

## **The Changing Universal Telecommunication Mission When Technologies Converge**

Rob Frieden  
Professor of Telecommunications  
Penn State University  
105-c Carnegie Building  
University Park, Pennsylvania 16802  
(+ 1 814) 863-7996; rmf5@psu.edu

The universal service mission in telecommunication <sup>1</sup> will change and evolve as technological innovations make it possible to offer faster, better, cheaper and smarter applications. Technologies like Asymmetric Digital Subscriber Links, cable modems, wideband satellite service and terrestrial broadband options provide high speed access to new information age services such as direct to the desktop computer, "streaming" video. Collectively these technologies trigger the transition from Plain Old Telephone Service ("POTS") to Pretty Amazing New Stuff ("PANS"). As well they offer the promise of enhancing productivity and quality of life, particularly if the Internet continues to evolve as a major medium for communications and commerce.

Technological innovations and the diversification of service options complicates the longstanding public policy objective of achieving affordable and ubiquitous access to telecommunications services. Currently the universal service mission for POTS costs approximately \$5 billion annually <sup>2</sup> and has become more irritating to some, because the funding method involves direct subsidization from long distance carriers and their customers who now see new charges on their monthly bills. At the same time as the POTS mission remains ongoing, Congress has expanded the universal service campaign to include specific "e-rate" beneficiaries, like schools and hospitals, and a mandate for access parity between urban and rural consumers for advanced PANS services.

An expanded and more costly universal service mission poses more daunting choices for consumers, but also greater challenges in shaping legislative and regulatory goals, strategies and policies. As the universal service mission cost rises, telecommunication service

providers and their consumers have increasing incentives for finding ways to avoid making universal service subsidy contributions. Technological innovations and regulatory classifications make this avoidance strategy more easily achieved as ventures can offer Internet-mediated long distance telephone services that qualify for exemptions from the local network access charges and universal service subsidies paid by long distance carriers.

Technological convergence makes it possible for a single service provider to offer a package of POTS and PANS services that heretofore have triggered different regulatory burdens. Legislators and regulators will have greater difficulty in maintaining a "level competitive playing field" among telecommunications and information service providers while also achieving universal service objectives no longer limited to the primary twin objectives of bringing dial tone to the hinterland and making telephone service affordable everywhere.

This paper will address the impacts on universal service resulting when different technologies converge and when pre-existing regulatory models fail to work properly. Technological innovation blends together previously discrete technologies, subject to a customized regulatory system. The resulting convergence does not lend itself to continued application of either preexisting regulatory systems. For example, both state and federal regulators traditionally deem local and long distance telephone service as common carriage: a public utility offering subject to significant economic regulation designed to achieve universal service on nondiscriminatory and cost-based terms.

On the other hand many of the enhanced services, which might become part of an expanded inventory of universal service elements, traditionally have qualified for unregulated or lightly regulated status. Congress, the FCC and state regulators collectively share the view that cable television and value-added information services do not constitute common carriage and accordingly do not fit into a pervasively regulated category like telephony.

**Technological Convergence Ruins the Existing Regulatory Regime and Threatens Universal Service Funding System**

When an ISP can provide long distance telephone services free of universal service funding contributions and regulation two adverse consequences result:

- 1) ISPs can exploit their unregulated status to provide long distance telephone service functionally like that offered by regulated carriers; by not having to pay fees borne by competitors ISPs can offer cheaper service leading to a migration of long distance telephone traffic from routings that trigger a universal service funding contribution to ones that do not require such payments; and
- 2) In a broader sense the ISPs' ability to exploit their special unregulated status challenges the rationality of having two different classifications (private carriers providing enhanced, information services versus common carriers providing basic telecommunications services) when consumers perceive little difference between Internet-mediated and conventional long distance telephone service.

Regulatory dichotomies work only when technological categories remain discrete and absolute. But they surely do not work when technological convergence results in porous service categories and diversification by operators. When cable telephone and Internet Service Providers ("ISPs") offer telephone services functionally similar to what telephone companies, regulators cannot maintain preexisting dichotomies, particularly when regulations inadvertently have favored one type of technology and company over others. When ISPs offer consumers telephone service equivalents, which link PSTN access with Internet-mediated telephony, preexisting regulatory exemptions tilt the competitive playing field to their advantage. Should significant telephony traffic volumes migrate to routings exempt from the universal service contribution requirement, then the total funds available to achieve the universal service mission will decline. The potential for declining universal service funds occurs just as Congress has articulated a broader and more ambitious universal service mission and has expressly identified beneficiaries of this mission, viz., schools, libraries, hospitals, and clinics.

### **The Universal Service Mission**

Ubiquitous and low cost access to basic telecommunication services constitute a fundamental public policy objective in the same vein as providing access to other basic

infrastructure such as electricity and water. <sup>3</sup> "Telecommunications is not simply a connection between people, but a link in the chain of the development process itself." <sup>4</sup> A correlation exists between access to telecommunications facilities and services and economic development. <sup>5</sup> This means that efficient, effective and widely available telecommunications can stimulate social and economic development by providing the vehicle for more and better commerce, political discourse, education, and job training.

In view of changing technologies and consumer expectations, the concepts of universal access and universal service remain in flux. As a baseline we should consider universal access and service in terms of four components:

- 1) **Infrastructure**-the scope and nature of the network that serve users;
- 2) **Services**-what constitutes basic "life-line" service and to what other features should users have access at an additional price?;
- 3) **Cost**-should users pay the full cost of service, or should some subset of the user base receive subsidies for non-recurring charges, such as installation, as well as for recurring charges, such as monthly service?; and
- 4) **Maintenance and Upgrades**-what incentives must regulators create to ensure that universal service providers maintain and upgrade their networks?

Access also includes the issue of physical proximity between individuals and the telecommunications infrastructure. Even in developed nations, some users must share telephone lines. In developing nations and rural or high cost areas, shared access from the home or a public place might have to suffice in the short run. One cannot conclude that an entire nation has access to a telecommunications infrastructure simply because a satellite footprint illuminates the country. On the other hand, significant progress in a universal service mission will occur when the first of only a few telephone lines become available in a locality. Accordingly, the first step in reaching the universal service mission may involve the provisioning of lines to public facilities, such as libraries, post offices, government buildings, schools and clinics.

#### **The Status Quo Ante: Common Carriage Before the Internet and Enhanced Services**

In this information age, buzz words like convergence, digital, multimedia, and interactive describe an environment where technological innovations largely foreclose air tight legal and regulatory dichotomies. Until twenty years ago it was possible for judges and regulators to construct different rules and requirements based on the nature of the service and the characteristics of who provided the service. Something as apparently absolute as the First Amendment could apply differently as a function of the communication medium involved. For example, government could impose more burdensome restrictions on speech mediated through the public airwaves than through the spoken or written word.

In the pre-convergence age, a single regulatory structure for telecommunications could apply by extending the pre-existing public utility model of common carriage. The rights and responsibilities historically vested in common carriers ensured widespread access to essential services, established consumer safeguards and tempered the market power created when regulators authorized a single "natural monopoly" to operate. Governments negotiated a regulatory compact with common carriers: providing valuable insulation from competition and reduced liability or exemption from criminal and civil liability in exchange for agreeing to regulation of the prices charged, the revenues generated and many other aspects of the carrier's corporate and operational behavior.

Historically, providers of neutral and transparent conduits did not have to monitor the content carried, nor could they typically refuse access to their bottleneck<sup>6</sup> facilities on the basis of content, or customer location. Government could require the telecommunications common carrier to provide service to anyone within a franchise geographical area ready, willing and able to take service. Common carriers could not discriminate among "similarly situated" users, meaning in application a limited capacity to price service as a function of demand and marketplace conditions, as opposed to a regulator-managed calculation of carrier costs and a fair rate of return.

On the other hand, non-common carriers could operate as private carriers when transporting content, whether over spectrum, e.g., satellite operators, or via closed circuit media,

e.g., cable television operators. Their regulatory status derived from the perception that they lacked market power and did not provide essential or irreplaceable services.

The dichotomy between common carriers and private carriers has grown murky, because of:

- legislative and regulatory tinkering with the common carrier model; <sup>7</sup>
- technological innovations;
- a growing body of cases articulating robust First Amendment speaker rights of common carriers; and
- court cases imposing quasi-common carrier obligations on private carriers, e.g., the duty of cable television operators to carry broadcast television signals, and quasi-publisher duties on common carriers, e.g., the duty to inquire and disclose whether content is obscene or indecent.

A fuzzy line between common and private carriers makes it increasingly difficult for regulators to impose traditional common carrier requirements when ventures providing functionally equivalent service bear no such burdens. Legislators and regulators have not considered private carriers as providing such essential services that they should participate in the universal service mission, either as partial underwriters, e.g., payment of fees used to subsidize universal service, or as recipients of universal service subsidies. Increasingly, however, private carriers offer both competitive alternatives to basic service offered by regulated common carriers, e.g., wireless telephone services, and new services that legislators and the public believe should constitute a part of a revised and bolstered universal service mission.

### **Common Carriage and the Universal Service Mission**

The common carrier regulatory regime makes it possible for policymakers to execute a universal service mission. Regulators can compel common carriers to provide undesirable or unprofitable service in two key ways:

- 1) regulators can impose costs on common carriers by forcing rate averaging and cross-subsidization as a necessary public interest dividend in exchange for the

carrier's insulation from competition and some types of criminal and civil liability;  
and

- 2) regulators can more easily engineer a financial cross-subsidy mechanism for underwriting universal service programs when a single set of large ventures exist that can orchestrate the collection and distribution of universal service funds by adjusting service rates above and below actual cost, plus a reasonable return.

Telecommunications common carriers have accepted their status based on a rational cost/benefit analysis. They trade off upside profitability for protection from the downside of below market rates of return and open markets. While the regulator-granted franchise may not have expressly conferred market exclusivity, most telecommunications common carriers enjoyed monopoly status. Perhaps incumbent operators grew to expect exclusivity as part of the deal. Such expectations notwithstanding, the barriers to market entry have dropped, because of technological innovation and increased reluctance on the part of regulators to deny market entry opportunities. To make matters worse, market entrants typically operate with fewer regulatory burdens, including noncommon carrier status.

Incumbent common carriers' ability and inclination to pursue universal service objectives may decline in a competitive marketplace, particularly one with asymmetrical regulation, i.e., burdensome common carrier regulation of incumbents, and light or nonexistent regulation of market entrants. Incumbent operators may have to reduce rates for services, particularly in localities where they face competition. This competitive necessity would reduce internally generated revenues available for voluntary cross-subsidization of services not facing competition and downward rate pressure. Similarly, incumbent carriers may need to reallocate infrastructure investments to localities, e.g., cities where they have to match the diversified services available from new competitors. However, the common carrier classification may limit incumbent operators' ability to adjust rates in response to competition. Rate rebalancing has no net financial impact on the incumbent carrier's revenues or rate of return, but it typically results in reduced rates for competitive, urban services and raised rates for hinterland services. Such rebalancing comes across to rural residents as a discriminatory rate hike, and may have an adverse impact on

universal service by making POTS and PANS more expensive in the absence of redirected or increased subsidies.

The common carrier classification best serves universal service objectives when regulators can leverage some degree of insulation from competition and liability in exchange for the carrier's commitment to serve unprofitable locales and customer categories. When noncommon carriers can offer functionally equivalent service, incumbent common carriers have legitimate concerns that they will remain the carrier of last resort for unprofitable services even as they lose market share and revenues in having to compete with newcomers. Market entrants predictably target the most profitable and easiest to serve customers, typically large volume business users in cities.

Incumbent carriers consider this market strategy unfair "cherry picking" and "creamskimming." Regardless of whether it constitutes unfair competition, such selective targeting of customers has a possibly immediate and adverse impact on universal service for two reasons:

- 1) all universal service funding most likely will have to come from consumers, without any local exchange carrier voluntary cross-subsidies; this means consumers will incur higher charges indirectly through above cost access charge payments passed through by interexchange carriers, or directly through additional long distance charges; and
- 2) incumbent local exchange carriers will have increased incentives to deaverage rates, i.e., to seek permission to subdivide service territories, such as an entire state, into smaller service regions based on traffic density and degree of competition.

### **Where Does Internet Access Fit Into the Universal Service Mission?**

The Internet means different things to different people. On a macro, technological level, it constitutes a "network of networks" in the sense that ISPs purposefully link their individual networks with other networks to achieve global connectivity. ISPs provide consumers with "seamless" access to most of the individual networks that comprise what we call the Internet often with a contract covering only the first or last of many network connections. The



packet-switched nature of the Internet, coupled with switching and routing protocols, provides robust and diverse network access without each ISP having to negotiate interconnection terms with every other operator. Telecommunications carriers achieve similar connectivity with greater effort and specificity: the one-by-one accumulation of operating agreements.

Internet users benefit from the technological ease in switching and routing traffic, but such seamlessness generates a host of legal and regulatory problems. For example, the lack of contract privity between each and every ISP raises liability questions when an ISP inadvertently provides a conduit for a criminal transaction, e.g., the transmission of obscenity, serving as the delivery mechanism for securities fraud, and providing the forum for predatory, libelous and other illegal behavior. The legal and regulatory models created for telecommunication carriers provide near absolute exculpation. As neutral and transparent common carriers, telecommunication service providers lack liability or culpability even when serving as the conduit for the commission of a crime. Conversely, ISPs do not operate as common carriers. They benefit by not incurring the duties of common carriers: to provide service to any and all users in a particular geographical region without discrimination.

### **Impact From The Telecommunications Act of 1996**

Section 254 of the Telecommunications Act of 1996 (hereafter referred to as the '96 Act) amends the Communications Act of 1934 to establish an explicit mandate for the FCC to promote universal access to telecommunication services.<sup>8</sup> The legislation requires explicit universal service funding<sup>9</sup> and mandates equitable and non-discriminatory sharing of the financial burden among all telecommunications carriers providing interstate telecommunications services.<sup>10</sup> The '96 Act also identified specific beneficiaries of the universal service mission: schools, health care provider facilities, and libraries. Additionally, the '96 Act directs the FCC and state commissions to promote in all regions of the nation 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."<sup>11</sup>

The FCC, in consultation with State Public Utility Commissions, established six general universal service principles:

- Quality services should be available at just, reasonable, and affordable rates;
- Access to advanced services should be available in all regions of the nation;
- Access to basic and advanced services should be available to customers in rural and high cost areas and to low-income consumers at rates comparable to those in urban areas;
- Equitable and nondiscriminatory contributions should be made by all telecommunications providers to the preservation and advancement of universal service;
- Specific and predictable support mechanisms should exist at both the federal and state level; and
- Schools, health care facilities, and libraries should have access to advanced telecommunications services.

The FCC also determined that the following services warranted subsidization to achieve ubiquity:

voice grade access to the public switched network, with the ability to place and receive calls;

Dual Tone Multifrequency ("touch tone") signaling or its functional equivalent;

single-party service;

access to emergency services, including 911 and Enhanced 911 (which identifies a caller's location);

access to operator services;

access to interexchange services;

access to directory assistance; and

Lifeline and Link Up services for qualifying low-income consumers.

On the matter of telephone service affordability, the FCC accepted the recommendation of a Board comprised of both FCC and state public utility Commissioners that the states should

monitor rates and non-rate factors, such as subscribership levels, to ensure local telephone service remains affordable. The FCC expanded the Lifeline program, which discounts local telephone service to qualifying users, and implemented the "e-rate" program that provides schools and libraries with discounted access to all commercially available telecommunications services, Internet access, and internal connections. Eligible schools will qualify for discounts ranging from 20% to 90%, with the higher discounts available to the most disadvantaged schools and libraries and to those in high cost areas. The Commission capped total expenditures for universal service support for schools and libraries at \$2.25 billion per year, with a roll-over into following years of funding authority, if necessary, for funds not disbursed in any given year. Additionally all public and not-for-profit health care providers located in rural areas will receive universal service support, not to exceed an annual cap of \$400 million. A health care provider may obtain telecommunications service at a transmission capacity up to and including 1.544 megabits per second, the bandwidth equivalent of a T-1 line, at rates comparable to those paid for similar services in the nearest urban area with more than 50,000 residents, within the state in which the rural health care provider is located. Rural health care providers also will receive support for both distance-based charges and a toll-free connection to an ISP. Each health care provider that lacks toll-free access to an ISP may also receive the lesser of 30 hours of Internet access at local calling rates per month, or \$180 per month in toll charge credits for toll charges imposed for connecting to the Internet.

### **ISPs Exempted From Having to Pay Access Charges and USF Contributions**

On the subject of ISP and other "enhanced service providers" the Commission noted that previously it exempted such ventures from paying access charges in addition to their ordinary line rental fees. In 1983, the FCC classified enhanced service providers as "end users" rather than "carriers" for purposes of the access charge rules.<sup>12</sup> The Commission tentatively concluded that ISPs should not be subject to access charges as currently constituted, i.e., that enhanced and Internet service providers should only have to pay business local service rates. However, the

Commission did note that "usage continues to grow, [and that] such services may have an increasingly significant effect on the public switched network." <sup>13</sup>

The FCC has chosen to consider the issue broadly in terms of how to "provide incentives for investment and innovation in the underlying networks that support the Internet and other information services" <sup>14</sup> rather than narrowly a matter of whether enhanced and Internet service providers should pay access charges. <sup>15</sup> With that perspective in mind, the Commission noted:

the development of the Internet and other information services raise many critical questions that go beyond the interstate access charge system that is the subject of this proceeding. Ultimately, these questions concern no less than the future of the public switched telephone network in a world of digitalization and growing importance of data technologies. Our existing rules have been designed for traditional circuit-switched voice networks, and thus may hinder the development of emerging packet-switched data networks. To avoid this result, we must identify what FCC policies would best facilitate the development of the high-bandwidth data networks of the future, while preserving efficient incentives for investment and innovation in the underlying voice network. In particular, better empirical data are needed before we can make informed judgments in this area. <sup>16</sup>

### **ISPs Can Qualify For Indirect Universal Service Subsidies**

Despite not having to contribute to universal service funding, ISPs can indirectly receive financial support when offering information services to schools, libraries, hospitals and clinics. While ISPs do not qualify for direct universal service subsidies as telecommunications carriers, they offer "advanced services" which the drafters of the '96 Act sought to make available to schools, etc. on a discounted basis. <sup>17</sup> In essence ISPs can have their cake and eat it too. <sup>18</sup>

The FCC initiated a Notice of Inquiry seeking comment generally on the implications of information services such as Internet access for the telephone network. The Commission asked what it should do to encourage development of packet switching hardware able to route data traffic around incumbent LEC switches, or to install new high-bandwidth access technologies such as asymmetric digital subscriber line ("ADSL"), or wireless solutions.<sup>19</sup> Without directly addressing the issue of ISP exemptions and the impact on universal service the Commission has

turned its attention to the broader issue of how to promote deployment of advanced services by telecommunications carriers. <sup>20</sup>

### **Despite Misgivings, The FCC Maintains ISP Exemptions**

In an April, 1998 Report to Congress, <sup>21</sup> the FCC strongly hinted its disinclination to maintain a blanket exemption of all types of Internet telephony from universal service funding obligations:

The record currently before us suggests that certain of these ["phone-to-phone" IP telephony] services lack the characteristics that would render them "information services" within the meaning of the statute, and instead bear the characteristics of "telecommunications services," [as defined in the Telecommunications Act of 1996]. . . . To the extent we conclude that the services should be characterized as "telecommunications services," the providers of those services would fall within the 1996 Act's mandatory requirement to contribute to universal service mechanisms. <sup>22</sup>

While the FCC refrained from taking a definitive stance "in the absence of a more complete record focused on individual service offerings," <sup>23</sup> the analysis in the Report to Congress provides significant insight on future Commission rulemakings and its assessment of how the Internet affects the Congressionally-mandated universal service mission. The Commission considers information services, a means to "buttress, not hinder, universal service," <sup>24</sup> particularly when such services stimulate demand for basic services that make universal service subsidy contributions. On the other hand, information services hinder the universal service mission if providers of such services also offer telecommunications services and do so in a manner that exploits anomalies and loopholes thereby exempting them from universal service obligations and reducing the funds available for subsidizes. <sup>25</sup>

### **The Definitions of Telecommunications and Information Service**

The FCC reiterated its view that the Telecommunications Act of 1996 legislated a regulatory dichotomy between telecommunications and information services. Operators

providing the former have a duty to contribute to universal service funding, but providers of the latter do not.

Unfortunately for the FCC such a clean semantic dichotomy cannot operate in a time of rapid technological evolution and convergence. Likewise, Congress ordered the FCC to consider the impact of mixed or hybrid services on universal service definitions. The Commission expressly recognized that the Internet integrates both telecommunications and information services, but that ISPs "generally do not provide telecommunications."<sup>26</sup> However, the provision of transmission capacity to ISPs does constitute a "telecommunications service."<sup>27</sup> Presumably, any basic service routed via such capacity does not necessarily convert into "information services" simply because an "information service provider," as defined by the Telecommunications Act,<sup>28</sup> offers other information services perhaps transmitted over the same transmission capacity.

In its 1998 Report to Congress the FCC also acknowledged the view of Senators Burns and Stevens that regulatory mutual exclusivity cannot work for instances where a single enterprise provides both telecommunication and information services, or that a service combines aspects of both classifications.<sup>29</sup> The Commission stuck to its reliance on the semantic dichotomies established by the Computer Inquiries and the MFJ, and the pragmatic view that because all ISPs use basic transport capacity as a building block, it "would be difficult to devise a sustainable rationale under which all, or essentially all, information services did not fall into the telecommunications service category."<sup>30</sup> Accordingly the Commission reiterated the need for an absolute regulatory dichotomy based on a functional analysis:

### **Internet Telephony as a Telecommunications Service**

As a result of its decision to stick to mutually exclusive categories, the FCC recognized the duty to categorize Internet-mediated telephony as either a telecommunication service, or an information service. Despite its disinclination to regulate the Internet, the FCC acknowledged that "phone-to-phone IP telephony" services bear the characteristics of "telecommunications

services." <sup>31</sup> "Phone-to-phone IP telephony" enables users to access Internet-mediated telecommunication services via ordinary telephone handsets and pay phones instead of specially-configured personal computers. With the ease of ordinary telephone access, <sup>32</sup> the market for Internet telephony has exploded, coupled with a real potential for significant migration of traffic from customary switching and routing, subject to access charges and USF contribution requirements, to Internet-mediated switching and routing heretofore exempt from access charges and USF contribution requirements.

For ventures meeting a four-part test, <sup>33</sup> the Commission stated its tentative conclusion that the service provided constitutes telecommunications, primarily because:

From a functional standpoint, users of these services obtain only voice transmission, rather than information services such as access to stored files. The provider does not offer a capability for generating, acquiring, storing, transforming, processing, retrieving, utilizing, or making available information. Thus, the record currently before us suggests that this type of IP telephony lacks the characteristics that would render them "information services" within the meaning of the statute, and instead bear the characteristics of "telecommunications services." <sup>34</sup>

Despite its preliminary assessment, the FCC refrained from making "any definitive pronouncements in the absence of a more complete record focused on individual service offerings." <sup>35</sup> The Commission did note that if it were to deem phone-to-phone, Internet-mediated telephony telecommunications, that finding would trigger a mandatory USF contribution from such operators as required by Section 254(d) of the Communications Act. But even in the face of this financial contribution, the Commission implied that it might not have to subject such operators to the full array of common carrier requirements contained in the Communications Act, because Section 10 of the Act, established by the Telecommunications Act of 1996, <sup>36</sup> permits the Commission to forbear from imposing any rule or requirement of the Communications Act on telecommunications carriers. <sup>37</sup> For example, the Commission stated that it might not have to subject providers of Internet telephony to the international accounting

rate toll revenue division system presumably because the Commission recognizes the consumer benefits accrued by access to services that can undercut and arbitrage the current, above-cost regime. <sup>38</sup>

### **ISPs Should Help Fund the Universal Service Mission**

Section 254(d) of the Communications Act, as amended, mandates universal service contributions from "every telecommunications carrier that provides interstate telecommunications services." <sup>39</sup> In application the USF obligation has extended to wireless paging and telephone service providers, because they are providers of telecommunications service despite the limited use of the local loop and limited opportunity to receive financial support themselves. Some private telecommunication carriers also must make USF payments even though they operate as non-common carriers. <sup>40</sup> In its 1998 Report to Congress the FCC stated that its intention to "construe broadly the class of carriers that must contribute." <sup>41</sup> Likewise it recognized the potential for Internet-mediated telephone service to reduce universal service funding:

If such providers are exempt from universal service contribution requirements, users and carriers will have an incentive to modify networks to shift traffic to Internet protocol and thereby avoid paying into the universal service fund or, in the near term, the universal service contributions embedded in interstate access charges. If that occurs, it could increase the burden on the more limited set of companies still required to contribute. <sup>42</sup>

### **A Predisposition Not to Extend Legacy Regulation**

Notwithstanding the real potential for adverse financial impact on its universal service mission, the FCC remains adamantly opposed to extending traditional telecommunications regulation to ISPs. <sup>43</sup> The Commission believes market forces will create incentives for a robustly competitive and ubiquitous highspeed information service infrastructure. As well the FCC wants to support the Clinton Administration's view that the Internet should be a tax-free, largely unregulated media. <sup>44</sup>



In a larger sense the FCC has unofficially expressed its reluctance to extend the common carrier classification and the regulatory burden its generates on Internet-mediated services, including ones that compete with, and appear as viable alternatives to common carrier services. The Commission appears disinclined to impose legacy regulations on new technologies even if these technologies migrate traffic and revenues from services that have borne the universal service subsidy obligation:

New technologies, while perhaps similar in appearance or in functionality, should not be stuffed into what may be ill-fitting regulatory categories in the name of regulation. Rather, the Commission should continue the approach of studying new technologies and only stepping in where the purpose for which the Commission was created, protecting the public interest, demands it.<sup>45</sup>

Staffers at the FCC's in-house think tank favors deregulating incumbents rather than regulating market entrants. The FCC should pay attention to the potential for anticompetitive conduct, and adverse impact on universal service funding. However, the Commission should decide to apply regulatory safeguards on an ad hoc, as needed basis and for instances where regulatory intervention outweighs the costs imposed.

### **Universal Service Cannot Fully Develop in an Unregulated Environment**

Unofficially at least the FCC has expressed its confidence that marketplace resource allocation will adequately provide the capital, technologies and services necessary to achieve universal access to information superhighways. Part of this misguided confidence appears to stem from the widespread availability of multiple ISPs throughout the nation, the trend toward distance insensitivity in telecommunications and information services and the long standing tendency for ventures to offer nationally averaged, "postalized" rates. However, a fundamental question remains unanswered: have the millions of dollars already invested in universal service contributed to the above three factors, and conversely would a change in the level of available funds cause telecommunications carriers to change their pricing policies in a manner detrimental to ubiquitous access? <sup>46</sup> More specifically:

- are there scenarios where the number of ISPs in rural and high cost areas might decline if their cost of doing business, e.g., network access costs, increased significantly?
- are first and last mile access services distance insensitive and will they remain so with new technologies like ADSL that have service limits based on proximity to switching facilities?
- under what circumstances will carriers deaverage rates thereby eliminating one-price, postalized services? and ,
- will state regulatory agencies authorize additional telecommunications service providers, including cellular radio operators, to maximize the benefits of universal service subsidies?

### **The Potential for Balkanization of the Internet and Its Impact on Universal Service**

As the Internet matures and commercializes current promotional access pricing and interconnection arrangements will change. <sup>47</sup> During the Internet's initial incubation period, ISPs emphasized connectivity at the expense of a calibrated and efficient access and interconnection mechanism. During this time, network congestion did not present much of a problem and operators typically agreed to a zero cost "peering" arrangement with other operators. Having no apparent incentive to incur the cost to meter traffic flows, ISPs interconnected facilities on a Sender Keep All basis. Such an arrangement helped make the Internet "a network of networks" and as well expedited the accrual of positive networking externalities, i.e., expanding the value of the Internet as more users and content suppliers come on-line.

Internet interconnection arrangements have become more hierarchical with zero cost peering now primarily limited to large volume, Tier-1 backbone carriers. Lesser ISPs now must pay larger carriers for access to their backbone networks. This outcome constitutes a perfectly reasonable response to the proliferation of ISPs, including many small ventures who would become free riders of larger carrier facilities absent a transfer payment. As well, a payment mechanism helps reduce congestion, or at least imposes costs of carriers and their customers responsible for adding a traffic burden on another service provider.

However, the potential exists for a more hierarchical Internet to balkanize networks and to impose higher costs on rural ISPs and those incurring the higher access charges. The Internet might balkanize if more network operators refuse to peer and interconnect with other operators, even if the smaller operator offered to pay for access. Even in the absence of such balkanization, the diversification of Internet operator types probably means that most rural ISPs will fall into the lowest and smallest category thereby reducing their peering opportunities and obligating them to incur interconnection and access charges with just about every other ISP they access. Depending on what the financial impact of higher telecommunications link costs, rural ISPs may have to raise rates to levels comparatively higher than rates available in urban locales. Universal service support programs in telecommunications works to prevent such an outcome, but under the current regime only schools, libraries and health care facilities enjoy subsidized access to Internet service.

### **Distance and Volume Still Matters When Carriers Price Service and Set Access Terms**

No doubt technological innovations in telecommunications and information processing support declining consumer costs. However distance and traffic volumes still matter in the cost calculus: a long call routing from a rural caller or Web surfer to a distant call recipient or content source costs more than a shorter or more easily routed call. In the telephony environment, carriers typically average dense and sparse route traffic costs, but a small, rural ISP may not have the traffic volume or a wide enough service territory to engage in similar cost averaging.

There is nothing new to the fact that rural or inner city residents frequently face higher product and service costs. But arguably access to the Internet and other advanced services should qualify for the same preferred status as telephony. However, the USF mechanism cannot generate sufficient funds for such an expanded mission. Already the establishment of discounted e-rate access to telephony and the Internet has imposed substantial stress on the universal service contribution process with consumers objecting to a new tax when IXCs add a new line item to their bills to pass through explicit financial subsidy burdens. Billions more in universal service

funding would be required if Congress expressly expanded the universal service mission to include Internet access beyond e-rate beneficiaries.

### **Rate Rebalancing Will Occur Despite Adverse Affects on Universal Service Goals**

At the same time as rural ISPs incur higher telecommunications costs, all telephone service subscribers in rural and high cost areas face significantly higher rates. When ILECs face competition in urban areas, they rationally see the need to reduce rates and expand service options. Reduced urban service revenues will trigger the need to generate higher revenues elsewhere so that the carrier generates a fair total amount of revenues. One could consider such rate "rebalancing" as unfair in the sense that rural and high cost residents, even as they accrue the financial benefits of universal service funding, end up having to "subsidize" competitive rates available to large volume, urban users. But another way to look at this outcome is the appreciation that without a conscientious effort to meet competitors' prices, ILECs would lose urban and large volume customers. Should this occur, ILECs would have to rely even more so on the revenues generated when they operate as carriers of last and only resort to their "captive" customers who have no service alternative. Using universal service concerns as the basis for denying a rate rebalancing request might have the unfortunate effect of making matters worse for rural users in the long run.

### **Regulators Appear Reluctant to Support Alternative Carriers and Technologies to Achieve Universal Service Objectives**

The Telecommunications Act of 1996 created a mechanism for state regulatory agencies to authorize more than one carrier to pursue universal service goals in a locality or region.<sup>48</sup> Heretofore states have been reluctant to certify additional carriers, including ones using wireless technologies that can provide cost-effective service on an immediate basis, despite the FCC conclusion that "the plain language of section 214(e)(1) does not permit the [Commission] or the

states to adopt additional criteria as prerequisites for designating carriers eligible" for universal service subsidization.<sup>49</sup>

Perhaps such reluctance stems from the perception that authorizing multiple carriers to operate in a single region somehow would adversely affect the ability of the incumbent carrier to continue providing services in view of the potential for universal service fund diversion. If providing subsidized services has diverted time, money and effort from other more profitable endeavors, then ILECs should welcome the opportunity to share or abandon such a burden. In any event, no state or federal regulatory authority should second guess the business judgment of a new carrier ready, willing and able to provide essential, universal services.

Much of the cost incurred in providing wireless services occurs with the installation of the towers, antennas, switches and transmitters that constitute the infrastructure. The incremental cost of an additional minute of traffic anywhere within the overall "footprint" of a mobile radio system approaches zero, absent congestion. While a rural call may involve more switching and backhauling to a central facility, probably located in an urban locale, the mobile radio operator may be inclined to offer postalized rates throughout a service area, i.e., declining to impose higher "roaming" charges simply because the caller is located outside a city. It appears that many regulators have failed to notice the significant reduction in mobile radio charges and the ability of wireless services, in some circumstances, to offer functional equivalent service at roughly the same cost as conventional wireline options.<sup>50</sup> In any event, the criteria for determining whether to grant ETC status to a wireless carrier does not depend on the affordability or substitutability of wireless services vis a vis incumbent wireline carrier services.<sup>51</sup>

### **Convergence Requires a New Approach to Universal Service**

In a converging and Internet-centric environment, preexisting regulatory classifications simply do not work. Technological convergence blurs the semantic classifications between print media, broadcasting, closed-circuit media like cable television and telephony. Market convergence means that previously discrete industry segments merge, or at least become more easily penetrated by newcomers. For example, in an Internet-dominated environment, an ISP

could easily become a "one-stop-shop" for consumers' telecommunications, entertainment and information requirements offering an array of services including streaming audio (radio) and video (television) and local and long distance telephone service along with a variety of electronic commerce, news and entertainment applications.

Any attempt to extend regulatory regimes to Internet-mediated applications runs the risk of creating a dichotomy in regulatory rights and responsibilities between providers of functionally equivalent services. Many of the services available via the Internet provide a faster, better, cheaper and smarter evolution of preexisting services. The Internet provides a convenient, user-friendly medium for acquiring news and entertainment and for engaging in all sorts of commercial transactions. A bias or intention not to regulate, or to regulate lightly such activities may contrast significantly with a preexisting and more intrusive regulatory model. Governments should not automatically extend the application of preexisting regulatory regimes to Internet-mediated equivalent services. Nor should governments deregulate incumbent services simply because Internet options have become available, and governments have opted to apply a different and probably less burdensome regulatory regime to Internet services.

The onset of Internet-mediated services presents a regulatory challenge to governments, particularly those disinclined to treat Internet-mediated services as equivalents to services transmitted and delivered via traditional media. The juxtaposition of different regulatory regimes typically also creates an asymmetry that has the potential for tilting the competitive playing field in favor of the less regulated service. To the extent regulation can impose financial and operational burdens, the service provider subject to greater regulation typically suffers a competitive disadvantage vis a vis the less regulated operator. Governments need compelling justifications for establishing different regulatory regimes in view of the potential for such asymmetry to impact the marketplace attractiveness of one service vis a vis others.

Regulatory dichotomies work best when technological categories remain discrete and absolute. But they surely do not work when technological convergence results in porous service categories and diversification by operators. When cable television companies and ISPs both offer

telephone services functionally similar to what telephone companies, regulators may not be able to maintain preexisting dichotomies. Heretofore, government regulators have assumed that incumbent telephone service providers have dominant market shares, should operate as common carriers and offer the best technologies and wherewithal to achieve universal service goals. Government regulators typically assume that market entrants like ISPS, other enhanced service providers and resellers of basic transmission capacity do not have the potential to acquire a dominant market share, or offer ancillary, non-common carrier services. In the future, such assumptions may prove incorrect.

When ISPs offer consumers telephone service equivalents, which link PSTN access with Internet-mediated telephony, preexisting regulatory exemptions tilt the competitive playing field to their advantage. Should significant telephony traffic volumes migrate to routings exempt from universal service contribution requirement, the sum of funds available to achieve the universal service mission will decline. The potential for declining universal service funds occurs just as many governments have articulated a broader and more ambitious universal service mission for all citizens to have access to both basic telephone service and advanced Internet services.

### **An Immodest Proposal**

The universal service mission may suffer greatly if the FCC continues to apply the basic/enhanced service dichotomy coupled with the different regulatory treatment of common carrier versus private carriers. If the Internet becomes the predominant medium for telecommunications and information services as anticipated, then an increasing volume of traffic previously considered basic, common carrier services will transform into enhanced, private carrier services. This transformation may appeal to deregulatory advocates, but two secondary impacts will have a substantial, adverse impact on the generation of funds for supporting the universal service mission:

- 1) when ISPs offer functionally equivalent long distance services, their non-common carrier, enhanced services provider classification exempts them from paying access charges and contributing to universal service funding; and

- 2) incumbent carriers, fettered with a more onerous universal service burden as a result of asymmetrical regulation, will create new, enhanced service provider subsidiaries similarly exempt from universal service subsidy obligations.

When Congress enacted the Telecommunications Act of 1996 and expanded the scope of the universal service mission, it ordered the FCC to fund the mission with explicit support mechanisms from all telecommunications carriers.<sup>52</sup> Surely Congress recognized that substantially more funds would have to flow from companies providing telecommunication services to achieve an expanded universal service mission and to replace an unsustainable implicit subsidy mechanism from long distance services to local exchange services. For the subsidy burden to be equitable, all enterprises providing the functional equivalent to interstate telecommunications should make a contribution. This includes ISPs when they hold themselves out as providing telecommunications services like Internet-mediated, long distance telephone services. Likewise, all providers of local exchange services, which can support the universal service mission, should have access to universal service subsidies. This includes wireless operators, such as cellular radio and personal communication service providers when they apply for Eligible Telecommunications Carrier status and hold themselves out as providing the menu of essential local services specified by the FCC.

Few consumers understand or appreciate having new charges on their long distance bills listed as a "universal service charge." Consumer advocates claim that IXCs have passed onto consumers the entire universal service subsidy burden without a commensurate reduction in long distance charges that are possible, because the local access charges paid by IXCs contain a substantially reduced implicit universal service subsidy. At the same time as long distance telephone bills from conventional carriers contain new charges, new Internet telephony services provide substantial savings, partly the result of access charge and universal service funding exemptions. Part of the solution for stabilizing and rationalizing universal service subsidization lies in spreading the financial burden across all providers of long distance telephone services, no matter what their preexisting regulatory classification.



## NOTES

1. One working definition of this mission: "a public policy to spread telecommunications to as many members of society as possible, and to make available, directly or indirectly, the funds necessary to support the policy." Eli M. Noam, Will Universal Service and Common Carriage Survive the Telecommunications Act of 1996?, 97 Columbia Law Review, 955, 957 (1997).
2. Universal service programs include funding for schools and libraries, commonly known as the e-rate program; high cost support, a rural health care program and two programs (discounted initial hook up fees and reduced monthly rates) supporting access by people with low incomes. See Federal Communications Commission, Accounting Policy Division, Universal Service, available at [http://www.fcc.gov/ccb/universal\\_service/](http://www.fcc.gov/ccb/universal_service/). In 1998 the Commission adopted annual funding caps of \$2.25 billion for schools and libraries and \$400 million for health care providers.
3. See International Telecommunication Union, World Telecommunication Development Report 1998, Chapter 4, Universal Access (1998).
4. Heather E. Hudson, Access to the Digital Economy: Issues in Rural and Developing Nations, paper presented at Understanding the Digital Economy—Data, Tools and Research, conference organized by the United States Department of Commerce, Washington, D.C. May 25-26, 1999, available at <http://mitpress.mit.edu/ude.html>; see also <http://www.ecommerce.gov>.
5. See, e.g., Into Vogelsang, Micro-Economic Effects of Privatizing Telecommunications Enterprises, 13 Boston University International Law Journal (Fall, 1995); Robert J. Saunders, et al., Telecommunications and Economic Development 4 (2d ed. 1994); Ben A. Petrazzini, The Political Economy of Telecommunications Reform in Developing Countries: Privatization and Liberalization in Comparative Perspective 28 (1995); Walter T. Molano, the Logic of Privatization: The Case of Telecommunications in the Southern Cone of Latin America (1997). see also Christopher J. Sozzi, Project Finance and Facilitating Telecommunications Infrastructure Development in Newly-Industrializing Countries, 12 Santa Clara Computer & High Tech.L.J. 435, 436-39 (1996); Bella Mody, et al., Telecommunications Politics: Ownership and Control of the Information Highway in Developing Countries (1995).
6. "A firm controlling bottleneck facilities has the ability to impede access of its competitors to those facilities. We must be in a position to contend with this type of potential abuse. We treat control of bottleneck facilities as prima facie evidence of market power requiring detailed regulatory scrutiny. Control of bottleneck facilities is present when a firm or group of firms has sufficient command over some essential commodity or facility in its industry or trade to be able to impede new entrants. Thus bottleneck control describes the structural characteristic of a market that new entrants must either be allowed to share the bottleneck facility or fail." Policy and Rules Concerning Rates for Competitive Common Carrier Services and Facilities Authorizations Therefor, CC Docket No. 79-252, First Report and Order, 85 FCC 2d at 36.
7. See Rob Frieden, Contamination of the Common Carrier Concept in Telecommunications, 19 Telecommunications Policy, No. 19, 685-697 (Dec. 1995).
8. Telecommunications Act of 1996, Pub. L. No. 104-104, 110 Stat. 56, 47 U.S.C. § 254
9. 47 U.S.C. 254(e); see also Joint Explanatory Statement at 131 ("In keeping with the conferees' intent that universal service support should be clearly identified, [section 254(e)] states that such support should be made explicit . . .").
10. 47 U.S.C. § 254(d).
11. See 47 U.S.C. § 254(b)(3).
12. "In 1983 we adopted a comprehensive 'access charge' plan for the recovery by local exchange carriers (LECs) of the costs associated with the origination and termination of interstate calls. [citing MTS and WATS Market Structure, Memorandum Opinion and Order, 97 FCC 2d 682 (1983) At that time, we concluded that the immediate application of this plan to certain providers of interstate services might unduly burden their operations and cause disruptions in provision of service to the public. Therefore, we granted temporary exemptions from payment of access charges to certain classes of exchange access users, including enhanced service providers." Matter of Amendments of Part 69 of the Commission's Rules Relating to Enhanced Service Providers, CC Docket No. 87-215, Notice of Proposed Rulemaking, 2 FCC Rcd. 4305 (1987)(proposing to imposed access charges on enhanced service lines), terminated, 3 FCC Rcd. 2631(1988)(proposal abandoned on ground that despite the apparent discrimination in charges "a period of

- change and uncertainty" besetting the enhanced services industry justified ongoing exemption from access charge payments).
13. Id. at ¶282.
  14. Id. at ¶ 283.
  15. "The mere fact that providers of information services use incumbent LEC networks to receive calls from their customers does not mean that such providers should be subject to an interstate regulatory system designed for circuit-switched interexchange voice telephony. The mere fact that providers of information services use incumbent LEC networks to receive calls from their customers does not mean that such providers should be subject to an interstate regulatory system designed for circuit-switched interexchange voice telephony." Id. at ¶288.
  16. Id. at ¶311.
  17. Section 254(h)(1)(b) requires "telecommunications carriers . . . [to] provide both advanced telecommunications services and additional [FCC designated] services to elementary schools, secondary schools, and libraries for educational purposes at rates less than the amounts charged for similar services to other parties." When providing such discounted "e-rate" services, telecommunications carriers qualify for universal service subsidization. But so too do ISPs, because Section 254(h)(2)(A) requires the FCC to "enhance, to the extent technically feasible and economically reasonable, access to advanced telecommunications and information services for all public and non-profit elementary and secondary school classrooms, health care providers and libraries."
  18. See Sean M. Foley, *The Brewing Controversy Over Internet Service Providers and the Universal Service Fund: A Third Generation Interpretation of Section 254*, 6 *CommLaw Conspectus* 245 (Summer, 1998) (stating the case for eliminating the telecommunications carrier/information service provider distinction and embracing a broader definition of telecommunication service so that ISPs both may universal service contributions and qualify to receive subsidies).
  19. *Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996*, CC Docket 98-146, Notice of Inquiry, 3 FCC Rcd. 15280 (1998).
  20. *Deployment of Wireline Services Offering Advanced Telecommunications Capability*, CC Docket No. 98-147, Memorandum Opinion and Order, and Notice of Proposed Rulemaking 13 FCC Rcd. 24012 (1998), First Report and Order and Further Notice of Proposed Rulemaking, 14 FCC Rcd. 4761 (1999); see also *Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996*, CC Docket No. 98-146, Report, 14 FCC Rcd. 2398 (1999).
  21. Federal-State Joint Board on Universal Service, CC Docket 96-45, Report to Congress, 13 FCC Rcd. 11,501 (1998), available at [http://www.fcc.gov/Bureaus/Common\\_Carrier/Reports/fcc98067.html](http://www.fcc.gov/Bureaus/Common_Carrier/Reports/fcc98067.html) [hereinafter cited as 1998 Universal Service Report to Congress].
  22. 1998 Universal Service Report to Congress at ¶ 3.
  23. Id.
  24. Id.
  25. See id. at ¶ 4.
  26. 1998 Universal Service Report to Congress at ¶ 15.
  27. "Moreover, we clarify that the provision of transmission capacity to Internet access providers and Internet backbone providers is appropriately viewed as 'telecommunications service' or 'telecommunications' rather than 'information service,' and that the provision of such transmission should also generate contribution to universal service support mechanisms." Id. at ¶ 15.
  28. The Communications Act of 1934 now defines information service as "the offering of a capability for generating, acquiring, sorting, transforming, processing, retrieving, utilizing, or making available information via telecommunication, and includes electronic publishing, but does not include any use of any such capability for the management, control, or operation of a telecommunications system or the management of a telecommunications service." 47 U.S.C. § 153(20)(1997).
  29. "Senators Stevens and Burns indicate, an information service provider transmitting information to its users over common carrier facilities such as the public switched telephone network is a 'telecommunications carrier.'" 1998 Universal Service Report to Congress at ¶ 34. The Commission understand the concept of mixed or hybrid services to refer to "services in which a provider offers a capability for generating, acquiring, storing, transforming, processing, retrieving, utilizing or making available information via

- telecommunications, *and* as an inseparable part of that service transmits information supplied or requested by the user." *id.* at ¶ 56.
30. *Id.* at ¶ 57.
  31. *Id.* at ¶ 83.
  32. Internet telephony "offer users the ability to call from their computer to ordinary telephones connected to the public switched network, or from one telephone to another. . . . [A] user first picks up an ordinary telephone handset connected to the public switched network, then dials the phone number of a local gateway. Upon receiving a second dialtone, the user dials the phone number of the party he or she wishes to call. The call is routed from the gateway over an IP network, then terminated through another gateway to the ordinary telephone at the receiving end." *Id.* at ¶ 84.
  33. An Internet telephony provider subject possibly subject to USF contribution requirements must meet the following conditions: (1) it holds itself out as providing voice telephony or facsimile transmission service; (2) it does not require the customer to use CPE different from that CPE necessary to place an ordinary touch-tone call (or facsimile transmission) over the public switched telephone network; (3) it allows the customer to call telephone numbers assigned in accordance with the North American Numbering Plan, and associated international agreements; and (4) it transmits customer information without net change in form or content. *Id.* at ¶ 88.
  34. *Id.* at ¶ 89.
  35. *Id.* at ¶ 90.
  36. 47 U.S.C. § 160 (1999).
  37. *See id.* at ¶ 92.
  38. " We continue to believe that alternative calling mechanisms are an important pro-competitive force in the international services market. We need to consider carefully the international regulatory requirements to which phone-to-phone providers would be subject. For example, it may not be appropriate to apply the international accounting rate regime to IP telephony." 1998 Report to Congress at ¶ 93. *See also* Rob Frieden, "Falling Through the Cracks: International Accounting Rate Reform at the ITU and WTO," 22 *Telecommunications Policy* No. 11, 963-975 (December 1998).
  39. The Commission concluded that to be a mandatory contributor to universal service under section 254(d): (1) a telecommunications carrier must offer "interstate" "telecommunications"; (2) those interstate telecommunications must be offered "for a fee"; and (3) those interstate telecommunications must be offered "directly to the public, or to such classes of users as to be effectively available to the public. Universal Service Order, 12 FCC Rcd. at 9173, *citing* 47 U.S.C. §§ 153(22), 153(43), and 153(46).
  40. For example, the Commission held that operators of interstate private networks that lease excess capacity on a non-common carrier basis should contribute to universal service. *See* Universal Service Order, 12 FCC Rcd. at 9178.
  41. 1998 Universal Service Report to Congress at ¶ 16.
  42. *Id.* at 4. Policy Implications at ¶ 5.
  43. *See* Jason Oxman, The FCC and the Unregulation of the Internet, Federal Communications Commission, Office of Plans and Policies, OPP Working Paper No. 31 (1999) available at <http://www.fcc.gov/opp/workingp.html>.
  44. *See* President William J. Clinton and Vice President Albert Gore, Jr., A Framework For Global Electronic Commerce, available at <http://www.iitf.nist.gov> (viewed July 22, 1999); United States Department of Commerce, The Emerging Digital Economy (April 15, 1998) available at <http://www.ecommerce.gov/emerging.htm>; and The Emerging Digital Economy II (June 22, 1999) available at <http://www.ecommerce.gov/ede/>.
  45. *Id.* at p. 24-25.
  46. Arturo Gandara, "Equity in an Era of Markets: The Case of Universal Service," 33 *Wake Forest L. Rev.* 107 (1998).
  47. *See e.g.*, Robert M. Frieden, "Without Public Peer: The Potential Regulatory and Universal Service Consequences of Internet Balkanization," 3 *Virginia Journal of Law & Technology* 8 (Fall, 1998) available at <http://vjolt.student.virginia.edu/>. Kenneth Neil Cukier, "The Global Internet: A Primer," in Gregory C. Staple, Ed. *TeleGeography* p. 112 (1999); Robert M. Frieden, "Last Days of the Free Ride? The Consequences of Settlement-Based Interconnection for the Internet," 1 *Info* No. 3, 225-238 (June, 1999).
  48. Any telecommunications common carrier can become certified as an eligible telecommunications carrier ("ETC"), and thereby qualified under Section 254 of the Communications Act to receive universal service subsidies. The appropriate state regulatory commission must determine, pursuant to Section 214(e) of the

- Communications Act, that: 1) the candidate carrier provides the base set of services determined by the FCC, pursuant to Section 254(c), as worthy of federal universal service subsidization, e.g., POTS; 2) the carrier advertises the availability of such services and the applicable charges; 3) the carrier provides the supported services, whether owned or resold, throughout a designated service area; and 4) for service in rural area, the commission determines that certifying this carrier, in addition to the incumbent carrier, would serve the public interest. See 47 U.S.C. § 214(e).
49. Federal-State Joint Board on Universal Service, CC Docket No. 96-45, Report and Order, FCC 97-157 at ¶ 24 (May 8, 1997); see also Federal-state Joint Board on Universal Service: Promoting Deployment and Subscribership in Unserved and Underserved Areas, Including Tribal and Insular Areas, CC Docket No. 96-45, Further Notice of Proposed Rulemaking, FCC 99-204, 1999 W.L. 684121 F.C.C. (rel. September 3, 1999)(expressing enthusiasm for wireless options).
  50. See Mark J. Ayotte, Eligibility of Wireless Carriers to Receive Universal Service Support, 17 Communications Lawyer 11 (Spring, 1999).
  51. "Incumbent LECs can be expected to oppose ETC designation for . . . [wireless service] providers based on claims of 'affordability' and 'substitutability.' Yet, such tests are wholly unrelated to the governing ETC criteria under Section 214(e) and are merely designed to protect their monopoly position and avoid competition." Id.
  52. 47 U.S.C. §254(d) requires "[e]very telecommunications carrier that provides interstate telecommunications services . . . [to] contribute, on an equitable and nondiscriminatory basis, to the specific, predictable, and sufficient mechanisms established by the Commission to preserve and advance universal service."