities to get a job or start a business – and is most valuable where other opportunities for wealth creation are least available, such as in disadvantaged communities and rural areas – a legacy regulatory framework, which includes intrastate access charges, continues to divert private investment to traditional networks optimized to carry only voice service – not video or data services upon which economic growth increasingly depends.ⁱⁱⁱ

The National Broadband Plan prepared by the Federal Communications Commission at the request of Congress in March, 2010 hints at the possibility that the federal government may require the states to eliminate implicit subsidies such as intrastate access charges.^{iv} A Notice of Proposed Rulemaking issued by the FCC in last month invites public comment on how the FCC can create incentives for the states to reform intrastate access charges. Among other things, the NPRM asks whether support from a potential new Connect America Fund should be withheld from states that are not taking measures to reduce intrastate access rates.^v

This paper observes that intrastate access charges can be manageably transitioned in a manner that encourages migration of voice services provided by incumbent telecommunications providers from legacy networks to efficient multifunctional broadband networks capable of providing voice, video and data services at lower cost.

Access reform will not jeopardize phone service in rural Tennessee. Aside from new revenue opportunities from wireless, video and Internet access services, under current law the Tennessee Regulatory Authority may establish an explicit subsidy for telephone companies that can demonstrate an inability to maintain landline voice service with revenues from their own business activities.^{vi}

Finally, available evidence points to the fact that reductions in access charges are passed along to consumers in the form of lower prices for long-distance service.^{vii}

- **Rates Some Telecom Providers Charge for Intrastate Access Are Excessive**

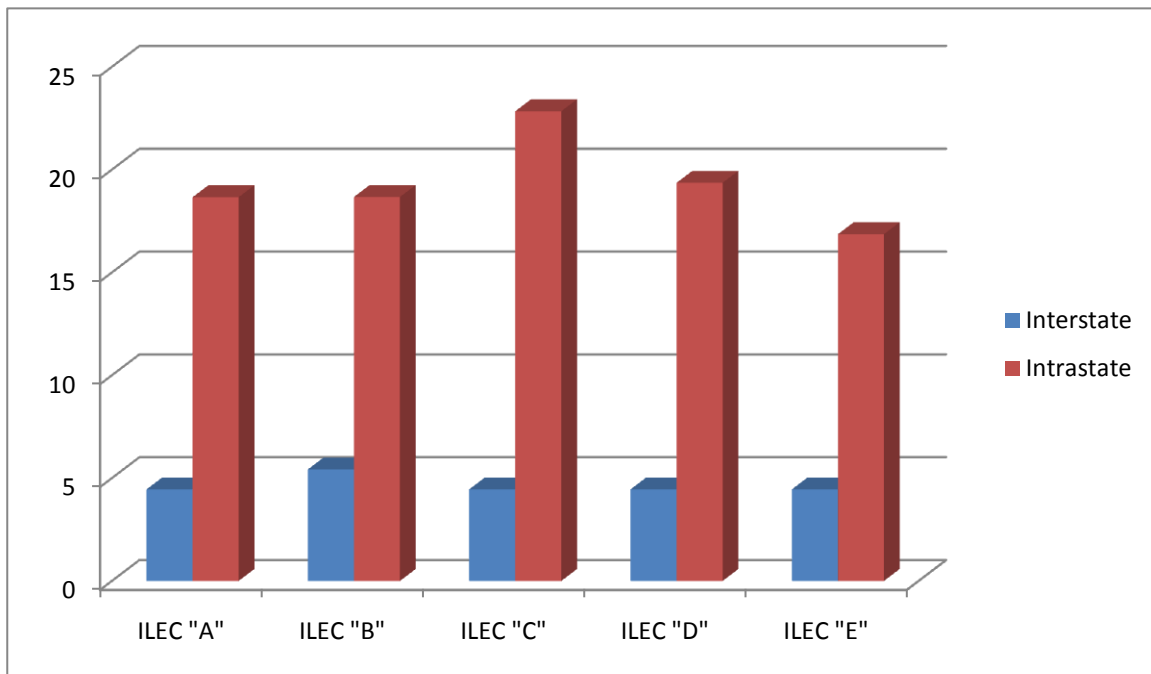
During the monopoly era, an extensive system of implicit subsidies were created at both the state and federal levels to maintain rates for basic residential local telephone service at the lowest possible levels. Rates for long distance service, for example, were set far above cost to generate significant subsidies for local service. Access charges are paid by long-distance and wireless providers to local phone providers when calls are exchanged between the providers.

Prior to competition, incumbent providers could afford to lose money serving high-cost consumers and leverage their protected monopoly status to fully recover the losses by charging above-cost rates to other end users who had nowhere else to go for their telecommunications needs.

An unintended consequence of hidden subsidies was to nurture and sustain monopolies in the residential and rural categories of the telecommunications market, which typically have been subsidized. When rates are set below cost, an efficient competitor will have no incentive to enter the market.

Intrastate v. Interstate access charges in Tennessee

Cents per minute



Sources: FCC, filed tariffs

There are some carriers in Tennessee charging rates for intrastate access that are much higher than what they assess for interstate access services.^{viii} Five randomly selected independent local telephone incumbents were each charging intrastate access rates which were at least three times more than their interstate access charges.

For example, the FCC has determined that ILEC "C" in the nearby chart is entitled to charge only 4.45 cents per minute for a call between any location in Tennessee and Los Angeles or New York City. The same phone company collects 22.84 cents per minute for any non-local call originating somewhere else within Tennessee. ILEC "C" is furnishing the same service and incurring the same cost in either case.

Tennessee's largest telecommunications provider, AT&T, already charges the same rate (1.5 cents per minute) for both interstate as well as for intrastate access.^{ix}

The only justification for two separate prices is that state law in Tennessee still permits local companies to subsidize their operations by charging inflated intrastate access rates, while the FCC and federal law (for reasons discussed below) have – with respect to interstate services – eliminated this source of implicit subsidies.

Telephone companies are obligated to charge average rates to consumers. When forced to pay high intrastate access fees, the companies cannot pass these charges directly to the particular customers whose calls generate in some cases significant marginal cost. Thus, there is no incentive for customers who utilize the services of a LEC that charges high intrastate access fees to minimize costs.

Moreover, telephone companies are under more pressure to flow higher per-minute access charges through to consumers in the form of per-minute charges for long distance service. The alternative – to offer flat-rate plans that most consumers prefer – requires averaging, which leads to higher rates for the urban and suburban majority to subsidize the minority. The higher anything is priced, the less it is used. Therefore, higher prices for the majority of consumers of long-distance leads to reduced demand and less revenue.

Inflated access charges also create incentives for telecommunications companies to consolidate, so they don't have to hand off as many calls to other networks. With more customers, it is likely that more calls will originate and terminate on the same larger network. When payments to other carriers can be eliminated, customers can pay lower rates and perhaps consume more service.

- **Implicit Subsidies Are Unsustainable
In a Competitive Market**

If wireless and VoIP providers can profitably offer lower prices for long-distance than an incumbent landline provider, competition will erode the significant subsidies that intrastate access charges generate. The widespread availability of lower-cost competitive alternatives to landline phone service diminishes the ability of incumbent telecommunications providers to dictate above-cost rates to generate needed subsidies. Since competitors may choose to serve only profitable customers and ignore high-cost consumers, implicit subsidies cannot be maintained in a competitive market.

For one thing, the providers of VoIP services are not obligated pay intrastate access fees, because the FCC has designated VoIP services which allow consumers to make calls to or receive calls from the telephone system (“interconnected VoIP”) as jurisdictionally interstate.^x These services are subject to interstate access charges, which in states like Tennessee are frequently substantially less than intrastate access. VoIP services which do not connect with the telephone system do not pay any access charges.^{xi}

Although wireless service providers are obligated to pay both intrastate and interstate access charges, they do not pay intrastate access charges for a large volume of wireless traffic – which the FCC has classified as “local.”^{xii}

Besides the unintended advantage that wireless and VoIP services derive from the burden that intrastate access charges impose on their wireline competitors, competitive advantage also accrues in some cases due to the fact that wireless and VoIP technologies may be a more efficient means of serving some consumers. For example, Kyle McSarrow of the National Cable & Telecommunications Association notes that cable companies offer digital phone service in rural areas almost wholly without any of the direct federal subsidies that comprise a significant share of the income of some smaller telephone companies serving remote areas.^{xiii} In 2008, Verizon Wireless and Sprint agreed to reduce the direct federal support they received to serve rural areas from \$530 million to zero over five years.^{xiv}

It should not concern policymakers if a voluntary decision to adopt one technology versus another confers competitive advantages in the marketplace. But policymakers should act when some commercial entities are at a competitive disadvantage because – unlike their rivals – they are legally obligated to pay inflated prices for intrastate access. Lawmakers should allow telephone companies to provide a more competitive service by following the FCC’s lead and reducing intrastate access charges to the same level as interstate access charges.

- **Competition Is Rapidly Eroding
The Intrastate Access Market**

Given that the subsidies generated by intrastate access charges are not sustainable in a competitive market, with the advent of turbulent competition it is not possible to preserve the status quo, nor is it desirable to postpone reform.

The monopoly era officially ended with the federal Telecommunications Act of 1996, which opened the market to competition.^{xv} Congress and the FCC wrote elaborate rules providing opportunities and incentives for new entrants, whom most policymakers presumed would utilize legacy technology. Most of these entities eventually went bankrupt or were acquired. Competition emerged anyway, albeit not as expected. Mobile phones and the Internet – both of which were mostly overlooked by lawmakers and regulators – thrived in the near absence of regulation.

Today, incumbent telecommunications providers are facing intensive competition from VoIP providers, from cable operators, from wireless providers and from other certificated wireline providers. The Tennessee Regulatory Authority has approved market regulation in each of the state’s five rate groups pursuant to Tennessee law in recognition of the fact that at least two non-affiliated telecommunications providers offering competitive service could be identified.^{xvi}

Nationally, 99.6 percent of the total U.S. population – including 98.5% of the rural population – had one or more different operators offering mobile telephone service in the census blocks in which they live in 2009, according to the FCC.^{xvii} In mid 2009, 29.3% of households in the South had only wireless telephones, according to a study conducted by the Centers for Disease Control of the U.S. Department of Health and Human Services.^{xviii} Another 18.1% of Southern households received all or almost all calls on wireless telephones, even though they also had a landline phone.^{xix} Adding these two categories together, 47.4% of households in the South either don't have a landline phone at all, or they don't use their landline phone for most of their calls.

VoIP services were offered by 10 or more providers in zip codes containing 86.2 percent of the nation's households in the first half of 2009, according to the FCC.^{xx} Only half of one percent of households were located in zip codes with zero providers.^{xxi} Cable companies are using VoIP to provide voice services. Comcast became the nation's third largest phone services provider in March, 2009.^{xxii}

A news magazine recently predicted that if consumers discontinue landline telephone service at the current rate, "the last cord will be cut sometime in 2025."^{xxiii}

Intrastate access charges are assessed on a per minute basis. But, as a result of competition, there are alarmingly fewer minutes to assess. The FCC reports that interstate minutes-of-use of incumbent telecom providers declined 50% between 2000 and 2009.^{xxiv} Local and intrastate minutes-of-use undoubtedly have also declined precipitously. AT&T, for example, has estimated that intrastate minutes-of-use decreased 60% between 2000 and 2008.^{xxv}

The cost of maintaining a network ready and able to provide service to any consumer upon request does not vary in direct proportion to the number of active subscribers. There are many fixed costs. One analyst estimated that the average annual cost of maintaining the legacy network rose from \$43 per line in 2003 to \$52 in 2009.^{xxvi} Faced with competition from wireless and VoIP services, incumbent telephone companies have little, if any, freedom to raise rates.

As the number of subscribers dwindles, local phone companies must find new efficiencies and new sources of revenue to sustain their businesses, rather than continue to rely upon unsustainable subsidies hidden in declining intrastate access charges. For example, telecommunications service providers are successfully entering new areas of business such as video, wireless, and internet access.

- **Congress Directed the FCC
And The States to Eliminate
Implicit Subsidies**

Congress fully recognized that implicit subsidies were incompatible with competition, and in the 1996 Telecommunications Act it directed the FCC and the states to create permanent subsidy mechanisms that would be "explicit and permanent."^{xxvii} According to the FCC,

Congress intended that states ... must in the first instance be responsible for identifying intrastate implicit universal service support. Indeed, by our decisions in this Order and in our companion *Universal Service Order*, we strongly encourage states to take such steps.”^{xxviii}

Although Congress and the FCC have traditionally avoided any suggestion of preempting implicit subsidies at the state level, the recent National Broadband Plan issued by the FCC at the request of Congress in March of last year recommends reducing intrastate access charges to interstate rate levels in equal increments over a period of 2-4 years, and to eliminate per-minute charges altogether by 2020.^{xxix} In its current form, the recommendation is nonbinding.

A Notice of Proposed Rulemaking issued by the FCC last month invites public comment on how the FCC can create incentives for the states to reform intrastate access charges. Among other things, the NPRM asks whether support from a potential new Connect America Fund should be withheld from states that are not taking measures to reduce intrastate access rates.^{xxx}

Establishing parity between intrastate and interstate access charges for all telecommunications providers is unlikely to create hardship for individual providers. Existing Tennessee law authorizes the Tennessee Regulatory Authority to establish a universal service support mechanism, if necessary, to assist telecommunications service providers who demonstrate they cannot furnish landline voice service solely based on the revenues generated by their own businesses.^{xxxi}

- **Inflated Intrastate Access Charges Discourage Investment in Broadband**

Hidden subsidy mechanisms conflict with the National Broadband Plan’s goal of ubiquitous access to broadband at the fastest speeds. The subsidies are targeted toward single-purpose voice telephone networks, and only indirectly support integrated, multifunctional broadband platforms which are capable of delivering voice service at lower cost.^{xxxii} Additionally, implicit subsidies including intrastate access charges may actually discourage the deployment of broadband networks.

Broadband providers have begun migrating to more efficient IP interconnection and compensation arrangements for the transport and termination of IP traffic. Because providers’ rates are above cost, the current system creates disincentives to migrate to all IP-based networks. For example, to retain ICC revenues, carriers may require an interconnecting carrier to convert Voice over Internet Protocol (VoIP) calls to time-division multiplexing in order to collect intercarrier compensation revenue. While this may be in the short-term interest of a carrier seeking to retain ICC revenues, it actually hinders the transformation of America’s networks to broadband.^{xxxiii}

In a report for the FCC, Robert C. Atkinson and Ivy E. Schultz estimated that the major telephone companies invested approximately 52% of the \$28 billion they spent on capital expenditures in 2008 on

legacy voice networks.^{xxxiv} Legacy networks are optimized for voice, not video or data. A broadband network, on the other hand, is capable of carrying voice, video and data.

Investment in legacy voice networks simply doesn't have spillover benefits for the entire economy like investment in broadband. A study by the Brookings Institution found that 300,000 private non-farm jobs are created throughout the entire economy for every one percentage point increase in broadband penetration.^{xxxv} The authors conclude that employment in both manufacturing and services industries (especially finance, education and health care) is positively related to broadband penetration.

Economists have found higher residential property values and more jobs and businesses in communities with broadband, particularly in smaller, more rural and economically distressed areas.^{xxxvi} Wage and salary jobs, as well as the number of proprietors, grew faster in counties with early broadband Internet access.^{xxxvii}

Access to broadband is becoming increasingly important for employment, education, news, health care and consumer welfare purposes, as FCC Commissioner Mignon Clyburn recently noted.

In today's fast-changing world, broadband is not a luxury; but rather, it is a necessity, a must-have. Need a job? You'll have to go on-line for that. Want to manage your energy consumption at home? You'll have to go on-line for that. Applying for government benefits? Before long, you will have to go exclusively on-line for that too.

* * * *

Broadband's key promise for people of color in particular is economic empowerment. For the first time, there are no immediate and overwhelming barriers to entry for upstart businessmen and women or "cyberpreneurs." Broadband has opened avenues never dreamed possible by those in challenged communities.^{xxxviii}

"We firmly believe that ubiquitous broadband access, adoption, and use, stand to be great equalizers in our society," notes a joint policy statement of the National Asian-Pacific American Caucus of State Legislators, National Black Caucus of State Legislators, National Caucus of Native American State Legislators and the National Hispanic Caucus of State Legislators. "As such, we must ensure that Internet adoption and use via a broadband connection becomes engrained as a social, cultural norm in our communities."^{xxxix}

Policymakers should ensure that telecommunications providers are not diverting investment from multipurpose broadband platforms to legacy telephone networks due to outdated regulatory mandates. Intrastate access charges were designed to generate subsidies for legacy telephone networks. Although intrastate access revenues may be helping rural telecommunications providers transition to IP networks, they should not be mandated in perpetuity. IP networks are vastly more efficient than legacy architecture.

A study by Connected Nation estimates that just a 7 percent increase in broadband adoption – similar to the higher household broadband adoption in Kentucky versus national growth that was achieved by

addressing local supply and demand issues – would create or save 49,142 new jobs per year in Tennessee.^{xi} The Connected Nation Study also projects the following additional benefits assuming a reasonably-achievable 7 percent increase in broadband in Tennessee:

- \$1,682,608,846 in direct annual income growth
- \$13,377,207 in average annual health care costs saved
- 75,784,562 in average annual hours saved
- \$623,706,946 in annual value of hours saved
- \$130,689,201 in average annual mileage costs saved
- 66,197,898 in average annual lbs. of CO2 emissions cut.^{xii}

The total economic impact of accelerating broadband access and use in Tennessee is approximately \$2.5 billion, according Connected Nation.^{xiii} Although Tennessee has already taken significant steps to update its telecommunications statutes, it is not clear that all of these benefits could be achieved without a further reform of remaining hidden subsidies.

- **High-Priced Intrastate Access Is Unnecessary to Maintain Affordable Phone Service**

Intrastate access charges can be reduced without forcing rural and residential consumers to pay higher prices for basic service. Telecommunications service providers can work to develop other sources of revenue, such as video, wireless, and broadband. They can also work to reap savings from the efficiencies made possible by newer technologies. And, if demonstrably unable to maintain landline voice service with revenues from their own business, they can seek an explicit subsidy from the Tennessee Regulatory Authority pursuant to existing state law.^{xliii} Legislation could promote an orderly and predictable transition process allowing local phone companies to gradually reduce intrastate access charges over a reasonable period of time.

At this point, there is no compelling reason (other than preexisting regulation) for telecommunications providers to maintain two networks, a broadband Internet access network and a legacy telephone network for voice service. A multifunctional broadband network can deliver increasingly robust voice service utilizing VoIP technology, with more features at lower cost.^{xliv}

Ultimately, the way to ensure affordable voice service is to remove barriers to broadband investment. The alternative is either for incumbent providers to raise their rates – which defeats the goal of affordable phone service – or receive higher subsidies; which would force wireless and VoIP customers to pay higher prices, and slow the inevitable migration from legacy to new age communications networks.

- **Reducing Inflated Access Charges Would Provide Savings for Consumers**

Reforming intrastate access charges would provide savings for Tennessee consumers in the form of lower prices for in-state long-distance calls. The hidden subsidy component in intrastate access charges operate as a form of tax which only residents of Tennessee pay, since lower interstate access fees apply to any call which crosses state lines. Removing hidden subsidies in intrastate access charges will reduce the overall cost telecommunications service providers incur to furnish in-state long-distance service, enabling them to lower prices.

Reducing inflated intrastate access charges does not result in a windfall for some telecommunications service providers at the expense of others. A recent paper by Debra Aron, et al. confirms that access reform does in fact lead to lower retail toll prices for consumers – to the full measure of the access reductions.^{xlv} Telephone companies already have an incentive to reduce prices when their incremental costs fall, according to the authors, because at lower incremental costs profits are higher at lower prices.^{xlvi} They also report that legally-mandated requirements for telephone companies to pass through savings in the form of lower prices for long-distance services “have no measurable effect.”^{xlvii}

- **Conclusion**

Although Tennessee has taken significant steps to update regulation of telecommunications providers as a result of the advent of competition, previous reform efforts have not eliminated harmful implicit subsidies which distort competition and discourage investment in efficient broadband networks.

Some local telecom providers in Tennessee are still charging intrastate access rates which are at least three times higher than their interstate access charges. Since the legacy voice network traffic has already declined by half or more, the access revenues currently generating hidden cross-subsidies for local phone service are disappearing.

Congress directed the states to eliminate implicit subsidies in 1996. Now, the National Broadband Plan prepared by the Federal Communications Commission at the request of Congress hints at the possibility that the federal government may require the states to eliminate implicit subsidies such as intrastate access charges.

Intrastate access charges should be transitioned to parity in order to facilitate the migration of voice services provided by incumbent telecommunications providers from legacy networks to efficient multifunctional broadband networks capable of providing voice, video and data services at lower cost.

Although broadband offers new opportunities to get a job or start a business – and is most valuable where other opportunities for wealth creation are least available, such as in disadvantaged communities and rural areas – a legacy regulatory framework, which includes intrastate access charges, continues to divert private investment to traditional networks optimized to carry only voice service – not video or data services upon which economic growth increasingly depends.

Reducing intrastate access charges would provide an additional dividend in the form of lower prices for in-state long-distance calls.

AUTHORS

Hance Haney is Director and a senior fellow of the Technology & Democracy Project at the Discovery Institute. He advised the chairman of the Subcommittee on Communications of the United States Senate during the deliberations leading to the Telecommunications Act of 1996. He subsequently held various positions with the United States Telecom Association, U S WEST, Inc. and Qwest Communications.

George Gilder is a senior fellow at the Discovery Institute and the founder of Discovery's Technology & Democracy Project. He is also chairman of George Gilder Fund Management, LLC and moderator of the Gilder Telecosm Forum. His best-selling book, [Microcosm](#) (1989), explored the quantum roots of new electronic technologies. A subsequent book, [Life After Television](#) (1990), was a prophecy of the future of computers and telecommunications and a prelude to his book on the future of telecommunications, [Telecosm](#) (2000).

The authors have previously assessed the state of competition and need for regulatory reform in Alabama, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina and Tennessee, "Stimulate Broadband and Lower Utility Bills With Regulatory Reform," *Discovery Institute* (Feb. 2009) available at <http://www.discovery.org/a/9241>.

The views expressed herein are those of the authors and do not necessarily reflect the views of the Discovery Institute or its directors or staff.

ⁱ "Universal Service Monitoring Report," *Federal Communications Commission* (Dec. 2010) available at http://www.fcc.gov/Daily_Releases/Daily_Business/2010/db1230/DOC-303886A1.pdf, at Table 8.1. The report indicates that interstate minutes-of-use declined by 50% between 2000 and 2009. The most likely conclusion is that Intrastate minutes-of-use have declined by a comparable amount, since in many cases unlimited calling plans are available for both local and long-distance services.

ⁱⁱ Market Regulation Act of 2009, Public Chapter No. 278, Senate Bill No. 1954, available at <http://state.tn.us/sos/acts/106/pub/pc0278.pdf>.

ⁱⁱⁱ Robert C. Atkinson and Ivy E. Schultz, *Broadband in America – Where It Is and Where It Is Going* (According to Broadband Service Providers), *Columbia Institute for Tele-Information* (Nov. 11, 2009) available at http://www.broadband.gov/docs/Broadband_in_America.pdf, at 30. Atkinson and Schultz note (at 28) that in 2008, the aggregate capital expenditures of telecommunications service providers (including telephone, wireless and cable companies) were about \$62.8 billion. They also note (at 30) that among telephone companies, broadband is expected to reach 60% of total wireline capex in 2011, i.e., \$14 billion for broadband versus \$10 billion for legacy networks.

^{iv} *Connecting America: The National Broadband Plan*, *Federal Communications Commission* (Mar. 16, 2010) available at <http://download.broadband.gov/plan/national-broadband-plan.pdf> (*National Broadband Plan*), at 148-50.

^v *In the Matter of Connect America Fund, WC Docket No. 10-90, etc., Notice of Proposed Rulemaking (NPRM) and Further Notice of Proposed Rulemaking*, *Federal Communications Commission* (released Feb. 9, 2011) available at http://www.fcc.gov/Daily_Releases/Daily_Business/2011/db0209/FCC-11-13A1.pdf at paragraph 297.

^{vi} Tenn. Code Ann. 65-5-107.

^{vii} Debra Aron, David Burnstein, Ana Daniels and Gerry Keith, A Empirical Analysis of Regulator Mandates on the Pass Through of Switched Access Fees for In-State Long-Distance Telecommunications in the U.S. (Aug. 18, 2010) available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1674082, at 5, 27.

^{viii} These examples reflect “total charges per conversation minute,” which include the four separate components of access charges: originating access, terminating access, switched usage and switched non-usage. Regulators choose which category to assign various costs. Sometimes regulators over-assign costs, and parties cite one or more categories of access charges as either desirable for a particular social purpose or as unsustainable in a competitive market.

^{ix} “Trends in Telephone Service,” *Industry Analysis and Technology Division, Wireline Competition Bureau, Federal Communications Commission* (Sep. 2010) available at http://www.fcc.gov/Daily_Releases/Daily_Business/2010/db0930/DOC-301823A1.pdf, at Table 1.4.

^x In the Matter of Vonage Holdings Corporation Petition for Declaratory Ruling Concerning an Order of the Minnesota Public Utilities Commission, WC Docket No. 03-211, *Memorandum Opinion and Order* (rel. Nov. 12, 2004) available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-04-267A1.pdf.

^{xi} In the Matter of Petition for Declaratory Ruling that pulver.com’s Free World Dialup is Neither Telecommunications Nor a Telecommunications Service, WC Docket No. 03-45, *Memorandum Opinion and Order* (rel. Feb. 19, 2004) available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-04-27A1.pdf.

^{xii} In the Matter of Interconnection between Local Exchange Carriers and Commercial Mobile Radio Service Providers, *First Report and Order*, CC Docket No. 95-185 (rel. Aug. 8, 1996) at paragraphs 1034-1036 (Instead of applying state-defined local service areas – of which there are thousands – to wireless traffic, the FCC defined the largest FCC-authorized license territories (“Major Trading Areas” or MTAs) – of which there are only 51 – as the local service areas for wireless traffic. Since MTAs are very large, a significant portion of wireless calls originate and terminate within a single MTA. Access charges do not apply to these calls, because they are deemed “local.”) available at http://www.fcc.gov/Bureaus/Common_Carrier/Orders/1996/fcc96325.pdf. A map of MTAs is available at <http://wireless.fcc.gov/auctions/data/maps/mta.pdf>.

^{xiii} Testimony of Kyle McSlarrow, President and CEO, National Cable & Telecommunications Association on “Universal Service: Transforming the High Cost Fund for the Broadband Era” before the Committee on Commerce, Science and Transportation, United States Senate (Jun. 24, 2010) available at http://commerce.senate.gov/public/?a=Files.Serve&File_id=6c61d2b7-8ca5-4646-8ab5-627ccc0e32ae.

^{xiv} *National Broadband Plan* at 147.

^{xv} 47 U.S.C. 251

^{xvi} Tenn. Code Ann. 65-6-109(o). Market regulation was extended to Rate Groups 1 and 2 in December. See In Re: BellSouth Telecommunications, Inc. D/B/A AT&T Tennessee Petition to Extend Market Regulation to Rate Groups 1 and 2, *Order Granting Petition to Extend Market Regulation*, Docket No. 10-00108 (Dec. 21, 2010) available at <http://www.state.tn.us/tra/orders/2010/1000108u.pdf>.

^{xvii} In the Matter of Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993; Annual Report and Analysis of Competitive Market Conditions With Respect to Commercial Mobile Services, WT Docket No. 09-66, Fourteenth Report (rel. May 20, 2010) available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-10-81A1.pdf, at 7 and 18.

^{xviii} Stephen J. Blumberg and Julian V. Luke, “Wireless Substitution: Early Release of Estimates From the National Health Interview Survey, January-June 2010 (Dec. 21, 2010) *available at* <http://www.cdc.gov/nchs/data/nhis/earlyrelease/wireless201012.htm> at 9 and 16.

^{xix} *Id.*

^{xx} “Local Telephone Competition: Status as of June 30, 2009,” Federal Communications Commission (Sept. 2010) *available at* http://www.fcc.gov/Daily_Releases/Daily_Business/2010/db0903/DOC-301310A1.pdf (Local Telephone Competition) at 29.

^{xxi} *Id.*

^{xxii} “Comcast Now the Third Largest Residential Phone Services Provider in the U.S.” (Mar. 11, 2009) *available at* <http://www.comcast.com/About/PressRelease/PressReleaseDetail.ashx?PRID=844>.

^{xxiii} “Cutting the cord,” *The Economist* (Aug. 13, 2009) *available at* http://www.economist.com/opinion/displaystory.cfm?story_id=14214847.

^{xxiv} *See note 1.*

^{xxv} Letter from Mary L. Henze, AT&T, to Marlene Dortch, Secretary of the Federal Communications Commission, GN Docket No. 09-51 (Nov. 24, 2009) *available at* <http://fjallfoss.fcc.gov/ecfs/document/view?id=7020350009>, at 3.

^{xxvi} Saul Hansell, “Will the Phone Industry Need a Bailout, Too?” *New York Times* (May 8, 2009) *available at* <http://bits.blogs.nytimes.com/2009/05/08/will-the-phone-industry-need-a-bailout-too/>.

^{xxvii} 47 U.S.C. 254.

^{xxviii} In the Matter of Access Charge Reform, *First Report and Order*, Federal Communications Commission (rel. May 16, 1997, *available at* http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-104945A1.pdf, at para. 11.

^{xxix} *See note 3.*

^{xxx} *See note 4.*

^{xxxi} *See note 6.*

^{xxxii} *National Broadband Plan, e.g.*, at 138, 141 and 150.

^{xxxiii} *Id.* at 142.

^{xxxiv} *See note 3.*

^{xxxv} Robert W. Crandall, Robert E. Litan and William Lehr, “The Effects of Broadband Deployment on Output and Employment: A Cross-Sectional Analysis of U.S. Data,” *Brookings Institution* (Jun. 2007) *available at* http://www.brookings.edu/papers/2007/06labor_crandall.aspx.

^{xxxvi} Sharon Gillett, William H. Lehr, Carlos A. Osorio and Marvin A. Sirbu, “Measuring Broadband’s Economic Impact: Final Report Prepared for the U.S. Department of Commerce, Economic Development Administration (Feb. 28, 2006) *available at* http://www.eda.gov/ImageCache/EDAPublic/documents/pdfdocs2006/mitcmubbimpactreport_2epdf/v1/mitcmubbimpactreport.pdf.

^{xxxvii} Peter Stenberg, Mitch Morehart, Dstephen Vogel, John Cromartie Vince Breneman and Dennis Brown, “Broadband Internet’s Value for Rural America,” *U.S. Department of Agriculture, Economic Research Report No. (ERR-78)* (Aug. 2009) available at <http://www.ers.usda.gov/Publications/ERR78/>.

^{xxxviii} Prepared Remarks of Commissioner Mignon L. Clyburn, MMTC Broadband and Social Justice Summit, John H. Johnson School of Communications, Howard University (Jan. 22, 2010) available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-295888A1.pdf.

^{xxxix} “Towards Access, Adoption and Inclusion: A Call for Digital Equality and Broadband Opportunity,” *National Asian Pacific American Caucus of State Legislators, National Black Caucus of State Legislators, National Caucus of Native American State Legislators, and National Hispanic Caucus of State Legislators* (Dec. 2009) available at http://thehispanicinstitute.net/files/u2/TAAI_MultiCaucus_Statement.pdf.

^{xl} “The Economic Impact of Stimulating Broadband Nationally,” *Connected Nation* (Feb. 21, 2008) available at http://www.connectednation.com/research/economic_impact_study/index.php at 8.

^{xli} *Id.*

^{xlii} *Id.*

^{xliii} See note 6.

^{xliv} Although VoIP at one time was not comparable to wireline service in terms of sound quality, this is no longer the case. See Bob Tedeschi, “Better Calling for Less, by Skipping the Cell Network,” *New York Times* (Feb. 10, 2010) available at <http://www.nytimes.com/2010/02/11/technology/personaltech/11smart.html> (“It’s easy to take for granted the fact that Internet calls are now as clear as those on landlines.”). See also “Save a bundle: How to piece together a great deal for TV, phone, and Internet service,” *Consumer Reports* (Feb. 2010) available at <http://www.consumerreports.org/cro/magazine-archive/2010/february/electronics-and-computers/bundling/overview/bundling-ov.htm> (“The best Voice over Internet Protocol (VoIP) services, which came from providers of all types, rivaled fiber in offering the best phone service.”).

^{xlv} See note 7.

^{xlvi} See note 7, at 13.

^{xlvii} See note 7, at 5. See also 27, 29.