

ATTACHMENT D

TO

REPLY COMMENTS OF WESTERN WIRELESS

IN

**FEDERAL-STATE JOINT BOARD ON UNIVERSAL
SERVICE SEEKS COMMENT ON CERTAIN OF THE
COMMISSION'S RULES RELATING TO HIGH-COST
UNIVERSAL SERVICE SUPPORT AND THE ETC
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Economic Efficiency And The Support Of Universal Service In Rural Markets

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I. Executive Summary

The twin goals of universal service and competition are complimentary public policy objectives and neither can be fully achieved without the other, as explained in Section II. Said another way, universal service cannot substitute for competition in rural areas. Section III outlines the fundamentals of economic efficiency and why it should properly form the foundation for evaluating universal service programs, given the coincident goal of competition. In Section IV, the importance of forward-looking costs for economic efficiency and sound public policy is described. The economic distortions caused by historical cost-based regulation and pricing is described. A clarification is provided regarding the proper economic interpretation of notions of “least-cost providers.” Section V outlines the importance of competitive neutrality for economic efficiency and sound public policy. The existing universal service funding mechanism is competitively biased (not neutral). In particular, the use of full cost recovery for incumbents but per-line funding for CETCs is not competitively neutral. In section VI the issue of “windfall” universal service receipts is considered. The use of historical costs may lead to a windfall for some providers; however, the windfall will tend to be greater for incumbents than for CETCs.

II. Introduction: The Twin goals of Universal Service and Competition

The Telecommunications Act of 1996 (TA96) significantly changed the competitive landscape of the Telecommunications industry of the United States.² Decades of protected (or partially protected in urban areas) franchised monopoly provision of service formally came to an end with the passage of TA96.³ The Act had the effect of promoting competitive entry into local telecommunications in at least four ways: 1) eliminated barriers to entry to providing telecommunications and information services;⁴ 2) created the obligation for ILECs to offer retail services at a wholesale discount and unbundled network elements “based on cost (determined without reference to a rate-of-return or other rate-based proceeding);⁵ 3) provided for reciprocal compensation for the termination of traffic by all carriers based on costs;⁶ and 4) created the opportunity for a rural carrier to become an eligible telecommunications carrier to receive universal service funding.⁷ The FCC and state regulatory agencies have taken additional steps (while meeting their statutory obligations under TA96) to encourage the entry of competitive providers in the provision of telecommunications services.

Facilities-based competition is the ultimate measure of competitive activity in the new open-entry world of telecommunications. It is noteworthy that the single obligation of all telecommunications carriers is the obligation “to interconnect directly or indirectly with the *facilities and equipment* of other telecommunications carriers.”⁸ Similarly, while CLECs do not have the obligation to offer retail services at a wholesale discount, or provide UNEs, they have the “duty to establish reciprocal compensation arrangements for the transport and termination of

telecommunications.”⁹ Professor Jim Chen stresses the importance of facilities-based competition:

Two specific features of the universal service program reflect the federal commitment to technological improvement. First federal law strongly favors facilities-based competition. No carrier that conducts its business solely by reselling services provided by another carrier can receive federal universal service support. Second, the specifics of federal universal service administration reinforce the facilities-based competition.¹⁰

It is also absolutely critical to fully recognize this new competitive environment when evaluating universal service arguments and proposals. In particular, it is critical to avoid comparisons to a world of traditionally protected monopoly telecommunications providers. Arguments implying the advantages of traditional monopoly provision of service (whether real, imagined, or misstated) are simply not germane to current evaluations of universal service (in the absence of a repeal of TA96). Any comparison to the counterfactual (or historical) state of the absence of competition is a distraction at best. Today, universal service proposals must be evaluated in the context of existing statute and regulation that encourages competitive entry.

TA96 and the aftermath of FCC and state public utility commission orders create and embrace the dual goals of the development of competition (and the encouragement of competitive entry), and universal service. The task then is to identify the most efficient universal service mechanism within the confines of open entry policies and existing legal and regulatory constraints.

III. Economic Efficiency – The Lynchpin to Sound Universal Service Policy

Economic efficiency is the lynchpin to sound universal service policy and should be the overarching standard for evaluating universal service proposals and recommendations. Before proceeding further, it is worth briefly describing what economic efficiency entails. One categorization is that economic efficiency has four components: 1) efficiency in consumption; 2) efficiency in production; 3) efficiency in exchange; and 4) dynamic efficiency.¹¹ The Commission (and its policies) will have little influence on the rational (or irrational behavior) of consumers, and all further references to efficiency will be to components 2, 3, and 4.¹²

Efficiency in production requires that firms choose combinations of inputs and production processes (e.g., technologies) that minimize costs for any level of output given existing technologies and input prices.¹³ There is potential for regulation to distort input choices and reduce efficiency in production (and increase costs to society).

Efficiency in exchange requires that transactions (generally free market transactions) lead to the equivalence of costs to producers and value to consumers.¹⁴ Distortions in final prices for goods and services can lead to inefficiency in exchange. Clearly, regulation has the potential to distort the prices of final goods and services and to reduce efficiency in exchange.

The first three measures of efficiency can be defined in a static context at any point in time. Dynamic efficiency deals with efficiency over time and requires proper incentives to create and deploy new technologies and production processes. Regulation also has the potential to distort the efficient creation and adoption of new technologies and production processes.

There are two primary efficiency-related tenets to consider in this proceeding: first, forward-looking costs, and not historical-based costs, form the basis for economic efficiency; and second, competitive neutrality is necessary to promote economic efficiency. Each of these is considered in detail below.

IV. Forward-Looking v. Historical Costs

A. The importance of forward-looking costs for economic efficiency, business decisions, and sound public policy.

Forward-looking cost should properly form the foundation for business decisions and public policy decisions and are necessary for determinations of economic efficiency.¹⁵ The term “forward looking” is not often used by economists, but it is implicit in fundamental economic cost concepts. The most fundamental economic concept of opportunity cost clearly rests upon a forward-looking evaluation. Foregone opportunities are not foregone until a decision is made and an action is taken committing resources to one use, rather than others. It doesn’t require guidance from physicist Stephen Hawking on the arrow of time to understand that all of the consequences of an action occur in the future and not in the past.¹⁶ Forward-looking costs are the costs that properly reflect the value of resources that *will be* used up (or dedicated to an activity for some period of time) in the future because of a decision and a consequent action.¹⁷

Similarly, the fundamental nature of the economic concept of sunk costs reveals that costs are forward-looking. The economic dictum states that one should ignore sunk costs.¹⁸ This of course does not mean that the cost of using assets purchased in the past should be ignored for current decisions and actions. Rather, the sunk-cost dictum reminds one that the forward-looking valuation of resources does not necessarily match historical purchase values or the remaining un-depreciated value on the books of account. Anyone not heeding the sunk-cost dictum will perform poorly when selling real estate (on the one hand), and used computers (on the other).¹⁹

B. The economic distortions caused by regulation based on historical costs

Historically, virtually all local exchange companies in the United States were regulated as rate-base, rate-of-return (RoR) monopolies.²⁰ The opinion in the famous Hope Natural Gas case held that the Constitution did not preclude regulators from establishing utility rates based on RoR regulation, *i.e.*, based on the historical investment of the companies, rather than on the forward-looking market value of investments.²¹

However, economists and regulators alike have for many years expressed concerns that the incentives created under RoR regulation reduce economic efficiency.²² In the early 1960s, economists described the potential for RoR regulation to distort input choices, *i.e.*, to lead to inefficiency in production, and the potential to lead to inefficiency in exchange and dynamic inefficiency as well.²³ RoR regulation may also lead to higher regulatory costs, higher costs of regulatory compliance; the costs of collecting and auditing cost information and engaging in RoR-based rate cases is significant. RoR regulation retards incentives to innovate (since superior

products and services do not lead to superior earnings) with losses in dynamic efficiency. Perhaps most importantly, RoR regulation reduces a firm's incentives to minimize costs since cost reductions lead not to sustained increases in earnings, but rather reductions in prices. Conversely, increases in costs lead to price adjustments sufficient to create corresponding increases in revenues.

The disadvantages of RoR regulation were outlined in a report by the NTIA in 1987. Later that same year the FCC issued a NPRM on price caps in CC Docket 87-313. In the early 1990s RoR regulation was replaced with price cap regulation for AT&T and the large ILECs. During the late 1980s and 1990s, most state public utility commissions also abandoned RoR regulation for a form of incentive regulation. By the end of 2000, all but 7 states had adopted some form of incentive regulation for large ILECs.²⁴

TA96 suggests a break from RoR-based methods of pricing for interconnection and UNEs by noting that they be "determined without reference to a rate-of-return or other rate-based proceeding."²⁵ The FCC has required (and the Supreme Court has upheld) that forward-looking costs be used in the determination of unbundled network element (UNE) prices and the prices for reciprocal compensation.²⁶ In addition, the FCC (with input from the Joint Board) made it quite clear in its First Report and Order on Universal Service, that forward-looking economic costs should be used to determine the cost of providing Universal Service in rural, insular, and high cost areas.²⁷ In addition, the order provided ten "Criteria for Forward-Looking Cost Determinations."²⁸

However, small ILECs in the United States continue to be regulated under full-cost recovery RoR mechanisms. And given the relatively small size of many of these companies, and the significant costs of monitoring RoR companies and engaging in RoR reviews, rate cases are seldom, if ever, performed. Retail prices for many firms have not changed for years, and in many instances decades. More importantly for the purposes of this proceeding, high-cost universal service reimbursement for small ILECs continues to be based on historical investments and historical costs.

In addition, it does not appear that the accounting data used by the National Exchange Carrier Association (NECA) is audited for accuracy and consistency. The large ILEC ARMIS data sources appear more consistent and accurate. And when these large ILEC accounting records are audited, large errors are sometimes found.²⁹ However, given the large amount of data from a far larger (NECA v ARMIS) number of companies, the problem of auditing the NECA data could be significant.

Therefore, the current system based of historical cost recovery leads to the well-known incentives for these firms to behave inefficiently. As modifications to the universal service reimbursement mechanism in the United States are considered, it is critical for the FCC to help break the link with RoR regulation-type processes.

It is time for the FCC to move to a forward-looking cost standard for all of universal service funding (not just for large ILECs). While the HCPM may have shortcomings, reasonable forward-looking cost estimates can be produced for rural areas. Jim Stegeman describes in detail

the action items and the process to develop and move forward with the creation of a superior forward-looking cost model and creation of estimates for rural and high cost areas.³⁰ In the long run, this may be less effort than a complete audit of the historical cost data that is currently relied upon for universal funding disbursements.

V. Economic Efficiency & Competitive Neutrality

A. Efficiency

In Section II, it was stated that competitive neutrality is necessary for economic efficiency. As the FCC has noted, competitive neutrality has two dimensions: “[c]ompetitive neutrality means that universal service support mechanisms and rules neither unfairly advantage nor disadvantage one provider over another and neither unfairly favor one technology over another.”³¹ If funding is not competitively neutral, then it is possible that the providers succeeding in the market place are not those that provide the greatest value to consumers at the least cost. Competitively neutral funding mechanisms should encourage efficient behavior. This has at least two implications. First, applying the same rule to all providers is not a sufficient condition for competitive neutrality. In particular, some rules, although applied equally to all firms, may create a bias against one technology or business practice. Consider a hypothetical rule that is not competitively neutral: funding will be based on the kilometers of twisted copper wire deployed to actually serve customers. Obviously, this hypothetical rule is biased against wireless providers.

B. Current funding is not competitively neutral.

The existing funding mechanism is not competitively neutral in at least five respects. Because of this, existing funding mechanisms contribute to economic inefficiency.

1) *Total cost funding for incumbents and per-line funding for entrants is not competitively neutral.*

As noted earlier, a funding mechanism that rewards incumbents for their full historical costs creates incentives for inefficient behavior by the incumbents. In addition, a funding mechanism that asymmetrically provides full historical cost recovery for incumbents (regardless of market share), but per line recovery for new entrants creates a bias in favor of the incumbent. This can distort competitive outcomes and reduces economic efficiency. In addition, this mechanism will cause funding amounts to grow over time.

A competitively neutral funding mechanism must provide support to all providers—ILECs as well as CETCs—on an equal per-“line” basis.

2) *Determining funding based on incumbent areas of geography is not competitively neutral.*

Consider a counter example to illustrate the point. It would not be competitively neutral to require wireline incumbents to serve the same geographic footprint of a new entrant (e.g.,

Western Wireless), in order to obtain universal service funding, or to calculate universal service funding on the basis of that geography.

Based on my past examination of cost data in both the United States and Canada, the level of geography for determining universal service funding should be as small as administratively feasible (consistent with transparently defined units of geography, with publicly available data on the boundaries of those geographic units). The smaller the level of geography, the more accurate the reflection of the costs of providing universal service in that area. Employing small geographic areas for funding determinations increases competitive neutrality and eliminates or reduces distortions in business plans. As a provider serves a greater number of customers in high cost areas, it should receive more universal service funding.

3) *The use of historical cost-based funding for small rural carriers, but forward-looking cost funding for large ILECs creates a competitive distortion.*

The existing funding mechanism is not competitively neutral with respect to large and small ILECs serving high cost areas. Large ILECs have funding based on forward-looking costs while small ILECs have funding based on historical costs. This distorts market behavior, creates perverse incentives for the sale of rural properties (to small ILECs), and reduces economic efficiency.

4) *The existence of ILEC service quality standards or other constraints is not a reason to abandon competitively neutral universal service funding.*

Some parties suggest that existing ILEC service standards and/or other ILEC constraints should be applied to new entrants. Alternatively, it has been implied that such ILEC constraints justify universal service funding standards that favor ILECs. These arguments are misplaced in at least three ways. First, service standards for CMRS providers have already been considered and rejected by the FCC. Second, each technology faces its own set of costs and constraints. Wireless carriers have paid for spectrum that wireline carriers have not had to purchase. Third, as new entrants compete with incumbents, ILEC standards and constraints should be relaxed. Forcing monopoly constraints on new entrants is misplaced. The existence of competitive entry should herald a greater reliance on market discipline rather than expanded regulation.

5) *Payment of switched access revenues is not competitively neutral.*

At the divestiture of AT&T, minute-based switched access charges were created to replace the line-based so-called ENFIA tariffs to usage-based switched access charges.³² These charges have perpetuated the pattern of cross-subsidy from long distance to local and low cost to high cost areas.³³ Rural wireline providers continue to receive a significant proportion of their revenues via access charges. In a recent public presentation, John Balk of TCA inc., indicated that a typical rural ILEC client receives approximately 22% of its revenues from interstate access revenues and 18% from state access revenues, and 40% from federal universal service funding.³⁴

The FCC recognized the diverse sources of funding and cross-subsidies in the system:

The current universal service system is a patchwork quilt of implicit and explicit subsidies. These subsidies are intended to promote telephone subscribership, yet they do so at the expense of deterring or distorting competition. ... The present universal service system is incompatible with the statutory mandate to introduce efficient competition into local markets, because the current system distorts competition in those markets. For example, without universal service reform, facilities-based entrants would be forced to compete against monopoly providers that enjoy not only the technical, economic, and marketing advantages of incumbency, but also subsidies that are provided only to the incumbents.³⁵

However, CMRS providers receive virtually no switched access revenues from long distance providers. Given the relatively large proportion of rural ILEC revenues that is derived from access revenues (40%, approximately equal to the percentage of revenues derived from federal universal service funding) this creates a significant distortion in the competitive process and creates a bias in favor of wireline providers. Obviously, this represents an implicit subsidy flow that is not competitively neutral.

To the extent that this subsidy flow is beyond the scope of the current proceeding, it indicates the importance of ensuring that other aspects of universal service funding are competitively neutral and not biased against CMRS.

VI. “Windfall” Receipts of Universal Service Funding

Some parties have suggested that wireless CETCs receive a windfall by receiving the same level of funding that incumbent ETCs receive, on a per line basis. It is important to consider these claims in detail.

First, since measures of economic efficiency, proper business decisions, and sound public policy should be based on forward-looking costs, there is certainly the potential that funding based on historical costs can lead to a windfall for one or more providers. See Professor Jim Chen’s attachment on behalf of RCA/ARC and the comments of RCA/ARC for more detail on other aspects of windfall issues and the use of forward-looking costs.³⁶ However, if there is a windfall/overstatement of costs due to the use of embedded historical accounting cost data, then the overstatement is either equal (if applied on a per line basis for all carriers) or is greater for the incumbent ETC.

Second, a windfall will exist for incumbent ETCs funded on a total cost basis. As noted in section III.A above, a funding mechanism that rewards incumbents on a total cost basis, but new entrants on a per-line basis is not competitively neutral. Because the incumbent continues to receive support, even when CETCs receive support for providing service to the same incumbent customer, the incumbent receives a windfall equal to the payments received by CETCs. This is, in essence, the amount of double funding (to the extent of competitive entry) under the existing system. To create a funding system that avoids this source of windfall to incumbents, and to be competitively neutral, the funding mechanism must reward providers on an equal per-“line” basis.

Third, even if one subscribed to a notion of needing to reimburse a provider for its full historical costs (not on a per line basis), and that the CETC has a cost advantage, then CETCs are highly

unlikely to recover as great a percentage of their total costs as the incumbent. Consider a simple numerical example where the incumbent initially serves 1,000 lines and all revenues are derived from the universal service fund. The incumbent has volume insensitive historical infrastructure costs (historical “fixed” costs) of \$10,000/month and volume sensitive (line-sensitive variable) costs of \$10/month/line. Before competitive entry, the incumbent receives \$20,000/month total and \$20 per line from the USF.

Now, a new less costly provider enters with volume insensitive infrastructure costs of \$8,000/month and volume sensitive (line-sensitive variable) costs of \$8/month/line.” After entry, the incumbent now serves only 900 lines and the new entrant serves 300 lines. The incumbent’s total embedded historical costs are \$19,000 and \$21.11 (\$19,000/900) per customer. Under the existing plan, the incumbent continues to recover its full historical embedded cost (\$19,000), but the new entrant now receives $300 * \$21.11 = \$6,333.33$ of its \$10,400 costs (\$8,000 + $300 * \$8$).

Fourth, the notion of new entrant windfalls is not consistent with the financial data. CETCs do not seem to be earning inordinate profits while many small ILECs appear to be earning (even on the basis of embedded cost calculations) beyond the FCC’s authorized cost of capital.³⁷ For example, Western Wireless recently announced that its losses (not its profits) narrowed in the last quarter.³⁸ Losses (even narrowing losses) are not a strong indication of a windfall.

Fifth, as noted above, incumbent ETCs collect carrier access revenues, which are virtually unavailable to CMRS providers. Not only is this asymmetry a violation of the principle of technology neutrality, it also means that rural-serving CMRS providers are less likely to be able to collect a “windfall” but incumbent ETCs are more likely to receive a windfall. These alternate revenues sources are significant (as indicated earlier).

VII. Conclusion

The twin goals of universal service and encouraging competitive entry are not substitutable. Sound public policy requires consideration of the economic efficiency improving (or reducing) aspects of universal service funding, given the new competitive policy in the United States. It is critical to ensure competitive neutrality in universal service funding. The following actions should be taken:

- 1) Change from historical cost full cost recovery for ILECs to equal per-“line” funding for all qualified providers;
- 2) Change to forward-looking cost estimates;
- 3) Make universal service geographic funding areas as small as practical, and not tied to incumbent’s service territory;
- 4) Forward-looking cost estimates must be those that can reasonably be achieved by providers (least-cost provider notions should not be used to reduce cost estimates below that that can be achieved by real network-based firms).

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Inc. He has a Ph.D. from the University of California at Santa Barbara where he was both an Earhart Foundation Fellow and a University of California Regents Fellow. Dr. Parsons has served as an adjunct faculty member at eight universities including Washington University in St. Louis where he currently teaches both Telecommunications Economics and Telecommunications Regulation and Public Policy for a specialty telecommunications masters program in the School of Engineering. He has made many professional presentations and written many professional papers analyzing economic issues in telecommunications. Professor Parsons' publications have appeared in such journals as the *Yale Journal on Regulation*, *The Administrative Law Review*, *Economics Information and Policy*, *The International Journal of the Economics of Business*, *the Journal of Regulatory Economics*, and *The Southern Economics Journal*. He has taught cost studies, pricing, and applied economics and business courses through Bellcore, Criterion, ICORE Training Systems, APPA, Southwestern Bell, INDETEC, at various universities, and other venues for more than 18 years. Professor Parsons has dealt with the telecommunications issues of: universal service, interconnection, economic costs, cost model estimates, price levels and structures, imputation, competitive cost standards and safeguards, unbundling, resale, bypass and factor substitution, competitive assessment, regulatory reform, cost and price benchmarking, and regulatory reform.

2. Pub. L. No. 104-104, 110 Stat. 56 (hereinafter TA96).

3. Pub. L. No. 104-104, 110 Stat. 56. The Act's express purpose was "To promote competition and reduce regulation in order to secure lower prices and higher quality services for American telecommunications consumers and encourage the rapid deployment of new telecommunications technologies."

4. *Id.*, Sections 253 and 257 (requiring a proceeding related to eliminating barriers to entry). Note that even the states authority to "impose ... requirements necessary to advance universal service, protect the public safety and welfare, ensure the continued quality of telecommunications services, and safeguard the rights of consumers" must impose those requirements "on a competitively neutral basis and consistent with section 254."

5. *Id.*, Section 252(d)(1)(A)(i).

6. *Id.*

7. *Id.*, Section 102.

8. *Id.*, Section 251 (emphasis added). Section 251 (a)(2) essentially precludes features that interfere with the obligation to interconnect.

9. *Id.*, Section 251 (b) (5).

10. See Jim Chen, "Managing Universal Service in the Public Interest," exhibit 2, Comments of Rural Cellular Association and the Alliance of Rural CMRS Carriers, filed May 5, 2003, CC docket No 96-45, page 13.

11. See generally, Hirshleifer, Jack, *Price Theory and Applications*, (1976, first edition) (Prentice Hall).

12. Efficiency in consumption requires that consumers allocate their budget so as to maximize satisfaction (utility).

13. Generally, the (marginal product of input i)/(price of input i) = (marginal product of input j)/(price of input j), for all inputs i and j. This means that no dollar of budget can be redeployed to produce more output.

14. The marginal value to consumers of the last unit consumed should equal the marginal cost of the last unit produced. There is no opportunity to redistribute resources to produce more of one good and less of another and make society better off.

15. See, Thomas T. Nagle, *The Strategy & Tactics of Pricing: A Guide to Profitable Decision Making*, 14-28 (Prentice Hall 1987) (at page 15: "Only forward-looking costs are relevant for pricing because only they represent the true cost of doing business.")

16. See Stephen Hawkins, *A Brief History of Time* (1998, 10th Edition).

17. See, generally, Buchanan, J. M., *Cost and Choice: An Inquiry in Economic Theory*. University of Chicago Press, 1969; Buchanan, J. M. and Thirlby, G. F., eds., *L.S.E. Essays on Cost*. Weidenfeld and Nicholson, 1973 (reprinted New York, New York: University Press, 1981); Heyne, Paul, *The Economic Way of Thinking*, 2002 (10th Edition), (Prentice Hall).

18. See, e.g., Walter Nicholson, *Microeconomic Theory: Basic Principles and Extensions*, pages 279-282 (3rd ed., The Dryden Press: 1984).

19. With used computers (or electronics of virtually any type), historical values are likely to overstate forward-looking values. With real estate, historical values often understate forward-looking values. My parents were wise, after purchasing their home for \$1,000 in 1938, to ignore this sunk cost when eventually selling the home in the 1990s for over \$200,000.

20. See generally, Kahn, Alfred, *The Economics of Regulation: Principles and Institutions, Volume I*, 1970; and Phillips, Charles F., *The Economics of Regulation*, 1965.

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21. *Federal Power Commission v. Hope Natural Gas Co.*, 320 U.S. 591, 601 (1944). Coming full circle, the Supreme Court recently affirmed the use of forward-looking costs to set rates for telephone companies' unbundled network elements. *Verizon Communications, Inc. v. FCC*, 535 U.S. 467 (2002).
22. See e.g., Incentive Regulation for Public Utilities (M. A. Crew ed.) 1994; Price Caps and Incentive Regulation in Telecommunications (M. A. Einhorn ed.) 1991.
23. See Averch, Havery A., and Leland Johnson, "Behavior of the Firm Under Regulatory Constraint," *American Economic Review*, 52, 1962; and Spann, Robert M., "Rate of Return Regulation and Efficiency in Production: An Empirical Test of the Averch-Johnson Thesis." *Bell Journal of Economics and Management Science*, 5, 1974, pp. 38-52.
24. Telecom A.M., November 1, 2000, Vol. 6, Issue 209.
25. TA96, Section 252(d)(1)(A)(i).
26. See *First Implementation of the Local Competition Provisions in the Telecommunications Act of 1996*, First Report and Order, 11 F.C.C.R. 15,499, (1996) (in particular paragraphs 683-685), *aff'd in pertinent part sub nom. Verizon Communications, Inc. v. FCC*, 535 U.S. 467 (2002).
27. *Federal-State Joint Board on Universal Service*, First Report and Order, 12 FCC Rcd 8776, paras. 199-272 (1997), *subsequent history omitted*.
28. *Id.*, at paragraph 250. See James W. Stegeman "Proposal for a Competitive and Efficient Universal Service High Cost Funding Model/Platform" Attachment I to Comments of Western Wireless CC Docket No. 96-45, filed May 5, 2003, for a listing of the criteria and a more detailed discussion of issues related to the estimation of forward-looking costs.
29. See *Ameritech Corp. Telephone Operating Companies Continuing Property Records Audit, et al.*, 16 FCC Rcd 4083 (2000).
30. See Jim Stegeman, "Proposal for a Competitive and Efficient Universal Service High Cost Funding Model/Platform, Attachment I, Comment of Western Wireless, CC Docket No. 96-45, filed May 5, 2003.
31. Federal-State Joint Board on Universal Service, Report and Order, 12 FCC Rcd 86776, 8801 (1997).
32. See, e.g., Gerald W. Brock, *Telecommunications Policy for the Information Age: From Monopoly to Competition*, 1994.
33. See, e.g., Dingwall, Craig D. 1995, "The Last Mile: A Race for Local Telecommunications Competition Policy" *Federal Communications Legal Journal* 48: 105-132 (estimating the size of the cross-subsidy); Egan, Bruce L., and Dennis L. Weisman, 1986, "The US Telecommunications Industry in Transition: Bypass, Regulation, and the Public Interest," *Telecommunications Policy* 10:164-176; Faulhaber, Gerald R. 1987, *Telecommunications in Turmoil: Technology and Public Policy*, Ballinger (pg 89); Johnson, Leland L. 1982, *Competition and Cross-Subsidization in the Telephone Industry*, Rand Corporation (December 1982, R-2976-RC/NSF); Kahn, Alfred E. 1984, "The Road to More Intelligent Telephone Pricing," *Yale Journal on Regulation* 1(2): 139-157 (pg 139); Kaserman, David L. and John W. Mayo, 1994, "Cross-subsidies in Telecommunications" *Yale Journal on Regulation* 11(1):119-147; Maher, Maria E. 1993, "Access Costs and Entry in the Local Telecommunications Network: A Case for Deaveraged Rates," Department of Applied Economics, University of Cambridge Working Paper No. 9315, August; Monson, Calvin S., and Jeffrey H. Rohlfs, "The \$20 Billion Impact of Local Competition in Telecommunications," Strategic Policy Research, Unpublished Manuscript, July; Temin, Peter, 1990, "Cross Subsidies in the Telephone Network After Divestiture," *Journal of Regulatory Economics* 2: 349-362; Weinhaus, Carol, 1994, "Apples and Oranges: Differences Between Various Subsidy Studies," Presentation at the Meeting of the National Association of Regulatory Utility Commissions, October 10; Wenders, John, 1987, *The Economics of Telecommunication: Theory and Policy* (pg 177), For a survey of the literature on cross-subsidy, see Parsons, Steve G., "Cross-Subsidization in Telecommunications," 13 JOURNAL OF REGULATORY ECONOMICS, 1998 (<http://www.parsonsecon.com/parsonsecon/publications.html>); and see Curien, Nicolas, 1991, "The Theory and Measure of Cross-Subsidies: An Application to the Telecommunications Industry," *International Journal of Industrial Organization* 9: 73-108; and Globerman, Steven, and Daryl Kadonaga, 1994, "International Differences in Telephone Rate Structures and the Organization of Business Subscribers," *Public Choice* 80:129-142 (describing these patterns of cross-subsidization existing outside of the United States).
34. John Balk, TCA, Inc., "Universal Service at a Crossroads," Arizona-New Mexico Telecommunications Association, Spring Conference, April 23, 2003 (describing a typical client's revenue profile). While these values were not presented as industry averages, they were described as typical.
35. See *Implementation of the Local Competition Provisions in the Telecommunications Act of 1996*, First Report and Order, 11 F.C.C.R. 15,499, (1996), paragraph 5.

36. *See* Comments of Rural Cellular Association and the Alliance of Rural CMRS Carriers, filed May 5, 2003, CC docket No 96-45; and exhibit 2, Jim Chen, “Managing Universal Service in the Public Interest.”

37. *See* AT&T Ex Parte Filing, CC Docket Nos. 00-256, 96-45, 98-77, and 98-166 (filed May 9, 2003) (demonstrating that numerous rate-of-return ILECs are earning in excess of the 11.25% authorized rate of return).

38. May 1, 2003, Reuters (“For the first quarter, Western Wireless said its net loss narrowed to \$21.6 million, or 27 cents a diluted share, from a net loss of \$120.6 million, or \$1.53 a share a year earlier”).