



Competitive Enterprise Institute

**1001 Connecticut Ave NW • Suite 1250 • Washington, DC 20036
202.331.1010 • www.cei.org**

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Keeping the Voices Alive

A Brief Prescription for Saving Land line Telephone Service

By Eli Lehrer*

*And the night was alive
With a thousand voices
Fighting to be heard
And each and every one of them
Connected to me.*

- Maury Yeaston, "The Night Was Alive" *Titanic: The Musical*

America's land line telephone industry faces grave trouble. Consider the following:

- According to the Federal Communications Commission (FCC), the number of traditional land line telephones in the United States has declined every year since 2001.¹ After reaching a high of about 192 million in 2001, the FCC reports, the number of telephones has fallen to 175 million (about 8 percent) despite significant population and economic growth. On a per-capita basis, the United States has seen the number of conventional land lines decline by about 13 percent. Even by the most optimistic estimates, the growth of Voice over Internet Protocol (VoIP) telephone service has made up less than 20 percent of the loss. The growth of mobile phones, however, has increased the total number of telephones far faster than population growth.
- In July, SunRocket, the second largest pure-play VoIP telephone company announced that it was shutting down operations, leaving its 200,000 customers without any telephone service. A small company bought its assets for pennies on the dollar.²

* *Eli Lehrer is a Senior Fellow at the Competitive Enterprise Institute. The author wishes to thank Margret Lancaster and Michelle Minton for their comments and assistance with this paper..*

- As it rolled out its FIOS fiber-optic service, Verizon began removing the copper cable that has carried telephone calls for most of the past 100 years.⁵ Although the company offers a number of plausible justifications for doing so and appears willing to replace the copper when asked, it's unlikely that Verizon would be removing copper if it believed the land line business had much of a future.⁴
- Verizon has also sold its traditional land line telephone businesses in both New England and Hawaii.⁵ AT&T, likewise, has sold much of its land line business across the country.
- Ooma, a start-up company, promises that it will allow customers to “own the dial tone” and let them make calls anywhere in the United States at no additional charge, forever, with no recurring service fee, once they purchase a \$399 device.⁶ If Ooma's technology, which the author has not experienced firsthand, works as advertised, it would threaten to undermine the traditional telephone companies' business model. This technology, which might be called “Device-Based Telephony,” offers another alternative to traditional land line service that, if successful, would make it very difficult for any company that charges monthly fees to compete.

In short, the land line telephone business faces very serious problems across the board. This paper strives to convey two messages. First, traditional land line telephone service transmitted over copper and coaxial cable—the traditional Public Switched Telephone Network (PSTN)—faces serious peril and could well disappear in the medium- to long-term, at least for residential use.⁷ Second, if we wish to maintain universal land line telephone service in the United States, we must leave new voice telecom technologies—VoIP and Device-Based Telephony—as lightly regulated as possible.

How Did We Get Here? The evidence indicates that the combination of mandates for “universal service” for supposedly poor and “underserved” areas and mandated access by so-called Competitive Local Exchange Carriers (CLECs) has accelerated the decline of copper telephone wiring.⁸ Mandates for the owners of copper telephone cable to grant access to those who wanted it—CLECs—at lower than market rates appear particularly misguided. Those who predicted problems with this were almost entirely right.⁹

But, it's not clear that much would have been different without these regulations. In fact, numerous new communities are being built without any provision for copper wiring at all.¹⁰ No amount of deregulation will encourage anybody in developed countries to invest in a technology that's obviously inferior to fiber-optic cable and wireless technologies: These technologies can transmit Internet, cable television, and telephone calls better and more quickly than can the old PSTN. While we can always stretch the existing telephone network—through technologies like ADSL and high speed modems—the technology, like all others, has its limits and everything we know indicates they have been reached. Overregulation has only accelerated disinvestment that, in retrospect, appears to have been inevitable.

This doesn't mean, of course, that copper cable telephone service will vanish immediately. Just as Western Union's nationwide telegram service survived the invention of the practical fax machine, the telephone, express mail, and email before finally ending in 2006, telephone service transmitted over copper cables could very well last in some form until the early 22nd century.¹¹ But it's safe to predict that the United States will never have more traditional land line telephones than it did in 2001.

This leaves two other technologies that continue to grow (although not as fast as land line telephone service is shrinking): VoIP and Device-Based Telephony.

Markets, Not Mandates. The flexibility of the free market appears better suited to figuring out how—if at all—land line telephone service can survive into the 21st century and beyond. Not matter how well-intentioned or, in the case of the E-911 mandate, genuinely useful, there is no particular advantage—and there are significant downsides—to government mandates. If the United States wants to arrest the rapid decline of land line telephone service of all kinds it should repeal existing regulations on these technologies and avoid imposing any new ones. Two particular mandates stand out: E-911 service and “universal access fees.”

Access to E-911 services is one of the greatest disadvantages of VoIP—and, possibly, new device-based—telephone systems relative to their land line counterparts. Since their introduction in the late 1970s, E-911 systems have transmitted callers' locations directly to emergency call centers to speed up the arrival of police and fire agencies.¹² Clearly, their existence has improved public safety. By their very nature, however, existing E-911 technology cannot work perfectly with any existing VoIP systems: Both telephony devices (Ooma Boxes) and the VoIP routers will operate when attached to any Internet connection anywhere in the world.

To illustrate, consider a recent experience by this author. I recently moved to another county and “transported” my telephone number simply by taking my VoIP router with me. Before doing this, I had to register my new address with the telephone company. Had I not registered, my old address would continue to show up when someone dialed 911 from my residence. This extra step—and the good chance that many people may forget to take it—makes the system demonstrably inferior to traditional land line telephone service for the purposes of emergency response.

Since 2006, however, the FCC has required VoIP providers to provide location information by collecting it and then transmitting it to emergency response centers.¹³ This approach had the support of the VoIP industry. (At least no VoIP carriers lobbied against it and the largest one, Vonage, appears to have supported it.) But it also resulted in an increase of roughly \$1 a month—around 3 to 4 percent—in the average bill for VoIP service.

New Consumer Options. Most consumers will want the service that this regulation mandates carriers to provide, but some might not. In some cases, people who carry

mobile VoIP devices will find themselves connected to a particular local emergency call center—rather than a potentially more useful state-and-region-wide center—whenever they dial 911. Future devices will likely be even more mobile than existing VoIP devices. Furthermore, it appears likely that device-based telephony services would face the same location-based problems. There’s no reason to make things worse through regulation. In any case, the FCC has already decided that it’s okay for some phones not to have E-911 capacity, because including it would require phones to contain an expensive GPS device—no similar mandate exists for mobile phones.

It is possible that in time all telephony devices—VoIP boxes, mobile phones, and device-based telephony gadgets—will contain GPS transponders that transmit information to the closest 911 centers. However, until the cost of GPS comes down enough to make this reasonable on a large scale, we are probably better off letting the market, rather than mandates, define the best short-term workarounds.

By mandating E-911 access, the current system places an additional tax on VoIP service. Although it appears likely that most providers would include something similar to the current 911 mandate anyway, there is no good case for the mandate. Some consumers who already have mobile phones may want a “feature stripped” model providing basic land line phone service. Even if it slightly increases the individual burden when somebody dials 911, it would be worthwhile to give customers the choice.

Obsolete Mandates. Universal access fees—long assessed on all traditional telephone bills—seem similarly ill suited to new types of land line telephone service. Since 2006, however, the FCC has applied them to VoIP services that use the PSTN.¹⁴ (The FCC, however, does not tax pure Internet telephone calls made through services like Skype since they do not use the PSTN.¹⁵)

Although it may help advance some noble social goals, the telephone system’s current structure makes the universal service fee an anachronism for three reasons. First, the United States already has universal telephone service. Second, the nature of current technology means that imposing a “universal service fee” involves central planners making choices about the nature of technologies that consumers ought to make for themselves. Finally, new technologies erase the cost differences between rural and urban areas that originally justified the fee.

Most importantly, the entire idea of land line universal service is itself obsolete: Insofar as satellites provide telephone and Internet service to every location on the planet, universal service already exists in every inhabited area of the world. The United States, in any case, already has far more telephones than people.¹⁶ Rather than provide telephones to more people, current government-run universal service mandates focus on providing telephone service to the poor, to places where service costs are high (regardless of the incomes of those living there), to schools and libraries, and to rural health care facilities.¹⁷

Whatever one thinks of government involvement in this area—and some interventions seem more justifiable than others—the nature of new technologies makes it difficult to justify using the universal service fee to support them. When initially imposed under the 1934 Communications Act, which established the FCC and the federal government’s control over communications, the fee had a certain logic because telephones became more valuable the more people had them, and many areas did not have telephones. Moreover, everywhere telephone service existed in almost exactly the same form: low capacity copper cables strung between buildings and connected mostly by means of manually operated switchboards. Although evidence remains mixed as to how effective the fee proved in promoting widespread telephone access, at least it had a clear purpose.¹⁸

In contrast, today the universal service fee may be used to subsidize individual telephone bills for well-off individuals living in remote areas, provide “lifeline” service to the poor, wire lower income schools for the Internet, buy telemedicine equipment for hospitals, and develop satellite uplinks in rural areas. The technologies used to accomplish these purposes vary a great deal and somebody must make a political decision as to which technology gets more support and which gets less. Ultimately, this involves government rather than consumers making consumer purchases and, all other things being equal, government will know consumers needs less well than consumers do themselves.

Finally, the cost differentials between urban and rural areas that provided some of the initial justification for universal service mandates do not exist under VoIP and device-based telephony. Except for state sales taxes, every VoIP provider charges the same amount regardless of customers’ location even though the providers themselves receive no subsidy to do so. This is simply the nature of the technology and the business model that supports it: Every node on the Internet is essentially equal to every other. The costs of VoIP and device-based telephony, nearly everywhere in the country, are likely to be less than those for traditional land line telephone services regardless of subsidy.

Conclusion. If Congress decides that communications subsidies for rural residents, hospitals, schools, and libraries are an urgent public purpose—though they probably are not—then it should appropriate general revenues for that purpose rather than tax certain types of telephone calls.

A repeal of the universal service fee with regard to VoIP and device-based telephony would further free companies to cut their prices and innovate. Lower costs for *all* telephone service, in any case, would likely do more to facilitate widespread access than any government program. Since a nationwide telephone network providing “universal access” already exists, there is a strong reason to think that a level playing field demands that the fee be removed from all telephones of all types.

By reducing mandates on land line telephone service, the federal government could allow land line providers to increase their price competitiveness relative to mobile carriers and, perhaps, allow them to stay in business. It is possible, however, that land line telephone service has simply run its course as a technology: Some countries, including Luxembourg, Ireland, Finland, and Denmark, already have more mobile telephones than

people and, in these places, reports suggest that a majority of younger people moving away from their parents' homes have decided to go without a land line telephone at all.¹⁹ Land line telephone service may not survive under these circumstances. Deregulation would, however, would help give new technologies for land line telephones a fighting chance.

Notes

¹ Federal Communications Commission. *Trends in Telephone Service*: February 2007, Table 7.1. Page 7.3, http://fjallfoss.fcc.gov/edocs_public/openAttachment.do?link=DOC-270407A1.pdf (PDF page 47).

² Post I.T. Blog. *The Washington Post* "Sun Rocket Sells Assets," <http://blog.washingtonpost.com/cgi-bin/mt/mt-t.cgi/16620>. July 27, 2007.

³ Debora Yao. "Verizon's Copper Cutoff Traps Customers," Associated Press, July 9, 2007.

⁴ Eric Rabe. "AP Gets it Wrong, Part II," <http://policyblog.verizon.com/PolicyBlog/Blogs/policyblog/EricRabe9/323/AP-Gets-It-Wrong-Part-II.aspx>, Verizon Policy Blog, July 9, 2007.

⁵ Dennis Pate, "Arbitration Sought in Verizon Sale," *New Hampshire Union Leader*, July 13, 2007.

⁶ Ooma, "Frequently Asked Questions," http://www.ooma.com/ooma_faq.php. August 6, 2007.

⁷ This paper focuses mostly, although not entirely on the residential market: It's likely that the inherently superior security of physically securable wires will mean that some business and government applications will use land line telephones well into the future.

⁸ A review of many of the problems with universal service mandates around the world can be found in: George Clarke and Scott Wallsten, "Universal(ly Bad) Service: Providing Infrastructure Services to Rural and Poor Urban Consumers" (July 19, 2002). World Bank Policy Research Working Paper No. 2868

⁹ See e.g. Robert W. Crandall, "Are We Deregulating Telephone Services? THINK AGAIN," Brookings Institution Policy Brief #13, March 1997, <http://www.brookings.edu/comm/policybriefs/pb13.htm>.

¹⁰ For example, in Loudoun County, Virginia, the fastest growing county in the United States, the massive Ashburn and Landsdowne communities—each of which houses more than 15,000 people—are being built entirely with fiber-optic wiring.

¹¹ Telegram service, Western Union says, ended on January 31, 2006, Western Union "Telegram Service," <http://www.westernunion.com/info/osTelegram.asp>.

¹² Federal Communications Commission et al. "VOIP and 911 Services," <http://www.VoIP911.gov/>

¹³ FCC 05-116.

¹⁴ Anne Broche. "FCC Approves New Internet Phone Taxes," Cnet.com, June 12, 2006.

¹⁵ The FCC keeps them tax free, at least in part, for practical reasons. Since pure Internet telephone services allow users to make many types of calls for free, there is no billing mechanism from which the government could extract taxes.

¹⁶ FCC, February 2007. All told, the FCC reports that the United States has about 400 million telephones of all types as compared with about 300 million people. That's almost two telephones for each adult.

¹⁷ FCC, "The FCC's Universal Service Support Mechanisms," <http://www.fcc.gov/cgb/consumerfacts/universalservice.html>.

¹⁸ Milton L. Mueller, Jr., *Universal Service: Competition, Interconnection, and Monopoly in the Making of the American Telephone System*, Cambridge, MA: MIT, 1997.

¹⁹ Comreg (Ireland), Quarterly Report, Fourth Quarter, 2007, table 4.