

MERCATUS CENTER
GEORGE MASON UNIVERSITY

REGULATORY STUDIES PROGRAM

Public Interest Comment on
*Review of Regulatory Requirements for IP-Enabled Services: Notice of Proposed Rulemaking*¹

The Regulatory Studies Program (RSP) of the Mercatus Center at George Mason University is dedicated to advancing knowledge of the impact of regulation on society. As part of its mission, RSP conducts careful and independent analyses employing contemporary economic scholarship to assess rulemaking proposals from the perspective of the public interest. Thus, this comment on the Federal Communications Commission’s review of regulatory requirements for Internet Protocol-enabled services does not represent the views of any particular affected party or special interest group, but is designed to evaluate the effect of the commission’s proposals on overall consumer welfare.

I. Introduction

In this Notice of Proposed Rulemaking, the Federal Communications Commission seeks comment on a wide variety of issues related to the regulation of services and applications that make use of Internet Protocol (“IP-enabled services”). Such services and applications include instant messaging, interactive games, gambling, virtual private networks, maps, various video services, and (perhaps most significantly) Internet Protocol telephony. They may travel over the Internet or over private communications networks, but they all function by utilizing Internet Protocol to transfer individually-addressed packets of data over communications networks. This contrasts with traditional telephone service, which typically requires a dedicated path between the users for the entire duration of the call.²

Internet Protocol telephony in particular creates an interesting quandary. Like e-mail, file retrieval, video, and other information services, it involves the transfer of bits across a

¹ Prepared by Jerry Ellig, senior research fellow, Mercatus Center. James Taylor contributed substantial research assistance. This comment is one in a series of Public Interest Comments from Mercatus Center’s Regulatory Studies Program and does not represent an official position of George Mason University.

² NPRM, paras. 8-22.

communications network—often the Internet, but possibly a private network. In addition, Internet Protocol telephony that connects with the rest of the telephone network is potentially a much closer substitute for ordinary landline telephony than these other information services, and hence it holds greater potential to erode revenues for both local and long-distance telephone service.³ Faced with this reality, the Commission could attempt to treat Internet Protocol telephony like telephone service, or it could allow Internet Protocol telephony to develop freely as an information service.

The latter approach could require the Commission to reconsider the structure of access charges and universal service funding mechanisms if Internet Protocol telephony garners a significant market share at the expense of ordinary landline telephone service. This is a challenge well worth the Commission's time and effort, because economic research demonstrates that current policies toward access charges and universal service impose significant costs on consumers that could be avoided under alternative policies. Internet Protocol telephony underscores the importance and urgency of Commission initiatives on intercarrier compensation and universal service reform.⁴

The NPRM raises several key questions on which economic research sheds light. The Commission asks whether Internet Protocol enabled services should be subject to economic regulation, pay access charges for connecting to the public switched telephone network, and make universal service contributions.

Many of these questions are couched in terms of legal interpretations. Whether the services at issue are considered telecommunications or information services, whether the Commission forbears from certain types of regulation, whether the Commission employs “end-to-end” analysis, and how the characteristics of various technologies affect the answers to these questions, will all ultimately determine how these services are regulated. This comment, however, refrains from detailed legal analysis. Rather, it offers an economic analysis that assesses how some of the fundamental policy choices addressed in this proceeding are likely to affect consumer welfare.

Economic research suggests several recommendations that are directly relevant to the issues the Commission raises in this proceeding. The Commission should:

1. Refrain from imposing economic regulation on IP-enabled services.
2. Keep IP-enabled services, including all forms of Internet Protocol telephony, free from access charges. In the short term, allow IP-enabled services continued treatment as business phone customers.

³ The NPRM (para. 16) notes that providers of other IP-enabled services, such as instant messaging and gaming, are also incorporating voice features. To the extent that these voice components serve as a substitute for local or long-distance phone calls, they may raise some of the same issues as Internet-Protocol telephony.

⁴ See dockets cited in the NPRM, paras. 61 and 63.

3. Assess whether Internet Protocol telephony should be subject to some other form of intercarrier compensation arrangement only after this service becomes better-established in the market, and after the Commission has implemented a reformed, universal intercarrier compensation system that avoids the significant consumer costs of the current access charge regime.
4. Keep IP-enabled services other than Internet telephony free from requirements that they contribute to fund universal service programs.
5. Delay deciding whether Internet Protocol telephony should make contributions to universal service programs until those programs are reformed to substantially reduce their costs to consumers.
6. Evaluate whether widespread adoption of Internet Protocol telephony could reduce the cost of universal service programs by reducing the number of high-cost wireline telephone loops that would need to be subsidized.

II. Economic Regulation

Price regulation can improve consumer welfare if the regulated industry is a “natural monopoly”—that is, if the relationship between costs and demand makes it possible for a single firm to serve the entire market at lower cost than multiple firms—and if sunk costs eliminate the potential for entry. In that case, price and common carrier regulation may mitigate the single firm’s market power. Entry regulation can improve consumer welfare if a natural monopoly is “unsustainable”—that is, if a peculiar set of cost conditions would lead to the presence of more than one firm in the market even though a single firm can serve the entire market at lowest total cost.⁵ In the absence of monopoly, economic regulation is at best superfluous and at worst a source of market power and increased consumer costs.⁶

The Commission notes that monopoly ownership of the public switched telephone network is the principal reason for much of the economic regulation that it implements, then states, “To the extent that the market for IP-enabled services is not characterized by

⁵ See William J. Baumol, John C. Panzar, and Robert D. Willig, *Contestable Markets and the Theory of Industry Structure* (Harcourt Brace Jovanovich, 1982).

⁶ For a sample of the economics literature outlining the perverse incentives created when economic regulation substitutes for competition, see Thomas W. Hazlett, “Competition vs. Franchise Monopoly in Cable Television,” *Contemporary Policy Issues* 4 (April 1986): 80-97; Hazlett, “Prices and Outputs Under Cable TV Reregulation,” *Journal of Regulatory Economics* 12:2 (Sept. 1997): 173-97; Hazlett, “Spectrum Flash Dance: Eli Noam’s Proposal for ‘Open Access’ to Radio Waves,” *Journal of Law & Economics* 41:2 (Oct. 1998): 805-20; Hazlett et. al., “Was the Fairness Doctrine a ‘Chilling Effect’?: Evidence from the Postderegulation Radio Market,” *Journal of Legal Studies* 26:1 (Jan. 1997): 279-301; Walter M. Primeaux, Jr., *Direct Electric Utility Competition* (Westport, CT: Praeger, 1986); John E. Kwoka, Jr., *Power Structure: Ownership, Integration, and Competition in the U.S. Electricity Industry* (Kluwer Academic Publishers, 1996); George J. Stigler and Claire Friedland, “What Can Regulators Regulate? The Case of Electricity,” *Journal of Law & Economics* 5: 1-16; Thomas G. Moore, “The Effectiveness of Regulation of Electric Utility Prices,” *Southern Economic Journal* 36 (April): 365-75; Robert Poole (Ed.), *Unnatural Monopolies* (Lexington: D.C. Heath, 1985); Jerry Ellig and Michael Giberson. “Scale, Scope, and Regulation in the Texas Gas Transmission Industry,” *Journal of Regulatory Economics* (March): 79-90.

For discussions of the political influence costs associated with regulation, see Michael Crew and Charles Rowley, “Toward a Public Choice Theory of Monopoly Regulation,” *Public Choice* 57 (1988): 49-67; James Buchanan, Robert Tollison, and Gordon Tullock, *Toward a Theory of the Rent-Seeking Society* (College Station: Texas A&M University Press, 1980); H.G. Broadman and J.P. Kalt, “How Natural is Monopoly? The Case of Bypass in Natural Gas Distribution Markets,” *Yale Journal on Regulation* (1989); Jerry Ellig, “Why Do Regulators Regulate? The Case of the Southern California Gas Market,” *7 J. of Reg. Econ.* 293 (1995); Thomas W. Hazlett, “Assigning Property Rights to Radio Spectrum Users: Why Did FCC License Auctions Take 67 Years?,” *Journal of Law & Economics* 41:2 (Oct. 1998): 529-75; Hazlett, “Oak Leaves and the Origins of the 1927 Radio Act: Comment,” *Public Choice* 95:3-4 (June 1998): 277-85; Hazlett, “The Cost of Rent-Seeking: Evidence from Cellular Telephone License Lotteries,” *Southern Economic Journal* 59:3 (Jan. 1993): 425-35; Hazlett, “The Demand for Regulate Franchise Monopoly: Evidence from CATV Rate Deregulation in California,” *Economic Inquiry* 29:2 (April 1991): 275-96.

such monopoly conditions, we seek comment on whether there is a compelling rationale for applying traditional economic regulation to providers of IP-enabled services.”⁷ In a subsequent section, the Commission inquires “whether any of these economic regulations are appropriate in the context of IP-enabled services, given that customers often can obtain these services from multiple, intermodal, facilities- and non-facilities-based service providers.”⁸

Given the Commission’s assumptions, the answer suggested by economic research is a resounding “No.” The history of telecommunications, as well as a wide variety of other regulated industries, suggests that consumers bear significant costs when economic regulation becomes a substitute for competition.⁹ Deregulation and competition in the long-distance telecommunications, airline, railroad, natural gas, and trucking industries has led to price reductions and other consumer benefits worth more than \$50 billion annually; regulation deprived consumers of these benefits.¹⁰

Even in the unlikely event that a party presents the Commission with evidence that some IP-enabled services are or could be monopolized, the Commission would do well to avoid economic regulation, for several reasons. First, even if there are some barriers to entry in IP-enhanced services in the form of sunk costs, other competitors in this rapidly-changing market may overcome these barriers by developing lower-cost or innovative services.¹¹ When innovation and discovery are possible, conventional competition analysis overestimates the potential for market power. In dynamic markets, potential entrants can leapfrog an incumbent by offering superior products and services, lower prices, or creative contract terms. Sunk costs depreciate more rapidly—and more unpredictably—because of ceaseless change. Potential competition, in the form of Schumpeterian “creative destruction,” could be much more vigorous in spite of sunk costs.¹²

⁷ NPRM, para. 5.

⁸ NPRM, para. 74.

⁹ For a summary of relevant research, see Clifford Winston, “Economic Deregulation: Day of Reckoning for Microeconomists,” *Journal of Economic Literature* 31 (Sept. 1993), 1263-89; Robert Crandall and Jerry Ellig, *Economic Deregulation and Customer Choice* (Fairfax, VA: Center for Market Processes, 1997); Kenneth W. Costello and Robert J. Graniere, *The Deregulation Experience: Lessons for the Electric Power Industry* (Columbus, OH: National Regulatory Research Institute, 1996).

¹⁰ Crandall and Ellig (1997).

¹¹ Even the developers of contestable market theory, which emphasizes the role sunk costs play as a barrier to entry, acknowledge that contestability theory says nothing about innovation and change. Rather, contestable market theory discusses how potential competitors employing the same technology as the incumbent can discipline the incumbent’s behavior. See William J. Baumol and Janusz Ordover, “Antitrust: Source of Dynamic and Static Inefficiencies?” in *Antitrust, Innovation, and Competitiveness* edited by T. Jorde and D. Teece, (New York: Oxford, 1982): 82-97.

¹² Joseph Schumpeter, *Capitalism, Socialism, and Democracy* (New York: Harper, 1942); Shelby Hunt, *A General Theory of Competition* (New York: Sage, 2000); Jerry Ellig (ed.), *Dynamic Competition and Public Policy: Technology, Innovation, and Antitrust Issues* (New York: Cambridge University Press, 2001). It is important to emphasize the breadth of phenomena that dynamic competition includes. For many people, the word “innovation” connotes new inventions or changes in physical production processes, and even a great deal of economics literature on innovation exhibits a narrow focus on “hardware” issues,

Second, even if a firm develops some service that appears to enjoy a long-lasting monopoly, the monopoly may merely reflect superior “skill, foresight, and industry”¹³ if it emerges from a competitive market process. Such a legally-acquired monopoly is not illegal under the antitrust laws, and it may even benefit consumers, to the extent that the prospect of supra-competitive profits induced innovation that might not otherwise have occurred. Indeed, a strong argument could be made that concerns about monopoly in IP-enabled services should simply be left to the antitrust authorities.

The tone of the NPRM suggests that the Commission is suspicious of proposals to impose economic regulation on IP-enabled services; economic research shows that this suspicion is well-grounded. The Commission should be concerned about monopoly in an IP-enabled service only if such monopoly can be shown to flow from a firm’s pre-existing monopoly over some other part of the telecommunications network. And in that case, the preferred remedy should be one that prevents the spread of monopoly to IP-enabled services, rather than one that substitutes economic regulation for competition.

III. Access Charges

Long-distance telephone companies pay access charges to local telephone companies. There is virtually unanimous agreement among regulatory economists that historically, these charges have been used to subsidize local telephone service.¹⁴ Since the 1980s, the Commission has gradually reduced access charges and made up the revenues with the fixed Federal Subscriber Line charge.

such as patentable inventions. In an economic sense, however, innovation comprises any type of change, including changes in marketing methods, management philosophies, or contracting strategies. Sunk construction costs, for example, need not deter entry if the entrant can obtain assurances that it will capture enough of the market to earn a profit. The prospective entrant can bid for and sign up enough of the market to make its project profitable, even if such competition for the market imposes losses on the incumbent. The most straightforward way of accomplishing this is through contracting with customers, and this is in fact what some potential entrants have done. Richard Posner pointed this out years ago in regard to cable television. See R. Posner, “The Appropriate Scope of Regulation in the Cable Television Industry,” 3 *Bell J. of Econ.* 98 (1972) at 112. This strategy was also employed by a federally-regulated gas pipeline in Southern California that sought to expand into Northern California in competition with a state-regulated utility. The only truly sunk costs were those associated with contracting; counting construction costs as sunk costs overstated the magnitude of the entry barrier by a factor of 20! See Jerry Ellig, Jeff Kaufman, and Tom Rustici, “When Do Sunk Costs Prevent Entry? The Case of Gas Pipelines,” manuscript, George Mason University (March 17, 1995).

¹³ *United States v. Aluminum Company of America*, 148 F.2d 416 (2nd Cir. 1945).

¹⁴ Wayne Leighton, *Consumers and Cross-subsidies: An Interest Group Theory of Telecommunications Regulation* (Ph.D. dissertation, George Mason University, 1996). The argument that long-distance service does not cross-subsidize local service is based on the assumption that local loop costs are “common costs” of producing long-distance and local service. However, the fact that customers might use local phone lines for both local and long-distance calls does not mean that local loops are common costs for the phone companies. A loop provides a customer with access to the telecommunications network. The cost of any loop is incremental to the rest of the system, and a loop receives a subsidy if it does not cover its incremental costs. For a thorough discussion of theory and evidence, see Steve G. Parsons, “Cross-Subsidization in Telecommunications,” *Journal of Regulatory Economics* 13 (1998).

Information service providers are exempt from access charges. Instead, they pay for phone service as business customers. In so doing, they help subsidize local residential service, because business rates (at least for small and medium-size businesses) tend to be much higher than residential rates even though the cost of providing the service is similar.¹⁵

The Commission's "pulver.com" decision holds that a service that helps its customers make voice calls to each other over the Internet is an unregulated information service¹⁶, and hence exempt from access charges. Other providers of Internet Protocol telephony, however, connect their users with other callers on the public switched telephone network, and the NPRM asks whether this type of provider should pay access charges.¹⁷

The current system of access charges is intended to promote universal service. The assumed public benefit is that more people subscribe to local phone service because access charge revenues are used to subsidize monthly local rates. This benefit may address a market failure, reflecting the internalization of a genuine externality, under three conditions:

1. The value of telephone service to each subscriber rises when other subscribers join the network,
2. This increase in value is large enough that current subscribers would be willing to subsidize these new subscribers, and
3. Individuals fail to take this increased value into account when they decide whether to subscribe.¹⁸

Even if these conditions hold, a regulatory response may not be necessary, because the owner of the network has strong financial incentives to maximize the value of the network by crafting subsidies to new subscribers if subsidies are needed to internalize the externality.¹⁹ Alternatively, policymakers may believe that an increase in telephone subscription rates is a good thing even if there is no externality.²⁰ Regardless of whether

¹⁵Robert W. Crandall and Leonard Waverman, *Who Pays for Universal Service?* (Washington, DC: Brookings, 2000), p. 47.

¹⁶ *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 (adopted Feb. 12, 2004).

¹⁷ NPRM, paras. 61-62.

¹⁸ The first condition defines the existence of an externality. The second condition determines whether it is a "Pareto-relevant marginal externality," an often-overlooked precondition for a subsidy or regulatory action to improve consumer welfare. A.H. Barnett and David L. Kaserman, "The Simple Welfare Economics of Network Externalities and the Uneasy Case for Subscriber Subsidies," *Journal of Regulatory Economics* 13 (1998).

¹⁹ Stanley J. Liebowitz and Steve Margolis, "Network Effects," in M. Caves, S. Majumdar, and I. Vogelsang (eds.), *Handbook of Telecommunications Economics* (Elsevier, 2002), pp. 76-94.

²⁰ John C. Panzar, "A Methodology for Measuring the Costs of Universal Service Obligations," *Information Economics and Policy* 12 (2000), p. 213.

an externality exists, most research suggests that access charges impose significant costs on consumers, but the cross-subsidies generate little increase in telephone subscriptions.

A. Access charges generate significant consumer costs

Because consumer demand for long-distance service is very responsive to price, access charge policies that inflate the price of long-distance service generate significant reductions in consumer welfare. When an artificial price increase leads consumers to cut back on consumption by a large amount, it makes consumers substantially worse off. Most studies find that the price elasticity of demand for long-distance service is relatively large, in a range between -0.5 and -0.72; a 1 percent increase in long-distance prices reduces use by about one-half to three-quarters of one percent.²¹ Hence, long-distance access charges generate relatively large reductions in long-distance usage and consumer welfare.

This reduction in consumption might be offset, to some extent, by the value of increased consumption of local service made possible by the cross-subsidies. Consumer decisions to subscribe to telephone service, however, are not very sensitive to the fixed monthly charge.²² In other words, local service has a relatively low price elasticity of demand, and this elasticity appears to have fallen over time—perhaps as low as -0.005.²³ Surveying the findings of multiple studies, Jerry Hausman and Howard Shelanski note,

A comparison of price elasticities of demand for local and long-distance telephone services thus reveals that an increase in long-distance prices is probably more harmful to society's economic welfare than is an increase in local service prices. Long-distance demand, with a price elasticity of -0.7, will contract substantially more in the face of a price increase than will local-service demand, with a price elasticity of -0.005.²⁴

B. Effectiveness of subsidizing local phone service is questionable

Studies of phoneless households cast further doubt on the idea that the fixed monthly cost of local service is a key barrier to telephone subscription. The most common reasons that phoneless households give for not subscribing to telephone service is concern about uncontrollable usage-based charges, not the cost of basic local service. A pathbreaking 1994 study of low-income households in New Jersey found that the cost of usage-related charges and optional services—such as long-distance, collect calls, calling-card calls, and voice mail—were the most common reasons that households lacked phone service.

²¹ Jerry Hausman and Howard Shelanski, "Economic Welfare and Telecommunications Regulation: The E-Rate Policy for Universal-Service Subsidies," *Yale Journal on Regulation* 16 (Winter 1999), pp. 36-37.

²² Barnett and Kaserman (1998), pp. 252-53; David L. Kaserman, John W. Mayo, and Joseph E. Flynn, "Cross-Subsidization in Telecommunications" Beyond the Universal Service Fairy Tale," *Journal of Regulatory Economics* 2 (Sept. 1990), pp. 231-49.

²³ Crandall and Waverman (2000), p. 91.

²⁴ Hausman and Shelanski (1999), p. 39.

Heads of households noted that other family members or friends living with them had run up large usage-related bills in the past, often without their knowledge or approval. The authors concluded, “Income, employment, and other measures of wealth or poverty are strongly related to low penetration not because the price of basic local phone service is too high, but because low-income users who run up large usage-related bills are unable to cover them.”²⁵

A 1995 survey of Texas households without telephones found that about half of them said the cost of local service makes it difficult to afford a telephone, but about 80 percent said they could afford to pay \$16 per month, the actual average cost of local service in Texas at the time of the survey. The primary barriers to phone service were the fact that long-distance charges are variable and hence perceived as harder to control, the cost of reinstallation for people who previously had service disconnected due to nonpayment of bills, and difficulty in controlling who uses the phone.²⁶

These differing elasticities suggest that cross-subsidies from long-distance to local service may generate small increases in telephone subscription at the cost of a large reduction in consumer welfare due to inflated long-distance prices. Estimates of the impact of cost-based rate rebalancing suggest that complete elimination of cross-subsidies would, at worst, reduce the number of primary residential telephone lines in the United States by 1.5 percent. Rural areas would see subscription fall by less than 5 percent, and often by much less. Lower long-distance rates, however, would increase consumer welfare by between \$2.5 billion and \$7 billion.²⁷

Even this tradeoff may be an illusion. Higher long-distance rates tend to reduce telephone subscription, since consumers subscribe to local phone service in part so that they can make long-distance calls. Some studies find that subscription is more sensitive to changes in long-distance rates than to changes in local rates. Therefore, a reduction in the cross-subsidy from long-distance to local rates may actually increase telephone penetration. The principal study examining these offsetting effects estimated that the reduction in cross-subsidies that occurred between 1984 and 1990 actually increased telephone penetration rates by 0.45 percent, bringing 450,000 additional households onto the telephone network.²⁸ Another, more recent study using a variety of statistical techniques found very little evidence that the cost of monthly service affects telephone penetration rates; in that case, access charges generate consumer costs but simply fail to promote universal service.²⁹

²⁵ Milton L. Mueller and Jorge Reina Schement, “Universal Service from the Bottom Up: A Study of Telephone Penetration in Camden, New Jersey,” *The Information Society* 12 (1996), p. 287.

²⁶ John B. Horrigan and Lodis Rhodes, *The Evolution of Universal Service in Texas* (Sept. 1995), available at www.apr.org/policy/lbjbrief.html.

²⁷ Crandall and Waverman (2000), pp. 112-21.

²⁸ Jerry Hausman, Timothy Tardiff, and Alexander Belinfante, “The Effects of the Breakup of AT&T on Telephone Penetration Rates in the United States,” *American Economic Review* 83 (May 1993), pp. 182-83.

²⁹ Crandall and Waverman (2000), pp. 94-104.

In short, the policy of cross-subsidizing local rates with revenues from long-distance access charges generates little increase in telephone subscription rates, and may even reduce them.

The cross-subsidy is difficult to justify on equity grounds as well. Even in households with incomes less than \$10,000, long-distance accounts for more than 40 percent of average monthly telephone expenditures. In all income classes, long-distance usage is quite variable, with some households using a lot and some very little. It is thus safe to say that many low-income households use a great deal of long-distance service, and so the cross-subsidy may actually diminish the welfare of these households.³⁰ In addition, the local service subsidy is not targeted based on income, in marked contrast to the practice in other regulated utilities, such as electricity and natural gas. Rich and poor households alike are entitled to one cheap residential phone line—an odd way of redistributing income to the poor.³¹

The Commission's own long-lived initiative to replace access charges with the fixed monthly Subscriber Line Charge reflects these realities. Given the ineffectiveness and inequity of cross-subsidies funded by access charges, a decision to subject Internet Protocol telephony to access charges would surely harm consumers.

C. The special case of Internet Protocol telephony that connects with the rest of the telephone network

In its discussion of access charges for Internet Protocol telephony, the Commission notes, “As a policy matter, we believe that any service provider that sends traffic to the [public switched telephone network] should be subject to similar compensation obligations, irrespective of whether the traffic originates on the PSTN, on an IP network, or on a cable network.”³² But surely the effects of this approach on consumer welfare depend critically on the nature of the compensation regime.

The current access charge system significantly distorts prices and impairs consumer welfare. The Commission itself appears to have recognized this in its proceeding on unified intercarrier compensation, which seeks to replace access charges with less distortionary arrangements.³³ Bringing Internet Protocol telephony under the current access charge regime might promote competitive neutrality, but it would also perpetuate the price distortions of the current regime and reduce the incentives for meaningful reform of intercarrier compensation. If Internet Protocol telephony remains free from access charges, it provides at least some consumers with an “escape valve” that reduces the inefficiencies associated with access charges. Leaving Internet Protocol telephony

³⁰ Crandall and Waverman (2000), pp. 57-68.

³¹ Crandall and Waverman (2000), pp. 26, 69-88.

³² NOPR, para. 61.

³³ *In the Matter of Developing a Unified Intercarrier Compensation Regime*, CC Docket No. 01-92 (adopted April 19, 2002).

free from access charges might also make intercarrier compensation reform easier to achieve, since parties subject to access charges would have strong incentives to press for a less distortionary system in order to “level the playing field.” These broader, pro-consumer policy goals may well be worth sacrificing a little short-term competitive neutrality.

In the short term, the most workable way to address the issue may be to treat providers of Internet Protocol telephony as Internet Service Providers for the purpose of connecting to the public switched telephone network. In this way, they would help cover the cost of the public switched telephone network by paying business telephone rates and the Federal Subscriber Line Charge. Since tariffed business rates tend to be much higher than residential rates, these service providers would still make a contribution toward subsidizing residential rates.

Over time, if Internet Protocol telephony emerges as a highly successful competitor to traditional telephone service, it could erode long-distance access charge revenues. If that occurs, the Commission may wish to consider whether Internet Protocol telephony providers should connect to the telephone network under a “bill and keep” regime as proposed in its unified intercarrier compensation proceeding.³⁴ This issue can perhaps best be addressed after Internet Protocol telephony becomes more established in the market and the Commission implements new intercarrier compensation rules. Since it is not yet clear whether Internet Protocol telephony will attain a market share large enough to erode access charge revenues significantly, it would be premature to subject consumers of this service to an access charge regime that may change in the next few years anyway.

IV. Universal Service Contributions

In addition to authorizing access charges on some carriers, the Commission requires universal service “contributions” from providers of interstate telecommunications services to subsidize basic phone service for low-income customers, subsidize high-cost phone companies, provide reduced-price Internet service to schools and libraries, and offer reduced-price telecommunications services to rural health care facilities. Providers typically pass these charges through to consumers on their bills. The Commission inquires whether IP-enabled services should be required to make universal service contributions.³⁵

³⁴ An especially attractive proposal from a consumer welfare perspective has been developed by FCC staff in Jay M. Atkinson and Christopher C. Barnekov, “A Competitively Neutral Approach to Network Interconnection,” FCC Office of Plans and Policy Working Paper # 34 (December 2000). Interconnecting carriers would simply split the incremental costs of interconnection, then bill their own customers for service.

³⁵ NPRM, paras. 63-65.

A. Universal service programs are costly to consumers

The federal government spent approximately \$5.7 billion on these universal service programs in 2003. More than half of this money—\$3.3 billion—went to subsidize high-cost carriers, and \$713 million (12.5 percent) was spent on programs for low-income customers that help pay initial connection charges (Linkup) and subsidize monthly phone bills (Lifeline). Most of the rest (\$1.7 billion, or 30 percent) subsidized Internet service to schools and libraries.³⁶ Thus, about 70 percent of the funds were devoted to subsidizing basic telephone service, with the remainder spent on the newer “universal service” programs created by the 1996 Telecom Act, which reduce the cost of Internet service to specified types of institutions.

The contributions take the form of a percentage assessment against sales of interstate services—primarily long-distance and wireless phone services. Readjusted quarterly, the universal service “contribution factor” was 8.7 percent for the first two quarters of 2004.³⁷ Though not formally called a tax, the assessment has all the economic effects of a tax. This funding mechanism for universal service programs generates substantial consumer costs in addition to the revenue it raises to fund universal service. This occurs because the contribution mechanism acts as a tax on services with relatively high price elasticities of demand, such as long-distance and wireless. Consequently, the Commission should exercise caution when considering whether to require IP-enabled services to make universal service contributions, because these new services are also likely to have high price elasticities of demand.

Several studies document the detrimental effects of the current universal service contribution regime on consumer welfare. MIT economist Jerry Hausman estimated that the contributions required from long-distance service to fund discount Internet service for schools and libraries reduce consumer welfare by approximately 65-79 cents for every dollar of revenue raised.³⁸ The marginal effect—that is, the effect of additional contributions—is even higher: \$1.25 for each additional dollar raised. Thus, in addition to the \$1.89 billion that Hausman estimated the program would transfer from consumers of long-distance service to schools and libraries, the program would cost the economy \$2.36 billion annually in lost output of long-distance service.³⁹

Like long-distance service, demand for wireless service is relatively responsive to price, with demand elasticity in the neighborhood of -0.51.⁴⁰ In a separate study, Hausman

³⁶ Federal Communications Commission, Wireline Competition Bureau, Industry Analysis and Technology Division, *Trends in Telephone Service* (May 2004), Table 19.1.

³⁷ *Trends in Telephone Service*, Table 19.14.

³⁸ Hausman and Shelanski (1999). pp. 42-43.

³⁹ Jerry Hausman, “Taxation Through Telecommunications Regulation,” *Tax Policy and the Economy* 12 (1998), p. 31.

⁴⁰ Jerry Hausman, “Cellular Telephone, New Products, and the CPI,” *Journal of Business & Economic Statistics* 17:2 (April 1999), p. 191.

estimated the impact on the economy of all taxes applied to wireless, including the universal service contributions imposed by the Commission. He calculated that every dollar raised generated an excess burden of approximately 53 cents, which implies that wireless taxes cost the economy \$2.56 billion annually in addition to the \$4.79 billion raised annually in the late 1990s. Additional taxes or contributions would, on average, entail a cost of 72 cents for each dollar of revenue raised.

Using Hausman's excess burden percentages and the FCC's figures on universal service expenditures in 2003, it is possible to calculate updated excess burden figures. Long-distance service accounted for 49.3 percent of universal service contributions, or \$2.8 billion. Multiplying this figure by the 65-79 cent average excess burden yields a total excess burden of \$1.8-2.2 billion. Wireless providers accounted for 24.5 percent of universal service contributions, or \$1.4 billion. Multiplying this figure by the 53 cent average excess burden yields a total excess burden of \$739 million.⁴¹ Thus, universal service contributions from long-distance and wireless generated an excess burden of approximately \$2.6-3.0 billion in 2003. This excess burden represents the value of long-distance and wireless services that consumers and producers forego because the universal service contribution factor raises the price of these services.

These efficiency costs are far below those estimated for other, more general forms of taxation, which usually involve a reduction in output (or "excess burden") of 25-40 cents per dollar raised.⁴² And it is positively huge compared with the impact on consumer welfare of an alternative regulatory policy—paying for the subsidy through a flat rate charge like the Subscriber Line Charge. Since the price elasticity of demand for local telephone service is very low, the excess burden associated with an increased flat rate charge is approximately 6/100ths of a cent per dollar raised.⁴³

Like long-distance access charges, taxes on long-distance and wireless appear to be a very expensive means of funding traditional universal service subsidies for telephone service.

B. Effectiveness of universal service programs is questionable

While these programs clearly transfer large amounts of money between different groups of users, the extent to which they promote universal service by actually increasing subscribership is much less clear.

A 1997 study using data from the 1990 Decennial Census found that expenditures on Lifeline and Linkup programs increase telephone penetration, but by very small amounts.

⁴¹ Total universal service funding of \$5.695 billion is from *Trends in Telephone Service*, Table 19.1. Percentages of contributions accounted for by toll and wireless service are from *Trends in Telephone Service*, Table 19.15.

⁴² Jerry Hausman, "Efficiency Effects on the U.S. Economy from Wireless Taxation," *National Tax Journal* 53 (Sept. 2000), pp. 733-42.

⁴³ Hausman (2000), p. 740.

A 10 percent increase in expenditures would lead to less than a one tenth of one percent increase in the telephone penetration rate.⁴⁴ Similarly, a more recent study estimated that the Lifeline and Linkup programs increase total subscribership by about 0.155 percent.⁴⁵ One of the most extensive recent studies found that monthly charges have no influence on telephone penetration rates, and Linkup programs sometimes increase and sometimes decrease penetration, depending on the data set used to estimate the relationship.⁴⁶

The high-cost support programs, which account for more than half of the universal service fund's expenditures, appear to be a much more costly way of increasing subscribership. The most recent study on this topic estimates that the cost of adding one subscriber through loop support was at least \$11,000 in 2000, up from \$3350 in 1990. The cost of adding one subscriber through local switching support was \$5155, up from approximately \$2000 in 1990. These figures are substantially higher than the \$1899 cost of adding a subscriber via Lifeline and Linkup.⁴⁷ Other studies employing 2000 data find that high-cost support programs add subscribers at even higher cost, in the neighborhood of \$20,000 per subscriber.⁴⁸ This cost is substantially higher than the \$666 estimated by another study for 1985-93.⁴⁹

These research results suggest that the current universal service contribution regime generates substantial consumer costs while doing little to expand access or subscribership. The most cost-effective program that some studies indicate may increase subscribership—Linkup—is targeted at low-income households and accounts for a small percentage of the funds. The schools and libraries program is targeted in the sense that it gives lower discounts to wealthier institutions, but it is not clear whether this program has actually induced more schools and libraries to obtain Internet access. Consequently, a Commission decision to impose universal service contributions on IP-enabled services likely would cost consumers a great deal while doing little to actually increase subscribership either to basic telephone service or to Internet service.

⁴⁴ Christopher Garbacz and Herbert G. Thompson, Jr., "Assessing the Impact of FCC Lifeline and Link-Up Programs on Telephone Penetration," *Journal of Regulatory Economics* 11 (1997), pp. 67-78.

⁴⁵ Daniel J. Ryan, "Universal Telephone Service and Rural America," unpublished manuscript (April 30, 2004), p. 18.

⁴⁶ Crandall and Waverman (2000), pp. 94-104.

⁴⁷ Ryan (2004), pp. 18-19.

⁴⁸ Christopher Garbacz and Herbert G. Thompson, "Estimating Telephone Demand with State Decennial Census Data from 1970-1990: Update with 2000 Data," *Journal of Regulatory Economics* 24:3 (2003), pp. 373-78.

⁴⁹ R.C. Eriksson, D.L. Kaserman, and J.W. Mayo, "Targeted and Untargeted Subsidy Schemes: Evidence from Post-Divestiture Efforts to Promote Universal Service," *Journal of Law & Economics* 41 (1998), pp. 477-502. This study uses data only for the Bell telephone companies, which receive a small portion of total high-cost support and may not be typical.

C. The special case of Internet Protocol telephony that connects with the rest of the telephone network

One might agree with this assessment yet nevertheless suggest that competitive neutrality justifies collecting universal service contributions from providers of Internet Protocol telephony that connect with the public switched telephone network. This kind of service has the potential to compete most directly with conventional telephone service.

The competitive neutrality issue raises precisely the same types of concerns discussed above in regard to access charges. The current funding regime for universal service significantly distorts prices and impairs consumer welfare. Extending this regime to some providers of Internet Protocol telephony might appear to create a “level playing field” between some of the competitors, but it would do so at significant cost to consumers.

Indeed, it is not even clear what the quest to make universal service policy reflect “competitive neutrality” means in a context where competitors employ widely differing technologies with different implications for the universal service programs. The competitive neutrality argument seems to assume that providers of Internet Protocol telephony would compete only for customers on low-cost telephone loops who are currently net contributors to universal service funding. Unlike conventional wireline telephony, however, Internet Protocol telephony has the potential to serve customers in a wide variety of locations at approximately the same cost, provided that they already have the requisite Internet connection. That connection could be cable, wireless, or satellite. Consequently, widespread adoption of Internet Protocol telephony could help reduce the subsidies needed by the high-cost program by reducing the number of high-cost loops. Providers of this technology could make a substantial contribution to universal service even if they and their customers were not compelled to contribute money to the universal service fund.

At the very least, it is premature for the Commission to subject Internet Protocol telephony to the universal service contribution regime. The consequences of such a decision can be better understood after the Commission revises its universal service contribution methodology, and after the market potential of Internet Protocol telephony becomes more clear. Any such decision should include a careful consideration of the contribution Internet Protocol telephony can make simply by successfully competing for telephone subscribers who currently use subsidized high-cost loops.

V. Conclusions and Recommendations

There seems to be no economic justification for subjecting any IP-enabled service to economic regulation. In addition, it is difficult to understand why most IP-enabled services should not be free from access charges and universal service contributions. The only such service that creates seemingly thorny issues is Internet Protocol telephony when it connects users with the public switched telephone network. Interconnection allows Internet Protocol telephony to offer a service comparable to regular voice telephone service, and hence it has the potential to attract many subscribers away from

traditional wireline service. As a result, Internet Protocol telephony could undermine the system of highly inefficient cross-subsidies inherent in the current access charge and universal service regimes. Since it is not yet clear whether Internet Protocol telephony will attain a market share large enough to erode traditional sources of subsidy revenues significantly, though, it would be premature to subject consumers of this service to new charges. In the meantime, IP-enabled services, including Internet Protocol telephony, would still make some contribution to cross-subsidies as the information service providers pay business rates to connect to the telephone network.

From a consumer perspective, not all level playing fields are created equal. If the Commission chooses to bring Internet Protocol telephony under the cross-subsidy tent, it will impose substantial costs on consumers while likely doing very little to advance universal service. This result would occur not so much for reasons peculiar to Internet Protocol telephony, but rather because the current system of access charges and universal service subsidies generates significant consumer costs by inducing consumers to under-utilize long-distance, wireless, and other interstate services. The Commission could best promote consumer welfare by moving expeditiously on its initiatives to reform intercarrier compensation and universal service subsidies, rather than trying to expand the current systems to additional services. Specifically, the Commission should:

1. Refrain from imposing economic regulation on IP-enabled services.
2. Keep IP-enabled services, including all forms of Internet Protocol telephony, free from access charges, which currently exceed the actual cost of interconnection.
3. Assess whether Internet Protocol telephony should be subject to some other form of intercarrier compensation arrangement only after this service becomes better-established in the market, and after the Commission has implemented a reformed, universal intercarrier compensation system that avoids the significant consumer costs of the current access charge regime.
4. Keep IP-enabled services other than Internet telephony free from requirements that they contribute to fund universal service programs.
5. Delay deciding whether Internet Protocol telephony should make contributions to universal service programs until those programs are reformed to substantially reduce their costs to consumers.
6. Evaluate whether widespread adoption of Internet Protocol telephony could reduce the cost of universal service programs by reducing the number of high-cost wireline telephone loops that would need to be subsidized.

**APPENDIX I
RSP CHECKLIST**

Element	Agency Approach	RSP Comments
1. Has the agency identified a significant market failure?	<p>The Commission seems skeptical there is a market failure justifying economic regulation, but takes universal service goals as a given.</p> <p>Grade: C</p>	<p>In theory, network effects could make it efficient to subsidize subscribers who are “on the margin” because existing subscribers benefit from a larger network. Most economic research suggests that this externality is minimal for a mature telephone system, and that federal universal service programs do little to increase subscribership.</p>
2. Has the agency identified an appropriate federal role?	<p>FCC restricts itself to interstate telecommunications and Internet.</p> <p>Grade: A</p>	<p>Both of these are clearly interstate. FCC is largely acting within boundaries set by federal law and court precedent.</p>
3. Has the agency examined alternative approaches?	<p>FCC clearly solicits alternatives. Most suggestions in the NPRM boil down to either regulate or don’t.</p> <p>Grade: B</p>	<p>NPRM is quite open-ended in seeking suggestions. The binary nature of many of the questions stems from the choice between the traditional regulatory and cross-subsidy framework for telephone service and the relatively unregulated framework for information services. FCC offers a bigger difference between policy alternatives than agencies typically offer.</p>

Element	Agency Approach	RSP Comments
4. Does the agency attempt to maximize net benefits?	The NPRM contains very little discussion of benefits/costs. Most overt discussion is of which legal categories difference services belong in. Grade: C	Read as a stand-alone document, this NPRM seems concerned with placing various services in the appropriate legal categories based upon technological characteristics and past precedent. Read in the context of other FCC proceedings and history, there is greater reason to hope that the decisions will be based on an assessment of the likely effects of alternative policies. Context justifies a passing grade.
5. Does the proposal have a strong scientific or technical basis?	The technological and legal background in the document is strong; the economic policy background less so. Grade: D	The most significant drawback is lack of assessment of whether it is prudent to extend highly inefficient policies to cover new competitors. This NPRM missed a big opportunity to highlight the need for reform of intercarrier compensation and universal service funding, which the FCC is considering in other proceedings.
6. Are distributional effects clearly understood?	The principal distributional issue discussed is whether Internet Protocol telephony will undercut funding for cross-subsidies. Grade: D	There is little recognition of the voluminous literature showing that these subsidies are often poorly targeted, so many of them are highly ineffective means of redistributing income to the poor.
7. Are individual choices and property impacts understood?	FCC walks gingerly to avoid stomping on new information services. But certain programs/policies are taken for granted despite significant detrimental effects on consumer choice. Grade: B	Reading between the lines, the FCC seems to be saying that most IP-enabled services should be relatively unregulated—except for certain Internet Protocol telephony services that could shrink the subsidy pool because they are good substitutes for traditional wireline telephony. It is unclear whether the latter is evidence of a blind spot, a belief that certain inefficiencies will be adequately dealt with in other proceedings, or political assessments that it is imprudent for the FCC to publicly question certain policies that are popular with Congress.