

Harnessing Competitive Forces to Foster Economical Universal Service

by

David E. M. Sappington

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David E. M. Sappington*

I. INTRODUCTION AND SUMMARY

The Federal Communications Commission (“the Commission”) and the Federal-State Joint Board on Universal Service (“the Joint Board”) are engaged in the important task of reviewing the rules governing high-cost universal service support and the Eligible Telecommunications Carrier (“ETC”) designation process. The Commission and the Joint Board seek to determine if the existing rules best satisfy the goals of the Telecommunications Act of 1996 (“the 1996 Act”). This paper reviews a key issue that the Commission and the Joint Board face in this regard – the distribution of support to competing carriers – and explains how the Commission and the Joint Board can structure this support to achieve key universal service goals while harnessing the proven benefits of industry competition.

This paper offers three principal recommendations.

First, the competitive process, not regulatory pre-selection of a single universal service provider, is the best means to ensure the delivery of supported telecommunications services at minimum cost to consumers. Among the many benefits of competition is its ability to constantly motivate industry suppliers to reduce their operating costs over time, and thereby limit the total support required to ensure the delivery of high quality services at affordable rates.

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Second, because regulators unavoidably lack access to the enormous amount of information required to implement asymmetric per-line support and to continually administer such support efficiently, symmetric per-line support policies should be adopted. Symmetric support policies will ensure that the most efficient suppliers deliver supported services, so that industry costs and support levels will be minimized on an ongoing basis. Excessive support also can be avoided by eliminating duplicative support and, if necessary, by capping total support.

Third, arguments advanced by some parties in favor of asymmetric per-line support can be better addressed by defining supported services appropriately, by de-averaging support across relevant geographic regions, and by implementing a reasonable sharing of any true burdens that arise from any asymmetric carrier-of-last-resort obligations.

This paper emphasizes the fact that the benefits and costs of a particular universal service mechanism cannot be assessed properly on the basis of static considerations alone. Some commentators have attempted to analyze the merits of designating multiple ETCs based solely on short-term considerations. Such static analyses ignore the fundamental benefit of competition – the strong, dynamic pressures it provides to continually reduce operating costs and improve service quality. Universal service support should be structured to harness the power of competitive forces to continually compel industry suppliers to reduce costs and improve quality. Competition can ensure that society as a whole automatically benefits from cost reductions and quality improvements on an ongoing basis, thereby minimizing the amount of long-term support and ongoing governmental regulatory intervention that is needed to ensure that universal service goals are achieved.

This paper also emphasizes the hazards of linking universal service support to realized costs on an ongoing basis in the absence of competitive pressures. Such linkage typically will provide limited incentives to minimize operating costs. Recall that universal service subsidies are merely transfers of payments among consumers. Every dollar of subsidy used to reduce rates in a rural area (or for some other universal service-related purpose) must be collected in rates (usually universal service recovery fees) charged to consumers nationwide. When subsidies are collected from consumers other than those who receive the subsidized service, the subsidized consumers have little incentive to compel their supplier to reduce its operating costs in order to keep subsidies low. Consequently, absent strong pressure from competitors, incumbent suppliers will have limited incentive to minimize their costs on an ongoing basis if higher costs are largely passed on to customers other than their own in the form of higher universal service recovery fees; as a result, consumers are therefore likely to face a greater burden than is necessary to achieve the Commission's and Joint Board's universal service objectives. Competition is particularly well suited to delivering universal service at minimum cost while providing automatic market-based incentives to continually reduce operating costs and provide high quality service.

The discussion in this paper proceeds as follows. Section 2 reviews the central goals of universal service policy and notes that two distinct approaches – monopoly or competition – might conceivably be employed to achieve these goals. Section 3 explains that one of these approaches – the *de jure* monopoly approach – is inappropriate, primarily because regulators do not have, and never can obtain, the information required to implement this approach successfully (i.e., to provide sufficient support at minimum overall cost to consumers) either in the short run

or in the long run. Section 4 explains why the second approach – the competitive approach – is better able to achieve the central goals of universal service policy over time. Section 4 stresses the importance of allowing competition to determine market outcomes when regulators lack the knowledge required to dictate and enforce desired outcomes directly.

Section 5 explores how best to implement the competitive approach. The importance of providing symmetric support to suppliers of supported services is emphasized. Attempts to implement asymmetric support in the presence of limited information can raise industry costs, prices, and support levels, and otherwise harm consumers of telecommunications services. Section 5 also notes that excessive support can be avoided, even in the short term, by capping support and limiting duplicative support. Section 6 suggests ways in which universal service policies can be administered, when necessary, to obviate any perceived need to implement asymmetric support policies. For example, *ex ante* symmetry can be fostered by defining supported services appropriately, by de-averaging support across relevant geographic zones, and by implementing a reasonable sharing of any significant financial burdens that might arise from asymmetric carrier-of-last-resort obligations. Section 7 summarizes the primary recommendations of this paper.

II. THE GOALS OF UNIVERSAL SERVICE POLICY

Congress has determined that quality communications services should be “available at just, reasonable, and affordable rates”,¹ and that “[c]onsumers in all regions of the Nation, including low-income consumers and those in rural, insular, and high cost areas, should have access to telecommunications and information services ... at rates that are reasonably comparable

¹ 47 U.S.C. §254(b)(1).

to rates charged for similar services in urban areas.”² Furthermore, Congress stated, “There should be specific, predictable and sufficient Federal and State mechanisms to preserve and advance universal service.”³ These congressional determinations imply five goals for universal service policy.

First, telecommunications and information services that are “reasonably comparable” to the services available in urban areas should be available in rural areas. Second, the rates for these services should be “affordable.” Third, the rates for these services should be “reasonably comparable” in urban and rural regions. Fourth, the service rates and any associated support received by suppliers should be just and reasonable. In particular, although the rates and support should be sufficient to render the supply of the services financially attractive, the total regulated revenue, consisting of universal service support and revenue from end users and other carriers, should not be excessive. Fifth, the mechanisms to support universal service should be “specific, predictable and sufficient.” The United States Court of Appeals for the Fifth Circuit has held that this requirement implies that “funding of *customers*, not *providers*” must be sufficient,⁴ and the Commission recently reiterated that “minimizing the burden on contributors is inherent in the principle of sufficiency.”⁵

As with the provision of telecommunications services generally, there are two distinct approaches the Commission might contemplate to achieve these five important universal service

² *Id.* at (b)(3).

³ *Id.* at (b)(5).

⁴ *Alenco Communications, Inc. v. FCC*, 201 F.3d 608, 620 (5th Cir. 2000).

⁵ *Federal-State Joint Board on Universal Service*, Order on Remand, Further Notice of Proposed Rulemaking, and Memorandum Opinion and Order, CC Docket No. 96-45 at ¶ 37 (rel. October 27, 2003); *Alenco*, 201 F.3d at 620 (“[b]ecause universal service is funded by a general pool subsidized by all telecommunications providers – and thus indirectly by the customers – excess subsidization in some cases may detract from universal service by causing rates unnecessarily to rise, thereby pricing some consumers out of the market.”)

goals: the *de jure* monopoly approach and the competitive approach. The *de jure* monopoly approach is, in essence, the approach used by the Commission and the states prior to the enactment of the 1996 Act. The competitive approach is the approach the 1996 Act clearly embraces for markets other than those served by rural telephone companies, as well as those rural areas for which state commissions have terminated the statutory “rural exemption” from unbundling and interconnection requirements.⁶

Standard economic analysis reveals that the competitive approach is by far the superior approach, for the reasons described below. To understand the superiority of the competitive approach, it is important to first understand the failings of the *de jure* monopoly approach.

III. THE *DE JURE* MONOPOLY APPROACH TO ACHIEVING UNIVERSAL SERVICE GOALS

It cannot be denied that the *de jure* monopoly approach has delivered universal service to rural areas. Nonetheless, a *de jure* monopoly approach to achieving universal service goals is the wrong approach, and should not be employed. A *de jure* monopoly approach to universal service will predictably result in universal service support that exceeds the amount that is sufficient to achieve universal service goals. Consequently, consumers as a whole will be forced to pay rates (including universal service support) that are not just and reasonable under the *de jure* monopoly approach.

A. The Hypothetical *De Jure* Monopoly Approach

If it were to be employed, a *de jure* monopoly approach logically would entail the following three steps, assuming that regulators sought to ensure the provision of universal service at the lowest possible cost to consumers. First, the Commission and state regulators would identify the most efficient supplier of the supported telecommunications services in each

⁶ See 47 U.S.C. § 251(f)(1).

relevant market area. Only the identified supplier would be permitted to operate as the universal service provider in this area, and only this supplier would receive universal service support. Second, the regulators would (somehow) ensure that the chosen supplier continually produces the supported services in each area at minimum cost. Third, the Commission and state regulators would calculate and provide to the monopoly provider an amount of subsidy sufficient to allow the monopolist to set prices that are affordable and reasonably comparable across geographic areas, while ensuring that the prices and support provide a normal return on investment for each of the designated monopoly suppliers.

Although the monopoly approach could, in theory, achieve the five key universal service goals, it could do so only under very stringent and unrealistic circumstances. These circumstances include the following six:

- First, regulators must be able to identify and select the least-cost supplier of the supported services in every relevant geographic area. To do so, regulators must have detailed, comprehensive knowledge of the prevailing production technologies of all potential suppliers of supported services. In addition, and even more unrealistically, regulators must know how the production technologies and associated costs of potential suppliers will change over time. If a regulator lacks this information, she runs considerable risk of selecting other than the most efficient supplier under the *de jure* monopoly approach. When the most efficient supplier is not selected, realized industry costs will exceed the minimum possible costs, and so support in excess of minimum possible levels will be implemented, contrary to the goals of universal service policy.

- Second, regulators must be able to act on their (unrealistically) extensive knowledge, and resist all pressure to select politically powerful, entrenched suppliers rather than least-cost suppliers of key services. If the regulator selects the *de jure* monopolist based on considerations other than efficiency, consumers as a whole will pay more to support universal service than is necessary, and, in the words of the 1996 Act, “sufficient”.
- Third, regulators must be able to induce the selected monopolists to operate their prevailing technologies as efficiently as possible. Otherwise, actual industry costs will exceed minimum possible costs, and so support will be forced above the level that is just sufficient to induce the supply of the supported services at affordable and reasonably comparable rates. Regulators have long struggled with how best to motivate monopolists to operate efficiently. Regulators have recognized that traditional rate-base rate-of-return regulation does not provide strong incentives to limit costs to the minimum possible levels, and have used price regulation as a “second best” alternative to competition to induce regulated monopolies to operate efficiently. If excessive cost inflation is (unavoidably) permitted under the *de jure* monopoly approach, rates will be unjust and unreasonable, and support will be excessive, rather than sufficient.

- Fourth, regulators must be able to induce the monopolists to continually discover more efficient technologies that enable the production of high quality, innovative services at ever-lower costs. Otherwise, the prices that consumers pay for the supported services will be higher than they need to be and/or support will be excessive.
- Fifth, regulators must be able to determine the most efficient geographic scope of operations for each *de jure* monopolist. Because the prevailing boundaries of incumbent LEC “study areas” largely reflect historic regulatory factors, it is inappropriate to assume that existing ILEC service areas represent efficient units for providing universal service. It may be, for example, that a particular small ILEC service territory could be served most efficiently in conjunction with adjacent areas. Failure to identify all such efficiencies would condemn consumers as a whole to pay higher rates than are necessary, and would result in excessive universal service support.
- Sixth, regulators must be certain that economies of scale are pervasive within each of the identified geographic service areas. In other words, the minimum possible per-line cost of serving customers must decline as a telecommunications supplier serves more lines within each of these areas. If per-line costs do not decline, industry costs will not necessarily be minimized under monopoly production. Consequently, unjust and unreasonable rates and/or excessive universal service support may be fostered under the *de jure* monopoly approach.

B. Illustration of the *De Jure* Monopoly Approach

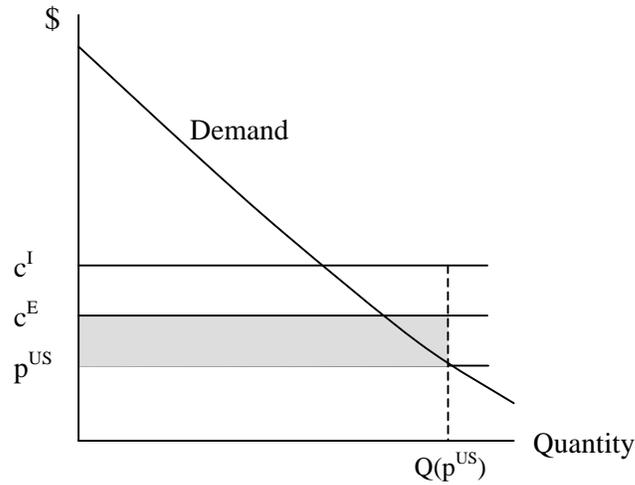


Figure 1. Simple Two-Firm Setting With Constant Unit Production Costs.

Figure 1 permits a simple illustration of the stringent, unrealistic circumstances required for the *de jure* monopoly approach to achieve the five universal service goals. Figure 1 depicts a setting in which there are two potential suppliers of a single supported service. Call these firms the incumbent local exchange carrier (“ILEC”) and the competitive eligible telecommunications carrier (“CETC”). For simplicity, suppose the two firms produce the same homogenous service and operate with constant unit cost.⁷ Let c^I denote the ILEC’s unit cost and c^E denote the CETC’s unit cost of production. p^{US} in Figure 1 denotes the affordable and reasonably comparable universal service price that the regulator seeks to implement. $Q(p^{US})$ denotes the number of units of the supported service that consumers will purchase at price p^{US} . The downward-sloping demand curve in Figure 1 reflects the fact that consumers will purchase more of the supported service as the price of the service declines.

⁷ In this setting, a firm’s unit cost of production is both its average and its marginal cost of

If the regulator is to implement the *de jure* monopoly approach in this setting, she must first identify the least-cost supplier of supported services. To do so, the regulator must know that c^E is less than c^I . In practice, this information is difficult, if not impossible to discover. It is difficult even to compare the actual realized costs of supplying supported services, particularly when new suppliers seek to operate in the market, and regulators lack detailed historic cost data on these potential suppliers.

Of course, to implement the *de jure* monopoly approach, the regulator must do far more than simply verify and compare realized costs. She must also be able to identify the costs that industry suppliers would incur if they operated efficiently, and so incurred only the minimum possible costs. Current realized costs are not necessarily the costs of an efficient provider. Particularly when firms historically have served as monopolists under rate-of-return regulation, there is no basis for assuming that realized costs are the minimum possible (efficient) costs. Realized costs will only reflect efficient costs if the regulator has been able to regulate perfectly, and has not allowed costs and investment to rise above efficient levels. A substantial body of economic literature and FCC decisions suggest that investment costs and expenses are likely to exceed efficient levels under rate-of-return regulation.⁸

Moreover, the regulator must know more than the current, efficient cost structures of the two potential suppliers. The costs of efficient suppliers are unlikely to remain constant over

production.

⁸ See, e.g., Charles Phillips, Jr., *The Regulation of Public Utilities: Theory and Practice*, in Arlington, VA: Public Utilities Reports, Inc., (3 ed. 1993). (“Under regulation, ... if rates are fixed so as to enable all companies – those that are well managed and those that are not – to cover their costs plus receive a fair rate of return, there is no stimulus for efficiency comparable to the stimulus of competition.”); *Policy and Rules Concerning Rates for Dominant Carriers*, Report and Order and Second Further Notice of Proposed Rulemaking, 4 FCC Rcd 2873, 2890, ¶ 30 (rel. April 17, 1989). (“[Under rate-of-return regulation,] a carrier seeking to increase its dollar earnings often can do so merely by increasing its *aggregate* investment. ... This creates a powerful incentive for carriers to ‘pad’ their costs, regardless of whether additional investment is necessary or efficient.”) (emphasis added).

time, particularly in the telecommunications industry where continual technological change and changes in input prices are the norm. If, for example, c^E initially were greater than c^I , but c^E were declining more rapidly than c^I , the regulator would need to know the exact rates at which the two costs were declining in order to determine which supplier could serve customers more efficiently at any particular point in time. Such knowledge is impossible to obtain with certainty because regulators, like even the most omniscient industry experts, are unable to predict perfectly future technological advances. Such advances are inherently uncertain and unpredictable.

Even knowing the minimum feasible costs of all potential producers – both current costs and future costs – is not sufficient to implement the monopoly approach. The regulator must also be certain to act on this information. In particular, in the setting of Figure 1, the regulator must be able to withstand all political pressure to protect the inefficient ILEC. She must do so, for example, even when the ILEC and the CLEC presently have similar costs, but it is apparent that the CLEC's costs will fall below the ILEC's costs in the near future. In this case and others, the regulator must oust the ILEC as the universal service provider, perhaps in the face of substantial political pressure not to do so, and award the franchise exclusively to the more efficient CETC in order to minimize overall universal service costs.

To implement the *de jure* monopoly approach, the regulator must also be able to induce the selected supplier (here the CETC) to operate at minimum cost. Only by doing so can the regulator be certain to secure price p^{US} with the smallest possible subsidy. This smallest possible subsidy appears as the shaded region in Figure 1.⁹ There is little empirical evidence that

⁹ The smallest subsidy, $Q(p^{US})[c^E - p^{US}]$, is the product of the number of units of the supported service purchased at price p^{US} and the difference between the unit cost of the least-cost supplier and price p^{US} .

regulators are able to induce monopoly suppliers to minimize their operating costs, even under various forms of incentive regulation.¹⁰ This is not surprising, given the enormous complexity of the task and the limited information that regulators typically have while engaged in the task.

Over time, the *de jure* monopoly approach also requires the regulator to motivate the selected supplier to continually reduce its costs towards (or even below) p^{US} , so that the subsidy required to ensure p^{US} can be reduced (or even eliminated). Notice that as c^E declines toward p^{US} in Figure 1, the shaded rectangle, which represents the required support, becomes smaller. The precise manner in which a regulator can motivate a protected monopolist to continually discover more efficient means of operation is not apparent, particularly if the firm realizes that its support will be reduced as its costs decline.

The *de jure* monopoly approach also requires that the regulator continually be certain that industry production costs exhibit pronounced economies of scale and that the selected supplier has lower costs than any other potential supplier. Given the limited information typically available to regulators, neither of these important facts is readily ascertained in practice.

The regulator's task in this regard is particularly challenging when one considers the cost complementarities that can arise from operation in multiple geographic regions. Consider, for example, a case in which the CETC's per-line cost of serving the relevant geographic area on a

¹⁰ Ai and Sappington find little impact of incentive regulation alone on operating costs. See Chunrong Ai & David Sappington, *The Impact of State Incentive Regulation On the U.S. Telecommunications Industry*, 22(2) *The Journal of Regulatory Economics*, 133-160 (2002). However, the authors find that costs are significantly lower when incentive regulation is accompanied by strong competitive pressure. Thus, Dr. Lehman's pessimism regarding the ability of incentive regulation alone to motivate substantial cost reductions may be appropriate. (Dale Lehman, *Universal Service and the Myth of the Level Playing Field*, August 12, 2003 at 17-19). However, this pessimism does not, as Dr. Lehman seems to imply, suggest that rate-of-return regulation in a monopoly environment is a preferable, or even neutral, policy prescription. Indeed, Ai and Sappington's finding suggests that costs decline when rate-of-return regulation is replaced by a combination of incentive regulation and competition. This finding is a reason to foster competition, not preclude it.

stand-alone basis is greater than the ILEC's per-line cost of serving that area. Suppose, however, that the CETC can serve the area from a switch that it has installed to serve customers in an adjacent area. Suppose further that when it serves the supported area in this manner, the CLEC's per-line cost of serving the supported area is less than the ILEC's corresponding cost. This simple example illustrates the more general point that in order to assess suppliers' costs of serving a particular geographic area, regulators must have comprehensive knowledge of both the costs of serving the area on a stand-alone basis and as part of a larger service territory. Such knowledge is seldom available in practice.

Without the enormous amount of information required to implement the central planning that underlies the *de jure* monopoly approach, attempts to engage in such central planning are doomed to fail and to harm consumers, as history has shown repeatedly.¹¹ Armed only with limited and highly imperfect information, regulators will inevitably authorize inefficient suppliers to operate and prohibit efficient suppliers from doing so. Consequently, industry costs will increase above minimum feasible levels, increasing demand on the universal service fund. Furthermore, even if the most efficient suppliers are somehow selected initially, entry restrictions will protect the chosen suppliers from the rigors of competitive discipline. Consequently, the suppliers likely will have limited incentive to continually minimize their operating costs. The resulting higher costs will increase the amount of support required to ensure affordable and reasonably comparable rates for supported services.

¹¹ See, e.g., Daniel Yergin & Joseph Stanislaw, *The Commanding Heights: The Battle Between Government and the Marketplace that is Remaking the Modern World* (Simon and Schuster, 1998).

In summary, although the *de jure* monopoly approach to achieving universal service goals could secure the delivery of comparable services and rates in urban and rural areas, it generally will fail to secure affordable rates without the expenditure of excessive support.¹² The inevitable selection of inefficient suppliers and a lack of competitive discipline on the chosen suppliers will put upward pressure on rates and support, to the detriment of all consumers of telecommunications services – both those who benefit from the support and those who pay the support.

C. Proffered Justifications for the *De Jure* Monopoly Approach

In light of the substantial drawbacks to the *de jure* monopoly approach, it can only be advisable if it offers significant countervailing benefits. Two potential benefits of the approach are conceivable, but neither is compelling.

1. Economies of Scale

One hypothetical benefit of prohibiting competition is that it might enable the selected supplier (typically the incumbent supplier) to enjoy pronounced economies of scale, and thereby admit lower industry costs and prices. As emphasized above, however, the prevalence and magnitude of scale economies are difficult to verify in practice. Furthermore, even if scale economies do exist over some range of output so that the potential cost savings are conceivable in theory, the realization of such savings is unlikely in practice for at least three reasons.

First, the operating scale at which unit costs no longer decline substantially as output increases is difficult to identify in practice. Consequently, it typically is difficult, if not impossible, to distinguish settings in which potential cost reductions due to scale economies outweigh the many disadvantages of precluding competition from settings in which the many

¹² It also generally will fail to provide strong incentives for product or service innovation.

disadvantages of precluding competition outweigh any possible savings from scale economies. This difficulty is particularly pronounced in the telecommunications industry because of the potential for technological innovation to develop less costly means to serve high cost areas. For example, wireless technology may have substantially reduced the “last mile” costs of serving geographic areas with low teledensity, and softswitch technology may reduce the “switching” costs of serving areas in which a switch serves a small number of lines.

Second, network unbundling provides a convenient alternative means to secure both the many benefits that competition offers and the cost reductions that scale economies can provide. Network unbundling does so by allowing competitors to access key elements of an incumbent supplier’s network (for example, loops) that may be provided most economically at a certain point in time by a single firm. In doing so, network unbundling facilitates competition among multiple firms while preserving the industry cost savings that may flow from scale economies.¹³

Third, even if the operation of multiple firms sacrifices some scale economies in the short run, the associated competition is likely to reduce industry costs in the long run. As explained more fully in section 4, competing firms, whether ILEC or CETC, constantly seek to reduce their operating costs so that they can reduce their prices and thereby attract customers from rivals. Therefore, competition promotes long-term cost reductions even in the presence of scale economies.

Of course, in markets where scale economies are sufficiently pronounced, the market may result in *de facto* monopoly, i.e., only one firm may ultimately serve customers. But the value of potential entry and competition is that it allows the market continually to test whether

¹³ For the purpose of identifying ETCs, the 1996 Act draws no distinctions among common carriers according to whether they choose to operate using solely their own facilities or whether they employ unbundled network elements. *See* 47 U.S.C. §214(e)(1)(A).

scale economies make entry uneconomic, or whether entry is feasible and in the best interests of consumers even when the prevailing technologies admit some scale economies. An absence of entry barriers will help to ensure that monopoly provision arises only when such provision is in the best interests of consumers, and that competitive provision will re-emerge if the incumbent supplier ceases to pursue the best interests of consumers.

2. Reduced Capital Costs

A second conceivable benefit of restricting entry is that the associated reduction in the variation in an incumbent supplier's revenue stream may reduce the firm's cost of capital. While this theoretical possibility cannot be summarily dismissed, any such gains from guaranteeing revenue streams seem likely to be dwarfed by the associated costs of protecting carriers from competition. The persistent trend in the U.S. telecommunications industry over the past two decades has been away from rate-of-return regulation, toward various forms of incentive regulation and toward increasing competitive pressure.¹⁴ This trend reflects growing recognition of the severe drawbacks to revenue guarantees. Such guarantees dull incentives for innovation and cost reduction, to the detriment of consumers.¹⁵ Consumers of supported services and those who pay the support both benefit when incumbent suppliers are compelled to respond to the competitive challenges offered by rivals.

D. Summary

In summary, the *de jure* monopoly approach requires substantial regulatory intervention in an attempt to ensure that the designated monopoly provider delivers universal service at the

¹⁴ See, e.g., David Sappington, "Price Regulation", in *The Handbook of Telecommunications Regulation*, 225-293 (Martin Cave, Sumit Majumdar, and Ingo Vogelsang, eds., 2002).

¹⁵ As the Fifth Circuit Court has observed, "The Act does *not* guarantee all local telephone service providers a sufficient return on investment; quite the contrary, it is intended to introduce competition into the market. Competition necessarily brings the risk that some telephone service providers will be unable to compete." *Alenco*, 201 F.3d at 620.

lowest possible cost both presently and in the future. To select the most efficient provider, to continually ensure the least-cost provision of high quality services, and to determine when a change in the monopoly provider is necessary to meet universal service goals, the regulator must continually have (unrealistically) comprehensive, accurate information about the monopoly provider's actual and potential operating costs and about the corresponding costs of all potential suppliers of supported services. Because information of this scope and quality is not available to regulators in practice, the *de jure* monopoly approach is not an appropriate mechanism for pursuing universal service goals.

IV. THE COMPETITIVE APPROACH TO ACHIEVING UNIVERSAL SERVICE GOALS

As the 1996 Act has recognized,¹⁶ the powers of market competition can be harnessed to overcome the key problems that plague the *de jure* monopoly approach to achieving universal service goals. Competition can relieve regulators of the need to continually obtain extensive (and typically unobtainable) information in order to continually select and motivate the most efficient universal service provider. In stark contrast to the *de jure* monopoly approach, the competitive approach allows the market continually to identify the most efficient suppliers of supported telecommunications services, to provide appropriate incentives to those suppliers and their competitors alike, to deliver universal services at minimum cost, and to continually reduce the costs and improve the quality of telecommunications services. By harnessing market forces to continually compel industry suppliers to minimize their operating costs, the competitive approach helps to ensure that any high-cost support that is provided is not excessive.

¹⁶ The 1996 Act is self-described as an Act “to promote competition and reduce regulation in order to secure lower prices and higher services for American telecommunications consumers ...” Pub. L. No. 104-104, 110 Stat. 56 (1996).

A. The Details of the Competitive Approach

Under the competitive approach to achieving universal service goals, regulators first determine which services will be supported as universal services. Regulators also initially determine the reasonably comparable and affordable rates that they seek to achieve, just as they do under the *de jure* monopoly approach. However, under the competitive approach, regulators recognize the inherent impossibility of identifying and continually motivating the most efficient supplier of universal services. Instead, regulators specify the support that will be delivered to the universal service supplier that wins the consumer's business at the specified affordable and reasonably comparable rates. When implemented appropriately (as discussed further in section 5), the competitive approach can secure all five of the key goals of universal service policy. In particular, services and rates that are affordable and reasonably comparable in rural and urban areas can be implemented, while competitive discipline works continually to minimize industry costs, reduce industry prices toward costs, and otherwise limit the amount of long-term support that is needed to ensure affordable and reasonably comparable rates for supported services.

Most importantly, in contrast with the *de jure* monopoly approach, the competitive approach allows universal service goals to be achieved under reasonable conditions. Regulators do not have to identify in advance the most efficient providers of supported services. Nor do they have to know the precise capabilities of the most efficient suppliers or the degree of scale economies with which they operate. Under the competitive approach, the "invisible hand" of self-correcting market mechanisms, not regulatory fiat, determines the number and the identity of firms that thrive in the marketplace. Competition also motivates industry suppliers continually to reduce their operating costs and develop innovative, high quality services. Consequently, market competition excels on precisely those dimensions that regulated monopoly fails.

B. Illustration of Unfettered Competition

To illustrate how competition can deliver these important benefits and to introduce a framework for subsequent analysis, consider how the competitive process would work in the absence of subsidies in the simple two-firm setting depicted in Figure 1. Recall that in this setting, there are two potential providers – the incumbent local exchange carrier (“ILEC”) and the competitive eligible telecommunications carrier (“CETC”) – of a single supported service. The firms produce the homogeneous product at constant unit cost.

Because the firms sell a homogeneous product in this simple setting, consumers will purchase the product from the firm that charges the lowest price. To attract customers, the firms will lower their prices aggressively, each seeking to ensure that its price is not undercut by its rival’s price. This fierce competition forces the market price to fall to the level at which a further price reduction would cause one firm’s operations to become unprofitable.¹⁷ Figure 2 depicts the case where the CETC is the least-cost provider, since its unit cost, c^E , is less than the ILEC’s unit costs, c^I . In this case, market competition initially will drive the market price just below c^I , the price below which the ILEC cannot operate profitably without support or additional cost reductions. The CETC’s lower operating costs enable it to serve customers profitably at this price without any support. Figure 3 depicts the parallel setting in which the ILEC initially is the least-cost provider. In this case, the ILEC will prevail in the marketplace and serve customers at a market price just below c^E . The CETC will then be under pressure to reduce its costs in order to be able to serve customers profitably.

¹⁷ In richer models, including those in which industry suppliers produce differentiated products, multiple firms may operate simultaneously in equilibrium. However, the central qualitative conclusions drawn from the simple model that is analyzed here for expositional simplicity are relevant more generally.

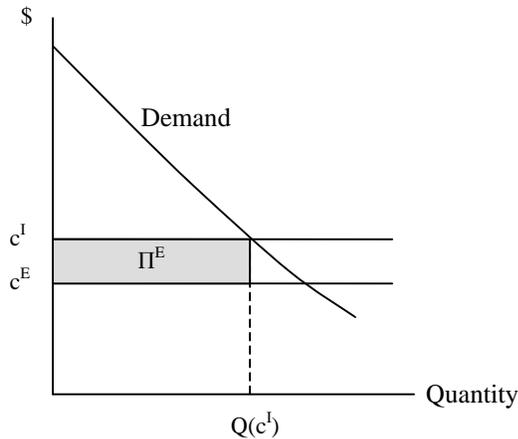


Figure 2. Setting Where the CETC is the Least-Cost Provider.

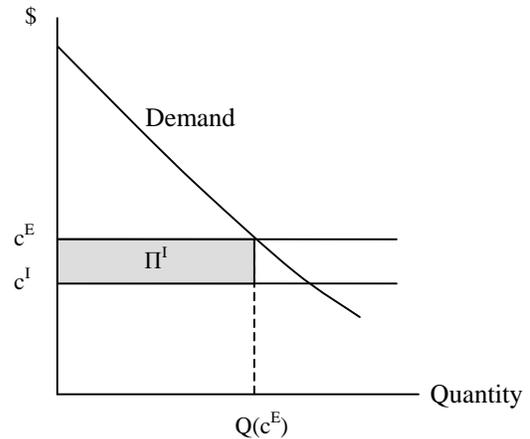


Figure 3. Setting Where the ILEC is the Least-Cost Provider.

Three elements of the outcome of this competitive process warrant emphasis. First, the market price reflects the operating costs of the industry participants. In particular, the market price declines as the ILEC reduces its costs in the setting of Figure 2 and as the CETC reduces its costs in the setting of Figure 3. Second, over time, customers will tend to be served by the least-cost supplier, eliminating any need for an omniscient regulator identify and select the most efficient supplier. The competitive process enables the most efficient supplier to prevail in the marketplace. Over time, the market automatically shifts to favor the firm that develops and demonstrates its superior ability to serve customers. Third, the least-cost supplier earns an economic profit that is proportional to its cost advantage.¹⁸ The CETC's profit is labeled Π^E in Figure 2.¹⁹ The ILEC's profit is labeled Π^I in Figure 3. It is the prospect of increased

¹⁸ Economic profit is profit in excess of a normal return on investment. Thus, a firm may not be earning any economic profit even though its revenues exceed its operating costs (exclusive of opportunity costs, which reflect normal returns on investment).

¹⁹ The CETC's profit, Π^E , is approximately $[c^I - c^E] Q(c^I)$, which is the product of $Q(c^I)$, the number of units of the product that customers purchase when the unit price of the product is c^I , and $c^I - c^E$, the CETC's profit margin on each unit sold. This is a close approximation to the CETC's profit rather than its actual profit because when the market price is just below c^I , consumers will purchase slightly more than $Q(c^I)$ units of the supported service, and the CETC's profit margin will be slightly less than $c^I - c^E$. The ILEC's profit in Figure 3 is calculated in analogous fashion. Notice that profit margins decline

economic profit that motivates the firms to continually pursue cost reductions in competitive settings.

Critically, and in stark contrast to the incentives under *de jure* monopoly, the incentives that arise in competitive settings are mutually reinforcing and self-correcting, and they persist without any government intervention. Although the low-cost supplier may secure some short-term economic profit in the settings of Figures 2 and 3, the high-cost competitor will constantly seek ways to lower its costs. As the high-cost competitor successfully achieves cost reductions, the profit of the low-cost supplier and the market price both decline. If the former high-cost supplier is eventually able to become the least-cost supplier in the industry, it will once again be able to earn an economic profit from serving customers. In this case, the former least-cost provider (now the higher-cost provider) will have to seek ways to reduce its costs in order to remain competitive. Of course, the prevailing least-cost supplier will continually attempt to reduce its costs to avoid becoming the higher-cost provider. In this manner, the competitive process naturally induces industry suppliers to constantly innovate and eventually to pass on to customers in the form of lower prices the benefits of their innovations.²⁰

C. Competition With Universal Service Support

To this point, the discussion has abstracted from any subsidies that might be provided in the industry. Because competition produces prices that reflect production costs, however, competition alone will not always produce prices that are affordable and reasonably comparable in all geographic regions. As illustrated in Figure 1, the desired affordable and reasonably and comparable price (p^{US}) may be below the unit cost of the least-cost supplier, even when

as the suppliers' costs become more similar. If the two suppliers have the same unit cost, neither firm will earn positive economic profit.

²⁰ In practice, innovation can give rise to superior services as well as lower costs. Consumers

competitive pressures force the firm to continually minimize its operating costs. Unit costs may exceed the appropriate universal service price when unit costs are unavoidably high in some regions (such as those with low teledensity) or when costs vary significantly across geographic regions. When the unit cost of the least-cost supplier is expected to exceed the affordable and reasonably comparable price, a universal service subsidy can be provided to allow profitable provision of the universal service at this price.

As long as the same per-line subsidy (i.e., symmetric support) is made available to both suppliers, the competitive interaction will proceed precisely as described above. In particular, competition with symmetric support will ensure production by the least-cost supplier. It will do so because symmetric support does not change the qualitative relationship among firms' unit production costs. In particular, a firm with the lowest unit cost in the absence of support will continue to have the lowest after-support unit cost under any symmetric support policy.

To prove this conclusion formally for the simple case where there are two industry suppliers, let c^I denote the ILEC's unit cost in the absence of support and let c^E denote the CETC's corresponding unit cost. Also let s denote the (symmetric) per-unit support delivered to both firms. In this setting, the CETC's after-support unit cost will be less than the ILEC's after-support unit cost (that is, $c^E - s < c^I - s$) if and only if the CETC's unit cost in the absence of support is less than the ILEC's unit cost in the absence of support (that is, if $c^E < c^I$).

Because symmetric support does not alter the qualitative relationship among firms' costs, a regulator requires no knowledge of the firms' unit costs to be sure that the more efficient supplier will prevail in the marketplace, just as it does in competitive markets. In this sense, a symmetric support policy is robust to even the severe information limitations that regulators

benefit from superior services, just as they benefit from lower prices.

typically face in practice. Furthermore, symmetric support that does not automatically adjust to reflect realized operating costs will motivate all suppliers to work diligently to constantly reduce their operating costs.

Universal service support, therefore, need not disrupt the automatic, self-correcting, beneficial forces that arise in competitive markets. Providing universal service support to the provider that wins the consumer's business preserves the dynamic cost-reducing, innovation-inducing benefits of a competitive market, while still delivering universal service at just, reasonable and affordable rates, consistent with the 1996 Act's universal service objectives. Harnessing natural market forces in this manner also may permit the regulator to reduce universal service support over time, as it becomes apparent that the prevailing level of universal service subsidy allows providers to offer service at prices below affordable and reasonably comparable levels.

Despite the merits of the competitive approach, numerous parties have asserted that the approach with per-line support based on the ILEC's costs is undesirable and will result in excessive support. The next section analyzes these assertions, emphasizing the need to recognize the long-term dynamic benefits engendered by competition and to avoid focusing myopically on short-term static considerations.

V. IMPLEMENTING THE COMPETITIVE APPROACH

To ensure that the key goals of universal service policy are achieved under the competitive approach, the high-cost support policy must be designed to harness the beneficial forces of the competitive process in order to avoid excessive support. Three features of the support policy are especially important in this regard. First, symmetric support should be

provided to suppliers of supported services.²¹ Second, industry suppliers should not receive support for customers they do not serve. Third, duplicative support payments for duplicative universal service subscriptions should be avoided. These three features of a well-structured support policy are now discussed in turn.

A. Provide Symmetric Support

As discussed above, symmetric support policies that deliver the same per-line support to all suppliers of supported telecommunications services help to avoid excessive support in two primary ways. First, they help to ensure that consumers are served by the least-cost supplier, just as they are in competitive markets. When industry costs are minimized, the support required to ensure affordable and reasonably comparable prices also can be minimized. Second, symmetric support policies can provide strong incentives for industry suppliers to minimize their current operating costs and to continually strive to secure even lower operating costs in the future. As industry costs decline, support can be reduced without jeopardizing the flow of high quality services to customers at affordable and reasonably comparable rates.

1. Illustration

To illustrate the benefits of symmetric support policies and the hazards of asymmetric support policies, return to the simple setting illustrated in Figure 1. Suppose that in this setting, the ILEC's realized unit cost of production is 5 and the CETC's realized unit cost is 4. Further suppose that the regulator determines that the appropriate universal service price (p^{US}) is 3, and so restricts the ILEC's price to at most 3. Suppose that consumers demand 100 units of the

²¹ Ideally, this support should reflect the minimum support that will enable an efficient supplier to deliver universal service profitably at affordable and reasonably comparable rates. If reliable data on this minimum support are not available, symmetric support for all ETCs might be based (at least initially) on costs that are reasonably well known to the regulator (e.g., the ILEC's costs).

supported service when its price is 3, so that $Q(p^{US}) = 100$ when $p^{US} = 3$, as depicted in Figure 4.

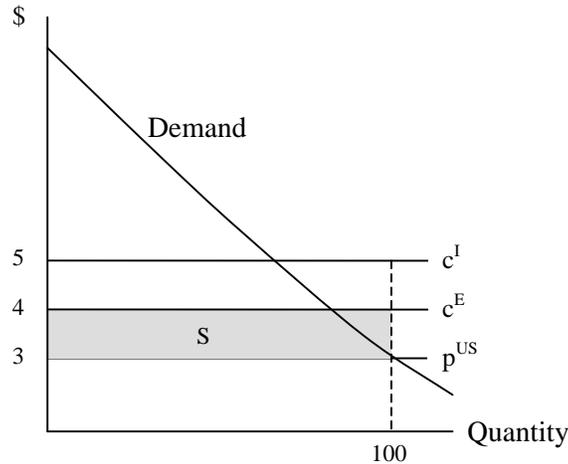


Figure 4. A Numerical Example Where the CETC is the Least-Cost Provider.

If the regulator were fully informed about the operating costs of the ILEC and the CETC in the setting of Figure 4, she could ensure the desired price of 3 with a minimum possible total support (S) of 100. She could do so by offering unit support of 1 and requiring (directly or indirectly) that the supported service be sold at unit price 3.²² Because the unit support of 1 reduces the CETC's effective after-support unit cost to $3 (= 4 - 1)$, the CETC would secure an economic profit of zero by selling the supported service to consumers at price 3.

Notice that if unit support is 1, the ILEC will not be able to operate with a normal return on investment (i.e., it will earn a negative economic profit) when it charges price 3 for the supported service. Unit support of 2 is the minimum support that would allow the ILEC to operate with a normal return on investment (and thus a zero economic profit) at price 3.

²² Direct price regulation would require both the ILEC and the CETC to charge at most 3. Indirect price regulation would require the ILEC to charge at most 3, while not specifically regulating the price charged by the CETC. If the ILEC sets a price of 3, the CETC will be compelled to set a price at or

Consequently, if the ILEC were the sole industry producer, support of at least 2 would be required to ensure long term supply of the supported service at price 3. Unit support of 2 would reduce the ILEC's after-support unit cost to 3(= 5 - 2) and thereby enable the ILEC to secure a normal return on investment (*i.e.*, zero economic profit) when it sells the supported service to customers at price 3.

If the same unit support of 2 were available to both potential suppliers in the setting of Figure 4, the CETC would have lower after-support unit cost than the ILEC. Consequently, the CETC would be able to profitably undercut the ILEC's price, and thereby serve customers at a price just below 3. The CETC would earn a temporary economic profit in this case, and on a static basis, the total amount of universal service support in this example would be the same whether the ILEC and CETC both received a subsidy of 2 or the ILEC alone served all customers under a *de jure* monopoly and received a subsidy of 2. However, under the competitive approach, the CETC's initial success in the market will provide strong incentives for the ILEC to work diligently to reduce its costs to the point where it can compete effectively against the CETC. This is the same incentive that would arise in a market where universal service support is not provided and so an ILEC (with unit cost 5) and a CLEC (with unit cost 4) compete head-to-head to win customer loyalty.²³

2. The Hazards of Asymmetric Support

In this example (and more generally), symmetric support secures production by the least cost supplier, and thereby minimizes the industry costs of producing the supported service. As explained above, symmetric support also provides ongoing incentives for all industry suppliers to work diligently to constantly reduce their operating costs. Despite these important attributes of

below 3 in order to attract customers in the present setting.

symmetric support, a regulator may be troubled by the fact that symmetric support (like the competitive process) allows the CETC to earn some economic profit when it is the most efficient provider of the supported service. Consequently, the regulator may seek to reduce this profit, in hopes of relieving pressure on the universal service fund. In particular, the regulator might consider offering less unit support to the more efficient CETC.²⁴ For example, in the setting of Figure 4, the regulator might provide unit support 2 to the ILEC and unit support 1 to the CETC. This asymmetric support would leave the two suppliers with the same after-support unit cost of 3 ($= 5 - 2 = 4 - 1$), and thereby lead them to compete away all economic profit and deliver the supported service to customers at the desired universal service price of 3.

Despite its superficial attraction, a policy of asymmetric support for providing the same supported service has at least four important drawbacks, both in the setting of Figure 4 and more generally. First, asymmetric support policies entail greater total support than is necessary to ensure the delivery of the supported service at the desired universal service price. As noted above, if the regulator truly knew that the CETC's unit cost was 4, she could secure the desired price of 3 by offering unit support of 1 to all ETCs in the market and directly or indirectly setting the price at 3. Such a policy would eliminate the need to pay unit support 2 to the high-cost ILEC for the customers it serves.

Second, asymmetric support policies limit the incentive of the high-cost supplier to reduce its operating costs. If the ILEC in the setting of Figure 4 recognizes that it will receive

²³ See Section 4 above.

²⁴ Conceivably, regulators might contemplate asymmetric support in some instances in order to compensate for perceived discrepancies between UNE prices and the costs an ILEC incurs in supplying UNEs. Of course, a difference between TELRIC UNE prices and embedded costs is not alone dispositive of a relevant "discrepancy". However, to the extent that any UNE prices warrant adjustment, they should be adjusted directly rather than indirectly through asymmetric support levels. In addition, UNE prices do not reflect all costs that CETCs incur in delivering facilities-based services. Therefore, UNE prices alone

greater support as long as its unit cost exceeds the CETC's unit cost, the ILEC's incentive to reduce its costs is dulled substantially. The ILEC does not face the threat that the CETC will undercut its price, as the CETC is only provided enough support to allow it to provide the same price as the ILEC. Consequently, asymmetric support policies will tend to perpetuate industry support in excess of the minimum required to ensure affordable and reasonably comparable prices, rather than reducing over time the amount of support required to achieve these prices.

Third, the CETC's incentives to minimize its current operating costs and to constantly reduce its future costs will be similarly dulled by asymmetric support policies. If the CLEC recognizes that it will be offered less support than the ILEC as long as it operates more efficiently than the ILEC, the CETC's incentive to operate efficiently will be mitigated. A policy that links the support of a CETC directly to its realized cost acts much like rate-of-return regulation, providing incentives for the CETC to allow its operating costs to rise. By creating such inappropriate incentives, an asymmetric support policy undermines the competitive process and leads to ongoing support in excess of the minimum required to ensure the delivery of supported services at affordable and reasonably comparable rates.

These drawbacks to asymmetric support policies arise even when the regulator is omniscient, and so knows the capabilities of all industry suppliers. The fourth drawback to asymmetric support policies arises in the more realistic setting where the regulator is not omniscient. Suppose, for example, that in the setting of Figure 4 the regulator mistakenly believes that the CETC's unit cost of production is 3, and therefore that the CETC needs no support in order to deliver the supported service at price 3.²⁵ Because the CETC's after-support

are not a sufficient measure of a CETC's costs or of differences between an ILEC's and a CETC's costs.

²⁵ The lack of historic cost data and regulatory accounting rules for CETCs makes it likely that regulatory estimates of CETCs' operating costs will be highly imperfect.

unit cost will be $4 (= 4 - 0)$ under these circumstances, it will not be able to supply the supported service at price 3. Furthermore, the asymmetric support policy will place the CETC at such a competitive disadvantage that it will be unable to apply meaningful competitive discipline on the ILEC. As long as support is set to allow the ILEC to serve customers profitably at price 3, the ILEC will have substantial freedom to allow its costs to rise. The increased support that accompanies the increased costs will continue to endow the innately less-efficient ILEC with lower after-support costs than the CETC, leaving the CETC powerless to impose the competitive pressure that could otherwise stem the ongoing flow of excessive support to the ILEC.

3. Summary

In summary, symmetric support policies ensure the operation of the least-cost provider of supported services. This is the case even if the symmetric support that is provided is based on the ILEC's costs, rather than the costs of an efficient industry provider. Symmetric support policies also provide strong incentives for industry suppliers to work diligently to reduce their operating costs in order to be able to compete effectively for customer patronage. In contrast, asymmetric support policies generally dull these incentives and can limit competitive discipline. Consequently, asymmetric support policies generally will require the delivery of support in excess of the minimum amount required to secure the delivery of supported services at affordable and reasonably comparable prices.

In concluding this discussion of the merits of symmetric support policies,²⁶ it is important to emphasize that these merits persist regardless of which competitor is the most efficient

²⁶ The merits of symmetric support policies are well known to the Commission. The Commission noted how asymmetric support can distort the competitive process when it observed that "A mechanism that provides support to ILECs while denying funds to eligible prospective competitors thus may give customers a strong incentive to choose service from ILECs rather than competitors." *Western Wireless Corporation Petition for Preemption of Statutes and Rules Regarding the Kansas State Universal Service Fund Pursuant to Section 253 of the Communications Act of 1934*, Memorandum Opinion and Order, 15

supplier of supported services. Symmetric support continues to be the best policy if the ILEC has lower unit cost than the CETC. To illustrate this more general point, consider Figure 5, which depicts a setting where the CETC's unit cost is 5, the ILEC's unit cost is 4, and the desired universal service price is 3.

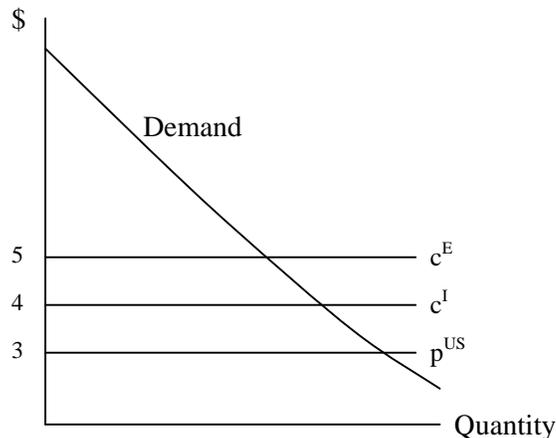


Figure 5. A Numerical Example Where the ILEC is the Least-Cost Provider.

In this setting, a symmetric unit subsidy of 1 will reduce the ILEC's after-support unit cost to 3, thereby enabling it to supply the supported service to customers at price 3. The CETC will not be able to operate profitably under this symmetric support policy, because its after-support unit cost would be 4. Consequently, there will be a *de facto*, but not a *de jure*, monopoly in this market. But this is precisely the outcome that would prevail in a competitive market, the outcome that minimizes industry costs, and the outcome that minimizes the total support required to ensure the delivery of the supported services at the desired price. Higher, asymmetric support for the less efficient CETC would increase total support, would dull the CETC's incentive to

FCC Rcd 16227, 16231, ¶8 (rel. August 28, 2000). Of course, even asymmetric support policies that provide some support to the CETC (but less than the ILEC receives) can encourage consumers to favor the ILEC unduly, and thereby raise industry support levels.

work diligently to reduce its operating costs in order to compete effectively against the ILEC, and would subsidize uneconomic entry by a competitor. Symmetric support, in contrast, supports *competition*, not *competitors*.

B. Cap Per-Line Support

Some criticize the competitive approach on the grounds that it may deliver excessive support to industry suppliers when multiple firms serve customers in a market area. The critics note, for example, that when support levels reflect an ILEC's unit cost of production and when the ILEC's unit cost increases as it loses customers to competitors, competition leads to higher levels of industry support.²⁷ This criticism is better directed at the details of the support policy than at the competitive approach *per se*. When support policies are designed appropriately, the competitive approach allows the many benefits of competition to be secured while avoiding excessive support levels.

To illustrate this more general point, consider the benefits of capping the per-line support that is provided in a market area as competition intensifies. A cap on per-line support prevents the support from growing, even if the capped support initially reflects ILEC costs.²⁸ Furthermore, if the capped support is allocated to competitors according to their realized market shares, all competitors will have substantial incentive to attract customers by serving them well. In particular, if an ILEC's support is reduced when it loses customers to competitors, the ILEC will have stronger incentives to retain customers than it does when its support is automatically adjusted to compensate for the financial effects of customer migration. Furthermore, when the link between support and realized costs is severed, all competitors will have strong incentives to

²⁷ See, e.g., Dale Lehman, *Universal Service and the Myth of the Level Playing Field*, August 12, 2003 at 8.

²⁸ By limiting increases in total support, the cap also helps to ensure that the total level of support is

reduce their operating costs. The reduced costs can promote lower prices for supported services and can help to offset any increase in unit costs that an ILEC might incur as its market share declines below one hundred percent.

Thus, in direct contrast to the claims of critics, symmetric support can harness the proven forces of competitive discipline to avoid excessive support. If per-line support is capped as competition intensifies, support need not increase (except as lines increase). Even if support is not capped, it may decline below present levels in the long run, provided support is not automatically set equal to the difference between the ILEC's realized unit cost and the desired universal service price. If industry participants recognize that their support will not increase automatically to match realized cost increases, they will be motivated to reduce their costs. As industry costs decline, support can be scaled down appropriately without jeopardizing the continued flow of high quality services to consumers at affordable and reasonably comparable rates.²⁹

C. Avoid Duplicative Support

Some may fear that the competitive approach to achieving universal service goals will promote duplicative support. This need not be the case if support rules are designed appropriately. Furthermore, it is important to note that the issue of duplicative support arises even under the *de jure* monopoly approach to achieving universal service goals.

predictable.

²⁹ Thus, it is not necessarily true, for example, that "It is more costly to support two networks than one." Dale Lehman, *Universal Service and the Myth of the Level Playing Field*, August 12, 2003 at 10. The competition that results when multiple industry suppliers are made eligible for symmetric support can reduce industry costs and thus the total level of support that is needed in the long run. If scale economies are pronounced, industry competition will likely ultimately lead to a single supplier of supported services in some geographic regions. However, symmetric support policies that do not automatically increase support as observed costs rise will help to ensure that the successful supplier in these regions is the most efficient supplier of supported services.

The present support system allows eligible telecommunications carriers, singly or in combination, to collect high-cost support for providing multiple supported services or multiple units of the same supported service to a single customer.³⁰ Not only is such duplicative support costly, but it may well be unnecessary to ensure that households have access to essential telecommunications services. Duplicative support can be limited (under both the competitive approach and the *de jure* monopoly approach to achieving universal service goals), for example, by providing support for only a single, primary network connection for each household.

When support is provided through primary network connections, suppliers face the full financial ramifications of losing customers to competitors under the competitive approach to achieving universal service goals. A firm that loses a customer to a competitor loses the full amount of the revenue associated with the former customer's subscribed services. Consequently, providing necessary support through primary network connections can increase the incentives of competitors to deliver low prices and high quality supported services to consumers.

Telephone vouchers might be employed to deliver support for primary network connections.³¹ When support is delivered in the form of vouchers, a firm is not automatically authorized to collect support from a universal service fund whenever it provides a supported service to a customer, regardless of whether the customer already purchases the same service or a different supported service from the same supplier or a different supplier. Therefore, vouchers

³⁰ This is the case despite the Joint Board's 1996 recommendation to limit high-cost support to a single line to a residence or a business. *See Federal-State Joint Board on Universal Service, Recommended Decision*, 12 FCC Rcd 87, 132-34 (rel. November 8, 1996). The Commission declined to accept this recommendation. *See Federal-State Joint Board on Universal Service, Report And Order*, 12 FCC Rcd 8776 at 8828-8830, ¶¶ 92-96 (rel. May 8, 1997).

³¹ The telephone vouchers might be provided to some or all customers that live in designated high-cost areas. The voucher recipients would be able to use the vouchers to pay for the supported services they purchase. It would not be necessary to distinguish between "primary" and "non-primary" network connections under such a policy.

can help to avoid duplicative support. Distributing support via vouchers also obviates any need to try to estimate cost differences among firms in order to micro-manage asymmetric support payments. Because vouchers afford all suppliers of supported services the same right to compete for the loyalty of voucher recipients, vouchers treat all suppliers of supported services symmetrically, and thereby enable the most innovative and most efficient firms to prevail in the marketplace.

D. Summary

In summary, the support policies employed under the competitive approach must be designed carefully to avoid excessive support and undue distortions of the competitive process. Support should not be guaranteed to firms as they lose customers, and duplicative support to multiple suppliers should be avoided. Furthermore, and perhaps most importantly, symmetric support should be provided to suppliers of supported services in order to implement strong incentives for cost reduction, and to otherwise avoid excessive support.

VI. AVOID ANY PERCEIVED NEED TO IMPLEMENT ASYMMETRIC SUPPORT

Despite the harmful long-term effects of doing so, regulators may be tempted to micro-manage asymmetric support levels. The temptation to implement asymmetric support levels may be particularly strong if competitors are known to offer very different services or to face very different operating circumstances and conditions. To overcome this temptation, it can be advisable to reduce relevant asymmetries *ex ante* rather than attempt to adjust for them *ex post*. Relevant asymmetries can be reduced *ex ante* by defining supported services appropriately, by de-averaging high-cost support across relevant geographic regions, and by implementing a reasonable sharing of any true financial burdens associated with asymmetric carrier-of-last-resort obligations, to the extent that the asymmetry and the associated burdens can be demonstrated.

A. Define Supported Services Appropriately

By defining supported services appropriately, regulators can avoid situations where industry suppliers incur different costs simply because they supply different services. As noted in section 4, the first step in the competitive approach to achieving key universal service goals is to identify the supported services. To identify a supported service fully, regulators should specify all relevant dimensions of the service and any associated standards that the service must meet. Relevant service dimensions and associated standards might pertain, for example, to the reliability, transmission quality, and functional capabilities of the service. Firms that do not deliver the specified standards on all relevant dimensions should not be eligible for support.

Providing support only to suppliers of services that satisfy the specified standards on all relevant dimensions will obviate any perceived need to micro-manage support for firms that experience substantially lower costs because they produce services that do not satisfy the specified standards on all relevant dimensions, even though they may resemble supported services in some respects.

B. De-average Symmetric Support

Cases where multiple firms offer supported services but are perceived to face different operating circumstances and conditions also can be accommodated without resorting to asymmetric support payments. To illustrate this fact, consider a setting where the costs of serving different geographic regions differ substantially, and where a CETC has unfettered ability to serve some geographic regions and not serve others, while the competing ILEC is required to provide service in all geographic regions at uniform rates. If the same per-line support were provided in all geographic regions in this setting, the CETC would have substantial asymmetric opportunity to reduce its costs and increase its profit by choosing to serve only low-

cost geographic regions. Consequently, a regulator might reasonably conclude that a lower level of support was appropriate for the CETC in such a setting.

However, the regulator would still face the difficult task of determining precisely the appropriate difference in support levels. Such a determination is difficult at any point in time because it requires substantial knowledge of the prevailing operating costs of all competitors in all geographic regions.³² Furthermore, an ongoing assessment of operating costs would be required to ensure any differential support that is implemented remains appropriate over time.

Given the formidable difficulties and hazards involved in micro-managing support levels, it generally is preferable to limit the asymmetries that might otherwise motivate the micro-management. One way to limit relevant asymmetries is to de-average the symmetric support provided to ILECs and CETCs to reflect relevant cost variation across geographic regions. If support is increased symmetrically for ILECs and CETCs in geographic regions that are known to be relatively costly to serve and decreased symmetrically in regions that are known to be less costly to serve, key asymmetries in the operating circumstances of ILECs and CETCs can be mitigated, thereby avoiding any need to attempt to fashion different support levels for different competitors.

Of course, just as regulators typically lack the information required to assess the extent of exogenous cost differences among competitors, regulators are likely to have imperfect knowledge of the extent to which production costs vary systematically across geographic regions. ILECs typically have access to this information, though. Consequently, ILECs can be permitted to de-average across geographic zones the support that is available symmetrically to ILECs and CETCs.

³² The determination also requires knowledge of the firms' production technologies in order to

Under current rules, ILECs are authorized to de-average support across certain geographic zones without regulatory approval.³³ ILECs can further de-average support across geographic zones to the extent that the relevant state regulatory commission finds the de-averaging to be in the public interest.³⁴ Thus, ILECs typically have both the information and the authority they require to ensure that CETCs do not choose their service territories strategically in order to benefit from differences between cost and support levels.

If ILECs choose not to exercise the authority they have been afforded, any resulting asymmetries between cost and support levels should not be employed to rationalize the micro-management of asymmetric support for ILECs and CETCs. Otherwise, ILECs might be tempted to refrain from de-averaging support in order to convince regulators to limit unduly the support available to CETCs. Such handicapping of CETCs inevitably would lead to the many problems identified above. Therefore, when any need for *ex post* handicapping is readily mitigated by undertaking *ex ante* actions that render the operating circumstances of ILECs and CETCs more symmetric, these *ex ante* actions should be pursued.

C. Distinguish Apparent From Actual Asymmetries

Some might argue that asymmetric support for ILECs and CETCs is appropriate because the two types of competitors face different carrier-of-last-resort (COLR) obligations. In principle, if different firms faced very different costs because of asymmetric COLR obligations, if the asymmetric COLR obligations were essential, and if the additional COLR costs were not primarily linked to geographic areas with lower teledensity that could be addressed through

distinguish realized costs from the costs that could be achieved through efficient operation.

³³ See 47 C.F.R. § 54.315(d).

³⁴ See 47 C.F.R. § 54.315(c); 47 C.F.R. § 54.315(d)(5).

geographic disaggregation of support, then a case might be made for asymmetric support levels. However, this case is not clearly supported for two primary reasons.

First, asymmetric COLR obligations do not necessarily impose substantial cost differences. In particular, if the costs of standing ready to serve are the costs a firm would naturally occur when competing for customers even in the absence of a COLR obligation, then the COLR obligation imposes no additional costs on the firm. Furthermore, customers in high-cost areas sometimes compensate their telecommunications supplier directly (through line extension fees, for example) for a significant portion of the extra costs the supplier incurs in serving them. Second, CETCs face COLR obligations in practice. For example, as a matter of federal law, CETCs must offer (and advertise) telecommunications services throughout the entire service area in which they receive an ETC designation.³⁵ In addition, if one ETC relinquishes its ETC designation in an area served by other ETCs, the other ETCs are obligated “to ensure that all customers served by the relinquishing carrier will continue to be served.”³⁶ Therefore, COLR obligations do not unavoidably raise the costs of ILECs asymmetrically.

Furthermore, to the extent that COLR obligations cause an ILEC alone to provide supported services in geographic regions that are particularly costly to serve,³⁷ the higher costs that the ILEC incurs because of its COLR obligations can be addressed directly – and symmetrically – through geographic disaggregation of support. As explained above, by offering higher (symmetric) per-line support in the geographic regions that are particularly costly to serve, relevant asymmetric burdens of COLR obligations can be mitigated.

³⁵ See 47 U.S.C. § 214(e)(1).

³⁶ 47 U.S.C. § 214(e)(4).

³⁷ This might be the case, for example, if a CETC elects to serve the most costly geographic regions through resale while using its own facilities to serve other geographic regions.

In addition, for the reasons identified above, it typically is difficult, if not impossible, to determine the exact extent to which asymmetric COLR obligations cause costs to vary asymmetrically. Consequently, attempts to micro-manage support levels to correct for suspected cost asymmetries caused by asymmetric COLR obligations can subvert the competitive process in the ways described above, and thereby lead to higher prices and increased universal service support.

D. Limit the Burdens of Any True Cost Asymmetries From COLR Obligations

In cases where asymmetric COLR obligations do impose unavoidable cost asymmetries, COLR obligations can be designed to limit any perceived need for inappropriate asymmetric support. For example, as General Communication, Inc. (GCI) has proposed in Alaska, CETCs might be required to share COLR obligations with ILECs once CETCs achieve a certain retail market share.³⁸ The sharing of COLR obligations could take a variety of forms, including a sharing of the expenses required to extend network capacity to reach unserved areas and/or reciprocal network unbundling for ILECs and CETCs.³⁹ Through these policies and others, any demonstrated differences in operating costs imposed by varying COLR obligations can be limited, thereby avoiding any perceived need to try to correct for these differences through imperfect micro-management of asymmetric support levels.

E. Summary

In summary, it often is preferable to reduce meaningful *ex ante* asymmetries where necessary, rather than attempt to adjust for the asymmetries *ex post*. Appropriate *ex post* adjustment typically requires more information than is available to regulators. Any such

³⁸ See Attachment 2 of the testimony of Dana Tindall before the United States Senate Committee on Commerce, Science and Transportation Communications Subcommittee in the matter of *Hearing on the Current Status and Future of the Universal Service Fund*, April 2, 2003 (“Tindall Testimony”).

adjustment also can limit incentives for superior performance and thereby lead to higher prices and/or increased universal service support. Important asymmetries can be reduced *ex ante* by defining supported services fully, by de-averaging high-cost support, and, where necessary, by implementing a reasonable sharing of any true financial burdens associated with asymmetric COLR obligations.

VII. CONCLUSIONS

In reviewing the rules that govern high-cost universal service support and the ETC designation process, the Commission and the Joint Board are undertaking an important task. Their task of retaining the benefits of competition for rural consumers while controlling the size of the fund is complicated immeasurably by the limited information to which they have access. The competitive approach to achieving key universal service goals coupled with symmetric support policies are essential in light of this limited information. Market competition and symmetric support policies will allow the most innovative and the most efficient suppliers to continually deliver supported services to consumers at affordable and reasonably comparable rates. Market competition, symmetric support, limits on duplicative support, and, if necessary, capped support also will help to limit the support required to ensure these rates, in part by providing strong incentives for industry suppliers to continually reduce their operating costs. Over time, market competition and symmetric support will be particularly valuable in identifying instances where support is excessive and in disciplining fund demand.

None of these important outcomes is fostered adequately by the *de jure* monopoly approach or by asymmetric support policies. Because of the limited information that is available to regulators, attempts to select a single support recipient or to micro-manage different support

³⁹ See the Tindall Testimony for additional details and possibilities.

levels for different ETCs run considerable risk of raising industry costs and support levels. Any perceived need to micro-manage asymmetric support can be mitigated, as necessary, by fostering *ex ante* symmetry in the operating circumstances of market competitors. Such symmetry can be fostered, for example, by defining supported services appropriately, by de-averaging high-cost support, and, if necessary, by implementing a reasonable sharing of any true financial burdens associated with asymmetric carrier-of-last-resort obligations. This approach will best ensure the delivery of innovative, quality services at affordable and reasonably comparable rates, while imposing cost discipline on fund growth that can help to ensure the continued sustainability of support to high-cost, rural areas.