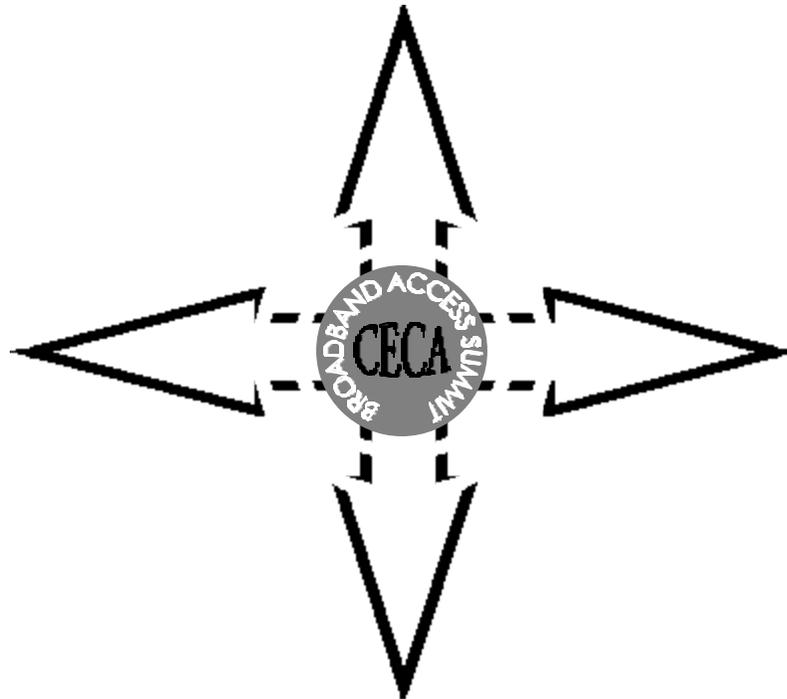


***THE CECA  
BROADBAND ACCESS SUMMIT  
Findings of the Summit***



Prepared by:

**CONSUMER ENERGY COUNCIL OF AMERICA**

**MARCH 2000**

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**Founded in 1973, the Consumer Energy Council of America (CECA) is the nation's senior public interest organization focusing on the energy and telecommunications sectors. CECA provides a leading national resource of information, analysis and technical expertise on the social and economic impacts of a wide variety of energy and telecommunications policies. CECA has a primary commitment to ensuring reliable and affordable essential services for all sectors of our nation, with special regard for residential and small business consumers. CECA provides a forum for consensus-building among public and private sector organizations, state and local groups, businesses, utilities, consumers, environmentalists, government agencies, academicians, and others in furtherance of public policy objectives.**

**CECA appreciates and is grateful for the valuable assistance and thoughtful critiques provided by Members of the Broadband Summit. An attempt was made to reach consensus on as many issues as possible in the Findings. Nevertheless, the Members of the Summit do not necessarily approve, disapprove, or endorse the Findings. Some Members of the Summit were there to listen and did not express views. CECA assumes full responsibility for the Findings and its contents.**

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# ***I. INTRODUCTION TO BROADBAND ACCESS: THE POWER OF BANDWIDTH***

## ***A. The Digital Age***

The development and deployment of broadband technology has its roots in the remarkable advancements occurring in the field of information technology and is made possible by the relentless march of digitization. The development of digital technology is one of the foremost technological advances of this century. Engineers use the term digital to refer to information representations where both time and the value being measured move in discrete steps. Although this term is often used to describe the conversion of any type of information to binary, the term “digitization” refers specifically to the process of converting some quantity, which may be continuous (infinite number of values) to a representation that is discrete. Digitization also describes the process of representing information in binary form, and is a discrete measure of data that is processed and expressed in terms of ones and zeros.

Any type of information can now be digitized easily and cheaply. Once the information has been digitized, it can be transmitted and manipulated in ways limited only by human creativity. Therefore, digitization changes fundamentally how business and consumers interact. This is because: (1) digitization either enables some totally new capability or is much better than the one it replaces, and (2) the cost of the new system is reasonably low compared to people's ability to pay. This makes activities such as video conferencing, telecommuting, and e-commerce feasible. It also blurs the line between originals and copies. Once something has been digitized it is virtually free to be duplicated, transmitted and manipulated without loss of quality.

The power of digitization is closely linked with the availability of bandwidth (range of frequencies),<sup>1</sup> a fundamental determinant of the speed at which information can be transmitted. The first major advance in transmission speeds came with the development of digital data transmission, a generic technology in which the carrier accepts formatted data from the originating user, regenerates it, compresses it, and decompresses it before delivery to the final user. Compared to analog networks, digital networks are substantially faster and provide signals with significantly higher quality and less distortion. Moreover, digital transmission systems can achieve higher speeds over comparable bandwidth than analog systems. It has become increasingly difficult, however, for digital transmission systems to increase their data speeds<sup>2</sup> in terms of bits per second at the same pace at which computer power is growing.

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<sup>1</sup> See **APPENDIX F: GLOSSARY of TERMS** for a more detailed definition of “Bandwidth” and other relevant terms used throughout the Findings.

<sup>2</sup> See **APPENDIX F: GLOSSARY of TERMS** for a more detailed definition of “Data Transfer Rate” (Speed).

## ***B. Broadband<sup>3</sup> Access***

The Federal Communications Commission (FCC) predicts that the number of households accessing broadband service will more than double by the end of 2000 and quintuple by 2002.<sup>4</sup> Some analysts further predict that by 2008, over 66% of all U.S. households could have high-speed data capacity.<sup>5</sup> Indeed, an information infrastructure undertaking of this magnitude has not been seen since the construction of the nationwide telephone network in the early 1900s. Increased consumer, business and public access to the multitude of advanced broadband communications products such as video-on-demand will depend on the development of a high-speed, digital infrastructure to support them. The new "fat pipes" will use existing cable, telephone, wireless technology and other conduits to connect directly to homes and businesses, often referred to as "the last mile"<sup>6</sup> in industry parlance. Thus far, private companies have shouldered the burden of building the broadband network, with an eye towards the upside potential of broadband applications. While the actual size and scope of the market for broadband technology is uncertain due to its infancy, the market perceives these assets as having significant upside potential. Forrester Research, for example, expects U.S. broadband subscribership to grow from 1.5 million in 1999 to 26 million by 2003, and predicts that revenues from consumer broadband spending could reach as much as 9 billion in that year.<sup>7</sup>

The question of the terms of access to these new broadband networks, once they are built, is of interest to many stakeholders. Currently, owners of cable broadband infrastructure capable of providing high-speed last mile data services may partner with a single Internet Service Provider (ISP)<sup>8</sup> to establish Internet<sup>9</sup> access capability over the cable plant and may restrict access to their networks. In the telephony industry, some critics believe that local telephone companies, though considered common carriers and required by law to

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<sup>3</sup> The FCC defines broadband as high-speed transmission of greater than 200 kilobits per second (>200Kbps), in both the provider-to-consumer ("downstream") and consumer-to-provider ("upstream") directions. Others, however, have defined broadband as high-speed transmission with rates greater than one megabit per second (>1 Mbps). For purposes of the Findings, the term "broadband" denotes high-speed transmission in the range of 200 Kbps-30 Mbps, with various upstream and downstream speeds, depending on platform type.

<sup>4</sup> "Technology and Trends," FCC News Release, February 5, 1999.

<sup>5</sup> Goldman Sachs Research, cited in "How Much Room in the Fat Pipe?" *The Washington Post*, September 19, 1999, Page H1.

<sup>6</sup> See **APPENDIX F: GLOSSARY of TERMS** for definition of "last mile."

<sup>7</sup> "From Dial-Up to Broadband," *Forrester Research Report*, April 1999, Pages 4 and 10. (<http://som.csudh.edu/cis/lpress/471/links/bband/forrester%20broadband.pdf>)

<sup>8</sup> The term "Internet Service Provider" technically refers to those organizations that solely provide *access* to the Internet, and not *content*. There are a few Internet organizations, however, that do provide both online content and Internet access to subscribers (e.g., America Online). For purposes of simplicity, then, the term "ISP" is used throughout the Findings to refer to all types of Internet Service Providers, with the caveat that the great majority of ISPs do not provide content to subscribers. **NOTE:** As a regulatory matter, all of these entities are properly classified as ISPs. See **APPENDIX F: GLOSSARY of TERMS** for detailed definitions of subgroups of ISPs used throughout the Findings.

<sup>9</sup> See **APPENDIX F: GLOSSARY of TERMS** for definition of "Internet," as it is used throughout the Findings.

provide all independent ISPs<sup>10</sup> with access to their networks, have in practice sought to delay competitive entry to their networks. In this unregulated environment, there is a very real concern that investment and competition may be delayed due to conflict (and, in some cases, litigation) over access to broadband capacity, asymmetric regulation,<sup>11</sup> and the ability to provide the next generation of high-speed Internet services.

The potential of a nationwide broadband network and all of its advanced capabilities brings together some of the largest communications concerns in the world as telephone, cable, satellite and wireless converge to transform the information superhighway into a high-speed communications vehicle delivering advanced Internet applications.<sup>12</sup> For those who have access to the network, broadband technology promises to drastically alter and enhance the way people live their lives and how the nation's business is conducted.

Though broadband services are in the early stages of deployment and lag dial-up services in the Internet access market, some stakeholders have raised concerns over possible ill effects of current access conditions on consumers and the public at large. While it is difficult to substantiate these concerns due to the infancy of broadband deployment, they nevertheless arise from trends identified in recent studies both of Americans with and without access to the existing information infrastructure.<sup>13</sup> As such, development of the new communications infrastructure brings forth many of the same policy concerns as the original telephone network did in the early part of the century. The following questions are representative of these concerns: Who should be connected and at what cost? Is the new information superhighway an essential service, like telephony, that all Americans should be able to access regardless of geographic or economic circumstances? Would a regulated access environment lead to a decline in private investment and a delay (or curtailment) in network construction? Should there be a national regulatory policy designed specifically to govern Internet access and other advanced technological applications? The underlying causes of the debate over broadband access need to be understood as well as broadband's implications for policymakers, consumers, businesses, the general public, and other stakeholders. In addition, policymakers need to consider all relevant effects of a given broadband access policy, including economic, social, constitutional and other impacts. Moreover, broadband policies should be implemented with the goal of balancing the property rights of network infrastructure owners with the individual rights of citizens and civic society.

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<sup>10</sup> See **APPENDIX F: GLOSSARY of TERMS** for definition of "independent ISP."

<sup>11</sup> Some specific issues that relate to asymmetric regulation of the cable and telephone industries are discussed in more detail in **Section VIII (C)** below.

<sup>12</sup> While DSL services currently include only high-speed data delivery, providers intend to eventually deliver video and other advanced technological products. For purposes of the Findings, therefore, DSL is considered broadband.

<sup>13</sup> This phenomenon is commonly described as the so-called "information gap" or "digital divide," described in more detail in the U.S. Department of Commerce (NTIA) Report, "Falling Through the Net: A Survey of the 'Have Nots' in Rural and Urban America," July 1995. (<http://www.ntia.doc.gov/ntiahome/fallingthru.html>) The CECA Broadband Access Summit recognizes, however, that there are many factors that contribute to a digital divide, and broadband access policy may or may not be included among these.

## ***II. THE CECA BROADBAND ACCESS SUMMIT***

### ***A. Why Broadband Access Matters***

Although there are many important issues involved in the development and deployment of broadband technology, the CECA Broadband Access Summit was particularly concerned with access to these important new networks given the following considerations:

- The need for widespread customer access to reliable and affordable Internet service and the next generation of Web applications;
- The capital-intensive nature of building broadband infrastructure;
- The unique history of telecommunications and cable television as separate services, with separate regulatory structures, and the potential for asymmetric regulations causing economic distortions;
- The potential need for regulatory oversight to ensure timely and efficient deployment of advanced services;
- The potential for market power abuses and anti-competitive behavior;
- The prospect of a “digital divide” between information “haves” and “have-nots;”
- The ongoing convergence of network industries that provide essential services (i.e., telephony, electricity and natural gas), integrating the latest developments in information technologies to maximize network efficiency; and
- The exponential growth of the Internet and e-commerce and its dependence on broadband access for accelerating future growth.

The CECA Broadband Access Summit recognizes that there are substantial public policy questions that must be addressed with the convergence of the telecommunications and cable television industries and the deployment of broadband technology. Clearly there will be positives and negatives associated with determining who can access the new networks and at what price.

Given the size and nature of the industries involved in the market for broadband, and the number of consumers potentially affected, major public policy questions must be addressed to ensure that competitive markets develop smoothly and that all customer classes benefit equitably from the changes in the market for Internet services.

## ***B. Goals and Objectives of the CECA Broadband Access Summit***

Recognizing a lack of objective documents available to policymakers and regulators who are currently dealing with broadband access issues, and the pressure on these policymakers to make decisions, the CECA Broadband Access Summit was convened in November 1999 to fill that void. Members of the Summit aimed to provide a credible, objective document that would encompass all the diverse stakeholder positions on the issues and serve to move the debate forward in a constructive manner, without prescribing one particular access solution over another. During this intense period of research, deliberation and collaboration, the CECA Broadband Access Summit brought together the major stakeholders to help policymakers understand:

- The technical considerations of broadband access,
- The diverse interests of the stakeholders,
- The magnitude of the stakes in regard to the information economy;
- The nature of the issues from a customer perspective;
- The steps that need to be taken in regard to process; and
- The policy options available for resolution.

Recognizing the contentiousness of the debate, the Summit allowed the stakeholders to explore issues in an open, off-the-record, and carefully balanced environment without favoring one position over another. The Summit was comprised of a blue-ribbon panel of more than fifty national leaders, representing Internet Service Providers (ISPs), leaders of telecommunications and cable industries, representatives of consumer and public advocacy organizations, Members of Congress, and local, state and federal regulators and legislators. Input from all participants was sought and carefully incorporated into the Findings. The CECA Broadband Access Summit was designed to:

- Bring the major stakeholders together in a constructive dialogue about broadband access in order to facilitate sound policymaking;
- Focus on areas of common interest among the stakeholders (for example, ensuring that broadband capacity and the services dependent on such capacity are widely available to consumers and the general public);
- Narrow the differences among the major stakeholders on the various policy options, rather than recommending a particular course of action;
- Discuss the merits of developing a national policy in regard to broadband access; and

- Agree on the most important questions that need to be answered and the procedural steps that need to be undertaken in order to develop public policy.

### *C. Objective and Scope of the Summit*

The primary objective of the CECA Broadband Access Summit was to produce a balanced, credible document that would incorporate the disparate views on broadband access and facilitate public policy decisionmaking at all levels of government. The Findings of the CECA Broadband Access Summit are intended to promote greater understanding on the part of both private and public stakeholders and policymakers of the issues involved in the provision of high-speed Internet-based services by cable operators. The Findings is not, however, intended to prescribe a particular course of action or advocate a particular broadband access policy. With policymakers' perspectives and needs as the starting point, the Findings will serve as a tool to aid effective decisionmaking.

Some participants of the Summit felt strongly that it is too early to take definitive regulatory actions, pointing to the nascent nature of the broadband market and the number of competing technologies available to provide broadband access. It was not the goal of the Summit, however, to reach consensus on one course of action or to favor one position over another. Rather, CECA's intention was to enable decisions over broadband access to be informed decisions, with all the facts, questions and other considerations made available to policymakers in an easy-to-use, mutually-agreed upon format. The widespread equitable deployment of broadband capacity is too important to the American public for policies to be considered any other way.

CECA has taken careful measure of what is occurring in the market and the possibility that "market forces" are driving nondiscriminatory access<sup>14</sup> to cable broadband networks, obviating the need for regulatory action. However, given that public officials are forced to make decisions today due to any number of factors (e.g., the ongoing schedule of hearings to consider cable franchise transfers at the local level), decisions do and will need to be made. At the start of the decisionmaking process, policymakers may want to determine whether any single technology is dominant in a given market, and whether conditions exist to warrant government intervention. Policymakers will also need to consider how their decisions will impact civic society with respect to the future

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<sup>14</sup> In terms of cable broadband, this policy objective is often referred to as "open access." Cable companies and other stakeholders have objected to the term "open access," however, arguing that it is a slogan adopted by cable's competitors whose motivation is to impose regulatory conditions on cable modem technology. Other stakeholders prefer the term "open access," believing that it accurately reflects the policy option these groups are seeking—opening up of networks. After much debate and careful consideration of all possible terms, CECA has adopted the terms "discriminatory" and "nondiscriminatory" access, to be used throughout the Findings, as specifically defined in **APPENDIX F: GLOSSARY of TERMS**. It should be noted that these are terms of art utilized in regulatory and legislative proceedings and are considered value-neutral.

expression of ideas, communication, and voting using the Internet.<sup>15</sup> Still, a decision not to act is a decision.

CECA's organizational mission is to promote the interests of small business and residential customers, and it is the ability to directly access broadband capacity from their homes and offices that concerns small customers the most. Specifically, the focus of the Findings is on local, last mile cable broadband access and does not include extensive discussion of Internet backbone issues<sup>16</sup> (for example, peering<sup>17</sup>), nor does the Findings directly address universal service issues as these are also beyond the scope of the project. Finally, the scope of the Findings does not include a detailed examination of alternative technologies' access systems (e.g., wireless, satellite or DSL) because:

- Cable modems are the leading transmission platform of residential broadband and will be for the next few years;<sup>18</sup>
- Cable companies are not currently required to provide nondiscriminatory access to their networks;
- DSL service providers, cable modem networks' closest competitors, are already required to provide independent ISPs with nondiscriminatory access to their networks;
- Other broadband platforms such as wireless and satellite do not currently pose market power concerns;
- The strategy of bundling cable modem broadband access exclusively with an affiliated ISP<sup>19</sup> is a strategy that has been suggested as a fundamental departure from the current design of the Internet,<sup>20</sup> in a manner not found in DSL or other cable competitors.

### ***III. SUMMARY OF PARTICIPANTS' PRIORITY STATEMENTS***

At the outset of the CECA Broadband Access Summit, considerable time was spent eliciting from the stakeholders their highest priorities with respect to broadband access

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<sup>15</sup> A recent article in the *New York Times*, for example, noted that several million U.S. military personnel will cast their presidential ballots via the Internet in 2000. (Source: "Secure or Not, the Internet has Become a Part of Life's Routine," *New York Times*, February 13, 2000)

<sup>16</sup> See **APPENDIX F: GLOSSARY of TERMS** for definition and brief discussion of the term "Internet Backbone."

<sup>17</sup> See **APPENDIX F: GLOSSARY of TERMS** for definition and brief discussion of the term "peering."

<sup>18</sup> See **Section IV(C), APPENDIX A** and related notes for detailed discussion of current broadband deployment figures.

<sup>19</sup> See **APPENDIX F: GLOSSARY OF TERMS** for definition of "affiliated ISP."

<sup>20</sup> See "End to End Arguments in System Design," J. Saltzer, D. Reed and D. Clark (<http://web.mit.edu/Saltzer/www/publications/>) and the discussion of the concept of end-to-end design as it relates to cable access in Written Ex Parte of Professors Mark A. Lemley and Lawrence Lessig before the Federal Communications Commission. (<http://cyber.law.harvard.edu/works/lessig/MB.html>)

policy. While some of the following priority statements were in possible conflict with one another, participants agreed that policies should promote competition, have broad jurisdictional application and, ultimately, be focused on the interests of consumers. The following priorities emerged:

- Develop a fully informed national broadband policy that encourages investment and the widespread, rapid deployment of broadband technology based on market forces.
- Determine whether the administrative (FCC) or the legislative (Congress) branch of government will be responsible for establishing a national access policy.
- Create broader recognition that broadband is the platform for the new economy and its transactions, and that broadband's success depends on widespread competition and innovation in both facilities and re-sale.
- Shift the burden of proof from local governments and others advocating for a consistent national access policy to those advocating for asymmetric regulation.
- Develop a broadband access policy that is both free from regulation and commercially negotiated.
- Construct an appropriate decision framework for policymakers.
- Inform policymakers that nondiscriminatory access to broadband networks is a fundamental value and that communications networks should not be proprietary.
- Develop a broadband policy that does not hinder the continued growth of the Internet.
- Develop a broadband policy that fosters First Amendment rights.
- Preserve capital and investment incentives for deployment.
- Preserve fundamental consumer rights (including privacy) in broadband and all other communications access policies.
- Ensure that respect for and protection of private property rights is a cornerstone of any broadband policy.
- Ensure that the broadband network, once established, is continually monitored at both the local and national levels.
- Encourage dialogue among all levels of government (federal, state, and local).

- Ensure that state and local government authority to review franchise transfers is not preempted.
- Make broadband technology more responsive to the needs of local communities and their citizens.
- Increase consumer understanding of broadband technology and the options available for access and content.
- Ensure that all consumers (including rural, low-income, community associations and small businesses) have access to broadband technology at affordable rates.
- Examine “digital divide” issues that relate specifically to broadband access and advocate for a strong, immediate policy and programmatic response to it.
- Expand the universal service definition to include broadband services.
- Ensure that consumers can choose their Internet service provider on broadband cable facilities just as they are able to do on narrowband telephone facilities.
- Use unfettered access by service providers to all broadband platforms to beget widespread consumer choice through the interaction of competition and innovation.
- Ensure that Competitive Local Exchange Carriers (CLECs)<sup>21</sup> have unfettered access to the Incumbent Local Exchange Carriers’ (ILECs)<sup>22</sup> broadband facilities.
- Transform the telecommunications regulatory structure into a framework that incorporates the effects of convergence and new technologies and is more understandable to the layperson.
- Address harmful regulatory asymmetry between the cable and telephone industries.

## ***PART ONE: KEY DRIVERS IN THE BROADBAND ACCESS MARKET***

### ***IV. UNDERLYING DRIVERS OF BROADBAND ACCESS DEBATE***

The focus of the CECA Broadband Access Summit is broadband access for consumers or, "residential broadband," which describes the market for interactive digital services to consumers in their homes with high-speed transmission in the range of 200 kilobits per

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<sup>21</sup> See **APPENDIX F: GLOSSARY of TERMS** for definition of “CLEC.”

<sup>22</sup> See **APPENDIX F: GLOSSARY of TERMS** for definition of “ILEC.”

second to as fast as 30 megabits<sup>23</sup> per second (200 Kbps – 30 Mbps).<sup>24</sup> To set the context for the current debate, however, it is useful to first briefly enumerate some key elements that have fueled the ongoing controversy over broadband access. These underlying forces include: A) the evolving regulatory environment in network industries; B) the astronomical growth of the Internet and the related surge in e-commerce; C) consumer demand and the bandwidth revolution; and D) the bundling together of telecommunications products and services, such as local and long distance services, with cable television services, Internet access and content, and other advanced telecommunications services, to be offered to customers as a package.

### ***A. Deregulation***

Deregulation is the deliberate action by a regulatory authority to restructure an industry so that it moves from being highly regulated to being less regulated. This opening up of former monopoly networks is achieved in concert with other regulatory and/or legislative action, so that the market sets prices, service offerings, etc., competitively rather than a regulatory body performing these functions. These regulatory changes, which open opportunities for both new revenue generation for incumbents and for new entrants to the industry, create opportunities for technological innovations that will maximize economic efficiency.<sup>25</sup> As such, industries in the competitive marketplace will require less regulation overall and will require different regulation than monopolies or duopolies have in the past.

The primary objective of this type of deregulatory intervention has been to isolate the natural monopoly aspect of a network (e.g., wires) from other parts (e.g., content), which can be operated on a competitive basis. This nondiscriminatory access model has been applied to many other industries including the railroad, natural gas and electric industries.

Some analysts believe that consumers could generally benefit from increased competition through nondiscriminatory access to broadband networks in the following ways:

- Nondiscriminatory access could foster competition and growth, expanding the size of the pie for all market participants;
- Nondiscriminatory access could foster increased customer choice; and
- Nondiscriminatory access could spur product innovation by all market participants.

The breakup of AT&T in 1984, for example, was designed in large part to engender competition in the telephone industry. It effectively barred the Incumbent Local

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<sup>23</sup> Commonly used to measure the amount of data transferred *per second* between two telecommunications points, it is equal to one million (1,000,000) bits and is typically shortened to “Mbps.”

<sup>24</sup> See **APPENDIX F: GLOSSARY OF TERMS**, “Broadband,” for more detailed explanation of this frequency range.

<sup>25</sup> Following deregulation and stricter environmental regulation of the electricity industry, for example, demand for new pollution control technologies and renewable power sources has risen.

Exchange Carriers (ILECs) from offering in-region, interLATA<sup>26</sup> service and left AT&T and numerous competitors to fight over that market. AT&T essentially became a long distance provider while the largest ILECs, known as the Regional Bell Operating Companies (RBOCs),<sup>27</sup> focused on local service. Unsatisfied with the level of competitive activity in this industry, Congress passed The Telecommunications Act of 1996. The effects of the Act have been pervasive, as the legislation is slowly starting to result in new entrants into the market for local service. In fact, the long distance market has become much more competitive and has led to price wars and cost cutting as well as squeezed margins.<sup>28</sup>

In the wake of a changing regulatory landscape, long distance companies are exploring ways to diversify their revenue away from their core long distance business. Evidence of this can be seen in the example of AT&T where some estimates indicate that by 2003, residential long-distance may account for just 25% of total revenue, compared to 45% in 1998.<sup>29</sup> With the threat of entrants into the local service market, the RBOCs have also sought ways to bolster revenues as margins on local service decline. These companies have been forced by deregulation to take the same short-term investment view as other companies do. That is, capital investments must produce revenues fairly quickly (12-18 months) in order to be viable and acceptable to shareholders. Both local and long distance companies have looked to digital, broadband networks as a viable means for revenue generation and diversification. Participation in the new broadband marketplace would presumably assist the telecommunications companies in bolstering their revenue against declining profit margins in core businesses. The market for these new products, while speculative, is thought by many analysts to have tremendous potential. While fewer than 2 million U.S. homes currently have broadband access, this figure is predicted to jump to over 16 million by 2004.<sup>30</sup>

Due to the fact that existing telephone and cable modems already offer a direct connection to consumers in their homes, it has become desirable for traditional telecommunications companies to merge or acquire cable television companies who can link them to this important last mile. Designed for analog television transmission, however, original cable television networks did not support two-way transmission of data services. As a result, cable companies (and, in some cases, their telecom parents) have invested considerable dollars in upgrading these networks to accommodate the higher speeds and quality of digital broadband applications. Local telephone companies, on the

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<sup>26</sup> See **APPENDIX F: GLOSSARY of TERMS** for definition of “LATA,” “interLATA,” and “intraLATA.”

<sup>27</sup> See **APPENDIX F: GLOSSARY of TERMS** for more detailed definition of “RBOC.”

<sup>28</sup> The number of long distance carriers, for example, grew dramatically in the U.S. from 210 in 1986 to 616 in 1996. Evidence of concurrent, shrinking long distance revenues may also be seen in the example of AT&T where from 1984 to 1994, average revenue per minute for interstate calls declined from \$0.32 per minute to \$0.18 per minute—a decline of 40%. (Source: “Trends in Telephone Service,” Federal Communications Commission, Industry Analysis Division, Common Carrier Bureau, July 1998, at Table 9.2: “Number of Long Distance Carriers By State” and Table 13.5: “Average Revenue Per Minute”)

<sup>29</sup> “The Battle for the Last Mile,” *The Economist*, May 1, 1999. Twenty-five percent (25%) figure based on average decline in consumer long distance revenues of 4% per year. (Source: “AT&T Speeding Upgrade Plans,” *USAToday Tech Report*, January 26, 1999)

<sup>30</sup> Source: Yankee Group research, February 2000.

other hand, are entering the broadband market by upgrading existing copper wire from analog to digital to enable high-speed transmission. Through slightly different routes, both will have access to the last mile.

The challenge posed to regulators by convergence of the various communications industries is the need for integration or standardization of policy across state jurisdictional boundaries and, if applicable, across converging industries (e.g. telephone and cable). The essential policy change that drives deregulatory intervention is the aforementioned unbundling of goods and services that can be sold competitively from network elements that may continue to be regulated. This policy change is the same in all the network industries and one might expect a high degree of similarity among regulatory bodies implementing such a policy. Such is not the case.

Some regulatory schemes impose burdens on one technology or competitor that are not imposed on others. For example, DSL and other broadband services provided by the ILECs are required by the FCC to adhere to certain regulatory requirements including providing competitive Internet service providers unbundled, nondiscriminatory access to their local loops, at regulated rates, and are not permitted to provide their customers DSL services across certain geographic boundaries (“LATAs”). Cable broadband providers, on the other hand, are permitted to deny access to their networks by independent ISPs, and the rates at which cable companies offer these high-speed services are not subject to federal regulation.

The fact that providers of one broadband technology have to meet regulatory requirements (e.g., telephone companies) but other technologies that may compete with it do not (e.g., cable companies) may distort the playing field.<sup>31</sup> State and local regulators currently have the authority to adopt unique access policies in the context of cable franchise transfers. Conceivably, each locality could adopt a unique regime for cable broadband access, potentially splintering the market.<sup>32</sup> It is already evident that states and local jurisdictions are adopting different policies and implementation schedules regarding broadband access.

Convergence and competition between and within the cable and telecommunications industries has the potential to magnify these distortions. Yet some of the benefit of telecommunications convergence to consumers comes from scale efficiencies, i.e., larger networks and larger marketers. Such scale efficiencies may be severely compromised by patchwork and asymmetric regulation. This significantly raises transaction costs to new entrants. Yet experimentation is beneficial to promoting innovation and testing new ideas. Over time some standardization of network access policy must take place for interstate commerce to be conducted efficiently through networks.

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<sup>31</sup> Some specific issues that relate to asymmetric regulation of the cable and telephone industries are discussed in more detail in **Section VIII (C)** below.

<sup>32</sup> Many critics of this approach point to the splintering of the wireless market in the U.S. due to a lack of uniform, national standards for wireless services. As evidence, these critics cite the possible competitive advantage (through greater economies of scale and scope) now enjoyed by some European companies, which operate under a uniform standard in their home markets.

## ***B. The Internet***

The growth of the Internet as a means of communication and conducting business has been astronomical. Originally devised in the 1960s as a way for U.S. Department of Defense personnel to keep apprised of national security issues, the old “ARPAnet” has evolved from an isolated, government communications device to a larger network connecting a small number of academics over university computer networks, to the vast, interconnected network known as the World Wide Web. The transformation of the Internet has resulted in an unprecedented communications revolution, the scope of which has been extraordinary:

- The U.S. Department of Commerce reports that Internet traffic has been doubling every 100 days.
- From 1998 to 1999, the number of World Wide Web users rose by 55%, there were 137% more web addresses registered and Internet hosts increased by 46%.<sup>33</sup>
- In the U.S. alone, nearly 81 million people (one-third of U.S. households) had access to the Internet as of early 1999, amounting to a 900% increase from 1993.<sup>34</sup>
- Of the 171 million people who had access to the Internet worldwide in May 1999, over half were from the U.S. and Canada and, altogether, the U.S. and Canada account for 56% of worldwide users.<sup>35</sup>
- Some analysts project that by the end of 2000, Internet users worldwide will number 320 million.<sup>36</sup>
- A recent study by Forrester Research found that Web access grew from 6 million households in 1994 to over 38 million in 1999, and it is estimated that by 2003, almost 68 million U.S. households will have Internet access.<sup>37</sup>

A \$50 billion market in 1998, e-commerce is projected to reach \$218 billion by the end of 2000, and grow as high as \$1.3 trillion by 2003 (see **Exhibit 1** below).<sup>38</sup>

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<sup>33</sup> “My How We’ve Grown,” Maryann Jones Thompson, *The Industry Standard*, April 26, 1999. (<http://www.thestandard.com>)

<sup>34</sup> “The State of the Internet:USIC’s Report on Use & Threats in 1999,” (hereafter, *State of the Internet*), United States Internet Council. ([http://www.usic.org/usic\\_state\\_of\\_net99.htm](http://www.usic.org/usic_state_of_net99.htm))

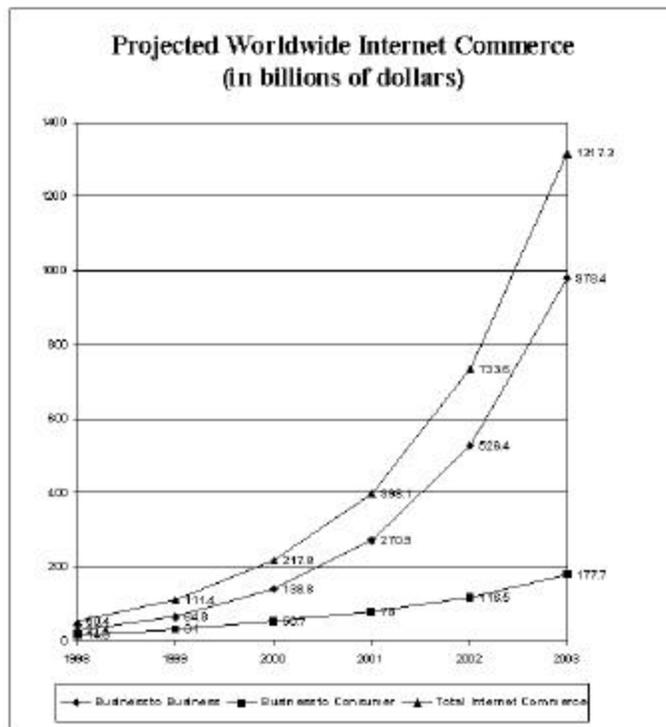
<sup>35</sup> “The Emerging Digital Economy II,” U.S. Department of Commerce, June 1999.

<sup>36</sup> *State of the Internet*.

<sup>37</sup> “Bandwidth & Access Strategies: Digital Subscriber Line,” *Jupiter Communications*, Jupiter Analyst Report, 1999, Volume 8.

<sup>38</sup> *State of the Internet*.

## Exhibit 1.



Source: International Data Corporation (1999)

### C. Consumer Demand and the Bandwidth Revolution

In the past ten years the Internet has become increasingly more graphical and interactive. Numerous advanced applications have been developed that require greater bandwidth to be effectively utilized by consumers. In fact, the most popular content often involves streaming video, graphics and audio, all of which require broadband technology to accommodate such large file downloads.<sup>39</sup> A recent survey of Internet users by Forrester Research confirms the increasing demand for advanced technological products. Researchers found that of all the factors that cause users to return to the same website more than once, availability and quality of content was ranked first by respondents.<sup>40</sup> Indeed, consumer demand is a principal driver in the development of these advanced technology products, most of which can only be deployed using high-speed bandwidth. One stakeholder characterized the changing face of the Internet this way:

"We're seeing that users are driving innovation, and the power in the marketplace is shifting from supply to demand...from providers to users."<sup>41</sup>

<sup>39</sup> *State of the Internet*.

<sup>40</sup> "Factors Driving Repeat Visitors to Websites," Forrester Research, 1999.

<sup>41</sup> "Unclogging the Broadband Pipeline," Prepared Remarks of Jonathan B. Sallet, Chief Policy Counsel, MCI Communications Corporation, at the Economic Strategy Institute, April 20, 1998. (<http://www.econstrat.org/ECONSTRAT/sallet2.htm>)

Bandwidth ("the size of the pipe") is measured in bits per second (bps). The existing voice network is commonly known as *narrowband* (<1 Mbps, typically using copper wires) and faster networks are referred to as *broadband* (200 Kbps – 30 Mbps) using copper, fiber optics, wireless, and other conduits. Some examples of broadband products and services include interactive purchasing, video-on-demand, remote interactive medical services, remote access to stored video material and a myriad of other possible applications, all of which require greater bandwidth than current narrowband technology can support. As a result, end users are becoming frustrated with the resulting slower speeds and consumer demand for broadband technology has mushroomed in recent years.

Transmission speed is determined largely by the bandwidth of the carrier: the greater or broader the bandwidth, the higher the speed. A comparison of the speed required to transfer a 10MB file is depicted in **Exhibit 2** below:

**Exhibit 2.**

### **Transfer Rate for a 10-Megabyte File**

<b>MODEM SPEED / TYPE</b>	<b>TRANSFER TIME</b>
9.6-Kbps Telephone Modem	2.3 hours
14.4-Kbps Telephone Modem	1.5 hours
28.8-Kbps Telephone Modem	46 minutes
56-Kbps Telephone Modem	24 minutes
128-Kbps ISDN Modem	10 minutes
1.54-Mbps T-1 Connection	52 seconds
4-Mbps Cable Modem	20 seconds
10-Mbps Cable Modem	8 seconds

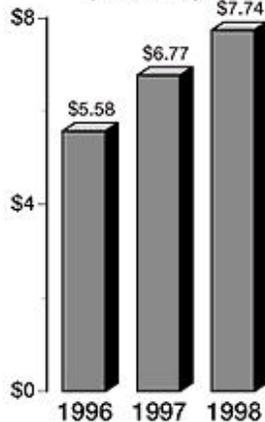
Source: *Cablemodems.com* (<http://www.cablemodems.com/whatis.html>)

Cable companies have responded to demand for increased bandwidth by upgrading existing facilities and investing heavily in this new, high-speed network. In 1998, for example, cable companies spent over \$7.5 billion to upgrade existing facilities to allow for, among other things, two-way interactive products and services.<sup>42</sup> (See **Exhibit 3** below.)

<sup>42</sup> "Year End Review—1998," National Cable Television Association.

### Exhibit 3.

Cable Industry Construction/  
Upgrade Expenditures  
(in Billions)



Source: Paul Kagan Associates, Inc.,  
*Cable TV Financial Databook*, 1998, p. 127.

Telephone companies, on the other hand, have offered broadband services largely on existing copper wires using Digital Subscriber Lines (DSL), which digitize signals and enable faster transmission speed. At present, one significant limitation to DSL is that it only works if the customer is located no farther than 18,000 feet<sup>43</sup> from the local exchange carrier's (LEC)<sup>44</sup> central switching office. Analysts estimate that currently only 65% of American phones meet this geographical requirement.<sup>45</sup> Nevertheless, the RBOCs have gradually made substantial investments in broadband capacity. One RBOC recently announced a plan to invest more than \$6 billion in the next three years developing an extensive broadband network that would serve 80% of its current customer base.<sup>46</sup> Terrestrial wireless and satellite companies have also made significant investments in developing broadband capability for their own networks but continue to trail cable and DSL in network deployment. As of fourth quarter, 1999, DSL subscribers numbered approximately 504,000, compared with 1,200,000 cable modem service customers.<sup>47</sup>

<sup>43</sup> A few of the competitive DSL resellers are able to offer service at a greater distance. This would suggest that the 18,000-foot limit might not be such a significant factor in the future.

<sup>44</sup> See **APPENDIX F: GLOSSARY of TERMS** for definition of "LEC."

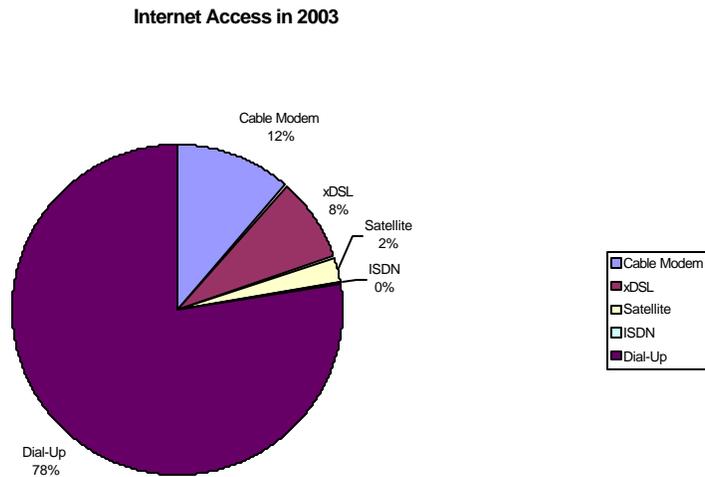
<sup>45</sup> "SBC to Offer Broadband Vision," *The Washington Post*, October 16, 1999, Page E1.

<sup>46</sup> *Ibid.*

<sup>47</sup> "Fourth Quarter 1999 xDSL Deployment Summary," Telechoice, February 15, 2000 ([http://www.xdsl.com/content/resources/deployment\\_info.asp](http://www.xdsl.com/content/resources/deployment_info.asp)), and "Market Statistics and Projections," Gecko Research, July 5, 1999, Third and Fourth Quarter 1999 Data. (<http://www.catv.org/modem/subnumbers/index.html>)

While the total market for broadband technology is comprised of various companies who utilize different platforms to deliver broadband (see **APPENDIX A** for explanation of platforms), the CECA Broadband Access Summit focused on cable modems, which represent the majority of broadband access platforms currently in use. While there are currently more homes passed<sup>48</sup> by DSL technology than by cable-modem-capable service (93 million for DSL vs. 53 million for cable),<sup>49</sup> cable's share of the residential broadband market is currently over 80%.<sup>50</sup> Most analysts predict this significant lead will continue for at least the next few years (see **Exhibit 4** below for short-term projections):

**Exhibit 4.**



Total Online Households: 67.6 Million

©Jupiter Communications

***D. The Product Bundling Strategy***

One of the greatest expectations for deregulation and convergence of network industries is a revolution in the nature of transactions. The most immediate goal is for consumers to realize expanded choice, lower prices, and increased convenience by purchasing different types of goods and services in a single transaction, or paying for them on a single bill. In a continuing effort to realize benefits from lower transaction costs engendered by the shift from physical commerce to electronic commerce, network companies are

<sup>48</sup> Number of “homes passed” is a generally accepted measurement of commercial availability for a network service.

<sup>49</sup> As of second quarter, 1999. (Source: “Second Quarter 1999 xDSL Deployment Summary,” Telechoice, August 10, 1999. ([http://www.xdsl.com/content/resources/deployment\\_info.asp](http://www.xdsl.com/content/resources/deployment_info.asp)))

<sup>50</sup> “Cable Takes the Early Lead,” *The Industry Standard*, October 11, 1999.

increasingly offering bundled packages of goods and services. The potential consumer benefits of this economic transformation include the following:<sup>51</sup>

- At a minimum, telecommunications and cable convergence will deliver new bundles of goods and services;
- Consumers gain a much more convenient means of shopping and purchasing goods and services;
- Production costs may be significantly lowered by better coordination and reduction of transaction costs within the production process;
- Sellers expect substantial cost savings in advertising and information dissemination, reduced transaction time and distribution; and
- Under competitive conditions, cost savings translate into lower prices for consumers.<sup>52</sup>

On the supply-side, network industries like telecommunications and cable tend to have high front-end and fixed costs (see **APPENDIX B: ECONOMICS of BROADBAND COMPANIES** for further discussion of the unique economic characteristics of broadband providers). By increasing the number of units sold, and spreading these costs over the maximum subscriber base possible, the cost per unit falls dramatically. In short, the goal is to maximize network utilization. One way to accomplish this is to offer current subscribers new applications using the same network to create additional revenues with incrementally lower costs.<sup>53</sup>

In addition to the potential for positive economic outcomes, however, there is also a potential for negative economic outcomes. Some examples might include:

- The privacy and security of transactions and consumers rights may be compromised by certain bundled arrangements;

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<sup>51</sup> “The Convergence Phenomenon: A Consumer Perspective,” Draft Report of CECA’s Convergence Forum, October 1999.

<sup>52</sup> AT&T, for example, has begun to offer customers bundled packages of local and long distance service over cable lines at rates that are sometimes lower than ILEC prices. In Fremont, California, for example, one AT&T plan offered customers local and long distance service over cable lines for \$11.00 per line for the first line and \$5.00 per line for each additional line, compared to the \$11.25 per month Southwest Bell currently charges for each new line. (Source: “AT&T Offering Some Fremont Residents Phone-Cable Packages,” *SiliconValley.com*, May 13, 1999) (<http://www.mercurycenter.com/svtech/news/indepth/docs/tci051399.htm>)

<sup>53</sup> Maxwell, K., Residential Broadband: An Insider’s Guide to the Battle for the Last Mile, (hereafter, Residential Broadband), John Wiley & Sons, New York: 1999, Page 149.

- Other tying arrangements may even lead to antitrust concerns such as those being raised in the recent lawsuit filed by GTE against cable subsidiaries of AT&T and their affiliated ISP, Excite@Home;<sup>54</sup> and
- Consolidating transactions takes time and the potential savings from this transformation will not materialize overnight.

In response to the changing economic conditions and the unique characteristics of network economics, cable and telecommunications companies have sought to bundle broadband Internet access transmission with Internet content service (utilizing an affiliated ISP), as a way to maximize revenues. This is the crux of the access debate and is discussed in more detail in **APPENDIX C: MARKET POWER**. Essentially, the ISPs ([Excite@Home](#) and Roadrunner) that developed the technology to allow cable systems to offer two-way high speed Internet service asked cable companies to enter into exclusive agreements with these ISPs that are designed to produce mutually beneficial results.<sup>55</sup> Some stakeholders have criticized this practice for reasons that appear in **Section V (pp. 33 – 39)**.<sup>56</sup>

## ***PART TWO: DISCUSSION OF THE ISSUES***

The current debate over broadband access has evolved over the last few years from a position of relative obscurity to an issue at the forefront of the telecommunications industry. Broadband networks have gradually taken shape from the initial investments in broadband research by Bellcore laboratories, to a leap in investment in digital infrastructure led by cable companies, to the present-day deployment of high-speed networks by both telephone and cable companies. Telephone companies have recently begun to increase their level of investment spurred by the emergence of cable modems as a competitive voice and data conduit. As previously noted, however, current research estimates that cable modems' market share amounts to over 80% of the nascent residential broadband market.<sup>57</sup> As such, Internet access over cable modems was the primary focus of the CECA Broadband Access Summit.

Convergence activity in the telecommunications and cable industries, and the related acquisitions made by these firms, has created the opportunity for the debate over broadband access. With each transfer of control from an acquired cable operator to the new parent, some local governmental authorities (charged with overseeing such franchise transfers) have considered regulation of access privileges, propelling the debate over

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<sup>54</sup> On October 25, 1999, an Internet services subsidiary of GTE filed a complaint in U.S. District Court alleging that AT&T's subsidiaries' (TCI and Comcast) exclusive agreement with affiliated ISP [Excite@Home](#) violates the Sherman Antitrust Act.

<sup>55</sup> Excite@Home, for example, developed the technology to allow cable systems to offer two-way high-speed Internet service. Mindful of the many risks inherent in deploying a new, technologically unproven service, Excite@Home asked AT&T to agree to an exclusive contract, which named Excite@Home as the affiliated ISP for AT&T's broadband service through 2002. Until this contract expires, neither party is permitted to enter into another high-speed agreement with a cable provider or ISP.

<sup>56</sup> See, e.g., **Subsections (C) Consumer Advocates** and **(D) Internet Service Providers**.

<sup>57</sup> "Cable Takes the Early Lead," *The Industry Standard*, October 11, 1999.

these new high-speed networks to new heights. These decisions have, in a few cases, included various conditions that must be met by the cable operator before franchise control may be granted. Chief among these is a requirement that cable operators provide nondiscriminatory access to their broadband networks. Other local regulators have decided in favor of granting franchise rights to new cable operators without requiring nondiscriminatory access. What follows is a chronological summary of some key recent developments.<sup>58</sup> Debate over access to these new networks is being played out largely in U.S. courts and city councils:

### *A. Chronological Summary of Events*

- June 1998: AT&T merges with cable provider TCI and transforms the acquired company into a broadband Internet service provider; soon after the deal, AT&T begins applying for transfer rights in TCI markets all over the U.S.
- December 1998: The City of Portland, Oregon and Multnomah County, Oregon become the first jurisdictions in the country to require the provision of nondiscriminatory access to the cable network as a condition of transferring TCI's local cable franchises to AT&T. AT&T refuses and so the transfer is not granted.
- January 19, 1999: AT&T files a lawsuit against the City of Portland and Multnomah County in Federal District Court, contesting the City and County's legal authority to impose a nondiscriminatory access condition (see **APPENDIX D: AT&T v. CITY of PORTLAND Case Study**).
- January 1999: FCC issues Section 706 report. Commission decides no action is needed regarding cable modem Internet access because market is nascent and "preconditions for monopoly seem absent."
- February 1999: More than 750 local franchising authorities approve the change of control of the TCI cable licenses to AT&T without imposing access requirements, despite lobbying by various organizations to do so.<sup>59</sup>
- February 1999: FCC approves AT&T/TCI merger and refuses to adopt access conditions stating that merger will not harm competition for Internet services.
- May 1999: AT&T announces plans to acquire cable giant MediaOne giving it access through cable modems to 30 – 60 % of all U.S. cable households,<sup>60</sup> and files more transfer rights applications in MediaOne markets.

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<sup>58</sup> This list is provided for illustrative purposes only and is not intended to be a comprehensive list of all broadband access events.

<sup>59</sup> This includes, among others, Los Angeles, Denver, Dallas and Seattle/King County.

<sup>60</sup> A range of percentages is provided because there is disagreement among the parties involved as to the actual number of homes passed by AT&T following the MediaOne acquisition. At the heart of the matter is a dispute over whether or not AT&T's minority ownership stakes in certain cable properties and other concerns should be included in the total.

- June 1999: Federal District Court of Oregon (Judge Owen Panner) issues a ruling unequivocally upholding the City and County's right to impose the nondiscriminatory access condition, but makes no judgment on the merits of the access policy.<sup>61</sup>
- July 1999: AT&T appeals the Oregon District Court ruling to the U.S. Court of Appeals for the Ninth Circuit.
- July 1999: In Broward County, Florida, the Board of County Commissioners votes in favor of a general ordinance requiring cable companies to provide access to their broadband facilities. AT&T and Comcast Corporation file suit against Broward County.
- July 1999: In San Francisco, the Board of Supervisors approves a franchise transfer from TCI without attaching an access requirement, but leaves open the possibility of doing so in the future. San Francisco then joins New York, Los Angeles, Atlanta, Boston, the U.S. Conference of Mayors, the National Association of Counties, the National League of Cities and several other jurisdictions, consumer groups and industry associations in filing an Amicus brief in the AT&T v. City of Portland court case. The San Francisco brief, while not filed in support of Portland's nondiscriminatory access position, did support Portland's argument that local franchise authorities' (LFAs) jurisdiction over cable television is broadly construed, and that LFAs have sovereign power to enact legislation to protect competition.
- August 1999: The FCC files an Amicus brief in the AT&T v. City of Portland case, in which the Commission asserts its jurisdiction in cable access matters.
- September 1999: Fairfax County, Virginia rejects a proposal for mandatory access conditions in the franchise transfer of MediaGeneral to Cox Communications.
- September 1999: The City of Fairfax, Virginia, a subdivision of Fairfax County, votes to require Cox Communications to provide nondiscriminatory access to its network as a condition for the transfer of rights from Media General.
- October 1999: FCC releases staff report cautioning states and municipalities against imposing access conditions on franchise transfers and affirms FCC policy of "unregulation."
- October 1999: GTE's Internet subsidiaries sue AT&T's cable subsidiaries (TCI, Comcast) and affiliated ISP Excite@Home, alleging that bundling high-speed data transport with Internet access service violates the Sherman Antitrust Act.

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<sup>61</sup> For the full text of Judge Panner's ruling see: <http://www.mhcr.org/CurrentIssues/attvportland.pdf>.

- October 1999: Miami-Dade County, Florida rejects a proposal that would have required cable television companies to allow access to their networks by independent ISPs (see **APPENDIX E: MIAMI-DADE, FL COUNTY COMMISSION Case Study** for Case Study).
- October 1999: The City Manager of Cambridge, Massachusetts establishes nondiscriminatory access requirements as a condition of the MediaOne/AT&T franchise transfer. Several other towns in Massachusetts approve the transfer without attaching such conditions.
- October 1999: In a similar MediaOne/AT&T transfer, Weymouth, Massachusetts votes to require AT&T to provide nondiscriminatory access to independent ISPs as a condition for approval.
- October 1999: The St. Louis, Missouri Board of Aldermen votes in favor of requiring AT&T to provide nondiscriminatory access to its broadband network.
- November 1999: The City Council of Richmond, Virginia approves a franchise transfer to AT&T and rejects a separate, nondiscriminatory access proposal.
- November 1999: In Weymouth, Massachusetts, elected officials reverse an earlier decision to impose nondiscriminatory access, at the request of the incoming mayor.
- On December 6, 1999, AT&T, MindSpring and Ken Fellman, Chair of the FCC State and Local Advisory Committee, send FCC Chairman Kennard a letter outlining principles all parties have agreed to for “providing consumers with a choice of ISPs when connecting to the Internet at high speed over cable.”
- December 1999: Culver City, California votes to insert a nondiscriminatory access condition on the franchise transfer of MediaOne to AT&T.
- December 1999: The Henrico County, Virginia Board of Supervisors approves the transfer of MediaOne’s cable franchise to AT&T with the requirement that AT&T provide nondiscriminatory access to independent ISPs.
- December 1999: The Pittsburgh City Council votes to require, as part of its agreement to renew the local cable franchise license, a self-executing nondiscriminatory access provision. The provision requires AT&T to provide nondiscriminatory access if either 1) AT&T agrees with another local community to provide nondiscriminatory access; 2) the FCC orders nondiscriminatory access or 3) the Courts order AT&T to provide nondiscriminatory access.
- December 1999: By December 1999, 476 Local Franchise Authorities have approved the transfer of MediaOne cable franchises to AT&T without imposing nondiscriminatory access conditions.

- January 10, 2000: AOL announces its intention to purchase entertainment and media corporation TimeWarner, joining together in one company TimeWarner's cable systems and AOL's Internet services. At the same time, AOL and TimeWarner also announce their commitment to ensuring customer choice of ISPs and content, with a preference for market-driven nondiscriminatory access solutions negotiated by cable operators and ISPs.

## ***B. Further Noteworthy Developments***

The following important events represent key developments that may or, in some cases, already have changed the landscape of the broadband access debate:

### ***1. AT&T v. City of Portland Case***

As of press time, February 2000, a decision in this case is expected any day by the three-judge panel of the U.S. Court of Appeals. This decision may significantly impact the broadband access debate because the Appeals Court may or may not uphold the District Court's decision that localities have the authority and jurisdiction to require cable operators to provide nondiscriminatory access to independent ISPs as a condition of transferring franchises and approving mergers. The Court has also shown signs that it may resolve the issue of whether cable broadband Internet service is a telecommunications service or a cable service. Both possible outcomes have implications for the debate. These issues are discussed in more detail in **APPENDIX D: AT&T v. CITY OF PORTLAND (Case Study)**.

### ***2. FCC Broadly Defines Nondiscriminatory Access***

In a December 1999 speech to the California Cable Television Association (CCTA), FCC Chairman Kennard outlined for the first time his expectations for the type of access cable operators should provide to their broadband networks. In his remarks, which represented a significant departure from the Commission's prior reluctance to articulate specific recommendations for cable access, Chairman Kennard exhorted cable broadband providers to work towards the following goals: 1) open protocols; 2) open boundaries; and 3) open pricing.<sup>62</sup> A more detailed discussion of these three goals and a summary of the FCC position on broadband access are provided in **Section VIII (A)(2), pp. 48 - 51**.

### ***3. Clinton Administration***

The Clinton Administration has recently made several public statements regarding broadband access policy. The Administration addressed the issue of access to these new networks both in the December 1999 release of the Second Annual Report of the E-commerce Working Group, and during the President's first-ever online interview, which was broadcast ("webcast") live over the Internet on February 16, 2000.

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<sup>62</sup> "Broadband Cable: Next Steps," Remarks by FCC Chairman Kennard before the Western Show, (hereafter, *Kennard's Remarks at Western Show*), December 16, 1999.

#### ***a) E-commerce Working Group***

In December 1999, the Clinton Administration's E-commerce Working Group issued its Second Annual Report which, while refraining from advocating regulatory intervention to achieve broadband deployment, acknowledged the debate over broadband access, and clearly established the Administration's position on the issue of access to these new networks:

“We believe that competition should be encouraged in all markets and support the principle that customers should have choice in both their content and their Internet access provider...We must maintain what is special, valuable and unique about the Internet, even as it evolves to support broadband applications. The Administration hopes that the continued promotion of pro-competitive policies and market forces will achieve these goals.”<sup>63</sup>

A more detailed discussion of the Report is provided in **Section VIII (A)(1), pp. 47 - 48.**

#### ***b) President Clinton's Webcast***

In his first-ever online interview, President Clinton answered questions about a variety of issues, including the Internet. In response to a question about the recent surge in media partnerships and mergers, and their impact on Internet access and content, the President offered the following:

“The one thing is you don't want to – that it's important not to have access choked off. We want all these – if these mergers go through – we want them to lead to greater access to greater options for consumers at more affordable prices. Then the second thing is you want other competitors to be able to get into the game.”<sup>64</sup>

### ***4. AOL Buys TimeWarner***

On January 10, 2000, ISP America Online (AOL), whose service offering includes both online content and Internet access, announced its plans to acquire media and entertainment corporation TimeWarner for more than \$160 billion in stock.<sup>65</sup> The merger will join together TimeWarner's cable systems (over 13 million subscribers) and AOL's Internet services (over 21 million subscribers). The companies will have an estimated combined value of approximately \$350 billion.<sup>66</sup> TimeWarner's cable assets include a high-speed cable Internet service provided by Roadrunner, a privately held joint venture whose parents include (in addition to TimeWarner), MediaOne Group, Inc., Microsoft

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<sup>63</sup> "Progress on Presidential Directives," U.S. Government Working Group on Electronic Commerce Second Annual Report, Page 16.

<sup>64</sup> President William Jefferson Clinton, quoted in Online News Interview, *CNN.com*, February 16, 2000. (<http://www.cnn.com/2000/ALLPOLITICS/stories/02/14/clinton.cnn/index.html>)

<sup>65</sup> Figure based on stock prices at the time of the announcement.

<sup>66</sup> "AOL Buys TimeWarner in Historic Merger," *CNET News.com*, January 10, 2000.

Corporation and Compaq Corporation. As of the end of 1999, Roadrunner's subscribers numbered over 550,000,<sup>67</sup> second only to [Excite@Home](#) (approximately 1,000,000 subscribers). AOL president and chief operating officer Robert Pittman provided some insight into the new company's future broadband plans:

"We will accelerate the development of TimeWarner's cable broadband assets by bringing AOL's hallmark ease-of-use to this platform...We expect America Online to help drive the growth of cable broadband audiences..."<sup>68</sup>

AOL has publicly stated its intention to allow choice of both content and ISP, and sees its merger with TimeWarner as another example of the cable broadband market moving in this direction. Representatives of both companies maintain that the combined company:

"is committed to offering our customers a choice...and we now have to turn that [commitment] into specific policies that will result shortly in negotiations with other [ISPs]." <sup>69</sup>

Following the merger announcement, both AOL CEO Steve Case and TimeWarner CEO Gerald Levin have subsequently made repeated statements indicating their commitment to opening the TimeWarner cable system to multiple ISPs. At the recent World Economic Summit in Davos, Switzerland, Steve Case outlined AOL's intentions:

"We are evangelizing open access...The inherent character of the Internet is open and competitive, so everything we're focused on, whether it be TimeWarner cable systems – we're going to open those up and let other people ride along them."<sup>70</sup>

In a similar statement, Gerald Levin commented on the current cable access environment:

"The current [discriminatory access] structures governing our Internet service won't survive the merger."<sup>71</sup>

The extent of the new company's commitment to providing nondiscriminatory access to its network is an important issue to many stakeholders in the CECA Broadband Access Summit. Some stakeholders point to evidence that since the merger with TimeWarner, AOL has significantly changed its strategy, electing to abandon its public campaign for government-imposed requirements that sought to guarantee nondiscriminatory access to cable broadband networks for all ISPs, in favor of a new strategy focused on achieving access goals through private negotiations among the parties. This significant change in

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<sup>67</sup> "Roadrunner Triples Customers in 1999," Roadrunner Press Release, January 12, 2000. (<http://www.roadrunner.com>)

<sup>68</sup> "AOL Buys TimeWarner in Historic Merger," *CNET News.com*, January 10, 2000.

<sup>69</sup> Mike Luftman, TimeWarner Cable Vice President, quoted in "AOL TimeWarner Shifts Balance of Internet Power," *ZDNet's PC Week Online*, January 14, 2000.

<sup>70</sup> Remarks of Steve Case, AOL Chief Executive Officer, at the World Economic Summit, Davos, Switzerland, February 1, 2000.

<sup>71</sup> "Open Net Access Plan for TimeWarner," *Atlanta Journal-Constitution*, February 3, 2000, Page F1.

strategy is evident in this statement made by TimeWarner CEO Gerald Levin at the time the merger was announced:

“Essentially...we’re going to take the open access issue out of Washington and out of City Hall, and put it into the marketplace and into the commercial arrangements that should occur to provide the kind of access for...multiple ISPs.”<sup>72</sup>

and in this recent quote from AOL General Counsel George Vradenburg, on AOL’s previous lobbying efforts aimed at state governments:

“The need for these state legislative initiatives has been lessened now that we are likely to get effective and expeditious movement in the marketplace.”<sup>73</sup>

Some stakeholders argue that this development underscores the need for a federally imposed, nondiscriminatory access requirement. Portland, Oregon City Councilman Erik Sten bemoaned AOL’s recent tack:

“They’ve gone from being the biggest corporate champion of open access to at best a lukewarm champion...It just completely underscores the case that the government needs to do its job and quit pretending that corporate forces will do the government’s work.”<sup>74</sup>

Despite assurances from AOL, TimeWarner, and other industry representatives, consumer and public advocacy groups have raised concerns about the merger, including skepticism about the ability of market-based solutions to adequately achieve the scope of access necessary to ensure customer choice in both provider and content. These groups are concerned about the sheer size of the new company, which represents the joining together of the largest online service provider (AOL) with the world’s largest media and entertainment company:

"Consumers do not want to be beholden to a giant media-Internet dictatorship, even if it promises to be a benevolent one. This is the sad result of the Clinton Administration's weak competition policy that has allowed enormous consolidations, which are likely to leave consumers with fewer choices, limited competition, and higher prices. We will immediately ask the Federal Communications Commission (FCC) to initiate a rule making proceeding to require open access to the Internet. We will also ask the FCC to review its new ownership rules, which could enable AOL, TimeWarner, and AT&T to preserve anticompetitive ownership ties of cable companies that serve more than half of all

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<sup>72</sup> “AOL Aims to Continue Open Access Fight,” *CNET News.com*, January 11, 2000.

<sup>73</sup> “AOL Ends its Push for Open Access,” *The Washington Post*, February 13, 2000, Page A1.

<sup>74</sup> Councilman Sten, quoted in “AOL Ends its Push for Open Access.”

consumers and control the most popular cable TV programming and Internet services.”<sup>75</sup>

As the merger has only recently been announced,<sup>76</sup> it is premature to pinpoint just how it will affect the current debate. At the very least, however, it has magnified the issue of broadband access, and amplified the need for policymakers to examine and carefully weigh the positions of the various stakeholders involved.

## V. STAKEHOLDERS AND POSITIONS

Unlike Internet access from traditional telephone wires, which is open to all competitors by law (common carriage requirement), cable providers who offer Internet services often are not similarly required to make their wires available to competitors. Some of these competitors (and other stakeholders) argue that cable operators often have an exclusive arrangement whereby broadband transmission service provided by the cable company is bundled with information (content) services provided by an affiliated ISP (e.g., AT&T provides high-speed access to its customers with bundled ISP Excite@Home), and are critical of the fact that some of these arrangements do not currently allow customers to connect directly with independent ISPs.

Cable companies maintain that those subscribers who want to access an ISP (such as AOL, Prodigy, MSN, et al.) not included in the bundled package can simply “click through” on the Web to an alternative ISP. Others argue, however, that in order to access the full content and service offerings of some ISPs, the customer must often pay a monthly fee to the independent ISP. For some customers who still desire to access certain ISPs for their content (e.g., chat rooms, e-mail and other member services), this means that they must pay a fee (in excess of the amount already paid for the bundled access/content service) in order to continue to access the full content of the other, independent ISP.<sup>77</sup> As such, this customer’s Internet access costs have risen above the cost of the bundled service alone, as long as he/she desires to keep a preferred ISP, and that ISP charges for full access to its services or content.<sup>78</sup> The inability of customers to select (or maintain) certain independent ISPs within the context of the exclusive

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<sup>75</sup> “Consumer Groups Respond to AOL-TimeWarner Deal,” Joint Press Release of Center for Media Education, Consumer Federation of America, Consumers Union and Media Access Project, January 10, 2000. (<http://www.cme.org/press/000110pr.html>)

<sup>76</sup> The transaction is subject to certain closing conditions, including regulatory approvals and the approval of AOL and TimeWarner shareholders.

<sup>77</sup> FCC Advisory Recommendation Number 15, *Recommendation for Issuance of Notice of Inquiry Regarding Access to Broadband Networks*, FCC Local & State Government Advisory Committee (<http://www.fcc.gov/statelocal/recommendation15.html>) TCI, for example, currently requires that any customer who subscribes to its high-speed cable modem service must also purchase Internet access from Excite@Home. Thus, a TCI customer who wishes to use another ISP to gain access to the Internet using a cable modem would have to pay for both the @Home service (high-speed access + content) and the other ISP’s service (content only).

<sup>78</sup> Most ISPs in fact do not charge nonsubscribers for access to their content (e.g., Yahoo, MSN, Lycos). AOL, on the other hand, does charge for access to its content and AOL currently has the largest subscriber base of any ISP (over 21 million subscribers), making this issue relevant to a number of consumers.

broadband access/content service packages provided by cable operators, without paying an additional fee to access preferred content, is a point of contention for many stakeholders in this debate.

Some ISPs and other broadband service providers want the federal government to require nondiscriminatory access to cable wires into U.S. homes just as it does in the telephone business. Cable companies, on the other hand, argue that there is little incentive for them to invest in building and acquiring the fiber optic infrastructure necessary to deliver broadband services if they will be forced to provide nondiscriminatory access to competitors for small fees. Moreover, cable operators argue that customers can choose a different provider of bundled services and a different platform (e.g., a LEC's DSL service).

Congress has not yet enacted any laws in this area but is currently considering several new bills (see legislative discussion in **Section X(A)**). The Federal Communications Commission has publicly stated its intention to avoid regulating an industry it views as being in its infancy (see **Section VIII** for detailed discussion of the jurisdictional issues involved in the access debate). In the absence of a formal FCC ruling on broadband access, some state and local authorities that have jurisdiction over cable television have acted on their own. A few have passed ordinances that make the ownership/transfer of cable franchise rights conditional on unrestricted access for all interested ISPs (see **APPENDIX D: AT&T v. CITY of PORTLAND Case Study**), while many others have rejected or delayed such access requirements (see **APPENDIX E: MIAMI-DADE, FL COUNTY COMMISSION Case Study**). The positions of these and other major stakeholders in the broadband access debate are summarized below.

### ***A. Cable Companies***

For years, cable television companies have provided television service to customers through wires directly into U.S. homes. Recent technological advances have resulted in an interest in using this direct, last mile access to transmit a variety of telecommunications services over these wires to consumers. Cable companies are attracted not only to the Internet and cable possibilities of broadband technology but are also interested in using these same wires to enter and build market share in the lucrative local telephone market (estimated at more than \$90 billion)<sup>79</sup> and other related markets, to provide a bundled package of services. With intent to provide a diverse line of products to customers (e.g., Internet, video, and telephone), many large telecommunications firms, and even some utilities, have undertaken substantial projects designed to upgrade their existing infrastructure to accommodate the new digital broadband technology. Or, in some cases, these firms have utilized an acquisition strategy to secure a competitive position in the new broadband market.

Maintaining that broadband is not a separate market from narrowband, these companies oppose the imposition of nondiscriminatory access requirements by regulators. Broadly, the cable companies contend that the current, unregulated broadband marketplace is

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<sup>79</sup> "Armstrong at the Helm Guides a Rejuvenated AT&T," *Reuters News*, April 27, 1999.

fostering the competitive environment sought by consumer groups and regulators alike providing new products, progressively lowering prices and affording ample new investment opportunities for new entrants. Cable companies argue that regulatory intervention should only occur as a specific response to a specific problem in the marketplace or else such interference will disrupt the rapid deployment of broadband services and harm customers because.<sup>80</sup>

- Cable broadband deployment has spurred other providers (e.g., telephone, wireless and satellite companies) to deploy high-speed services, and prices have fallen as a result. Falling prices for high-speed Internet service are evidence that the broadband marketplace is working correctly and in the best interest of consumers;
- Contrary to claims by ISPs and consumer and public advocacy groups, broadband access to the Internet is not controlled by cable companies but rather includes a significant number of competitors from nearly every sector of the communications industry, including telephone (DSL service), wireless and satellite. This competitive environment contrasts sharply with the ILECs' current control over the local loop for narrowband Internet access;
- The total number of cable modem subscribers (1,200,000) is dwarfed by leading ISP America Online, which has a total subscriber base of more than 21,000,000 members and a 60% share of the total online market;<sup>81</sup>
- Cable modem subscribers are not prevented from accessing alternative ISPs and any other available content on the World Wide Web;
- Network architecture does not permit interconnection with an unlimited number of ISPs, a technological limitation that justifies current time limits on streaming video downloaded by subscribers. Mandating a nondiscriminatory access policy (allowing access to all access providers) would lead to reduced access speeds from the resulting Web congestion and increased customer dissatisfaction;
- The broadband technology market is a fledgling industry and, therefore, any attempt to regulate Internet access could slow the growth of the worldwide broadband network, preventing customers from accessing this important new technology;
- Recent decisions by local governments that require cable companies to provide nondiscriminatory access to ISPs only serve to curtail valuable infrastructure investment and diminish customer choice; and

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<sup>80</sup> "The Truth Behind Forced Access: Why Government Regulation Would Limit Choice and Forestall Competition," National Cable Television Association (NCTA), September 1999.

<sup>81</sup> Source: *Hoover's Online*. (<http://www.hoovers.com/industry/snapshot/0,2204,26,00.html>)

- There is no evidence that broadband cable providers are currently restricting speech on their networks.

The cable position received support from recent analysis by Professor Einer Elhauge of Harvard University. The report warns that a regulated, shared access model would not only discourage further investment and inhibit competition but also might be an undue burden on the antitrust courts and state litigators. Elhauge argues that the Department of Justice already monitors anti-competitive behavior of firms and that any additional regulation specifically aimed at the broadband industry would be redundant and inordinately costly. Elhauge's work also affirms the right of cable operators to bundle high-speed transmission with content by selectively choosing content providers and that a nondiscriminatory access model would unwisely usurp this right:

"If every firm had a duty to deal with every other firm, no firm would have to compete with each other's business."<sup>82</sup>

Cable companies also cite evidence from recent econometric studies of the unique characteristics of the emergent broadband marketplace and the impact of price regulation at various levels of consumer demand for broadband technology. One of these studies estimates that at current demand levels, regulation would discourage further capital investment outlays and significantly restrict the number of competitors from entering the market. In fact, some analysts have argued that demand levels must reach as high as 70% before regulatory pricing would not hinder the rapid deployment of broadband technology for a majority of the U.S. population.<sup>83</sup>

The cable industry also calls attention to the motivations of those arrayed against it in the broadband access battle. Specifically, cable companies argue that AOL, MCI, GTE and certain RBOCs, all representing some of the world's largest Internet and telecommunications providers, have joined this fight for one reason: to slow or stop competition. Cable companies claim that the prospect of impending local telephone competition from cable is yet another reason why incumbent providers are seeking to impose government regulation on cable while simultaneously pursuing deregulation of their own target markets (like long distance services). In short, cable companies argue that these companies' motivation for supporting nondiscriminatory access stems from a concern about the competition emerging from the cable industry. The FCC recently echoed this observation:

"We should be skeptical of the protestations from those who now feel the heat of a viable competitive threat..."<sup>84</sup>

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<sup>82</sup> "Analysis of the Proposed Internet Freedom Act," Prof. Einer Elhauge, Harvard University School of Law, October 1999.

<sup>83</sup> See, for example, "The Market Structure of Broadband Telecommunications Draft Paper," G. Faulhaber & C. Hogendorn, University of Pennsylvania, Wharton School of Business. (<http://rider.wharton.upenn.edu/~faulhabe/Broadband.pdf>)

<sup>84</sup> FCC Commissioner Michael Powell in Speech to the Federal Communications Bar Association, June 1999.

While opposing a government-mandated access policy, some cable companies have recently begun to negotiate mutually acceptable terms of access with certain independent ISPs. In a recent joint letter to the FCC,<sup>85</sup> for example, AT&T agreed to provide consumers with the following access benefits once its contractual obligation to its affiliated ISP, Excite@Home, expires:

- A choice of ISPs;
- The ability to exercise their choice of ISPs without having to subscribe to any other ISP;
- A choice of Internet connections at different speeds, and at prices reasonable and appropriate to those speeds;
- Direct access to all content available on the World Wide Web without any AT&T-imposed charge to the consumer for such content;
- The continued ability to change or customize their “start page” and other aspects of their Internet experience; and
- The functionality of their ISP comparable to that which such ISP has on competing high-speed networks, subject to any technical constraints particular to, or imposed upon, all ISPs using AT&T’s cable network to deliver high-speed Internet access.

In addition to the above consumer benefits, AT&T pledged to negotiate private commercial arrangements with multiple ISPs (once contractual obligations to Excite@Home expire) that would provide ISPs with the following benefits:

- Internet transport services for high-speed Internet access at prices reasonably comparable to those offered by AT&T to any other ISP for similar services, subject to other terms negotiated between the parties on a commercial basis;
- The opportunity to market directly to consumers high-speed Internet access over cable using AT&T’s Internet transport services;
- The opportunity through means to be mutually agreed upon, to market their high-speed Internet access which uses AT&T’s Internet transport services to AT&T’s cable customers who have not already designated an ISP;
- The opportunity to bill cable subscribers directly for services provided by the ISP that are additional to the services provided by AT&T;
- The opportunity to differentiate service offerings by various means, such as enhanced customer care and advanced applications; and

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<sup>85</sup> Letter from AT&T and MindSpring to FCC Chairman William Kennard, December 6, 1999.

- The opportunity to maintain brand recognition in all such offerings.

### ***B. Equipment Manufacturers***

This group is led by the Information Technology Industry Council (ITIC) and includes some of the largest manufacturers of broadband and other high-tech equipment, many of whom are current suppliers to cable operators. These manufacturers argue that until the demand reaches levels that result in profit-taking, transforming the present cable access model into a nondiscriminatory access model will discourage competitive entry and hinder the rapid development of a nationwide, broadband infrastructure.<sup>86</sup> These large industrial concerns favor a continuation of the current discriminatory access model, echoing the FCC's position that broadband network owners should not be forced to allow competitors on their wires and arguing that:

“...because cable Internet access is an emerging service and the providers currently lack market power in the Internet access market, they should not be subject at this time to open network requirements.”<sup>87</sup>

The ITIC and other large equipment suppliers also argue that the ILECs should not be required to provide their competitors nondiscriminatory access to their DSL technology. These groups argue that such a requirement would (as with cable modem access) hinder investment in the broadband industry and have urged the FCC:

“...to avoid any interpretation of the Communications Act that would impede the competitive growth of the information services market by blunting the ILEC's incentive or ability to deploy ADSL service...”<sup>88</sup>

ITIC does, however, emphasize the need for CLECs to access the ILECs' essential facilities (e.g., local loops) for data transmission, arguing that information services like broadband are not telecommunications services and should not be subject to common carrier fees and regulations.<sup>89</sup>

On the other hand, some equipment manufacturers and network designers may have a more neutral view on the question of which access model is preferable. These companies might, in fact, favor a nondiscriminatory access model wherein the market might include a larger number of buyers for their products.

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<sup>86</sup> "Tech Heavy Hitters Join Open-Access Fray," *The San Francisco Chronicle*, Tuesday, August 17, 1999. (<http://www.sfgate.com>)

<sup>87</sup> Information Technology Industry Council (ITIC) Letter to FCC Chairman William Kennard, August 12, 1999, Page 1.

<sup>88</sup> ITIC Letter to FCC Chairman Kennard, June 10, 1999, Page 3.

<sup>89</sup> "ITI's Bandwidth Principles," Information Technology Industry Council, March 4, 1999. ([http://www.itic.org/iss\\_pol/ppdocs/fccbw\\_0899.pdf](http://www.itic.org/iss_pol/ppdocs/fccbw_0899.pdf))

### *C. Consumer, Civic and Public Advocates*

Most consumer, civic and public advocacy groups argue that policymakers should play an active role in promoting deployment of low-cost broadband access and service and favor a nondiscriminatory access model for cable broadband networks. Many fear that a continuation of the current discriminatory access system will lead to a few (or a single) firms achieving an oligopoly or a monopoly position in the broadband market, which would result in price gouging, a decline in service quality and other harmful effects on the public. These advocates argue that the current unregulated model is highly detrimental to consumers and citizens not only because they must pay additional amounts to access an independent ISP but, more importantly, because such vertical integration allows the cable operator inordinate control over the network and over the content available to its customers.<sup>90</sup>

These groups argue that while cable companies claim that a cable broadband customer may access rival content providers in "one click of the mouse," it is possible for cable operators to manipulate their broadband networks and discriminate against competitive content providers by causing the access speed for competitors to be significantly slower than for content from its proprietary site:

“One might envision the bandwidth offered by the cable modem network as a funnel, with the wide end being last mile bandwidth and the narrow end being connection to the Internet. The cached content of the service provider affiliates is located in the middle of the funnel, while non-affiliated sites have no means to bypass the bottleneck.”<sup>91</sup>

Consumer, civic and public advocates also warn that the current, discriminatory access system threatens the open, competitive nature of the Internet. Some cable companies' affiliated ISPs, for example, have already implemented restrictions on the length of video programming that may be shown online. TCI's Excite@Home, for example, may be restricted by contract from showing unlimited lengths of streaming video, or other content.<sup>92</sup> These advocates refer to this development as an information bottleneck, and contrast the characteristics of the current, discriminatory access model with those of a preferable, nondiscriminatory access model:

“The fundamental difference between an open access model and a closed proprietary system that regulates traffic to accomplish corporate goals is the discrimination against unaffiliated content providers. In a nondiscriminatory, open access system, the transportation provider profits from the maximum

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<sup>90</sup> "Transforming the Information Superhighway Into a Private Toll Road: The Case Against Closed Access Broadband Internet Systems" (hereafter, *Transforming the Information Superhighway*), Consumer Federation of America, September 1999, Pages 19-24.

<sup>91</sup> "Letter to Chairman William Kennard," *Center for Media Education*, July 29, 1999.

<sup>92</sup> For further discussion of this issue, see "AtHome Speed Cap Angers Subscribers," *San Francisco Chronicle*, June 30, 1999.  
(<http://www.sfgate.com/cgi-bin/article.cgi?file=/chronicle/archive/1999/06/30/BU15769.DTL>)

movement of traffic. In a closed system, the integrated transportation/content provider maximizes profits by ensuring that the content it owns moves first and fastest and the traffic of its competitors moves last and slowest, if at all.<sup>93</sup>

While acknowledging that the broadband market is still emerging, these groups nevertheless maintain that regulatory oversight will not preclude additional investment in the broadband market. These advocates argue that the potential size of the broadband market combined with technological imperatives will guarantee the continued deployment of broadband infrastructure, regardless of whether access to these networks is regulated. Some leading financial analysts agree, arguing, among other things, that customers will always migrate to superior products and, furthermore, that cable and LEC operators stand to realize cost savings from the unbundling of distribution and content. ISPs would, for example, assume some of the costs of providing content such as marketing and customer service.<sup>94</sup>

Many prominent consumer, civic and public advocacy groups were critical of the recent agreement made between AT&T and MindSpring in which AT&T agreed to allow independent ISPs a degree of access to its high-speed network.<sup>95</sup> These advocates argue that the agreement fails to address certain key issues such as content restrictions and equitable treatment for independent ISPs:

“Open access requires more than a choice of ISPs. Open access requires that cable operators provide competing ISPs with full access to their networks under the same terms and conditions, and at the same rates, that access is available to affiliated ISPs. An operator should not be able to restrict offerings to those which its affiliate chooses to provide.”<sup>96</sup>

Professor Lawrence Lessig of Harvard University supports the public and consumer advocacy groups’ cautionary response to the AT&T/MindSpring agreement. In remarks before the National Press Club Briefing on Broadband and the Public Interest, Professor Lessig criticized the AT&T/MindSpring agreement as falling short of true nondiscriminatory access. Lessig argued that one of the fundamental drivers of the Internet’s success is the “end-to-end” nature of its architectural design, which describes the location of “intelligence” in a network at the “ends” of a layered system. Such an end-to-end design is also characterized by simple and general pipes (communications protocols), which may be freely utilized. Lessig argued that an important consequence of this design is a nondiscrimination principle among applications. In other words, users innovate freely and send new applications through the network, unrestricted by a

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<sup>93</sup> “Creating Open Access to the Broadband Internet: Overcoming Technical and Economic Discrimination in Closed, Proprietary Networks,” Consumer Federation of America/Consumer@ction, December 20, 1999, Page 16. (<http://www.consumerfed.org/internetaccess>)

<sup>94</sup> “Excite@Home Alone: Open Minds or Locked?” *The Motley Fool*, July 16, 1999 (<http://www.fool.com>) and “Financial Implication of Broadband Service,” Annual National Cable Television Association, June 1999.

<sup>95</sup> Following termination of AT&T’s contract with affiliated ISP [Excite@Home](#) in 2002. See Cable Companies’ position (outlined in “A” above) for details of agreement.

<sup>96</sup> Letter of Andrew Schwartzmann, President, Media Access Project, to FCC Chairman William E. Kennard, December 6, 1999.

controlling network owner. Lessig stressed that AT&T's agreement with MindSpring does not ensure that this end-to-end feature will be respected and he echoed public and consumer advocacy groups' concerns, in arguing that AT&T:

"has been unwilling to commit to the principle that it will impose no content or function-based limitations on the use of the network."<sup>97</sup>

Consumer advocates fear that without swift regulatory intercession, the broadband market is doomed to progress in the undesirable manner of the cable industry as a whole, which has been criticized for its monopolistic practices, including price increases:

"How have consumers fared in the 15 years since cable TV [deregulation]? For most consumers, the result is as evident as the monthly cable bill. Consumers routinely face high bills, poor service quality, and have no real alternative to their cable provider. When that cable TV reality is combined with the significant and increasing importance of the Internet...it is easy to understand the intensity with which consumer, low income, and civil rights advocates are resisting [cable owners'] efforts to run the broadband Internet as a private lane on the information superhighway."<sup>98</sup>

Along these lines, consumer advocates saw little progress in the recent overtures made by AT&T in its promise to provide access to independent ISPs in the future:

"Cutting preferential deals with affiliates and a few most-favored outsiders is no more likely to open high-speed broadband to choice and lower prices than has occurred for cable television itself."<sup>99</sup>

In contrast to the prevailing position of most consumer groups, a few consumer organizations have opposed any imposition of a nondiscriminatory access model on cable broadband networks. San Francisco-based NetAction, for example, argues that it is premature to assume that Internet over cable modems will become a monopoly:

"The reality is that cable modem providers cannot dominate broadband because they are just one part of the market. The broadband market also includes DSL, wireless and satellite operations."<sup>100</sup>

NetAction maintains that the most important policy goals in this issue are 1) ensuring the competitive deployment of broadband technology, and 2) fostering competitive local

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<sup>97</sup>Remarks of Professor Lawrence Lessig, Harvard University, "National Press Club Briefing on Broadband and the Public Interest," Washington, DC, December 20, 1999.

<sup>98</sup>*Transforming the Information Superhighway* at Page 59.

<sup>99</sup>Gene Kimmelman quoted in "Open Access Requires Public Accountability, Not Private Deals," Center for Media Education-Consumers Union-Consumer Federation of America Joint Press Release, December 6, 1999. (<http://www.consumerfed.org/internetaccess/pubnotpriv061299.htm>)

<sup>100</sup>Comments of NetAction before the Department of Telecommunications and Information Service, San Francisco, California, October 27, 1999.

telephone service. NetAction believes that any type of government regulation will only interfere with achieving these goals:

“Regulation that impedes the ability of cable operators to provide competitive local telephone and Internet services is not in the public interest.”<sup>101</sup>

#### ***D. Internet Service Providers***

Internet Service Providers (ISPs), which currently number over 6000 in the United States, include providers whose business focus is providing Internet content to subscribers, providers whose business focus is primarily providing Internet access with little or no content to subscribers, and providers who offer both services. Some content-oriented ISPs (America Online, Prodigy, MSN, et. al.) primarily serve residential consumers, while other ISPs (UUNet, CompuServe, Verio, et. al.) primarily serve business customers. Under current law, the local telephone companies must afford all competing ISPs access to their lines on a nondiscriminatory basis so that telephone company-affiliated and independent ISPs are on equal competitive footing. This requirement has not, however, been applied to Internet access over cable modems to date as the regulatory status of high-speed cable transport as either a cable service or telecommunications service has yet to be determined by the courts or the FCC.

Many ISPs, including many who offer their customers both proprietary content and access to the Internet, argue that the present nondiscriminatory access tradition of narrowband dial-up networks (where ISPs pay a fee to use the LEC loop) should exist with respect to broadband cable modem service. They assert that:

- The availability of broadband infrastructure is limited;
- Cable wires represent the most likely high-speed access platform for many residential consumers;<sup>102</sup>
- The cable companies are able to exercise excessive market power, as switching costs for consumers (e.g., from cable modem service to DSL service, or from DSL service to cable modem service) are high due to a lack of standardization and network architecture requirements;
- The current closed network produces local cable Internet monopolies that have an adverse effect on consumer content choice and may lead to price gouging; and

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<sup>101</sup> “The Inappropriate Role of Regulation in the Evolution of High-Speed Cable Internet Service,” *NetAction.org*. (<http://www.netaction.org/broadband/regs.html>)

<sup>102</sup> These ISPs offer as evidence the fact that 94% of the over one million homes wired for broadband use cable modems. (Source: “Defending the Internet Revolution in the Broadband Era: When Doing Nothing is Harm” (hereafter, *Defending the Internet Revolution*), BRIE Economy Working Paper 12, August 1999, Page 15))

- Competition from alternative ISPs over existing analog networks is not a comparable substitute for broadband networks that are much faster and enable applications that would not be possible with traditional narrowband transmission.

These companies maintain that unless they are provided this same nondiscriminatory access to broadband networks, they will not be able to compete in the emerging broadband marketplace due to the superiority of broadband technology and the market power resulting from cable companies' exclusive content arrangements:

“Competition from existing ISPs providing narrowband access will not prevent exercise of market or monopoly power by an ISP...that is vertically tied to the owner of broadband access facilities. Those who would argue the contrary assume that broadband and narrowband Internet access are substitutable products, when it is readily apparent that they are not: they offer significantly different transfer speeds, with substantial price differences.”<sup>103</sup>

These companies further warn that without nondiscriminatory access to cable broadband networks, the cable companies' bundling strategy would result in these companies emerging as “gatekeepers of the Internet,” due to their dominant position in the marketplace. The result will be diminished customer choice for content because:

“[a]ny network owner, left unconstrained, will logically attempt to shape network uses along patterns that best serve its own interest...As a result, [the network-affiliated ISP]'s concept of what can and should be done over the Internet precludes a range of innovation and experimentation by other service providers and by its own customers.”<sup>104</sup>

These ISPs also point to the positive consumer benefits achieved in the deregulated long-distance telephone market as a basis for the probable success of a similar, nondiscriminatory broadband Internet access model:

“The robust competition made possible by the open-access model in telecommunications has led to improved service quality, more options, and lower prices.”<sup>105</sup>

In addition to the consumer gains, ISPs also deny that mandating open access would lead to diminished investment in broadband infrastructure again positing the example of the long-distance telephone market where:

“[t]he trend in [telecommunications industry] growth has continued and even accelerated in recent years. The average growth rate of new real investment per

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<sup>103</sup> *Defending the Internet Revolution* at Page 12.

<sup>104</sup> *Ibid.* at Pages 24-25.

<sup>105</sup> “MaCable.com: Closed v. Open Models for the Broadband Internet,” Prepared for the OpenNET Coalition by *Strategic Policy Research*, October 15, 1999, Page 24.

year in the 1990s has been about 9%. In 1997, real domestic investment is estimated to have been about \$47.5 billion.”<sup>106</sup>

Finally, these ISPs deny that allowing them access (for a fee) to broadband networks would be prohibitively costly. Some of the more prominent ISPs, including AOL and CompuServe, recently hired a firm to demonstrate new technology that would allow open access to alternative service providers. GTE Service Corporation’s recent study demonstrated that by using a simple, off the shelf device, it is technically feasible to give customers a choice of providers.<sup>107</sup> According to these parties, this proof of technical feasibility directly rebuts the cable industry’s claim that the costs involved in transforming their networks from closed to open would be prohibitive:

“GTE’s demonstration pilot flatly discredits the claim that open access and consumer choice are technologically complicated and costly...[the GTE model] is a low-cost solution that is feasible, flexible, scaleable and easy to incorporate, giving consumers a real choice.”<sup>108</sup>

Other ISPs offer few services apart from Internet access and relatively little of their own content. These ISPs predominantly advocate nondiscriminatory access to telephone lines, since DSL upgrades now constitute the dominant conduit for broadband Internet access for their subscribers. These groups believe the ILECs are violating FCC rules by trying to impose unfair conditions on the ISPs (and the CLECs) that want to purchase DSL services from them. These ISPs want the FCC and the states to enforce actively the ILECs’ interconnection and unbundling obligations. This includes what these ISPs perceive as unfair conditions and tariffs imposed on them by the ILECs:

“To date, the ILEC DSL tariffs have raised significant concerns that efficient and competitive local area transport to ISPs will emerge unless the Commission and the states actively enforce the ILEC interconnection and unbundling obligations.”<sup>109</sup>

While strongly advocating the opening of ILEC telephone networks, many of the more business-oriented, DSL-focused ISPs have not publicly favored one cable modem access policy over another, preferring instead to endorse a level playing field for advanced telecommunications services generally, characterized by technologically-neutral regulatory policies. As one prominent trade association representative recently stated:

“...statutory emphasis on technical neutrality underscores the broader goal of open networks, as found on the Internet. With more open and competitive telecommunications networks, a variety of providers can deploy service

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<sup>106</sup> Ibid. at Page 17.

<sup>107</sup> “GTE Debunks Cable Access Myth,” *InternetNews.com*, June 14,1999.

<sup>108</sup> William P. Barr, GTE Executive Vice President, quoted in “GTE Debunks Cable Access Myth.”

<sup>109</sup> “Concerning the Deployment of Advanced Telecommunications Services Capability,” Testimony of Commercial Internet Exchange Association before the FCC, September 14, 1998, Page 19.

applications that make use of capacity, but are fundamentally independent from the underlying telecommunications.”<sup>110</sup>

Many of these ISPs object to the current focus on cable unbundling and argue that the debate over cable modem access has contributed to prolonging the ILECs’ competitive advantage and allowed the Bells more time to deploy broadband infrastructure and affiliated ISPs.

### *E. Local Telephone Companies*

The local telephone companies have also sought ways to diversify revenue in the face of continuing deregulation, which may eventually diminish their dominant position in the market for local telephone service. Now the leading providers of DSL for residential customers (currently about 390,000 customers in the U.S.),<sup>111</sup> the telephone companies desire regulatory parity with cable companies in the broadband access marketplace. Currently, the ILECs are required to provide nondiscriminatory access to their networks to their competitors (CLECs) and their customers, but the ILECs have garnered some protection from federal regulators for proprietary broadband equipment used for “data transmission.”<sup>112</sup> These companies argue that any further regulation should be equally applied to both platforms:

“...there are many pipes into the home for consumers to select. So why is the phone pipe—providing the same services as the cable pipe or the satellite pipe—heavily regulated and the other pipes unregulated?”<sup>113</sup>

Other industry analysts have echoed this observation:

“The electric company cannot tell you what kind of brand of appliance to buy, the gas company can’t tell you what kind of furnace or stove to buy. The water company can’t tell you what kind of faucet or sink to buy. The telephone company can’t tell you what kind of or brand of phone to buy or who to do business with over your phone. Why should cable?”<sup>114</sup>

In general, the ILECs defend their call for a nondiscriminatory access requirement for all network providers by pointing to the emerging market characteristics of broadband and

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<sup>110</sup> Ibid. at Page 8.

<sup>111</sup> “Fourth Quarter 1999 xDSL Deployment Summary,” Telechoice, February 15, 2000. ([http://www.xdsl.com/content/resources/deployment\\_info.asp](http://www.xdsl.com/content/resources/deployment_info.asp))

<sup>112</sup> “Bells Don’t Have to Lease Broadband Gear,” *The Industry Standard*, September 15, 1999. (<http://www.thestandard.com>) In regulating telephone networks, the FCC has historically distinguished between voice and data transmission with more stringent common carriage rules applied to voice transmission providers.

<sup>113</sup> Letter from Roy Neel, United States Telephone Association (USTA) President, to the Editor of *The Washington Post*, September 22, 1999.

<sup>114</sup> LeggMason Precursor Group Managing Director Scott Cleland, quoted in “How Much Room in the Fat Pipe?” *The Washington Post*, September 19, 1999, Page H4.

noting that they face increasing competition in the local service market from cable companies who are not bound by the same regulatory requirements:

“Only the incumbent telephone companies have regulated prices, interconnection requirements, and unbundling obligations—none of which apply to cable modems.”<sup>115</sup>

In a related issue, current regulation considers Internet traffic “interLATA” or, long-distance, and, as such, the ILECs are restricted in certain ways from building out their digital networks to compete with cable and other platforms. The asymmetry in regulatory requirements, they contend, creates undesirable economic distortions that are not in the best interest of consumers or broadband providers:

“If the FCC perpetuates its current regulatory posture, effectively barring the LECs from providing advanced services, a digital divide will be created between rural customers who lack access, and urban customers that have access.”<sup>116</sup>

Local telephone companies have generally not argued that cable companies should be subject to all the same unbundling, loop provisioning, and collocation requirements with which they must comply. Nor have they argued for absolute equality in regulatory treatment. Instead, they have argued that there should be more parity in treatment between these industries and most importantly that there should be a policy requiring nondiscriminatory access to the Internet, applicable to all network providers. In essence, such a policy would result in consumers having a choice as to how they access the Internet, how they connect to an ISP (choice of local transport provider), and the freedom to access all content. Moreover, the telephone companies argue that a nondiscriminatory access policy would accelerate the widespread deployment of broadband technology:

“...the fastest way to bring high-speed access to all homes in America is to level the playing field so that ALL industry segments—cable, satellite, local phone companies—can compete fairly.”<sup>117</sup>

Local telephone companies believe that a basic policy requiring nondiscriminatory access and a heavy regulatory process are two different remedies. They point to interconnection requirements in the wireless industry as an example of an industry characterized by a lack of government involvement in the details of pricing, interconnection technologies, or where and how interconnection takes place. At the same time, these companies argue that existing regulation of the ILECs should be reduced to ensure that parity becomes a reality. There is little disagreement on the part of most local telephone companies, for example, that incumbents unbundle local loops and provide collocation space, at cost. But these companies maintain that more extensive and expensive regulations (such as line

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<sup>115</sup> Bell Atlantic Chairman & Chief Executive Officer Ivan Seidenberg, Speech to the Progress & Freedom Foundation’s 5<sup>th</sup> Annual Summit, August 23, 1999.

<sup>116</sup> “Issue Brief: Advanced Services,” United States Telephone Association, March 1999. (<http://www.usta.org/advsvcs.html>)

<sup>117</sup> Letter from USTA President Roy Neel to the Editor of *The Wall Street Journal*, August 26, 1999.

sharing) only serve to undermine the competitiveness of the telephone companies and emasculate a substantial share of their efficiencies when it is clear that competitors, such as cable companies, are achieving substantial market growth and competing successfully:

“The FCC should now recognize that if ‘[t]he decision not to regulate’ cable modem services ‘fosters creativity and innovation’ with regard to cable broadband, lessened regulation with regard to ILEC broadband would also foster creativity and innovation. And, if as Chairman Kennard proclaims, the costs of regulation in terms of defining and enforcing nondiscrimination and pricing requirements outweigh the benefits with regard to cable broadband, then the costs likely outweigh the benefits for ILEC broadband as well.”<sup>118</sup>

### ***F. Competitive Local Exchange Carriers***

Competitive Local Exchange Carriers (CLECs) are companies that have emerged following the passage of the Telecommunications Act of 1996 to compete with the LECs in local voice market and, more recently, the data transmission market. Like the major ISPs described above, the CLECs have built significant high-speed networks and have been installing the necessary equipment to deploy broadband services (as well as traditional local service) to customers using the incumbent local telephone company’s local loops. The CLECs want to be able to offer customers a broad array of telecommunications services: local, long-distance as well as broadband Internet access.<sup>119</sup> As such, these companies have focused their attention on the DSL network, arguing in favor of stricter enforcement of the unbundling and collocation provisions of the 1996 Telecommunications Act, so that they may access local telephone lines for purposes of broadband deployment.

These companies have recently benefited from an FCC rulemaking that requires the LECs to share local, last mile phone lines with CLECs. The ruling will allow the CLECs to obtain access to the high-frequency portion of the local loop from the ILECs, over which the ILECs provide voice services. This will enable competitive carriers to provide Digital Subscriber Line (DSL)-based services over the same telephone lines simultaneously used by ILECs to provide basic telephone service, a technique referred to as “line sharing.”<sup>120</sup>

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<sup>118</sup> May, Randolph J., “On Unlevel Playing Fields: The FCC’s Broadband Schizophrenia,” *Progress On Point: Periodic Commentaries on the Policy Debate*, The Progress & Freedom Foundation, December 1999. ([http://www.pff.org/POP\\_6.11.htm](http://www.pff.org/POP_6.11.htm))

<sup>119</sup> “In a Race to the Web, Phone Upstarts Grab Turf,” *The Wall Street Journal*, October 18, 1999, Page B1.

<sup>120</sup> “Federal Communications Commission Action to Accelerate Availability of Advanced Telecommunications Services For Residential and Small Business Consumers,” FCC Press Release, November 18, 1999.

## ***VI. CONSUMER and PUBLIC IMPACTS of CURRENT BROADBAND ACCESS SYSTEM***

### ***A. Potential Positive Impacts***

The potential direct benefits of broadband technology, which is being transmitted under the current access system, are readily apparent:

- Broadband access is not only faster, but is of much higher quality than analog networks and allows consumers an "always on" feature;
- The deployment of broadband technology by cable operators has spurred the deployment of other competitive technologies, including DSL technology, resulting in expanded consumer choice and lower prices;<sup>121</sup>
- Production costs for business may be significantly lowered by better coordination and reductions in transactions costs which could translate into lower costs for consumers who purchase their goods;
- Consumers may soon be able to purchase bundled packages of telecommunications and cable services, which may represent cost savings and greater selection of products; and
- Significantly higher connection speeds for Internet access (from 100 to 1000 times as fast as current analog modems) allow the delivery of advanced technological applications including those for entertainment, business, education, shopping, medical and public services (see **Exhibit 5** below for examples):

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<sup>121</sup> Cable companies also point out that although the broadband service they provide is not subject to federal regulation, prices for cable broadband service are (on average) equivalent or, in some cases, lower than comparable DSL service.

**Exhibit 5.**

**BROADBAND APPLICATIONS**

<b>CATEGORY</b>	<b>PC/TV</b>	<b>DESCRIPTION</b>
Video-On-Demand	TV	Watching selected movies, television reruns, delayed broadcasts, all with full VCR controls; one of the largest single markets for residential broadband
Shopping	Either	Video catalog shopping including customized profiling and ordering and interactive purchasing
Medical	Either	Remote doctor visits by video conference, remote transmission of x-rays and other medical files; comparison shopping for medical services
Education	Either	Remote access to stored video material; interactive learning and online homework
Public Services	Either	Voting, filing taxes, attending public forums and town meetings
Business Services	PC	Telecommuting by connecting with a corporate LAN at speeds comparable to the office; video conference calling; and electronic and network support for home businesses

Source: Maxwell, K., Residential Broadband, 1999.

***B. Potential Negative Impacts***

Along with the potential benefits of increased consumer access to broadband technology under the current access system, there are potential negative customer impacts that may occur. These may include the following undesirable effects:

- Loss of competition among ISPs (both access providers and content providers), which could negatively impact prices and result in diminished content available to customers;
- Control over key aspects of network architecture may lead current network owners to favor products that support particular business models and objectives at the expense of customers' rights to access certain information; undesirable consequences of this include infringement on free speech rights and civic participation and democratic discourse;

- The practice of bundling an affiliated ISP with high-speed access service allows these providers to control critical aspects of network architecture, which may lead to restrictions on customer use of the network;
- Innovation and experimentation may be stifled as new entrants to the broadband marketplace may be less likely to invest in a market that contains a network owner with substantial market power with the possibility that the access provider could decide what types of material are allowed on its network;
- Asymmetric regulation could lead to inefficiencies and delay deployment of broadband technology; and
- Due to the nature of the equipment required for customers who purchase broadband access to the Internet, switching costs from platform to platform may be substantial and this may lead to diminished actual customer choice.

Relevant questions and possible alternatives for policymakers to consider in addressing the consumer and public impacts of various access models are outlined in **Sections IX and X, pp. 56 – 67.**

### *C. Consumer Education*

The vast majority of consumers are unaware of the capabilities of broadband technology and the issues surrounding access to these networks. There is a great deal of confusion over the different platforms and service options for the purchase of broadband services. Price and quality information that is understandable and useful to customers must be developed that go beyond reliance on the marketplace. In the telecommunications market, for example, we have had over a decade of competition and consumers still do not receive clear information from industry providers. Instead, there is a plethora of confusing and misleading advertising information and inadequate efforts to develop credible information sources to be used as a basis for informed decisions.

There are four steps necessary to conduct a successful consumer education campaign. First, policymakers must encourage the development of materials to enable consumers to make effective choices. Initially, consumers should be educated about competition. They must be made aware that new technologies are available and new decisions are coming. Consumers must be provided information on price, quality and features that facilitate comparisons across broadband providers. Apples to apples comparisons are in the public interest, whereas apples to oranges comparisons obscure intelligent choices.

Second, outreach efforts should be conducted by state and local agencies and/or the broadband companies themselves. These should rely on general advertising as well as community-based efforts.

Third, each provider should be required to prepare a plan for consumer education. The plan should cover materials, outreach and monitoring.

Fourth, the effects of education efforts should be monitored. Surveys to assess the effectiveness of the efforts, including the extent of consumer knowledge and the best means to improve areas of weakness should be conducted. Audits of company efforts should also be carried out.

CECA believes that consumer education will create a context for change, give small business and residential consumers a voice in the debate around how the new market is structured, and give consumers the tools to make a choice which benefits them and their families. The cornerstone of consumer protection is consumer sovereignty. The ability of consumers to exercise informed choices in the marketplace is considered essential to the efficient functioning of a market.<sup>122</sup>

## ***VII. CONSENSUS POINTS of the CECA BROADBAND ACCESS SUMMIT***

Despite the differences among stakeholders' priorities and positions on broadband access issues (see, e.g., **Section III**, "Summary of Participants' Priority Statements" and **Section V**, "Stakeholders and Positions"), the CECA Broadband Access Summit reached consensus on several key points. Though these consensus points do not represent all policy objectives for broadband access, they do represent a major breakthrough. This is the first time a diverse array of stakeholders has agreed on a set of broadband access principles. Members of the CECA Broadband Access Summit agreed:

1. In the long term, broadband Internet access is expected to supplant narrowband Internet access for many consumer applications.
2. The ubiquity of the Internet and the resulting customer demand for bandwidth is driving the broadband market; user-driven innovation is a hallmark of that market, and broadband access policies should continue to foster this trend.
3. Customers should have choice in both their content and their Internet Service Provider. A nondiscriminatory access system should be encouraged to achieve that goal.
4. Vibrant competition between providers of broadband access should be an important objective of broadband access policies. In addition, careful consideration needs to be paid to the social impacts of broadband access policies, including broadening civic participation and protecting free speech. Regulators need to vigilantly measure whether these market and social objectives are being reached and institute a procedure to make adjustments as necessary.

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<sup>122</sup> "The Convergence Phenomenon: A Consumer Perspective," Draft Report of CECA's Convergence Forum, October 1999.

5. More data is needed on key aspects of broadband deployment and consumption, especially with regard to the level of forecasted broadband deployment and consumption in the next five years.
6. The vibrancy of the information-based economy relies upon the participation of a diverse array of geographical regions, economic sectors, and customers. Broadband access and the advanced services dependent on such access should be made widely available to all consumers.
7. It is important to maximize the total social value of broadband network systems to society.
8. The prospect of a “digital divide” is troubling. Although many factors contribute to a digital divide, policymakers can reduce the likelihood of a digital divide by adopting policies that 1) permit broadband access facilities to be deployed at the lowest possible cost; 2) monitor access to broadband facilities by low-income and hard-to-reach customers; and 3) contain pro-active measures that can be implemented as necessary to ensure that broadband access is available to low-income and hard-to-reach customers, to the extent that market mechanisms fail to provide timely and affordable access.
9. Consumers of Internet services should be protected by consumer protection laws similar to those that apply to other competitive businesses.
10. Given the fact that information technology and various implementations of this technology are fast changing, broadband policies should be goal oriented and focused on delivering results for users. Broadband access policies should challenge all delivery media to meet goals for significant increases in consumer welfare including, but not limited to, increased data speed, affordability and ubiquity of provisioning. As these goals are met, broadband access policymakers should consider, in the context of a measurable framework, whether expanded user choice (of both content and service provider) is eroding concerns about last mile bottlenecks, and whether commensurate deregulation is warranted.
11. Regulatory certainty and stability tend to encourage needed investment in broadband infrastructure. Regulatory uncertainty and instability tend to discourage investment and raise the capital costs for a firm.
12. State and local regulators play an important role in promoting access to broadband technology and fostering competition; the extent of their role derives from federal, state and local law.
13. Greater coordination among federal, state and local officials would facilitate the deployment of broadband technology.

## ***VIII. JURISDICTION***

A critical component in the debate over broadband access is whether local governments have the authority to make franchise transfers conditional on competitive entry from independent ISPs. The jurisdictional debate over broadband access highlights, once again, the extremely thorny question of federal versus state prerogatives. While the Telecommunications Act of 1996 opened formerly regulated markets to competition, the Act set minimal ground rules, leaving the courts, federal agencies, states, and local regulators to hash out the details. To date, the FCC has not set an official, legally binding policy with regard to broadband Internet access. As a result, the issue has begun to be litigated in the U.S. courts in the absence of any federal rulemaking. While publicly endorsing a “watchful waiting” approach to high-speed Internet access, the FCC has simultaneously discouraged state and local regulators from making cable franchise transfers contingent on the fulfillment of nondiscriminatory access requirements:

“The FCC is the only agency with jurisdiction over all of the current providers of broadband technology—cable operators, wireline telephone companies, providers of wireless communications service, and satellite communications firms. Local franchising authorities, in contrast, are in no position to implement technologically-neutral policies with respect to all these competitors.”<sup>123</sup>

While the FCC has consistently maintained that local officials only have regulatory authority over cable systems and not ISPs, the Commission has refrained from promulgating new regulations that would formally assert its authority. Furthermore, the FCC has bemoaned recent decisions by local cable supervisors (which in some cases made franchise transfers conditional on unbundling requirements) for creating “regulatory disparity,”<sup>124</sup> and has actively opposed those local broadband access decisions. Local officials have defended their actions as policymaking in the best interest of their constituencies. The positions of federal, state and local governing bodies are outlined below.

### ***A. Federal Government***

#### ***1. The Clinton Administration***

As part of its 1997 project designed to implement the Clinton Administration's strategic vision for electronic commerce, the President appointed a Working Group on Electronic Commerce and charged the Commerce Department with responsibility for five new initiatives, one of which concerns high-speed Internet access:

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<sup>123</sup> Amicus Curiae Brief of the Federal Communications Commission (hereafter, *FCC Amicus Brief*), filed in *AT&T v. City of Portland*, August 16, 1999, Page 29.

<sup>124</sup> *FCC Amicus Brief* at Page 26. The Commission further defends this position by arguing “any such [regulatory] disparity might undermine the objectives of section 706 [of the Telecommunications Act of 1996] by impeding the reasonable and timely deployment of advanced telecommunications capability to all Americans.” (<http://techlawjournal.com/courts/portland/19990816fcc.htm>)

"1. High-Speed Internet Access: The Secretary of Commerce, in appropriate consultation with the Federal Communications Commission, shall encourage the deployment of advanced telecommunications capabilities for all Americans while preserving the vibrant and competitive free market that exists for the Internet and other interactive computer services."<sup>125</sup>

In its recently published Second Annual Report, the Administration acknowledges the debate over cable broadband access and clearly sets forth its views on the issue of access to these new networks:

"Considerable attention has been focused on the question of "open access" to broadband delivery over cable. At the heart of this issue is consumer choice and competition at all levels of the marketplace. We believe that competition should be encouraged in all markets and support the principle that customers should have choice in both their content and their Internet access provider."<sup>126</sup>

The Administration hails the "open characteristics" of the Internet and praises its influence on exploding levels of innovation and entrepreneurship, but falls short of recommending government intervention to enforce the access principles expressed above:

"We must maintain what is special, valuable and unique about the Internet, even as it evolves to support broadband applications. The Administration hopes that the continued promotion of pro-competitive policies and market forces will achieve these goals."<sup>127</sup>

The current position of the FCC echoes the Clinton Administration's preference for a reliance on market forces to achieve customer choice, and has fueled the growing jurisdictional conflict among federal, state and local regulators.

## ***2. The Federal Communications Commission***

In the absence of a formal, federal rulemaking on cable broadband access, a jurisdictional conflict has ensued between state and local regulators and the FCC. In a handful of cases, local authorities have passed new ordinances and/or set restrictions on franchise transfers that mandate unrestricted ISP access to cable broadband networks. The FCC, on the other hand, has adamantly opposed any regulation of the Internet,<sup>128</sup> arguing that the Internet's success has been due in large part to a lack of federal government interference:

"In the mid-1980s, when the telephone companies started to roll out 'information services' – the regulatory forerunner of the Internet – the FCC had the good

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<sup>125</sup> "Progress on Presidential Directives," U.S. Government Working Group on Electronic Commerce, Second Annual Report, Page 13.

<sup>126</sup> Ibid. at Page 16.

<sup>127</sup> Ibid.

<sup>128</sup> See, e.g., "The FCC and the Unregulation of the Internet," FCC Office of Plans & Policy, Working Paper No. 31, July 1999.

judgment to allow the phone companies to deploy information services in an unregulated environment. Without that decision to exercise restraint and let the market develop, the Internet as we know it would not exist.”<sup>129</sup>

Compounding the FCC’s predicament is the Commission’s longstanding commitment to fostering competition in the local telephone market. Since the passage of the Telecommunications Act competitive local markets have been slow to materialize. Recent entrants into the new digital cable network, which may be used for voice and data transmission, represent the first real possibility of achieving competition in this market. As such, the FCC has been reluctant to force these new broadband cable operators to provide nondiscriminatory access to their networks to competitive ISPs or impose other regulatory requirements, which it believes might discourage further investment in these new, high-speed networks:

“We need these networks deployed quickly. If the government is not going to do it, somebody has got to pay for it. Nobody in government should be depressing investment in broadband facilities, because consumers want this. It is good for them. It is good for the economy.”<sup>130</sup>

Some ISPs and telephone companies have lobbied both the Congress and the FCC to mandate nondiscriminatory access but their efforts thus far have been unsuccessful. At the same time, the FCC has not promulgated any new regulatory policy for broadband access markets.<sup>131</sup> Instead, the Commission prefers to encourage the stakeholders to work towards a mutually desirable solution while following what it terms a policy of “regulatory restraint” in the broadband marketplace:

“At present, the appropriate balance can be struck by monitoring the market and resisting the urge to fix a system that does not appear to be broken and shows early signs of healthy growth and competition.”<sup>132</sup>

At the same time, however, Chairman Kennard has expressed general concern over the potential downside of delaying policymaking on this issue:

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<sup>129</sup> *Kennard’s Remarks at Western Show.*

<sup>130</sup> Remarks by FCC Chairman William Kennard, at AARP convention, Washington, DC, February 4, 1999.

<sup>131</sup> The FCC has shown a preference recently for negotiating with competing stakeholders in the broadband access debate with the purpose of developing a mutually beneficial arrangement. See, e.g., “AT&T Top Cable Executive Resigns Amid Internet-Access Fracas,” *The Wall Street Journal*, October 7, 1999.

<sup>132</sup> Federal Communications Commission Cable Services Bureau, “Broadband Today: A Staff Report to William E. Kennard” (hereafter, *Broadband Today*), October 1999, Page 41. **NOTE:** Many CECA Broadband Access Summit participants object to the substance of *Broadband Today* and dispute the data contained in the document. These participants contend that the methodology utilized by FCC Cable Bureau staff was flawed because opposing views were not adequately represented in the privately held information gathering sessions conducted by Bureau staff. These Members of the Summit maintain that a public hearing on the subject of broadband access would have been preferable.

“Here is the key thing, that I am interested in understanding more. And that is, what is the cost of delay? If we do not act immediately in this area, will it be difficult or impossible to go back later and ensure that there is access to these networks?”<sup>133</sup>

On the other hand, Kennard has also expressed recognition of the potential pitfalls of untimely intervention:

“What I don’t want the agency to do is compose a set of rules until we have a better understanding of how this marketplace is going to develop. This marketplace is still in its infancy.”<sup>134</sup>

The basis for the FCC’s “watchful waiting” response to the broadband access issue may be summarized as follows:<sup>135</sup>

- The Commission is not convinced that cable operators have or will establish a broadband monopoly that poses a risk for consumers;
- The continued deployment of competitive platforms (DSL, satellite and wireless, e.g.) to cable broadband services will offer consumers viable alternatives for Internet access;
- All parties agree that openness and choice are what consumers want and will demand, the only disagreement is about how to reach that goal. A combination of careful monitoring of broadband access markets coupled with the natural evolution of market forces will eventually beget open competition on these new networks;
- Cable operators will eventually be compelled by consumer demand for more content choices to provide independent ISPs nondiscriminatory access to their networks; the debate over access to these pipes is merely a transitional issue.<sup>136</sup>
- A consistent, national broadband policy is more likely to be achieved through active collaboration with state and local regulators.

The Commission hailed the recent agreement between AT&T and MindSpring as evidence of the efficacy of marketplace solutions, and went on to define its view of nondiscriminatory access for the first time in a December speech to the California Cable Television Association (CCTA). In his remarks, Chairman Kennard urged cable broadband providers to adopt the following broadband access principles: 1) open

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<sup>133</sup> Remarks by FCC Chairman William Kennard, at AARP convention, Washington, DC, February 4, 1999.

<sup>134</sup> Ibid.

<sup>135</sup> Sources: *Broadband Today* at Pages 42-44, and *Kennard’s Remarks at Western Show*.

<sup>136</sup> The FCC Cable Bureau staff predicts that if cable operators seek to maintain exclusive agreements with affiliated ISPs, they will lose customers who will opt for a more open network while simultaneously subjecting themselves to anti-trust and regulatory scrutiny.

protocols; 2) open boundaries; and 3) open pricing. Kennard explained these three principles as follows:

“By open protocols, I mean that the interface standards that applications developers and equipment designers use are arrived at in an open, transparent process, and then made accessible to everyone – just like the IP protocol. By open boundaries, I mean that interconnection is encouraged, and bottlenecks and content control are eliminated. The borders are porous, not closed or walled-off, and outside programming and services are allowed to enter the network and interact freely with consumers. By open prices, I mean that prices for access to the network are determined by a competitive market, not unilaterally by a rate setter, whether public or private. And the customer can reach the service provider of their choice without having to pay twice.”<sup>137</sup>

These remarks have been the strongest to date from the FCC regarding the Commission’s stance on cable broadband access and may offer some guidance to state and local governments as they continue to grapple with this issue.

### ***B. State and Local Government***

Current law generally requires that cable companies who apply for franchise transfers or changes in control (usually following a merger or acquisition) first obtain the consent of the city government or other supervisory body before they are allowed to proceed. The standards for approval vary from jurisdiction to jurisdiction, but they are generally quite broad and allow localities to consider a range of public interest factors in rendering a decision.<sup>138</sup> Some statutes authorize city officials to make these transfers contingent on the fulfillment of certain conditions:

“...the City of Portland may condition a transfer upon such terms and conditions related to the technical, legal, and financial qualifications of the prospective transferee to perform according to the franchise as the City deems appropriate...”<sup>139</sup>

The issue of broadband Internet access has thus far arisen on the local level in two contexts: the AT&T acquisition of TCI and the AT&T acquisition of Media One. The first nondiscriminatory access condition was imposed on AT&T in Portland and Multnomah County, Oregon. In Portland, for example, the Mt. Hood Cable Regulatory Commission (MHCRC)<sup>140</sup> decided, after several public hearings on the matter, to recommend that a nondiscriminatory access condition be attached to the transfer of TCI’s

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<sup>137</sup> Kennard’s Remarks at Western Show.

<sup>138</sup> Federal law does, however, impose some limits on municipal authority; the nature and extent of federal preemption with regard to access to broadband cable networks is currently in dispute. See, e.g., AT&T v. City of Portland, 43 F. Supp 2d 1146 (D.Or. 1999) appeal pending, Ninth Circuit No. 99-35609. See also **APPENDIX D: AT&T V. CITY OF PORTLAND (Case Study)**.

<sup>139</sup> Section 15.1 & 15.2 of the TCI/Portland Franchise (Ord. No. 166469).

<sup>140</sup> The MHCRC is a citizens’ commission that advises the Portland, Oregon City Council and the Multnomah County Commission on cable and telecommunications policy.

franchises to AT&T. Among other reasons for attaching the condition, the MHCRC cited:

“[t]he public interest is clearly best served by providing for robust competition and choice in the thriving Internet market, a market which is clearly more important every day,” and that “open access is especially important because of the critical need to ensure that a maximum variety of choices concerning high-speed access to the Internet be available to users and citizens of any income level or social status.”<sup>141</sup>

The MHCRC recommended that nondiscriminatory access be a mandatory condition of the franchise transfer and the City of Portland agreed (see **APPENDIX D: AT&T v. CITY of PORTLAND Case Study**). The Portland City Council and the Multnomah County Commission overwhelmingly approved (4-1) the franchise transfer with the nondiscriminatory access condition attached and the Federal District Court for Oregon upheld this decision.<sup>142</sup> About ten other communities have followed Portland’s lead, including: St Louis, Missouri, Broward County, Florida, Fairfax City, Virginia, Madera, California, and Cambridge, Massachusetts. All of these jurisdictions have conditioned their approval of franchise transfers to cable operators on providing access to independent ISPs.

Most recently, the City Manager of Cambridge, Massachusetts decided to attach a nondiscriminatory access requirement for approval of the franchise transfer application from MediaOne to AT&T and explained his decision:

“As a matter of principle, the open flow of ideas, information and commerce is the cornerstone of our democracy and economy...Cambridge consumers deserve the choices and competition that should result from a requirement of non-discriminatory access to broadband cable.”<sup>143</sup>

In contrast to the above, the San Francisco Board of Supervisors did not immediately make nondiscriminatory access a requirement for its approval of the franchise transfers in that jurisdiction, preferring to take a “wait and see” approach. At the same time, several communities that did not immediately impose nondiscriminatory access have announced their intent to reconsider the issue at a later date. Others (for example, the City of Pittsburgh) have announced that if the courts uphold nondiscriminatory access requirements, these jurisdictions will require nondiscriminatory access in their own communities. In all of these cases, state and local entities were charged with policymaking of the type that many believe should be the responsibility of the federal

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<sup>141</sup> Ex Parte Comments of the Mt. Hood Cable Regulatory Commission, City of Portland, January 29, 1999, Page 11.

<sup>142</sup> See *AT&T v. City of Portland*, 43 F. Supp 2d 1146 (D.Or. 1999) appeal pending, Ninth Circuit No. 99-35609. See also **APPENDIX D: AT&T V. CITY OF PORTLAND (Case Study)** for brief summary of issues involved in that case.

<sup>143</sup> “Cambridge, Massachusetts Joins Open Access Fight,” *openNETCoalition.org*, October 21, 1999. (<http://www.opennetcoalition.org/news>)

government. One San Francisco legislator involved in the franchise transfer decision reflected on his own experience with the access issue:

“It shouldn’t be this way. Local government has enough to do as it is. We are struggling with carrying out welfare reform, financing health care and rebuilding our parks and playgrounds. We care about good schools, safe streets and buses and trains that run on time. The resources we have spent having to deal with [broadband access] could have been better used...[This is] policy by crazy quilt. Even worse, it’s abdication.”<sup>144</sup>

In a similar vein, City Commissioner Erik Sten, the lead city official in Portland, Oregon on cable and telecommunications issues, responded to an op-ed piece by FCC Chairman William Kennard in the *Wall Street Journal*, in which Kennard defended the Commission’s nonintervention in cable access. Sten wrote:

“I sincerely hope that Chairman Kennard and the FCC will reconsider their policy [of inaction]. In the meantime, responsible local governments can be expected to continue to step forward to clean up the mess the FCC’s inaction has left on our doorstep. ...[w]e would, however, love to have a national policy developed. The problem is that the FCC has taken no steps to create one.”<sup>145</sup>

Furthermore, some local regulators warn that should the FCC continue to refrain from promulgating broadband access policy, cable operators will follow through on plans to sue local governments<sup>146</sup> and/or curtail high-speed access deployment altogether in those jurisdictions that have instituted nondiscriminatory access requirements:

“This argument is the strongest reason for states to take action to protect their communities from threats by entities who, legally, should yield to a local jurisdiction’s police power.”<sup>147</sup>

Perhaps in response to the burgeoning role of state and local regulators in the broadband policy arena, the FCC recently established a joint federal-state conference to examine issues involving advanced broadband services.<sup>148</sup> The Commission has not yet, however, begun any formal rulemaking process to address the issue of nondiscriminatory access.<sup>149</sup>

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<sup>144</sup> Yaki, Michael, “Setting Federal Policy A Town at a Time,” *The New York Times*, August 1, 1999.

<sup>145</sup> Excerpt from letter sent by Commissioner Erik Sten to the *Wall Street Journal* in response to an Op-Ed submission by FCC Commissioner Kennard entitled, “How to End the World Wide Wait.” Portions of Mr. Sten’s letter were published in the *Wall Street Journal* on September 2, 1999.

<sup>146</sup> AT&T, for example, has threatened to sue every locality that adopts a nondiscriminatory access condition and, in fact, has now sued Portland and Multnomah County, Oregon, Broward County, Florida, and Madera, California. AT&T has also filed a state administrative appeal of the decision by Cambridge and other Massachusetts communities.

<sup>147</sup> Statement of Jane E. Lawton, Past President, National Association of Telecommunications Officers and Advisors, at the CECA Broadband Access Summit, November 17, 1999.

<sup>148</sup> “FCC Establishes Federal-State Joint Conference to Promote Advanced Broadband Services,” FCC News Release, October 8, 1999.

<sup>149</sup> The cable industry has asserted that the FCC does not have the legal authority to adopt a national nondiscriminatory access policy. The FCC appears to disagree, however. The FCC did file an Amicus

### C. Regulatory Asymmetry

The jurisdictional debate over broadband access also includes the very important issue of regulatory asymmetry between the cable and telephone industries. Telecommunications and cable service providers are treated differently under existing law. Because the Internet infrastructure and the telecommunications industry are so closely linked (access lines are typically leased from telecommunications companies), an important key to understanding the broadband access debate is to recall that both telecommunications and cable television have historically been regulated industries of varying degrees but with critical differences between the two.

The Communications Act of 1934 classified the telephone network as “common carriers” whose owners could not discriminate in carrying traffic, and spawned the concept of universal service.<sup>150</sup> Cable operators, on the other hand, have historically been subject to less stringent regulatory requirements due to a long-standing regulatory distinction between cable services and telecommunications services.

The 1984 Cable Act exempted cable providers from common carrier regulation as long as they were deemed to be providing “cable services,” a term which was defined as *one-way* transmission of video programming to subscribers. The Act also included, however, recognition that cable systems increasingly had the ability to offer *two-way*, interactive voice and data services. The definition was designed to prevent those cable operators who delivered *video* services from being subject to common carrier regulation.<sup>151</sup> While the 1984 Act recognized that cable operators were capable of offering two-way, interactive products, only recently has the emergence of the Internet and broadband technology engendered a reconsideration of this distinction, as many broadband applications are inherently two-way and interactive.<sup>152</sup>

The 1996 Telecommunications Act revised the definition of cable services to allow for more emphasis on the *use* of the service in determining if it is one-way transmission,<sup>153</sup>

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brief in the AT&T v. Portland case, suggesting that broadband Internet access policy would best be established at the federal level. The Commission did not, however, advise the Ninth Circuit that localities are without legal authority to impose nondiscriminatory access conditions and did not urge that the District Court ruling in Portland’s favor be reversed.

<sup>150</sup> As amended by the Telecommunications Act of 1996, that provision of the original 1934 Act now reads: “...to make available, so far as possible, to all the people of the United States, without discrimination on the basis of race, color, religion, national origin, or sex, a rapid, efficient, Nation-wide, and world-wide wire and radio communication service with adequate facilities at reasonable charges...” (<http://www.fcc.gov/telecom.html>).

<sup>151</sup> The definition of cable service was intended to “exempt video programming from common carrier regulation in accordance with the traditional conception that the one-way delivery of television programs, movies, sporting events and the like is not a common carrier activity.” (H.R. Rep. No. 934, 98<sup>th</sup> Cong., 2d Sess. At 41)

<sup>152</sup> “Internet Over Cable: Defining the Future In Terms of the Past,” FCC Office of Plans and Policy Working Paper (hereafter, *Internet Over Cable*), August 1998, Pages 66-68.

<sup>153</sup> There is disagreement about exactly what “or use of” refers to. Some cable stakeholders believe the change in the 1996 Telecommunications Act referred to here (the addition of the ‘or use of’ language) allows two-way service to still be considered a cable service.

and defined “video” as programming that is comparable to broadcast television. There is also disagreement about whether Internet-based services should be considered video programming:

“For example, a basic Internet connection permitting a subscriber to visit Web sites put up by third parties may not be comparable to programming provided by a television broadcast station. In contrast, live video images transmitted across the Internet by the technique known as ‘streaming’ video might appear much closer to traditional broadcasting, particularly from the point of view of the subscriber.”<sup>154</sup>

The debate over broadband access turns on these essential issues, which have highlighted the distinct regulations and regulatory layers of jurisdiction governing the separate telecommunications and cable television industries. If broadband Internet access over cable is considered one-way, video programming, for example, it might continue to be defined as a cable service and be exempt from common carrier regulation. If, however, broadband over cable is not considered a cable service, cable operators who transmit this service might be considered telecommunications providers and could be subject to common carrier regulation.<sup>155</sup> While the cable companies have maintained that broadband Internet access over cable is a “cable service” and is, therefore, not subject to common carrier regulation, the FCC has not definitively clarified the asymmetric treatment. To the extent that such providers offer similar services, for example, questions have arisen as to whether regulatory treatment should be similar.

The FCC has recently indicated that it is considering making a clarification with respect to the asymmetric treatment of broadband services. Possible regulatory options include treating the service as the type of “advanced telecommunications capability” envisioned by Section 706(b) of the Telecommunications Act of 1996, which would address its current, default classification status and prevent it from being classified as a “cable service.” While reiterating that it has not yet resolved the issue, the FCC recently allowed that:

“More generally, on a conceptual level, an argument can be made that Internet access is more appropriately characterized as an information or telecommunications service rather than a cable service...[H]owever, the Commission has not yet conclusively resolved the issue.”<sup>156</sup>

This new treatment could allow the FCC to construct a regulatory framework that includes a provision mandating nondiscriminatory access for alternative service providers.

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<sup>154</sup> *Internet Over Cable* at Pages 82-83.

<sup>155</sup> The Summit recognizes, however, that even if cable broadband services are determined by the FCC to be telecommunications services, they may not be subject to common carrier regulation. Cable broadband services could, for example, be considered “enhanced” services, which are telecommunications services that are not subject to common carrier regulation.

<sup>156</sup> *FCC Amicus Brief* at Page 26.

Apart from the narrower conflict over the definition of cable services, some analysts have warned that regulators need to address this asymmetric treatment generally, lest it lead to undesirable social and economic effects:

“The fundamental worry is that, unless all suppliers are treated equally, regulation—rather than the ability to satisfy consumer demand efficiently—will determine which suppliers prevail in the telecommunications marketplace. The results can be lower quality, innovation and investment, and higher costs and prices.”<sup>157</sup>

## ***IX. PUBLIC POLICY QUESTIONS TO CONSIDER***

In addition to providing a detailed overview of the issues involved in the debate over access to broadband networks, Members of the CECA Broadband Access Summit developed lists of critical questions for policymakers to consider in the course of reviewing access policy. In light of the complex issues involved, Members agreed that it is most important for policymakers to ask the right questions throughout the policymaking process. Members identified six major issue categories that should be addressed and developed an extensive list of questions within each major issue category. These questions represent a consensus by Members of the most important and relevant issues for policymakers to address. This compilation of questions is not, however, meant to be exhaustive, and the CECA Broadband Access Summit recognizes that there may be numerous other relevant questions to consider in the context of a thorough examination of the issues involved. These questions represent a significant contribution to the body of knowledge available to policymakers because key stakeholders, representing all sides of this debate, devised them together.

Detailed background information on most of these questions has been provided in the preceding sections. There are some questions that were not discussed extensively in the preceding sections (e.g., universal service issues). Members of the CECA Broadband Access Summit have nevertheless included these questions because they address important issues that may require the attention of policymakers.

Members of the CECA Broadband Access Summit have identified the following six major issue categories: 1) Civic and Social Impacts; 2) Market Power; 3) Competitive/Economic Impacts; 4) Jurisdiction; 5) Technology; and 6) Policy Implementation. Civic and Social Impacts should be considered first, followed by a thorough examination of relevant Market Power issues. The remaining three categories (Competitive/Economic Impacts, Jurisdiction and Technology) should be given equal consideration and the examination should conclude with a focus on the details of Policy Implementation. Finally, in addition to economic considerations, utilization of this framework should occur in the context of a thorough consideration of all possible impacts of a given access policy, including social policy concerns, the constitutional rights of

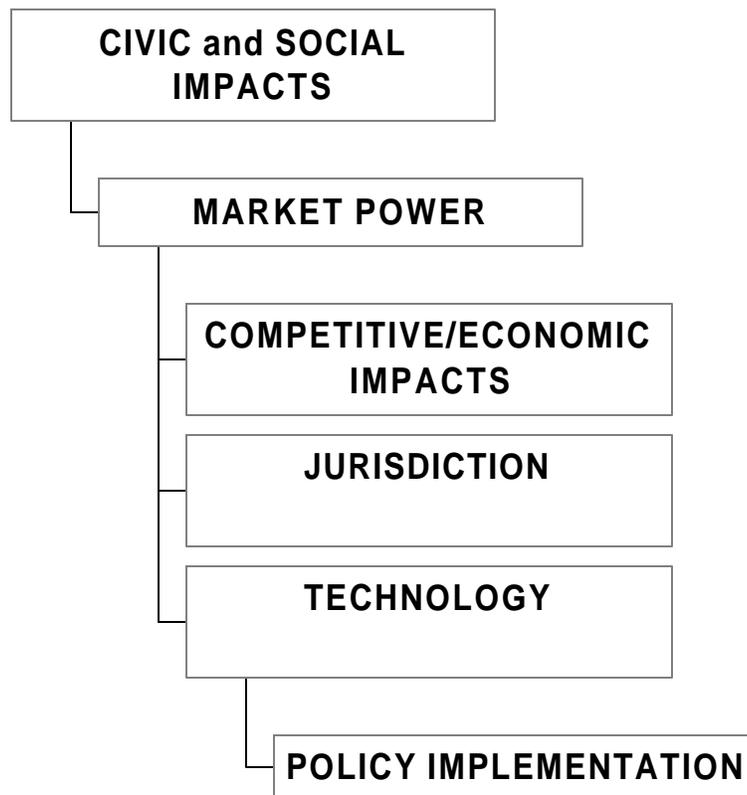
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<sup>157</sup> Katz, Michael L., “Regulation: The Next 1000 Years” (hereafter, *Regulation: The Next 1000 Years*), Commissioned for the Aspen Institute Conference on Telecommunications Policy, August 1999.

broadband customers and effects of such policies on other markets.<sup>158</sup> A graphical representation of the Issue Framework is depicted in **Exhibit 6** below, followed by the list of relevant questions for each major category.

**Exhibit 6.**

## **BROADBAND ACCESS ISSUE FRAMEWORK**



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<sup>158</sup> In addition to high-speed Internet service, for example, cable broadband will also introduce competition in the local telephone market. This is a very significant development and was an important goal of the Telecommunications Act of 1996. Public policies that are intended to promote broadband deployment, therefore, should not have the secondary consequence of thwarting local telephone competition.

## ***1. CIVIC and SOCIAL IMPACTS***

The civic and social impacts of a particular broadband access policy should be the first and foremost consideration in any decisionmaking process. Members of the CECA Broadband Access Summit urge policymakers not to design policies that are narrowly construed and focused solely on competitive or market outcomes. Instead, broadband access policies should be developed with the broadest possible objectives, including an evaluation of the impact on consumer privacy issues, the quantity and quality of content available to all broadband customers, and the effect of the policy on community expression and other civic considerations. Some of the most important questions for policymakers to consider include the following:

- Does the current model of broadband access exacerbate or ameliorate the extent to which the U.S. population is divided into two camps: those who have high-speed access (the "haves") and those who do not (the "have-nots")? Is this a social policy concern that regulators should address?
- Can consumers choose among broadband access providers and Internet service providers of high-speed Internet access? If so, what are the costs (economic, time and effort considerations) associated with switching Internet service providers? From a consumer perspective, can one broadband platform easily be substituted for another platform? What are the costs associated with switching to alternative broadband platforms (e.g., cable subscribers selecting DSL and DSL subscribers selecting cable)?
- Is broadband becoming an essential service? Should universal service obligations be attached? What are the market effects of instituting the universal service model in the broadband market?
- Will any broadband access or Internet service provider with monopoly or oligopoly power control the nature and quality of Internet content available to consumers?
- Should access to broadband services be subsidized for low-income and rural customers?
- What will the nature of consumer demand be like in the short-term? What will it be like in the long-term? Will a majority of the U.S. population want broadband technology?
- What specific positive and negative consumer impacts have arisen (or could reasonably be expected to arise) in the context of the current cable access system?
- What are the costs to society if consumers have limited access to broadband technology?

- What is the potential cost to consumers if the infrastructure must be altered to allow for a different access model?
- What is the role of government in ensuring that broadband communications technologies promote national and community-based democratic discourse?
- How can a national broadband policy encourage citizen involvement in constructing the new broadband infrastructure and in prioritizing the deployment of civic applications?
- What are the possible impacts on consumers of bundling broadband services with other communications services?
- Does the current access model of cable broadband providers require customers to invest in new hardware or software? Will they also be required to invest in new hardware or software if that model changes?
- Is nondiscriminatory access to cable broadband facilities and services sound public policy?

## **2. MARKET POWER**

Following a careful analysis of major civic and social considerations, policymakers should examine the market power issues involved in a given broadband access decision. Market power issues are central to the debate over access to broadband networks and may be understood in terms of a core group of issues, including an analysis of the market for broadband service and its characteristics, a determination of whether oligopoly or monopoly control by one or more companies exists in the market for broadband service, and whether or not there is market power abuse in that market. A detailed examination of some of these issues is provided in **APPENDIX C: MARKET POWER**. Some of the most important market power questions for policymakers to consider include the following:

- What is the relationship between nondiscriminatory access conditions and actual customer access to the broadband networks?
- Will any broadband access or Internet service provider with monopoly or oligopoly power control the nature and quality of Internet content available to customers?
- How can market power be analyzed in an emerging industry and, as a corollary, how can bottlenecks be identified?
- What is the applicable market for broadband? Is broadband a separate market, distinct from the total market for Internet access? Are we making a distinction between broadband and narrowband? Is it possible to separate the market for

network infrastructure from the market for services provided over the Internet? If so, what is the relevant market for broadband services for purposes of devising appropriate access policies?

- What are the key market segments that influence the broadband access market? Can major broadband providers using various technologies, including telephone infrastructure-based, cable infrastructure-based, wireless and satellite systems, exercise market power to significantly affect competition and customer choice in broadband access? How is such market power reflected through its impacts on competition in the Internet access, content, local access and Internet transport sub-markets? Is customer choice constricted or undermined? If so, how?
- Does a distinct market for broadband access exist? Do firms have market power and, if so, are they abusing that market power and diminishing consumer welfare in that market? How is market power abuse measured on an ongoing basis?

### ***3. ECONOMIC/COMPETITIVE IMPACTS***

Members agreed that any thorough examination of broadband access issues should include a consideration of the economic and competitive impacts of a given policy. The following questions should be considered separately from Market Power questions, because they relate specifically to how a particular access policy interacts with core economic principles (e.g., consumer demand, capital investment) and competitive forces at work in the broadband marketplace (e.g., the effect of DSL prices on the prices paid for cable modem service). Policymakers should ask these and other questions to illuminate the true economic and competitive nature of a given broadband market before designing access policy. Some of the most important economic and competitive questions for policymakers to consider include the following:

- Is competition among facilities enough to achieve the desired level of competition or is resale necessary to allow multiple providers that will offer the range of services desired by customers? Can facilities-based providers prohibit the resale of their services?
- How many facilities-based broadband access providers and Internet service providers are necessary to ensure reasonable rates for customers? Can the market do this alone or will it require regulatory guidance?
- Does the deployment of high-speed broadband capacity have any real impact on the prices charged by other Internet services?
- What is the state of competition in the local markets for broadband access (e.g., competition within regional and municipal markets)?
- Are market forces causing cable broadband providers to allow nondiscriminatory access to their wires, for the provision of broadband Internet service? Is

- government action required if policymakers determine that such access is an important public policy goal?
- How would a change in government policy affect private investment in broadband technology?
  - Are broadband access facilities a limited resource? If so, what changes in the supply would signal that they are no longer limited? If they are limited, should network owners be required to share these assets? Will a sharing requirement discourage others from expanding the supply?
  - How do different broadband access policies encourage or discourage competitive entry into the local telephone service market?
  - To what extent will other broadband platforms such as wireless and satellite offer viable alternatives to cable modems and DSL technology?
  - Are there competitive impacts as a result of regulatory policies that have shielded the returns of regulated entities in the past or allowed regulated entities to operate in protected markets? If so, how significant are those impacts and do they justify government intervention? Can an effective balance be struck in any policy deemed necessary between providing competitors with a fair chance to compete and leaving incumbents or dominant market players with enough of their efficiencies to allow them to compete effectively as well?

#### ***4. JURISDICTION***

In conjunction with asking questions about economic and competitive impacts, Members of the Summit felt that policymakers should consider the jurisdictional issues involved in making broadband access decisions. A detailed background on the issues involved in the debate over broadband access has been provided in **Section VIII: JURISDICTION (pp. 47 - 56)**. Among the issues policymakers will want to examine closely are the parameters of local and state government authority and the obligations of these governments to their constituents, the history of asymmetric regulation in the telephone and cable industries, and the possibility of establishing national standards for platform interoperability. A thorough understanding of these complex jurisdictional issues and of which questions to ask in the context of a broadband access policy decision is crucial to developing sound policies that will balance the needs of consumers, businesses, and civic society. Some of the most important jurisdictional questions for policymakers to consider include the following:

- If broadband providers are required to allow access to competing service providers, who should determine how much providers should be charged for accessing the network? Should it be decided in a regulated or unregulated environment? Would the current common carriage model be appropriate for broadband?

- What are the parameters of the local government's legal authority (identify them), and what are the parameters of the local government's obligations to its constituents including nondiscriminatory access, universal service, and customer needs (identify them), in developing and implementing policies affecting broadband access within that community?
- Is two-way broadband over cable a telecommunications service or a cable service? If so, how are the differences between telecommunications and cable services defined?
- What is the history of asymmetric regulation of the cable and telephone industries (e.g., regulations that vary among suppliers of the same service, regulations that vary by geographic region)? What is the relevance of this history? Should access to and regulation of cable and telephone be different? If so, why? If not, why not?
- Does the FCC have the jurisdiction to establish a national nondiscriminatory access policy?

## **5. TECHNOLOGY**

Policymakers should develop an understanding of the many technological concepts and issues involved in broadband access decisionmaking. A solid grasp of the basic architecture of the of the Internet and relevant operational concepts, for example, may assist policymakers in comprehending complex technological issues that relate to access to broadband networks. Policymakers should familiarize themselves with the unique terminology used by practitioners in broadband industries. Many of these terms are defined in **APPENDIX F: GLOSSARY of TERMS**. One of the key technological questions to be asked, for example, concerns the technical functionality of the current access system and which issues must be addressed if this system is transformed into one that allows nondiscriminatory access by independent ISPs. Some of the other important technological questions for policymakers to consider include the following:

- How do the various physical components of the network (e.g., backbone, transport, routers) function and how do they impact customer access to broadband services? Does access at various levels affect the ability of competitors to directly market, bill to and control quality and other operational parameters for the benefit of their customers?
- What are the current architectures used by broadband access providers to provide two-way broadband access service? Do these architectures present or place significant cost or use barriers in the way of customers' choices, Internet access or constrict customer access to content? If so, do these architectures inhibit access due to a) cable plant owner policy; b) lack of consensus standards that support

multiple path routing in the architecture; c) current engineering challenges; or d) cost of reengineering?

- Should national interconnection and interoperability standards be established for broadband platforms? If so, should the standards be established by industry, government or a combination?
- What are the technical issues to be resolved in transforming existing cable systems into networks that will allow access to competitors?
- What additional data is available on the rollout of broadband technology?

## **6. POLICY IMPLEMENTATION**

Once the economic/competitive, jurisdictional, and technological issues have been examined, the details of implementing a particular broadband access policy should be addressed. There are numerous considerations involved in this final step in the process including an examination of the intended target of a particular policy (e.g., Internet content or infrastructure), and a determination of the appropriateness of focusing on the cable modem platform in the policymaking process. Members of the CECA Broadband Access Summit suggest that the details of policy implementation should include the following considerations:

- Is a nondiscriminatory access policy necessary to establish a competitive atmosphere for broadband architecture and services? Is it sufficient?
- How would a nondiscriminatory access policy impact private investment in broadband technology?
- If a nondiscriminatory access policy is selected, can the parties involved (e.g., cable operators and ISPs) negotiate and come to mutually agreeable terms on the specific details of the access policy including, for example, maintenance, liability, technological upgrades, ISP selection criteria, interconnection criteria, interconnection protocol, and operational support issues? If not, is government oversight desirable to resolve these issues?
- Are the issues under consideration designed to regulate the underlying Internet infrastructure or to regulate Internet content?
- Is it appropriate to focus on cable modem access policy to the exclusion of other platforms? Would new regulations apply to all broadband pipes or just cable?
- What is the impact of a given broadband policy on the research and development of broadband technology and the associated infrastructure?
- What is the impact of a particular broadband access policy if deals are struck between ISPs and cable companies?

## *X. Policy Alternatives*

### *A. Current Legislation*

Presently there are numerous bills affecting high-speed Internet access in the U.S. Congress. Proposed legislation includes several bills that concern cable modem access, and several that are targeted at engendering stricter compliance with the unbundling requirements imposed on the ILECs. HR 1685, for example, the Internet Growth and Development Act (also known as Goodlatte-Boucher), is designed to give nondiscriminatory access to independent ISPs. It accomplishes this with three sections that amend antitrust law. Under the bill, a presumption of a violation of the Sherman Act is established if a broadband access transport operator provides access exclusively to affiliated ISPs and does not allow independent ISPs to access its network.<sup>159</sup>

Senator Ernest Hollings (D-SC) recently introduced the Telecommunications Enforcement Act (S 1312), which would provide harsh penalties for ILECs and RBOCs that cannot show the FCC that they have provided nondiscriminatory access to their networks and interconnected with competitors (including ISP customers like the CLECs). The bill imposes a fine of \$100,000 per day for non-compliance.<sup>160</sup> Thus far, the 106<sup>th</sup> Congress has not passed any of this proposed legislation and the burden for broadband access decisions has fallen squarely on the shoulders of federal, state and local regulators who continue to grapple with this contentious issue.

### *B. Broadband Access Models*

#### *1. Addressing Regulatory Asymmetry*

Before examining and selecting from different access models, policymakers may want to first address the critical issue of the differing regulatory treatment of telecommunications and cable services outlined in **Section VIII(C)**. As regulators continue to grapple with this issue, they may want to consider the work of Professor Michael Katz of the University of California on this subject. In a recent paper addressing broader issues than broadband access, Katz suggests that important differences between telecommunications service providers should be identified to provide a basis for regulatory distinction (if necessary), and that the key to making this determination is to ascertain whether or not the service providers differ in ways that have a meaningful impact on competition. Katz argues that asymmetric treatment is most desirable when a firm holds so-called “bottleneck assets.”<sup>161</sup>

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<sup>159</sup> “Rep. Rick Boucher’s Summary of HR 1685,” *Tech Law Journal*, May 6, 1999. (<http://techlawjournal.com/cong106/boucher/19990506sum.htm>)

<sup>160</sup> “Hollings Introduces Bill to Force Compliance with Section 271,” *Tech Law Journal*, July 6, 1999.

<sup>161</sup> Katz defines bottleneck assets as assets that “(a) are critical to competitive success; (b) are possessed by very few providers and cannot readily be obtained; and (c) were not acquired by those who possess them solely through past hard work.” (Source: Regulation: The Next 1000 Years at Page 13)

“Asymmetric control of bottleneck assets might justify asymmetric application of retail price regulation, for example. Or, when the bottleneck assets are specific network facilities, the owner might be required to share those facilities with rivals...In these examples, more stringent regulation is applied to providers with bottleneck assets, either to prevent the socially costly exercise of market power or to facilitate competition that will limit market power.”<sup>162</sup>

On the other hand, if asymmetric regulatory treatment is not warranted, then Katz believes that regulatory parity should prevail in order to avoid economic distortions:

“If users consider two services to be close substitutes, then providers of these services should be subject to similar regulations unless there are significant differences in the providers’ market positions as measured by ownership of bottleneck assets.”<sup>163</sup>

This is a category of issues that is too complex to resolve on an individual basis in this report. Rather this is a good candidate for a generic rule in favor of adopting policies that impose symmetrical burdens and benefits on all broadband competitors. Recognizing the challenge imposed on public policy makers by this recommendation, regulatory symmetry, in general, is important to ensuring fair competition and optimizing consumer benefits from broadband technology.

## ***2. Access Models***

There is an array of options available to policymakers from which the best solution may be selected to improve the access of customers to content and access of ISPs to the cable network. At least three of these options represent cable access frameworks. These are:

- The current access model in which cable broadband network owners may discriminate among Internet Service Providers as well as refuse access to other Internet Service Providers. In selecting this framework, policymakers would rely on market forces to improve access.
- The access model (similar to the one already applied to the ILECs), in which cable broadband network owners are required to provide nondiscriminatory access to their networks.
- A hybrid model of the first two models, which might include a “leased-access” model,<sup>164</sup> where negotiated agreements are reached for access with some role for government to assure the process proceeds.

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<sup>162</sup> Ibid. at Page 13.

<sup>163</sup> Ibid. at Page 15.

<sup>164</sup> The leased-access model is based on existing cable television law and involves negotiating mutually agreeable leasing arrangements between access providers and content companies with the active involvement of federal regulatory agencies in the process. Several of these agreements have already been proposed by certain ISPs. See, for example, “IVI’s Crusade For Leased Access On Cable,” *CableWorld.com*, February 1, 1999. (<http://www.cableworld.com/Articles/News99/1999020115.htm>)

### ***3. Additional Mechanisms***

There are a variety of additional mechanisms that could be implemented to promote nondiscriminatory access objectives. These may be taken individually or in concert, and may have timetables associated with their completion. For example:<sup>165</sup>

- The FCC could be required to consistently collect data on the broadband market, including the social impacts of broadband access policies, publish that data in a quarterly report, and make forecasts in the context of broadband decisionmaking.
- The FCC could hold public hearings at which all stakeholders could be present, in order to further assess the broadband marketplace and the status of access to broadband networks and, if necessary, institute a rulemaking proceeding.
- The FCC could be required to institute a series of triggers for regulatory actions that would be activated by a findings of fact with respect to market conditions and social impacts;
- The FCC could establish and publish a nondiscriminatory access requirement that would be associated with one of the triggers and could establish a date certain for the completion of a consensus standard(s) for the protocols required to facilitate access to multiple providers.
- The FCC could work with all the stakeholders, including consumer organizations, to create a survey instrument for analyzing these impacts.
- The FCC could serve as a resource and guide to local and state governments on broadband access policies.
- The FCC could establish a time period for negotiations to take place among the stakeholders, with regulatory action forthcoming by a date certain if the negotiations are not successful.
- The FCC could establish a date certain whereby cable modems and their networks must have the built-in-ability to provide nondiscriminatory access to independent ISPs using adopted standards.
- The FCC could limit the ability of a network operator to impose content restrictions for other than network performance requirements, with any such restrictions being applied in a nondiscriminatory manner subject to regulatory review.

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<sup>165</sup> In addition to these possibilities, one CECA Broadband Access Summit Member also suggested establishing a requirement for regional peering by cable operators who have not otherwise accommodated the access of independent ISPs to their networks. As previously stated, however, the issue of peering was beyond the scope of the CECA Broadband Access Summit.

- The FCC could free up spectrum and provide other incentives to encourage deployment of broadband technology.
- Policymakers at all levels could encourage vigorous, ongoing participation and debate by academicians, consumers and other stakeholders, and incorporate relevant information into the decisionmaking process.

## APPENDICES

APPENDIX A.....Broadband Platforms

APPENDIX B.....Economics of Broadband Companies

APPENDIX C.....Market Power

APPENDIX D.....Case Study: AT&T v. City of Portland

APPENDIX E.....Case Study: Miami-Dade Access Decision

APPENDIX F.....Glossary of Terms

## ***APPENDIX A: BROADBAND PLATFORMS***

The deployment of broadband technology will take place over several different platforms or, underlying bases on which broadband applications may run. These include cable modems, digital subscriber lines (DSL), terrestrial wireless and satellite systems. Of these, cable modems and DSL are the most commonly utilized and offer what many analysts believe will be the two preeminent conduits of the new broadband network. One reason for this is that both platforms utilize existing, last mile infrastructure to transmit their high-speed products. Using the most optimistic assumptions, including the ability to minimize competitive distortions, analysts predict that by 2002, 63% of all cable systems will be ready to deploy broadband products and by 2004, 70% or more of U.S. homes should have access to DSL service.

### ***1. Cable Modem***

A cable modem network closely resembles an Ethernet,<sup>166</sup> with network interface cards that connect to a circuit board and allow computers to access a network with a dedicated connection that is "always on." In cable television (CATV) systems, there is a network of users whose individual cable modems are all connected to a central, cable modem termination system (CMTS) at the local CATV office. Because of the nature of this connection, users may only communicate with the CMTS alone and not other users on the network. As previously indicated, this connection has much larger bandwidth and can attain speeds as fast as 30 Mbps, which are significantly faster than traditional, analog connections over telephone wires.

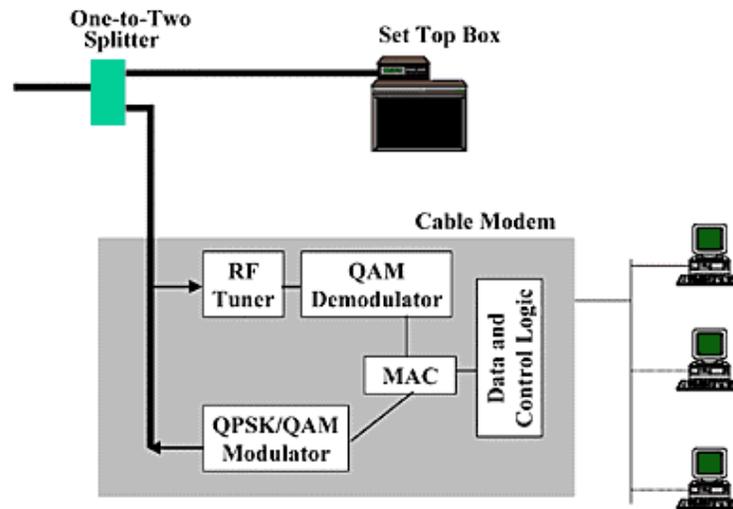
A cable modem can also be added to or integrated with a set top box that turns a television channel into an Internet channel. The same line feeds both the set top box and the cable modem. The cable modem is tuned to send and receive only on the assigned channels. For PC attachment, the cable line must be split so that part of the line goes to the television set and the other part goes to the cable modem and the PC (see **Exhibit 7** below).

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<sup>166</sup> The term "Ethernet" describes the most common type of local area network (LAN). An Ethernet LAN uses coaxial cable or special twisted-pair wires to provide high-speed transmission to users who are connected and share access using a special set of communication rules (protocol).

## Exhibit 7.

### Cable Modem Connection



Source: The International Engineering Consortium © 2000

Broadband over cable modems has its roots in the evolution of Community Antenna Television (CATV), which began in the 1950s as a broadcast television service primarily targeted at rural customers who experienced poor over-the-air reception. The service used coaxial cables to connect member homes to a community antenna. With the nationwide upgrade to color television, CATV grew and expanded in the 1970s to meet burgeoning consumer demand for more programming until by 1986 it had deployed enough infrastructure to connect 10 million U.S. residences. By 1995, CATV "passed" over 100 million homes, which amounted to about 90% of U.S. homes. Connections amounted to 65% of these residences.<sup>167</sup>

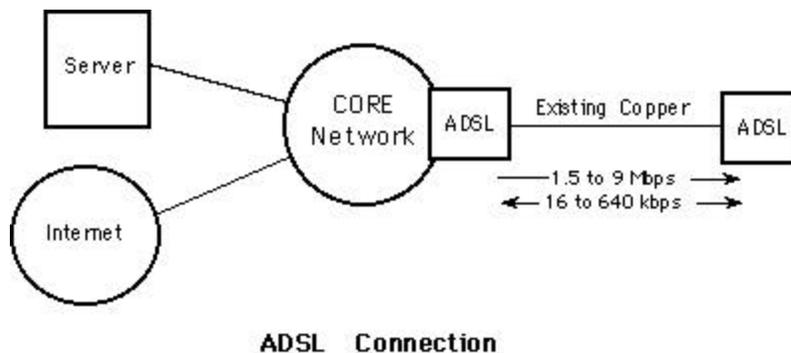
As early as the mid-1980s, it became apparent that growth in CATV revenues would be limited to population increases, and that cable companies needed to look for ways to diversify revenue and expand their product offering using the same, existing network. In the beginning, the networks were built to accommodate one-way transmission of content from a local cable office to the customer but were later upgraded to accommodate two-way transmission and, more recently, digital transmission. Digital, broadband technology offers cable companies a new revenue opportunity. While originally intended for video-on-demand applications, broadband over cable is now being deployed to respond to the demand for Internet downloading at faster speeds than dial-up, analog technology can currently offer. The Internet applications have proved to be a larger market and can help justify the cost involved in building out the broadband network.

<sup>167</sup> Residential Broadband at Pages 147-149.

## 2. Digital Subscriber Lines

Broadband access is also available over digital subscriber lines (DSL); a product developed by telecommunications carriers and deployed over existing telephone wires. Like cable modems, DSL was originally designed for the video-on-demand application market but has evolved in recent years in response to consumer demand for faster Internet speeds and as a diversified product that address the competitive pressures engendered by telecommunications deregulation.<sup>168</sup> A digital subscriber line compresses signals, allowing them to be transmitted at significantly higher speeds than dial-up. DSL service is deployed from a central switching office to businesses/consumers (see **Exhibit 8** below). As such, maximum transmission speed depends on a subscriber's distance from the central office. The closer the subscriber, the higher the attainable speed. The service can also split the incoming and outgoing signals allowing for voice and data lines to be used simultaneously (a phone and a computer can share the same line). The data part of the DSL service is a dedicated, continuous connection that can transmit data *downstream* (from the source to the customer) at high speeds averaging 1.5 Mbps and allows for *upstream* transmission at somewhat lower speeds of less than 300 Kbps. The asymmetric downstream and upstream rates are commonly known as "ADSL." ADSL is just one of several DSL products, all of which utilize the same transformation of analog wires but offer various speeds to users. Of these, ADSL has emerged as the most likely candidate for residential broadband.

**Exhibit 8.**



Source: The ADSL Forum

### a) Cable Modems vs. DSL

Cable modems utilize a shared network system so that the number of users on the network may compete for and thus limit available bandwidth at any given time. DSL, on the other hand, is a dedicated line from the computer to the phone company's central

<sup>168</sup> Residential Broadband at Page 229. Maxwell notes that telephone companies ran ADSL video-on-demand trials well into 1997 but most did not begin Internet access trials until mid-1997 or later.

office so bandwidth is not shared. Analysts have observed that this individualized connection makes DSL particularly attractive to businesses because their cost threshold tends to be higher (paying for more than one line is acceptable). Advantages for DSL include the ability to connect remote corporate Intranet users and fewer security breach issues than connecting on a shared cable network.

As previously stated, Internet service connections over cable modems currently outnumber DSL service connections in the marketplace at approximately 1,200,000 subscribers, compared to 504,000 DSL subscribers. However, some analysts predict that by the end of 2000, DSL subscribers will number more than 2,000,000.<sup>169</sup>

### ***3. Terrestrial Wireless***

Broadband technology is also being deployed over terrestrial wireless networks. While wireless cable can potentially be deployed using microwave radio frequencies for one-way transmission at speeds of 1.5 Mbps and above, most of the major telecommunications companies have begun to offer wireless Internet services only at narrowband access speeds. For example, Sprint offers wireless Internet service through its Sprint PCS subsidiary. The Sprint PCS “Wireless Web” is a suite of wireless data products and services. Products include email and other Internet content services such as stock quotes, weather and travel updates in real-time, all available on the screens of cell phones.<sup>170</sup> Sprint PCS Wireless Web services became available to its customers in late September 1999. AT&T has offered its Wireless IP network “PocketNet” services since 1997 and recently announced an agreement with OmniSky Corporation to provide wireless Internet services to Palm V users.<sup>171</sup> Other companies offering wireless Internet services for hand-held devices include 3Com (Santa Clara, California), Oracle (Redwood Shores, California) and Wireless Knowledge (San Diego, California). BellAtlantic Mobile launched its new wireless product offering, “Web Access” service in all its East Coast markets in November 1999.

High-speed wireless Internet services may experience wider deployment in certain global markets because these markets are often characterized by national wireless technology standards such as code-division multiple access (CDMA), which enables a more rapid adoption of technology using alternative platforms. In Japan, for example, where wideband CDMA is the standard, DoCoMo Corporation offers continuous, low-cost Internet access over mobile phones through data transmission technology called “I-mode.” The service has been quite successful (nearly 4 million subscribers) and has thrived in a country where 34% of Internet users gain access through mobile phones.

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<sup>169</sup> “Market Statistics and Projections,” Gecko Research, July 5, 1999, Third and Fourth Quarter 1999 Data (<http://www.catv.org/modem/subnumbers/index.html>), and “Fourth Quarter 1999 xDSL Deployment Summary,” Telechoice, February 15, 2000. ([http://www.xdsl.com/content/resources/deployment\\_info.asp](http://www.xdsl.com/content/resources/deployment_info.asp))

<sup>170</sup> “Sprint Announces Grand Opening of the Wireless Internet With Nationwide Availability of the Sprint PCS Wireless Web,” Sprint Press Release, September 20, 1999. ([http://www.sprintpcs.com/news/1999/09\\_20\\_99.html](http://www.sprintpcs.com/news/1999/09_20_99.html))

<sup>171</sup> “AT&T Announces Two New Digital Phones,” AT&T Press Release, November 15, 1999. (<http://www.att.com/press/item/0,1354,2253,00.html>)

Some analysts predict that as early as 2003, Japanese wireless customers could be sending each other digital images, streaming video and other data at speeds of 2 megabits per second – more than 200 times faster than is currently possible.<sup>172</sup>

#### **4. Satellites**

Satellite technology uses receivers, amplifiers, and transmitters along with the electronic technique known as multiplexing (receiving two or more messages using a common circuit) to relay signals. Satellites are grouped and revolve in a circular orbit at a constant altitude of a few hundred miles. These low-earth-orbit systems could eventually make Internet access possible from any point on the planet using just a rudimentary antenna. Using newly available frequencies in the Ka-Band,<sup>173</sup> for example, companies can offer broadband technology to small antennas, avoiding traditional telecommunications networks.

While two-way satellite systems will be available in the future, current applications only offer one-way high-speed access. This drawback has contributed to the dominance of cable modems and DSL. Some analysts predict, however, that the market for such services will explode in the next five years. A recent study by Pioneer Consulting pegged worldwide revenues from broadband satellite services at \$29.25 billion by 2005.<sup>174</sup>

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<sup>172</sup> "In Japan, the Internet Without the PC," *The Washington Post*, February 8, 2000, Page E1.

<sup>173</sup> The term "Ka-Band" refers to a satellite frequency band that operates between 20--30GHz and is part of the Super High Frequency (SHF) band that was thought at one time to have few terrestrial applications. Now the SHF band has many applications.

<sup>174</sup> "Broadband Satellite Market \$29 Billion By 2005," *SpaceDaily*, February 5, 1998.  
(<http://www.spacer.com/spacecast/news/broadband-98a.html>)

## ***APPENDIX B: ECONOMICS OF BROADBAND COMPANIES***

In order to provide the best analysis of the relationships among the broadband access stakeholders, many of whom come from formerly regulated network industries, this Appendix provides a brief explanation of some key economic concepts relevant to the broadband industry, including network concepts, distribution attributes and the cost structure of communications systems generally.

### ***1. Broadband Networks and Distribution***

The concept of a network in information technology is used to describe a series of points or nodes interconnected by communication paths. Networks have existed since the early Greeks used nighttime flares as beacons to communicate news of the fall of Troy. At base, all networks are designed to transfer information or other commodities (e.g., electricity) from one point to another along a configured path. The telecommunications and cable industries both share this network characteristic.

In many network industries, distribution is generally divided into two main functions--marketing (particularly account acquisition) and customer services. In telecommunications/computer/cable industries it is more complex. It is roughly equivalent to content, conduit and applications. Production of content is fully separable from the transmission of content in digitized form (bits), which is separable from applications at the end-user location (customer premise). Content is provided by ISPs. The telephone company conduit is copper wire and fiber optic cable. The cable company conduit is fiber optic and coaxial cable. Both telephone company applications (e.g., DSL) and cable company applications may deliver high-speed data to a PC or a TV.<sup>175</sup> See **Exhibit 9** below for categorization of economic activities in these two industries.

#### **Exhibit 9.**

##### **ECONOMIC ACTIVITIES IN BROADBAND INDUSTRIES**

<u>INDUSTRY</u>	<u>PRODUCTION</u>	<u>TRANSPORT</u>	<u>DISTRIBUTION</u>
CABLE	ISP, ICP	Coaxial cable, fiber	Cable modem, TV, PC
TELEPHONE	ISP, ICP	Copper/fiber	Modem, PC, TV

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<sup>175</sup> There is a constant speculation that parts of the two competing systems may converge, or that one approach will prevail over the other. Most analysts agree that this debate obscures the big picture and that an array of technological platforms is essential to the growth of rapid deployment of broadband technology. See, e.g., "Broadband Market Offers Room For Variety," *Forbes.com*, May 26, 1999. (<http://www.forbes.com/asap/html/99/0526/side.htm>)

## 2. Cost Structure

As outlined earlier, cable and telephone companies have made substantial investments to upgrade existing networks to accommodate broadband technology.<sup>176</sup> The unique nature of costs involved in these capital investments deserves some explanation. Basically, there are three costs found in the development of communications systems: 1) cost per user; 2) cost per unit of usage (e.g. a minute); and 3) cost per potential user (such as to lay cable wire under a street that passes a home). As such, "infrastructure" industries like telephone and cable face a market limited to only those customers whose homes are passed by their lines. As a result, these companies must overbuild their networks initially in order to have enough capacity to serve a large number of future customers who may or may not subscribe. Once a network is built, this cost is sunk and that network segment can't be used to serve any other demand than that specific neighborhood. Thus, the firm makes crucial capacity decisions about how large a network to build and where to build it before the first subscriber is signed up. The market implications of this reality are discussed below in **APPENDIX C: MARKET POWER**.

With demand for broadband access growing over time, there is an advantage that inures to the first mover in such network industries due to the sunk-cost characteristic of the initial infrastructure investment. Simply put, it pays the first firm to overbuild (or upgrade)<sup>177</sup> its network in order to maximize the revenue potential of future subscribers. Analysts estimate the average cost to upgrade existing cable networks to broadband capable systems at \$1000 per home and this money is invested before connecting a single user.<sup>178</sup> The cost of deploying DSL and other line-based broadband delivery systems tends to be lower as most of their connection costs are incurred not as initial investments but after a user has been connected and service begins. Demand for consumer and business applications of broadband technology will dictate to a large extent the level of infrastructure investments made by both cable and telephone companies. Most experts agree that current demand for such products must increase substantially in the long-term in order to justify continued capital outlays.

This economic model characterizes traditional CATV networks as well as the development of telephone networks in the United States. One crucial quality inherent in original CATV infrastructure, however, is that the subscribers were not able to share information with each other, unlike computer networks. Because the Internet is based in large part on interconnectivity using a common set of protocols, the new broadband networks must be interconnected. Consumers have come to expect this technological framework. In response, cable operators have made substantial investments in upgrading

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<sup>176</sup> For example, AT&T recently bought cable giant MediaOne for what amounted to a cost of \$5000 per subscriber, more than double the industry rate of \$2000-\$3000. (Source: "Busy Signals for AT&T," *The Industry Standard*, October 11, 1999)

<sup>177</sup> Upgrading existing cable and telephone networks to deploy digital broadband technology will require substantial capital investment (billions of dollars) in order to reach a majority of U.S. consumers. This serves to mitigate the "incumbent" advantage of telephone and cable companies who are utilizing existing infrastructure.

<sup>178</sup> Residential Broadband at Page 183.

existing facilities to accommodate two-way, digital transmission of voice and data services.

## ***APPENDIX C: MARKET POWER***

### ***1. Market Power Defined***

This section will briefly consider the market power issues that arise in analyzing the broadband access issue. Market power refers to the ability that a single firm has (or a group of firms have) in a market to influence the price, quality or quantity of a product or hamper competitive entry by others in ways that deviate from competitive levels for a sustained period of time. It should be recognized that most firms have some degree of "market power," and that consolidation within industry segments is not necessarily bad or good. If market power is substantial, however, and if it is exercised, the result can be efficiency losses, higher prices, reduced levels of output and employment, retarded innovation, and the imposition of barriers to competition, all bringing negative impacts for customers who would otherwise benefit from the competitive, deregulated marketplace.

Put simply, market power analysis examines whether a small number of suppliers of a product in a given market have the ability to control the price and amount of the product and to keep other suppliers out or if, in fact, there are enough suppliers to ensure that prices and output remain at or near competitive levels. Traditional market power analysis applied to mergers and other joint activities evaluates whether the consolidation of two firms will limit customer choice in a market in an anti-competitive manner. Today, regulators also use market power analysis to establish whether a historically regulated product market (such as the market for cable and telecommunications products and services) has sufficient numbers of competitors to give reasonable assurance that it would function effectively if the industry were deregulated.

Methods for properly analyzing market power problems associated with advanced technology like the Internet and broadband deployment over a deregulated telecommunications structure, however, have not been fully developed. As such, the application of existing methods requires rigorous examination to avoid making decisions that will ultimately reduce consumer welfare. In its present relatively unregulated state, broadband access has engendered concern about the ability of cable and telephone companies to exercise market power to the detriment of consumers. Some have called for the establishment of a new regulatory framework to address these concerns. On the other hand, Internet access and advanced, broadband applications may be so complex or new that it becomes problematic to define either product markets or geographic markets with sufficient certainty to allay concerns about the exercise of market power.

### ***2. Market Power Concerns and Broadband Access***

The central concern in the broadband access debate is whether private, unregulated ownership of the digital broadband network by a few large companies (these companies build the network and, therefore, own it) will negatively affect consumers if access by competitors is provided on a discriminatory basis. The specific concerns that have arisen in this matter are:

- The relationship of large cable and telecommunications companies with captive customers for some services;
- The control over facilities and potential bottlenecks in the network;<sup>179</sup>
- The potential cross-subsidies that can be used to gain a competitive advantage or foreclose competitive alternatives; and
- The impact of vertical integration strategies on the quantity and quality of content available to consumers. Some stakeholders argue that this would be among the most devastating possible outcomes.<sup>180</sup>

Some analysts, however, view the market for broadband access as too immature to glean any reliable evidence of market power abuse by providers and point to a lack of substantiated evidence of price extortion or discrimination, output manipulation or poor customer service.<sup>181</sup>

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<sup>179</sup> Unlike the telephone network, the emerging broadband network has not been designated an essential facility and, therefore, has not been subject to the FCC's common carriage requirements.

<sup>180</sup> For a detailed analysis of this issue from a consumer perspective, see "Breaking the Rules: AT&T's Attempt to Buy a National Monopoly in Cable TV and Broadband Internet Services," Consumers Union/Consumer Federation of America/Media Access Project, August 17, 1999. (<http://www.consumerfed.org/internetaccess/ATT180899.pdf>)

<sup>181</sup> See, e.g., "Regulating Internet Over Cable," *Communications Update*, March 1999.

## ***APPENDIX D: AT&T v. CITY OF PORTLAND (Case Study)***

Perhaps the most prominent example in the current debate over nondiscriminatory access may be seen in the legal battle between AT&T and the City of Portland. TCI is a cable company that operates in over 900 cities nationwide and offers Internet access to cable customers through its affiliated ISP, Excite@Home. In June 1998, AT&T announced that it would acquire TCI as a wholly owned subsidiary. The deal gave AT&T access to more than 11 million customers and a means for implementing its recent strategy of transforming itself from a long distance provider to a full service provider of Internet, voice and data services. Importantly, the TCI acquisition would also allow AT&T to compete in the local telephone market, using its newly acquired cable lines. But completing the acquisition of TCI involved transferring the control of franchise agreements in each jurisdiction that TCI was currently operating. These transfers of control were subject to the authority of local cable regulators such as the Mt. Hood Cable Regulatory Commission (MHCRC)<sup>182</sup> and the Portland City Council, both located in Portland, Oregon.

When presented with the choice of granting AT&T exclusive control over high-speed Internet access networks, or requiring them to provide nondiscriminatory access, the Portland City Council voted overwhelmingly for a transfer approval with a nondiscriminatory access requirement attached. The City of Portland and Multnomah County were the first two jurisdictions in the country to include a nondiscriminatory access condition to the transfer of TCI's local franchises to AT&T. AT&T refused to accept Portland's nondiscriminatory access condition and filed a federal suit against Portland. The suit made several claims, chief among them was that Portland lacked jurisdiction to adopt a nondiscriminatory access policy. In June of 1999, Federal District Court Judge Owen Panner issued a ruling that dismissed every claim AT&T made in its suit against Portland. In short, Judge Panner ruled:

“I conclude that the open-access provision is within constitutional Power of the City and County. It furthers the substantial goal of competition.”<sup>183</sup>

AT&T appealed the District Court's decision to US Court of Appeals for the Ninth Circuit. The Circuit Court is widely expected to issue their opinion in the first quarter of 2000. Along with ruling on Portland's authority to require AT&T to provide access to competitors, it is expected that the Court might also consider the larger question of whether broadband Internet over cable is a cable service (as AT&T and Portland have asserted), or is more properly classified as a telecommunications service:

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<sup>182</sup> As previously noted, the MHCRC is a citizens' commission that advises the Portland, Oregon City Council and Multnomah County Commission on cable and telecommunications policy.

<sup>183</sup> Panner, J., Opinion in *AT&T v. City of Portland*, *Tech Law Journal*, June 4, 1999, Page 11. (<http://techlawjournal.com/courts/portland/19990604op.htm>)

“We have to determine what this is before we can figure out what rules apply to it.”<sup>184</sup>

AT&T has responded that even if its broadband service *is* considered a telecommunications service, federal law prohibits Portland from requiring a cable company to provide telecommunications “facilities,” which may include the additional equipment necessary for independent ISPs to connect to AT&T’s lines. Portland officials have responded that they would be delighted if the Court decides to rule that AT&T is providing a telecommunications service, as federal telecommunications law requires nondiscriminatory access.

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<sup>184</sup> Judge Sidney R. Thomas, U.S. Court of Appeals, quoted in “AT&T Cable-Internet Case Looms Large,” *The Washington Post*, November 2, 1999, Page E2.

## ***APPENDIX E: MIAMI-DADE, FL COUNTY COMMISSION (Case Study)***

This recent broadband access case involved the transfer of franchise rights from cable operators MediaOne and TCI to new owner, AT&T. The Miami-Dade County Commission, a body that governs Florida's largest county, was petitioned by GTE to adopt an ordinance that would require all current and future cable providers to unbundle their broadband networks as a condition for transfer approvals. Specifically, the proposal would have required AT&T to provide access to competitors at comparable rates and conditions as are found in its current agreement with affiliated ISP Excite@Home.<sup>185</sup>

In commenting on the Commission's rejection of the ordinance, Mayor Alex Penelas cited the benefits to Miami-Dade of continuing the deregulatory approach of the FCC with respect to broadband Internet access. The Mayor argued that such a hands-off policy is in the national interest and that the County Commission's decision would lead to new services and upgraded cable infrastructure:

“...we should refrain from using the power of local government to saddle competitors with new regulations that are restrictive and burdensome—regulations that would slow the delivery of new services and stifle competition by giving one industry a competitive advantage over another. This would clearly harm consumers.”<sup>186</sup>

The Mayor also expressed concern over the financial obstacles to enforcing such an ordinance at the local level:

“Moreover, to fully implement and oversee laws mandating the unbundling of high-speed Internet transport and content would necessitate the creation of a new, large and expensive government regulatory agency. The kind of bureaucracy necessary to implement and enforce such regulation would be very costly.”<sup>187</sup>

Penelas likened Miami-Dade's decision to a similar one in Los Angeles in which local regulators also decided against mandatory unbundling of cable networks:

“...[T]his is notable because Los Angeles is much like Miami-Dade County; several operators serve their cable market and their demographic diversity can easily be compared to that of our community.”<sup>188</sup>

The Miami-Dade County Commission's decision to reject the access proposal was also hailed by the Mayor and other civic leaders as key to avoiding the County's involvement in “costly” litigation with cable operators, which was predicted to occur following any

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<sup>185</sup> “Florida County Rejects Broadband Regulation,” *Yahoo! News*, October 20, 1999.

<sup>186</sup> Letter of Mayor Alex Penelas to Miami-Dade Board of County Commissioners, October 18, 1999.

<sup>187</sup> *Ibid.*

<sup>188</sup> *Ibid.*

adoption of an unbundling ordinance. AT&T faces similar battles in all the other cities in which TCI and/or MediaOne have franchise agreements.

## ***APPENDIX F: GLOSSARY of TERMS***

Some of the terms that are likely to play a central role in efforts to devise policy in this emerging broadband industry are defined in this subsection. Not all of the definitions are relevant to all of the policy models we have considered, and some of them would no doubt have to be modified to fit the needs of a particular policy under consideration. The following definitions are applied throughout the Findings:

### ***Bandwidth***

The term “bandwidth” means a measure of the range of frequencies a signal occupies. Generally speaking, bandwidth is directly proportional to the amount of data transmitted or received per unit of time. In a qualitative sense, bandwidth is proportional to the complexity of the data for a given level of system performance. For example, it takes more bandwidth to download a photograph in one second than it takes to download a page of text in one second. Large sound files, computer programs, and animated videos require still more bandwidth for acceptable system performance. While it is impossible to predict with certainty which commercial applications will consume the most bandwidth, it is likely that in the medium-term future, virtual private network (VPN) multimedia videoconferencing services will require the most bandwidth.

### ***Broadband***

The term “broadband” means different things to different people and has even come to connote relative value, as opposed to “narrowband,” which suffices for many uses and applications via the Internet. The FCC defines broadband as high-speed transmission of greater than 200 kilobits per second (>200Kbps), in both the provider-to-consumer (“downstream”) and consumer-to-provider (“upstream”) directions. Others, however, have defined broadband as high-speed transmission with rates greater than one megabit per second (>1 Mbps). For purposes of the Findings, broadband means high-speed transmission in both directions in the range of 200 Kbps – 30 Mbps, with asymmetric or symmetric upstream and downstream speeds,<sup>189</sup> depending on the technological capabilities of a particular broadband platform.

### ***Competitive Local Exchange Carrier (CLEC)***

The term “Competitive Local Exchange Carrier” (CLEC) describes a company in the United States that competes with the already established local telephone company by providing its own network and switching capabilities. The term distinguishes new or potential competitors from established local exchange carriers (LECs) and arises from the Telecommunications Act of 1996, which was intended to promote competition between both long-distance and local phone service providers.

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<sup>189</sup> *Asymmetric* transmission describes transmission speeds of, for example, 200 Kbps from the consumer to the provider, and 10 Mbps from the provider to the consumer. *Symmetric* transmission describes speeds of, for example, 200 Kbps both in the consumer-to-provider and the provider-to-consumer directions.

### ***Data Transfer Rate (Speed)***

The terms “data transfer rate” or “data transfer speed” describe the amount of digital data that is moved from one place to another in a given time, usually in a second's time. The data transfer rate can be viewed as the speed of travel of a given amount of data from one place to another. In general, the greater the bandwidth of a given path, the higher the data transfer rate. In telecommunications, data transfer is usually measured in bits per second. For example, a typical low-speed connection to the Internet may be 33.6 kilobits per second (Kbps). On high-speed networks such as cable modem or DSL platforms, data transfer can be as fast as 10 megabits per second. It should be noted, however, that these speeds are theoretical or, in some cases, represent lab speeds only. It is unlikely that broadband customers will experience the high end of these speeds.

### ***Discriminatory Access System***

The term “discriminatory access system” describes an access model in which the broadband provider (system operator) owns the broadband infrastructure in the Internet access network and can employ discriminatory prices, tariffs, and policies to limit interconnection and competition. The system operator may, for example, choose which ISPs can access its network.

### ***Incumbent Local Exchange Carrier (ILEC)***

An “Incumbent Local Exchange Carrier” (ILEC) is a telephone company in the U.S. that was providing local service when the Telecommunications Act of 1996 was enacted. ILECs include the former Bell operating companies (BOCs), which were grouped into holding companies, known collectively as the Regional Bell Operating Companies (RBOCs) when the Bell System was broken up by a 1983 consent decree.

### ***Internet***

The term "Internet" refers to the global information system that 1) is logically linked together by a globally unique address space based on the Internet Protocol (IP) or its subsequent extensions/follow-ons; 2) is able to support communications using the Transmission Control Protocol/Internet Protocol (TCP/IP) suite or its subsequent extensions/follow-ons, and/or other IP-compatible protocols; and 3) provides, uses or makes accessible, either publicly or privately, high level services layered on the communications and related infrastructure described in this definition.<sup>190</sup>

### ***Internet Backbone***

On the Internet or other wide area network, a “backbone” is a set of paths to which local or regional paths connect for long-distance interconnection. The connection points are known as network nodes or telecommunication data switching exchanges (DSEs). The

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<sup>190</sup> Source: The Federal Networking Council. ([http://www.fnc.gov/Internet\\_res.html](http://www.fnc.gov/Internet_res.html))

largest ISPs, frequently called “backbones,” cover vast geographical areas and carry large proportions of the Internet’s traffic using the TCP/IP protocol suite. TCP/IP enables data packets to be transported across diverse networks and equipment to their intended destination for reassembly in correct order and enables IP networks to inter-network. The Internet is unlike the Public Switched Telephone Network (PSTN) and is also not simply a different kind of telephony. Rather, commercial data networks, of which the Internet is the outstanding example, are deployed over the telephone infrastructure and depend on telephone lines and install hardware to transmit standardized IP data packets towards their ultimate destinations. Major backbone carriers connect with other ISPs, web sites and carriers and these are the sites customers want to connect with when they are “surfing the Net.”

### ***Internet Content***

The term “Internet content” means information available (in the form of words, pictures, graphical images, et. al.) and delivered to Internet users in various ways including the World Wide Web and other facilities and services such as electronic mail. In terms of broadband technology, this content may include interactive applications such as streaming video and other advanced applications.

### ***Internet Infrastructure***

The term “Internet Infrastructure” means the physical hardware used to interconnect computers and users, including the transmission media and other devices (routers, repeaters, modems) that control transmission paths. Infrastructure also includes the software used to send, receive and manage the signals that are transmitted.

### ***Internet Service Provider***

The term “Internet Service Provider” (ISP) is an organization (usually but not always commercial) that provides access to the Internet. It includes regional, national, and global “backbones” as well because they perform essentially the same functions as local ISPs and use the same type of data gear. These functions are aggregating traffic, switching or routing data packets on toward their final destination. ISP networks are part of the Internet because they internetwork with other TCP/IP networks. The vast majority of ISPs do not provide “content,” which is a byproduct of interconnectivity. For purposes of the Findings, however, the term “Internet Service Provider” is used to encompass all Internet access organizations, including those that provide subscribers with both online content and access to the Internet (e.g., AOL, Prodigy, et. al.).<sup>191</sup>

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<sup>191</sup> Some stakeholders objected to using the term ISP to include online service providers, arguing that those organizations are not technically ISPs. They point out that AOL is an online service that allows access to the Internet as part of that service and that AOL (and companies like it) have very different positions on the issue of cable broadband access than ISPs who only provide access (the different positions of these organizations are outlined in **Section V (D)**). While noting these points, CECA nevertheless decided to include companies like AOL under the mantle of “ISP,” for purposes of simplicity and to make the Findings more comprehensible to laypeople.

### ***a) Affiliated ISP***

The term “affiliated ISP,” means an ISP whose service is bundled as an offer along with other broad and narrowband (e.g., local and long distance) voice service and which has a financial arrangement with the access provider. The term is most often used in the Findings to mean an ISP whose service is bundled with a cable broadband operator’s transmission service, so that a customer receives both broadband access and content as one package.

### ***b) Independent ISP***

The term “independent ISP” means a stand-alone ISP that is not bundled with a particular broad or narrowband provider’s access service and has no financial arrangement with the access provider.

### ***Last-Mile***

The term “last-mile” refers to infrastructure at the neighborhood level and is used to describe any telecommunications technology (for example, wireless radio) that carries signals from the larger telecommunications infrastructure along the short distance to and from the home or business.

### ***Local Access and Transport Area (LATA)***

The term “Local Access and Transport Area (LATA) is used to describe a geographic area covered by one or more of the Local Exchange Carriers (LECs) in the U.S. A connection between two local exchanges within the LATA is referred to as intraLATA. A connection between a carrier in one LATA to a carrier in another LATA is referred to as interLATA. InterLATA is long-distance service. The current rules for permitting a company to provide intraLATA or interLATA service (or both) are based on the Telecommunications Act of 1996.

### ***Local Exchange Carrier (LEC)***

The term “Local Exchange Carrier” (LEC) is used to describe a public telephone company in the U.S. that provides local service. Some of the largest LECs are the Bell operating companies, which were grouped into holding companies known collectively as the Regional Bell Operating Companies (RBOCs) when the Bell System was broken up by a 1983 consent decree. In addition to the Bell companies, there are a number of independent LECs, such as BroadWing.<sup>192</sup>

### ***Network***

The term “network” means a series of points or nodes interconnected by communication paths. Networks can interconnect with other networks and contain sub networks. The

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<sup>192</sup> BroadWing, Inc. is an independent LEC formed in November 1999 by the merger of Cincinnati Bell and IXC Communications, Inc.

most common topologies or general configurations of networks include the bus, star, and ring topologies.

### ***Nondiscriminatory Access System***

The term “Nondiscriminatory Access System” (often referred to as “Open Access System”) means an Internet access network which is characterized by open protocols (interface standards are arrived at in an open, transparent process), open boundaries (interconnection is encouraged and bottlenecks and content control are eliminated), open pricing (prices for access to the network are determined by a competitive market, not by a public or private rate-setter), and the customer can reach the ISP of his choice without having to pay twice.<sup>193</sup> While cable companies may set the terms of access (price, length of agreement, etc.) in private negotiations with ISPs, the terms of these agreements are equitable for both affiliated and independent ISPs. With regard to broadband access over telephone wires, policymakers should note that regulatory approval of a common carrier tariff does not mean that a local access network is nondiscriminatory. A broad set of facts, particularly its interconnection policies and treatment of competitors, should be analyzed to determine whether a local carrier operates a nondiscriminatory access system.

### ***Peering***

The term “peering” means the exchange of traffic between major backbone providers on an equal, usually no charge basis. Some of the largest carriers only peer with each other, while other backbone providers peer with all ISPs (including smaller carriers). Some ISPs, however, must connect at public connection points (called NAPs) or must purchase direct connections to the backbone. While some NAPs can be crowded and congested areas because so many ISPs want to interconnect, their importance as traffic exchange points is decreasing because large providers tend to exchange traffic at private peering points rather than public traffic exchanges. In addition, small local or regional exchange points have been established to handle local traffic such as e-mail. Slowdowns in the Internet and congestion for any users hooked up to ISPs connected at the NAPs persist, however, and are caused by many factors, including technological limitations of some of the electronic “gear” installed by data network operators, unavailability of local broadband access service offers, underprovisioned Web or information sites, problems in the underlying telephone transport, and excessive subscriber demand. Given these factors, the mere fact that more investment and more upgrades are being made in the large backbone networks does not automatically translate into faster speeds for all users. The original IP-based technologies incorporated in the Internet are reaching their limits in additional functionality. In effect, the entire Internet may need to be upgraded so it is capable of handling the demands that are being placed on it today (video, streaming audio, telemedicine, et. al.) or will be in the future.

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<sup>193</sup> Definition based on principles set forth in *Kennard’s Remarks at Western Show*.

### ***Regional Bell Operating Company (RBOC)***

The term “Regional Bell Operating Company” (RBOC) is used to describe one of the U.S. regional telephone companies (or their successors) that were created as a result of the breakup of AT&T. The seven original RBOCS were Ameritech, Bell Atlantic, BellSouth, NYNEX, Pacific Bell, Southwestern Bell, and US WEST. Each of these companies owned at least two Bell operating companies (BOCs). The BOCs were given the right to provide local phone service while AT&T was allowed to retain its long-distance service. The RBOCs and their constituent BOCs are part of the class of LECs.

### ***World Wide Web***

The term “World Wide Web” means an Internet facility that makes available content in the form of “Web pages,” which can be accessed through hyperlinks. The facility uses software developed in 1991 by Dr. Tim Berners Lee at the European Organization for Nuclear Research (CERN) and may incorporate any combination of text, graphics, audio and video content, software programs, and other data. Web content can be created, manipulated, stored and transmitted through a browser software program that sits on the personal computer’s hard disk drive.