NCTA
NATIONAL CABLE & TELECOMMUNICATIONS ASSOCIATION

Cable Telephony:

Offering Consumers Competitive Choice

July 2001

Cable Telephony: Offering Consumers Competitive Choice

As we embark on a new millennium, cable is delivering new technologies, products and services to consumers. In addition to being the leading multi-channel provider of analog video, cable is now offering its customers a wide array of advanced services, including high-speed Internet service, digital video, and cable telephony.

The cable industry has invested billions of dollars in infrastructure upgrades to provide residential customers with high-speed access to the Internet and other services. Today cable makes its high-speed Internet service available to more than 60 million of the nation's households, and cable modem service is being made available to millions of additional households every year. Less well known is the extent to which cable companies are using their broadband infrastructure to provide facilities-based telephone service to both residential and business consumers.

Residential Circuit-Switched Telephony

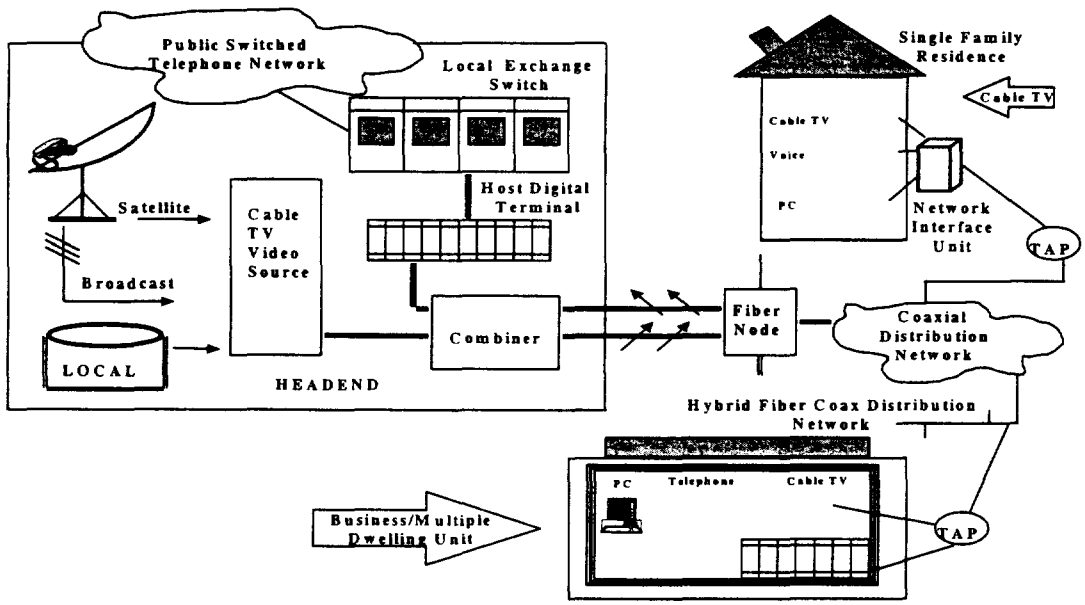
Initially hampered by regulatory constraints, cable telephony is tapping into what promises to be a large potential market. Cable operators like AT&T, Cox, Comcast and Cablevision are offering competitive residential telephone services in a number of markets across the country. With penetration rates in the mid-teens and above, they are proving that consumers will buy telephone services from their local cable companies.

Cable companies have invested nearly $50 billion since 1996 upgrading their systems to offer new services. The same upgrades that allow cable companies to offer high-speed Internet access and digital cable service help make it possible for cable to provide high-quality digital telephone service. Today, over 1.3 million residential telephone customers receive telephone service from cable companies using the same wires that carry cable video and Internet traffic, and this number is growing by over 70,000 customers a month. These cable facilities compete with the existing facilities of incumbent telephone companies, typically offering savings of 10% - 20%, although savings can sometimes reach 50% or more.

Cable's initial forays into residential telephony have been through traditional circuit-switched technology, although this technology has been updated to provide digital, rather than analog service. To provide such service, a cable company must install a sophisticated telecommunications switch in the cable

headend (a centralized distribution point analogous to a telephone company central office). The switch functions in a manner similar to that of telephone company switches. A circuit, or path, is temporarily created, on a per-call basis, from one cable telephony customer to another cable telephony customer served by the same switch. Or the circuit is connected to, and traverses the public switched telephone network (PSTN) to be connected to any other telephone subscriber connected to the PSTN. A diagram is shown below. Cable's residential circuit switched technology has been successfully deployed in Arizona, California, Colorado, Connecticut, Florida, Georgia, Illinois, Kentucky, Maryland, Massachusetts, Michigan, Minnesota, Nebraska, New Hampshire, New York, Oklahoma, Pennsylvania, Rhode Island, South Dakota and Virginia.

Cable Telephony Network Diagram



Source: NCTA Cable Handbook.

For example, by March 31, 2001 Cox Communications was serving 300,000 residential customers using 410,000 residential access lines, making Cox the equivalent of the 12th largest telephone company in the country. Cox's residential telephone service is growing at a rate of 118% annually, adding 4,000 customers per week. The major markets where Cox is offering residential telephony include Hampton Roads, VA, Oklahoma City, OK, Omaha, NE, Phoenix, AZ, and Orange County and San Diego, CA. By

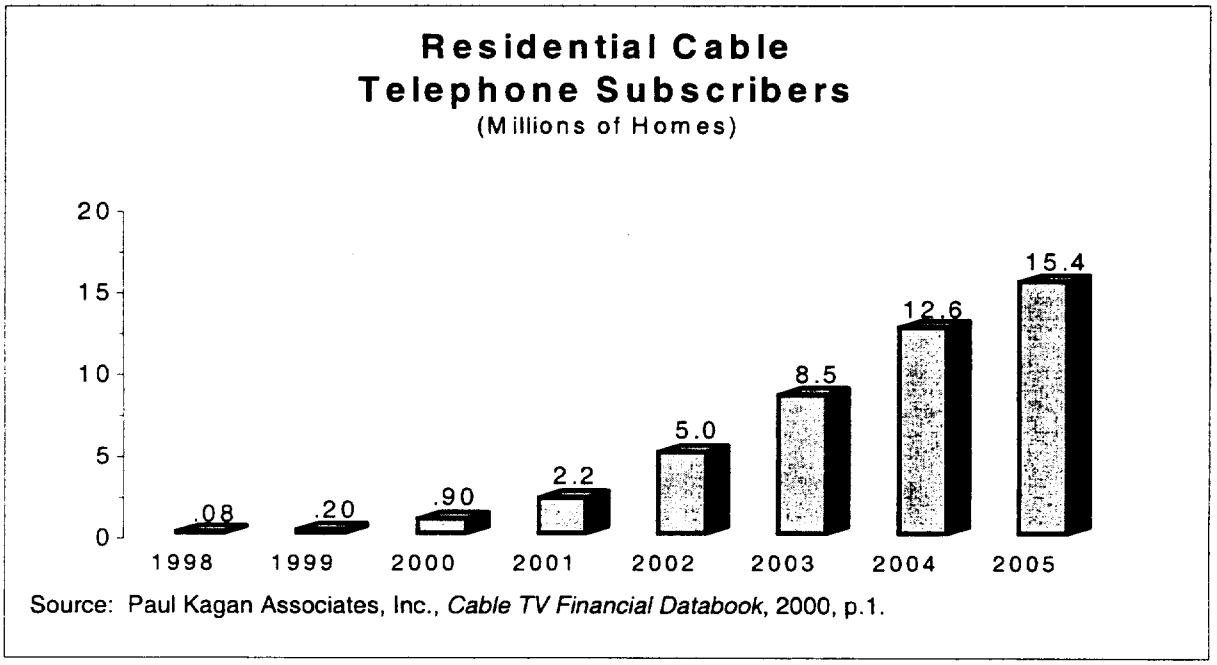
year-end 2001, Cox's residential telephone service will be available to 75% of the households in the eight major markets where Cox offers telephone service.

Meanwhile, AT&T Broadband, is now serving over 850,000 residential customers through cable facilities in 11 states, including the major metropolitan areas of Atlanta, Boston, Chicago, Hartford, Los Angeles, and Pittsburgh.

General Communications, Inc (GCI), the largest cable operator in Alaska, serves 65,000 local telephone access lines in Anchorage or 33% of the market. (GCI serves these customers using non-cable-related facilities).

Comcast Corporation currently has 70,000 residential and business telephony customers primarily located in the Detroit and Washington, DC suburbs.

Insight Communications launched AT&T Digital Telephone Service in Louisville, Kentucky during the first quarter, 2001, and will launch in Evansville, Indiana in August of this year.



Consumers may choose to purchase local phone service from their cable provider for a variety of reasons, including; improved customer service, additional features and functionality, digital quality, consolidated billing and lower prices.

In Orange County, CA, Cox Digital Telephone is priced roughly 10% less than the ILEC's offering for the first telephone line, and roughly 50% less for the second line, (or third or fourth line). Enhanced features such as call forwarding and call waiting are priced up to 30% less.

In Los Angeles, AT&T Broadband customers can save nearly 50% over the cost of the incumbent phone company's offering if they subscribe to two fully-featured telephone lines. In the Southern New Hampshire - Northern Massachusetts AT&T system area, digital phone service packages are priced between $19.25 to $42.95 per month, which is 20-30 percent below the competition.

Cable telephony customers can find additional savings through bundling discounts. Cable companies do not generally require telephone customers to purchase other services (such as cable video services or high-speed Internet access) when they purchase cable's telephony service. Approximately 10% of Cox Digital telephone customers, for example, choose to purchase Cox telephone service alone. However, Cox customers who also choose to purchase video and/or Internet access service from Cox enjoy additional savings in the form of bundling discounts.

These circuit-switched deployments represent some of the first (and in some cases only) facilities-based deployments of residential telephony in competition with incumbent local exchange companies. This is important because only facilities-based competitors are likely to provide sustainable long-term competition. Such competitors are less dependent on incumbents to provide needed inputs into the provision of the competitive service. Even so, incumbent phone companies have often done much to frustrate facilities-based competition. They have attempted to impose onerous interconnection terms and conditions, delayed connecting facilities, processing orders, and porting numbers, and generally placed barriers in the way of competitors.

Notwithstanding these obstacles, residential cable telephony is gaining market share; there are now 1.3 million access lines and that number is growing. And it's not just large cable companies that are offering cable telephony – some smaller, rural companies, are also providing much needed competition by deploying circuit-switched telephony in competition with incumbent local exchange companies. Cable companies such as Service Electric in Pennsylvania and MidContinent in South Dakota are offering telephone services. MidContinent Communications, for example, has over 100,000 residential and business telephony subscribers in 11 communities in South Dakota.

Voice Over IP

Even with cable's initial success in offering circuit switched telephony, technological advances, standardization efforts, and economics are driving cable companies to test and begin to deploy a new form of cable telephony –Voice over Internet Protocol ,or VoIP, that may result in lower rollout costs, increased flexibility, and more innovative advanced services. Virtually every major cable company is planning to test, or is currently testing, VoIP.

Cable companies currently offering circuit-switched telephony generally are "deepening" their rollouts in the markets in which they've already deployed and are not expected to deploy circuit-switched technology in very many new markets. Although these circuit-switched efforts have been successful, most cable companies that have not already begun to provide circuit-switched services are expected to focus exclusively on VoIP. This is because of the huge capital expenditures and investments needed to purchase and install switches – even after system upgrades have been completed. VoIP is more modular without the large upfront cost needed for the deployment of circuit-switched telephony. VoIP is not only an incremental expense, it utilizes the data path the industry has already built, and should allow for easy software changes and additions to service packages, and innovative combinations of voice, data, and fax services.

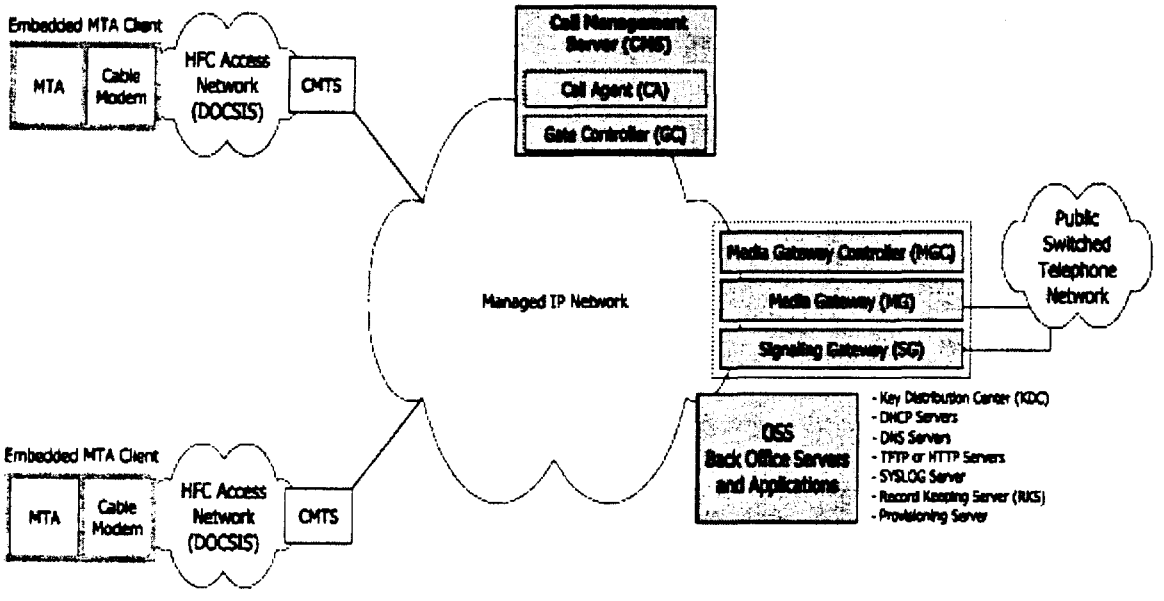
As in many other technical pursuits, standardization issues are important in VoIP. Cable companies want to be able to purchase equipment from various vendors, and to know that the equipment will be interoperable. To that end, CableLabs, the industry's research consortium, has been involved in various specification efforts for many years, including a successful effort to develop cable modem technical specifications. The Data Over Cable System Interface Specifications (DOCSIS) are also the underlying specs for a CableLabs project known as PacketCable. Very simply, PacketCable is a set of software-based mechanisms written to do exactly what today's analog, circuit-switched phone network does, from dial tone to ring tone. But unlike other VoIP specification efforts that address only portions of how to make a phone call work in IP, PacketCable maps out the entire journey. This is no minor task, yet much of the spec-writing work is already done.

While some equipment manufacturers may seek to establish de facto standards, cable companies favor adherence to PacketCable, just as they sought uniformity with cable modem specifications. PacketCable has a technical prerequisite: DOCSIS 1.1. PacketCable needs DOCSIS 1.1 for its quality-of-

service (QoS) features, so calls placed over the cable-IP path (today's cable-modem path) sound clear and synchronized, and parallel the grade of service currently offered on a wireline phone.

Cable companies currently pursuing circuit-switched telephony are expected to continue to offer circuit-switched even if they later add VoIP. Meanwhile, cable companies not yet offering telephony must consider whether to pursue a full-IP voice architecture or to pursue a circuit-switched based architecture that could be migrated to switched-IP as the technology matures. Many have indicated they would prefer to take full advantage of the DOCSIS 1.1 platform and the forthcoming PacketCable architecture. Charter Communications explains their approach this way; "We're in the middle of deploying our high-speed data services using the DOCSIS platform across the majority of the company. We have little proprietary high-speed data product installed today. What we're trying to do is leverage the DOCSIS platform for other services, and IP telephony fits in that space very well." Charter has also found that switches involved in VoIP can be deployed over a much wider area, and then shared over systems, unlike the conventional approach which would localize a number of Class 5 switches. According to their analysis, Charter would "get better economics out of deploying IP telephony." A diagram showing the IP network connection to the PSTN is shown below.

IP Network Diagram



Source: CableLabs PacketCable Primer.

Companies that pursue VoIP must also decide whether to do so as a "lifeline" service or secondary line. Lifeline quality telephone service means the phone remains in use even if the power is out. Doing so requires equipping the hybrid-fiber coax (HFC) plant to accommodate the powering needs of the VoIP gear when the power grid is out. Secondary line service would be offered as an adjunct to existing primary line service - without the expectation that the line would operate when the power is out. A second-line offering can be offered at a lower price since companies need not make the additional investment necessary to power the plant, or upgrade to provide 99.999 percent phone reliability. Such a service might be marketed as a teen-line or fax-line service.

There continue to be significant questions of scalability and powering that will need to be resolved before IP telephony can be marketed on a mass scale. Nonetheless VoIP is expected to play a major role in the industry's future cable telephony efforts. And for areas served by smaller systems, where it can be economically infeasible to deploy a switch, VoIP may be the only economic means of providing wireline telephone competition.

Various VoIP tests are currently underway:

- AOL/Time Warner is currently conducting a commercial trial of a service dubbed "Line Runner," which is being offered to 1,000 RoadRunner (AOL/Time Warner's high-speed Internet access service) customers in Portland, Maine, and another 1,000 customers in Rochester, New York. The company is marketing Line Runner as a second line to RoadRunner customers, essentially bundling VoIP and high-speed data services. The VoIP base service is offered for $9.95 per month. Optional features, such as caller ID and voice mail, cost more. Line Runner's offering delivers voice services by linking a standard telephone into a cable modem. From there, voice packets are transmitted via the cable system as part of the RoadRunner data stream. The service is offered as a second-line service. As a company spokesperson explains: "we can do it without powering the network, an expense we don't want to assume. It's possible we may move into a primary-line service in the future if powering issues can be resolved in a more cost-efficient way."
- Charter Communications Inc. is conducting a 500-customer "carrier-grade," end-to-end voice-over-Internet-protocol cable-telephony field trial in St. Louis. The company is also conducting another VoIP trial in central Wisconsin. Charter is testing network gear provided by various manufacturers – using different gear for each test. Both trials are expected to eventually extend beyond the technical stage as Charter employs back-office systems and interconnection with its billing system. The tests are expected to run through August of 2001, at which point Charter plans to compare the results from both trials.
- Armstrong Cable, a 200,000 subscriber MSO, has been conducting VoIP trials throughout its systems in Ohio, Pennsylvania, West Virginia and Maryland.

Business Telephony

Cable has met with great success in deploying business telephony services in markets across the country. Five major cable companies or their affiliates – Adelphia Business Solutions/Hyperion, Cablevision Lightpath, Comcast Business Communications, Cox Fibernet/Cox Business Services and Time Warner Telecom -- provide commercial business telephony service in over 100 markets. While these services are generally not provided through the same hybrid-fiber-coax facilities that provide cable television service, they nonetheless represent an important component of the competition incumbent telephone companies face – providing alternatives for small, medium and large businesses – and keeping costs down for all.

While many CLECs have lost favor on Wall Street, some having declared bankruptcy, and others barely solvent, cable-owned CLECs have continued their rollouts. Adelphia Business Solutions and Time Warner Telecom, both of which are publicly traded companies, have distinguished themselves from other CLECs according to at least one analyst because of their "[f]inancial support from parent companies, well-regarded management teams and focused business plans."

Adelphia Business Solutions (ABS), for example, provides integrated communications services to business customers through its state-of-the-art fiber optic communications network, including local and long-distance voice services, messaging, high-speed data and Internet services. ABS has completed the construction of its fully redundant, 18,000-mile long-haul fiber optic network in the eastern-half of the United States, which, combined with an estimated 8,000 local fiber route miles in its operating markets, will support Adelphia Business Solutions' full line of communication service offerings. By the end of 2001, ABS will serve 75 to 80 markets across the U.S. including markets in 30 states and the District of Columbia.

Cablevision Lightpath is pursuing a regional strategy, focusing on New York, New Jersey and Connecticut, the world's largest telecommunications market. By leveraging the rights-of-way used by corporate parent Cablevision, the company currently connects directly to more than 900 buildings in the region. Lightpath offers voice and data services, as well as virtual private network (VPN) services which combine "Cablevision's Optimum Online consumer high-speed Internet connection with Lightpath's VPN software, creating a secure tunnel through the public network and into a business customers' network." As of April 2001 Cablevision Lightpath had over 66,280 commercial access lines.

Time Warner Telecom currently serves over 5,200 business customers in 39 major markets around the country, including Dallas, Los Angeles and New York.

Cox offers telephony services over its cable networks to business customers, and provides over 1 million voice-grade equivalents to businesses of all sizes.

What's Left To Be Done

As facilities-based competitors, one would expect that cable companies would be able to reach interconnection agreements with ILECs without much controversy, since the principle issue to be negotiated is how the parties will interconnect to exchange traffic. Yet as a result of ILEC intransigence, Cox, for example, has had to submit virtually all of its interconnection agreements to state public service commissions for arbitration. Cable companies have been forced to deal with a variety of anti-competitive tactics undertaken by their ILEC competitors. Cutover schedules have not been met. Timely provisioning of trunks has been a problem, resulting in busy signals for cable telephony customers. Ported numbers have not been properly loaded by ILECs into their switches, making it impossible to receive incoming telephone calls. Some ILECs have declined to pay reciprocal compensation (for all traffic exchanged – not just ISP-bound calls). In addition, ILECs have sometimes failed to comply with state regulations guaranteeing access to multiple dwelling units (MDUs). These are but a few of the systematic roadblocks thrown up by the ILECs to thwart cable entry into the local phone market.

Cable companies have also faced difficulty in persuading regulators of the importance of promoting facilities-based competition over the less viable resale and unbundled network element (UNE) competitive entry strategies envisioned by the Telecommunications Act of 1996. The reality is that it is difficult to implement a business model that relies heavily on purchasing essential inputs from one's fiercest competitor. A far more reliable approach is to make capital investments in one's own infrastructure and to decrease reliance on the ILECs as much as possible.

Moreover, as the FCC and many others have recognized, facilities-based competition creates more consumer benefits than any other form of competition. Facilities-based providers can compete more effectively with incumbents, provide more reliable service and, because they control the entire transmission path, offer more innovative and advanced services than non-facilities-based providers.

Cable Companies and Universal Service

Like other providers of interstate telecommunications services, cable companies offering cable telephony pay a percentage of their interstate revenues into the Federal Universal Service Fund. Similarly, to the extent that cable companies offer circuit-switched telephony in a state with a state universal service fund, they contribute based on intrastate revenues.

Cable companies that become certified as "eligible telecommunications carriers" (ETCs), are eligible to receive subsidies from the USF to serve high-cost and low-income customers. Companies must be certified by a state Public Utility Commission in accordance with the federal statutes and FCC rules. Cox Communications in California has sought and received certification as an ETC, and currently receives a small amount of funding from the California Tele-Connect Fund, an intrastate universal service fund. Because federal eligibility rules differ, Cox does not, however, receive any funding from the federal universal service fund for the provision of cable telephony to high-cost or low-income customers, although the company does pay into the fund.

Cable companies also provide various supported services to schools and libraries. Some of these services are provided free of charge through Cable in the Classroom's High-Speed Education Connection. Cable companies provide other services at discounted rates through the E-Rate program.

The Cost of Providing Cable Telephony

The cost of upgrading a cable system to provide cable telephony is not insignificant. Cox, which has installed 11 switches in its largest markets, estimates its switching costs at $105 per customer (assuming a penetration rate of 25 per cent of homes passed and an average take-rate of 1.5 lines per customer). In addition, Cox spends an additional $505 per customer for the Network Interface Unit (NIU), the drop, the tap and the Headend Interface Terminal (HIT). This combined variable cost of $610 per customer for the provision of local telephony is in addition to the $220 per home passed that Cox must invest to upgrade its cable plant to 750 MHz capacity and to introduce two-way interactivity. It also does not include the $100 per customer that Cox is investing to power its cable networks to ensure that telephone service continues in the event of a power failure.

Conclusion

Cable companies have invested substantial amounts of risk capital to upgrade their facilities, and deploy new services. Consumers across the country are benefiting from the deployment of these new services, including cable telephony. Consumers have shown their willingness to purchase telephony services from their local cable companies and are saving substantial amounts of money in the process. Cable companies will deploy even more new and innovative services in the future, such as IP telephony, and consumers will benefit further by new choices, convenience and savings.

NCTA
National Cable & Telecommunications Association
State Telecommunications Policy
1724 Massachusetts Avenue, NW
Washington, DC 20036
202-775-1039

Appendix B

Regional Cable Networks

1. Arabic Channel, The
2. Arizona News Channel
3. Bay News 9
4. Bonjour USA
5. California Channel, The
6. Casa Club TV
7. Central Florida News 13
8. Channel 4 San Diego
9. ChicagoLand Television News (CLTV)
10. CN8 – The Comcast Network
11. Comcast SportsNet
12. Comcast SportsNet (Mid Atlantic)
13. County Television Network SAN DIEGO
14. Ecumenical Television Channel
15. Empire Sports Network
16. FOX Sports Net Arizona
17. FOX Sports Net Bay Area
18. FOX Sports Net Chicago
19. FOX Sports Net Cincinnati
20. FOX Sports Net Detroit
21. FOX Sports Net Florida
22. FOX Sports Net Midwest
23. FOX Sports Net New England
24. FOX Sports Net New York
25. FOX Sports Net North
26. FOX Sports Net Northwest
27. FOX Sports Net Ohio
28. Fox Sports Net Pittsburgh
29. Fox Sports Net Rocky Mountain

30. FOX Sports Net South
31. Fox Sports Net Southwest
32. FOX Sports Net West
33. FOX Sports Net West 2
34. Hip Hop Network
35. International Television Broadcasting, Inc. (ITV)
36. Las Vegas ONE News
37. Local News on Cable
38. Lottery Channel, Inc., The
39. Madison Square Garden Network
40. MetroChannels
41. MGM
42. Michigan Government Television
43. New England Cable News
44. New England Sports Network (NESN)
45. New York 1 News
46. News 8 Austin
47. News 12 Bronx
48. News 12 Connecticut
49. News 12 Long Island
50. News 12 New Jersey
51. News 12 Westchester
52. NewsChannel 8
53. News Now 53
54. News On One
55. News Watch on Channel 15
56. NGTV – National Greek Television
57. Nippon Golden Network
58. NorthWest Cable News
59. Ohio News Network (ONN)
60. Orange County NewsChannel

61. Pennsylvania Cable Network (PCN)
62. Pittsburgh Cable News Channel (PCNC)
63. R News of Rochester
64. Rarities–Exchange
65. San Diego's News Channel 15
66. Six News Now
67. Sunshine Network
68. Texas Cable News
69. TV33

Appendix C

FCC Video Competition Proceeding

Use and Limitations of Structural Indicia of Market Power

August 6, 1999

Economists Incorporated

FCC Video Competition Proceeding

Use and Limitations of Structural Indicia of Market Power

Summary

The Commission has placed undue emphasis on market shares in its annual assessments of competition in the market for multichannel video services. A firm with a large market share will not be able to exercise market power if the elasticity of supply of smaller firms is sufficiently great. The supply elasticity of DBS providers is very likely sufficient to constrain any attempts by cable operators to increase cable rates or otherwise exercise market power. Further, the Commission should distinguish the degree of competition needed to support maintenance of current regulatory policies, the implicit issue in its annual assessment, from the much more stringent competition standard used in merger enforcement.

Introduction

In its video competition inquiries and annual reports to Congress, the Commission has consistently concluded that, although competitive conditions continue to improve, structural conditions in the market for the delivery of video programming remain conducive to the exercise of market power by cable operators. The basis for this conclusion is the observation that despite cable's steadily declining share of subscribers to

multichannel video programming distributor (MVPD) services, its "market" share remains above 80 percent.[1]

While a firm's market share can, under some conditions, be used to infer its ability to exercise market power, it is not true that a large market share necessarily enables a firm to exercise market power.[2] One important reason that market share does not equate with market power is that market share is generally a measure of how successful a firm has been in the recent past, whereas market power is a function of how consumers and alternative suppliers would respond in the future in the event that a firm tries to raise price above competitive levels.[3] Thus, market share alone is not sufficient to establish market power; it is just the starting point for assessing market power.[4] The Commission itself has recognized that "[m]arket share alone is not necessarily a reliable

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1 See, for example, *Annual Assessment of the Status of Competition in the Market for the Delivery of Video Programming, Fifth Annual Report*, CS Docket No. 98-102 (December 23, 1998).

2 Market power is defined as the ability to charge prices above the competitive level for a sustained period of time. See, for example, George A. Hay, "Market Power in Antitrust," *Antitrust Law Journal*, 60:821 (1992). Market power is often regarded as a necessary condition for the existence of other competitive problems, such as tying and vertical restraints.

3 Ibid. at 821-22.

4 See, for example, Phillip E. Areeda, Herbert Hovenkamp, & John L. Solow, *IIA Antitrust Law: An Analysis of Antitrust Principles and their Application*, ¶532 (1995); *United States* v. *General Dynamics Corp.*, 415 U.S. 486, 498 (1974); *United States* v. *Baker Hughes, Inc.*, 908 F.2d 981, 986 (D.C. Cir. 1990); *Broadway Delivery Corp.* v. *United Parcel Service of America, Inc.*, 651 F.2d 122, 127-130 (2d Cir. 1981); and *Oahu Gas Service, Inc.* v. *Pacific Resources Inc.*, 838 F.2d 360, 366-67 (9th Cir. 1988).

measure of competition, particularly in markets with high supply and demand elasticities."[5]

To the extent that the Commission does focus on market share, it is important to distinguish the policy standard that is appropriate to a continuation of present regulatory policies from the standard applicable to enforcement of §7 of the Clayton Act. Merger law is concerned with stopping incipient trends toward reduced competition through mergers and acquisitions. Regulatory policy toward cable involves a balancing of the benefits that may result from constraining market power against the costs and distortions created by regulation itself.

Discussion

The objective of the Commission's annual analysis is to provide Congress with the means to assess the economic policy merits of continuing its various regulatory policies toward cable television systems. Cable regulation is predicated on "market power"— the presumed ability of cable systems, absent regulation, to increase profits by raising prices above prevailing or competitive levels, or otherwise to restrict output. In providing analysis to Congress, the Commission may have relied unduly on purely structural indicia of market power. In the case of the cable industry, a purely structural approach (i.e., reliance chiefly on market share) is inappropriate because it leads to a misleading result.

One reason why the Commission may have adopted a structural approach is because of the influence of the *DOJ/FTC Merger Guidelines*, which are often used as a paradigm for competitive analysis. While the

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[5] *Competition in the Interstate Interexchange Marketplace*, CC Docket No. 90-132, Report and Order, 6 FCC Rcd 5880, 5890 (1991).

Guidelines are a very useful model, it is important to recognize that they were developed for a somewhat different purpose and under a very distinct set of policy standards.[6]

In order to obtain a summary measure of concentration in local markets for the delivery of video programming, the Commission looks at shares held by cable and non-cable MVPDs in a hypothetical local market. In addition to calculating shares, the Commission also calculates the Herfindahl-Hirschman Index (HHI). The Commission then notes that its estimated HHI of 7015 is several times greater than 1800, the threshold at which the *Merger Guidelines* considers a market to be highly concentrated.[7]

The *Guidelines* attempt to provide a basis for predicting whether a proposed *change* in industry structure (a merger or acquisition) will lead to higher prices or other consumer welfare losses. The *Guidelines* rely on structural analysis in part because of the possible irrelevance of current observable industry performance to the changed circumstances that a merger may bring about, and because of the difficulty of otherwise

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[6] The *Merger Guidelines* are designed primarily to articulate the analytical framework the antitrust agencies apply in determining whether a merger is likely substantially to lessen competition. See *Merger Guidelines* §0.1. The standards established for this purpose seek to stem anticompetitive trends at an incipient stage, and in a context where market forces (i.e., internal growth by incumbent firms) often can correct an erroneous decision to bar an efficiency-enhancing increase in concentration. In contrast, permanent regulatory constraints which may themselves introduce distortions for which there is no market remedy are to be avoided in the absence of very substantial and continuing market power unlikely to be challenged by market forces.

[7] *Fifth Annual Report* at ¶128.

predicting behavior. Even then, of course, the *Guidelines* themselves caution that any analysis requires the exercise of judgement. Mechanical application of the *Guidelines* standards may provide misleading answers to the economic questions raised. In particular, "the picture of competitive conditions that develops from historical evidence may provide an incomplete answer to the forward-looking inquiry of the *Guidelines*."[8]

In assessing the state of competition in the video industry, the Commission seeks to provide Congress with the means to test the continued validity of legislation predicated on existing market power. In contrast to merger enforcement, where the policy question is whether an *increase* in concentration will lead to increased prices, the issue before the Commission is whether the historical trend toward *decreased* concentration among MVPDs, and the economic forces that lie behind that trend, would prevent cable operators from restricting output if there were no government regulation of cable systems. The current market share of cable operators may not be very useful in answering the relevant policy question, and certainly the quantitative tests found in the *Guidelines* are inappropriate benchmarks for the Commission's purposes in its annual assessments.

From an analytical point of view, Congress must determine whether consumers' economic interests face a greater threat from the potential exercise of market power by a declining cable television industry or from the continuation of regulatory intervention in an increasingly competitive marketplace. The dangers of continuing regulation in a competitive

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[8] See *Merger Guidelines* §0.

environment are well documented,[9] as are the welfare losses from such regulation in industries such as airlines and trucking prior to their deregulation.

The *Guidelines* note that since market concentration and market share data of necessity are based on historical evidence, recent or ongoing changes in the market may indicate that the current market share of a particular firm either understates or overstates the firm's *future* competitive significance.[10] For this reason, the antitrust agencies examine other structural factors, such as entry conditions, and non-structural factors, such as a history of collusion in the industry. In interpreting market concentration and market shares, the agencies also consider reasonably predictable effects of recent ongoing changes in market conditions. Thus, even agencies whose mission is to consider the likely effects of proposed mergers that would increase market shares of leading firms consider non-share factors. This suggests the importance of considering non-structural factors in situations where normal market forces are actually reducing concentration.

To illustrate, suppose a firm has a 100 percent market share because of an entry barrier, such as a patent. When the patent expires, the firm's market share will fall, but perhaps not instantaneously. The rate at which the firm's share will fall depends on various factors, such as the speed with which entrants can expand capacity, the existence of product differentiation, and the ability of the former monopolist to discriminate in favor of more price-elastic consumers. Each of these and other relevant

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9 See, e.g., Roger G. Noll and Bruce M. Owen, eds., *The Political Economy of Deregulation*, AEI (1983).

10 See *Merger Guidelines* §1.521.

factors must be considered in deciding whether and for how long the firm retains significant market power. Note that the firm's market share by itself sheds almost no light on this question, unless it declines to a level so low as to obviate any need for further inquiry. In this example, a firm may still have 90 percent of the market and yet find itself unable to raise prices above the levels established by its new competitors. In this case, the relatively large market share is indicative not of market power but merely of competitive pricing by the former monopolist. (Indeed, in the extreme case a firm can have a 100 percent market share and yet be forced to charge competitive prices if the market is "contestable.")

Market power as measured by the gap between price and marginal cost can be shown to be a function of the elasticity of demand faced by a firm. The less elastic the demand faced by a firm, the greater is its ability to charge a price above the competitive level. A leading firm's elasticity of demand, in turn, can be shown to be a function of (1) the firm's market share, (2) the market elasticity of demand,[11] and (3) the elasticity of supply of smaller firms in the industry or firms that are able to enter the industry.[12]

A firm with a large market share will not be able to exercise market power if the elasticity of supply of smaller firms (i.e., firms with smaller shares) is sufficiently high. This simply means that if the large firm were

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[11] The market elasticity of demand measures the degree of substitutability with other products from consumers' point of view.

[12] The elasticity of supply of smaller firms or new entrants measures their ability to quickly increase their output and sales. For a more detailed discussion of the issues presented here see William M. Landes and Richard A. Posner. "Market Power in Antitrust Cases," *Harvard Law Review* 94:937 (1981).

to attempt to raise price, the smaller firms can profitably expand output rapidly and win away a sufficient number of customers that the price increase is unprofitable for the large firm. This capability of the smaller firms depends in turn upon the extent to which they can rapidly expand capacity and the marginal cost of providing service after expansion has occurred. Smaller firms may have the ability to increase production in the relevant market because they have unused capacity or because they can use resources previously employed in producing other goods. If smaller firms have a high elasticity of supply, for whatever reason, this limits the ability of the leading firm to exercise market power. When the elasticity of supply of smaller firms is substantial, basing market shares on current sales will understate the competitive impact of the smaller firms in the market.[13]

The argument that a high supply elasticity can create competitive conditions even when one firm has a large share is not new to the Commission. Indeed, the Commission came to the same conclusion in its 1995 decision to reclassify AT&T as a non-dominant carrier.[14] At that time, the Commission determined that market supply was sufficiently elastic to constrain AT&T's unilateral pricing decisions because competing firms had the capacity to expand rapidly. MCI and Sprint could have absorbed as much as 15 percent of AT&T's switched demand overnight and almost one-third of AT&T's capacity could be shifted to MCI, Sprint and LDDS/WilTel within 90 days using their existing

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[13] Not only the expansion of existing firms but also the ability of new firms to enter a given market and take market share away from the leading firm indicates a relatively high elasticity of small-firm supply and a lack of market power on the part of the leading firm.

equipment. Absorption of almost two-thirds of AT&T's capacity could be accomplished within a year through additional capital investment. With these facts, the Commission found that "supply is sufficiently elastic to constrain AT&T's unilateral pricing decisions." It is interesting to note that the policy decision then facing the Commission— whether to retain regulations on a market player with a large share— is very similar to the issue presented in the Commission's annual assessment of video programming delivery. It is also noteworthy that the ability of cable's DBS competitors to expand output, discussed below, compares favorably with the ability of AT&T's competitors to expand output.

Application to Cable Industry

If one accepts the overly-narrow[15] MVPD market put forward by the Commission, cable providers, with local "market shares" on average above 80 percent, correspond to the high-share firms in the general discussion above. Within this "market," DBS providers are the principal competitors to cable. DBS providers have the essential characteristics of

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[14] *In the Matter of Motion of AT&T Corp. to be Reclassified as a Non-Dominant Carrier*, 11 FCC Rcd 3271, 3303-04 (1996).

[15] In concluding that cable has a high market share, the Commission is assuming an unduly narrow MVPD market, since it excludes competition from terrestrial broadcasters. The reasoning on this point is inconsistent. On the one hand, it is argued that terrestrial broadcasts do not compete with cable and DBS because terrestrial broadcasters (each) provide only a single channel. On the other hand, it is argued that DBS is limited in its ability to compete with cable because DBS does not yet provide local television signals— a service that has been defined to be outside the relevant market. The fact is that DBS provides consumers with an alternative to cable for precisely those cable services for which there is no local substitute. Moreover, DBS suppliers today offer various means to integrate local reception of broadcast signals with DBS channels.

relatively small firms that constrain or eliminate the market power of a large firm through the ability to expand rapidly.

First, there is virtually no limit to the capacity of DBS providers to expand the number of customers they serve. Indeed, DBS providers can expand output almost instantaneously because they already have invested in 100 percent national coverage.[16] Second, even at expanded service levels, the marginal cost of serving each DBS customer remains very low. The marginal cost of using the satellite to serve another customer is zero. The marginal cost of providing the required earth-based equipment is small and falling. In fact, the cost to a DBS supplier of providing cable programming services to a marginal customer is not appreciably different than for a cable operator. For these reasons, the supply elasticity of DBS providers is likely sufficient to constrain any attempt to increase cable rates or otherwise exercise market power.

In some industries, special circumstances may permit the large firm to exercise market power despite the presence of smaller competitors capable of rapid expansion at low cost. Two such circumstances, neither of which is present in MPVD markets, are significant product differentiation and the ability to discriminate in price. First, if the large firm's product is significantly superior to the product offered by the smaller firms, some customers may remain with the large firm even after it raises its price. In the case of multichannel video, product differentiation is based chiefly on the number of channels offered, picture

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[16] Some households may be unable to subscribe to a DBS service because of line-of-sight requirements in placing the receiving satellite antenna. However, this has no relevance for assessing a cable operator's market power because, as discussed below, cable

quality, and the availability of local broadcast signals. DBS typically provides more channels and a better picture quality than the cable operations with which they compete. Cable in the past had an advantage over DBS in providing local broadcast signals, but this advantage is disappearing.[17] Since at least two of these three factors favor DBS over cable, there is no reason to conclude that consumers would not readily abandon cable for DBS if cable operators were to attempt to exercise any market power.

Second, a large firm can sometimes exercise market power despite the presence of competitive alternatives by selectively raising price only to those customers that are least likely to choose the alternatives. Cable operators have neither the ability to identify such customers nor the ability to charge them a higher price. The 1992 Cable Act requires cable operators to have a rate structure for the provision of most cable services that is uniform throughout the geographic area in which cable service is provided, and many franchises have similar provisions.

The presence of small competitors does not necessarily effectively constrain the power of an incumbent with a large market share. The competitive significance of DBS in constraining cable operators can be usefully illustrated by contrasting it with local telephone service. Superficially, the situations are similar, in that some incumbent local exchange carriers (ILECs) may now face competition from a number of small competitive local exchange carriers (CLECs). However, there are at least two differences that affect the competitive significance of the small competitors. First, CLECs are typically present only in portions of the

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operators cannot charge higher prices to households that cannot receive DBS signals.

larger cities, and provide little or no competitive alternative for residential and suburban customers. DBS, in contrast, uses a satellite delivery system that makes its programming available to potential customers in all regions without incremental capital investment. Second, CLECs' ability to expand service to additional customers is often critically curtailed by their reliance on ILEC facilities and processes. In contrast, DBS suppliers are able rapidly to expand their service virtually without limit and without any reliance on cable operators.

Conclusion

The Commission has concluded that, because cable's share of MVPD services has not yet fallen below threshold levels established in the *Merger Guidelines*, cable market power persists. This reliance on market share is unwarranted. A firm with a substantial market share will not be able to exercise market power if the elasticity of supply of smaller firms is sufficiently high. The supply elasticity of DBS providers is very likely great enough to constrain any attempt to increase cable rates or otherwise exercise market power. The Commission should also distinguish between the degree of competition needed to support maintenance of current regulatory policies, the question implicitly at issue in its annual assessments of the status of competition in markets for the delivery of video programming, and the much more stringent competition standard used in merger enforcement.

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[17] See footnote 15.