

I. INTRODUCTION AND OVERVIEW

1. Our names are R. Glenn Hubbard, William H. Lehr, Janusz A. Ordover, and Robert D. Willig. R. Glenn Hubbard is Professor of Economics and Finance at Columbia University. William H. Lehr is an associate research scholar of finance and economics in the Graduate School of Business of Columbia University. Janusz A. Ordover is Professor of Economics at New York University. (Professor Ordover's Curriculum Vitae is appended as Attachment 1.) Robert D. Willig is Professor of Economics and Public Affairs at Princeton University.

2. We submit this affidavit in response to the April 16, 1999 Second Further Notice of Proposed Rulemaking of the Federal Communication Commission (the "Commission" or the "FCC") in CC Docket No. 96-98 and in response to the affidavits of: Alfred Kahn; Jerry Hausman and Gregory Sidak; Thomas Jorde, Gregory Sidak, and David Teece; Robert Crandall; and, Debra Aron and Robert Harris.¹ Professors Hubbard, Lehr, and Willig filed an affidavit during the initial round of comment in which we discussed what regulatory standards for unbundling network elements will best advance the objectives of assuring that consumers of exchange and exchange access services receive the maximum benefits of competition in both the

¹ Declaration of Alfred E. Kahn, Appendix A to the Comments of GTE Service Corp. et al. in Response to Second Further Notice of Proposed Rulemaking, CC Docket No. 96-98 (filed May 26, 1999) ("Kahn") (also attached to the Comments of Bell Atlantic Telephone Companies); Affidavit of Jerry A. Hausman and J. Gregory Sidak in Response to Second Further Notice of Proposed Rulemaking, Attachment 1 to the Comments of the United States Telephone Association, CC Docket No. 96-98 (filed May 26, 1999) ("Hausman-Sidak"); Affidavit of Thomas M. Jorde, J. Gregory Sidak, and David J. Teece in Response to Second Further Notice of Proposed Rulemaking, Attachment 2 to the Comments of the United States Telephone Association, CC Docket No. 96-98 (filed May 26, 1999) ("Jorde-Sidak-Teece"); Declaration of Robert W. Crandall, Appendix B to the Comments of Bell Atlantic Telephone Companies, CC Docket No. 96-98 (filed May 26, 1999) ("Crandall"); Joint Affidavit of Debra J. Aron and Robert G. Harris, Attachment 1 to the Comments of Ameritech, CC Docket No. 96-98 (filed May 26, 1999) ("Aron-Harris").

short term and the long term. We concluded that the standard that will best advance these interests is the competitive benchmark. We demonstrated that the Commission should conclude that an incumbent LEC's failure to provide access to a network element on economic terms would impair a competitive local exchange carrier's ("CLEC's") ability to offer competing local exchange services and otherwise undermine the Act's objectives if the requesting CLEC would consequently experience greater delays in offering service, reduce the scope of its services, or offer service of lower quality, including limitations on capabilities. That is so because these effects would reduce the viability or scope of a CLEC's service offerings, and weaken or eliminate its contributions to competition in local telecommunications markets.

3. We also described the various ways in which a reduction in scope of a CLEC's service offerings could manifest itself, including: (i) geographically, if the CLEC provides service in fewer areas; (ii) as a reduction in the breadth of customers served, if the CLEC decides to offer services to fewer customer groups; or (iii) as a decrease in the range of products, if the CLEC offers a diminished set of local and exchange access services. A reduction in viability arises if the CLEC is unable to supply its services at minimum forward-looking economic cost. Hence, impairment could manifest itself as a CLEC's inability to enter geographic, customer, or product markets on competitive terms as broadly as it would have done absent the impairment. We also noted that impairment could manifest itself as a delay in CLEC entry to a particular geographic, customer, or product market.

4. We further concluded that access to incumbent LEC network elements will produce short-run benefits for consumers by accelerating competition, accelerating price reductions, and enhancing the scope of service offerings. Unbundling, we demonstrated, also generates long-run benefits by acting as a bridge to facilities-based competition. Further, we

showed that CLECs relying on unbundled network elements (“UNEs”) face significant cost disadvantages that can be mitigated if they replace UNEs with their own facilities, but the UNEs still play a crucial rule during the early stages of entry when CLECs lack scale and scope economies as well as the customer demand information they need to build efficient networks. Finally, we demonstrated that the Telecommunications Act of 1996’s (the “Act’s”) twin goals of promoting local competition and driving prices to competitive levels are best served if the Commission adopts national unbundling requirements.

5. In this affidavit we demonstrate that the arguments raised by the incumbent local exchange carriers’ (“incumbent LECs”) economists against unbundling network elements should be rejected. *First*, we explain why the antitrust “essential facilities” doctrine is an inappropriate foundation for deriving rules for unbundling network elements at this time. The principal purpose of the Act is not merely to prevent incumbent LECs from leveraging their monopolies into adjacent markets or engaging in anticompetitive conduct – the primary purpose of the essential facilities doctrine – but to bust up incumbent monopolies by *affirmatively* using regulation to facilitate local exchange competition. *Second*, we demonstrate why the Commission’s pricing standard for network elements (TELRIC) does not justify the incumbent LECs’ more restrictive unbundling proposals. Contrary to their claims, TELRIC is fully compensatory for bottleneck facilities as well as facilities closely linked to bottleneck elements, and the financial markets likely take into account the significant risk factors that the incumbent LEC economists identify. *Third*, and relatedly, we explain why TELRIC-based pricing of bottleneck elements will not “destroy” the incentive for incumbent LECs to innovative. To the contrary, subjecting incumbent monopolists to vigorous competition is the best way to ensure innovation. Indeed, the principal example cited by the incumbent LECs – DSL technology –

proves exactly this point. This technology sat gathering dust for over a decade until the incumbent LECs were faced with the looming threat of competition from cable companies offering high speed internet access. *Fourth*, we explain that the incumbent LECs' economists' arguments against national unbundling rules would, if adhered to, likely create more problems and mismatches than they would resolve, and would further delay effective competition.

A. Forward-Looking Economic UNE Pricing Advances The Act's Purpose Of Promoting Competition In The Provision Of Telecommunications Services For The Benefit Of Consumers.

6. Unlike other telecommunications services, local exchange services and local access are at present not competitive under any reasonable measure of competitiveness. Three years after the passage of the Act, the provision of these services continues to be controlled by the incumbent local exchange carriers.

7. Congress recognized that the incumbent LECs' monopoly would not be broken by simply lifting the legal barriers to entry into the provision of local exchange and access services. Incumbent LEC advantages, such as the ubiquity of their networks with the concomitant scale and scope economies and long established customer relationships, create significant entry barriers that, without additional competitive incentives, could not be broadly overcome by potential entrants. Thus, Congress recognized that competition would develop broadly only if potential entrants could have access to the elements of the incumbent LEC's network at economic rates, and it therefore required incumbent LECs to unbundle their network elements and make them available to competitive local exchange carriers at cost based rates. In short, access to unbundled network elements at economically sound prices promotes the objectives of the Telecommunications Act.

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8. As virtually every state commission and federal court around the country has concluded, UNE rates based on total element long run incremental cost or "TELRIC," as mandated by the FCC, are both consistent with sound fundamental economic principles and with the objectives of the Act.² Because TELRIC presents a comprehensive cost estimate that includes all of the incremental fixed and variable costs of constructing and operating an efficient telephone network at a wholesale level, including the cost of capital, depreciation, and the impacts of fill factors, there can be no doubt that TELRIC based rates fully compensate incumbent LECs consistently with the competitive standard for use of their network elements. Indeed, in a fully competitive market, a firm *ex ante* never can expect to recover more than the full economic cost of its operations, including investment. Hence, TELRIC is the appropriate benchmark for pricing unbundled network elements because it promotes efficient entry and investment decisions by incumbent LECs and CLECs, while enabling the incumbent LEC to recover its investment in its network facilities.

9. TELRIC includes all costs that are relevant to the firm when it decides whether to invest in additional capacity or to enter at efficient scale. It is forward-looking by construction because it ignores all inputs that may have been irreversibly acquired and deployed in the past, and all concomitant costs that may have been incurred in the past and are now sunk. It includes all future costs that result from the decision to enter, including those that will become sunk following the firm's implementation of the decision to enter. Because the future is uncertain, TELRIC must and does account for uncertainty with respect to technological progress, factor prices, firm demand, and interest rates. The expansion, contraction, entry, and exit decisions of competitors efficiently

² Throughout our affidavit, TELRIC based prices are assumed to include any economically efficient mark-up that may be necessary to account for common costs.

and necessarily turn on expected forward-looking revenues and costs, and are independent of embedded, historic expenditures. Consistent with the logic of competitive markets, the pricing of network elements on the basis of incremental cost should encourage new or potential entrants in local exchange markets to make efficient make-or-buy decisions, supplying a network element for its own use through self-provision only when the entrant can do so at a lower incremental cost than the incumbent LEC.³

10. Moreover, as the Commission has found, the provision of UNEs at TELRIC-based rates is “pro-competition” not “pro-competitor.”⁴ This is true for a number of reasons. As we explained in our original affidavit, entrants into local telecommunications markets face significant hurdles even when relying on UNEs. Their marketing and setup costs are likely to be very high, as are the risks that they confront.⁵ The disadvantages facing entrants would be exacerbated significantly if UNEs were not available at efficient rates. The massive investments in facilities necessary to achieve the scale and scope economies required to compete broadly against the incumbent LECs make more economic sense if UNEs can be obtained at TELRIC. In this respect, then, unbundling at TELRIC clearly is pro-competition because otherwise

³ Here the measures of costs must include applicable transaction costs incurred in dealing with the incumbent LEC.

⁴ See First Report and Order, *Implementation of the Local Competition Provisions in the Telecommunications Act of 1996*, 11 FCC Rcd. 15499 (1996) ¶ 618 (“*First Report and Order*”) (“[t]he price levels set by state commissions will determine whether the 1996 Act is implemented in a manner that is *pro-competitor* and favors one party . . . or, as we believe Congress intended, *pro-competition*”) (emphasis in original); *id.* ¶ 705 (rejecting embedded cost pricing methodologies because they “would be pro-competitor – in this case the incumbent LEC – rather than pro-competition”).

⁵ These risks include the possibility that consumers will stick with incumbent providers and that a UNE-based network may not be fully operational.

competition at best would be limited to niche opportunities, and for many consumers in a vast majority of the country, competition would possibly not emerge at all, or with only great delay.

11. It is false to assert that ILEC unbundling would necessarily harm competition in local exchange markets.⁶ In fact, the provision of UNEs at TELRIC based rates would promote competition by facilitating efficient entry and exit decisions. As we discuss below, CLECs have ample incentive for the self-provision of network elements when it is socially desirable for them to do so, and the availability of UNEs at TELRIC, as we discuss, in no way provides entrants with a “free-ride” on incumbent LEC investments. Further, efficiently priced network elements also permit CLECs to enter local markets broadly by combining their own network elements with those of the incumbent LECs, both geographically and functionally. At the same time, because TELRIC-based UNE rates are fully compensatory for the incumbent LECs’ bottleneck elements (and those elements linked to the bottleneck), and because the Act’s unbundling requirements are, as we discuss in this affidavit, firmly linked to the bottleneck properties of the facilities, incumbent LECs experience incentives to deploy new and innovative facilities in response to consumer demand and competition.

12. Uniform national unbundling requirements promulgated by the Commission will play a crucial role in the development of local competition. Uniform national rules make it possible for a CLEC contemplating entry broadly across different states and different incumbent LEC territories, as well as across urban, suburban, and rural areas, to develop a coherent local entry plan. Variability in the types of UNEs available from one geographic area to another may force a CLEC to employ radically different entry vehicles in each area, not because the economics of local telecommunications necessarily differ substantially among those areas, but

because different state commissions effectuate different public policies bearing on local competition. Equally important, national rules significantly reduce the regulatory costs CLECs will encounter by alleviating the requirement that they negotiate and, most likely, litigate or arbitrate over each element anew in each state. Hence, while national rules may result in somewhat imperfectly tailored unbundling requirements, as we discuss below, those imperfections are likely to be far outweighed by the regulatory savings, broad effectiveness, and other significant benefits of national rules.

B. Arguments Raised Against Ubiquitous Unbundling And TELRIC Based Rates.

13. Despite clear Congressional intent, obvious benefits to competition, and the unwavering adherence in principle by state commissions and federal courts to unbundling at TELRIC rates, the incumbent LECs' economists argue that national unbundling rules and TELRIC-based pricing serve competitors and not competition, and will harm consumers of telecommunication services over the long haul. Their arguments fall into four categories.

14. *Essential facilities doctrine.* As a threshold matter, the incumbent LEC economists assert that the essential facilities doctrine, which was developed in antitrust cases, provides the proper benchmarks for determining whether any particular UNE should be made available to the requesting CLEC.⁷ Hence, they maintain that only those UNEs that are essential in an antitrust "sense" should be unbundled, and only in those geographic markets in which the essentiality test is met. If a particular element is not "essential," they contend, its unavailability

(... continued)

⁶ See Kahn Aff. ¶ 10 (agreeing that unbundling does not necessarily harm competition).

⁷ Aron-Harris at 46-53; Hausman-Sidak ¶¶ 94-130; Kahn ¶¶ 20-22.

should not be seen to “impair” the ability of a CLEC or CLECs to compete in the provision of any final telecommunications service.

15. *TELRIC rates exacerbate the inefficiencies of unbundling.* The incumbent LEC economists acknowledge that the Second Notice of Further Proposed Rulemaking is not concerned with UNE pricing. They argue, however, that pricing of the unbundled elements at TELRIC exacerbates the economic inefficiencies from unbundling.⁸ That is, even if a UNE were to satisfy the antitrust “essential facility” test, they argue, it ought not to be priced at TELRIC. Clearly, these economists maintain, if incumbent LECs were properly compensated for access to their facilities, they would have correct private incentives to make such access possible. Because the incumbent LECs are fighting against TELRIC tooth-and-nail, it must be the case that pricing UNEs at TELRIC provides insufficient compensation for the risks entailed in investments in UNEs: Apparently, the incumbent LEC economists aver, TELRIC pricing does not compensate for the option value of delay, *i.e.*, CLECs can wait and see whether any particular R&D investment leads to a useful innovation. If it does, the UNE will be bought at TELRIC; if it fails, the investment will be stranded. The net effect is an increase in incumbent LECs’ costs of capital.

16. *Compulsory unbundling at TELRIC prices stifles innovation and enables the CLECs to free ride on incumbent LECs’ investments.* In a similar vein, the incumbent LEC economists maintain that compulsory unbundling at TELRIC prices stifles innovation and enables the CLECs to free ride on incumbent LECs’ investments.⁹ CLECs can request a UNE

⁸ Hausman-Sidak ¶¶ 87-93; Kahn ¶ 22; Jorde-Sidak-Teece ¶¶ 27-42.

⁹ Aron-Harris at 18-20; Crandall ¶ 14; Hausman-Sidak ¶¶ 75-79; Kahn ¶ 22; Jorde-Sidak-Teece ¶¶ 50-60.

after it has shown itself to be valuable to telecommunication consumers. Incumbent LECs cannot secure any product differentiation/product bundling advantage because they have to make these UNEs available to competitors. Thus, they insist, TELRIC-priced UNEs make it unprofitable for both CLECs and incumbent LECs to invest in facilities by creating incentives for “free riding” on successful investments by the incumbents.

17. *Unbundling requirements should vary by geography and time.* Finally, the incumbent LEC economists argue that the availability of UNEs should vary from one geographic area to another, and change over time.¹⁰ Unlike national rules, they claim, such an approach is consistent with the DOJ/FTC Horizontal Merger Guidelines, which recognize that market power has geographic and time dimensions. Hence, they say, the assessment of whether any particular UNE is necessary for competition and whether its unavailability to a CLEC at TELRIC-based prices would impair competition is a “local” matter. Clearly, the incumbent LECs’ economists claim, the same UNE properly may be unbundled in some rural wire centers, but not in urban wire centers in which alternative sources of that network element are allegedly widely available.

C. The Commission Should Reject The Arguments Raised By The Incumbent LEC Economists Against TELRIC Pricing And Broad, National Unbundling Requirements.

18. As we demonstrate throughout our affidavit, the Commission should reject the arguments submitted by the incumbent LECs’ economists. Below, we review each of their four major arguments in detail. Their arguments, however, should be rejected for several overarching reasons as well.

¹⁰ Hausman-Sidak ¶¶ 164-176; Aron-Harris at 36-37.

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19. First, the Telecommunications Act envisages and promotes broad-based entry as a socially-beneficial goal. By providing for resale and network element unbundling, the Act acknowledges that wholesale and UNE entry can offer competitive benefits to consumers sooner and in a more ubiquitous manner than would be the case if only facilities based entry were allowed. Hence, it is a mistake to argue that any public policy that possibly slows down facilities based entry favors competitors rather than competition, to the detriment of telecommunications consumers.

20. Second, the incumbent LEC economists are railing at a straw-man, namely the idea that *any* innovative activities by the BOCs or other incumbents would lead to new access mandates. In fact, the Act and the Commission are perfectly clear that what should be unbundled are *bottleneck* elements and functionalities linked to them. As we discuss further below, incumbent LEC innovations that are not inextricably linked to bottleneck elements should be free from unbundling requirements. We do not recommend (nor do we think that the Act demands) unlimited unbundling forever. The sound economic argument is that only those functionalities that are fundamental properties of the bottleneck fall within the proper purview of the unbundling requirement. Those functionalities that are not inextricably linked to the bottleneck need not be unbundled. When there is convincing evidence of the competitive provision of the functionalities, *i.e.*, self-provision or third-party provision, of a ubiquitous and effective substitute for the UNE without increasing the CLECs' costs of providing service, slowing their ability to offer service, or degrading the quality of their local service offerings, then the UNE should be removed from the national list.

21. The incumbent LECs' economists attempt to leave the Commission with the impression that our concept of unbundling, or indeed any concept of unbundling that would

apply to the original list of seven network elements, is extremely broad, and almost all-encompassing. Such an impression would be wrong. As public policy has long recognized, through regulation, antitrust litigation, and legislation, local telecommunications networks have been and today remain genuinely exceptional in their bottleneck properties. The concept of unbundling that is central to our testimony here, like any that we think is economically consistent with the Act, is driven by the linkage to the local telecommunications bottleneck. Arguments that would attempt to leave the impression that this concept of unbundling is a danger to the general economy, or to innovation generally, are just rhetoric targeted at a strawman.

22. Third, the implementation of the broad provisions of the Act should be guided by the competitive benchmark principles that we described for the Commission in our previous affidavit. In particular, in determining whether or not a CLEC would be impaired in its ability to offer local services, the Commission should test whether or not the absence of that element would weaken competitive forces that otherwise might foster a competitive local telecommunications marketplace that constrains all consumer prices to competitive levels grounded in forward-looking economic costs. In contrast, the incumbent LECs' economists focus instead on the ability of the incumbent LECs to raise prices by exercising some heretofore *unexploited* market power. For example, Hausman and Sidak urge the Commission to base its impairment test on whether or not an incumbent LEC profitably could *increase* prices above their current levels by 5% for a sustained period of time if the CLECs were denied access to a UNE (or group of UNEs). Since it should be clear that the status quo does not meet the competitive standard, the Hausman-Sidak view of the impairment test has nothing to do with bringing the benefits of competition to consumers, and should be firmly rejected by the Commission.

23. Like other economists, we believe that regulation should not significantly favor one competitor or one group of competitors. Regulation should be designed and implemented in a manner that favors competition, *i.e.*, that inures to the benefit of consumers. Local telecommunications services have been and remain exceptionally resistant to competition, and thus warrant regulatory public policy measures that go beyond those generally encountered in a typical antitrust litigation involving so called essential facilities. Incumbent LECs continue to have a virtual monopoly on the provision of certain basic telecommunications services – despite the fact that there are no legal constraints on competition in the provision of local exchange services and access – and they control key assets (the local telecommunications networks) that are necessary to deliver these services to the broad public (as opposed to narrow pockets of telecommunications-services consumers). They also enjoy substantial non-tangible advantages over possible rivals in the provision of such services. It is, therefore, a rhetorical skewing of the current competitive situation to bemoan the possibility that unbundling and TELRIC-based pricing may provide some limited benefits to one or several UNE-based competitor(s) in some narrow geographic market. The competitive reality is, of course quite different. Competition is a laudable goal. However, competition cannot be achieved and cannot deliver its projected benefits if actual or potential competitors are placed at substantial competitive disadvantage against the monopoly incumbents. Their disadvantage arises not as the result of sloth, incompetence, or lack of foresight, but merely because of the exceptional confluence of legal, historic, and economic forces that have made broad-scale competition virtually impossible. Those forces primarily grew out of legal impediments to entry and substantial economic barriers to entry. The barriers to entry arose from first-mover advantages and from large fixed and sunk costs associated with investments in the network and with elements of natural monopoly in some

portions of the local network. These forces have prevented potential rivals from competing with incumbent LECs, and regulatory entry barriers further allowed the incumbents to entrench their market position.

II. THE ESSENTIAL FACILITIES DOCTRINE IS NOT THE CORRECT PRINCIPLE FOR THE “IMPAIRED” AND “NECESSARY” TESTS.

24. The incumbent LEC economists urge the Commission to follow the essential facilities doctrine in determining whether or not to unbundle a network element.¹¹ In particular, they suggest that the Commission should ask whether or not the four prerequisites of the essential facilities doctrine are met. If yes, they say that the Commission should then engage in a fifth inquiry – whether or not “denial of access to that network element at TELRIC prices would impair competition at the end-user level.”¹² The essential facilities doctrine only applies if, *inter alia*, “it is impractical and unreasonable for the CLEC to duplicate the requested network element through any alternative source of supply.”¹³ Incumbent LEC economists also urge the Commission to unbundle a network element only if the potential entrant cannot profitably offer service without it if the incumbent charges 105% of the current price for the services. This “necessary plus” test for the impairment standard leaves unanswered the question of what test should be applied for proprietary elements under the “necessary” standard.

25. Quite apart from the inconsistencies in the arguments of the incumbent LEC economists, the essential facilities doctrine is not the right policy benchmark for determining the

¹¹ Aron-Harris at 46-53; Hausman-Sidak ¶¶ 94-130; Kahn ¶¶ 20-22.

¹² See Hausman-Sidak ¶ 123.

¹³ See *id.*

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unbundling and pricing criteria for UNEs. That doctrine applies to settings in which a monopolist (or a firm with monopoly power) has reached its position through superior foresight and industry but illegitimately attempts to lever or extend its monopoly power from the market in which such monopoly power legitimately “resides” to another market (or markets) in which competition would otherwise be possible. Consequently, the essential facilities doctrine treats the “basic” monopoly of the “defendant” with respect. It does not intend to undermine that monopoly and it does not directly regulate the commercial terms on which access to the “bottleneck” facility is granted. In other words, the doctrine is primarily concerned with an anticompetitive extension of monopoly power from one market to another.¹⁴

26. The role that the essential facilities doctrine plays in the antitrust laws is exemplified by some prominent that have applied it. In the *Terminal Railroad Ass’n* case, the attack was not on the St. Louis railroad terminal monopoly, but on the use of that monopoly to control long-haul railroad traffic to the west coast.¹⁵ In the *Image Tech. Servs. v. Eastman Kodak, Co.* case, the concern was not with Kodak’s “monopoly” over the replacement parts but rather with the extension of that “monopoly” to “service” of Kodak equipment.¹⁶

¹⁴ For example, because of its superior quality, intellectual property rights and market savvy, Kodak developed a monopoly in the film market. With that monopoly, Kodak earned exceedingly generous returns for its shareholders as amateur photography flourished after the end of World War II. Kodak, however, was not content with its monopoly in the film market, but instead attempted to leverage that monopoly into the film processing market. More precisely, Kodak began to require anyone who wanted to buy its film to use Kodak processing as well. It was only after Kodak began to engage in this anticompetitive behavior that the government brought an antitrust suit, which resulted in Kodak ceasing its attempt to monopolize the processing market, but permitting Kodak to retain its legitimate film monopoly. *United States v. Eastman Kodak Co.*, Civ. No. 6450, 1954 Trade Case ¶ 67920 (W.D.N.Y. Dec. 21, 1954).

¹⁵ See *United States v. Terminal Railroad Ass’n*, 224 U.S. 383 (1912).

¹⁶ 125 F.3d 1195 (9th Cir. 1997), *cert. denied*, 118 S. Ct. 1560 (1998).

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27. By contrast, this is not the issue that faced Congress or that now faces the Commission and the state regulatory commissions. Local exchange monopolies exist due to a confluence of historic legal and economic forces, and they currently remain, even absent regulatory impediments to entry, due to substantial economic barriers to entry arising in part from economies of scale, economies of scope, and significant sunk costs. Congress, the Commission, and its state counterparts are faced with the issue of how to break the incumbent LECs' existing monopolies over the provision of local exchange services and local access. Lifting of regulatory restrictions on entry into these services that existed prior to the Act was plainly not enough. To deliver the promise and the benefits of competition in the provision of local exchange services to the broad public, lawmakers instructed the Commission and state regulators to implement a more "interventionist" set of policies, including broad-based access to the products (wholesale) and certain assets (UNEs) controlled by the incumbents on regulated terms.

28. To that end, Congress established a regulatory scheme aimed at promoting rapid (wholesale, UNE, and/or facilities-based) entry into local exchange and local access services, an approach that will deliver greater benefits to consumers than regulation of monopoly so long as CLECs can effectively take advantage of those pro-competitive measures.¹⁷ Ultimately, Congress wanted to replace regulation with efficient competition, but that would only be in consumers' interest if entrants can effectively drive prices and service qualities to their appropriate competitive levels.

¹⁷ It is our understanding that the wholesale discount rates ordered by state commissions around the country have proven insufficient for those CLECs attempting to enter the local markets through local service resale to successfully compete against incumbents.

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29. Further, the objective of the Act is not to preserve regulated prices with forces of competition, but instead to harness forces of competition to drive prices away from their regulated levels and down (or perhaps even some up upon rebalancing) to genuinely competitive levels. Thus, impairment should be judged relative to the competitive standard that we discussed in our initial affidavit. This is not the approach advocated by the incumbent LEC economists, who do not provide a tight benchmark against which the feasibility of entry should be assessed. In fact, Hausman and Sidak (Aff. ¶ 119-122) want to test impairment by asking whether an incumbent LEC could profitably increase its prices by 5% – as per the Merger Guidelines. Hence, they propose to test whether there is some *unexploited* market power that would be exploited if UNEs were not available. By contrast, we advocate that, consistent with the objectives of the Act, the Commission should test whether the forces of entry are strong enough to create a competitive local telecommunications marketplace and competitive prices for local exchange and exchange access services.¹⁸

30. Analytically, our standard is this: Assume that offering local services requires NB activities together with B activities, where B stands for bottlenecked, and NB for non-bottlenecked activities. The competitive (or contestable) price, P***, is the minimum average forward-looking economic cost (“FLEC”) of B plus the minimum average forward-looking economic cost of NB. Under the optimistic presumption that entrants have an opportunity to attain efficient scale, without undue barriers, in performance of NB activities, they will be unable

¹⁸ It is also worthwhile to note that Hausman and Sidak (Aff. at ¶ 101) opine that the essential facilities doctrine has rarely been applied by the courts under U.S. antitrust law – although one of the most important instances involved telecommunications. *See MCI Telecommunication Corp. v. AT&T*, 708 F.2d 1081 (7th Cir. 1982), *cert. denied*, 464 U.S. 891 (1983). It seems to us unlikely that Congress would have prescribed unbundling under Section 252(c) and as a
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to compete effectively if they cannot obtain the services needed for activities B at minimum average FLEC of B (which is what is called unit-TELRIC in our initial affidavit). *This is the definition of impairment that flows from the competitive benchmark.* In fact, entrants will have a hard time attaining efficient costs for NB, so there is little danger of excessive entry even if UNEs are sold a bit below true TELRIC – thus there is no legitimate reason to shy away from trying to get TELRIC right as the basis for UNE pricing. If UNE prices are too high, or if UNEs are not unbundled properly, then entrants will be unable to attain unit costs as low as the competitive price, P***. Even if entrants could come in, then they would be unable to drive market prices down to the truly competitive levels of P***. Worse, they would not rationally enter under this known disadvantage, because they would anticipate that the incumbent would go down to at least P*** to protect its business, whereupon the entrant would be losing its costs of entry, some of which would indeed be sunk. This distinction between our test and that of Hausman and Sidak is clear. While they argue that the relevant end user price is 5% above the current price, our analysis shows that the relevant price is the truly competitive one.

31. Our proposed test may not seem to be entirely sufficient to guide unbundling decisions because it may appear to be based on the costs of just one competitor in providing the end-user service(s) using NB and B telecommunications elements. Hence, it might seem to support the incumbent LECs' economists who have argued that if there is just one entrant who can hoist or claw itself over the entry hurdles without obtaining some unbundled elements (here, B-activities) at current prices (allegedly set at TELRIC), then these UNEs can be declared "unnecessary" and be freed from the unbundling requirements of the Act. The "one is enough"

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prerequisite for BOC entry into the long distance market under Section 271 if it intended the
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unbundling test is inadequate under the competitive benchmark that we believe is appropriate for local exchange telephony services under the Act. Clearly, there might be potential entrants who could not survive in a competitive market even if they obtained UNEs at unit-TELRICs. Likewise, it is conceivable that there might also be just one entrant who has something sufficiently special on the NB side (for example) to overcome the entry impediments, even if no UNEs were sold at unit-TELRIC. So, the unbundling test should be clearly defined in terms of the general competitive standard (the P*** concept) to insure that active and potential rivals to the incumbent LEC will have the full opportunity to create an effectively competitive environment.

32. Our proposed test is responsive to the public policy standards developed by the Act and is applicable to the facts and the competitive setting in question. In particular, it is consistent with the Act's objective of stimulating entry into a monopoly market that is protected by entry barriers and replacing costly and inefficient regulation with true competition.¹⁹

33. Hence, as we concluded in our original affidavit, the Commission should find that an incumbent LEC's failure to provide access to a network element would impair a CLEC's ability to offer competing local exchange services and otherwise undermine the Act's objectives if the requesting CLEC would then experience greater delays in offering service, reduce the scope of its services, or offer lower quality service, including limitations on capabilities. That is because, in a competitive local telecommunications market, these effects would reduce the

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FCC to apply a standard that would rarely result in unbundling.

¹⁹ Of course, this test is too stringent for standard essential facilities cases in which prices have not been regulated and which lack the particular features of the local telecommunications market. But the goal here is to make sure that competition can take hold.

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viability or scope of a CLEC's service offerings, thereby reducing consumer choice and increasing the prices consumers pay.

34. As we also discussed in our original affidavit, a reduction in scope could manifest itself (i) geographically, if the CLEC provides service in fewer areas; (ii) as a reduction in the breadth of customers served, if the CLEC decides to offer services to fewer customer groups; or (iii) as a decrease in the range of products, if the CLEC offers a smaller set of local and exchange access services. A reduction in viability arises if the CLEC is unable to supply its services at minimum potential cost. Put another way, impairment could manifest itself as a CLEC's failure to enter geographic, customer, or product markets as broadly as it would have done absent the impairment. In addition, impairment could be revealed as a delay in CLEC entry to a particular geographic, customer, or product market.

35. The incumbent LECs' economists, relying largely on the essential facilities doctrine, argue that neither the necessary nor impair standards can be satisfied if a CLEC has self-provisioned a particular network element. As an initial matter, this argument should be irrelevant because the essential facilities doctrine is not the appropriate policy guide for deciding which network elements should or should not be unbundled. More importantly to consumers, such a rule would limit local competition to niche competition at best.

36. It is certainly true that CLECs have deployed their own facilities under special conditions to serve primarily high volume customers. The Commission, however, cannot infer from those limited market successes that CLECs are able to compete more broadly for more high volume customers, small business customers, or residential customers. In most instances where CLECs can profitably serve high volume customers using their own network elements, it is only because incumbent LECs currently charge their retail customers supracompetitive rates. In

doing so, they create a “price umbrella.” A price umbrella is not a permanent or reliable source of pricing protection. As CLECs recognize, incumbent LECs could drop their retail prices in response to competitive inroads at any time, thereby making competition for entrants who have higher costs than the incumbent LECs unsustainable. As we discussed in our initial affidavit, CLECs simply will choose not to enter if their costs exceed the prices they expect will prevail post-entry.

37. In those select cases where the obstacles to self-provisioning network elements prove the least cumbersome, and the potential revenues from a particular customer or set of customers are most attractive, aggressive CLECs may be able to compete by deploying their own facilities – despite the risk that the incumbent LEC may collapse its price umbrella. In most instances, however, the impediments self-provisioning presents will preclude a profit-maximizing CLEC from assuming the risks of entry and collapsing pricing unless it can offer service while incurring only competitive costs. Consequently, unless a CLEC has attained the scale economies necessary to compete with the incumbent broadly using its own facilities, the CLEC will not compete broadly for high volume, small business, or residential customers without relying at least in part on unbundled network elements.

38. In short, the existence of facilities-based competition for high volume customers today does not demonstrate the possibility of ubiquitous facilities-based competition. It shows only that niche entry is feasible in some instances. UNEs are a necessary prerequisite to broad competition for high volume customers, as well as for small business and residential customers, despite the existence of alternative facilities to serve a limited group of those customers. And, to the extent that high volume customers provide a natural launching point for small business and

residential customers, mass market competition would be undermined by incumbent LEC failure to unbundle that impairs the ability of CLECs to compete broadly.

III. TELRIC PRICING OF UNES DOES NOT INCREASE INCUMBENT LECs' COST OF CAPITAL.

39. In addition to asking the Commission to adopt a very stringent unbundling standard, the incumbent LECs' economists raise several arguments about undercompensation that they claim either (i) justifies unbundling few or no elements and (ii) necessitates unbundling at rates higher than TELRIC.²⁰ More specifically, they argue that technological obsolescence and decreasing end-user prices make TELRIC undercompensatory and, with respect to those elements that have a sunk cost component, they argue that there is a valuable option conferred on CLECs at the incumbent LECs' expense that further results in their undercompensation. These undercompensation issues, they insist, are inherent in an uncertain environment like telecommunications.

40. These arguments are unpersuasive. First, the financial markets take into account all the risk factors that the incumbent LECs' economists identify. Second, the option value that they identify is likely to be small as we explain below, and, in any event, Congress has concluded that the burden unbundling may impose on incumbent LECs is outweighed by the consumer gains from competition.

41. As a threshold matter, all the incumbent LECs' economists' attention to t uncertainty is a lot of argumentation about nothing special. All firms face uncertainty to different degrees. That is why the costs of capital that state commissions have awarded

²⁰ Hausman-Sidak ¶¶ 87-93; Kahn ¶ 22; Jorde-Sidak-Teece ¶¶ 27-42.

incumbent LECs in UNE rate proceedings have been much higher than the risk free rate of return. Incumbent LECs are being compensated for many forms of uncertainty, including regulatory uncertainty and the unknown effects of competition that cannot be diversified away.

42. Put another way, what the incumbent LECs' economists are railing about is nothing more than a regulatory measurement issue, rather than a conceptual one. But they fail to explain why the financial markets already have not factored these issues into the incumbent LECs' costs of capital. TELRIC based rates include the market calculated user cost of capital for the incumbent LEC and, unless the financial markets somehow uniquely fail with respect to the incumbent LECs in reflecting all the pertinent risks, the undercompensation claims are likely much exaggerated. Indeed, the Commission recently acknowledged that "[m]arket-based cost-of-capital methodologies incorporate the capital markets' assessment of *all* the forms of risk, including risk associated with a changing legal and regulatory environment."²¹ If anything, building the total company cost of capital into UNE rates is likely to be overcompensatory because the RBOCs and other incumbent LECs also engage in business activities that are more risky than their core business of providing local exchange and exchange access services on a wholesale and retail basis.

43. Moreover, TELRIC, by including adjustments for fill factors and asset lives, reflects estimates of technological obsolescence and, by including the compensation for uncertainty, it captures the risk that those estimates will be incorrect. Absent taxes, the familiar user cost of capital employed in standard investment models is approximated by the sum of the risk-adjusted discount rates, the exponential rate of expected depreciation, and the expected

exponential rate of change in the price of the capital good (all multiplied by the relative price of the capital good purchased).²² This definition has a simple interpretation: The user cost of capital is the financial cost of investing funds in a project plus the depreciation of the value of the capital good. This is why the economic lives used in TELRIC calculations are shorter than the physical lives of the assets. These shorter economic lives account for the expectation that productivity improvements and future price declines will make it cost effective to replace aging plant before the facilities are actually worn out. Further, the risk that the expected economic lives of network elements ex post prove to be shorter (or longer) than anticipated is captured in the cost of capital, *i.e.*, that is one of the risks for which incumbent LECs are already being compensated. Hence, there is no reason for the Commission to be concerned that the incumbent LECs are not being compensated today for the risk that the wireline telephony technologies of today on which the incumbent LECs rely to provide service could be rendered obsolete some day by alternate technologies.

44. The incumbent LECs' economists also focus a great deal of their rhetoric on the option value that unbundling conveys on CLECs at incumbent LEC expense. Even if the financial markets for some unknown reason did not factor in this option value into the incumbent LECs' costs of capital, this should have no bearing on the Commission's identification of network elements that incumbent LECs must unbundle. First, the option issue is theoretical packaging for what should be obvious to anyone – by requiring incumbent LECs to unbundle

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²¹ See *Prescribing the Authorized Unitary Rate of Return for Interstate Services of Local Exchange Carriers*, "Notice Initiating a Prescription Proceeding and Notice of Proposed Rulemaking," 13 FCC Rcd. 20561 ¶ 5 (1998)

²² See, *e.g.*, Kevin A. Hassett and R. Glenn Hubbard, "Tax Policy and Investment," in Alan J. Auerbach, ed., *Fiscal Policy: Lessons from Economic Research* (Cambridge: MIT Press, 1997).

their network elements at cost based rates, Congress imposed a burden on incumbent LECs in order to enable entry into local markets and spur competition. Congress specifically sought to reduce the risk that CLECs face when deciding whether or not to enter a local market because it concluded that the benefits of these market-opening measures outweighed the costs.²³ The Commission, we believe, should not now attempt to second-guess Congress' conclusion that this trade-off was worthwhile.

45. That is especially true given that the incumbent LECs provide no evidence to suggest that this option value is large enough to have a significant effect on their cost of capital.²⁴ Indeed, we suspect that in the local telecommunications context, there are significant reasons to believe that the quantitative effect would be far smaller than the rhetoric in this case would suggest.. It is perhaps most important to recognize that the unbundled UNEs will all be linked to the bottleneck, and so are unlikely to be subjected to an unusual degree of market risk. Moreover, inasmuch as the retail and other operations of the incumbent LECs are more risky than the wholesale bottleneck business, the overall cost of capital of the firm is unlikely to understate the riskiness of UNE sales. In addition, once we carefully distinguish among variable, fixed, and sunk costs, other clear reasons emerge why the concern over option value is overstated.

²³ Congress also conveyed a significant benefit on the BOCs that their economists conveniently ignore, namely the ability to offer in-region long distance services once their local markets have been opened to competition. It is certainly possible that this benefit outweighs the costs imposed by the unbundling requirements of the Act.

²⁴ The incumbent LEC economists also suggest that the option value issue reduces the incumbent LECs' incentives to innovate. As we discuss in Section IV, there is no reason for the Commission to conclude that unbundling bottleneck elements and elements linked to the incumbent LEC bottlenecks will undermine either CLEC or incumbent LEC incentives to innovate. Indeed, both incumbents and entrants may have greater incentives to innovate than ever before due to the pressures of a competitive environment.

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46. In elementary economics courses, students learn that there are two types of costs in the short run: variable costs, which change with the level of production, and fixed costs, which do not. First-best economic efficiency requires that prices be set equal to marginal costs, so that only consumers who value consumption at least as much as what it costs society to satisfy their demand will actually purchase the good or services. Students learn further that profit-maximizing firms should ignore fixed costs in the short run if they are irreversible or sunk. In the long run, all costs are reversible because firms can revisit their decision to continue operating in the industry (*i.e.*, firms could enter or exit the industry). Whether a cost is variable, fixed, or sunk depends on the time horizon and the characteristics of the underlying investment or expense.

47. In the real world, decisions occur continuously. Firms may decide to invest, disinvest, or wait to make a decision at a later time, or to reverse wholly or partially an earlier decision (*e.g.*, selling off assets). Information is continuously arriving and firms revise their dynamic investment strategies. In this more general framework, forward-looking costs are the ones that are pertinent to decision-making, and the costs that are incremental to the decision at hand are the ones that govern efficiency.

48. As we have explained above, TELRIC includes all costs that are relevant to the firm when it decides whether to invest in additional capacity (*i.e.*, enter). It is forward-looking by construction because it ignores all costs that may have been incurred in the past. It includes all future costs that result from the decision to enter irrespective of whether they are fixed or variable, or whether they will be sunk following the firm's decision.

49. Clearly, in local telecommunications, there are significant recurring variable and fixed operating costs. These costs would be avoidable if the firm subsequently decided to exit

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the industry. Also, while some of the plant investment may not be usable in another application, this is not true of all of the investment. For example, much of the switch and switching center investment clearly is not irreversible. Switches can be moved to new locations and the end-office real estate can be sold. Rights of way, conduit, and even excess wireline facilities, which may face reduced demand for ordinary telephone lines, may be sold for other uses (such as delivery of video to the home via technologies such as ADSL). Because the incumbent can sometimes be able to sell its plant to another firm producing different products or services, this portion of investment would be recoverable.²⁵

50. The fact that significant portions of incumbent LECs' network investments are not necessarily sunk provides another indication that the option value on which the incumbent LECs' economists place so much emphasis need not be as substantial as their degree of rhetorical attention would suggest. That is because, to the extent that investments in local plant are reversible, *incumbent LECs do not need to recover the opportunity cost associated with the option to wait to invest*. Absent substantive evidence that this option value is large and absent reason to conclude that the financial markets have not accounted for the option value, the Commission should not conclude that unbundling at TELRIC will result in undercompensation.

51. With respect to those elements that have relatively small sunk costs, the incumbent LECs' economists argue that the Commission should not require unbundling because they are not necessary. While it is true that relatively smaller sunk costs can help to diminish the economic barriers to entry, they are unlikely to eliminate them in the local exchange context. Mixing self-provision of some UNEs with purchase of others from the incumbent LEC is likely

²⁵ In addition, it is our understanding that most of the incumbent LEC capital stock invested prior to 1990 soon will be replaced. See, e.g., Lee L. Selwyn and Patricia D. Kravtin, *Analysis of*
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to create new necessary costs of both the unsunk and the sunk varieties. Moreover, it is crucial to evaluate the degree of sunk costs that will face the entrant, over the time horizon that is pertinent to its entry decision, and in light of the likelihood that the incumbent will react rationally to its entry with a price war that may well drive prices down during its duration to the level of the incumbent's unsunk variable costs. It is the anticipation of this outcome that acts as a powerful disincentive to entry in the first place.

52. It is critical to recognize, as we explained in our initial affidavit, that an incumbent LEC's failure to unbundle a network element will inflate a CLEC's costs above the incumbent LEC's costs for that element if alternative sources for the element, including self provision, do not allow the CLEC to achieve the same scale and scope economies as the incumbent LEC, if they force the CLEC to incur assemblage costs, or if the market prices for those alternatives are higher than their corresponding TELRIC per unit of service.

53. Because incumbent LEC local networks are ubiquitous and network costs are largely fixed (and some sunk), incumbent LECs enjoy high economies of scale and scope that allow them to offer service at the lowest potential cost. Even if the TELRIC (total rather than per-unit costs) a CLEC incurs when it self-provisions a network element were no higher than the incumbent LEC's TELRIC of providing that network element, which is unlikely to be the case, the CLEC's lack of an equivalent local traffic base will cause its per-unit costs of self-providing the element to be much higher than the incumbent LEC's. Further, assemblage costs are costs borne by the CLEC when it mixes its own facilities with unbundled network elements. These

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Incumbent LEC Embedded Investment (Boston: Economics and Technology, Inc., 1996).