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Pricing Network Elements under the Telecommunications Act of 1996: Back to the Future

by

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Introduction

The Telecommunications Act of 1996 ("TA96") is a revolutionary piece of legislation. Prior regulatory reforms in other industries, like railroad freight transportation, mandated less government intervention and increased freedom on the part of firms. The TA96, however, moves in a different direction, adding regulatory mechanisms that ostensibly seek to increase the number of local exchange carriers ("LECs") and to increase innovation in the provision of local telecommunications service. Congress concluded that mandated access by new entrants, referred to as competitive LECs ("CLECs"), to the incumbent LECs' ("ILECs") local loop and related facilities was necessary to spur competition for local telephone service because it believed that the facilities were essential to entry in many cases.

The TA96 attempted to encourage new entry in local exchange services in three ways: (1) require interconnection of physical networks and reciprocal compensation between carriers for the transport and termination of local traffic; (2) require ILECs to "unbundle" those elements of their networks that are necessary for competition — i.e., unbundled network elements ("UNEs") — and allow CLECs to purchase them to augment their own facilities in order to provide competitive local service; and (3) require ILECs to make their retail local service offerings available to CLECs on a discounted wholesale basis. The unbundling requirement permits a CLEC to compete with an ILEC using a mix of its own network facilities while leasing others from the ILEC. Congress envisioned the ability of leasing such facilities as enhancing the development of


   It would be gross understatement to say that the Telecommunications Act of 1996 is not a model of clarity. It is in many respects a model of ambiguity or indeed even self contradiction. That is most unfortunate for a piece of legislation that profoundly affects a crucial segment of the economy worth tens of billions of dollars.


2. The local loop refers to the cable that runs from an end-user's location (e.g., a home or a business) to the LEC's local switching office. These cable facilities consist of both copper and fiber optic cables.

new, competing local networks. Furthermore, it was maintained that permitting CLECs to purchase retail services at wholesale prices allows CLECs to offer a broader range of services than they may otherwise have been able to offer.

The TA96 and the Federal Communications Commission's ("FCC") resulting regulations have generated significant legal controversy. Unsurprisingly, one central dispute relates to the appropriate charges that CLECs should pay for UNEs and other network facilities. Overcharging for UNEs, for example, would allow ILECs to set prices above competitive levels — if there are no substitutes for such service. In the presence of supracompetitive UNE fees, CLECs would not be able to offer alternative services in a competitive manner, and efficient leasing of ILEC facilities would be retarded. Alternatively, setting the prices of UNEs too low would induce inefficient entry through the uneconomic leasing of ILEC UNEs and discourage ILECs from maintaining and expanding their networks, even when such investments would be economically efficient. CLECs could take advantage of the artificially low price of using UNEs, while the ILEC would be left under-compensated.

Conceptually, the price of UNEs could be set from three different perspectives. First, the regulatory body could calculate the historical costs of the facilities employed in the ILEC's network and project them into the future. Such an approach would be "backward looking," accounting for the historical expenditures the ILEC incurred in originally building the network. While this method of cost calculation would permit ILECs to recover historical costs, historical information does not necessarily reflect the market value of existing facilities. In addition, using historical costs has attributes similar to those existing under traditional rate-of-return regulation. Relying on historical costs reduces incentives to innovate and reduce costs.

Second, the regulatory body could use the costs of operating modern, efficient technology, regardless of whether the ILEC employs it. The FCC has selected this model for UNE pricing,

7. We focus on UNE costs in this Article because UNE cost methods are applied to reciprocal compensation and they are sometimes used as a cost reference for other aspects of an ILEC's network.
requiring that "the total element long-run incremental cost ["TELRIC"] of an element should be measured based on the use of the most efficient telecommunications technology currently available and the lowest cost network configuration available." This "efficient network" approach represents a long-run, idealized, static model of efficiency. While this approach is likely to spur entry into local telecommunications services, it may seriously undercompensate ILECs and may lead to excessive UNE leasing by CLECs. Furthermore, this approach does not satisfy the compensation requirements of the TA96, as the Eighth Circuit recently concluded in *Iowa Utilities Board v. Federal Communications Commission.* The United States Supreme Court is currently reviewing this decision.

Third, the regulatory body could use the actual incremental costs that the ILEC incurs or will incur. This approach would include cost reductions from an ILEC's anticipated technological upgrades. This perspective reflects a dynamically efficient market where costs are incurred to move from one technology to another and where new technologies may be introduced over time — when an economic justification exists to replace the older technology. This approach retains incentives for ILECs to maintain and upgrade their networks while encouraging efficient entry. Importantly, this "back to the future" method compensates ILECs in a manner more consistent with the requirements of the TA96. The Eighth Circuit's recent opinion in *Iowa Utilities* has suggested this third approach would be a more appropriate costing method than the FCC's interpretation of TELRIC.

In this Article, we conclude that the Eighth Circuit's legal framework is more consistent with sound economic principles than either the TELRIC or historical approaches. Using actual incremental costs creates a more efficient competitive standard for local telephony. Section II of this Article summarizes the TA96, discussing the provisions that relate to LECs, the legislative history of the TA96 and the Eighth Circuit's recent case interpreting the UNE pricing provision. In Section III, we explore the various economic approaches for UNE pricing and explain why an approach based on the incremental costs of using the ILECs' actual network with

11. 219 F.3d at 750-52.
expected network upgrades represents the best method for costing UNEs. In this section, we also discuss why this “back to the future” approach falls within the legal ambit of the TA96. Finally, in Section IV, we offer some concluding remarks.

II

Overview of the Telecommunications Act of 1996

The growth of American Telegraph and Telephone (“AT&T”) as a dominant telephone provider by the early 1930s spurred Congress to pass the Telecommunications Act of 1934 (“Act”). The Act’s purpose was to “regulat[e] interstate and foreign commerce in communication by wire and radio so as to make available . . . a rapid, efficient, Nation-wide, and world-wide wire and radio communication service.” The Act treated telecommunications service providers as monopolies and subjected them to rate regulation. The belief that the telecommunications industry gravitated toward natural monopoly was manifested in state government policies that gave exclusive franchises to telecommunications companies. As Congress observed, government policy “relied on heavily regulated monopolies to provide communications services to businesses and consumers.”

Originally, rate of return regulation was the predominant form of ILEC regulation. This form of regulation examined the ILEC’s costs associated with providing local service, including government mandated services, and estimated a reasonable rate of return based on this cost structure. Rates reflected embedded cost plus some

12. See Aimee M. Adler, Competition in Telephony: Perception or Reality? Current Barriers to the Telecommunications Act of 1996, 7 J.L. & Policy 571, 574 (1999). Prior to the Communications Act of 1934, AT&T avoided regulation and antitrust action through a voluntary commitment to interconnect its long distance network to all local providers in the Kingsbury Commitment of 1913. AT&T remained free to refuse to interconnect its local network with competing local networks. At the time, the long distance network was considered by many to be the troublesome bottleneck point in the network. See e.g. Gerald W. Brock, Telecommunications Policy for the Information Age 65, 66, 102 (1994); Hank Brands & Evan T. Leo, The Law and Regulation of Telecommunications Carriers 4 (Harv. Univ. Press 1999).
15. See AT&T Corp., 525 U.S. at 370.
18. The FCC has often mandated the provision of telecommunications services to satisfy social policy goals. Congress has done so itself on occasion. See e.g. 47 U.S.C. § 225
specified rate of return. Thus, local and state authorities fixed the rates ILECs could charge customers in order to achieve a targeted return for ILEC investors.

In addition, regulators often pursued public policy goals designed to keep rates low for some politically sensitive services — primarily residential local services to promote universal service objectives, especially in rural areas. This led to relatively higher rates for less politically sensitive services, like business services. These patterns of cross-subsidy were significant, long-lived, and widespread in the United States. In order to sustain these policy-induced patterns of cross-subsidy, regulators found it essential to attempt to preclude entry into telecommunications markets. Thus, many laws existed that insulated ILECs from the threat of potential entry into local service.

This regulated regime began to crumble visibly with the government’s antitrust case against AT&T. AT&T resulted in a consent decree that broke up AT&T into Regional Bell Operating

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19. See e.g. Rural Tel. Coalition v. FCC, 838 F.2d 1307 (D.C. Cir. 1988).
22. U.S. v. Am. Tel. & Telegraph Co., 552 F. Supp. 131 (D.D.C. 1982). However, the FCC moved toward more competitive policies in telecommunications prior to the AT&T decision through various regulations. See Joseph D. Kearney & Thomas W. Merrill, The Great Transformation of Regulated Industries Law, 98 Colum. L. Rev. 1323, 1341-43 (1998); Kearney, supra n. 17, at 1171, 1175-76.
Companies ("RBOCs") and a long distance telephone provider.\(^{23}\) The divestiture spun off the long distance portion of the Bell System largely to create a more level playing field for the now-competitive long distance telephone services.\(^{24}\) The RBOCs were required to provide non-discriminatory access to long distance providers, but were not required to open up the local loop for competition.\(^{25}\) After the divestitures, the RBOCs controlled the largest ILECs.\(^{26}\)

With respect to local service, the government continued to pursue policies that generally supported rate regulation, including protection from competitive entry.\(^{27}\) Without access to the local loop, local entry was very limited. Prior to the enactment of the TA96, the top ten local telephone companies controlled ninety-two percent of the local telephone network.\(^{28}\) Moreover, none of the top ten telephone companies competed between each other for local service.\(^{29}\) As the House Report for the TA96 stated:

> In the overwhelming majority of markets today, because of their government sanctioned-monopoly status, local providers maintain bottleneck control over the essential facilities needed for the provision of local telephone service. The bottleneck consists of the elements needed to originate and terminate a telephone call — the equipment with capabilities of routing and signaling calls, network capacity and network standards. The inability of other service providers to gain access to the local telephone companies equipment inhibits competition that could otherwise develop in the local exchange market.\(^{30}\)

One of the goals of the TA96 was to open telecommunications

\(^{23}\) *U.S. v. Am. Tel. & Telegraph Co.*, 552 F. Supp. at 139.

\(^{24}\) *Id.*

\(^{25}\) *Id.*

\(^{26}\) *Id.*

\(^{27}\) However, rate regulation became more flexible. Following the lead of the FCC from the late 1980s, many state jurisdictions adopted alternative, more flexible forms of regulation such as price cap regulation. See Kearney, *supra* n. 17, at 1178; Alexander C. Larson, *An Economic Guide to Competitive Standards in Telecommunications Regulation*, 1 CommLaw Conspectus 31, 36-40 (1993); 16 State Telephone Regulation Report (No. 7, Aug. 20, 1999, & No. 8, Sept. 3, 1999) (Thirty-six states had substituted price caps or incentive regulation for traditional cost-plus, rate base/rate of return regulation at the time the article appeared.). Price cap systems allowed LECs to price freely within a specified range.


\(^{29}\) *Id.*

\(^{30}\) *Id.* at § 49 (reprinted in 1996 U.S.C.C.A.N. 10, 13).
competition in the local exchange segment of the industry. By opening local telephone services to competition, the House Report found that “[t]echnological advances would be more rapid and services would be more widely available and at lower prices.”31

In order to achieve these ends, the TA96 continues the historic dual jurisdiction of federal and state oversight of the telecommunications industry.32 The federal role under these statutes is to foster competition and create a competitive framework for LECs.33 The states are given the more limited authority to implement and tailor the federal framework in a manner that does not contravene it.34 The TA96 bars states and local governments from “prohibiting the ability of any entity to provide any interstate or intrastate telecommunications service.”35 Additionally, it gives the FCC the authority to preempt any state or local laws that have the effect of acting as entry barriers.36 This dual jurisdiction is reflected in several other aspects of the TA96. For example, states are authorized to approve certain agreements between LECs that foster competition, but they are to do so under a pricing framework established by Congress.37 Similarly, states are authorized to establish access and interconnection obligations of LECs, as long as they are not inconsistent with the goals of the TA96.38

To introduce competition for local telephone service, the TA96 created a hierarchy of duties for different types of telecommunications carriers. First, the TA96 restates the general duty of all telecommunications carriers to interconnect with the facilities and equipment of all other telecommunications carriers.39 This interconnection requirement protects the ease of access of the entire national telecommunications network to all carriers.

Second, the TA96 creates additional duties for all LECs — both

32. See Harris & Kraft, supra n. 21, at 95.
33. See 110 Stat. at 56.
34. The United States Supreme Court has observed that the states must hew to the lines drawn by the statute. See AT&T Corp., 525 U.S. at 378 n. 6. Furthermore, some commentators have argued that the FCC’s policies have attempted to thwart this dual jurisdiction by limiting state discretion too much. See e.g. Jerry A. Hausman & J.G. Sidak, A Consumer Welfare Approach to the Mandatory Unbundling of Telecommunications Networks, 109 Yale L.J. 417, 500-03 (1999).
36. Id. § 253(d).
37. Id. § 252(d) & (e).
38. Id. § 251(d)(3).
39. Id. § 251(a). Prior to the TA96, the same obligation existed. See id. § 201 (1994).
ILECs and CLECs. All LECs have five obligations: 40 (1) to provide non-discriminatory service to resellers of telecommunications services provided by the LEC; (2) to permit number portability; 41 (3) to provide dialing parity; 42 (4) to afford access to any right-of-way the LEC may control; and (5) to provide reciprocal compensation “for the transport and termination of telecommunications.” 43 These LEC provisions encourage competition by ensuring that customers can both access other LEC providers via the local loop as well as switch between providers without incurring the inconvenience of having to change telephone numbers. The provisions also encourage new forms of competition by allowing LECs to resell services provided by other LECs. The reciprocal compensation provision ensures that the costs of terminating the traffic of another LEC are recovered through reciprocal — but not necessarily equal — charges for the transport and termination of traffic. Finally, the provision granting any LEC access to another LEC’s right-of-way encourages facilities-based competition, since other LECs may build competing networks along these rights-of-way without having to secure legal assurance for another, parallel right-of-way.

Third, Congress mandated a set of special duties for ILECs in addition to complying with the duties for all LECs. 44 The ILEC has special obligations to provide interconnection services to any competitor to route and transmit telephone exchange service at any technically feasible point within the network. 45 The TA96 mandates

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40. See id. § 251.

41. Congress has defined number portability as the ability of a telephone customer to “move” his or her number when changing to another LEC. H.R. Rpt. 104-204, at 72 (July 24, 1995) (reprinted in 1996 U.S.C.C.A.N. 10, 37).

42. Congress referred to dialing parity as the ability to dial the same number of digits to reach another number, regardless of who is providing the service. See id. (reprinted in 1996 U.S.C.C.A.N. 10, 38).

43. 47 U.S.C. § 251(b).

44. The TA96 defines ILECs as carriers who provided local exchange service on February 8, 1996. 47 U.S.C. § 251(h)(1). The TA96 permits the FCC to designate additional LECs as ILECs in the future if three conditions are met: (1) the market position of the LEC is comparable to that of an ILEC defined in 47 U.S.C. § 251(h)(1); (2) the LEC has displaced the previously designated ILEC; and (3) the designation is “consistent with the public interest, convenience, and necessity and the purposes of this section.” Id. § 251(h)(2). The TA96 also provides certain exemptions to LECs that otherwise would be classified as ILECs. Most notably, the TA96 exempts rural exchange carriers and local exchange providers that control fewer than two percent of the country’s subscriber lines. Id. § 251(f). A great deal of legal controversy has brewed with respect to the legal standards satisfying the rural exemption. See Iowa Util. Bd., 219 F.3d at 759-62.

45. See 47 U.S.C § 251(c)(2)(A) & (B). Greive and Levin discuss the ambiguity of
that the ILEC provide interconnection to CLECs "that is at least equal in quality" to that provided by the ILEC "on rates, terms, and conditions that are just, reasonable, and nondiscriminatory." In addition to interconnection, the TA96 requires ILECs to: (1) unbundle components of the network (UNEs) and lease them to competitors; (2) provide physical collocation of CLEC equipment that is necessary to interconnect with the ILEC on its premises; and (3) offer retail services for resale at a wholesale discount.

The unbundling provision allows CLECs to use discrete parts of an ILEC's network and facilities without incurring the costs of using the other portions of the network. The CLEC can use a combination of its own facilities and the ILEC's facilities to create its own competing network that provides service to subscribers. FCC regulations originally identified seven general network elements to be unbundled. The seven network elements encompass the following:

a) Loop and Subloop
   1) Local loop
   2) Subloop (any part of the loop that can be accessed through terminals in the ILEC's outside plant)
   3) Line conditioning (removal from loop of devices that may diminish high-speed capability), attached electronics, and high capacity loops
   4) Dark fiber

47. Id. § 251(c)(2)(D).
48. Id. § 251(c)(3).
49. See id. § 251(c)(6) (Virtual collocation is permitted when actual collocation is infeasible as a technical matter, such as limited space at the relevant network facility.).
50. Id. § 251(c)(4).
52. In re Implementation of the Loc. Competition Provisions of the Telecomm. Act of 1996, 15 F.C.C.R. 3696, at ¶ 175 (1998) (The Commission states, "[W]e conclude that, with the exception of Digital Subscriber Line Access Multiplexers (DSLAMs), the loop includes attached electronics, including multiplexing equipment used to derive the loop transmission capacity.").
53. Id. at ¶ 176.
54. Dark fiber is listed in the description of both loops and interoffice facilities UNEs. See id. at ¶ II, Executive Summary. With respect to loops, the FCC did not specify
b) Network Interface Device


c) Switching Capability
   1) Local switching capability\(^{55}\) (exception to unbundling in certain higher density zones when other requirements met)
   2) Local tandem switching
   3) Packet switching\(^{56}\)

d) Interoffice Transmission Facilities (includes dedicated transport, dark fiber, shared transport)

e) Signaling Networks and Call-Related Databases
   1) Signaling networks (when CLEC purchases switching, or to CLEC with switching capabilities)
   2) Call related databases (including access to emergency 911, line information, and other databases)
   3) Service management systems (databases and systems for call processing)
   4) Operator Services and Directory Assistance (only required in the absence of customized routing or compatible signaling protocol)
   5) Operations Support Systems

The FCC also required that ILECs “share” the high-speed frequency of the loop with CLECs.\(^{57}\) The FCC maintains that this will enable competitive carriers to provide Digital Subscriber Line (“DSL”)-based services over the same telephone lines simultaneously used by incumbent LECs to provide basic telephone service.\(^{58}\)

With respect to the collocation provision, the TA96 requires an ILEC to grant access to a LEC competitor of “such public switched facilities and functions as may be requested ... for the purpose of

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\(^{55}\) This includes all features that the switch is capable of: white page listing, telephone number, local area signaling, and service features such as Centrex.

\(^{56}\) A required element where the ILEC has deployed digital loop carrier systems, and the ILEC has not permitted CLEC to deploy DSL Access Multiplexer at the remote terminal, and the ILEC has deployed packet switching for its own use.

\(^{57}\) In the Matters of Deployment of Wireline Services Offering Advanced Telecommunications Capability, 14 FCC Red 20912 (1999).

enabling . . . [the LEC] to provide telecommunications services.\textsuperscript{59}

Finally, the resale provision permits CLECs greater ease in offering services they cannot provide independently. While all LECs have the duty to offer retail services for resale, ILECs have the additional duty to offer for resale, at wholesale rates, "any telecommunications service that the carrier provides at retail to subscribers."\textsuperscript{60} Congress has defined the wholesale rate as the retail rate charged to subscribers less "any marketing, billing, collection, and other costs that will be avoided by the local exchange carrier."\textsuperscript{61}

Crafting the regulations governing the pricing mechanisms are critical to effectively implement the UNE, interconnection and collocation provisions of the TA96 and attain the goal of encouraging efficient competitive behavior. Congress has created guidelines for a general pricing standard for states and the FCC to follow in implementing these aspects of the TA96.\textsuperscript{62} With respect to both interconnection and UNEs, the TA96 requires that ILEC "rates, terms, and conditions" for usage be "just, reasonable, and nondiscriminatory."\textsuperscript{63} Like the interconnection and UNE provisions, collocation rates and other terms should be nondiscriminatory.\textsuperscript{64} The costs of providing interconnection and UNEs are the bases for developing their prices.\textsuperscript{65} These prices may include a reasonable profit for the ILEC.\textsuperscript{66} The statute, however, leaves regulators with the task of implementing the specific pricing methodology to satisfy the requirements of these guidelines.

To fill the statutory void, the FCC adopted a uniform pricing methodology for interconnection, UNEs, and collocation.\textsuperscript{67} The FCC initially adopted a methodology that it dubbed "Total Element Long Run Incremental Cost," or TELRIC.\textsuperscript{68} We briefly describe TELRIC

60. Id. § 251(c)(4)(A). However, a state regulatory commission may prevent the reseller from offering the services to a different class of customers than the ILEC had provided. See id. at § 251(c)(4)(B).
61. Id. § 252(d)(3).
62. See id. § 251.
63. Id. § 251(c)(2)(D), (c)(3).
64. See id.
65. See id. § 252(d)(1)(A)(i).
66. See id. § 252(d)(1)(A)(ii), (B).
68. See id. at ¶ 672.
The TELRIC approach establishes cost by measuring long run incremental costs plus some allocation of forward-looking joint and common costs. Furthermore, by using long-run costs as a basis, all costs associated with the network are considered avoidable.

Under TELRIC, the price for a specific network element is calculated by adding: (1) the long run incremental costs associated with that element; and (2) some portion of unattributable, forward-looking, joint and common costs to the network, including a reasonable return on investment. These figures are used to estimate the cost of constructing an entirely new, hypothetical network. This hypothetical network relies on the existing location of the ILEC's switching centers and uses the most efficient technology available in the telecommunications industry regardless of the technology the ILEC actually uses for itself and furnishes to the CLEC.

The Eighth Circuit recently rejected the FCC's TELRIC method of costing and pricing. The court reasoned that because TELRIC relied on the cost structure of a hypothetical network that maintained all of the newest available technology, it violated the statutory requirement that rates be "based on the cost ... of providing the interconnection or network element." The court concluded that this language suggested that Congress sought to implement a pricing method that relies on actual costs, not on the cost some imaginary carrier would incur by providing the newest, most efficient, and least costly substitute for the actual item or element which will be furnished by the existing ILEC pursuant to Congress's mandate for sharing.

Congress required ILECs to share their existing facilities and equipment with new competitors to bring competition to local telephone service. It expressly said that the ILECs' costs of providing those facilities and equipment were to be recoverable through just

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69. A more detailed discussion is found in infra Part III(B).
70. See First Report and Order, supra n. 67, at ¶ 675.
71. See id. at ¶ 677.
72. See id. at ¶¶ 672-673.
73. See id. at ¶ 685; see also Harris & Kraft, supra n. 21, at 104 ("The TELRIC approach calls for estimating the cost of reconstructing an entire, hypothetical network using the best available forward-looking technology. TELRIC holds constant only the company's existing switch locations and thus, effectively allows all capital expenses to be treated as variable costs.").
75. Id. at 750.
76. Id. at 750-52 (citation omitted).
and reasonable rates.\textsuperscript{77} According to the court, Congress did not expect a new competitor to pay rates for a “reconstructed local network,” but for the existing local network it would be using in an attempt to compete.\textsuperscript{78} Since the CLEC “piggybacks” onto the ILEC’s network, the statute permits the ILEC to recoup the cost of providing that ride.\textsuperscript{79}

In requiring ILECs to provide UNEs to CLECs, Congress treats the local loop and other facilities as if those facilities were essential for entry. Some ILECs had argued before the United States Supreme Court that the TA96 was simply Congress’ restatement of the common law antitrust principles of the essential facilities doctrine.\textsuperscript{80} Had this been the case, Congress would not have needed to create a whole new body of regulations to identify and price these services.\textsuperscript{81} It could have simply eliminated entry barriers and barred state regulation of pricing, leaving to the courts and government antitrust authorities the enforcement of the antitrust laws, as is the case for most other industries.\textsuperscript{82} Alternatively, Congress could have

\begin{itemize}
\item \textsuperscript{77} 47 U.S.C. § 251.
\item \textsuperscript{78} Iowa Util. Bd., 219 F.3d at 750 (citation omitted).
\item \textsuperscript{79} Id. at 751.
\item \textsuperscript{80} AT&T Corp., 525 U.S. at 388. Section 251(d)(2) sets out the legal requirements to access ILEC UNEs:
\begin{quote}
(2) Access standards. — In determining what network elements should be made available for purposes of subsection (c)(3) [unbundling], the Commission shall consider, at a minimum, whether — (A) access to such network elements as are proprietary in nature is necessary; and (B) the failure to provide access to such network elements would impair the ability of the telecommunications carrier seeking access to provide the services that it seeks to offer. U.S.C. § 251(d)(2) (emphasis added).
\end{quote}

Notably, the FCC’s First Report and Order, supra n. 67, mentions the term “essential facilities” once in 700 pages and the term is not used as a standard for determining which incumbent’s facilities should be subject to mandatory unbundling. In vacating the FCC’s initial unbundling requirements, the United States Supreme Court did not direct the FCC to employ the essential facilities doctrine. AT&T Corp., 525 U.S. at 389.

\item \textsuperscript{81} Cf. John T. Soma, et al., The Essential Facilities Doctrine in the Deregulated Telecommunications Industry, 13 Berkeley Tech. L.J. 565, 609-10 (1998) (arguing that regulators could apply the essential facilities doctrine to the TA96 without violating the language and goals of the statute).
\item \textsuperscript{82} The Federal Trade Commission and Department of Justice do maintain antitrust jurisdiction over several aspects of the telecommunications industry. For example, the agencies ultimately have jurisdiction to evaluate the competitive effects of mergers under Section 7 of the Clayton Act. 15 U.S.C. § 18 (1996).
\end{itemize}
explicitly sought to emulate the antitrust laws through the regulatory process. For example, Canadian regulators have adopted telecommunications reforms that hew closer to the essential facilities doctrine.\(^3\)

This institutional choice deserves some brief comment. In enacting the TA96, Congress may have sought a uniform solution to the competitive issues with respect to ILECs. Through FCC and federal statutory guidelines, a large number of competitive issues could be addressed uniformly. Under the auspices of the courts and federal antitrust enforcers, these issues may have reached different resolutions depending on the court and other circumstances.\(^4\)

The common law of the essential facilities doctrine might evolve in unpredictable ways to handle these new cases. A legislative approach also prevents CLECs from incurring larger, individualized litigation expenses before they could even gain interconnection or the UNEs that the TA96 provides. Incumbents may initiate litigation to cause other new entrants to incur disproportionate expenses in responding to a lawsuit, forestalling or entirely precluding entry.\(^5\)

Moreover, the reaches of the essential facilities doctrine are

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83. See Loc. Competition Decision, at ¶¶ 66-126 (Canadian Radio-Television and Telecomm. Commn, May 1, 1997). Unbundling occurs only for those network components that are essential facilities. Three criteria are required to satisfy the essential facility requirement: (1) the network is monopoly controlled; (2) a CLEC needs the network element to provide services; and (3) a CLEC cannot duplicate the network element economically or technically. See id. at ¶ 74; see also Grieve & Levin, supra n. 45; Willie Greive & John Lowe, Canada, International Telecommunications Law (BNA Intl. 1999).

84. Some economists have advocated a case-by-case examination. But such an approach could be quite onerous and could require states to take part in the process. See Hausman & Sidak, supra n. 34, at 500-01.

85. Robert Bork suggests that litigation can be used as a predatory tool. An incumbent's use of litigation can create costs that are disproportionately borne by new entrants who may have more limited resources than their entrenched rivals. Even when the entrant is a relatively large firm with significant resources, litigation still acts as a conduit for forestalling competition, extending monopoly rents. Those rents may be relatively large in comparison to the costs of litigation. See Robert H. Bork, The Antitrust Paradox: A Policy at War With Itself 347-64 (Basic Books 1978).

The difficulty with Bork's theory, however, is that an incumbent may also seek access to the courts to prosecute other, more legitimate aims, such as avoiding burdensome regulations. As a result, such litigation is typically protected under the First Amendment unless it is a sham calculated to simply violate the antitrust laws. See E. R.R. Pres. Conf. v. Noerr Motor Freight, Inc., 365 U.S. 127 (1961). In addition, less regulated competitors may use litigation and the regulatory process to stall relaxed regulation for incumbents. New entrants may therefore also attempt to use the courts and the regulatory process to their advantage.
more limited than the TA96. Commentators have noted that the doctrine is rarely used for three practical reasons. First, with liberal access, firms may avoid making significant investments in their own facilities and instead rely on the investments of their rivals. Second, liberal access discourages firms from making riskier, innovative investments. Firms will be unable to reap the benefits of being a "first-mover" since their rivals will be able to access the new facility. Third, in mandating access, a court must act like a regulator in setting reasonable terms and conditions to facilitate competition. Setting rates too high will preserve the monopolist’s control of the market, while setting rates too low will cause less investment in the facility and create more entry without facilities-based investment than an efficient market would encourage.

As a result, the threshold for prevailing under the essential facilities doctrine is rather high. Courts have established four legal requirements: (1) control of the facility by a monopolist; (2) an inability of a competitor to replicate the facility in a reasonable manner; (3) the monopolist’s denial of use of its facility to rivals; and (4) technical feasibility of opening access to the facility to rivals. Thus, a competitor’s need for the facility must be essential for entry. Without it, the competitor would be unable to be in business.

86. Hausman and Sidak observe that the doctrine "has shown the capacity to screen out a multitude of unmeritorious claims." See Hausman & Sidak, supra n. 34, at 467. They contend that the FCC's application of the TA96 would allow greater access to UNEs than the essential facilities doctrine. See id. According to them, this result is dubious because the FCC's belief "that the public interest is advanced by the simplistic rule that any compulsory sharing that is technically feasible should be required" is doubtful. Id.


88. AT&T has argued that it should not have to provide access to its cable television facilities to competitors for similar reasons. See C. Michael Armstrong, Speech, Telecom and Cable TV: Shared Prospect for the Communications Future (Washington Metropolitan Cable Club, Nov. 2, 1998) (available at <http://www.att.com/speeches/item/0,1363,948,00.html>).

89. For example, courts have rejected the essential facilities doctrine for shippers who are captive to one railroad where the shippers wished to gain access to the tracks to operate their own trains and interchange with other railroads. See e.g. Laurel Sand & Gravel, Inc. v. CSX Transp., Inc., 924 F.2d 539 (4th Cir. 1991); Bar Technologies Inc. v. Conemaugh & Black Lick R.R. Co., 73 F. Supp. 2d 512 (W.D. Penn. 1999).

90. See e.g. MCI Commun. Corp. v. Am. Tel. & Telegraph Co., 708 F.2d 1081, 1132-33 (7th Cir. 1982); see also Hausman & Sidak, supra n. 34, at 467.

91. See e.g. Phillip E. Areeda & Herbert Hovenkamp, Antitrust Law, IIIA § 771c, at
Nonetheless, a court may still find aspects of a local network an essential facility. In *MCI Communications Corp. v. American Telephone & Telegraph*, the Seventh Circuit upheld a jury's finding that AT&T's local facilities were essential facilities that MCI needed to provide for certain forms of long distance telephone service.\(^2\) The court explained:

AT&T had complete control over the local distribution facilities that MCI required. The interconnections were essential for MCI to offer... [certain long distance] service[s]. The facilities in question met the criteria of "essential facilities" in that MCI could not duplicate Bell's local facilities. Given present technology, local telephone service is generally regarded as a natural monopoly and is regulated as such. It would not be economically feasible for MCI to duplicate Bell's local distribution facilities (involving millions of miles of cable and line to individual homes and businesses), and regulatory authorization could not be obtained for such an uneconomical duplication.\(^3\)

What is striking, however, about *MCI* is that technical progress in the telecommunications industry has significantly changed the circumstances on which its legal conclusions were based in 1982.

Indeed, several commentators have suggested that an ILEC's facilities would not satisfy the doctrine's requirements, in that the local loop itself may not be an essential facility necessary for entry into the telecommunications business:

Although the ILEC is a monopolist of copper telephone lines, the essential facilities doctrine is not premised upon a copper telephone line monopoly. ... If cellular, fiber-optic, cable, and satellite technologies effectively compete with the copper telephone line, the ownership of copper telephone lines would not be central to the provision of telephone service within the relevant market. Possession of a copper telephone line monopoly would also not be central to competitive viability if: (1) the copper telephone lines are available from another source; (2) copper telephone lines are easily duplicable by a competitor; or (3) other technology provides an equivalent substitute. Allowing access to copper telephone lines within the confines of these divisions enables a competitor to simply substitute itself for

\(^{176-77}\) (Little Brown1996).

\(^{92}\) 708 F.2d at 1133.

\(^{93}\) *Id.*
the incumbent local exchange provider. This substitution creates few (if any) pro-competitive effects and has the potential of chilling desirable behavior.  

Other networks, such as cable television, may represent parallel networks that could compete with a local loop. Moreover, other technologies, such as wireless telephony, may simply bypass the local loop entirely.

III
Analysis of Cost Principles for Unbundled Network Elements

This section examines the three basic costing approaches that could be employed to establish the cost of an UNE. We first examine an approach that incorporates embedded cost. Second, we examine the FCC's TELRIC approach. Third, we consider our "back to the future" approach. In the fourth section, we demonstrate that the "back to the future" approach satisfies the policy goals and legal requirements of the TA96, as well as more closely reflecting efficient market behavior.

Before evaluating the three cost approaches in detail, we raise an important distinction: "cost" and "price" are two very distinct and different concepts. The FCC’s TELRIC method illustrates the potential confusion with these concepts. The FCC has recommended the development of a total service long-run incremental cost of a network element through TELRIC. The TELRIC price is the sum of TELRIC plus a reasonable allocation of forward-looking joint and common costs. Thus, TELRIC hinges on two concepts: one is a cost

94. Soma, et al., supra n. 77, at 598-599; see also Harris & Kraft, supra n. 21, at 98-102 (noting alternative technologies for entry for CLECs, including satellite based technologies, cellular and cable); Hausman & Sidak, supra n. 34, at 488-89 (arguing a case by case analysis of whether the local loop is indeed an essential facility); Daniel F. Spulber, Deregulating Telecommunications, 12 Yale J. Reg. 25, 34 (1995) (arguing that telecommunications networks are no longer natural monopolies).

95. Spulber, supra n. 94, at 39 (noting that “a high proportion of households has both standard telephone service and cable telecommunications services”).

concept and the other a pricing formula. The pricing aspect of TELRIC relates to the recovery of shared, joint and common costs that telecommunications firms incur in providing different services.

Many economists have criticized pricing schemes that simply allocate shared, joint and common costs as arbitrary and unlikely to lead to economically efficient prices.\textsuperscript{97} Efficient pricing principles for joint and common costs require both cost information and market information.\textsuperscript{98} In contrast to this approach, the FCC has required


\textsuperscript{98} Three economic pricing standards are relevant for establishing an appropriate pricing methodology. First, the price of a service should be no greater than its stand-alone cost. See Gerald R. Faulhaber, Cross-Subsidization: Pricing in Public Enterprises, 65 Am. Econ. Rev. 966, 974-76 (1975); Parsons, supra n. 18, at 161. The FCC has recognized this principle in its rules governing UNEs, noting that “[t]he sum of a reasonable allocation of forward-looking common costs and the total element long-run incremental cost of an element shall not exceed the stand-alone costs associated with the element.” 47 C.F.R. § 51.505 (c)(2).

Second, the prices to recover for joint and common costs should be efficient. Establishing efficient prices for the recovery of joint and common costs is rather difficult. Pricing at marginal cost for all services leaves the shared and common costs of the firm unrecovered. Such pricing is unsustainable, causing firms to exit, and is therefore not efficient in a dynamic sense. Prices can diverge from marginal costs in second-best fashion via multipart tariffs or Ramsey-efficient pricing. See e.g. Alfred E. Kahn & William B. Shew, Current Issues in Telecommunications Regulation: Pricing, 4 Yale J. on Reg. 191, 248 n. 142 (1987); Jean-Jacques Laffont & Jean Tirole, Competition in Telecommunications 61-83, 114-16, 131-36 (2000); Charles H. Kennedy, An Introduction to U.S. Telecommunications Law 146-47 (Artech House1994); Bonbright et al., supra n. 97, at 426; William J. Baumol & David F. Bradford, Optimal Departures from Marginal Cost
TELRIC prices to reflect only cost information to the exclusion of market information.\(^9\)

Our discussion emphasizes the first aspect of the FCC’s TELRIC price — estimating the direct costs attributable to an UNE. Recognizing the unclear economic impact of various approaches to estimating the joint and common costs, we defer discussing the merits of the FCC’s approach, and the alternatives, for another day. Instead, we focus on how to best estimate the costs directly attributable to UNEs or other specific services.

A. Looking Backward in Time: Embedded Costs

When the debate establishing the appropriate costs associated with ILEC networks occurred before the FCC, a number of ILECs contended that the costing methodology should include the historical expenses that were incurred in building the network.\(^10\) These costs reflect the embedded expenditures in the ILEC’s network, and a proportion of these costs may be “sunk” (at least in some sense) since there may be no alternative use for the facilities.\(^11\) Moreover, because of the prior regulatory regime, the mix of technology and network attributes probably would not have reflected competitive forces of the market. Such costs may be sunk or stranded because

> under regulation, the incumbent LEC invested in facilities to perform its obligation to serve and to achieve regulatory objectives, including the provision of universal service. The

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\(9\). See First Report and Order, supra n. 66, at § 696.

\(10\). Id. at § 704.

\(11\). Unfortunately, “sunk costs” has come to have two meanings. First, from a public policy or societal perspective, a cost may be sunk if the facilities can only be used for one specific purpose (e.g., providing local telecommunications service). Second, from the perspective of the firm, the costs are only sunk if there is no market value to their alternate use. To the firm, if the assets can be sold to another firm that would use them for the same purpose, the costs are not sunk. However, in some instances, regulation itself may constrain a firm’s ability to sell assets and/or regulation will constrain the purchaser in the use of the assets. In addition, discussion of sunk costs and stranded costs become difficult since only some portion of the costs may be sunk or stranded.
possibility of stranded costs, as regulators permit competition in the market for local telephony, indicates that such investment may not have been economically efficient— that is, the incremental benefits to consumers may not exceed the incremental costs of the investment. Through prudency reviews and used and useful tests, regulators attempted to guard against inefficient investment that did not satisfy regulatory criteria. Those safeguards, however, were significantly different from a full test of economic efficiency.102

Under this rationale, the new competition in local telephony leaves the ILECs with past inefficient investments that should be recovered through a backward-looking costing methodology for UNEs and other forms of network access. According to Sidak and Spulber, the existence of less efficient network components and related investments was a holdover from a regulatory contract between the ILEC and state and federal regulators.103 In a sense, they suggest the government must uphold that contract by including compensation for these past costs. To the extent ILECs remain uncompensated or undercompensated, they would have disincentives to make future investments in the network infrastructure. In their own words, “[i]f deprived of a return to capital facilities after capital has been sunk in irreversible investments, or if faced with reduced returns to investments already made, any economically rational company will eliminate or reduce similar capital investments in the future.”104

At least one commentator has extended the concept of a regulatory contract by finding that in the face of facilities-based competition, the incumbent incurs costs associated with the option (but not the obligation) of the customer to use the incumbent’s

facilities. To equalize this regulatory burden, Weisman has endorsed a "default capacity tariff." The tariff would be calculated to pay for the costs associated with the option to use facilities that are provided as part of the regulatory contract.

The FCC has rejected the inclusion of embedded costs in its cost formula, concluding that a pro-competitive policy requires an approach to costing that is forward looking. The FCC reasoned that such an embedded costing system would interfere with the development of efficient competition. With regard to the specific calculation of costs, we agree. However, as noted above, we caution that the calculation of forward-looking costs and the determination of prices, which includes the assignment of joint and common costs, are two different exercises. In pricing and cost recovery, historical information has greater relevance.

But, in many instances, historical expenditures either overestimate or underestimate the costs that firms will actually incur in the future. Two illustrations show the divergence historical expenditures may have with costs that will actually be incurred in the future. In the case of capitalized labor — e.g., trenching, splicing, and erecting poles and other structures — historical expenditures are likely to understate the current market value of the assets. Pricing on the basis of historical expenditures for such assets would lead to inefficiently low UNE prices. In contrast, historical expenditures for switching equipment and other electronics are likely to overstate the market value of such assets. In these instances, using historical information could lead to inefficiently high UNE prices. CLECs would be unable to take advantage of the cost savings that have


106. Id.

107. Weisman, supra n. 100 (describing the implied contract, or franchise obligation facing local telephone companies, and a recommended tariff to deal with costs sunk due to competitive entry).


109. Id. at ¶ 706.

110. See supra Part III and accompanying text.

111. Generally, directly attributable incremental costs establish the lower bound for pricing in competitive markets. See Richard Emmerson & Steve G. Parsons, Dangers of Cost-Based Pricing, 8 J. Prof. Pricing 21, 21-25 (1999). The degree to which historical investments are recovered depends on market conditions. While firms will recover their historical investments on average, this result is not assured for each firm.
occurred from technical advances in telecommunications electronics without making the investments themselves.

Attempts to incorporate historical costs in a cost-based calculation of prices have inherent dangers. Such historical-cost pricing mechanisms are conceptually similar to traditional rate-of-return regulation mechanisms that are generally regarded to create incentives inferior to price cap mechanisms.\textsuperscript{112} ILECs themselves may have incentives to extend the life of stranded facilities in order to continue to obtain “recovery” from them. If this leads to higher prices for UNEs, UNE-based entry would be deterred at the margin where the higher prices would reduce the CLEC’s anticipated return from such entry.\textsuperscript{113} In short, the embedded approach to costing would slow UNE-based entry until these past regulatory costs are fully compensated.

\textbf{B. Looking Forward Without Turning Back — TELRIC}

If one elects not to look backward to derive costs, one can instead look forward, as the FCC elected to do when it adopted TELRIC. TELRIC is a variant of the total service long-run incremental cost (“TSLRIC”).\textsuperscript{114} TSLRIC and TELRIC are both forward-looking in nature.\textsuperscript{115} The primary distinction between TSLRIC and TELRIC is that TSLRIC refers to the costs of services purchased by customers, such as local service and long distance services, while TELRIC refers to the costs of the network elements that are used to provide the services, like local loops, switching, and interoffice transmission facilities.\textsuperscript{116} The FCC has previously utilized TSLRIC to determine if a service receives a cross-subsidy.\textsuperscript{117}

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\begin{enumerate}
\item \textit{See generally Donald Kridel, et al., The Effects of Incentive Regulation in the Telecommunications Industry: A Survey, 9 J. Reg. Econ. 269-306 (1996).}
\item \textit{Such pricing may comparatively encourage facilities-based entry.}
\item TELRIC is the FCC’s own application of TSLRIC. \textit{See First Report and Order, supra n. 67, at ¶¶ 672-673, 678.}
\item \textit{See id. at ¶ 672.}
\item \textit{See First Report and Order, supra n. 66, at ¶¶ 672-685.}
\item However, Sidak and Spulber explain that TSLRIC cannot be used to set prices alone:
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\end{flushleft}

\begin{quote}
[Setting prices to TSLRIC] does not allow prices to be adjusted in response to competition. Regulators should not adopt TSLRIC pricing to pursue a mistaken representation of how markets operate. Instead, regulators should let competition determine the margins on unbundled services. TSLRIC pricing, by automatically eliminating all
TELRIC represents the forward-looking costs of the most efficient technologies for the entire quantity of network elements needed to serve expected demand.\(^{118}\) Because TELRIC represents long run costs, it is assumed no sunk inputs are used to provide the network elements.\(^{119}\) All inputs required to provide the service are variable, and therefore, all components necessary to provide a network element must have an associated cost.\(^{120}\)

TELRIC is premised on a common, but incorrect, interpretation of forward-looking economic costs. TELRIC measures the costs of a hypothetical market entrant who can instantaneously construct a least-cost network to provide the full array of services currently provided by the ILEC.\(^{121}\) Moreover, under the TELRIC approach, the entrant is assumed to incur no sunk investment and therefore is not constrained by past decisions regarding its investments or operations. The entrant starts with a "blank slate" and instantaneously constructs a network with the capacity to accommodate all of the incumbent's customers.\(^{122}\) In effect, the FCC's TELRIC approach conceptually tears down or completely ignores the existing ILEC network and replaces it with a new, hypothetical network.

While TELRIC's forward looking approach to cost avoids the pitfalls of including stranded costs that would likely overcompensate ILECs, it too is conceptually flawed. The FCC's interpretation of the efficient entrant (and the appropriate metric on which to base forward-looking economic costs) represents an unattainable static ideal, rather than the achievable performance of an efficient incumbent or entrant in the real world. Actual incumbents or entrants will generally deviate from this hypothetical static standard margins, leaves the incumbent LEC no room for competitive price adjustment and thus creates a competitive disadvantage relative to new entrants.


118. See First Report and Order, supra n. 67, at ¶¶ 677, 685, 690; see also Iowa Util. Bd. 219 F.3d at 749-50.

119. Id. at ¶ 677 ("The term 'long run,' in the context of 'long run incremental cost,' refers to a period long enough so that all of a firm's costs become variable or avoidable.").

120. See id. at ¶ 691.


122. Alfred Kahn was the first to employ the term "blank slate" to refer to such hypothetical cost constructs. See Kahn, Letting Go, supra n. 97, at 89-103.
for three reasons: (1) economies of scale for some telecommunications investments in combination with growth in demand over time; (2) the rapid rate of technological change; and (3) the economic uncertainty that all firms face in regarding future investments and demand for those investments.

First, economies of scale for some telecommunications investments, in combination with continued growth in demand over time, lead to important cost characteristics. Growth in telecommunications demand over time will tend to lead to incremental investment over time, rather than a single placement of facilities for all future customers. Because economies of scale exist for some telecommunications investments, the sum of the actual incremental investments will be greater than the TELRIC hypothetical instantaneous investment to serve the current demand. Similarly, a perfectly sized, least-cost network today is likely to be insufficient in the future as demand for telecommunications continues to grow. This would hold true even if future growth in demand were certain.

A new firm, unencumbered with the franchise obligation to serve all customers at the time they demand service, would not instantaneously develop a perfectly sized network with the latest technology to serve all customers. New entrants are likely to serve a market on an incremental basis, perhaps waiting until demand reaches a critical threshold before constructing any facilities. Capital investments occur over a span of time and face practical limitations, such as minimizing service disruptions.

Second, technological change in the industry also creates situations where the incumbent carrier provides services using a mix of technologies. In contrast, the hypothetical statically efficient entrant who instantaneously creates a new network will employ only new technology. No real world analogy of this model exists. As Kahn has stated, "In a world of continuous technological progress, it would be irrational for firms to constantly update their facilities in order to completely incorporate today's lowest-cost technology as though starting from scratch...[I]nvestments made today, totally embodying the most modern technology would be outdated tomorrow."123

It obviously would not be cost effective for the incumbent to replace all of its plant as each new technology becomes available. Rather, the incumbent makes an economic comparison between continued use of the previously installed older technology and the

123. Id. at 91.
installation and use of the new technology. At the point where the new technology becomes cost effective, the incumbent begins the process of replacing the older plant with the new technology. However, this change is not instantaneous; it occurs at an economically feasible rate for the incumbent. Additionally, once a facilities-based entrant is in the market, it also faces the same type of constraints in adopting new technologies. Unregulated firms are unlikely to deploy the latest technology everywhere simultaneously. An unregulated firm may employ its newest technology for its most profitable operations, such as in dense urban areas or areas where other economic reasons dictate that choice of technology. It may then later expand into other territories.

Third, uncertainty with respect to future economic conditions for a dynamically efficient firm does not comport with TELRIC. In an industry with high fixed costs and rapid technological change, the assumption of static efficiency imposes significant revenue recovery risk upon incumbent firms.

Investments must be made based on expectations of customer demand, input prices, and available technologies. Once investments are made, actual customer demands, input prices, and technologies will vary from prior expectations due to uncertainty. Thus, optimal investment based on prior expectations will deviate from optimality after the investments are made. An actual firm, whether it is an incumbent or an entrant, may be efficient in a dynamic sense but not efficient in the idealized, static sense.

In reality, a firm assesses expected growth in demand for its services with its capacity to serve demand, based on its current capacity and any additions that may be required. Moreover, the timing of capacity additions will be determined by the timing of expected demand growth and the timing of the need for additional capacity relative to the carrying charges that would be incurred by the firm for holding excess capacity until it is needed. In addition, there is an element of risk in that demand for services may not materialize as expected. Therefore, a dynamically efficient firm,

125. For example, entry for intercity telecommunications services began in high-density markets. See W.K. Viscusi et al., Economics of Regulation and Antitrust 493 (3d ed. 1997). Similarly, new services, such as DSL were first introduced in more densely populated areas. See Internet Access: America Online and Bell Atlantic Form Strategic Partnership to Provide High Speed Access for the AOL Service, Edge On and About AT&T, 1999 WL 8103043 (Jan. 18, 1999).
which must consider all of these factors in its planning and operations, will generally fall short of the static efficiency standard embodied in the construct of a hypothetical firm that can instantaneously build the capacity required to serve all expected demand.\footnote{126}

C. "Back to the Future": A New Way of Looking at Costs in the Future

The appropriate interpretation of what constitutes forward-looking economic costs is the expected costs of an actual market participant. As Coase has observed: "In calculating the costs of an additional supply of a public utility service, it is of course necessary to start with the industry as it is, with whatever assets it possesses and the circumstances in which it finds itself. Costs are rooted in the actual situation."\footnote{127} Examples from economic literature support the conclusion that the appropriate basis for determining forward-looking costs is the expected costs of an actual firm in the market and not the instantaneous entrant.

Taylor asserts that when a new technology is introduced, the relevant economic costs are based on a mixture of the existing and new technologies because

the network will not be rebuilt from scratch, and the very long long-run view of costs identified above is not appropriate for pricing. The cost that a customer's action imposes on the network is the cost of the most efficient response to that action, given the network as it exists today.\footnote{128}

Taylor explains that "forward-looking efficient pricing requires users to pay the costs they actually impose on the network, not the

\footnote{126. For example, take the case of an area that is ultimately served with capacity of 1,200 pairs of copper cable. The static model would immediately place a 1,200 pair cable to satisfy this capacity. However, a dynamically efficient actual firm may arrive at the 1,200 pair capacity over time with, for example, a series of three discrete placements of 400-pair cables. Similarly, an actual entrant, behaving in a dynamically efficient manner would not instantaneously construct a network to serve all the incumbent's customers. Among the factors the dynamically efficient firm would consider in making these discrete placements over time would be: the expected growth in demand; the cost of placing all of the cable at once versus the cost of multiple placements over time; and the carrying charge associated with having a period of excess capacity until demand grows.}

\footnote{127. Coase, \textit{supra} n. 97, at 123.}

\footnote{128. Taylor, \textit{supra} n. 124, at 31.}
costs they would have imposed had a more efficient network been put in place."\(^{129}\)

In a seminal article on marginal cost pricing, Turvey notes that at any point in time the costs of a firm or industry represent a mixture of plant vintages and that costs derived from replacing the industry from scratch are irrelevant:

New plants reflect current technology and changing relative factor prices and will be built when price exceeds their average total costs. The oldest plants are scrapped when they fail to cover their operating costs. In between come a whole range of plants of various vintages. Thus the cost structure of the industry in any year depends upon the past evolution of its gross investment, its technology and relative factor prices.\(^{130}\)

In assessing the FCC's approach to TELRIC, Kahn has also expressed his fundamental disagreement with the interpretation of economic costs as being developed from a "blank slate" versus the actual expected costs of an existing firm.\(^{131}\) Kahn argues that the appropriate standard is the costs that will actually be incurred, not those of a hypothetical entrant who instantaneously builds its capacity from a "blank slate."\(^{132}\)

An additional factor suggests that estimating the costs of an efficient provider do not comport with the TELRIC method. Market prices tend to reflect the total costs of the least efficient provider that can survive in the market. This is the natural result of considering the

\(^{129}\) Id.


\(^{131}\) Letter from Alfred E. Kahn, Emeritus Prof. of Econ., Cornell U., to Reed E. Hundt, Commn., Fed. Commun. Commn. (Jan. 14, 1997) (on file with the authors). In discussing the appropriate cost standards he states, "The general economic principle that they cite clearly requires, however, that the correct pricing "signals" inform consumers of the costs that society will actually incur if they take somewhat (or a lot) more of each good or service." Id.

Advocates of the "blank slate" version of TELRIC typically assume that that is the level to which competition would drive price, if it were effective. They are mistaken. In a world of continuous technological progress it would be irrational for firms constantly to update their facilities in order to incorporate completely today's lowest-cost technology, as though starting from scratch: investments made today, totally embodying today's most modern technology, would instantaneously be outdated tomorrow. In consequence, the investments would never earn a return sufficient to justify the investment in the first place. Id. at 1-2 (emphasis in original); see also Kahn, Letting Go, supra n. 97, at 89-103.

\(^{132}\) See Kahn letter, supra n. 131, at 2-3.
price that results from the intersection of the market supply curve with the market demand curve. The long-run market supply curve reflects the horizontal summation of the marginal costs of all firms currently in the market, and all potential firms that could be in the market.\footnote{133}

At any given price, some firms will find the market price insufficient to allow them to recover all of their costs. These firms are too inefficient to be able to survive in the market, and such firms will either never enter the market or will eventually exit from it. Other firms will earn supracompetitive rents or quasi-rents due to foresight, superior management, or luck. One or more firms will be at the razor’s edge of remaining in the industry. It is the cost of these marginal firms that represent the market price. It would be anticompetitive to force the market price to barely recover the costs of the most efficient firm in the market. This would be tantamount to an economic death sentence for all firms besides the most efficient firm. In addition, the firm that is most efficient at one point in time, may not always be the most efficient. A hypothetical construct of the most efficient firm may be one that, in reality, no firm can satisfy in the long run.

In summary, the idealized, statically efficient entrant interpretation adopted in the FCC’s TELRIC methodology does not represent the performance of an actual entrant or incumbent in the market who is dynamically efficient. Actual entrants and incumbents, who are dynamically efficient will generally deviate from this ideal. They will do so because of uncertainty, economies of scale in some dimensions of network construction in combination with demand growth, and the rapid rate of technological change in the industry. Therefore, if rates were strictly based on the cost levels produced from models adhering to the idealized standard of instantaneous static efficiency, both ILECs and facilities-based CLECs would face cost recovery problems. These problems would be similar to the ones that would arise under a very lenient application of the essential facilities doctrine discussed earlier.\footnote{134}

\footnote{133. In the short run, this is the section of the marginal cost above average variable cost. In the long run, each firm must expect a price at or above its average total cost.}

\footnote{134. \textit{See supra n. 87} and accompanying text.}
D. The Legal Rationale Supporting the Back to the Future Approach

Under the TA96, Section 252(d)(1) sets out the legal requirements for compensation for ILEC UNEs:

(d) Pricing standards
   (1) Interconnection and network element charges
       Determinations by a State commission of the just and reasonable rate for the interconnection of facilities and equipment for purposes of subsection (c)(2) of section 251 of this title, and the just and reasonable rate for network elements for purposes of subsection (c)(3) of such section —
       (A) shall be —
       (i) based on the cost (determined without reference to a rate-of-return or other rate based proceeding) of providing the interconnection or network element (whichever is applicable), and
       (ii) nondiscriminatory, and
       (B) may include a reasonable profit.\(^\text{135}\)

The statutory meaning leaves some ambiguity as to whether costs should be calculated on a prospective or historical basis. In a joint statement, Congress added little to flesh out the meaning of "cost" in Section 252 beyond stating that "[c]harges for interconnection ... and for network elements ... are to be determined based on costs may include a reasonable profit."\(^\text{136}\)

The only other legislative history that bears on the question of cost is the overall purpose of the TA96 to "promote[] competition in the market for local telephone service."\(^\text{137}\) The TA96, however, does not take an entirely \textit{laissez faire} approach to telecommunications policy. The very nature of the additional obligations of ILECs creates an additional layer of regulation that did not previously exist. In addition, the TA96 creates new universal service requirements that subsidize rates to rural health care providers, schools and libraries.\(^\text{138}\)

\(^{138}\) See 47 U.S.C. § 254 (1999). Interestingly, Hausman and Shelanski have concluded that the present funding mechanisms for universal service have had a negative
Nonetheless, the House of Representatives set out to do no less than "lift[] the shackles of monopoly regulation" to open competition in local telephony. Congress concluded that competition would benefit consumers with greater innovation and lower prices. To meet this goal, costs for UNEs should have some relationship to promoting competition.

As discussed in Section II, the Eighth Circuit rejected portions of the TELRIC method of costing UNEs relying primarily on the plain meaning of Section 252(d)(1). Since the statute requires a LEC to pay an ILEC an amount "based on the cost . . . of providing the interconnection or network element," the cost should be derived from "the existing local network" that a CLEC "would be using in an attempt to compete." TELRIC relies on a hypothetical network using the most efficient technology. The only relationship it bears to an ILEC's network is simply its geographic scope and expected demand. Compensating an ILEC for use of network elements on a hypothetical network, rather than its own may not provide "just and reasonable rates" as the statute requires. The hypothetical network's cost for an UNE may not bear any meaningful relationship to its actual cost of providing a service.

The court analogized a CLEC's access to UNEs via an ILEC's facilities and equipment as a "piggyback." According to the court, the statute requires ILEC compensation for this piggyback. The court explained that "[i]t is the cost to the ILEC of providing that ride on those facilities that the statute permits the ILEC to recoup." Therefore, Congress intended an ILEC to recover the cost of


140. See id.
141. Iowa Util. Bd., 219 F.3d at 750.
143. Iowa Util. Bd., 219 F.3d at 750.
145. As the Eighth Circuit observed, an ILEC's compensation under TELRIC, as constructed by the FCC, relied on "state of the art presently available technology ideally configured but neither deployed nor to be used by the competitor." Iowa Util. Bd., 219 F.3d at 751.
146. Id.
147. Id.
148. Id.
“carrying the extra burden of the competitor’s traffic.”

In another context under the TA96, regulators have adopted TELRIC with some limited approval from the courts. In Texas Office of Public Utility Counsel v. Federal Communications Commission — a case the United States Supreme Court has certified — the Fifth Circuit concluded that TELRIC was an appropriate measure to estimate universal service subsidies. However, the Fifth Circuit did not assess “whether it is good policy for the FCC to use such cost models,” and concluded instead that the FCC’s approach to estimating universal service subsidies fit within the framework of the applicable statute. Unlike the statutory mandate of Section 252 that plainly requires a price to be “based on the cost . . . of providing the interconnection or network element,” the applicable statute governing universal service subsidies is based on entirely different language that does not appear to take cost into account. Finding the

149. Id.
151. Id. at 411.
152. Id.
154. In contrast to the provisions of 47 U.S.C. § 252(d)(1)(A)(i), the statute governing universal service, 47 U.S.C. § 254(b), espouses the following principles:

(1) Quality and rates
Quality services should be available at just, reasonable, and affordable rates.
(2) Access to advanced services
Access to advanced telecommunications and information services should be provided in all regions of the nation.
(3) Access in rural and high cost areas
Consumers 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, including interexchange services and advanced telecommunications and information services that are reasonably comparable to those services provided in urban areas and that are at rates that are reasonably comparable to rates charged for similar services in urban areas.
(4) Equitable and nondiscriminatory contributions
All providers of telecommunications services should make an equitable and nondiscriminatory contribution to the preservation and advancement of universal service.
(5) Specific and predictable support mechanisms
There should be specific, predictable and sufficient Federal and State mechanisms to preserve and advance universal service.
universal service support statute ambiguous, the Fifth Circuit concluded that the FCC’s application of the statute was reasonable.

The Eighth Circuit also concluded that an approach that takes the ILEC’s existing network and projects future costs on the basis of technological innovations meets the requirements of the TA96.\textsuperscript{155} As the court explained:

Costs can be forward-looking in that they can be calculated to reflect what it will cost the ILEC in the future to furnish to the competitor those portions or capacities of the ILEC’s facilities and equipment that the competitor will use including any system or component upgrading that the ILEC chooses to put in place for its own more efficient use.\textsuperscript{156}

\begin{itemize}
  \item[(6)] Access to advanced telecommunications services for schools, health care, and libraries
  \begin{itemize}
    \item Elementary and secondary schools and classrooms, health care providers, and libraries should have access to advanced telecommunications services as described in subsection (h) of this section.
  \end{itemize}
  \item[(7)] Additional principles
  \begin{itemize}
    \item Such other principles as the Joint Board and the Commission determine are necessary and appropriate for the protection of the public interest, convenience, and necessity and are consistent with this chapter.
  \end{itemize}
\end{itemize}

\textit{Id.} § 254 (b).

Section 254(e) further elaborates on the level of the subsidy, stating that it “should be explicit and sufficient to achieve the purposes of this section.” Thus, in \textit{Texas Office of Public Utility Counsel}, the appealing party was limited to arguing that Section 254’s principle requiring the universal service subsidy to be “equitable and nondiscriminatory” and the provision requiring the subsidy to be “sufficient” precluded the application of TELRIC. See 183 F.3d at 411-12. The court disposed of the first part of this argument by noting that all carriers “are subject to the same cost methodology and must move toward the same efficient cost level to maximize the benefits of universal service support.” \textit{Id.} at 412. In disposing of the second half of the argument, the Fifth Circuit accepted the FCC’s arguments that “nothing in the statute defines ‘sufficient’ to mean that universal service support must equal the actual costs incurred by ILECs.” \textit{Id.}
The court also noted that other agencies had adopted “similar methodologies.” \textit{Id.} (citing the Surface Transportation Board’s use of stand-alone cost methodology to determine the reasonableness of railroad rates approved in \textit{Burlington N. R.R. v. Surface Transp. Bd.}, 114 F.3d 206, 213 (D.C. Cir. 1997)).

\textsuperscript{155} \textit{Iowa Util. Bd.}, 219 F.3d at 750.

\textsuperscript{156} \textit{Id.} The court later stated that “a forward-looking cost calculation that is based on the incremental costs that an ILEC actually incurs or will incur in providing the interconnection to its network or the unbundled access to its specific network elements will produce rates that comply with the statutory requirement of § 252(d)(1) that an ILEC recover its ‘cost’ of providing the shared items.” \textit{Id.} at 752-53.
Indeed, the court rejected the argument put forward by some ILECs that the TA96 required CLECs to pay ILECs historical costs.\textsuperscript{157} The court found the concept of cost to be sufficiently ambiguous to encompass either historical cost or forward-looking cost.\textsuperscript{158} As the court observed, the word "cost" itself is like a "chameleon, capable of taking on different meanings, and shades of meaning, depending on the subject matter and the circumstances of each particular usage."\textsuperscript{159} Within this elastic meaning of cost, the court found the FCC's interpretation to be reasonable within the framework of the statute.\textsuperscript{160}

Furthermore, the Eighth Circuit noted that other courts had recognized the forward-looking costs as promoting competition.\textsuperscript{161} Under the court's approach, a forward-looking pricing method "that is based on the incremental costs that an ILEC actually incurs or will incur in providing the interconnection to its network or the unbundled access to its specific network elements requested by a competitor will produce rates that comply with the statutory requirement" set out in the TA96.\textsuperscript{162} The ILECs raised other arguments relating to the language of Section 252 that the court also rejected.\textsuperscript{163}

In addition to finding a forward-looking cost methodology reasonable under the statute, the court recognized that such a benchmark is pro-competitive.\textsuperscript{164} The Eighth Circuit quoted MCI Communications for the proposition that:

\begin{itemize}
  \item \textsuperscript{157} Id. at 752.
  \item \textsuperscript{158} Id. at 751-53.
  \item \textsuperscript{159} Id. at 751-52 (quoting Strickland v. Commn., Maine Dep't of Human Servs., 48 F.3d 12, 19 (1st Cir. 1995)).
  \item \textsuperscript{161} Iowa Util. Bd., 219 F.3d at 752 (citing MCI Commun. v. Am. Tel. & Telegraph Co., 708 F.2d 1081, 1116-17 (7th Cir. 1983), as an example of this judicial acceptance of forward-looking costs).
  \item \textsuperscript{162} Iowa Util. Bd., 219 F.3d at 752-53.
  \item \textsuperscript{163} Specifically, the ILECs argued that a forward-looking cost benchmark would not afford them an accounting profit. Id. at 752. However, Section 252(d) does not promise ILECs and accounting profit. 47 U.S.C. § 252(d). The provision only states that the regulating body "may include a reasonable profit." Id. § 252(d)(1)(B) (emphasis added).
  \item \textsuperscript{164} Iowa Util. Bd., 219 F.3d at 752.
\end{itemize}
It is current and anticipated cost, rather than historical cost that is relevant to business decisions to enter markets ... historical costs associated with the plant already in place are essentially irrelevant to this decision since those costs are 'sunk' and unavoidable and are unaffected by the new production decision.165

Our analysis of a forward-looking cost approach that calculates costs using the actual network would comport with this assessment.

In being pro-competitive, the approach that the Eighth Circuit endorsed and we advocate satisfies the goal of promoting competition for local telephony under the TA96 and is superior to the alternatives. Provisions such as section 251, contemplate facilities-based competition where CLECs may construct certain aspects of a local network while using other aspects of an ILEC's network. Historical costs do not necessarily reflect the market value of existing assets, and therefore do not provide the information necessary to send sound market signals to customers and providers. Using the hypothetical network that TELRIC contemplates does not reflect the network that will actually be utilized to provide service and similarly is flawed in reflecting the costs that actually will be incurred. As Kahn notes, adopting a hypothetical approach will actually discourage facilities-based competition contrary to the goals of the TA96:

In either event, the Commission's prescription reflects a presumption all too typical of regulators — declaring, in effect, 'we will determine not what your costs are but what they ought to be.' That approach has two major defects: first, that is not how the competitive process works; and second, its prices would actually discourage competitors coming in and building their own facilities when that would be more efficient than using the incumbent's facilities.166

165. Id. (quoting MCI Commun. Inc., 708 F.2d at 1116-17).
166. Kahn letter, supra n. 131, at 2 (emphasis in original).
IV
Concluding Remarks

The critical element that will determine competition in a regime that encourages access to an incumbent’s facilities is determining the appropriate price. This is especially true during the transition away from the regulated monopoly model of local telecommunications service to a more competitive model. As local telecommunications markets become more competitive, market forces will increasingly determine prices, regardless of what is determined by the cost models regulators employ. However, during the beginning of this transition, the more accurately UNE and other network costs replicate efficient markets, the more likely consumers will be able to enjoy the fruits of competition — avoiding the problems of either too much or too little entry.

There are at least three different variants of how pricing for various aspects of the local network could be derived. One approach estimates historical costs of an ILEC but fails to reflect the market value of the assets that will be used to provide service. Another approach, TELRIC, may over-stimulate the leasing of the incumbent’s network because the prices assessed reflect a static ideal of a hypothetical, efficient firm. Under changing conditions and uncertainty, an actual efficient firm is likely to deviate from the TELRIC model. It is our opinion that the preferred approach is one in which forward-looking economic costs are based on the expected costs of an actual market participant. This approach reflects a more dynamic model of the market, where an efficient firm may enter only partially, or may adopt a mix of older and newer technology for its network. This approach looks forward to best reflect the costs that firms will incur. Such properly constructed costs are consistent with prices and market signals that mimic efficient markets. Using such costs as the foundation for pricing satisfies the goals of the TA96 to bring greater competition into local telephony without subsidizing new entry.

Furthermore, this approach best fits into the legal framework of the TA96 because it compensates ILECs, as required by the terms of the statute. The Eighth Circuit recently rejected TELRIC for this reason and suggested that a forward-looking cost test should employ actual costs to adequately compensate ILECs. The U.S. Supreme Court is presently reviewing the Eighth Circuit decision. We believe that the Eighth Circuit’s reasoning is sound on this issue. The goal of the TA96, to encourage efficient entry into the local telephony will
best be satisfied by developing a costing system that relies on the costs firms will actually incur and estimates future network upgrades.

Of course, adopting this modification of a forward-looking cost model does not resolve all the pricing issues that could either over-induce or under-induce entry. Other critical elements of a pricing model could also distort results. When a firm produces multiple services with shared and common inputs, as a telecommunications firm often does, significant costs will exist that are not associated with the incremental cost of any particular service. These non-incremental costs must be recovered in a manner that is consistent with economic efficiency and market forces existing at the time.

The possibility that other variables in a costing scheme may distort the incentives of ILECs and CLECs demonstrates the complexity of developing a methodology for network elements that preserves efficient incentives. Judges have appreciated this complexity by the sparing use of the essential facilities doctrine to open bottlenecks in antitrust cases. In contrast, the TA96 has switched the role of the regulator from one of oversight of rates for customer services at a specified level or range, to one of setting prices for competitors to use an incumbent's network. Whether this shift in the regulatory role will spur efficient competition, in spite of the possibility that regulators will price UNEs incorrectly, remains to be seen. As this new regulatory regime attempts to define itself, there is no doubt that the telecommunications industry will continue its evolution to a competitive market.