

Strategies to Promote Advanced Telecommunications Capabilities

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I. INTRODUCTION

“[Section 706 of the 1996 Telecommunications Act] is an invitation to ‘grab the brass ring’ of new technology and should not be used simply as an opportunity to pick the low level fruit.”¹ Section 706 of the 1996 Telecommunications Act (Act)² directs both the Federal Communications Commission (FCC) and state public utility commissions (PUCs) to encourage deployment of advanced telecommunications capabilities (ATCs) “on a reasonable and timely basis . . . to all Americans.”³ Section 706 focuses on strategies that promote competition and remove barriers to infrastructure investment. It rigorously defines ATCs as capable of providing switched two-way voice, data, and video service.⁴

1. NARUC, *Resolution Regarding Petitions to the FCC for Action Under Section 706* (visited Oct. 1, 1999) <<http://www.naruc.org/Resolutions/winter98.htm>>.

2. Telecommunications Act of 1996, Pub. L. No. 104-104, section 706, 110 Stat. 153.

3. *Id.* § 706(a).

4. *See id.* Specifically, section 706 provides:

(a) IN GENERAL.—The Commission and each [s]tate commission with regulatory jurisdiction . . . shall encourage the deployment on a reasonable and timely basis of advanced telecommunications capability to all Americans (including, in particular, elementary and secondary schools and classrooms) by utilizing, in a manner consistent with the public interest, convenience, and necessity, price cap regulation, regulatory forbearance, measures that promote competition . . . [or] . . . that remove

Section 706 must be understood on its own terms and within the context of the purpose and structure of the Act. The House Conference Report states that the purpose of the Act is “to provide for a pro-competitive [sic], de-regulatory [sic] national policy framework designed to accelerate rapidly private sector deployment of advanced telecommunications and information technologies and services to all Americans by opening all telecommunications markets to competition, and for other purposes.”⁵

Part II of this Article provides a brief background on section 706 efforts to date and notes the tendency to see broadband deployment issues as an extension of preexisting interindustry disputes. Part III suggests that promoting ATC deployment is a more complex matter than it may appear at first. Many ATC issues are primarily loop issues regarding which state commissions—and even local communities—have particular expertise and concern. Part IV describes the interests of state government in ATCs and methods various states use to promote them. Part V proposes a strategy for advancing Congress’s goals in section 706 that would take advantage of various parties’ strengths and should minimize the delay occasioned by interindustry disputatiousness and political wrangling.

II. SECTION 706 IS A CALL FOR ACTION, NOT AN INVITATION FOR ARGUMENT

The FCC has considered section 706 in several proceedings, including the assessment required by section 706(b), and in action on petitions filed under section 706.⁶ In its report on broadband deployment,

barriers to infrastructure investment.

(b) INQUIRY.—The Commission shall . . . regularly . . . initiate a notice of inquiry concerning the availability of advanced telecommunications In the inquiry, the Commission shall determine whether advanced . . . capability is being deployed to all Americans in a reasonable and timely fashion. If the Commission’s determination is negative, it shall take immediate action to accelerate deployment . . . by removing barriers to infrastructure investment and by promoting competition

(c) DEFINITIONS.—For the purposes of this subsection:

(1) ADVANCED TELECOMMUNICATIONS CAPABILITY.—The term “advanced telecommunications capability” is defined, without regard to any transmission media or technology, as high-speed, switched, broadband telecommunications capability that enables users to originate and receive high-quality voice, data, graphics, and video telecommunications using any technology.

5. H.R. CONF. REP. NO. 104-458, at 124 (1996).

6. See Deployment of Wireline Services Offering Advanced Telecomms. Capability, *Memorandum Opinion and Order*, and *Notice of Proposed Rulemaking*, 13 F.C.C.R. 24,012 (1998) [hereinafter *Telecomms. Capability Memorandum Opinion and Order*]. In the

the FCC concluded that deployment was progressing reasonably, but that the FCC would continue to pay attention to the matter and promote deployment.⁷ Specifically, the FCC noted:

We certainly have not reached the ultimate goal that all Americans have meaningful access to advanced telecommunications services. Indeed, at such an early stage of deployment of many broadband services, it is difficult to reach any firm judgment about the state of deployment. Nonetheless, we are encouraged that deployment of advanced telecommunications generally appears, at present, reasonable and timely. We base this conclusion, in part, on the large investments in broadband technologies that numerous companies in the communications industry are making. We expect that these investments will lead, in the near future, to greater competition in the broadband market and to greater deployment of these services in a

Memorandum Opinion and Order, the FCC first concludes that the procompetitive provisions of the 1996 Act apply equally to advanced services and to circuit-switched voice services and therefore concludes that incumbent local exchange carriers (LECs) are subject to section 251(c) in their provision of advanced services. Specifically, it finds that incumbent LECs are subject to the interconnection obligations of sections 251(a) and 251(c)(2) with respect to both their circuit-switched and packet-switched networks. The *Notice of Proposed Rulemaking* suggests that to the extent an incumbent LEC chooses to establish an affiliate that is truly separate from the incumbent to provide these advanced services, that affiliate would not be an incumbent LEC under the Act, and would therefore not be subject to incumbent LEC regulation. The order also denies the petitions of Ameritech, Bell Atlantic, SBC, and U S WEST to the extent that they request the FCC to forbear from applying the requirements of sections 251(c) and/or 271 with respect to their provision of advanced services and concludes that Congress did not provide the FCC with the statutory authority to forbear from these critical market-opening provisions of the Act until their requirements have been fully implemented. The *Memorandum Opinion and Order* also rejects BOC requests to create a single, global LATA for packet-switched services. *See also* Deployment of Wireline Services Offering Advanced Telecomms. Capability, *First Report and Order and Further Notice of Proposed Rulemaking*, 14 F.C.C.R. 4761, 15 Comm. Reg. (P & F) 553 (1999); Deployment of Wireline Services Offering Advanced Telecomms. Capability, *Second Report and Order*, FCC 99-330, 1999 WL 1016337 (Nov. 9, 1999); Deployment of Wireline Servs. Offering Advanced Telecomms. Capability, *Third Report and Order in CC Docket No. 98-147 Fourth Report and Order in CC Docket No. 96-98*, FCC 99-355, 1999 WL 1124073 (Dec. 9, 1999) [hereinafter *Telecomms. Capability Third and Fourth Report and Order*]. On remand from an of the August 1998 *Order*, the FCC determined "that U S WEST may not avoid the obligations placed on incumbent LECs under section 251(c) of the Act in connection with the provision of advanced services" and affirmed its original *Memorandum Opinion and Order* view that xDSL-based advanced services are either telephone exchange service or exchange access. Deployment of Wireline Services Offering, *Order on Remand*, FCC 99-413, 1999 WL 1244007, para. 3 (Dec. 23, 1999); *see Telecomms. Capability Memorandum Opinion and Order*, 13 F.C.C.R. 24,012 (1998).

7. *See* Inquiry Concerning the Deployment of Advanced Telecomms. Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecomms. Act of 1996, *Report*, 14 F.C.C.R. 2398, paras. 5-7; 14 Comm. Reg. (P & F) 1292 (1999).

manner that is more efficient and includes all Americans.⁸

The report was greeted with some disappointment by rural advocates and others.⁹

In 1998, the FCC tentatively rejected requests that digital subscriber loop (DSL) facilities be exempted from unbundling requirements, unless those facilities are operated by a separate data subsidiary.¹⁰ On remand from the Supreme Court,¹¹ in November 1999, the FCC determined that incumbent LECs are not required to unbundle packet switching like DSL service at this time, except in a limited circumstances.¹² The states or the FCC may still require unbundling if they make other findings. Subsequently, the FCC did, however, require the incumbent LECs to “unbundle the high frequency portion of the loop” even where the incumbent LEC’s voice customer is served by digital loop carrier facilities.¹³ This means that a CLEC that wishes to provide DSL service

8. *Id.* at para. 6.

9. *See, e.g.*, Prepared Testimony of Maureen Lewis, *Internet Usage and ‘Digital Divide’*, (July 27, 1999), available at 1999 WL 20010596.

10. *See* Deployment of Wireline Services Offering Advanced Telecomms. Capability, *Memorandum Opinion and Order and Notice of Proposed Rulemaking*, 13 F.C.C.R. 24,011, para. 11, 13 Comm. Reg. (P & F) 1 (1998).

11. *See* AT&T Corp. v. Iowa Utils. Bd., 525 U.S. 366 (1999).

12. In the *Third Report and Order and Fourth Further Notice of Proposed Rulemaking*, the FCC stated:

Competitive LECs are actively deploying packet switches to serve high-volume customers, and are not impaired in their ability to offer service to such customers without access to the incumbent LEC’s facilities. Competitive LECs are impaired, however, in their ability to provide services to small-volume users without access to unbundled packet switching. Nonetheless, we consider the other goals of the Act in making our unbundling determination, and conclude that given the nascent nature of the advanced services market and the Act’s goal to provide incentives to all carriers to invest and innovate, incumbent LECs are generally not required to unbundle packet switching. . . . [However], Incumbent LECs must offer unbundled access to packet switching only in limited circumstances in which the incumbent has placed digital loop carrier systems in the feeder section of the loop or has its Digital Subscriber Line Access Multiplexer (DSLAM) in a remote terminal. The incumbent will be relieved of this obligation, however, if it permits a requesting carrier to collocate its DSLAM in the incumbent’s remote terminal on the same terms and conditions that apply to its own DSLAM. Packet switching is defined as the function of routing individual data message units based on address or other routing information contained in the data units, including the necessary electronics (e.g., DSLAMs).

Implementation of the Local Competition Provisions in the Telecomms. Act of 1996, *Third Report and Order and Fourth Further Notice of Proposed Rulemaking*, FCC 99-238, 1999 WL 1008985, at executive summary (Nov. 5, 1999) [hereinafter *Implementation of the Local Competition Third Report and Order*].

13. According to the FCC:

Incumbent LECs must provide unbundled access to the . . . high frequency portion of the loop to only a single requesting carrier, for use at the same customer address as the analog voice service provided by the incumbent.. Incumbents are

does not incur the expense of purchasing the entire subscriber loop to provide DSL service.

Concurrently, the National Telecommunications and Information Agency (NTIA) is developing information on penetration to retail customers of telephone service, computer ownership, and Internet access through modems.¹⁴ The most recent study shows increasing penetration overall but dramatic disparities based on income, ethnicity, and location. Rural households at all income levels are less likely to have Internet access than are urban counterparts. The report also shows a widening gap in home Internet access between Caucasian and African American households. The report includes a variety of recommendations, including support for community access centers.¹⁵ Congress has also closely followed ATC deployment and access through oversight hearings¹⁶ and through legislation which would take a variety of approaches to promoting more rapid deployment of broadband technology.¹⁷

To date, many of the proposals have become enmeshed in preexisting interindustry battles, legal disputes, and more general policy debates. Among the combatants are Bell Operating Companies (BOCs) seeking partial relief from section 271 requirements for data services,¹⁸ cable

not required to provide unbundled access to the high frequency portion of the loop if they are not currently providing analog voice service to the customer. Subject to certain obligations, incumbent LECs may maintain control over the loop and splitter equipment and functions . . . Incumbent LECs must condition loops to enable requesting carriers to provide acceptable forms of xDSL-based services over the high frequency portion of the loop unless such conditioning would significantly degrade the incumbent's analog voice service. We conclude that it would be unreasonable for incumbents to refuse to condition loops under 18,000 feet. For loops over 18,000 feet, an incumbent LEC must make an affirmative showing to the relevant state commission that such degradation will occur. . . . Incumbent LECs must unbundle the high frequency portion of the loop even where the incumbent LEC's voice customer is served by digital loop carrier (DLC) facilities. . . . States may, at their discretion, impose additional or modified requirements for access to this unbundled network element, consistent with our national policy framework.

Telecomms. Capability Third and Fourth Report and Order, 99-355, 1999 WL 1124073 (Dec. 9, 1999).

14. See U.S. Department of Commerce, *Falling Through the Net: Defining the Digital Divide* (last modified July 8, 1999) <<http://www.ntia.doc.gov/ntiahome/digitaldivide/>>.

15. See *id.* at xiii, xiv.

16. See 143 CONG. REC. S5281 (daily ed. May 13, 1999) (statement of Sen. McCain).

17. See, e.g., The Broadband Internet Regulatory Relief Act of 1999, S. 877, 105th Cong.; Internet Regulatory Freedom Act of 1999, S. 1043, 105th Cong.; Schools and Libraries Internet Access Act, S. 1004, 106th Cong. (1999); Rural Telecommunications Improvement Act of 1999, S. 1153, 106th Cong.; Schools and Libraries Internet Access Act, H.R. 1746, 106th Cong. (1999); Internet Freedom Act, H.R. 1686, 106th Cong. (1999).

18. See Testimony of Solomon Trujillo, *Broadbands and Consumer Access to the Internet Before the Committee on Commerce, Science, and Transportation*, Apr. 13, 1999,

companies opposing cable unbundling or the imposition of common carrier requirements on their networks,¹⁹ and competitive local providers opposing further regulatory relief for the large incumbents.²⁰ Sometimes lost in the cacophony of advocacy are the small rural providers—cooperatives and privately-owned companies—which often have compelling stories to tell about the advanced services they are providing or hope to provide.²¹ Meanwhile, consumer advocates are reminding us not to forget about the large number of customers who still want only fairly-priced “Plain Old Telephone Service”²² and low-volume long-distance.²³

The debate is illuminating. It focuses attention on broadband access and helps to sharpen issues. Thus far, however, it does not appear to have resulted in additional deployment. An outcome-oriented strategy focusing on solving specific problems is required. That strategy would, among other things, be based on a clear understanding of real conditions and needs “on the ground.” It would draw on coordinated federal, state, private, and public resources. It would recognize the relationship between ATCs, universal service, and competition issues. In many instances, such a strategy would be able to advance deployment without being ambushed in other battles in the ongoing “Telewars.”

available at 1999 WL 16945871.

19. See, e.g., Ted Hearn & Joe Estrella, *A Definite Maybe: FCC's Portland Brief Gives Locals Some Ammo*, MULTICHANNEL NEWS, Aug. 23, 1999, at 51 (citing a National Cable Television Association brief, filed in a suit against a municipality in seeking to impose “open access” requirements on cable companies, that claims “[f]orced access is common-carrier regulation as its purest.”).

20. See LEE SELWYN ET AL., BUILDING A BROADBAND AMERICA: THE COMPETITIVE KEYS TO THE INTERNET (1999); see generally, Lee Selwyn et al., *Economics and Technology Inc., Bringing Broadband to Rural America: Investment and Innovation in the Wake of the Telecom Act* (visited Nov. 9, 1999) <http://www.econtech.com/brbnd9_99.pdf>.

21. See *NTCA Members Deny Breadth of Digital Divide*, TELECOMMS. RPTS. DAILY, Apr. 19, 1999, at 32 (reporting statements by representatives of the National Telephone Cooperative Association). It is commonly recognized that “small, locally owned rural telephone companies and cooperatives tend to be more responsive to rural communities and their development needs.” EDWIN B. PARKER & HEATHER E. HUDSON, *ELECTRONIC BYWAYS: STATE POLICIES FOR RURAL DEVELOPMENT THROUGH TELECOMMUNICATIONS* 38 (2d ed. 1995).

22. Mark Cooper & Gene Kimelman, *The Digital Divide Confronts the Telecommunications Act of 1996: Economic Reality Versus Public Policy* (visited Oct. 1, 1999) <<http://www.stateandlocal.org/telecom.pdf>>.

23. See American Association of Retired Persons & Public Policy Institute, *Long-distance Callers' Awareness and Use of Various Telephone-related Options* (visited Oct. 1, 1998) <http://research.aarp.org/consume/d16819_longdist_1.html>.

III. ATC ISSUES LOOK DIFFERENT FROM ROUTE 66 THAN FROM THE BELTWAY

Advanced technology needs will vary from location to location, customer to customer, and from one portion of the network to another. The following questions are suggested by extensive discussions with providers and customers and by review of various facilities maps and plans.

A. *Physical Layers of the Network*

Networks can be thought of in terms of layers. Telecommunications networks are generally divided into transport, switch, and loop. A layered understanding may be useful for other purposes as well, such as sorting through the complex jurisdictional separations process²⁴ or rethinking the particular question of reciprocal compensation for Internet Service Providers (ISPs).²⁵

First, it is important to distinguish cost barriers to using existing facilities from the physical unavailability of the facilities. If the issue is the transport or backhaul²⁶ cost for gaining access to an existing network one set of strategies might be appropriate, such as pricing without a backhaul charge or providing support for backhaul charges.²⁷ Second, it is necessary to know with some granularity what facilities exist, their capacity and interoperability. There may be particular needs in each layer of the network, transport, switch, or loop.

Driving the Beltway instead of Route 66, it is easy to miss much of the work that has been done. It is important to identify the placement and capacity of BOC or national interexchange carrier networks and to maximize opportunities to use those networks.²⁸ However, this is only part

24. See State Members' Report on Comprehensive Review of Separations, *Jurisdictional Separations Reform and Referral to the Federal-State Joint Board*, CC Docket No. 80-286 (1998).

25. See Implementation of the Local Competition Provisions in the Telecomms. Act of 1996, *Declaratory Ruling in CC Docket No. 96-98 and Notice of Proposed Rulemaking in CC Docket No. 99-68*, 14 F.C.C.R. 3689; 15 Comm. Reg. (P & F) 201 (1999). See, e.g., Letter from James Bradford Ramsay, Assistant General Counsel, NARUC, to Magalie R. Salas, Secretary, FCC (Dec. 14, 1998) (on file with the *Federal Communications Law Journal*).

26. Charges, usually billed on a per-mile basis, for telecommunications costs incurred to connect a customer physically located outside a required advanced services connectivity point (e.g., a frame relay cloud area). Charges are assessed based upon the distance from the customer's location to the location of the nearest point of connection to advanced services.

27. For example, the Montana Universal Access program assists with backhaul costs for schools, libraries, rural health care providers, tribal colleges, and community access points. See *infra* note 67.

28. See William Lilley III, Ph.D., Remarks at the NARUC Telecommunications

of the story. A complete picture will include transport networks constructed by aggressive regional carriers such as Touch America, based in Butte, Montana.²⁹ It will also include the innovative work being done by many telephone cooperatives and other small rural carriers. Continuing with the Montana example, this state's telephone cooperatives and independent phone companies operate the Montana Advanced Information Network (MAIN),³⁰ which provides high-capacity transport to many parts of rural Montana. Vision Net, formed by five rural telephone cooperatives, operates over ninety interactive video sites, including state and tribal colleges.³¹

Based on a concrete understanding of existing networks, high-end transport needs may appear both more complex and yet more solvable. Where are the specific gaps in the current "network of networks?" Do particular customers (or would-be customers) have needs they cannot meet? There is extensive fiber deployed, including substantial deployment in many rural areas. However, there are significant gaps in that network, leaving particular areas without the access needed and no economically feasible way to obtain it.

A recent dispute concerned whether certain areas lacked Internet hubs, the so-called "on-ramps" to the Internet. A report prepared for the Internet advocacy group iAdvance identified twelve states which lagged significantly in the number of hubs deployed.³² The presence of hubs was said to confer speed and cost benefits. The presence of redundant hubs was said to provide essential reliability.

Committee (Feb. 24, 1999).

29. See Touch America, *Welcome to Touch America* (visited Oct. 1, 1999) <<http://www.in-tch.com>>.

30. The Montana Advanced Information Network (MAIN) uses T1 and higher level facilities, owned and leased, and connects with similar networks in other rural states through the Independent Network Consortium.

31. The system uses packet switching, with concentrating hubs and DS-3 level transport between hubs. Each Vision Net studio costs between \$30,000 and \$40,000. See *Visionnet* (visited Oct. 1, 1999) <<http://www.montanavision.net>>.

32. See Eric R. Olbeter & Matt Robison, *Breaking the Backbone: The Impact of Regulation on Internet Infrastructure Deployment* (visited Oct. 2, 1999) <<http://www.iadvance.org/background>>. The report, prepared on behalf of the Internet advocacy group iAdvance, maintains that the presence of Internet hubs within a state correlates with the number of cities larger than 100,000 people, per capita income, and the number of local lines provided by non-Bell Operating Company (BOC) local exchange carriers LECs. The report suggests that the relationship between more BOC lines and fewer hubs is explained by the presence of section 271 and other federal regulatory constraints imposed on BOCs but not on other LECs. The report does not appear to consider other possible reasons for the correlation, including the responsiveness of small phone companies and cooperatives to their communities. See also PARKER & HUDSON, *supra* note 21, at 39-41.

Switch issues include general upgrades where those have not occurred, software compatibility, and collocation and provisioning for competitive providers. Innovative strategies may be available, even in relatively rural areas. In Billings, Montana, Skyland Technologies, a creation of several rural telephone cooperatives and rural electric cooperatives, is beginning to provide wholesale collocation through a "fiber hotel" in an area served by U S WEST as the local exchange carrier. Some rural companies are also exploring partnering with national data providers to deliver Digital Subscriber Loop (DSL) service to small towns and rural areas.

Last mile or loop issues are often the most challenging. There are several operationally feasible last mile strategies, including DSL, cable modems, fiber-to-the-home or curb,³³ and several wireless options. Each strategy has particular technical, economic, and marketing issues associated with it. Yet no strategy is without constraints or provides the best solution for all regions, customers, and applications.³⁴

In most circumstances, loop constraints will be the most difficult physical barriers to ATC access. In some cases, for example, lines will simply be too long to handle DSL service,³⁵ or outside plant may not have been adequately maintained or upgraded to support advanced service. In other instances, terrain may be the barrier. In many situations, it might be technically possible to deploy ATCs but not possible to attract sufficient customers at a particular price to make a business case for deployment.

Relationships and trade-offs between different network layers also must be addressed. First, whatever is done at one layer of the network must interface with the other layers. Little is accomplished (beyond frustrated

33. This is often referred to as FTX, with the X indicating the various fiber options.

34. See generally GEORGE ABE, RESIDENTIAL BROADBAND (1997) (describing each of the access paths along with networking, business, and regulatory issues associated with each path). For an excellent review of the current and prospective suitability of various wireless technologies for specific services, see CAROL WEINHAUS ET AL., A GUIDE TO EVOLVING WIRELESS SERVICES (1998) (presented at the February 1999 NARUC meeting in Washington, D.C.).

35. There are many Digital Subscriber Line protocols, e.g., Asymmetric DSL (ADSL); High-speed DSL (HDSL) and HDSL2; IDSL (ISD—like DSL); and Symmetric DSL (SDSL). Currently, ADSL is generally limited to businesses and residences within approximately three miles of the incumbent's central office, but this could change. See *Telephony*, COMM. DAILY, Sept. 9, 1999, at 6-7 (quoting one expert as follows:

describ[ing] emerging technology that overcomes current restraints that limit asymmetric DSL service to within [three] miles of central office in most cases without modifications. Development of fiber feeder cable could extend deployment of ADSL services to as far as 15-20 miles from central office. . . . Development of line extender technology will make it possible to use loops "that in the past have been considered unusable because of various defects")

customers) by a state-of-the-art local expressway which terminates abruptly at a four-way stop sign, followed by dirt roads in each of the other three directions. Second, there are choices about where to house certain features. For example, there may be cost and functionality trade-offs between locating features in the switching office or even further out in the network. This may improve performance and reduce transport costs. Alternatively, features might be accessed at a distant central location, spreading the function's costs more widely. However, this may increase transport costs from the customer to the central location.³⁶ Third, as both fiber and intelligence move further out into the network, it is important that network upgrades and extensions be designed consistently with this direction.

B. Different Customers, Different Needs

Certain customers, for example, a research facility or a land-grant college in a rural state, may have high-end needs that currently are not addressable. The problem may be one of lack of facilities or may have a strong price element. These situations are not the most common, but have important consequences where they exist. For example, some academic institutions may be concerned about being left behind in cutting-edge, data-intensive research projects.

More common are mid-size commercial, academic, or medical entities with dispersed data networking needs. For example, a rural bank was unable to establish an adequate data link to affiliated institutions in other parts of the state. As a result, its plans to locate central data storage and processing functions at the particular site were put on hold, harming both the bank and the community. Customers with high time sensitivity, such as a bank clearinghouse, may also demand redundant access paths.

At the most basic level are small business, residential, and community institution customers that lack the high-speed access necessary to take full advantage of information technology. The FCC noted that most communities have access to ISPs.³⁷ This is both correct and irrelevant. As recently as three years ago, the Author commonly received complaints from rural customers who did not have local Internet access. Through the efforts of rural cooperatives and private ISPs, these complaints have been

36. For example, in many DSL deployments, Asynchronous Transfer Mode (ATM) switching is the most expensive element. Therefore, providing DSL in a more rural location raises the switch/transport trade-off concerning where ATM will be accessed.

37. See Inquiry Concerning the Deployment of Advanced Telecomms. Capability to All Americans in a Reasonable and Timely Fashion and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecomms. Act of 1996, *Report*, 14 F.C.C.R. 2398, para. 64 (1999).

addressed. However, even fifty-six kilobit Internet access is not within the section 706 mandate. Congress intended high-speed access.³⁸

IV. STATE INTERESTS AND STRATEGIES TO PROMOTE TECHNOLOGY

A. *State Interests in Technology*

Government interest in the economy and infrastructure has a long pedigree, from mercantilist England to Alexander Hamilton. Michael Porter famously argues that the old concept of “comparative advantage,” focusing on specific inputs, should be replaced with that of “competitive advantage,” which is concerned with the interrelationship of multiple factors, including infrastructure as well as skills, institutions, and attributes of a competitive environment. Both private and public entities have significant roles in creating competitive advantages.³⁹ Government may also have a role to play in maintaining the areas where firms must share resources (information and infrastructure) as a basis for competition.⁴⁰ Economists disagree over whether an import-export economic base model or a more locally focused model is more appropriate.⁴¹ However, under either approach, attention to infrastructure is crucial.

Economists have long noted the trend away from a predominantly resource or industrial-based economy,⁴² toward a more service-based economy, with knowledge workers among the most valuable participants in the service sector. Certain location-specific advantages (for example, the presence of a mature natural resource industry) may continue to be important but may be relatively less important as sources for new economic activity.⁴³ A scenic location or the presence of recreational

38. See H.R. CONF. REP. NO. 109-458, at 113 (1996), *reprinted in* 1996 U.S.C.C.A.N. 124, 124.

39. See MICHAEL E. PORTER, *THE COMPETITIVE ADVANTAGE OF NATIONS* 11-21 (1990).

40. See JAMES F. MOORE, *THE DEATH OF COMPETITION: LEADERSHIP & STRATEGY IN THE AGE OF BUSINESS ECOSYSTEMS* 130 (1996).

41. See THOMAS MICHAEL POWER, *THE ECONOMIC PURSUIT OF QUALITY* 106-28 (1988).

42. See EDWIN B. PARKER ET AL., *RURAL AMERICA IN THE INFORMATION AGE: TELECOMMUNICATIONS POLICY FOR RURAL DEVELOPMENT* vii (1989). The report was prepared for the Ford Foundation and the Aspen Institute's Rural Economic Policy Program.

43. For example, in Montana between 1976 and 1996, agricultural employment remained constant, nonfarm goods production (logging, mining, construction and manufacturing) increased 28%, and service industry employment increased 113%. See *MONTANA PEOPLE AND THE ECONOMY* 9 (James Murtaugh ed., 1996). Using Department of Commerce statistics, this report also shows that the decline in earnings per job was greater in the agricultural and production sectors than in the service industries, and was greater in Montana—a very rural state—than in the U.S. economy as a whole. Similarly, average inflation-adjusted hourly earnings declined more steeply over the twenty year period in

opportunities may itself have economic value,⁴⁴ evinced by the dramatic population growth throughout the Rocky Mountain West, while other rural areas experience net out-migration.

Rural America, along with many urban cores, largely remains poor America. Generally, nonmetropolitan status correlates closely with low per capita income. In 1997, the per capita personal income in nonmetropolitan areas of the United States was \$19,089.⁴⁵ Per capita income in metropolitan areas was \$26,840, or forty percent higher than nonmetropolitan areas.⁴⁶

Telecommunications, computing, and “content” (information, entertainment, etc.) are converging.⁴⁷ This convergence itself creates retail services and products but also creates increasingly valuable inputs as all economic sectors become information intensive. For example, stories are now commonplace about farmers using computers to manage their crops and checking prices daily over the Internet. America, including rural America, runs on telecommunications networks as it once ran on rails.

Telecommunications may overcome specific obstacles such as distance from supply sources or markets or disaggregation within an enterprise or within a community. It may be combined with other factors (a well-educated workforce, an attractive location, other specific inputs) to create new value and support economic or community development.⁴⁸ Telecommunications is not a magic bullet. There is no guarantee that “if you build it,” economic growth “will come.” Telecommunications is a fundamental and increasingly important infrastructure and of the sort with which all levels of government are appropriately concerned.

B. State Strategies to Promote Technology

State public utility commissions (PUCs) and state governments generally take a variety of approaches to promoting access to advanced technologies. Some of these are traditional regulatory approaches, others involve tax incentives, while others could be characterized as community

Montana than in the U.S. economy as a whole.

44. See POWER, *supra* note 41, at 139-41.

45. See Bureau of Economic Analysis, *Survey of Current Business BEA News Release* (visited May 6, 1999) <<http://www.bea.doc.gov/bea/newsrel/mpi97.htm>>.

46. See *id.*

47. See Jorge Reina Schement, *Introduction*, in THE NEW GLOBAL TELECOMMUNICATIONS INDUSTRY & CONSUMERS (visited Jan. 22, 2000) <<http://policy.net/naruc/intro.htm>> (suggesting a convergence of telephony, commercial broadcasting, consumer electronics, and computing).

48. See PARKER, *supra* note 42, at 29-50. Writing in 1989, Parker identified benefits including increased price competition, eliminating steps in the supply chain, lowering inventory costs, enabling more rapid delivery of products (especially perishables), reducing travel, and attracting new industry. See *id.*

and economic development. Although not favored, in at least some instances, direct public ownership has been employed. This section summarizes approaches which state utility commissions and other state entities have taken or should consider.

1. Regulatory Approaches

State PUCs have increasingly recognized infrastructure development as a primary mission.

a. *Ratemaking*

For at least fifteen years, PUCs have sought investment commitments as part of alternative forms of regulation (AFORS),⁴⁹ which is sometimes called social compact ratemaking. Investment commitments have also been obtained as part of merger reviews,⁵⁰ and even as part of traditional rate base/rate-of-return regulation.⁵¹ For example, the Montana Rural Telephone

49. Alternative forms of regulation began as relatively simple price cap plans under which initial cost-based prices were allowed to move below a cap, which was periodically adjusted according to some index of input prices, usually with an adjustment downward to reflect increased productivity. These plans became much more sophisticated and complex over time, often taking into account investment, service quality, and penalties for not meeting certain performance targets. *See generally*, NARUC, THE MAINE REPORT ON ALTERNATIVE REGULATION (1992); NARUC, STATUS OF COMPETITION (1995).

50. *See* New England Tel. & Tel. Co. and Nynex Corp. Proposed Joint Petition for Reorganization Intended to Effect the Merger with Bell Atlantic Corp., *Order (Part III)*, No. 96-338 at 21 (Me. Pub. Util. Comm'n Feb. 6, 1997), *available at* (visited Nov. 11, 1999) <<http://janus.state.me.us/mpuc/orders/96/96388.oii>>; Proceeding on Motion of the Comm'n as to the Joint Petition of N.Y. Tel. Co., NYNEX Corp., and Bell Atlantic Corp. for a Declaratory Ruling that the Comm'n Lacks Jurisdiction to Investigate and Approve a Proposed Merger Between NYNEX and a Subsidiary of Bell Atlantic or, in the Alternative, for Approval of the Merger, *Order Approving Proposed Merger Subject to Conditions*, Nos. 96-C-0603 & 96-C-0599 at 4-5 (N.Y. Pub. Serv. Comm'n Mar. 21, 1997), *available at* (visited Nov. 11, 1999) <<http://www.dps.state.ny.us/fileroom/doc1619.pdf>>.

51. Once dominant, rate of return regulation is still used for telephone utilities in 11 states. Generally, utilities are granted recovery of expenses and the opportunity to earn a commission-approved reasonable rate of return on investments which are either prudent or used and useful to serve customers. *See Price Caps Standard Form of Telco Regulation in 70% of States*, COMM. DAILY, Sept. 8, 1999, at 4.

Price caps have replaced earnings-based methods for regulating rates of major incumbent telcos in 70% of states, plus D.C., according to new survey.

Fifty-state study of incumbent telco rate regulation . . . [that] shows only 11 states still impose rate-of-return regulation on their Bell operating companies and major non-Bell [sic] incumbents, but price-cap activity in [four] of those states soon may be reducing rate-of-return ranks further. Two western states have gone beyond price caps to near-total deregulation of retail telecom services.

....

Rate-of-return regulation still is used in Alaska, Ariz[ona], Hawaii, Mont[ana], N[ew] H[ampshire], N[ew] M[exico], Okla[homa], Ore[gon], S[outh] C[arolina], V[ermont], Wash[ington].

Improvement Project (RTIP) allowed Mountain Bell (now U S WEST) an enhanced rate of return in exchange for making substantial investments in outside plant between 1981 and 1986.⁵² A subsequent switch upgrade program required U S WEST to install all-digital switches.⁵³

Retail ratemaking may also come into play. For example, creating “extended area service” regions, where costs are recovered through local rates instead of through short-distance toll rates, may promote rural development directly by encouraging commercial and other use and may promote telecommunications investment indirectly in response to increased use. This country’s unusual structure of flat, affordable local rates (generally without mandatory local measured service) has also been recognized as contributing to high penetration of both basic phone service and Internet.⁵⁴

b. Performance Standards

Many states have some form of network performance standards. Some have specifically updated those standards to support high-end data. Wisconsin has adopted phased-in standards which will result in a network capable of supporting broadband.⁵⁵

Id.

52. The Montana Public Service Commission ordered Mountain Bell to propose a comprehensive rural upgrade program in 1980. *See* Application of Mountain States Tel. and Telegraph Co. for Authority to Establish Increased Rates for Tel. Serv., *Order*, Docket No. 6652, Order No. 4585a (Mont. Pub. Serv. Comm’n July 16, 1980). The program was approved on September 21, 1981. *See* Application of the Mountain States Telephone and Telegraph Co. (Mountain Bell) for Authority to Establish New Rates and for Approval of Tariff Changes in Connection with its Comprehensive Rural Tel. Improvement Program, Docket No. 80.10.79, Order No. 4839 (Mont. Pub. Serv. Comm’n Sept. 23, 1981) (estimating the capital investment as exceeding \$56 million over a five year period).

53. *See* Application of U S WEST Comm. for Authority to Implement a Mont. Network Improvement and Rate Stability Plan, *Final Order*, Docket No. 90.12.86 at 3 (Mont. Pub. Serv. Comm’n Dec. 2, 1992). Switches were estimated to cost (in 1990 dollars) \$91 million. *See id.*

54. *See* Thomas Long, Great Expectations for Telecoms Competition: Lessons from the UK (July 1999) (unpublished manuscript, on file with the *Federal Communications Journal*). Long is the Senior Telecommunications Attorney for the Toward Utility Reform Network (TURN) and prepared the report as part of an Atlantic Fellowship in Public Policy.

55. Wisconsin’s universal service rules provide for basic levels of data transmission to be universally available and for customers to obtain more advanced services as they are required. The state’s definition of essential (basic) service includes minimal modem speeds and fax capability, which must apply to all lines provided by eligible telecommunications carriers, certified by the Wisconsin commission. *See* 47 U.S.C. § 214(e) (Supp. III 1997). The state’s rules also set deadlines for deployment of more advanced services, such as digital subscriber lines and high-speed data transmission services. If a customer has a reasonable demand for an advanced service before the deadline, and that service is not available at an affordable rate, the Wisconsin Public Service Commission can use state

c. *Deregulatory Approaches*

As early as the mid-1980s, many states adopted reduced regulation or deregulation for actually or potentially competitive services or for exclusively data services.⁵⁶ State commissions are often given broad authority to forbear from regulation, sometimes along the lines of section 10 of the Act.⁵⁷

d. *Competition*

State commissions began promoting local competition several years before passage of the Act. Some states abolished (or, as in Montana, never had) exclusive franchises.⁵⁸ New York developed collocation⁵⁹ and, in the Rochester Plan, a structural approach to separating competitive and noncompetitive lines of business.⁶⁰ The NARUC Telecommunications Committee undertook an extensive analysis of appropriate approaches to local competition, which produced a series of reports on the full range of local competition topics and a final report summarizing the work and

universal service fund money to serve that customer more rapidly. The rules do not specify which provider would offer that service—all providers would, in effect, bid on the offering. The lowest bidder would then provide service and would receive the bid amount from the state universal service rules. To date, no such auctions have occurred. According to Wisconsin Commission staff, the incumbents may prefer to provide the advanced services rather than risk having the universal service fund subsidize a competitor entering their markets. Essential services are defined in WIS. ADMIN. CODE § 160.03 (1996); advanced services deadlines and requests are defined in WIS. ADMIN. CODE § 160.035 (1996). The PSCW is currently updating these rules in docket 1-AC-166.

56. See MONT. CODE ANN. § 69-3-802 (1999).

57. See *id.* at § 69-3-808.

58. For example, the Washington Utilities and Transportation Commission (WUTC) authorized that state's first competitive access provider (CAP) and competitive local exchange carrier (CLEC) through a series of commission and judicial decisions involving Electric Lightwave, Inc. (ELI). See *Electric Lightwave, Inc.*, 129 Pub. Util. Rep. (PUR) 4th 262 (Wash. Util. Transp. Comm'n 1991) (authorizing ELI to provide service as a CAP). Subsequently, the WUTC decision was affirmed by the Washington Supreme Court. See *Electric Lightwave, Inc.*, 869 P.2d 1045 (Wash. 1994). Therein, the court prohibited the WUTC from conferring on any local exchange carrier the right to be the exclusive provider of telecommunications services in a given exchange. Subsequently, ELI petitioned the WUTC for status, in Docket UT-940119. The WUTC granted that request on March 23, 1994. See *Electric Lightwave, Inc.*, No. Ut-940119, (Wash. Wash. Util. Transp. Comm'n Mar. 23, 1994). The switch was installed, engineered, and furnished in the ELI's new Seattle central office within 30 days of the WUTC decision.

59. See *Proceeding on Motion of the Commission to Review Regulatory Policies for Segments of the Telecomms. Industry Subject to Competition, Opinion and Order Concerning Regulatory Response to Competition*, No. 89-12 (N.Y. Pub. Serv. Comm'n May 16, 1989).

60. See *Petition of Rochester Tel. Corp. for Approval of Proposed Restructuring Plan, Opinion and Order Approving Joint Stipulation and Agreement*, No. 94-25 (N.Y. Pub. Serv. Comm'n Nov. 10, 1994).

making recommendations.⁶¹

e. Universal Service Support

A growing number of states have implemented, created, or authorized intrastate high-cost fund programs.⁶² As states implement universal service or high-cost support programs, they must decide what level of service to support; what specific services will be supported; what bandwidth will the fund cover;⁶³ and what performance assurances will be required?⁶⁴

2. Taxation

Several states have considered tax incentives for technology deployment. Depending upon how they are structured, tax incentives may benefit only those enterprises which have a tax burden against which to take a tax credit and, therefore, could be of limited use to start-ups or nonprofits such as rural telephone cooperatives. More generally, efforts have been made to achieve tax neutrality between actual or potentially competitive providers, including replacing taxes on providers with excise taxes on consumers.⁶⁵

3. Public Ownership

Several states, including Iowa, have built publicly-owned networks.

61. See NARUC STAFF SUBCOMMITTEE ON COMMUNICATIONS, LOCAL COMPETITION WORK GROUP SUMMARY REPORT (1996).

62. See EDWIN A. ROSENBERG & JOHN D. WILHELM, STATE UNIVERSAL SERVICE FUNDING AND POLICY: AN OVERVIEW AND SURVEY (1998), available at (visited Oct. 2, 1999) <<http://www.nrri.ohio-state.edu/download/9820.pdf>>.

63. See NARUC, *Resolution on the Definition of Voice Grade Service for Universal Service Purposed* (visited Nov. 9, 1999) <<http://www.naruc.org/Resolutions/winter98.htm#resolutiononthedefinitionofvoicesserviceforuniversalservicepurposes>>.

64. See *Telephony*, COMM. DAILY, Feb. 4, 1998, at 8.

Rural telephone users will be denied full access to information technology because of change FCC recently made in universal service support. Rural Utilities Service (RUS) said in meeting with Commission staff last week. RUS . . . is concerned because FCC lowered level of "voice-grade access" that qualifies for universal service support. RUS said FCC in May 1997 adopted Federal-State Joint Board's decision to define voice-grade service as having bandwidth of 500-4,000 Hz, but in Dec. lowered definition to 300-3,000 Hz "without seeking comment." That means that rural telecos. can't get universal service funding for circuits with bandwidth higher than 3,000 Hz, RUS said: "The effect of this reduction will be to slow down rural America's access to information technology . . . A 3,400 Hz circuit will not guarantee that a modem will connect at 28.8 [kilobytes per second (kbps)] but a 3,000 Hz circuit will practically guarantee that will not."

Id.

65. See MONT. H. BILL 128 (1999) (moving significant tax responsibility from provider taxes to excise taxes paid by end users); MONT. CODE ANN. §§ 15-53-130, 15-6-141(c)(vi), 15-6-156(4) (1999).

Similarly, the City of Tacoma embarked on a telecom modernization build-out through its electric Public Utility District after an unsuccessful attempt to attract a private telecom or cable provider.⁶⁶ This approach is often controversial because it may diminish the potential market for private providers, may transfer technology risk to the public sector, is difficult to reconcile with competitive approaches, and raises the specter of government competition with the private sector. Therefore, it usually is considered a last resort.

4. State Contract Authority

Typically, state government will be the largest, or at least one of the largest, consumers of telecommunications services, particularly, but not exclusively, in smaller and more rural states. State contracts and other purchases may be designed to promote private deployment of open infrastructure. "Demand pull" approaches—a state outlining its needs without dictating how they are to be met—allow a creative market response and are usually preferred over technology push approaches.

5. Technical Assistance Programs

State government can be a clearinghouse for local efforts, support technology training, or facilitate community-to-community mentoring programs. An increasing number of colleges, especially land grant universities, now have technology programs.⁶⁷

6. Funding Specific Projects or Certain Kinds of Needs

a. Grants and Loans

Certain projects may have significant spillovers that justify exceptional public investment. The Federal Telecommunications and Information Infrastructure Assistance Program (TIIAP), a grant program, has been specifically suggested as a model for state programs.⁶⁸ Revolving loan funds could also be considered.

66. See Christopher Conte, *The Telecom Disconnect*, GOVERNING, July 1999, at 21-22.

67. For example, the Burns Telecommunications Center at Montana State University provides technology assistance to communities throughout Montana. See *Burns Telecommunications Center* (visited Nov. 9, 1999) <<http://btc.montana.edu>>.

68. See Steven Downs, *TIIAP Adaptation*, in A COMPILATION OF "BEST PRACTICES" TO IMPLEMENT THE TELECOMMUNICATIONS ACT OF 1996 39 (Bob Rowe & Vivian Witkind Davis eds., 1999).

b. Rate Assistance

States should consider companion programs to those at the federal level which support rural health care centers, libraries, and schools. A Montana Universal Access program goes beyond the federal programs, for example, to assist community access points and tribal community colleges.⁶⁹

C. An Economic Development/Community Development Framework for State Commission Efforts

The culture of the telephone industry and its regulators is different from the culture of rural development advocates and economic development agencies. They not only use different terminology, but are administered through different agencies, which often have little contact with each other. Historically, the two cultures have pursued their separate concerns in their two distinct worlds, never pausing to think that they have something in common.⁷⁰

Community and economic development may serve as a useful organizing principle for technology promotion, including many of the approaches just described. State PUCs may wish to rethink some portions of their operations and ways of doing business.⁷¹

A community and economic development approach (CD/ED) would emphasize working directly with concerned communities and marshalling the resources needed to meet the goal set by the communities. As described in Part IV.A, telecommunications is widely recognized as an essential input to economic development, measured in investment, per capita income, or employment. It can also be one valuable tool to promote community development, measured in crime levels, educational attainment, levels of participation in community activities, the balance of in-migration and out-

69. The Montana Universal Access Program, administered by the Public Service Commission, is designed to assist rural communities with the high costs of connectivity for advanced telecommunications services. Communities not located within a frame relay cloud do not have comparable access to advanced telecom technology as communities which, by virtue of their location, are in or near a frame relay cloud required for connecting to advanced services. The program provides funding assistance to schools, libraries, healthcare providers, tribal colleges, and communities which pay additional mileage or backhaul charges simply to reach the point of connection for advanced services. Under the program, applicants pay no more than \$100 per month in additional connectivity costs for a 56 kbps line than do their more urban counterparts located within an advanced service access area. These connectivity charges are usually billed by telecommunications carriers as mileage or backhaul charges and are incurred as additional charges to routine monthly recurring billing for lines for advanced services.

70. PARKER & HUDSON, *supra* note 21, at 49.

71. See William Gillis, Ph.D., *Rural Telecommunications: From Market Failure to Market Opportunity*, TELECOM Q., Feb. 1996. Gillis is a commissioner on the WUTC.

migration, and perceptions of the quality of life. Community development and economic development are mutually-reinforcing concepts.⁷²

A CD/ED approach might start with developing a shared vision for the community in a process initiated at the local level. The community might then conduct an inventory of assets and identify barriers to be addressed in achieving its vision. Infrastructure, especially telecommunications assets and barriers, would likely feature prominently in such an assessment. As plans are developed, they should be customer driven, not technology driven. This kind of process is likely to change both the nature of demand—what customers want—and the penetration of that demand—how many customers want it. For example, a rural business might initially want nothing more than the ability to quickly obtain a credit card verification. Over time, the business may desire to purchase inputs over the Internet or market its products electronically. Local examples of successful technology applications along with local training (such as cyber cafes that are held where citizens actually meet) are probably key to moving use up the scale, encouraging customers to extract more value from the network. At some point, a local technology culture begins to grow and use becomes more diffuse as well as more intense. This is very much the experience in towns such as Libby, Montana, where customer concerns with basic telephone infrastructure (multiparty lines, analogue switches, outages, and, in some cases, the absence of any facilities) expanded into an active technology group closely allied with the county economic development agency. The group founded a community-based internet service provider (ISP) that provides training and support to business, nonprofit, and private technology users and advocates progressively increasing network access.⁷³

A successful effort typically draws heavily on the community's own resources and often pursues market-oriented strategies as a first preference. For example, is it possible to aggregate demand into one relatively

72. In studying the penetration of simple phone service, Professor Jorge Schemant has identified the relationship between strictly economic factors (income and employment) and other factors, such as age, housing type, geography, and especially ethnicity. Often these factors play out in unique local combinations. See Jorge Reina Schemant, *The Persistent Gap in Telecommunication: Toward Hypothesis & Answers*, in COMPETITION, REGULATION, AND CONVERGENCE: CURRENT TRENDS IN TELECOMMUNICATION POLICY RESEARCH (Sharon Eisner Gillett & Ings Vogel Sang eds., 1999).

73. The "KootNet" (named after the Kootenai River that cuts through the mountain valley), adopted as its mission statement, "to Fill the Local Pothole on the Information SuperHighWay." *Lincoln County Montana Homepage* (visited Sept. 29, 1999) <<http://www.liby.org/>>; see also Gail Lawyer, *Node on the Range*, TELECOM, BUS. & TECH. FOR NEXT-GENERATION SERVICE PROVIDERS, Aug. 1998, at 62.

attractive package and solicit bids for serving that package?⁷⁴ Is it possible to develop partnering arrangements between local and remote entities—for example, a local ISP or other business and a regional or national data CLEC.⁷⁵

A state PUC can perform a number of crucial functions within a new CD/ED focus. It can convene local or state forums, provide an information resource to local officials and citizens, and act as an intermediary or advocate for local interests with providers and the federal government. Further, the state can help identify and implement strategies most appropriate to particular situations, develop a statewide vision to match the various local visions, and implement universal service, service quality, and other programs which support state and local visions.

A new CD/ED mission, if embraced, must coexist with an ongoing concern for rates paid and service received by retail customers who do not enjoy competitive choice and with a new emphasis on consumer protection and education. It also must function within existing statutory and administrative rule requirements applying to various types of proceedings. Potentially, it has implications for how utility commissions are organized, staffed, and operated. It is one part of a larger rethinking underway within and among state utility commissioners.⁷⁶

V. A FEDERAL-STATE APPROACH TO BROADBAND DEPLOYMENT

The Act established a cooperative federalist telecommunications policy.⁷⁷ Section 706 in particular speaks to both the FCC and states. As

74. Aggregation of demand, often with one larger user as an anchor, is attractive but difficult to achieve for several reasons. The anchor may already be tied into a contract or may be disinclined to enter a sharing arrangement with other customers. External restrictions on certain customers may make it difficult for them to aggregate with others. Even with aggregated demand, there may be few suppliers interested in providing service. Conducting needs assessments, developing requests for proposals, evaluating bids, and entering contracts may be complex and time-consuming undertakings. Local, state, public, and private entities may provide valuable service helping to overcome these barriers.

75. Skyland, a competitive venture of several Montana cooperatives, is pursuing an innovative arrangement with NorthPoint to provide DSL in certain areas.

76. See Bob Rowe, *Substance Plus Process—Telcoms Regulation Reforms to Protect Consumers, Preserve Universal Service, and Promote Competition*, 71 U. COLO. L. REV. (forthcoming March 2000) Bob Rowe, *A Cooperative Federalist Approach to FCC Restructuring*, NRRRI B., Fall 1999, at 109-114.

77. See Philip J. Weiser, *Chevron, Cooperative Federalism, and Telecommunications Reform*, 52 VAND. L. REV. 1, 3 (1999). Weiser describes cooperative federalist systems as those which charge state agencies as well as federal agencies with responsibility for interpreting and implementing federal law. He suggests that Chevron deference should be extended to state agencies charged with implementing the Telecommunications Act, as it is

discussed in Part III, ATC deployment is a complex issue and looks much different when viewed up close than when seen from a distance. Is it possible to coordinate various approaches to ATC deployment within the Act's structure? In particular, is it possible to take advantage of the relative skills of federal and state regulators? Is it also possible to reconcile promotion of ATC deployment with the Act's other mandates, especially preserving and advancing universal service and encouraging competition? This Part first summarizes an overall approach to FCC-state efforts to implement the Act. It then suggests a specific framework for coordinating section 706 efforts, along with a list of possible initial steps. Finally, it mentions several areas where ATC policies and other policies must be harmonized.

A. *A Framework for Federal-State Relations*

In his first speech as FCC Chairman, William Kennard called for a federal-state "Magna Carta" on Act implementation.⁷⁸ Over the following year, state commissioners worked with Chairman Kennard and his staff to draft such a document. NARUC adopted the final Magna Carta document in a February 1999 resolution.⁷⁹ The Magna Carta begins by affirming a commitment to competition and universal service and concludes by listing nine areas for joint action.⁸⁰ Perhaps most significantly, it includes a "Statement of Participation," which commits state commissions and the FCC to take full advantage of their complementary strengths, and identifies several specific practices which may be applied in various contexts in order to do so. These include participation in one another's key proceedings, hands-on consultation, best practices guidelines, and cooperative development of substantive models or standards.⁸¹

to the FCC. *See id.* at 1-3. *See generally* *Chevron USA, Inc. v. Natural Resources Defense Council, Inc.*, 467 U.S. 837 (1984).

78. *See* Chairman William E. Kennard, Address at the Annual Convention of the National Association of Regulatory Utility Commissioners (Nov. 10, 1997).

79. *See Winter Committee Meeting Resolutions* (visited Oct. 2, 1999) <<http://www.naruc.org/Resolutions/reswin99.htm>>.

80. The nine areas are: entry strategies, network element pricing, nonrecurring charges, universal service, nondiscrimination, innovation and investment, consumer protection, enforcement, study and analysis. *See id.*

81. *See id.* The pertinent portion of the Statement of Participation is as follows:

State and U.S. territory commissions and the FCC possess complementary strengths. We will work together to take full advantage of these, in the spirit of cooperative federalism.

Cooperation between the federal and [s]tate and U.S. territory decisionmakers takes advantage of the strengths of each. The federal, [s]tate[,] and U.S. territory proceedings are fact-based and the commissions are able to analyze and act on complex records. States and U.S. territories are close to local markets and have

B. A Structure for ATC Promotion

Given the complexity of ATC issues, the variety of potential strategies, and the strong state and national interests in ATC promotion, a vehicle is required to coordinate understanding of and action to address ATC deployment. The Act's overall cooperative federalist structure and the specific directions to the FCC and state commissioners outlined in section 706, at the very least, support such an approach. This vehicle would be a prime example of the kind of joint effort called for in the federal-state Magna Carta.

Joint boards or joint conferences of state and federal commissioners are specifically authorized by section 410(b) of the Act.⁸² In February 1998, the Alliance for Public Technology called for a joint board or task force concerning section 706.⁸³ In March 1998, NARUC passed a resolution urging the FCC to investigate section 706 thoroughly and consider ideas including "a state-specific joint board or a section 706 task force to model various approaches and to develop coordination strategies."⁸⁴

developed methods for evaluating the structure of those markets. States and the U.S. territories also benefit from experience with other industry restructurings, including natural gas and electricity. The FCC possesses not only a national, but also a global perspective. Moreover, it is expert in dealing with all forms of communications. Together, the FCC, the [s]tates[,] and the U.S. territories can accomplish much in addressing customer concerns, the linchpin of the regulatory process.

FCC actions affecting [s]tates and U.S. territories should be undertaken in a manner that is consistent with its statutory obligations, while mindful of [s]tates' and U.S. territories' unique knowledge of local conditions and experience in regulating the local market. In areas where national standards are appropriate, the FCC will strive to implement them in a way that encourages [s]tate and U.S. territory input to the fullest extent possible. The parties recognize the value of diversity and of experimentation in many circumstances. The [s]tates and the U.S. territories will support the FCC in its efforts to meet the challenges presented by the implementation of the Act to the fullest extent possible.

Generally, certain practices can help federal, [s]tate[,] and U.S. territory regulators achieve their goal of mutual cooperation. Such practices may include encouraging [s]tate participation in FCC proceedings, as well as FCC participation in crucial [s]tate and U.S. territory proceedings. Encouraging hands-on consultation among [s]tate, U.S. territory[,] and federal policy-makers and developing and using "best practices" guidelines will contribute to the collaborative process. Cooperative development of substantive models or standards, which may be considered by [s]tates and U.S. territories in formulation of [s]tate/U.S. territory-specific policies, will aid in achieving the common goals.

Id.

82. See 47 USC § 410 (b) (Supp. II 1996).

83. See Petition of the Alliance for Public Technology at 34-41, *Petition of the Alliance for Public Technology Requesting Issuance of Notice of Inquiry and Notice of Proposed Rulemaking to Implement Section 706 of the 1996 Telecomms. Act*, RM-9244, available at (visited Jan. 21, 2000) <<http://www.appt.org/policy/706filing.html>>.

84. NARUC, *Resolution Regarding Petitions to the FCC for Action Under Sec. 706*

In February 1999, NARUC passed a resolution calling on the FCC to convene a joint conference or advisory body including federal and state commissioners which would widely consult with other private and public interested parties. The joint conference would facilitate cooperative development of ways to promote competition and deployment of ATCs, develop program proposals, and monitor results.⁸⁵

Subsequently, a work group began developing a specific proposal. NARUC adopted the proposal in July 1999⁸⁶ and conveyed it to the FCC with a request for an order establishing a joint conference.⁸⁷ The proposal describes an overall objective, proposes a specific structure, explains the joint conference's scope, and concludes by listing specific joint conference functions.⁸⁸

The joint conference's overall objective would be to speed advanced services deployment to underserved areas and customers through coordinated action among federal, state, local, industry, and nonprofit initiatives.⁸⁹ The proposed structure is a joint conference of federal and state commissioners under section 410(b)⁹⁰ that would act as a steering committee for a larger and much more inclusive task force. Consumer groups, industry providers including small companies serving rural areas, and other units of government would all be encouraged to participate.

The joint conference's scope would include considering strategies such as those outlined in Part III.B-C of this Article. The conference would specifically consider how strategic partnerships with local government or economic development agencies may enhance the effectiveness of traditional regulatory options. To the extent possible, recommendations would emphasize private market development and leveraging of the

(visited Oct. 2, 1999) <<http://www.naruc.org/Resolutions/winter98.htm>>.

85. See NARUC, *Resolution Requesting a Federal/State Forum for Promotion of Access to Advanced Telecommunications Capabilities* (visited Oct. 2, 1999) <<http://www.naruc.org/rescont.htm>>.

86. See NARUC, *Resolution Endorsing a Federal-State Joint Conference on Advanced Services July 1999* (visited Oct. 2, 1999) <<http://www.naruc.org/Resolutions/summer99.htm>>.

87. See Letter from Bob Rowe, Chairman, NARUC Telecommunications Committee, to William E. Kennard, Chairman, FCC, (Aug. 9, 1999) (on file with the *Federal Communications Law Journal*).

88. See NARUC, *Attachment—Federal-State Joint Conference on Advanced Services* (visited Oct. 1, 1999) <<http://www.naruc.org/Resolution/summer99htm>>.

89. See NARUC, *Summer Committee Meetings Resolutions, Section I* (visited Oct. 1, 1999) <<http://www.naruc.org/Resolutions/summer99.htm7>>.

90. See *Attachment—Federal-State Joint Conference on Advanced Services*, *supra* note 88. The dual steering committee/task force structure was proposed to ensure an entity is specifically responsible for the joint conference's functioning.

competitive marketplace to promote access to ATCs.⁹¹

The proposal sets out an initial list of five specific functions.⁹² The joint conference would *monitor* ATC deployment, for example, through regional hearings sponsored jointly by the FCC, the Rural Utilities Service, NTIA, and NARUC. Monitoring would also include assessment of the supply of and demand for ATCs and identification of deployment strategies. *Activation* would include convening special forums and other means to promote the overall objective. *Coordination* of various programs would seek synergies between existing efforts, identify obstacles to their success, and transfer implementation to stakeholders. Information developed through the joint conference would be *disseminated* to those best able to use it. Finally, various strategies could be *deployed* in specific urban and rural section 706 zones.

The joint conference proposal is a way to bring together the various stakeholders and strategies in order to move forward on Congress's specific directions in section 706. It is consistent with the Act's overall purposes and congruent with the Act's cooperative federalist structure.

C. *Reconciling Access to ATCs with Competition and Universal Service*

There are a range of additional Act implementation issues with implications for ATC deployment and access. Three of these are establishing consistency with universal service, regularizing balanced wholesale prices and terms, and achieving significant progress on BOC compliance with section 271 and provision of in-region long-distance. This Part touches very briefly on each of these.

1. Universal Service

The relationship between encouraging deployment of and access to ATCs through section 706 and the enlarged scope of universal service under section 254⁹³ is especially complex. Section 254 primarily concerns funding for universal service programs. Section 706 emphasizes market-oriented, deregulatory, and other approaches.⁹⁴

91. *See id.*

92. *See id.*

93. *See* 47 U.S.C. § 254 (Supp. II 1996).

94. *See* Jeff Richter et al., *Policies on Pricing and Universal Service for Internet Traffic on the Public Switched Network* at v (last modified Apr. 1998) <<http://www.nrri.ohio-state.edu/download/9811.pdf>>. The report states:

Regulators must be careful not to over-plan the deployment of advanced services or fund infrastructure investments that would occur anyway.

Nonetheless, universal service planning should address the means to support

Section 254 of the Act expanded universal service to include libraries, schools, and rural health care and affirmed the nation's commitment to aid low-income customers and high-cost rural and insular areas. The new schools, libraries, and health care programs are potentially important vehicles for attracting and aggregating demand.⁹⁵

The traditional high-cost fund programs are also implicated.⁹⁶ The Act specifically calls for reasonable comparability of urban and rural rates and services.⁹⁷ For most customers for the short-term and mid-term future the existing, primarily land-line telephone network will be the underlying system over which ATCs could be provided.⁹⁸ High-cost fund programs must be sufficient to support the development and maintenance of adequate infrastructure.⁹⁹ They must be potentially available to support networks (of

investments necessary for designated advanced telecommunications services which customer demand will not currently support. This may mean subsidizing, in some areas, infrastructure necessary to promote advanced services or to facilitate Internet access.

Id. at vii.

95. See NARUC, *Resolution Supporting Access to Advanced Communications for Schools and Libraries and Rural Health Care Providers and Use of the Telephone Excise Tax to Fund these Programs* (visited Oct. 2, 1999) <<http://www.naruc.org/Resolutions/summer98.htm>>; NARUC, *Resolution on the Universal Service Rural Health Care Program* (Oct. 2, 1999) <<http://www.naruc.org/Resolutions/summer99.htm>>.

96. See generally Bob Rowe, *Summary of November 1998, Universal Service Joint Board Recommendation and Issues of Concern to High-Cost States*, NRRI Q. BULL. 1, 39 (Spring 1999); Bob Rowe et al., *Universal Service: The Case for Rural America*, PUB. UTILIT. FORT., July 15, 1999, at 48.

97. See 47 U.S.C. § 254(b) (Supp. II 1996) which states:

(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 [n]ation

(3) Access in rural and high cost areas

Consumers in all regions of the [n]ation, 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 available at rates that are reasonably comparable to rates charged for similar services in urban areas.

98. In the near term, many customers may have ATC access over cable modems, but cable does not reach many rural areas. Similarly, terrestrial and satellite wireless systems have nearer-term constraints for many services to many customers. All these approaches are advancing quickly. They have greater technical and economic promise the farther out one goes from the present.

99. See NARUC, *Resolution on Implementation of Universal Service High-cost Funding* (visited Oct. 6, 1999) <<http://www.naruc.org/communic.html>>; NARUC, *Resolution to Support Alternatives to the Federal High-cost Funding Support Mechanism Announced by the FCC in its May 8, 1997 Universal Service Order* (visited Oct. 4, 1999) <<http://www.naruc.org/Resolutions/winter98.htm>>.

whatever design) capable of carrying an advanced level of service (a platform),¹⁰⁰ which is quite different from saying high-cost support programs should currently pay support for ATCs. Essentially, networks supported by high-cost fund mechanisms should be forward compatible with higher service levels so that they need not be rebuilt or replaced. One approach might be to set a minimum floor but allow universal service eligible telecommunications carriers to build to a higher level. Consideration should be given to service level requirements, ensuring that the high-cost fund gets what it pays for.¹⁰¹ Various approaches have been advocated to make universal service compatible with competition.¹⁰² While these are outside the scope of this Article, their connection to ATC deployment should be noted. A section 706 joint conference might identify additional specific cost-related issues (such as the cost of backhaul)¹⁰³ and policy options to address them.

2. Wholesale Economic and Noneconomic Terms

Striking the right balance between incumbents and competitors concerning both price and nonprice terms for access to incumbents' networks continues to be important. These issues are being addressed in a variety of settings, including the FCC's proceeding on the Supreme Court's remand of the unbundled network element issue,¹⁰⁴ in ongoing implementation of the FCC's total element long run incremental costing methodology (TELRIC)¹⁰⁵ and through work on issues such as

100. See NARUC, *Resolution on Definition of Voice Grade Service Universal Service Purposes* (visited Oct. 2, 1999) <<http://www.naruc.org/Resolutions/winter98.htm>>. The resolution supports requests for reconsideration in FCC's *Fourth Order on Reconsideration* in CC Docket No. 96-45 released on December 30, 1997. The resolution calls for the FCC to increase the bandwidth which will be supported for high-cost fund purposes from 3,000 to 3,500 Hertz. Requests for reconsideration on this issue are still pending.

101. See *supra* note 64.

102. See, e.g., Dennis Weller, *Auctions for Universal Service Obligations*, 23 TELECOMMS. POLICY 645 (1999).

103. See *supra* note 26.

104. See *Implementation of the Local Competition Third Report and Order*, FCC 99-238, 1999 WL 1008985 (Nov. 5, 1999); NARUC, *Resolution Regarding Unbundled Network Elements* (visited Nov. 9, 1999) <<http://www.naruc.org/resont.htm>>; *Telecomms. Capability Third and Fourth Report and Order*, FCC 99-355, 1999 WL 1124073 (Dec. 9, 1999).

105. See *Implementation of the Local Competition Provisions of the Telecomms. Act of 1996, Stay Order*, 14 F.C.C.R. 8300 (1999). NARUC requested six months from the date of the FCC Order concerning the nonrural High-cost Fund within which to implement wholesale geographic rate deaveraging. See Letter from Bob Rowe, Chairman, NARUC Telecommunications Committee, to William E. Kennard, Chairman, FCC (Mar. 3, 1999) (on file with the *Federal Communications Law Journal*). The request was granted by FCC Order CC 99-14 on May 7, 1999. See *Commission Stays Geographic Deaveraging Requirement*, May 7, 1999, available at 1999 FCCLexis 2028.

collocation,¹⁰⁶ line sharing,¹⁰⁷ and access to buildings.¹⁰⁸ NARUC has advocated a “best practices” approach to resolving many of these issues and established a web-based process for gathering and sharing candidate best practices on a range of subjects, including customer service, advanced services, market entry, numbering, collocation, and interconnection.¹⁰⁹

3. Section 271 Compliance and In-region BOC Entry

Successful compliance with requirements of section 271 for BOC entry into the in-region long distance market will mean that competitors have adequate access to incumbent network facilities and will be more fully able to provide basic and advanced services. In addition, it will allow BOCs to more fully utilize their networks within their home regions.

Without either raising or lowering the section 271 bar, a variety of approaches have been advocated to advance this process. These include collaboratives and independent third party testing of Operations Support Systems (OSS), as have been employed in states such as New York¹¹⁰ and Texas.¹¹¹ In 1998, NARUC developed a “Section 271 Template” to be used by state utility commissions and parties to develop complete records in section 271 proceedings.¹¹² More recently, thirteen commissions in states served by U S WEST have joined in a multistate collaborative to conduct independent third-party testing of OSS.¹¹³ The multistate collaborative is supported both by U S WEST and by competitors who will be able to participate through a technical advisory group. The collaborative maintains

106. See NARUC, *Resolution Supporting Collocation Reform* (visited Nov. 9, 1999) <<http://www.naruc.org/recont.htm>>.

107. See *Telecomms. Capability Third and Fourth Report and Order*, FCC 99-355, 1999 WL 1124073 (Dec. 9, 1999).

108. See NARUC, *Resolution Regarding Nondiscriminatory Access to Buildings for Telecommunications Carriers* (visited Nov. 9, 1999) <<http://www.naruc.org/Resolutions/summer99.htm>>.

109. See Bob Rowe & Vivian Witkind Davis, “Best Practices” to Implementation of the Telecommunications Act of 1996, NRRI Q. BULL. 23 (Spring 1999); NARUC, *Resolution on the “Best Practices” Project* (visited Nov. 9, 1999) <<http://www.naruc.org/Resolutions/winter99.htm>>.

110. See *New York Tel. Co. 271 Proceeding*, (visited Nov. 5, 1999) <<http://www.dps.state.ny.us/tel271.htm>>.

111. See Investigation into Southwestern Bell Telephone Company’s Entry into In-region InterLATA Service Under Section 271 of the Telecommunications Act of 1996 (visited Nov. 10, 1999) <<http://www.puc.state.tx.us/telecom/projects/16251/16251.cfm>>.

112. The *Section 271 Template*, published in July, 1998, is available by request from the NARUC office. See NARUC, *Resolutions Adopted at NARUC’s Summer 1998 Meeting, Section 271 Template* (visited Oct. 2, 1999) <<http://www.naruc.org/Resolutions/summer98.htm>>.

113. See Bob Rowe, *Let’s Work Together to Resolve Bell Operating Company Long Distance Entry*, NRRI Q. BULL. 1, 53 (Spring 1999).

a web page, with electronic registration for the technical advisory group.¹¹⁴

VI. CONCLUSION

Since the drafting of this Article, the FCC has created the Federal-State Joint Conference on Advanced Telecommunications Services.¹¹⁵

Conferees include FCC and state PUC commissioners. The FCC stated:

Ensuring that advanced telecommunications services will be made available to all Americans is an effort that will be undertaken on various levels—federal, state, local, and regional. The Federal-State Joint Conference on Advanced Telecommunications Services will further that goal by facilitating the cooperative development of federal, state, and local mechanisms and policies to promote the widespread deployment of advanced services.¹¹⁶

In addition to dialogue among policy makers at various levels of government, the Joint Conference's activities will include monitoring deployment, identifying "best practices" to promote deployment, conducting regional field hearings, disseminating information to entities positioned to use it, and undertaking additional efforts.¹¹⁷

Access to ATC is a more complex problem than it appears at first. The problem's complexity, however, may ultimately make it more solvable. Solutions can be developed consistent with the Act's emphases on competition and universal service and within the Act's cooperative federalist framework. Within the Act's framework a new perspective and a new structure will best sustain the effort. An economic development/community development perspective, augmenting other more traditional regulatory perspectives, will bring a coherent view and clearer understanding of ATC deployment and access issues. A federal-state joint conference, with participation from the private and non-profit sectors as well as the public sector, will bring together the crucial stakeholders to coordinate and advance their efforts. With this approach, we should indeed be able to "grab the brass ring" of section 706.

114. See *Operational Supports Systems Third Party Testing Project* (visited Oct. 2, 1999) <<http://www.nrri.ohio-state.edu/ossedoc.htm>>.

115. See Federal-State Joint Conference on Advanced Telecommunications Services, *Order*, CC Docket No. 99-294 (Oct. 8, 1999), available at 1999 WL 809499.

116. *Id.* at para. 3.

117. See *id.* at para. 6.