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U.S. DEPARTMENT OF COMMERCE

ON

REAUTHORIZATION OF NTIA

BEFORE THE SUBCOMMITTEE ON

TELECOMMUNICATIONS, TRADE, AND CONSUMER PROTECTION

COMMITTEE ON COMMERCE

U.S. HOUSE OF REPRESENTATIVES

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SUMMARY

NTIA is the principal adviser on telecommunications and information policy issues in the Executive Branch. NTIA helps develop and present the Administration's position on issues before the Federal Communications Commission (FCC) and other domestic and international fora.

Given the increasing significance of the telecommunications and information sectors to our nation's economy, NTIA's role is more important than ever. We are using our expertise and leadership to address cutting-edge questions regarding electronic commerce, the deployment of high-speed broadband networks, and the implementation of international and bilateral telecommunications agreements, among numerous other issues.

NTIA is also responsible for managing the Federal use of radio spectrum. NTIA coordinates spectrum use by Federal agencies, working to avoid potential interference between users and to ensure that spectrum is available for future needs. Such spectrum coordination is key to the success of public safety efforts, air traffic control, national defense, national resource management, and other vital government functions. NTIA's telecommunications and spectrum management efforts are supported by its telecommunications research laboratory, which conducts cutting-edge research on issues of significance to both the public and private sector.

Finally, NTIA manages two federal grant programs, which help expand access to new technologies. The Telecommunications and Information Infrastructure Assistance Program (TIIAP) provides matching grants to non-profits and public entities that are using new technologies in innovative ways to reach those in rural, low-income, and traditionally underserved areas. NTIA's Public Telecommunications Facilities Program (PTFP) supports the maintenance and improvement of public broadcasting facilities throughout the United States and its territories.

In order to carry out its increasing responsibilities, NTIA's budget request for FY 2000 is $72,369,000, with a staffing level of 336 FTEs. The increase over FY 1999's budget will go towards enhancing

Federal radio spectrum management; upgrading our telecommunications research facility; implementing World Trade Organization requirements; and implementing the Presidential Critical Infrastructure Protection (CIP) program.

NTIA's programs would be significantly curtailed by the Discussion Draft "NTIA Reauthorization Act of 1999." Among other things, the Discussion Draft does not authorize funding for TIIAP. It would also privatize NTIA's research labs, eliminating an important resource for Federal agencies. And it would change the funding ratio for NTIA's spectrum management program, eliminating funds to conduct spectrum management functions on behalf of the national interest. The Administration therefore opposes the Discussion Draft.

I have also attached to my written testimony two appendices. The first is NTIA's Comments on the Discussion Draft "NTIA Reathorization Act of 1999." The second is a list of Recent Congressional Studies for NTIA and Potential Studies Proposed by Congress.

Mr. Chairman and Members of the Committee:

Thank you for this opportunity to testify today on the reauthorization of the Department of Commerce's National Telecommunications and Information Administration (NTIA).

Today, I would like to describe NTIA's unique role in developing and advocating policy in the telecommunications and information technology sectors; summarize our FY 2000 Budget Request; and highlight our key programs and initiatives. I have also attached to my testimony two appendices. The first is NTIA's Comments on the Discussion Draft "NTIA Reauthorization Act of 1999." The second is a list of Recent Congressional Studies for NTIA and Potential Studies Proposed by Congress.

INTRODUCTION

NTIA's UNIQUE ROLE

NTIA is the principal adviser on telecommunications and information policy issues in the Executive Branch. In this role, NTIA helps develop and present the Administration's position on these issues before the Federal Communications Commission (FCC) and other domestic and international fora. NTIA's goal is to assist the Administration and Secretary of Commerce William M. Daley in promoting the role of the nation's telecommunications and information industries by creating more job opportunities, enhancing U.S. competitiveness in the global economy, and ensuring that all Americans benefit from the digital age.

NTIA is unique among Federal government agencies. The agency's expertise encompasses every aspect of telecommunications and information technology. In addition to advocating the Administration's positions on domestic and international issues, we also manage the Federal use of the spectrum, resolve complex technical issues through cutting-edge research in our laboratories; administer infrastructure grants to promote the development of a widely accessible information infrastructure; and manage grants to help public broadcasting maintain their infrastructure and transition to the digital age.

NTIA's role in these areas is more important than ever, given the ever-increasing significance of the telecommunications and information technology (IT) sectors to our nation. Today, these technologies are driving this country's economic growth. The White House Council of Economic Advisors recently determined that revenues of communications services and equipment companies rose over 60 percent in the last five years. Over a third of real domestic product growth in the past three years has come from IT industries. More than 7 million people are now employed by IT industries and earn wages that are almost two-thirds higher than the average for all private sector jobs. And, investments in new technologies - including computers, satellites, wireless devices, and information processing systems - account for over 45 percent of total real business equipment investment.

New technologies will shape our economy even more significantly in the 21st century, particularly with the growth of the Internet and electronic commerce. Today, some 160 million worldwide are going online to shop, invest, trade, and e-mail, according to Nua Internet Surveys. That figure is expected to increase to 320 million by the end of next year. As more people and businesses connect online, the "virtual marketplace" will become commonplace. Electronic commerce among businesses is expected to grow more than fifteen-fold in the next few years, from $64 billion in 1999 to $980 billion in 2003, according to International Data Corporation analysts.

The heightened importance of the telecommunications and information sectors has engendered new and pressing policy development and advocacy needs. NTIA is using its expertise, leadership, and vision to address these urgent new questions.

In order to sustain the rapid development of our information infrastructure, NTIA is considering ways to promote the deployment of high-speed broadband networks, and to insure that information and telecommunications services are available and affordable for all Americans. We are facilitating the development of electronic commerce ("e-commerce") by addressing new questions of consumer privacy, security, and domain name management. We are also working with other nations to promote a market-driven, flexible and decentralized, and technology-neutral approach to e-commerce policy. And, we are coordinating efforts under the federal Critical Infrastructure Protection (CIP) plan to ensure that our telecommunications and information infrastructures are secured against physical and cyber attacks.

NTIA's management of the federal use of radio spectrum is also promoting public safety and competition. As the managers of federal spectrum, we are trying to improve efficiency, increase private access to spectrum resources, and plan for future spectrum needs, including those relating to public safety. These goals will become ever-more important as global uses of satellite and wireless devices increase.

We are also working to open up wireless and wirelined markets to competition, both domestically and internationally. NTIA helped secure the success of the World Trade Organization (WTO) Agreement on basic telecommunications services in March 1997. Nearly 70 countries, representing approximately 95% of the world's telecommunications revenues, agreed to liberalize their telecommunications markets under that Agreement. NTIA is now working to ensure, among other things, that the signatories comply with their countries' regulatory principles in implementing the WTO Agreement.

NTIA's expertise in these areas will help resolve some of the critical questions in our global economy. The demands on our expertise and personnel are growing rapidly, however, as the telecommunications and information sectors take on increasing importance. Virtually every day, we address new technologies and new issues. The importance of these issues is reflected in the increasing number of requests we have also received from the White House, the Department of Commerce, other Federal agencies, and Congress. At the same time, our staffing levels have declined in recent years. In 1994, NTIA had 361 employees; today, we have 267. NTIA's budget request for FY 2000 should provide necessary resources to help us respond to the increasing number of demands and challenges as we enter the new digital economy of the 21st century.

OVERVIEW OF FY2000 BUDGET ESTIMATES

Let me start by giving an overview of NTIA's proposed FY 2000 budget. NTIA's budget request for FY 2000 is $72,369,000, with a staffing level of 336 FTEs. This represents an increase of $23,604,000 over NTIA's FY 1999 funding level and an increase of 48 FTEs. NTIA is seeking $17,212,000 for Salaries & Expenses (S&E). This includes increases for enhancing Federal radio spectrum management; upgrading our telecommunications research facility; implementing World Trade Organization requirements; and implementing the Presidential Critical Infrastructure Protection (CIP) program. NTIA is also requesting $20,102,000 to fund the Telecommunications and Information Infrastructure Assistance Program (TIIAP), and $35,055,000 to fund the Public Telecommunications Facilities Program (PTFP). The PTFP

request is part of an Administration initiative with the Corporation of Public Broadcasting to assist broadcasting stations during the transition to digital broadcasting.

This funding will help NTIA maintain and augment its existing programs, which support the development of the nation's information and telecommunications sectors. I would now like to describe highlights of these, and other of NTIA's programs, which are critical to the continued development of our telecommunications and information technology sectors.

HIGHLIGHTS OF NTIA'S PROGRAM OPERATIONS

DOMESTIC POLICY

NTIA's domestic policy activities support NTIA's responsibilities as principal adviser to the President on telecommunications and information policies. The goal of these activities is to enhance the public interest by generating, articulating, and advocating creative and influential policies and programs in the telecommunications and information sectors.

While NTIA believes that open markets, competition, and industry development serve the public interest, NTIA also works to ensure the public interest in other ways. Foremost among these issues are those related to access to basic and advanced telecommunications services, the ability for people to control indecent or violent information coming into their homes, the transition to digital television, and encouraging minority participation in telecommunications. NTIA has also played a significant role in promoting electronic commerce and developing Internet policy, discussed in a separate section below. Throughout its existence, NTIA has developed and advocated policies to support the public interest in many areas such as these, and will continue to do so.

NTIA frequently files comments with the Federal Communications Commission (FCC) to represent the Administration's position on a broad range of matters. This year, for example, our filings included comments on the broadcast ownership rules; "truth-in-billing" on local telephone bills; the definition of "over the air signals" for purposes of the Satellite Home Viewers Act; guidelines to promote the deployment of broadband services; and tariffs relating to digital subscriber loops (DSL).

As mentioned above, NTIA is also increasingly called upon for its telecommunications expertise. We assist the White House and other Federal agencies in implementing the pro-competitive goals of the Telecommunications Act of 1996, addressing issues relating to new technologies, and promoting affordable access to the nation's growing information infrastructure. NTIA also will be an integral part of a congressionally mandated commission on Internet content as a result of the Children's Online Protection Act.

Promoting Competition

NTIA continues to work towards eliminating barriers to competition in the telecommunications industry while protecting consumers. Throughout NTIA's twenty-year history, this agency has been at the forefront of pro-competitive telecommunications issues. Among other things, we contributed our expertise to debates concerning first passage, then implementation, of the Telecommunications Act of 1996. This Act required the FCC to adopt regulations regarding such things as access charges, universal service to rural and other areas, interconnection, and broadband services. NTIA filed comments in each of these areas.

Going forward, NTIA will continue to articulate policies on a host of issues surrounding new, better and lower priced communications products and services. We are continuing to advocate policies that spur innovation, encourage competition, and create jobs. NTIA will suggest, for example, ways to encourage the availability of new services to rural and underserved communities and will identify impediments to the growth and vitality of industry sectors.

Addressing New Technologies

New technologies and new competitive providers are also spawning new questions in domestic policy. Foremost among these issues are those related to the growth of the Internet, the transition to digital television, and the widespread availability of wireless communications devices. NTIA has met these challenges in various ways. We often focus our limited resources on identifying and analyzing "over-the-horizon" issues well before they become widely known even among telecommunications professionals. One such issue is that of "Internet telephony," the use of the Internet or Internet Protocol, in place of traditional long distance telephony. NTIA sponsored a forum in 1997 to bring together technical and industry experts with policymakers. In comments to the FCC that same year, NTIA took the view that this technology should be allowed to grow and therefore should not come under full common carrier regulation.

The intersection of industry sectors is also raising additional sets of issues regarding technological convergence. The telephone network, for example, is increasingly used to transmit data, and the television provides viewers access to the World Wide Web. As a result, we are seeing varied and unique combinations of previously discrete technologies. Such convergence presents major challenges to the existing regulatory infrastructure, and NTIA is examining new regulatory issues and challenges.

Competition, Diversity, and the Public Interest in Mass Media

NTIA has been active in mass media issues as well. Several years ago, we promoted inclusion of provisions in the 1996 Telecommunications Act calling for a voluntary television ratings system and the requirement that all new television sets be equipped with a "V-Chip." NTIA believes that the V-chip, in particular, will help parents choose which television programming is suitable for their children. As the first television sets containing the V-Chip become available this year, we will lead efforts to monitor implementation of the V-Chip requirement.

NTIA has also worked to advance policies to protect and extend the public interest in many other contexts as well. We believe that, as with other telecommunications services, robust competition in the video services markets will serve the public interest by providing consumers with greater choices, lower prices, and better services. Thus, for example, we wrote to the FCC last year regarding the matter of delivery via satellite of television network signals to households unable to receive local broadcast signals. We urged the FCC to adopt a definition and measurement of "over the air grade B signal intensity" to promote consumer choice and competition. More recently, NTIA helped develop the Administration position on pending legislative proposals to modify the Satellite Home Viewer Act.

In developing mass media policies, competition often supports the additional goal of providing a diversity of voices to be heard by the American people. NTIA has been monitoring trends towards concentration in the ownership of radio and television stations. The Telecommunications Act of 1996 relaxed broadcast ownership rules and directed the FCC to review the public interest merit of remaining rules every two years. In February of this year, NTIA wrote to FCC Chairman Kennard supporting relaxation of some broadcast ownership rules while maintaining others.

NTIA's involvement with the mass media also extends to new broadcast services, such as the upcoming transition to advanced television. Most notably, NTIA served as Secretariat for the President's Advisory Committee on the Obligations of Digital Television Broadcasters, which presented its report in December 1998. In the role of secretariat, NTIA did not direct or influence the recommendation of the committee. NTIA was pleased to be a part of this consensus-building process, which brought together experts from the broadcasting industry, the public interest community, and academia to look at the future of television. Now that the work of this committee is complete, NTIA plans to continue policy development in this field.

Minority Ownership

Another of NTIA's goals is to enhance minority participation in telecommunications. NTIA's Minority Telecommunications Development Program (MTDP) is undertaking specific efforts in this regard,

including: (1) directing ComTrain, a training program to assist new minority commercial broadcast owners; (2) disseminating information and conducting seminars on ownership opportunities in telecommunications (3) developing and commenting on legislative and regulatory proposals that promote minority ownership in telecommunications; (4) working with industry, and other government agencies on initiatives to increase public/private sector assistance to minorities interested in ownership of telecommunications businesses and services; (5) promoting TELECAP, a study of capital development strategies for minority investment in telecommunications; and (6) tracking minority ownership in broadcasting. NTIA will also continue to analyze policies that affect minority participation in telecommunications.

Universal Access

Ensuring universal access to communications and information networks also remains a high priority for NTIA. We have been leading efforts to redefine universal service to telecommunications services to ensure that rural Americans have access to the same new services being offered in urban and suburban America. Over the past 40 years, rural Americans have gone from about 60 percent having basic phone service to 94 percent today. This is due in large part to our commitment as a nation to universal service policies.

NTIA has undertaken numerous activities to promote universal service. In the 1995 and 1998 Falling Through the Net reports, NTIA documented the relatively low penetration of telephone connections and computer and modem ownership in rural and inner city communities. In a 1996 filing with the FCC, we recommended that the Commission set a national subscribership goal for the year 2000 to ensure that the telephone penetration level for all segments of society will be at least equal to the national average existing as of November 1996.

As the Telecommunications Act of 1996 continues to be implemented, NTIA will continue to be a strong advocate for rural and underserved Americans, undertaking research, filing comments with the FCC, and participating in a variety of fora to ensure that these communities have access to these services, and the opportunities they provide, at reasonable rates.

NTIA has vigorously argued for the connection of schools, libraries, and other "community access centers" to the National Information Infrastructure. This step is integral to making access to advanced telecommunications and information services more readily available. Technology will be central to the mission of our nation's schools in our country. Numerous studies demonstrate the advantages afforded to students who have access to this technology. As the President has clearly stated, in order to succeed in the 21st century, our children must attain technological knowledge and tools. NTIA continues working to ensure that these tools are broadly available to the public.

ELECTRONIC COMMERCE

In addition to the domestic policy issues listed above, NTIA is playing a pivotal role in the Administration's cross-cutting efforts to develop electronic commerce and Internet policy. NTIA has been at the forefront of these issues, both domestically and internationally. We were a key participant in the development of the Administration's electronic commerce policy, reflected in *A Framework For Global Electronic Commerce*, issued in July 1997. Since then, NTIA has been a key participant in the White House's Electronic Commerce Working Group on such issues of broadband deployment, online content, domain name management, and consumer protection. Finally, NTIA has also played a leading role internationally by representing the United States government at bilateral discussions and at international fora. We have advocated the tremendous benefit of the Internet and electronic commerce to other nations' economies, as well as the merits of a non-regulatory, market-driven approach to the development of electronic commerce.

Domain Name Management

Since July 1997, NTIA has also been the lead agency responsible for implementing the President's

directive to privatize the management of Internet domain name system (DNS) functions and increase competition in the registration of Internet domain names. The *Statement of Policy on the Management of Internet Names and Addresses*, which resulted from extensive public consultations, invited the private sector to create a new, not-for-profit corporation to undertake management of DNS functions and was universally well received. The private sector responded by creating the Internet Corporation for Assigned Names and Numbers (ICANN) to assume this management responsibility.

Currently, NTIA is working with ICANN under a Memorandum of Understanding to develop the procedures and steps necessary to complete a smooth and stable transition from the government to the private sector by September 2000. NTIA is also working with ICANN and Network Solutions to introduce competition in domain name registration services. On April 21, 1999, ICANN announced the names of 34 companies that have been accredited to begin registering names in the .com, .net and .org domains within the next 60 days. We believe that this competition will result in lower prices, greater choice, and better registration services for all users of the World Wide Web and we look forward to our continued work on these issues.

We have had numerous discussions with the staff of House Commerce Committee Chairman Bliley on the progress being made on this issue, and will continue to keep them informed of developments in this area.

Privacy

NTIA has also been at the forefront in addressing privacy on the Internet. We played a leading role in encouraging private industry and privacy advocacy groups to develop and adopt effective codes of conduct and technological tools to protect privacy on the Internet. Following extensive consultation with the private sector in January 1998, NTIA and the Department of Commerce issued *The Elements of Effective Self Regulation for Protection of Privacy*, which expresses our view that effective self regulation involves substantive rules, the means to ensure that consumers know the rules, that companies comply with them, and that consumers have appropriate recourse when injuries result from noncompliance.

In June 1998, the Department of Commerce held a public meeting on privacy, coordinated by NTIA. Although industry was somewhat slow to take up the self-regulation challenge, there are signs that business leaders are beginning to understand the need to take decisive action on privacy. For example, the Online Privacy Alliance (OPA), a consortium of information technology companies and industry associations, representing over 80 global corporations and associations, requires its members to adopt and post privacy policies consistent with OPA guidelines and participate in a self-regulatory enforcement mechanism provided through third parties such as BBBOnLine and TRUSTe. We will continue to closely monitor their progress.

NTIA has been involved in examining other issues of domestic privacy. For example, NTIA has met with leaders in the area of online profiling by Internet advertisers and is planning a meeting in July 1999, in collaboration with the Federal Trade Commission (FTC), to examine the issue in a public forum.

Controlling Indecent and Violent Content

NTIA will continue to examine policies that empower parents and other individuals to control the nature of information that comes into their homes, particularly that which is indecent or violent. NTIA supports the free flow of information over the Internet or through television and radio. It therefore has directed its policy positions towards developing tools to allow individuals to determine the types of material they receive.

NTIA has helped promote online content initiatives, such as "green spaces" to help parents and others find Web sites suitable for their children. We were designated as the Secretariat for the Congressionally-appointed Child Online Protection Act (COPA) Commission. We look forward to working with the Commission in producing a report on child online safety issues.

All of these efforts take on new importance, following the senseless killings at Columbine High School in Littleton, Colorado. NTIA will continue to work on national policies to help citizens control the type of information their children receive, while not impinging on fundamental free speech rights.

Consumer Protection

Another critical issue is online consumer protection. We know that consumers will be reluctant to shop on the Internet unless they feel confident that they will get what they pay for online and that redress will be available if they do not. Therefore, NTIA has facilitated private sector outreach in developing US policy in this area.

NTIA is working both domestically and within a number of international fora to foster the development of effective consumer protections for consumers participating in electronic commerce. In cooperation with the FTC and other government agencies, we have also helped to shape the policy debate in the Organization for Economic Cooperation and Development (OECD) regarding the development of guidelines for online consumer protection. The issue of online consumer protection intersects with many other e-commerce issues in which NTIA is active, such as jurisdiction, privacy, security, and authentication. NTIA provides an important broad perspective on these issues when formulating policy approaches for electronic commerce consumer protection.

International Advocacy

Finally, as the representative of the United States government, NTIA has been working to build international consensus for a non-regulatory, market driven approach to the development of electronic commerce. We know that the Internet allows its users to exchange ideas and to experience the freedom of public speech of political expression, unlike any other medium before it. In many parts of the world, including Asia and Eastern Europe, the Internet is used by citizens to promote and spread the values of democratic government. Our efforts to promote greater use of the Internet and other new technologies should also facilitate the promotion of democratic values.

NTIA is actively engaged in discussions, both bilaterally and in international fora, to ensure that the "rules of the road" for the Information Superhighway are pro-competitive, empower end users, and avoid establishing artificial impediments to the conduct of global electronic commerce over the Internet. NTIA led the U.S. negotiations on Internet and electronic commerce issues at the International Telecommunication Union's (ITU) Plenipotentiary Conference in November 1998. NTIA has also been a leader formulating best practices for Internet infrastructure deployment in developing countries.

INTERNATIONAL POLICY

In addition to Internet and e-commerce issues, NTIA plays a key role on a range of other important international matters. As the representative of the U.S. government, we are working to attain an international consensus on open, competitive telecommunications policy; develop international satellite communications policy; and open foreign markets to U.S. industries. NTIA's efforts in these areas are spurring the development of the telecommunications and information sectors on both a national and global level.

International Telecommunications Policy

NTIA continues to play a lead role in promoting and building international consensus for open, competitive telecommunications networks, which creates opportunities for U.S. businesses abroad and offers market-based solutions to close the digital global divide.

We are a strong advocate for liberalization and privatization both in developed and developing country fora. For example, NTIA promotes implementation of the World Trade Organization's (WTO) Basic Agreement on Telecommunications, which calls for the liberalization of signing nations' telecommunications markets. We have also helped develop and implement training workshops for

foreign telecommunications regulatory authorities, which focused on implementing the WTO Basic Telecommunications Agreement and covered a range of issues, including interconnection, spectrum management and universal service. NTIA has also served as a U.S. Vice-Chair at both the ITU World Telecommunications Development Conference in Malta and at the Plenipotentiary Conference held in Minneapolis last November. In our view, the ITU conference would not have been such a success without the Federal support provided by the Congress.

Additionally, we have sponsored several international telecommunications summits in cooperation with the Telecommunications Industry Association (TIA) and the International Trade Administration (ITA). These summits bring together government officials and telecommunications industry representatives to discuss major policy matters affecting specific regions. They provide a unique opportunity for foreign government officials and business representatives to meet privately with senior U.S. telecommunications industry representatives.

Currently, NTIA is planning the fifth Latin American Telecommunications Summit (LATS). Industry participants report that previous LATS have facilitated millions of dollars in sales and invaluable contacts with Latin American government and industry representatives. In March 1999, NTIA, TIA and ITA also collaborated on the second China-U.S. Telecommunications Summit (CATS) in Guangzhou, China, where 32 U.S. companies met with Chinese telecommunications officials, and Chinese telecommunications and IT companies. One company reported that the summit provided "immediate opportunities that may not have developed without the summit" and that they "were approached with proposals for joint ventures and set plans for further high level negotiations for deals that could run into hundreds of millions of dollars."

In addition to our activities in international fora, we have also pursued other steps to open markets to U.S. companies. Recently, NTIA helped assess the anti-competitive impact of Deutsche Telekom's interconnection policy. Working with U.S. companies seeking to enter the newly-liberalized German telecommunications market and with other agencies, NTIA found that certain changes made market entry by new service providers more difficult. NTIA has supported efforts to bring about appropriate corrective action.

NTIA is also supporting the U.S. wireless industry in proposing multiple standards for third generation (3G) wireless systems. NTIA is advocating the industry's position through the ITU and is further advocating that other governments similarly support the outcome of the ITU deliberations. NTIA and other agencies have successfully obtained assurances from the European Union Commission that the European Union member states will respect the recommendations developed by the ITU for 3G systems and offer licenses on a technology-neutral and non-discriminatory basis.

Finally, NTIA has been an active and longstanding advocate for reform of international accounting rates *(i.e.*, those charges paid by U.S. carriers, such as AT&T, Sprint and MCI WorldCom to foreign carriers to terminate traffic at the foreign destination). NTIA seeks to lower accounting rates by bringing them in line with cost. We have helped shape U.S. advocacy and outreach efforts at the ITU, where member countries are seeking to reach an agreement on accounting rate reform. In 1999, NTIA has been concentrating its efforts on transitional arrangements for lesser and the least developed countries, which may need more time to adjust their rates to international competitive market pressures.

International Satellite Policy

NTIA also continues to play a pivotal role in the development and implementation of the U.S. policy objective of increasing competition in the international satellite communications sector.

On April 15, 1999 Inmarsat was privatized, completing a process begun over 5 years ago. We expect that INTELSAT itself will be fully privatized in the next several years. Throughout, NTIA has advocated policy changes to increase global competition in the international satellite communications sector. Iridium recently stated that it is able to offer service in 150 countries and expects this number to increase to 230 by year end. Moreover, ICO Global has, as NTIA consistently insisted, issued an initial public (stock) offering diluting control by former Inmarsat signatories and two U.S. firms (TRW and

Hughes) have become strategic investors in ICO. The United States government, with NTIA's leadership, has pursued a procompetitive outcome in the face of opposition from other nations, and we are confident of achieving a similar result with INTELSAT's privatization.

As a result of the *International Anti-Bribery and Fair Competition Act of 1998*, NTIA will be conducting a study of any advantages accruing to the intergovernmental satellite organizations (INTELSAT and Inmarsat; the ISOs) as a result of their unique status. NTIA's report will examine any advantages affecting market access which result from government ownership, government contracts to the signatories, favorable tax or regulatory treatment for the signatories or from use of the ISOs' privileges and immunities. The study will be included in the Secretary's report to Congress.

SPECTRUM MANAGEMENT

Another of NTIA's chief roles is to manage the radio frequency spectrum that is used by Federal agencies in satisfying their legislatively assigned missions. In this role, NTIA processes the Federal agencies' requests for frequency assignments; provides Executive Branch leadership in coordinating both current and future spectrum requirements among the Federal agencies and with the FCC; develops and promotes positions at Treaty Conferences and other technical and management fora of the International Telecommunication Union regarding United States spectrum management interests; and supports specialized administration initiatives that are designed to achieve specific improvements in areas such as air traffic safety, federal spectrum management procedures, protection of critical infrastructures, and public safety.

The fundamental goal of spectrum management at NTIA, as it is worldwide, is to avert potential interference between users and to ensure that spectrum is available for future needs. NTIA's spectrum coordination is therefore critical to the success of air traffic control, national defense, national resource management, and other vital government functions.

Nevertheless, further coordination efforts are essential, particularly for public safety purposes. The horrific incident in Littleton, Colorado last month demonstrates the need for further coordination among communications systems. We understand that a number of the local, state, and federal agencies lacked interoperable communications systems, making the coordination of a response more difficult. NTIA will be looking more closely in the coming year at new ways to manage spectrum to help coordinate public safety efforts.

Satisfying Spectrum Needs

NTIA continues to coordinate the spectrum needs of the Federal Government by processing frequency assignment requests by some 53 Federal agencies. NTIA processes 300 to 400 such requests daily through an automated screening process to correct errors in the data and ensure conformity of rules and regulations and through a coordination process with Federal spectrum-using agencies via the Interdepartment Radio Advisory Committee (IRAC) to ensure interference free operation. In addition, NTIA also certifies spectrum availability of approximately 60 to 70 new major radiocommunications annually.

NTIA also provides leadership for and manages the activities of the IRAC, a body of representatives from twenty major Federal agencies. The IRAC has provided valuable advice to the Executive Branch on numerous spectrum policies and issues for the past 75 years. NTIA has maintained a constant relationship with the FCC both through the IRAC and directly to ensure compatible operations. This is especially important today since the vast majority of the spectrum is no longer divided into exclusive private-sector and Federal-sector bands, but is shared by all users in the United States.

Spectrum Efficiency

The Federal Government constantly seeks to modernize its radiocommunications, increase the amount of information transmitted per unit bandwidth, and expand the use of more efficient digital technology and

the use of private sector radiocommunications. In order to improve Federal spectrum use, NTIA uses the following management tools. First, NTIA requires that every Federal Government user requesting a frequency assignment determine whether its need can be met by a private or commercially available service provider. This policy has helped encourage consideration of commercial services by many Federal Government agencies, including the Department of Defense.

Second, we promote the use of new spectrum efficient technologies. The Federal Government is a leader in developing new spectrum-efficient techniques such as narrowbanding, digital modulation, and spectrum sharing as well as in the use of the highest quality spectrum-efficient equipment. These techniques will lead to nearly double the number of frequencies available for land mobile communications. NTIA has required that all Federal users move to more efficient 12.5 KHz equipment for mobile communications by 2005 or 2008, depending on the frequency bands in which they operate.

Third, NTIA collects fees from Federal agencies for its spectrum management services, pursuant to Congressional mandate. Congress initially directed NTIA to begin a process to collect fees from federal agencies in the FY 1996 Appropriations bill for NTIA. At the same time, Congress reduced the amount of direct appropriations to NTIA by the amount of the fees. Because of serious difficulties in collecting fees in FY 1996, Congress subsequently passed a law directing Federal agencies to cease using the spectrum if such fees were not paid. Based on this legislation, NTIA and the Federal agencies entered into agreements in which the agencies agreed to pay their prorated share. These fees cover 80% of the Spectrum Management's funding requirement. Although we continue to experience some delay in payments because of the different methods of payment within the Federal agencies, NTIA has received the requested funds from the agencies. We are pleased with the progress that has been made with this program.

Increasing Private Sector Access to Spectrum

NTIA continues to work with the FCC, the private sector, and Federal agencies to promote sharing of spectrum, where feasible, with private sector users. Since 1978, NTIA has coordinated the reallocation of more than 5,000 MHz of spectrum to exclusive private use or greater shared use with private sector entities. This is a significant amount of spectrum -- today's entire wireless telephone system, including cellular and personal communications systems, is allocated only 170 MHz.

Spectrum reallocation and reimbursement

Over the past several years, NTIA has begun to reallocate 235 MHz of spectrum from Federal Government use to the private sector. The process for identifying spectrum for reallocation was based on a two year study which took into account two major factors: (1) the impact on the Federal agencies, in terms of mission, costs, and potential reduction of services to the public, and (2) the benefits expected to be realized by the public. Based on the extensive planning and coordination with the FCC, government agencies, and the public to produce this report, NTIA identified an additional 35 MHz of Federal spectrum to transfer to private use. NTIA has already reallocated 195 MHz of the previously identified spectrum. The remaining spectrum is scheduled for auction by the FCC by 2002, in accordance with the Balanced Budget Act of 1997.

NTIA has also recently transferred spectrum to the private sector to support satellite systems. During the International Telecommunication Union World Radiocommunication Conference (ITU/WRC) in October 1995, NTIA coordinated the release of 3 MHz of Federal Government spectrum for exclusive use in mobile satellite systems (low earth orbiting satellites, or LEOs). NTIA has also arranged for shared use of 360 MHz of Federal Government spectrum for mobile satellite links for big LEOs.

Most recently, NTIA identified 20 MHz of spectrum for reallocation by the FCC to private sector uses and assignment by competitive bidding in accordance with the Balanced Budget Act of 1997. Proceeds of these auctions were originally to be contributed towards balancing the Federal budget by fiscal year 2002. Federal agencies' relocation costs associated with this reallocation are in excess of $ 1 billion. Under the recently enacted defense authorization statute, these affected Federal agencies will be reimbursed for their relocation costs by the winners of the spectrum auctions of the 20 MHz and the

previously identified 1710-1755 MHz band. NTIA will work closely with the Office of Management and Budget, the FCC, and affected Federal agencies to see that this process is successful. We appreciate the Commerce Committee's support in securing this legislative authority.

Planning for Future Spectrum Needs

Reinventing the spectrum authorization process

NTIA began a program in 1993 to develop an automated Federal spectrum management system to provide a standardized, automated method for Federal agencies to submit applications for spectrum support, select spectrum that is interference free, and validate that the spectrum requested is within the rules and regulations governing spectrum authorization. This system will allow NTIA to make the spectrum management process more efficient and responsive, more accessible, and less bureaucratic. NTIA introduced the Joint Spectrum Management System for windows (JSMSw) in March 1997. Based on feedback the Federal agency users, JSMSw has been revised to make it efficient and effective. Improvements will continue on JSMSw to make it even more effective and to make actual use of spectrum more efficient. JSMSw provides spectrum management tools to spectrum managers in the field so that they can manage their own use of the spectrum, use the spectrum more efficiently, and more rapidly obtain spectrum to meet their needs. Seventeen seminars have been conducted by NTIA for Federal agency spectrum managers in the use and application of JSMS.

Public Safety Needs

One of the most pressing Federal spectrum needs is that of public safety. Under Congressional leadership, NTIA and the FCC established the Public Safety Wireless Advisory Committee (PSWAC) in 1995. The Committee was composed of appointees from Federal, State, and local governments and private sector public safety organizations. The goals were to evaluate the wireless communications needs of public safety agencies through the year 2010 and recommend possible solutions to the lack of available spectrum and interoperability problems. In September 1996, PSWAC submitted a report outlining the public safety community's need for additional spectrum, improved interoperability, more flexible licensing policies, and increased sharing of spectrum resources. Many of the PSWAC recommendations have now been adopted.

The FCC is currently conducting a rulemaking to provide the state and local public safety community with 24 MHz of spectrum that will be made available when broadcast TV migrates to other portions of spectrum as part of the deployment of digital television. NTIA is working with the FCC to develop procedures for licensing of this spectrum and to provide a means to establish interoperability between state, local and the Federal government. To this end, NTIA will be participating in the FCC's recently established Public Safety National Coordination Committee. The advisory committee will develop an operational plan to achieve national interoperability, as well as technical standards to achieve full interoperability and network integration. The work of the committee is to be completed by September 2000.

As provided for in the FY 1999 budget, NTIA is increasing its public safety staff to identify the long-range spectrum requirements for the next 10 years and develop a strategy to provide sufficient spectrum for growth of current services, advanced technologies, and interoperability requirements. Through these efforts, we will continue to ensure that spectrum is available for Federal Government and the public safety community to meet the needs of law enforcement, national security, safe airways, disaster and environmental control, and the promotion of safe living conditions.

Global Positioning System (GPS) Expansion.

NTIA is also addressing issues that will protect the radio spectrum currently used by the global positioning system (GPS) and facilitate the expansion of GPS services. GPS is a worldwide utility that provides precise position, velocity, and time information anywhere in the world. GPS information is used by the public and private sectors in such areas as aviation, maritime and waterways, public transportation, railroads, telecommunications, surveying, defense, weather, environmental protection,

and law enforcement.

In order for GPS to be used reliably and confidently as a worldwide utility, the radio spectrum within which it operates must be protected. NTIA is responsible for leading the efforts in preparation for the World Radio Conference 2000 to protect the radio spectrum used by GPS.

NTIA is also dedicated to making spectrum available for the expansion of GPS. The President's FY 2000 budget would provide for two new signals for civilian uses of GPS. One of the signals will be available for general applications. The other signal will be located in a portion of the spectrum allocated to aeronautical radionavigation services for aeronautical safety applications.

NTIA will be addressing the associated international spectrum issues at forthcoming technical fora and the World Radiocommunications Conference 2000. NTIA will also continue its efforts to work with the Department of Transportation, the Department of Defense, the Department of State, the FCC, and the private sector to ensure that spectrum is available in the future for this purpose.

Infrastructure Protection

Finally, NTIA has taken a leading role in protecting the national information infrastructure. As information and telecommunications systems become increasingly critical to our daily communications and our national economy, protection of this infrastructure is also becoming a priority for the nation. In May 1998, the President issued a Decision Directive (PDD-63) to create a public/private partnership to address the nation's need to protect our critical infrastructures from purposeful attacks. PDD-63 designated the Department of Commerce as the lead agency to conduct a vulnerability assessment to protect the nation's information and communication infrastructure. The Secretary of Commerce assigned NTIA the responsibility to carry out this program.

NTIA is planning to undertake numerous activities as lead agency. Among other things, we will be working with industry to raise awareness of the threat to, and vulnerabilities of, their infrastructure. NTIA will also work with industry to develop plans to mitigate the risks, deal with attacks, and reconstruct damaged infrastructure. Additionally, we will encourage the adoption of security standards and best practices, not only within the United States, but also among our major industrialized partners. Our goal is to harmonize our efforts with other countries and take best advantage of their developments in technology and policy because this infrastructure is inherently global.

Throughout this process, we will be working closely with industry, as most of the information and communications infrastructure is owned and operated by the private sector. We are working with three key trade associations -- the Information Technology Association of America (ITAA); the United States Telephone Association (USTA) and the Telecommunications Industries Association (TIA). In addition, NTIA has established close working relations with other government agencies, which will contribute to the effort. These include the National Communications System (NCS), the President's National Security Telecommunications Advisory Committee (NSTAC), the Federal Communications Commission's Network Reliability and Interoperability Council (NRIC) and the FBI's National Infrastructure Protection Center (NIPC). These close working relationships should ensure the cooperation of industry and government in our efforts to protect the nation's infrastructure.

TELECOMMUNICATIONS RESEARCH

NTIA is greatly assisted on spectrum management and other telecommunications issues by its laboratory in Boulder, Colorado. The laboratory, operated by NTIA's Institute for Telecommunication Sciences (ITS), performs state-of-the-art telecommunications research to support NTIA and Department of Commerce goals. It also conducts specific research under reimbursable agreements with other Federal agencies and under cooperative research agreements with private sector partners.

ITS is an active contributor to many agency endeavors, including those dealing with spectrum efficiency and sharing issues, digital television, broadband wireless technology and convergence issues, advanced

video and voice performance testing and standards development, Internet technology issues, and critical information and communication infrastructure research and development. Most recently, ITS provided essential information with respect to signal contours for purposes of the Satellite Home Viewers Act and related proceedings.

The Value of Federal Research

ITS's research laboratory plays a critical role in telecommunications research because it is is unbiased and cuts across government and industry needs. In many instances, ITS's input is essential to resolving pressing technical questions that can't be resolved by industry. For example, ITS's research laboratory recently assisted the FCC in the development of the national digital television channel assignment plan to facilitate the introduction of Digital Television (DTV) across the United States. Without this work, digital television channel assignments could not have been made in a timely and effective way, potentially costing television broadcasters millions of dollars due to increased interference. Private sector experts probably could not have done this work in an unbiased fashion, since their livelihood depends on the continued affiliation with their broadcast customers.

In another recent example, ITS participated in international frequency band allocation proceedings for direct satellite audio broadcasts. ITS was tasked to determine the viability of the proposed bands in the United States. ITS's measurements, which showed that the satellite signals could not be received, prevented the investment of billions of dollars in potentially unusable satellites. The private sector probably could not have provided such measurements, because they would be considered biased and would not have had the same influence as Government measurements. Additionally, industry did not have the means to make these measurements in a short time frame.

Over the years, there have been numerous external and internal reviews of NTIA's laboratory. All these reviews concluded that there is a compelling need for a centralized Federal telecommunications laboratory that serves the public interest by undertaking uniquely governmental research functions in a cost-effective fashion. The ITS laboratory is essential because it is guided by the public interest, not profit motives. A centralized laboratory is also crucial to preventing the duplication of telecommunications research efforts among Federal agencies.

Review of Telecommunications and Information Technology (IT) Systems

ITS also provides expert advice to government agencies with regard to telecommunication and IT planning and implementation. The laboratory helps these agencies provide cost-effective and interoperable systems to accomplish their missions. For example, ITS provided the U.S. Forest Service a national strategic plan for upgrading telecommunications and IT systems across all National Forests; assisted the Department of Transportation in developing a national Intelligent Transportation System to aid traffic control and general public transportation safety; analyzed Federal Railway Administration telecommunication requirements for rail safety and positive train control systems; evaluated and designed Federal Aviation Administration augmentations to Global Positioning System capabilities for air traffic control and ship navigation; and conducted engineering studies and developed standards for the National Communications System to assure interoperability and continuity of operations during national emergencies.

ITS is also playing a central role in the Department of Justice's Interoperability Standards Task Force (a consolidated effort of several Justice information integration programs), which is aimed at establishing telecommunications interoperability and effective information sharing among agencies in the local, State, and Federal criminal justice and public safety communities. ITS has the responsibility for identifying and analyzing the user needs at all levels and for proposing a comprehensive set of interoperability standards that will allow a nationwide criminal justice and public safety enterprise network.

Spectrum Use

Finally, NTIA's laboratory provides significant information on spectrum use. ITS maintains the Nation's

database of radio propagation characteristics for the entire radio spectrum to help improve radio communications in the U.S. and internationally. The database provides the foundation for models used by NTIA to prepare domestic and international radio standards and spectrum sharing agreements, by NTIA and the FCC in national spectrum management, and by the broad community of private sector and government users for planning, designing, and implementing radio telecommunication systems. This information also facilitates work on advances in telecommunications technology -- such as personal communications services and high definition television--to benefit all citizens.

ITS also provides comprehensive measurements of spectrum use and occupancy. These measurements provide critical information for spectrum policy and regulation which otherwise would be based solely on information contained in licensing documents and other records. This measurement capability is also used to solve difficult radio interference problems. Suspected radio interference between Government agencies, or the Government and private sector, can become contentious. ITS, because of its neutrality and expertise, is able to establish the trust of the parties and develop the evidence regarding any suspected interference. ITS has been able to quickly resolve many interference problems that other Government agencies and private sector organizations were not able to resolve.

ITS is proposing in FY 2000 a Broadband Initiative to develop the fourth generation of its Radio Spectrum Measurement System. This work is required to keep pace with the changes in spectrum use brought about by the deployment of new technologies such as spread spectrum wireless communications. Without the initiative, ITS will not be able to maintain its capability to make comprehensive spectrum use and occupancy measurements and to quickly resolve suspected interference by Government systems to private sector operations.

An FY 2000 initiative has been proposed for ITS to lead efforts in Critical Infrastructure Protection (CIP) research related to telecommunications and information technology. With its tremendous expertise and experience, ITS is a natural candidate to lead these efforts. ITS will develop a process for characterizing the assets of existing infrastructures, work with other Federal agencies and industry to identify threats and vulnerabilities to specific parts of the infrastructure, and define and evaluate mitigation strategies based on existing and emerging products and technologies.

GRANT PROGRAMS

Another significant area of NTIA's activities is its two grant programs, which help expand access to new technologies. Having documented the "digital divide," NTIA is also seeking to bridge the divide between those with access to new technologies, and those without. The Telecommunications and Information Infrastructure Assistance Program (TIIAP) provides matching grants to non-profits and public entities that are using new technologies in innovative ways to reach those in rural, low-income, and traditionally underserved areas. NTIA's Public Telecommunications Facilities Program (PTFP) supports the maintenance and improvement of public broadcasting facilities throughout the United States and its territories. Both programs are ensuring that Americans have greater access to the benefits provided in our digital age.

Telecommunications and Information Infrastructure Assistance Program

Since 1994, TIIAP has helped underserved communities use information infrastructure to improve the quality of, and the public's access to, lifelong learning, health care, public safety, and other community based services. TIIAP provides critical seed money, without which many innovative and vital applications would not take root and grow in these communities. We have awarded 378 grants to schools, libraries, hospitals, State and local governments and other non-profit entities in all 50 states, the District of Columbia and the U.S. Virgin Islands.

This competitive program has been able to award only one out of every 14 applications. Over the first five years of the program, NTIA received almost 5400 applications. Approximately $118 million in federal grants have been matched by more than $180 million in non-federal funds. In 1998 alone, TIIAP leveraged $18.5 million in federal funds matched by $24 million in private, State and local funding and

awarded 46 grants from over 750 applicants to projects in 35 states and the District of Columbia. For 1999, TIIAP has received 702 applications seeking over $278 million in grant funds. These applications represent more than sixteen times what NTIA can fund, making TIIAP one of the most competitive federal grant programs.

TIIAP has an excellent track record of supporting highly successful information infrastructure projects in underserved communities. The program leverages a modest federal investment into significant community investments and provides national models for public and nonprofit organizations to follow.

For example, through a TIIAP grant to the City of Winston-Salem, fire department vehicles responding to emergencies in Winston-Salem and surrounding communities have access to graphic information about the emergency sites as they respond. Detailed images of all city buildings have been created and made accessible in the fire department vehicles by using technologies such as document imaging, geographic information systems (GIS), mobile computers, and global positioning technology. By giving fire fighters better decision-making options during emergency responses, the system enables them to fight and contain fires more effectively, to save lives and property, and, in some cases, prevent fires from spreading to other locations. This project has received international acclaim -- it was recently selected as a finalist in the prestigious Global Bangemann Challenge, which honors "the best information technology projects that cities can show."

A TIIAP grant has also provided Internet connectivity for chronically-ill children at the University of Mississippi Medical Center. This connectivity enables these patients to continue their education and maintain contact with peers, teachers, and parents. Through the TIIAP grant, both hospitalized and homebound patients can use laptop computers and desktop video conferencing to gain access to their teachers, their classroom assignments, and their friends and families. Its impact on their emotional well-being, as well as their continued classroom involvement, is invaluable.

The benefits of the TIIAP grant program were confirmed recently by an independent evaluation by Westat of projects funded in the program's first two years. Among other things, the evaluation found that 90 percent of the projects are still in operation, and that the majority of projects reported meeting or exceeding nearly all of their objectives. Most important, the projects are sustaining themselves beyond the federal grant period and are generating new funds. Each grant dollar has generated another four non-federal dollars to support information infrastructure. In addition to matching funds, the grants led to investments that expanded their services beyond the original scope and further investments to support spin-off activities.

The projects' role as national models further leverages the TIIAP investment. Extensive outreach by the projects in response to the tremendous interest is spreading the benefits of the TIIAP grants to other communities. The 206 organizations surveyed in the independent study reported responding to 79,000 unsolicited requests for information and hosted visitors representing over 5,000 organizations.

The evaluation also found that TIIAP projects help communities in need and serve a diverse public. Sixty-five percent of the projects involved rural areas, while 48 percent served the inner cities. Fifty-nine percent reached those living in extreme poverty and 42 percent involved users with disabilities.

TIIAP grants provide the catalyst for the vast majority of these programs. Seventy-five percent of grant recipients reported to Westat that their projects never would have happened without the TIIAP funds. Of the remaining 25 percent, 90 percent indicated that, without TIIAP support, the projects would have either reached significantly fewer people, or have been substantially delayed, or dramatically reduced their range of services.

For a modest federal investment, TIIAP is providing a tremendous body of knowledge on which policy makers, community leaders, and technologists in the private, public, and nonprofit sectors can rely as they work to ensure that advanced telecommunications and information technologies reach the farthest corners of our nation. The excellence of the TIIAP-funded projects is reflected in the nationwide and international acclaim they receive. For example, four TIIAP grant recipients were recently named on a short list of finalists in the Global Bangemann Challenge, which honors the best information technology

projects that cities can show. TIIAP projects have also received awards from the NII/GII awards competition, the National Rural Health Association, the National Association of Development Organizations, the Medical Library Association, and the National Association of Counties, among many others.

Most importantly, TIIAP is strengthening our communities by revolutionizing how we learn, how we take care of our sick, how we control crime, and how we create opportunities for people most in need.

Public Telecommunications Facilities Program (PTFP)

NTIA's PTFP has helped public broadcasters maintain and expand their equipment and facilities for the last 35 years. The grants achieve three Congressionally mandated objectives: (1) extend delivery of public telecommunications services to as many American as possible by the most effective and efficient means; (2) increase public telecommunications services and facilities available to, operated by and owned by minorities and women; and (3) strengthen the capability of existing public broadcasting stations.

Facilities funded by PTFP have given millions of Americans access to the educational and cultural programming of public broadcasting. With the program's assistance, a public television signal now reaches about 95% of our nation's population and public radio reaches approximately 90% of the population. NTIA and its predecessor agencies have assisted noncommercial entities to acquire the necessary hardware to produce and broadcast public television and radio programs, radio reading services, and descriptive video services for the disabled. NTIA also supports the delivery of instructional and educational services by a broad array of community institutions.

Since PTFP's inception, over $500 million in federal funds has been invested in the public broadcasting infrastructure. Local communities have provided upward of another $500 million dollars to match the federal grants. In 1998, NTIA awarded $19.9 million for 115 projects in 41 states to facilitate the expansion of public broadcasting services to communities across the country and ensure the continuation of service. After receiving clearance from the FCC, NTIA recently awarded three addition projects from 1998. A number of the awards will expand access to public radio to 450,000 persons who presently do not receive any signal. Communities such as Santa Rosa, CA; Wilmington, DE; Kilauea Town, on the island of Kauai, HI; Leonardtown, MD; Manteo, Buxton, and Waves, NC; Manahawkin, NJ; Lund and Ely, NV; the Duck Valley Reservation of the Shoshone-Paiute Tribes in Owyhee, NV; Defiance, OH; and Vernal/Uintah, UT, will receive either their first public radio service or greatly expanded service.

The President's FY 2000 budget requests $450 million over 5 years to go towards the conversion of digital television. In April 1997, the FCC issued regulations requiring broadcasters to transition from analog to digital broadcasting. Public broadcasters must convert to digital broadcasting by May 1, 2003. This deadline allows the analog spectrum to be turned over to commercial users by the 2006 date established by Congress and mandated in the Federal Balanced Budget Act of 1997. The President's budget requests advance appropriations for a multi-year effort to allow advance planning and certainty in the public broadcasting system's transition to digital broadcasting. In FY 2000, the Administration is seeking $35 million from Congress to the PTFP. The $35 million request is part of the $450 million initiative, now in its second year. The initiative seeks funds in both the Corporation for Public Broadcasting and PTFP. Funding through PTFP will be targeted for digital transmission equipment, while funding for Corporation for Public Broadcasting will support necessary expenses related to digital program production and development.

Public broadcasting stations are undertaking an enormous new financial burden as they transition to the digital format. Over $700 million is needed for the nation's public television stations to meet the FCC's minimum digital broadcast pass through requirements. The conversion will place an enormous strain on the already precarious budgets of many of the public broadcasting stations. Federal assistance is critical during this transition period. For almost half the public television licensees, the cost of conversion to digital is projected to exceed their annual revenues. If stations are forced to convert without assistance, many stations will be forced to go off the air or reduce hours of operation, adversely affecting programming quality and diversity.

PTFP will take special measures to assure that the full potential of the new digital technology is used to provide the most economical means possible of providing public broadcasting services. Special consideration will be given to stations broadcasting in under served markets, especially those in rural, remote, or disadvantaged communities. In addition to digital conversion assistance, PTFP will continue its traditional support to expand the availability of public broadcasting services to those areas without such service. PTFP also will assist public radio and television stations to continue providing their existing analog service during the federally mandated transition period.

Since September, NTIA has awarded fifty-two awards to assist public television stations with the purchase of digital-ready or digital-compatible equipment. Three of these projects-KCTS-TV, Ch. 9, Seattle; KQED-TV, Ch. 9, San Francisco; and KCET-TV, Ch. 28, Los Angeles-will allow stations to complete their full digital conversion. Another grant will permit KERA-TV, Ch. 13, Dallas, TX, to share the cost of a digital TV antenna, thus allowing the station to remain on its current tower and greatly assist in its digital conversion.

As a result of an emergency grant to the Mississippi Authority for Education Television, the state network restored analog public television service to the Jackson area and allowed the Jackson station to broadcast experimental digital programming. NTIA funded a new tower and transmission equipment in response to the collapse of the commercial tower on which the public television station's antenna had been located.

These examples demonstrate NTIA's efforts to preserve public broadcasting, bring service to remote and rural communities, and encourage efficient technologies. NTIA will follow the same objectives as we assist public television with digital conversion and ensure that all public television transmitters are converted by 2003.

AGENCY OPERATIONS

NTIA is also committed to improving agency operations and management. Beginning in 1990, Congress passed several major pieces of legislation governing the way Federal departments and agencies operate, specifically:

-- the Chief Financial Officers Act of 1990, as amended by the Government Management Reform Act of 1994;

-- the Government Performance and Results Act of 1993; and

-- the Clinger-Cohen Act of 1996.

NTIA has made significant progress in implementing these laws. The Chief Financial Officers Act requires Federal departments and agencies to prepare annual financial statements and have those statements audited in accordance with generally accepted auditing standards. The Department of Commerce is committed to improving financial information and financial management capabilities. NTIA was one of the first Commerce agencies to receive an unqualified opinion on its financial statements for 1993, and has continued to receive unqualified opinions on all subsequent statements. Since 1995, the audits conducted have been formal full scope audits. The unqualified opinions confirm that NTIA's financial statements fairly present the financial position of the agency.

Under the guidance provided by the Government Performance and Results Act (GPRA), NTIA has established a strategic planning process and developed an agency strategic plan. During the past year, NTIA's senior managers have focused on redefining NTIA's goals and objectives and succeeded in reducing the agency goals from seven to four. A continuing emphasis has been placed on measuring performance, both internally and at the Department level. NTIA's internal planning process is designed to complement and reinforce the Department of Commerce planning efforts. NTIA managers have embraced the planning process as a way to improve our management and maximize the return to the

public from the agency resources available.

NTIA is also supporting the Department's efforts to properly implement the philosophy of the Clinger-Cohen Act. Clinger-Cohen (also called the Information Technology Management Reform Act) is designed to improve our management of the information technology investments necessary to enable us to fulfil our missions. The information technology investments NTIA makes are directly linked to our business needs. The strategic and operational information technology plans directly support for the agency's goals and objectives. NTIA has processes in place designed to ensure that all major information technology investments are evaluated in terms of the overall business value to the organization. In addition, NTIA's laboratory (ITS) is performing a Telecommunications Assessment across all bureaus and agencies of the Department to provide the current status of telecommunications and information technology assets for Commerce management, and to allow informed decision-making on future evolutions in the infrastructure.

NTIA has declared two information technology systems to be mission critical for year 2000 efforts: the Spectrum Frequency Management Systems and the Grants Processing System. Both these systems are year 2000 compliant. NTIA is in the process of developing year 2000 contingency plans for its own essential operations and working with the Department of Commerce to ensure telecommunications and other services are available for essential personnel.

CONCLUSION

NTIA serves a critical role in developing and promoting policy in all areas relating to the telecommunications and information sectors. We have taken the lead, both on the domestic and international front, in setting forth positions in spectrum management, universal service, broadband networks, global competition, and electronic commerce - to name a few key areas. Given the increasing importance of these issues to our domestic and global economy, NTIA is playing an increasingly significant role in its position as representative of the U.S. government and Executive Branch advisor.

As NTIA Assistant Secretary for six years, I continue to be proud of the role we play and the accomplishments we have achieved. We hope to continue to address the myriad new issues in telecommunications and information technology with the same level of expertise and thoroughness that we have always displayed. This objective has become increasingly difficult, however, as the issues and demands on NTIA have increased, and the staff levels have decreased. I fear that NTIA's leadership in the dynamic and expanding telecommunications and information arena could be compromised without adequate resources. We therefore appreciate the support of this Committee as it considers our FY2000 Budget Estimates so that NTIA can continue to play a leadership role.

Testimony of Larry Irving
Assistant Secretary of Commerce for
Communications and Information
before the Senate Committee on Commerce, Science and Transportation
September 17, 1997

Good afternoon, Mr. Chairman and members of the Committee. Thank you for the opportunity to testify today. The National Telecommunications and Information Administration (NTIA) within the Department of Commerce is the principal adviser to the President on domestic and international telecommunications issues. As assistant secretary of NTIA, I am pleased to be here today to present the views of the Administration on the transition to digital television.

Digital television (DTV) marks a quantum leap forward in television technology and provides an astonishing array of possibilities for advancing national telecommunications goals. An important dividend of the transition from analog to digital television is that DTV technology results in more efficient use of the radio frequency spectrum. With DTV technology, the broadcast television industry's current requirement for 402 megahertz of spectrum will be reduced significantly to 252 megahertz, saving up to 150 megahertz of prime spectrum for other uses. DTV will also allow broadcasters to provide an expanded range of services to consumers, including high definition pictures, multiple program streams, as well as CD-quality audio programming and advanced digital services such as data transfer. In these ways, DTV can bring important benefits to millions of American consumers -- dramatically better picture quality and more viewing choices, advancement of American technological and economic strength, and more efficient use of the radio frequency spectrum.

The Telecommunications Act of 1996 makes clear that the public interest responsibilities of television broadcasters which have endured for more than 60 years still abide in the new DTV era. Public interest responsibilities are fulfilled in return for a broadcaster's exclusive use of the scarce public airwaves. Over these years, the contours of public interest obligations have been adjusted to reflect changes in economic, technological and social needs. The novel technological features of DTV gives cause to re-examine the public interest responsibilities of television broadcasters to determine whether the public interest lies in the retention, repeal or addition to these obligations.

The President has made his position very clear on the public interest benefits of free air time for political candidates and more educational programming for children. Furthermore, the President established the Advisory Committee on Public Interest Obligations of Digital Broadcasters by Executive Order 13038 on March 11, 1997. The Committee will provide advice to the Administration on the public interest obligations that digital broadcaster should assume. The President will appoint up to 15 members who represent diverse views from the commercial and noncommercial broadcasting industry, computer industries, producers, academic institutions, public interest organizations, and the advertising communities. The President has already announced the co-chairs of the Advisory Committee: Leslie Moonves, president of CBS Entertainment and one of America's most prominent and creative broadcasters; and Dr. Norman Ornstein, resident scholar at the American Enterprise Institute and one of America's best known political scientists. The President will announce the other members of the Committee in the near future. A report is expected from the group by mid-1998. NTIA will serve as the group's secretariat.

The Advisory Committee will be faced with a number of challenging issues ranging from free air time for political candidates to children's broadcasting and the application of public interest obligations in an HDTV or multiplexed digital world. These are difficult issues, but critical to defining the role of over-the-air broadcasting in the digital world. The Administration is hopeful that the Advisory Committee will work with broadcasters, industry and public interest groups to develop real and concrete public interest obligations that are fair and reasonable, but also recognize that broadcasters have been given unique access to a precious public asset.

Congress recognized the many benefits of DTV in the Telecommunications Act of 1996 which

authorized the Federal Communications Commission to issue licenses for DTV services. While the Act gave the Commission discretion over whether to issue the licenses, it also imposed certain conditions on the assignment of licenses. The most significant features are that: (1) only incumbent television broadcasters are eligible to receive a 6 megahertz digital license; (2) licensees must return the "analog" spectrum currently used for broadcasting television signals; (3) digital broadcasters remain subject to public interest obligations on video programming as well as any new "ancillary and supplementary services" on the digital spectrum; and (4) the Commission must impose fees on subscription-based services to compensate the public for the value of the spectrum used for such commercial services. The Act otherwise provides digital broadcasters with substantial flexibility to develop their business plans for the delivery of DTV based on consumer demand.

In April of 1997, the Commission allocated the DTV spectrum and announced the timetables for commencement of DTV services and the return of the "analog" spectrum. The Administration strongly supported the Commission's timetables as critical to an orderly nationwide transition to digital television and the expedited return of "analog" spectrum which can be reallocated for maximum public benefit.

The Administration regrets that Congress did not adopt the Administration's proposed firm date of 2006 for the termination of analog broadcasting in the Balanced Budget Act of 1997. Lack of a firm date could unnecessarily delay the digital transition which will bring about new services, consumer benefits and new jobs. The new law requires the Commission to grant a waiver of the date certain for the return of the "analog" spectrum made available by more efficient digital technology in any market that meets a multi-faceted test. This waiver provision creates opportunities for broadcasters to manage their deployment of DTV in a way that would enable them to retain use of their current "analog" spectrum indefinitely. This, in turn, would limit the Commission's ability to make the "analog" frequencies available expeditiously for new communications services. Moreover, without a uniform return date, it will be virtually impossible for the Commission to "repack" the "analog" spectrum into nationwide contiguous blocks, which will also constrain the possible uses of this newly available spectrum. The Administration is also deeply concerned that the waiver provision will have a negative affect on the Commission's ability to make 24 megahertz of spectrum in broadcasting band (Channels 60 to 69) available to the public safety community to relieve the severe congestion that hobbles its ability to perform vital services.

The new law also waives the Commission's duopoly and newspaper-television cross-ownership rules to permit broadcasters in certain markets to bid on the returned "analog" spectrum, in the event that the Commission decides to allocate the spectrum for digital television broadcasting. The Administration is concerned about any such waiver because it may increase media concentration in these markets, lessening the number of diverse sources of information for consumers.

The Administration is also concerned about media reports regarding the disunity among the broadcasting industry and the equipment manufacturers over the nature of the services to be provided via digital television, and the impact it could have on the rapid rollout of DTV services to the American public. This issue has been highlighted by the mixed responses from policymakers and the industry to the recent announcements by ABC and Sinclair Broadcasting indicating that their business plans potentially call for providing multiple channels of standard definition programming and subscription-based services, rather than offering high definition television (HDTV).

While HDTV may have initially driven the development of new advanced television technologies and consumer products, digital technologies have continued to evolve so that broadcasters can provide a wide variety of additional services beneficial to the public. In recognition of this development, Congress has given broadcasters the flexibility to base their DTV plans on the marketplace rather than mandating a utilization format. This flexibility should be complemented with greater coordination between broadcasters and equipment manufacturers to ensure that the public ultimately benefits from the transition to DTV.

To the extent that broadcasters are now considering ways to offer multiple channels of programming and subscription-based services rather than some HDTV services, a whole host of tough policy questions arise that Congress, the Administration , and the Commission must address. For example, what new

equipment beyond a television set will consumers require to receive these multiple channels or subscription services? Who pays for this equipment? If more than one broadcaster multiplexes, will a consumer have to have a set-top box for each local broadcaster's services? Will this equipment be compatible with existing consumer electronics equipment, including VCRs, cable and broadcast satellite services equipment? What fee amount and structure should the Commission impose on digital broadcasters' subscription-based and commercial services in order to compensate adequately the public for the value of the spectrum used to provide these services? What subscription-based or commercial services, if any, should public broadcasters be permitted to offer on their digital spectrum? How best can the Federal government assist public broadcasters to make the transition to digital television? Do the program access provisions of the 1992 Cable Act permit broadcasters in a multiplexed environment to have access to cable programming and superstations? Should the must carry rule survive in a multiplexed environment, and if so, for which services or programming and in what format should a cable operator be required to carry it? Should a cable operator be required to carry a broadcast competitor's subscription-based services under the must carry rules? These questions, and more, remain to be answered.

Mr. Chairman, and members of the Committee, again, I appreciate this opportunity to share these views with you and I look forward to working with you and the Committee to develop policies that will speed the digital broadcasting transition. I look forward to answering any questions you may have.

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TESTIMONY OF LARRY IRVING

ASSISTANT SECRETARY FOR COMMUNICATIONS AND INFORMATION

NATIONAL TELECOMMUNICATIONS AND INFORMATION ADMINISTRATION (NTIA)

U.S. DEPARTMENT OF COMMERCE

ON

REAUTHORIZATION OF NTIA

BEFORE THE SUBCOMMITTEE ON

TELECOMMUNICATIONS, TRADE, AND CONSUMER PROTECTION

COMMITTEE ON COMMERCE

U.S. HOUSE OF REPRESENTATIVES

APRIL 24, 1997

Mr. Chairman and Members of the Committee:

Thank you for this opportunity to testify before you today on the reauthorization of the Department of Commerce's National Telecommunications and Information Administration (NTIA).

INTRODUCTION

As the President's principal adviser on domestic and international telecommunications and information policy, NTIA develops and advocates Administration policies for telecommunications and information-related industries, which are expected to grow to 17 percent of our domestic economy by the early 21st Century. Generating more than three-quarters of a trillion dollars in annual revenues, the telecommunications and information sectors represent the growth industries of today and the next century. These sectors encompass a broad range of services and products, including those offered by wired and wireless telephony, broadcast and cable television, the Internet, satellites, and other delivery systems.

Changes are taking place in our nation as a result of new telecommunications and information technologies and their applications. We are using these technologies to grow our economy, to expand markets both domestically and internationally, to generate new products and services. We are realizing the power of technology to bring high-wage, high-skilled jobs to our nation's workforce and new resources to our students.

The high-technology sector is increasingly becoming the linchpin of our economic success in the 1990s and into the 21st Century. Indeed, the high-technology sector has replaced the traditional

cyclical industries, such as autos and construction, as *the* driving force for growth. For the past three years, high-tech companies have contributed 27 percent of the growth in our gross domestic product, compared with 14 percent for residential housing and only four percent for the automobile companies. Over just this past year, 33 percent of GDP growth is the result of information technology industries, which includes everything from the Internet and its related products to direct broadcast satellite television.

There are more than 9 million workers now in the high-tech sector. And that is not accounting for any multiplier effect, which is significant. For example, a study of Microsoft's impact on the Washington State economy showed that each Microsoft job created 6.7 new jobs in the state. Compare this with a 3.8 multiplier for Boeing Co. High-tech jobs have accounted for roughly 20-25 percent of the real wage and salary growth over the past year.

And Wall Street sees continued growth in America's high-tech giants, as illustrated by the following statistic: The market capitalization of Intel, Microsoft, and Cisco together is almost three times that of Detroit's big three car companies, even though the car companies' sales are more than ten times higher than the high-tech firms.

The heightened importance of the telecommunications and information sectors of the economy has engendered new and pressing policy development and advocacy needs. NTIA's work in developing pro-competitive, pro-consumer policies, managing the Federal use of the radio spectrum, and opening foreign markets to U.S. companies is key to maintaining U.S. competitiveness. We are working hard to capitalize on American ingenuity and innovation in the telecommunications and information industries, and bring new opportunities to American businesses and workers.

NTIA will be drafting authorizing legislation for the agency's programs, which we will submit to Congress when it is completed. Today, I will highlight NTIA's key operations -- operations that are essential to promoting continued growth in these critical areas. NTIA's programs focus on three major priorities: (1) managing Federal spectrum use to improve efficiency, increasing private sector access to spectrum resources, and planning for future spectrum needs, including those of the public safety community; (2) promoting competition and opening markets, both domestic and global; and (3) promoting universal access and affordable telecommunications services for all Americans.

HIGHLIGHTS OF NTIA'S PROGRAM OPERATIONS

Improving Federal Spectrum Users' Efficiency, Increasing Private Sector Access to Spectrum, and Planning for Future Spectrum Needs

Let me begin with one of NTIA's core functions -- spectrum management. NTIA serves as a policy adviser to the President on spectrum issues, in addition to managing the Federal Government's use of the radio frequency spectrum. The fundamental goal of spectrum management at NTIA, as it is around the globe, is to avert potential interference between users and to ensure that spectrum is available for existing and future needs through the most efficient use of the spectrum. Because of the tremendous demand for spectrum resources, however, we often must balance the costs of displacing existing users with the potential benefits of the new services.

Spectrum Efficiency

The Federal Government constantly seeks to modernize its radiocommunications, decrease its channel bandwidths, and increase its use of digital technology and private sector radiocommunications. NTIA uses the following management tools to improve Federal spectrum use:

Requiring Federal users to use commercial services where possible

NTIA requires that every Federal Government user requesting a frequency assignment must first determine that its need cannot be met by a private or commercially available service provider. This policy has resulted in increased use of commercial services by Federal Government users, such as the Department of Defense.

Promoting the use of new spectrum efficient technologies

The Federal Government is a leader in developing new spectrum-efficient techniques such as narrowbanding, digital modulation, and spectrum sharing as well as in the use of the highest quality spectrum-efficient equipment. These techniques will lead to a doubling, and possibly quadrupling, of the number of frequencies available for land mobile communications. NTIA has required that all Federal users move to more efficient 12.5 KHz equipment for mobile communications by 2005. In another example, the Federal Aviation Administration has increased their use of certain frequency bands more than 33 times through more advanced technology.

Engaging in spectrum planning

In 1993, the Secretary of Commerce submitted the Land Mobile Spectrum Efficiency Plan to Congress, as required by the NTIA Organization Act. The implementation of this plan resulted in: (1) more usage of commercial and government-owned trunking systems, (2) doubling the channels in three major Federal land mobile bands through new narrowband technology, and (3) the promotion of sharing with the private sector. Several years later, the private sector adopted a similar narrowband channel plan.

Collecting spectrum management fees

Pursuant to Congressional mandate, NTIA put forth a program designed to collect fees from Federal agencies for spectrum management services provided by NTIA. NTIA proposed that each agency be charged in proportion to its use of the spectrum, and that the fee system be implemented over a five year period beginning in FY 1996.

Based on this report, Congress implemented legislation in 1996 (P.L. 104-134) directing NTIA to charge Federal agencies for NTIA's cost of managing the radio frequency spectrum. At the same time, Congress reduced the amount of direct appropriations to NTIA by the amount of the fees.

Due to serious difficulties in collecting fees in FY 1996, Congress passed a law (P.L. 104-208) that clearly specified that Federal agencies shall pay the fees charged by NTIA for spectrum management costs in FY 1997 and that, if they do not, they will have to cease using the spectrum. The legislation also directed that NTIA charge a total of $5 million in fees in FY.1997. NTIA sent letters to 29 agencies requesting payment. NTIA has received memorandums of understanding or equivalent from these agencies for the full $5 million, and has received payments to date of approximately $3.2 million.

To give the agencies as much notice as possible, NTIA informed the agencies of their estimated costs for FY 1998 in July 1996, so that their costs could be included in their respective budget submissions to Congress. The Administration plans to increase the fees in 1998 to $7.5 million.

<u>Increasing private sector access to spectrum</u>

NTIA continues to work with the FCC, the private sector, and Federal agencies to promote sharing of spectrum with private sector users. Since 1978, NTIA has coordinated the reallocation of more than 5,000 MHz of spectrum to exclusive private use or greater shared use with private sector entities. This is a significant amount of spectrum -- today's entire cellular telephone industry is allocated only 50 MHz.

Spectrum reallocation

Over the past several years, NTIA has begun to reallocate 235 MHz of spectrum from Federal Government use to the private sector. The process for identifying spectrum for reallocation was based on a two year study which took into account two major factors: (1) the impact on the Federal agencies, in terms of mission, costs, and potential reduction of services to the public, and (2) the benefits expected to be realized by the public. Based on the extensive planning and coordination with the FCC, government agencies, and the public to produce this report, NTIA also identified an additional 35 MHz of Federal spectrum to transfer to private use. NTIA has already reallocated 145 MHz. The remaining 90 MHz will be reallocated to the FCC by the year 2004.

NTIA has also recently transferred spectrum to support satellite systems. During the International Telecommunication Union World Radiocommunication Conference (ITU/WRC) in October 1995, NTIA coordinated the release of 3 MHz of Federal Government spectrum for exclusive use in mobile satellite systems (low earth orbiting satellites, or LEOs). NTIA has also arranged for shared use of 360 MHz of Federal Government spectrum for mobile satellite links for big LEOs.

In addition, NTIA worked closely with the FCC to allocate 300 MHz of spectrum previously used primarily by the Federal Government for shared use with unlicensed wireless networks. Because these networks are unlicensed, they will be relatively affordable, and thus will provide an important networking option that will be attractive to schools, libraries, and others with limited financial resources.

Reimbursing Federal users that move to accommodate private users

To accelerate the transfer of spectrum from Federal to private sector use, NTIA has proposed that winning bidders in auctions for spectrum now used by Federal agencies reimburse these Federal users for costs of relocating their operations relocation costs. NTIA worked with the Congress on this proposal last year. This important reform will be made part of the Administration's submission for NTIA's authorizing legislation, which NTIA plans to forward to Congress in May. The Administration proposes that incumbent Federal users have the same rights that incumbent private users have who are moved from a band of spectrum that will be auctioned. The new users reimburse the old users to move by purchasing equipment or paying for other expenses.

When NTIA identified 235 MHZ for relocation in 1993, there were many Federal users who could not be moved until after the year 2000 because they had no immediate means to pay for such a move. The total cost of moving operations and paying for new equipment for these Federal users is estimated at $500 million. This cost will be borne directly by taxpayers through the appropriations process, unless we can find a way to have new entrants pay for this relocation. If the Congress supports this language, spectrum can be cleared more quickly to accommodate new private sector users, and Federal operations -- including national security and public safety activities -- can be maintained.

Planning for Future Spectrum Needs

Reinventing the spectrum authorization process

NTIA began a program in 1993 to develop an automated Federal spectrum management system to provide a standardized, automated method for Federal agencies to submit applications for spectrum support, select spectrum that is interference free, and validate that the spectrum requested is within the rules and regulations governing spectrum authorization. This system will allow NTIA to make the spectrum process more efficient and responsive, more accessible and less bureaucratic. NTIA introduced the Joint Spectrum Management System for windows (JSMS) in March 1997. Improvements will continue on JSMS to make it more effective and to make use of spectrum more efficient. JSMS is providing tools to spectrum managers in the field so that they can manage their own use of the spectrum, use the spectrum more efficiently, and more rapidly obtain spectrum to meet their needs.

Meeting Spectrum Needs for Future Public Safety Use

One of the most pressing Federal spectrum needs is that of public safety. Under Congressional leadership, NTIA and the FCC established the Public Safety Wireless Advisory Committee (PSWAC) in 1995. The Committee was composed of appointees from Federal, State, and local governments and private sector public safety organizations. The goals were to evaluate the wireless communications needs of these public safety agencies through the year 2010 and recommend possible solutions to the lack of available spectrum and interoperability problems. In September 1996, PSWAC submitted a report outlining public safety needs for additional spectrum, improved interoperability, more flexible licensing policies, and increased sharing of spectrum resources.

To meet the immediate and future needs of the public safety community, the Committee made the following observations and recommendations:

*** More spectrum is required. 2.5 MHz of spectrum should be identified for interoperability among Federal, State, and local public safety agencies from new or existing allocations as soon as possible. In the short term (within 5 years), approximately 25 MHz of new Public Safety allocations are needed, and over the next 15 years, as much as an additional 70 MHz of spectrum will be required.**

*** Improved interoperability is required. Today's interoperability needs can be addressed by establishing bands of frequencies for interoperability purposes, encouraging the development and use of shared systems, and building gateways between technically incompatible systems.**

*** More flexible licensing policies are desirable. Policies should encourage the use of the most spectrally efficient approaches while remaining technology neutral.**

*** More sharing and joint use should be encouraged. Some states and regions are experiencing considerable success in pooling spectral and other resources.**

*** Commercial services should be used wherever possible.**

*** Consultative processes should be established.**

*** Funding limitations remain an obstacle. At a time when government budgets are tight, alternative methods of funding future public safety communications systems must be identified. To address this issue, NTIA recommends adoption of our proposed reimbursement language.**

NTIA and the FCC are evaluating these recommendations and using other mechanisms to address the longer range recommendations. The President's FY 1998 budget proposes that four channels between existing broadcast channels 60 to 69 be allocated for public safety use. Six other channels will be auctioned by the FCC for other services. NTIA advocated allocation of these channels for public safety in an FCC proceeding that was examining potential uses for these channels.

NTIA is continuing to ensure that spectrum is available to meet the needs of the Federal Government and the public safety community in providing the public with law enforcement, national security, safe airways, disaster and environmental control, and safe living conditions. At the same time, NTIA is continuing to work to make the Federal Government's use of the spectrum more effective and efficient.

Promoting Competition and Opening Markets

NTIA actively promotes competition and open markets through domestic and international telecommunications policy development and advocacy, efficient spectrum management and reallocation of spectrum to private sector users, and telecommunications research. NTIA continues to work diligently to eliminate barriers to competition in the telecommunications

industry while protecting consumers. NTIA is advocating policies that spur innovation, encourage competition, and create jobs. NTIA is leading Administration efforts to provide rural, inner city, and underserved areas with access to educational opportunities, job training, and better medical care through advanced telecommunications services. NTIA is also performing cutting-edge research and analysis, such as finding ways to use higher frequency spectrum for new wireless services, and developing positions on a wide array of policy issues, such as universal service, spectrum auctions, and privacy on electronic networks.

Domestic Policy Issues

The goal of NTIA's domestic policy activities, which are part of NTIA's role as principal adviser to the President on telecommunications and information policies, is to enhance the public interest by generating, articulating, and advocating creative and influential policies and programs in the telecommunications and information sectors that enhance service competition, consumer welfare, and economic and social opportunities for all, and that remove impediments to the growth and vitality of these sectors.

NTIA's domestic policy recommendations have made substantial contributions to major governmental actions regarding broadcasting, cable, and telephone issues. The range of domestic telecommunications policy issues is broad and increasingly complex, reflecting the rapid changes in telecommunications technology, its application to the marketplace, and a broadening of the number and types of players. Issues include traditional common carrier telephony and cable television, as well as their convergence with computer services; the improvement of radio spectrum management (e.g., spectrum auctions); rules limiting mass media (radio - television) ownership; development of advanced television (ATV); implications of Internet growth; and content oriented issues such as privacy, hate crimes, or free speech, using telecommunications. For example, NTIA issued a report recommending a voluntary framework to ensure privacy with regard to telecommunications-related personal information. NTIA is now promoting means of achieving industry self-regulation and will be issuing a report on self-regulation and privacy in the near future.

NTIA made substantial contributions to the recently enacted Telecommunications Act of 1996. Many of the Act's provisions require FCC rulemakings for implementation, and NTIA, on behalf of the Administration, is working hard to ensure that the spirit and letter of the law is reflected in the requirements. We have filed formal comments on important issues, including interconnection and universal service. For example, as the definition of universal service is updated for the next century, NTIA is working to ensure that the Administration's priorities for connecting rural Americans to advanced networks and ensuring that telecommunications rates for services are comparable between rural and urban areas.

Apart from the Telecommunications Act, NTIA intends to articulate policies on a host of issues surrounding new, better and lower priced communications products and services, in order to increase the availability of affordable access to telecommunications and information services for all Americans and to encourage technology neutral domestic telecommunications and mass media development. NTIA will suggest ways to encourage the availability of these services to rural and underserved communities and will identify impediments to the growth and vitality of industry sectors. Foremost among these issues are those related to the growth of the Internet, the transition to digital television, and the widespread availability of wireless communications devices.

Moreover, NTIA will continue to examine policies that affect the ability of existing and future U.S. mass media services to promote the free flow of information and diversity of voices in electronic media. NTIA will participate in the effort to reform the regulation of existing mass media services, thereby enabling them to be effective competitors in an increasingly competitive video marketplace without limiting the number of voices available to the American public.

NTIA's examination of the mass media extends to new services, such as the upcoming transition to advanced television. Many issues remain to be resolved, particularly concerning the public interest

obligations of broadcasters in the new digital era. As Secretariat to the President's Committee on the Public Interest Obligations for Digital Television Broadcasters, NTIA will facilitate the examination of these important issues by private sector representatives.

NTIA will also continue to promote reform of the current system of managing and licensing private sector spectrum use, so that the process of spectrum allocation and assignment is efficient and fair, so that licensees may offer all kinds of voice and data services to the public. A fully developed wireless communications industry is an essential element to the development of competition in such markets as local phone service. NTIA has a role in developing wireless and spectrum policies. It was instrumental in the development of spectrum auctions and the use of bidding for licenses by computer, which compared to alternative assignment mechanisms available to the FCC, are a transparent mechanism that can award licensees to the parties that value them most highly and within a relatively short period of time -- not to mention while capturing a portion of the value of the spectrum for the American public. NTIA will continue to use its expertise to help refine that system, while also exploring the many other issues associated with the development of wireless voice and data systems.

NTIA will also continue to search for ways to enhance minority participation in telecommunications. Specific efforts that will continue include: (1) directing ComTrain, a training program to assist new minority commercial broadcast owners; (2) disseminating information and conducting seminars on ownership opportunities in telecommunications (for example, NTIA recently published a report identifying financial barriers faced by minority entrepreneurs and small businesses seeking to compete in the telecommunications industries and suggesting possible financing strategies); (3) developing and commenting on legislative and regulatory proposals that promote minority ownership in telecommunications; (4) working with industry, and other government agencies on initiatives to increase public/private sector assistance to minorities interested in ownership of telecommunications businesses and services; (5) promoting TELECAP, a study of capital development strategies for minority investment in telecommunications; and (6) tracking minority ownership in broadcasting. NTIA will also continue to analyze policies that affect minority participation in telecommunications.

NTIA's domestic policy efforts not only use technical and policy expertise to ensure that the public benefits from any changes in telecommunications policies and laws. In addition, the Administration's telecommunications and information policies developed and advocated by NTIA for domestic markets serve as an important model for international efforts to open global markets to competition. This liberalization, in turn, provides U.S. firms with greater opportunities to be successful participants in those markets.

International Policy Issues

NTIA is playing a leading role in promoting and building international consensus for the core principles underlying the development of the Global Information Infrastructure (GII). The adoption of these key principles by the world community is helping to increase competition and open markets for U.S. companies.

Our nation's economic success depends on our being able to compete around the world. We cannot do so if other countries continue to protect their monopoly telecommunications providers, but we will be tremendously successful if they open their markets to competition.

In my capacity as Assistant Secretary for Communications and Information, I have spent nearly four years working to convince other countries to dramatically change the way they operate their telecommunications networks to encourage more openness, which offers an opportunity for U.S. businesses to compete. I am spending a great deal of time with my counterparts around the world discussing, debating, and persuading them of the benefits of competition and the technical and policy changes necessary to get there.

Every nation in which I have participated in meetings has a ministerial level officer for

telecommunications. In most countries, the government owns the telecommunications system. My official government position enables me to discuss with officials from these governments the fundamental structural, technical, and policy changes that will be necessary to their telecommunications infrastructure and help bring about a competitive global marketplace in telecommunications.

NTIA's efforts as a strong advocate for competitive markets globally in bilateral, multilateral and regional negotiations have been successful. For example, last year NTIA coordinated the U.S. Government's participation in the Information Society and Development Conference (ISAD) in South Africa. This Ministerial Conference continued to build on the success of the G-7 Ministerial Conference that took place in February 1995 in Brussels, Belgium, which resulted in an agreement among seven of the world's economic leaders on principles necessary for the development of a global information infrastructure. The ISAD Conference expanded the consensus reached at the G-7 Ministerial on the pro-competitive policies necessary for building the global information society.

NTIA also cosponsored, with the Telecommunications Industry Association, the third Latin American Telecommunications Summit (LATS) in Mexico last fall and played a key role in promoting U.S. interests at the Asia Pacific Economic Cooperation (APEC) Telecommunications and Information Ministerial meeting last fall. NTIA was an active participant in negotiating the World Trade Organization (WTO) agreement on basic telecommunications, which will open nearly all of the world's top telecommunications markets to competition. NTIA is also playing a key role in implementing the WTO agreement. In addition, NTIA is playing a central role in telecommunications talks focused on select foreign countries in Europe, Latin America, Asia, and Africa with significant market opportunities for U.S. providers of telecommunications goods and services.

NTIA is continuing its active advocacy for reform and restructuring within the Intelsat and Inmarsat global satellite organizations. Introducing market incentives enhances competitive opportunities for a large number of U.S. firms seeking fair market access to provide services, and that generally use U.S. equipment providers.

In addition, NTIA is working with other Federal agencies and industry on several other critical international policy matters, including but not limited to international privacy, electronic commerce, and accounting rate reform. For example, NTIA is playing a lead role in the Administration's efforts to address a European Union privacy directive that could significantly affect transborder data flows. We are also making significant contributions to the Administration's working group on electronic commerce. In addition, NTIA's efforts to advocate pro-competitive accounting rate reform include participation in meetings of multilateral organizations and bilateral meetings with individual foreign governments, as well as participating in regulatory proceedings.

It is also important to mention NTIA's work in the standards arena. NTIA is continuing to promote high quality U.S. standards for data, voice and video communications in international fora. Through its role in international standards-setting, NTIA is promoting U.S. business entry into foreign markets.

International Spectrum Allocation

I would like to note that the United States is forcefully and in many cases, successfully, promoting the concept of independent regulation of private sector telecommunications around the world. We view the independence of the FCC as an essential pillar of our competitive communications marketplace. We have tried very hard to convince other governments to create independent regulatory authorities governing private use of the spectrum. Such a separation provides U.S. companies operating overseas with the level playing field they need to compete for licenses and permits. In those countries where commercial spectrum allocation decisions are combined with government spectrum allocation decisions in one agency or department, we see a very negative

affect on the openness and competitive fairness of the marketplace.

Internationally, NTIA prepares and coordinates Federal Government proposals for the International Telecommunication Union World Radio Conferences and related technical meetings. Major issues include spectrum management reform, negotiations regarding the integration and interference protection for satellite systems that will support the evolving Global Navigation Satellite system for air traffic control, and addressing the public safety spectrum requirements through the year 2010 through the Public Safety Wireless Advisory Committee.

NTIA's work in the international arena also involves securing radio spectrum for new, emerging telecommunications technologies. NTIA is working through international organizations to make sure that there is enough space set aside for new innovative satellite services such as Globalstar, Iridium, Teledesic, and Odyssey. This is the next generation of communications technology, promising consumers more choice and lower prices, while providing U.S. companies with leadership positions in the development and implementation of such systems.

Mr. Chairman, these new systems will not be developed unless we secure spectrum and coordination agreements for their satellites, and that requires agreements with other governments. In addition, in these international arenas, NTIA secures necessary spectrum for important government uses including those affecting national security and public safety. The need to coordinate with and obtain approval from other governments will become even more important as we move into an era with greater reliance on international communications and satellite-based systems.

Telecommunications Research

NTIA's research laboratory in Boulder, Colorado, the Institute for Telecommunication Sciences (ITS), conducts applied research and engineering to develop new spectrum and networking technologies and to foster improved spectrum management techniques. For example, research on advanced broadband networks transmission standards, such as Integrated Services Digital Networks, as well as pioneering research in radio frequency characteristics, directly assist U.S. companies competing domestically and in international markets in their efforts to introduce and implement advanced telecommunications products and services. Long term research at ITS includes experimentation to find ways to use higher frequency spectrum that is not now viable for many services, thus increasing the total amount of useable spectrum as well as work to develop measurement methods to more effectively assess the performance of data, audio, video and multimedia communication services.

Some have suggested privatization of NTIA's research laboratory. This would be a serious mistake. This is not the first time that the issue of privatization of the Institute has been examined, resulting in a conclusion that the Institute performs critical public functions and should remain part of the Federal Government. Over the years, there have been various external and internal reviews of NTIA's laboratory, focused on the appropriateness of our telecommunications research and engineering work relative to that which could or should be provided by the private sector. In all these reviews, there emerges a common theme -- that there is a compelling need for a centralized Federal telecommunications laboratory that serves the public interest by undertaking uniquely governmental research functions in a cost-effective fashion.

These functions cut across Federal, industry, and national needs and cannot be maintained or nurtured in a privatized environment where economic incentive, not the public interest, is paramount. Indeed, the private sector is profit-motivated, and rightly seeks to maximize wealth for owners. In fact, most companies, because of competition, are forced to focus their research on the highest-payoff options, to realize near-term return on investment. A privatized Institute would thus not be able to invest in the kind of essential telecommunications research that today provides broad, cost-effective, benefits to government, industry, and the public at large. If ITS were privatize, the following benefits are amount those the Nation can expect to lose in due time:

Radio propagation characteristics database

ITS maintains the Nation's database of radio propagation characteristics across the entire radio spectrum, which are highly dependent upon natural and man-made environmental parameters, along with the associated computer-based radio system performance predictions based upon these data. This database and related information is peer-reviewed and accepted by both national and international individuals and organizations as a definitive resource used (a) for developing International Telecommunication Union radio agreements and standards, (b) to develop U.S. positions for International Radio Conferences, (c) by domestic standards developing organizations (e.g., ANSI-accredited T-1 Telecommunication Standardization Committee or the TIA) as definitive models in preparing radio interface standards and spectrum sharing agreements, (d) by NTIA and the FCC in national spectrum management activities, and (e) by a broad community of private sector and government engineers for planning, designing, and implementing radio telecommunication systems. This database facilitates work on advances in telecommunications technology -- such as personal communications services and high definition television -- to benefit all citizens.

A private organization would be unlikely to have the same image of historical reputation, integrity, and objectivity in maintaining the database, and is unlikely to allow openness of use and sharing of this information equally with all.

Unbiased review of telecommunications systems

ITS currently has the neutral and impartial ability to advise many government agencies with regard to telecommunication systems planning and implementation to provide cost-effective results dedicated to their missions. For example, ITS recently provided advice on a national plan for upgrading telecommunications requirements in National Forests, which will provide for services such as public safety, fire protection and fighting, and forest management; planning for the Department of Transportion in developing a national Intelligent Transportation System to aid in traffic control and guidance, and general public transportation safety; consultation to the Federal Railway Administration concerning telecommunication requirements for rail safety and positive train control systems; for the Federal Aviation Administration, evaluating and designing augmented Global Positioning System capabilities for air traffic control as well as ship navigation and other uses; and, for the National Telecommunications System, carrying out studies to assure interoperability and continuity of operations, and development of Federal standards to assure the systems' ability to operate in national emergencies.

These agencies have all indicated that they do not know where they could turn to get such neutral, competent advice if ITS did not exist.

Centralized Federal research

ITS provides select technological contributions and knowledge through a centralized Federal telecommunications research activity.

These contributions and knowledge have brought new concepts or capabilities useful to the telecommunications industry (some patented and moving into commercialization) and provided neutral leadership and coordination in domestic and international standards organizations, which help to provide a level playing field for and obtain desired objectives for U.S. industry in international marketplaces.

Some examples are: the development and industry acceptance of objective performance measurement techniques for data, video, digital audio, and multimedia information systems. U.S. industry found it difficult to reach successful agreements in these areas because of protecting information valuable to them in a competitive environment but, with the new concepts provided by ITS were able to rather quickly contribute to and agree upon standard methods, in both international and domestic fora, based upon the methods and data provided by ITS. Leadership

and coordination roles that are provided by ITS staff in domestic and international fora (which are desired and requested by U.S. industry) provide an effective way of working out agreement between highly competitive companies and creating a forceful U.S. position to be carried forward.

Promoting Universal Access and Affordable Telecommunications Services for All Americans

Ensuring Access for the Underserved

NTIA works to ensure access for all Americans to communications and information networks. On the policy front, NTIA has been leading efforts to redefine universal service to telecommunications services to ensure that rural Americans have access to the same new services being offered in urban and suburban America. Over the past 40 years, rural Americans have gone from about 60 percent having basic phone service to 94 percent today. This is due in large part to our commitment as a nation to universal service policies. In the 1995 report, "Falling Through the Net: A Survey of the `Have Nots' in Rural and Urban America", NTIA documented the relatively low penetration of telephone connections and computer and modem ownership in rural and inner city communities.

In a 1996 filing with the FCC, we recommended that the Commission set a national subscribership goal for the year 2000 to ensure that the telephone penetration level for all segments of society will be at least equal to the national average existing as of November 1996. In addition, we believe that schools, libraries, and other "community access centers" should be expeditiously connected to the NII as an integral part of making access to advanced telecommunications and information services more readily available. As the Telecommunications Act of 1996 continues to be implemented, NTIA will continue to be a strong advocate for rural and underserved Americans, undertaking research, filing comments with the FCC, and participating in a variety of fora to ensure that these communities have access to these services, and the opportunities they provide, at reasonable rates.

For example, on behalf of the Departments of Commerce, Education, and Agriculture, NTIA filed the Administration's "education rate," or "e-rate" plan with the Federal-State Joint Board on Universal Service. The Joint Board adopted many Administration-recommended features in its own plan, such as a procurement approach that uses competitive bidding and special tiered discounts for economically disadvantaged schools or libraries.

In addition, as directed by the Telecommunications Act of 1996, NTIA, in conjunction with the Department of Health and Human Services, recently issued a *Report to the Congress on Telemedicine*. The report examines questions relating to patient safety, the efficacy and quality of telemedicine service providers, as well as other legal, medical and economic issues which might act as barriers, or help promote, the development and expansion of telemedicine. The report highlights how telemedicine can mean the difference between life and death when fast medical response time and specialty care are needed. In addition, the report illustrates the adaptability of telemedicine to isolated rural areas and urban centers.

NTIA has pursued universal access policies through many other means as well. Among other things, NTIA has held public field hearings throughout the nation on universal service, issued a notice of inquiry and subsequent report on the subject, holding an electronic "virtual" conference on the subject, and working on "Net Day" activities, in which volunteers are found to help wire schools that cannot afford professional information system installation.

Serving Rural and Underserved America

Children today need the best education in the world to be ready for the Information Age. As the President has clearly stated, it is important to prepare the country for the 21st Century, and in order to give our children the best education we must help them to harness the powerful forces of technology. Technology is going to be central to the new mission of schools in our country. Study after study is beginning to demonstrate that students who use technology learn better and learn differently from children who do not. Study after study is showing that there is a demand for

skilled workers in this country, for employees who understand how computers work. We have to train our children for the jobs they are going to be walking into when they finish school. NTIA's Telecommunications and Information Infrastructure Assistance Program (TIIAP) is helping bridge this gap for thousands of Americans.

TIIAP provides matching grants to schools, libraries, hospitals, State and local governments and other non-profit entities. Since its inception in 1994, TIIAP has awarded 277 grants in all 50 states, the District of Columbia and the U.S. Virgin Islands. Approximately $79 million in Federal grants have been matched by more than $133 million in non-Federal funds. In 1996 alone, TIIAP leveraged $18.6 million in Federal funds matched by $30 million in private, State and local funding and awarded 67 grants (from over 800 applicants) to projects in 42 states and the District of Columbia. TIIAP projects funded in previous years are providing innovations in education; helping create more responsive public institutions; enhancing economic development in rural and disadvantaged areas; and increasing access to health care. Almost 90 percent of the funding went to serve rural Americans or traditionally under served Americans living in urban areas.

For example, in Sacramento, California, the NET at Two Rivers is using a TIIAP grant to establish a 15-county regional computer network. The network will include 50 public access sites in schools, community center, libraries and resource centers. Citizens will benefit by using the free, on-line literacy instructional materials in a on-on-one coaching situation providing Internet skills. The training sessions and computer tutorials are tailored to people looking for new jobs or re-training. The project demonstrates how information infrastructure can level the playing field by bringing new educational opportunities to a traditionally under served population.

TIIAP provided a grant to the Borough of Munhall in Pennsylvania to work with seven police departments to ensure the safety of their citizens by striving to have a more visible police presence. The seven police agencies are using information technology to share mug shots, check aliases, note identifying characteristics, and communicate other crucial information that might not otherwise find its way across jurisdictional boundaries. In a recent incident; the Munhall Police Chief credits the TIIAP-supported system with helping quickly identify a suspect in an apparent gang warfare-related murder of a two-year-old child. In January of this year, a family had stopped for gas when a group of individuals began shooting at one another. The child, strapped in a car seat, was fatally wounded in the crossfire. Police were able to identify the alleged assailant from eyewitnesses. Using the TIIAP-supported information system, they learned his aliases, and retrieved a mug shot, which they circulated to hundreds of police. Within a week, the shooter was apprehended.

The City of Crete, Nebraska, received funding to keep this small rural town a viable community. The grant funds the purchase of computers to build an access center where adults can be taught computer skills, find jobs, and build the town's economy. The project has an integrated family resource center that houses organizations such as Head Start, day care, and health services. Plans are underway for the human services clients to do computer outsource work. The family resource center will also begin to provide information technology training for their clients. The project also focuses on having children in school teach senior citizens how to use computers and the Internet at home. This grant explores inter-generational learning as a way to keep the community together. In the long term, that sense of community may determine whether young adults leave the town to seek better opportunities.

The State of Colorado and six partners, including the Colorado Rural Telecommunications Project, the Colorado Department of Agriculture, the U.S. Environmental Protection Agency, the Yampa Valley Economic Development Council and the Adams State College have developed a database that summarizes the potential of information on land use data, such as natural resources, wildlife, soil, and infrastructure. Prior to this project, the information was not shared across agencies, and sat relatively unused because a special software package was needed to manipulate the information. This made analysis difficult, if not impossible. With computer technology, it is now possible for any user on the Internet to assess tradeoffs on land use, and reduce conflict concerning land management.

The New York State Office for the Aging (SOFA) in Albany, New York, is developing the Aging Services Network (ASNet), to demonstrate new ways of applying computing, telecommunications, and information infrastructure to the human services industry. Over $17 billion in Medicaid expenditures are made each year in New York State alone. Of that amount, over $5 billion is spent annually on long term care for the elderly. The resources available to cover these costs are already unable to keep pace and, given the demographic projections, dramatic changes in how our society responds to the needs of the elderly seem inevitable. The ASNet project is using information systems to address the practical problems of information management and delivery of services to the elderly. The project focuses on reducing costs while increasing the quality and coordination of services so that provider agencies can meet the increasing demands of this growing population.

The White Mountain Apache Tribe in Whiteriver, Arizona, is using a TIIAP grant to gain access to the Internet for the first time. There are few areas in the country that have the same geographic isolation and none that combine that isolation with the high incidence of economic deprivation that is found on the Fort Apache Indian Reservation. Once the project is underway, it will provide community-wide networking to assist in economic development, lifelong learning, and improved delivery of health services and information to the Tribe and residents of the region. The Tribe is working with the Arizona Public Services Corporation and the local Internet Service Provider to secure a toll-free local connection to the Internet. It is important to note that more and more tribes are looking to NTIA for assistance with access to telecommunications. NTIA's longstanding history of promoting tribal access places NTIA in a unique position -- with adequate resources -- to meet the telecommunications needs of tribes.

At-risk students are earning high school credits in rural West Virginia thanks to a TIIAP grant using video teleconferencing. The award provides funds to connect advanced computers in as many as 20 homes. Teachers from the Regional Alternative Learning Center will be able to work with students who are unable to attend school. The Regional Alternative Learning Center will utilize a two-way, interactive video telecommunications system to provide home-based instruction to high school juniors and seniors who are unable to attend a traditional school environment. The project grew out of the need for schools to comply with new state legislation to provide service to students who are unable to attend school for disciplinary reasons. The project will provide instructional and counseling services for pregnant teens and other students who are unable to attend school for medical reasons.

TIIAP provides critical seed money, without which many innovative and vital applications would not take root and grow in these communities. In every project that NTIA has funded, TIIAP has brought together members of the community to form new partnerships. Without such partnerships, individual players would be unable to build networks or purchase computer and video equipment in order to train teachers, students, doctors, nurses, and librarians. While NTIA provides seed money, the vision of each of these projects springs up from local communities. The projects and their goals are what local residents feel they need, not what the Federal Government thinks is good for them.

Last year, NTIA released the "Lessons Learned from TIIAP" report, which presents the initial experiences of the projects funded in 1994 and 1995. "Lessons Learned" was the product of NTIA discussions with focus groups of current grantees to learn about their experiences and share their lessons. The report offers a snapshot look at the community impacts of TIIAP projects, and presents examples of how specific projects are using advanced telecommunications and information technologies to provide better services, to strengthen community ties, and to provide increased access to information for thousands of Americans.

This year, TIIAP staff will begin a formal, independent evaluation on the effects of the first few years of grants and will develop a sophisticated reporting system that will allow TIIAP to evaluate grant impacts on an ongoing basis. Now that the program is in its fourth year, NTIA will be increasing the emphasis on evaluation and dissemination for the grants that have been awarded.

For FY 1997, TIIAP has received 922 applications seeking over $350 million in grant funds. These applications represent more than fifteen times what NTIA can fund, making TIIAP one of the most competitive Federal grant programs. NTIA has held a series of regional Outreach Workshops to discuss the Program, and in so doing discuss the program funding priorities and application requirements. These workshops have been well attended and well received. The workshops provide a key opportunity for interested parties to understand the TIIAP goals and process and meet representatives of other organizations interested in the Program.

BUDGET AND OPERATIONS MATTERS

Fiscal Year 1998 Budget Request

NTIA is seeking $54,074,000 for Fiscal Year 1998 for salaries and expenses (S&E) and agency programs. For S&E, NTIA seeks $18,074,000. This includes an increase to conduct work necessary for the United States to host the International Telecommunication Union Plenipotentiary Conference in Minnesota in 1998. NTIA seeks $36,000,000 to fund TIIAP.

Operating Framework

Beginning in 1990, Congress passed several major pieces of legislation governing the operations and management of Federal departments and agencies, specifically:

-- the Chief Financial Officers Act of 1990, as amended by the Government Management Reform Act of 1994;

-- the Government Performance and Results Act of 1993; and

-- the Clinger-Cohen Act of 1996.

The Chief Financial Officers Act requires Federal departments and agencies to prepare annual financial statements and have those statements audited in accordance with generally accepted auditing standards. The Department of Commerce is committed to improving financial information and financial management capabilities. NTIA was one of the first Commerce agencies to receive an unqualified opinion on its financial statements for 1993, and continued to receive unqualified opinions on the 1994, 1995 and 1996 statements. In 1995 and 1996, the audits conducted were formal full scope audits. The unqualified opinion confirms that NTIA's financial statements fairly present the financial position of the agency.

Under the Government Performance and Results Act (GPRA), NTIA has initiated a comprehensive strategic planning process, which will provide a framework for our employees and stakeholders to work together to define agency priorities and establish performance measures. NTIA managers have embraced the planning process as a way to improve our management and maximize the return to the public from the agency resources available. An NTIA team, including all senior managers and several staff members from across the agency, have been meeting since January 1997 to define the strategic plan elements. At this point, the formal agency plan is being drafted and individual office heads are working with their staff to define appropriate performance measurements for the agency's goals. NTIA expects to submit the initial plan to the Department in June and work with the Department and the Congress on refining the NTIA strategic plan over the summer.

NTIA is also working closely with the Department to properly implement the philosophy of the Clinger-Cohen Act, which will improve our management of the information technology investments necessary to enable us to fulfil our missions. The agency strategic plan will be directly supported by strategic and operational information technology plans. A process is being designed to ensure that all major information technology investments are evaluated in terms of the overall value to the organization.

CONCLUSION

Telecommunications and information issues are dynamic, multi-disciplinary, and complex. NTIA is the only Executive Branch agency focused exclusively on telecommunications and information. Other agencies, such as the Department of State, International Trade Administration, and the U.S. Trade Representative, depend on and use NTIA's telecommunications expertise to support the accomplishment of their missions. The agency's high quality reputation is built on a foundation that maximizes the synergistic benefits of telecommunications experts in domestic policy, international policy, spectrum management, spectrum planning, spectrum analysis, radio wave characteristics, voice and video quality assessment, national and international standards development, and International Telecommunication Union activities, as well as practical applications through demonstration, pilot and other community projects. Many countries look to the United States as an example of how to support and nurture a viable, competitive, rich telecommunications and information industry. The Nation needs the expertise of NTIA to continue its role as a leader in global telecommunications and remain competitive worldwide.

With less than 300 employees and limited resources, NTIA provides a significant return on the taxpayers' investment. Over the last year, NTIA's cost-cutting and streamlining of operations have had a dramatic impact on the agency's ability to retain key policy and engineering staff needed to deal with the sweeping technological changes in the telecommunications and information sectors. In July 1994, NTIA had 361 employees. Today, we have 278 -- a loss of 83 people, a staff cut of almost 25 percent. Unfortunately, we have lost many first-rate technology and computer experts, as well as engineers from our spectrum management shop and our research lab, both of which contribute immensely to the development of more efficient, technologically advanced telecommunications technologies. These cuts have had an impact. NTIA's leadership and expertise in the dynamic telecommunications and information arena will be greatly compromised without adequate resources.

NTIA serves a vital role. All organizations should be subject to continued scrutiny to ensure that they are operating efficiently and effectively. Unnecessary functions and activities should be eliminated and privatization should be utilized where appropriate. But we should not -- must not -- eliminate programs and responsibilities that are critical to our economic future. NTIA works very hard to spur innovation and job creation and promote a competitive marketplace that will result in more choices and lower prices. The American people are being well-served by NTIA. As NTIA Assistant Secretary for almost four years now, I continue to be proud of what NTIA is accomplishing and the differences we have made in the lives of all Americans.

In short, NTIA is in a unique position to influence significantly the ability of U.S. companies to compete in the global marketplace of the 21st century and to enhance the benefits to the public of a strong, competitive telecommunications industry and infrastructure. We would appreciate the support of this Committee so that NTIA may continue to achieve these important ends, and we look forward to working with you in the future.

"Refocusing Our Youth: From High Tops to High-Tech"

National Urban League and the National Leadership Council on Civil Rights
Urban Technology Summit

Remarks by Larry Irving
Assistant Secretary for Communications and Information
National Telecommunications and Information Administration
U.S. Department of Commerce
June 26, 1998

[as prepared]

Good morning. I'm delighted to be here to talk about a subject that is particularly important to me: the impact of communications technology in our urban communities. I want to commend the National Urban League for holding this conference on this topic - one that should be of paramount concern to all of us. In particular, I'd like to thank Hugh Price and Keith Fulton for their efforts in launching this conference. For those of you who don't know, Keith is already practicing what we are preaching today. His Technology Access Centers make information technology and services available to four underserved communities. I'd also like to thank Wendy Petties of the Urban League, not only for her efforts in this conference, but also for her excellent work moderating a panel at the White House Content Conference in California two weeks ago.

No issue is more important than ensuring that our communities, particularly our children, obtain access to new technologies and become technologically literate. Our nation's problems can't and won't be solved entirely by new technology, but these new technologies are tools that we can use to make significant changes in our communities. President Clinton and Vice President Gore have made it a national priority to provide every citizen access to computers so that they can obtain the skills needed to succeed in our increasingly technological economy. Many of you probably remember that Ron Brown also challenged us, five years ago, to connect our urban communities to the "information superhighway" through his "Get Connected" program. The time is long overdue for us to meet Ron Brown's challenge.

The Technological Revolution

It is vital that our schools and communities recognize the importance of technological training and literacy. As we enter the 21st century, we are increasingly becoming a technological society. Remember when we thought ATM machines were a big deal? Now, more and more of us are turning to Internet, not only to send e-mail, but to do our banking, pay bills, or make purchases. According to a report released by the Department of Commerce in April, traffic on the Internet is doubling every 100 days. In 1997, 2.7 trillion e-mails were sent globally. In 1996, only 34% of the Fortune 500 companies had World Wide Web sites; last year, 80% had web sites. Dell Computers is now selling $5 million in computers over the Web every day.

So it shouldn't surprise anyone that an increasing number of jobs require skills in information technology - skills that many Americans lack. The Bureau of Labor Statistics anticipates that, between 1996 and 2006, the United States will require more than 1.3 million computer scientists and engineers, systems analysts, and computer programmers. These are jobs that pay, on average, $46,000 per year, compared to $29,000 per year for traditional manufacturing jobs. And who knows what technical skills will be required thirty or forty years down the road? I have heard that 80% of all jobs that will exist in the next century don't exist today. We will be using technologies that we have not yet fathomed, and our children will need the skills to adapt to those new technologies as well.

Currently, the number of jobs in the information technology sector is greatly outpacing the number of

skilled workers in this area. At least 10% of the jobs in the high-tech industry (or 346,000) remain unfilled. The high-tech industry attributes this labor shortage to a lack of skilled labor. Software companies have said that the recruitment of skilled workers now tops their list of business concerns. The shortage of skilled labor has reached the point that high-tech companies are now lobbying Congress to increase the number of workers that can be hired from foreign countries. These companies claim that they need to rely on foreign expertise because the expertise is lacking at home.

Our challenge is to educate our students and communities so that they can successfully participate in this high-tech economy. Other countries recognize the value of computer training to their children's education and their economic growth. In China, for example, parents typically spend a year's salary to buy a computer for their child.

Yet in this country, a significant portion of our children - particularly those in low-income and minority communities - simply are not receiving the training they need to prepare them for the high-tech future. The most recent data from the National Center for Education Statistics showed that wealthy schools were 2 ½ times more likely to have Internet access in classrooms than poor schools -- 36% vs. 14%. And we all know that wealthier children are more likely to have access to computers at home, as well.

This "digital divide" between the information "haves" and "have nots" will stunt the development of our urban communities, if we let it continue. Our inner cities have the highest unemployment rates in the nation. Meantime, children from low-income, urban neighborhoods are effectively shut out from high-tech jobs, which pay, on average, 73% more than the average private sector job. Ideally, our inner city youth would have an equal shot at becoming new Silicon Valley millionaires. Yet a very small fraction of these new computer millionaires are African-American or Latino.

The Administration's Efforts to Bridge the Digital Divide

The Clinton Administration has launched several programs to reduce the technology gap between our affluent and low-income communities. Two years ago, in his State of the Union Address, President Clinton challenged the country to connect every classroom by year 2000. The Administration worked hard to ensure that the 1996 Telecommunications Act included discounts for schools and libraries that were purchasing telecommunications services, Internet access, and classroom connections. Although this program has come under recent challenge, particularly on the Hill, the Administration has continued to support the need for a discounted "education rate" - or e-rate - for schools and libraries.

The Administration, through NTIA, also initiated a demonstration program, providing grants to non-profit and public entities that are using electronic services in innovative, and socially useful, ways. The Telecommunications and Information Infrastructure Assistance Program (TIIAP) has funded 332 projects in all fifty states, including projects assisting low-income neighborhoods in getting access to on-line health care information and to job bank databases. Unfortunately, Congress is now threatening to cut the level of funding for TIIAP, despite the program's success.

Finally, the Administration has also surveyed computer use throughout America's communities to determine the extent of the "digital divide." The 1995 White Paper, entitled "Falling Through the Net: A Survey of the 'Have Nots' in Rural and Urban America," determined that information "have nots" are disproportionately found in the country's urban and rural areas. Those statistics are now being updated, and a new survey will be released later this year.

These efforts, though they serve as significant models, are but a drop in the bucket in terms of what we need to do to connect our communities. We must gather more information on access to technologies, and we all need to do more to ensure that our communities receive the training and access to information services that they need.

The Straight-A Challenge

Today, I challenge all of you here to assist in this process. Your organizations can play a critical role in motivating our communities and our youth to understand the importance of becoming technologically literate and to make them feel comfortable with information technology. Your organizations are also in the best position to find the resources to purchase computers and improve informational services in your communities. Finally, you can think about ways to train our teachers and students so that they can master the skills they need.

Our efforts are needed in at least three areas: what I call "access," "aptitude," and "attitude." It's a triple-A plan, and we need to begin work in each of these areas immediately if our students are going to win straight As in technological literacy. I challenge each of your organizations to take meaningful steps in these areas.

Access. As I've discussed, many of our communities and students lack access to new technologies. We need more information about this technology gap.

For example, we need more information on whether computers or laptops are available at the schools, community colleges, and universities in your communities. Many universities have a wealth of technology available to their students. Some universities, such as Duke, Stanford, the University of North Carolina, and others, even require that students bring a PC with them when they enroll. NTIA plans to conduct a study of the information technology available in Historically Black Colleges and Universities, Hispanic-serving institutions, tribally-controlled community colleges, and other institutions of higher education. To conduct such a study, however, we need resources and assistance from organizations like yours.

We also need to think of creative measures to bring computers and information services to our urban communities. One way is through community or neighborhood centers. As valuable as schools and libraries are, community centers reach segments of the population -- such as the unemployed or elderly -- that might not use a school or library. Community centers are also natural places for after-school programs that can foster creative learning opportunities.

NTIA's TIIAP program has had particular success in serving urban neighborhoods through neighborhood computer centers.

One program we funded is "Plugged In," a program in East Palo Alto, California, which operates a community access center with computers and Internet access. Students can drop in after school to take computer training courses or use Internet. The students have now developed "Plugged In Enterprises," a program in which the kids are operating their own computer services businesses by producing World Wide Web pages for local businesses.

Another program is the National Urban League's Technology Access Center project, which is making information technology available to community organizations in Baltimore, Binghamton, Roxbury, and Newark. Each center uses computers to assist neighborhood residents with literacy training, preparing for the GED, and employment searches.

The York Community Asset Project, another TIIAP grantee, provides a central database for residents in one of York's most economically depressed neighborhoods. The database allows residents to identify community assets, such as rental housing or nearby clinics. By consolidating information on one database, the community can also track its economic development.

As I mentioned before, Congress is now threatening to reduce TIIAP's funding. A letter I received this morning from the Interactive Media Management stresses why this program is invaluable and should not be cut.

"On behalf of the Metropolitan Area Advisory Committee of San Diego, I managed a community network that was funded by a TIIAP grant in 1996. We set up fifteen public access terminals in some of

San Diego's poorest neighborhoods, developed a multilingual training program, and taught hundreds of parents, students, small business owners and social service agency staff how to find and use the resources of Internet. There is no way these people would have access to this information without TIIAP - the current E-rate guidelines would not have provided for access in the high-traffic community centers . . . that we were able to serve. Every day we saw examples of the impact that information could have on people's lives; parents researching healthcare information for disabled children, students finding scholarships through after-school programs, and entrepreneurs locating customers and suppliers."

I encourage you to make your communities and constituents aware of the projects funded by TIIAP, which are listed on NTIA's website at www.ntia.doc.gov. I also urge you to consider getting existing centers in your community, such as the YMCA, Boys & Girls Clubs, your church or athletic club, involved in providing technical training.

Additionally, we need to make sure that *all* of our schools, not just those in affluent suburban communities, obtain computer technology. One way to accomplish this is through a community "NetDay." "NetDays" have been described as "electronic barn-raisings," bringing together community volunteers and companies to wire neighborhood schools. There have been very few "NetDays," however, in inner city neighborhoods. I encourage you to bridge this gap by bringing your neighborhoods, schools, and businesses together to create "NetDays" in your own communities. You are in the best position to motivate the communities and explain why information technology is important. You are also in the best position to identify Internet service providers or other telecommunications companies that can dedicate equipment, training, and funding to these schools. Imagine what could be accomplished if every NAACP, Urban League and LaRaza local chapter, every fraternity and sorority, every professional organization, every church, and every bowling league adopted a high school and conducted a "NetDay."

There are numerous funding sources, including public funds, available for "NetDays." For example, the White House will be hosting a Community Empowerment Conference, along with the NextDay to NetDay Coalition, on July 14-16 in Washington, D.C. That conference will explore ways that empowerment zone block grants can be used to wire schools in Empowerment Zone/Enterprise Community (EZ/EC) communities. I encourage you to learn more about this conference, as well as explore other funding sources such as state vocational education programs.

Aptitude. As important as it is to provide the hardware, we also need to provide students training in using new technologies. We know what high-tech jobs will be available between now and 2006. The next step is to talk to the high-tech companies about skills our students should learn so they can be qualified to fill these jobs. Why are we talking about importing skilled workers, when we should be talking about imparting work skills?

We also need to get more high-tech companies involved in the training process. A number of computer companies are already operating computer training programs for teachers and students. Cisco Systems, for example, has teamed up with schools across the country and is now operating a "Network Academy" in every state. These academies train teachers in computer skills so that they can, in turn, teach their students how to use new technologies. Students who pass four levels of Cisco training are then eligible for jobs with Cisco Systems straight out of high school. I understand that, in the first pilot effort at the Thurgood Marshall School in California, a number of students finished the four-level program. One went to college; the others went to work with Cisco. Recently, Cisco Systems pledged that it would establish a Networking Academy in *every* empowerment zone that wants one.

While computer literacy is essential, we also need to train our students in high level math and science skills. According to the National Action Council for Minorities in Engineering, these skills are particularly lacking among minority students. Only 6 percent of blacks and Latinos take pre-calculus or physics in high school. We need to work with our schools to improve these levels of participation.

Some high-tech companies are also devoting resources to improve these long-term skills. Hewlett-Packard, for example, has committed $5 million to several universities to improve math and

science programs in local schools. Hewlett-Packard has also created an e-mail mentorship program, through which students can e-mail their math or science questions to a telementor. That program can use the expertise of volunteers without requiring much of their time or that they live nearby.

There are a variety of programs and resources such as these. If a program does not already exist in your community, I urge you to challenge businesses to consider creating one tailored to your community's needs.

We also need your help to engage our communities' best and brightest to become involved in the lives of our rising stars. I'm a real fan of mentoring and know that I wouldn't be where I am today without it. We should be thinking about internship opportunities, which can really make a difference to a student. Last night, I attended a reception for Media Careers for Minorities, a group that provides internships to minority students in television and radio. I met Lisa Setrini, a young woman from Miami, who learned how to design Web sites while she was an intern at MSNBC last year. This year, Lisa has started her own Internet company and already has two partners and three employees. We should consider creating a new program called "*New* Media Careers for Minorities" that would give more minority students similar kinds of internship experiences in the high-tech field.

Attitude. Finally, we need to make sure that our students and communities feel comfortable with new technologies and are aware of the importance of high-tech skills. As President Clinton said in his Commencement Address at M.I.T., "all students should feel as comfortable with a keyboard as a chalkboard; as comfortable with a laptop as a textbook." Bringing about this change may be the toughest task ahead of us.

The more contact our communities have with information technologies, the more likely they will feel competent using them. Meantime, we need to convince our communities and students that it is worth their time mastering computer skills. Most kids would rather grow up to be Michael Jordan than Bill Gates and spend time on a basketball court than in a computer room. In fact, earlier this year *Sports Illustrated* reported that 57% of all African-American males expect to be a pro-athlete, even though there are only 2,400 professional athletes in America. Compare that with the 22,000 Microsoft employees with stock options worth at least $1 million. We need to teach our kids that the chance of achieving fame and fortune is far less likely through the NBA than through technology. Silicon Valley, for example, produces 62 new millionaires every day. Our children should know as much about Paul Allen (the co-founder of Microsoft and owner of the Portland Trailblazers) as Paul Pierce, and as much about Michael Dell (whose net worth increases by at least $100 million a month) as Michael Jordan (who earns $100 million a year). And our children should have a shot -- better than a three-pointer -- at being one of those computer success stories.

I encourage you to be inventive in considering how to reach out to kids and communities. We might partner with ad agencies to promote industry leaders such as Kim Polese, the young founder of the high-profile start-up called "Marimba," or David Ellington, the founder of "NetNoir." We should invite these leaders to schools and community events to demonstrate the programs they have created. If our communities can spend as much time idolizing our high-tech stars, as they do our sports stars, then our children will finally believe that, they too, can achieve success in the high-tech world.

Conclusion. I've already outlined an action plan that I realize could consume all of our energy and time. We need to provide our communities *access* to new technologies, such as through community centers and by wiring our schools. We need to raise the *aptitude* of our students in using these technologies by finding training opportunities in computers, math, and science. And we need to change the *attitude* of our communities so that they realize that being technologically literate is as -- no, more -- important than having a good fade-away jumpshot.

Now, I want to add one more essential item. Today's Urban Technology Summit will likely generate numerous ideas from our community and government leaders. After these discussions, it would be especially useful if we could sit across the table from the leaders of the technology industry. I therefore

propose that the National Urban League convene another Urban Technology Summit that would include, not only the distinguished leaders here today, but also industry leaders such as Bill Gates, Larry Ellison, John Chambers, Michael Armstrong, Ivan Seidenberg, and other CEOs. Just as the Rainbow Coalition is making inroads into Wall Street, we need to make inroads into the world of telecommunications and information technology.

Let's sit down with the high-tech industry leaders and find out what they think our schools should be teaching so that students can become employees in their companies. Let's find out how to create a new class of entrepreneurs in our communities. Let's talk about getting minority businesses on line using this new technology and becoming e-commerce participants. And let's discuss how to use this technology to improve our society. Remember, this technology is not just about money and jobs, it can be used to uplift our communities and promote democratic and religious values. We need frank discussions with these leaders, and should not let much time escape before convening the next summit. This can, and should, be a win-win for all.

I'd like to close with a quote:

"There can be no gainsaying of the fact that a great revolution is taking place in the world today . . . that is, a technological revolution, with the impact of automation and cybernation . . . . Now, whenever anything new comes into history it brings with it new challenges and new opportunities. . . . [T]he geographical oneness of this age has come into being to a large extent through modern man's scientific ingenuity. Modern man through his scientific genius has been able to dwarf distance and place time in chains. . . . Through our scientific and technological genius, we have made of this world a neighborhood and yet we have not had the ethical commitment to make of it a brotherhood. But somehow, and in some way, we have got to do this."

That was Rev. Martin Luther King, March 31, 1968.

"The Ed Tech Challenge: Training Our Youth for 21st Century"

Remarks by Larry Irving
Assistant Secretary for Communications and Information
National Telecommunications and Information Administration
U.S. Department of Commerce

at the

Mississippi Educational Technology Luncheon
"Using Technology Tools to Transform Teaching and Learning"
Jackson, Mississippi

January 27, 1999
[as prepared]

I'd like to thank the Mississippi Council for Education Technology, Ellen Davis Burnham, Helen Soule, Dr. Larry Anderson, and so many other friends for inviting me here today. It's a privilege to be here at the Mississippi Educational Technology Luncheon to honor those who have contributed to the successful implementation of education technology this past year.

Those of you working on ed tech issues are truly today's pioneers. As President Clinton said in his State of the Union speech last week, we are standing on the "mountaintop of this next century, look[ing] ahead to the next one." No-one knows exactly what the 21st century holds. But what we do know is that next century's jobs will require a higher degree of technical literacy and high-tech skills than ever before. Our challenge today - as state and federal officials, school administrators, and educators - is to prepare our students to compete in this high-tech economy. And those in ed tech are blazing new trails to meet this challenge.

The Technological Revolution

When you look at the world today, there's no doubt that technical literacy is as important as "reading, writing, and arithmetic" to our students. New technologies now pervade daily life. Today, some estimate that nearly 200 million people are now online worldwide -- not only for e-mail, but to shop, listen to music, watch live video footage, or trade stocks. There are now 830 million web pages you can visit, and by 2003 there may be 8 billion.

"The Internet audience is not only growing, it is getting decidedly mainstream," according to the Pew survey released two weeks ago. This year's online holiday shopping is an example of that trend. It may not have been a White Christmas, but it was certainly a "Web Christmas": consumers spent $ 8 billion on online holiday shopping this year, by some accounts - *three times* the amount anticipated.

But these technologies are doing more than facilitating online shopping -- which is why it is so essential to incorporate computer training in the school curriculum. The Internet, wireless systems, and satellite technologies are opening new doors for Americans. Now, those in remote areas and those at home, can take distance education courses from universities worldwide. They can use these technologies to brush up old skills or to learn new ones to find jobs in newly expanding areas. Even navy officers serving on aircraft carriers can now access courses using computers, satellite transmissions, and video conferencing. And, if you have a computer and online access, you can explore the thousands of job postings that are placed only on the Net, or find the best price for a consumer good.

Even more importantly, training in high-tech skills will prepare our youth for employment in the 21st century. Today, a significantly high percentage of jobs require computer literacy. More than seven million Americans now work in information technology jobs. More Americans now build computers

than cars, make semiconductors than construction machinery, and work in data processing than petroleum refining. In a recent *US News and World Report* survey of the "best jobs of the future," eight out of the twenty selected jobs were involved high-tech skills.

We are now in a situation where there are more high-tech jobs than people to fill them. Over 347,000 jobs are currently unfilled. And, over the next seven years, more than one million new jobs will be created in computer-related fields alone. This means that companies needing employees with high-tech skills will move to cities where they can find those skills. A city or town's economy could depend on its ability to train its workers. You already know that Jackson's economy is being transformed by companies such as WorldCom/MCI and Tritel (which I heard, by the way, just signed a $300 million agreement with Ericssen).

And it is not only technology-related jobs that require high-tech skills; jobs in all areas will require computer literacy and other technology-related skills. D.C. Cablevision told me recently that it would not even consider someone for a job - of any kind - if that person does not know how to use a computer. And look at what is happening in the retail industry: on-line sales of travel, music, clothing, automobiles and electric goods have increased by 200% over the last 12 months. The same is occurring in the insurance, banking, and real estate industries. Millions of Americans employed in those industries will need high-tech skills, as will policemen, farmers, government employees, and educators -- all of whom will be incorporating new technologies in their work.

The Administration's Programs

President Clinton and Vice President Gore have long recognized the importance of preparing our communities and students for the high-tech jobs of the 21st century. Two weeks ago, I took part in a conference hosted by Vice President Gore on "21st Century Skills for 21st Century Jobs." Tens of thousands of people attended this conference via satellite to discuss new ways to meet the workforce demands of the next century. Vice President Gore announced, among other things, that he will allocate $60 million to regional programs to provide technological training for incumbent and dislocated workers. "America's competitiveness and the prosperity," he noted, depends on the ability of our people to learn "throughout their lifetimes."

The fate of this country also depends on the ability to train our students in school. Children with computers will not only have employment advantages over those without, they will also have educational advantages over those without. Providing children with access to computers and training is therefore key to ensuring their success in the future.

We need to provide access and training in public institutions because many of our children, particularly those in low-income, minority, rural, or inner city households, still do not have computers or Internet access at home. Only *2%* of children in low-income, rural households have Internet access, compared to 50% of urban households earning more than $75,000. Similarly, African-American households are *two times* less likely to have computers and *three times* less likely to have online access than White households. Ninety-two percent of African-American children still lack access to the Internet at home. The figures are even worse in rural areas and central cities.

These findings are from NTIA's most recent study, based on 1997 data, called *Falling Through the Net II: New Data on the Digital Divide*. This study, which updated our original 1994 study, found that computer ownership has grown among all groups but that we still have a significant digital divide based on race, income, education level, age, and location. NTIA will issue a new study this year exploring the digital divide in 1999 and why certain households still lack access to computers and the Internet.

The "digital divide" underscores the importance of providing computers and Internet access in schools and public institutions so that *every* child can access new technologies. Several years ago, President Clinton established the goal to connect every school and library in America to the information superhighway by year 2000. The Administration has since launched numerous programs to introduce computers in the classroom and to connect schools to the Internet. For example, we have encouraged

communities to establish "NetDays," which can be described as "electronic barn-raisings" designed to bring together community volunteers and companies to wire neighborhood schools. The Mississippi Department of Ed Tech puts information on Net Days on the Net; you've got the pioneers right here, and you're showing others how it's done.

Many of you in this room area also familiar with the Administration's Telecommunications and Information Infrastructure Assistance Program (TIIAP), administered by NTIA. TIIAP provides grants to non-profit and public entities that use new technologies to reach underserved communities. Over the last five years, we've given almost 400 grants totaling $118 million in matching grants. The grantees range from innovative programs helping low-income neighborhoods get online access to health care information, to programs providing access to job bank databases.

Some of the best examples of these projects have brought new technologies to students and are based right here in Jackson, Mississippi. For example, TIIAP helped fund the Mississippi Family Math and Science Network Project. Through this project, the Mississippi Department of Education has brought high quality Internet access to five rural school districts and trained high school students to design, build, and maintain the local area networks. We have also been proud to help fund the Connect-2-Tomorrow project, which connects chronically ill youngsters at the Blair E. Batson Hospital for Children at the University of Mississippi Medical Center. Using e-mail and video conferencing, these patients are still able to keep up with their classmates and classes even though they're hospitalized or homebound. Last year, I had the opportunity to meet some of the young people who are personally benefitting from your work with this program. You are the visionaries; I'm just a bureaucrat with a checkbook!

In addition to TIIAP, the Administration has also fought hard to establish and preserve the education-rate, or "e-rate," program. This program provides a discounted rate to schools and libraries for Internet access, telecommunications services, and equipment to connect to Internet. This fiscal year, $1.9 billion has been appropriated for e-rate grants; $427 million has already been released in three waves of grants. The Administration has also developed several grant programs - such as the Technology Innovation Challenge Grants and the Technology Literacy Challenge grants - to assist schools that are incorporating new technologies in their curricula.

As the President noted in last week's State of the Union address, "we are well on our way to our goal of connecting every classroom and library to the Internet." In 1994, only 3% of US classrooms had computers, according to the National Center of Educational Statistics. The most recent study by Market Data Retrieval has found that, in 1998, 85% of schools and 44% of all classrooms had Internet access. This study also found that the 12-1 ratio of students to computers in 1993 was down to 6.3-1 in 1998. Many of you here have had a part in helping us make these tremendous strides.

Remaining Challenges

Many challenges, of course, still lie before us. First, we need to make sure that, as we connect schools and libraries, it is done on an equitable basis. By the last official count, only a little more than half of rural libraries offered Internet access. Classrooms in rural and predominantly minority public schools were also nearly three times less likely to have Internet access as those in wealthy schools. The e-rate program currently gives priority to the neediest schools; but we need to be sure that this program, and others like it, succeed in reducing disparities among schools.

We also need to galvanize our rural communities and inner cities to hold "Net Days" to wire local schools. Imagine how many more rural communities and minority students could access the Internet if every Lions or Kiwanis Club, every church, and every civic and social organization adopted a school and held a "Net Day."

Second, we need to focus on teacher training. It is one thing to have computers in the class; it is another thing to ensure that they are used in a meaningful way. The recent Market Data Retrieval study uncovered some disturbing news. It found that, even though classrooms may have computers, a large number of teachers are not using the Internet for teaching. Only 14% of schools surveyed reported that

90% or more of teachers use the Internet for "instructional purposes." Clearly, our challenge now is to train teachers to successfully integrate new technologies in the classroom.

We must also explore the most effective ways to use new technologies in class. I was struck last fall by several articles discussing the largest study to date, conducted by the Educational Testing Service, on the use of computers in helping students learn. The *Washington Post*'s headline read "Study Faults Computers' Use in Math Education." The *New York Time*'s headline read "Computers Help Math Learning, Study Finds." The headlines appear contradictory, but both were accurate. The study found that, if used certain ways - such as through repetitive drills -- computers actually lowered students' performance on math tests. But if used to illustrate abstract concepts, computers were found to improve students' scores. Teachers need to learn which methods work, and which don't.

Over the next ten years, we will have two million new teachers entering the work force, who will need training in incorporating new technologies. The Administration has allocated $75 million in its FY 1999 budget to help with these training efforts. Other efforts, such as requiring evidence of such proficiency at the state level, would help us ensure that our teachers are putting technologies to the best use in class.

Third, we should be focusing on the inclusion of *all* students in technological training -- especially girls and minorities who are underrepresented in the high-tech fields. According to recent studies, minority and female students are less likely to choose computer science as a field of study or to find computer-related jobs. A report issued last summer in by Virginia's Fairfax County School Board, for example, found that girls make up only one-third of the students in computer science courses and that women compose only 25 percent of the information technology work force.

Minorities are similarly underrepresented in these areas. According to the Bureau of Labor Statistics, only 7.2% of computer scientists in 1996 were African-American and 2.6% were of Hispanic origin. In a more recent survey in Silicon Valley, the *San Francisco Chronicle* found that staffs at the leading 33 companies were only 4% African-American and 7% Hispanic, even though Blacks and Hispanics respectively make up 8% and 14% of the area's labor force.

We must reverse these trends by inspiring girls and minority students to join computer classes and pursue math and science. Our children should know as much about Bill Gates as Kobe Bryant, and as much about Michael Dell (whose net worth increases by at least $100 million a month) as Michael Jordan (who earns $100 million a year). They need to learn that 15 hours in front of a computer per week is far more likely to lead to a lucrative career than 15 hours on the court. Only if we lay these foundations early on, can we pave the way for these students to explore profitable high-tech careers down the road.

Finally, I want to stress the importance about thinking "outside the classroom." As important as it is to wire our schools, we also need to reach out to other communities through public facilities. Some of our students, and certainly many adults, are more likely to learn about computers in community centers or after-school clubs.

For example, one of the many successes we've seen through our TIIAP program is a program in East Palo Alto, California, called "Plugged In." Even though Silicon Valley is close by, students in East Palo Alto have had little opportunity to learn about computers. The "Plugged In" project, however, is changing that story. "Plugged In" operates a community access center with computers and Internet access. Students drop in after school to take computer training courses or to use the Internet. These kids have now even learned how to operate their own business by designing web pages for local businesses. This program, and others like it, are increasing the chances of employment, or even self-employment, for the youth in the neighborhood. Plugged-In provides a valuable model for alternative ways to reach out to, and excite, our youth in new technologies.

Conclusion

We have many opportunities and challenges ahead of us. But all of us must continue to invest the time

and energy to bring our children into the technological age. Author William Gibson has been quoted as saying that "the future has arrived; it's just not evenly distributed." As we move into the digital world, we cannot afford to let technological literacy become unevenly distributed, or to become a nation divided between "information haves" and "information have nots." Those of you in this room are making a significant contribution towards bridging that gap, and I look forward to working with you in the future to bring the benefits of the digital age to *all* of America's children.

Thank you.

"Defining Government's Role in the New Telecommunications Landscape"
Remarks by Larry Irving
Assistant Secretary for Communications and Information
National Telecommunications and Information Administration
U.S. Department of Commerce

at the

Third Annual Florida Communications Policy Symposium
Tallahassee, Florida
February 18, 1999

Good morning. It's a pleasure to be here in sunny Florida, and to see my good friend Julia Johnson again. Being here today with Chairman Garcia and former Chairman Johnson -- two power hitters -- is like having Mark McGuire and Sammy Sosa in the same lineup.

Last week was a week of reflection for those of us in telecommunications. Some were asking whether Tinky Winky (of Teletubbies fame) is really a societal menace . . . On the more serious side, many of us were assessing the impact of the 1996 Telecommunications Act as it reached its third anniversary. We have been exploring whether the Act has, in fact, changed the telecommunications landscape, and whether consumers have been affected by these changes.

Three years after the Act's passage, it looks as though the ball is finally now in play. The telecommunications field is changing, and Americans are beginning to feel its benefits. With these developments, state and federal governments will need to play new roles -- the subject I'd like to explore today.

The Changing Paradigms in Telecommunications

There is no denying that we have entered an era of paradigm shifts in telecommunications. To begin with, the traditional monopoly structure is giving way to a competitive marketplace. In 1993, President Clinton and Vice President Gore articulated their vision for a National Information Infrastructure (or NII), which would be based on private investment, competition, and open access. Today, we are indeed fulfilling the objectives of the NII agenda: competition is lowering prices, spurring the expansion of facilities and services, and promoting new investment and job growth.

According to a "Progress Report," released by Secretary of Commerce William Daley last week, these developments are occurring across all sectors of the telecommunications industry. Long-distance rates are half what they were before we saw competition with AT&T. Wireless rates have plummeted, and subscribership has soared, because of the many new players and products in the wireless market. Some wireless providers now have plans offering 10 cents a minute, anytime and anywhere. And many are offering new services, such as caller ID, pagers, and voicemail. These are all the fruits of competition.

And the Telecommunications Act of 1996, intended to end the local telephone monopolies, has opened the door to local telephone competition. Many customers - particularly business customers - now have choice in local telephone provider and are selecting among new services at lower prices.

As we near the end of the 20th century, we are also witnessing another paradigm shift: the development of the "Information Age." Today, more people are going online to get their news, weather forecasts, listen to music, make purchases, and even make phone calls. The numbers alone tell the story. In 1993, there were fewer than 100,000 Internet users; today, there are over 150 million worldwide. Five years ago, there were 3 million Internet "hosts"; today there are more than 30 million hosts.

In 1993, very few thought about making money through online transactions. In 1997, there were $3 billion in online retail sales. And the Department of Commerce announced last week that that amount

tripled in 1998 -- to $9 billion in online retail sales. By some estimates, consumers spent $8 billion during the Christmas season alone. By year 2000, consumer online purchases could be a $30 billion business.

The "Information Age" has also given rise to an "Information Economy." American companies - almost without exception - are increasingly *relying* on information services. And a growing portion of companies today are *offering* information services. In fact, over a third of real gross domestic product growth in the past three years have come from information technology industries. The information and telecommunications industries are expected to continue to fuel America's economic growth, each projected to grow another 8% per year.

The New Challenges for State and Federal Government

These paradigm shifts - the rise of competition and the information sector - are presenting new challenges for state and federal governments. With the new competitive marketplace, we now have new goals. First, we need to facilitate competition and ensure that new competitors really can enter the market. Our business is no longer about regulation, but the elimination of regulations. In fact, if we do our jobs right, we'll have worked ourselves right out of our jobs in a few years time!

We also need to be sure that the benefits of competition are shared by *all* Americans - not just by businesses or urban homeowners, but by rural residents and the corner shop owner. Florida's efforts to make multi-tenant environments (MTEs), such as apartment buildings, accessible to competitors is an excellent step in the right direction. Let me applaud you for that decision. By prohibiting landlords from selecting a single provider, tenants will now have reasonable access to the telecommunications company of their choice.

We will need to focus on bringing competition to all geographic areas - whether in concentrated, urban centers or remote towns. In Florida today, for example, we are seeing competition in Ft. Lauderdale, Jacksonville, Miami, and Orlando. Ideally, the Telecommunications Act should make it possible for *every* home and community to have a choice in telephone, Internet, or cable provider. And we have to make sure that wherever Americans live, be it in rural, suburban, or inner city areas, that they remain connected through universal service programs.

The emerging Information Age is presenting its own set of challenges. States and federal governments alike will want to support the rapid growth of the information sector. This means, for one thing, ensuring that our youth and adults are adequately trained in high-tech skills so that they can take lucrative jobs with software companies and high-tech manufacturers. Remember, nearly 350,000 of today's high-tech jobs are unfilled because companies cannot find skilled employees. It used to be the case that people moved to where the jobs are; now, because of the existing skills deficit, companies are moving to the areas with the skills.

A well-trained workforce could mean new business for a community. As Secretary Daley said recently, "The hot spot for technology is beyond Silicon Valley. In the 21st century, to be economically competitive, every town must be technologically sophisticated." My experience is that communities with high-tech success have two things in common: the right technical education and the infrastructure. That's true, not only of Silicon Valley, but also for Austin, Boston, D.C., and Redmond.

We also need to encourage the rollout of broadband networks so that more Americans can access information services. The demand for broadband services is growing at a tremendous rate -- over 1000% per year according to MCI WorldCom. Americans are consuming more sophisticated services today than ever before. Witness the turnout of 1.5 million people at "Victoria's Secret" online fashion show, or the numbers of teens using MP3 to download music from the Net.

To get these services, we will need faster, bigger pipelines. To quote *The New York Times*, the difference between a high-speed broadband connection and a regular phone connection is the difference between "Speed" and "Driving Miss Daisy."

While we want to encourage the buildout of broadband services, we also need to do it in a way that includes *all* families and locations. In NTIA's July 1998 study (which we will be updating this summer), we found that some 80% of all households still do not have Internet access. These figures are even worse in rural areas and for minorities. Ninety-one percent (91%) of Hispanic-Americans, 92% of African-Americans, and 98% of the rural poor, do not have Internet access at home. These families cannot e-mail their Congressman, follow news breaking events online, communicate cheaply with distant relatives, or find the thousands of jobs that are posted only on the Net. If we let this "digital divide" persist, significant portions of Americans will be left out of the Information Revolution.

Meeting the Challenges through Partnership

Numerous tough and exciting challenges lie ahead, and we can meet them head on if we work collectively -- through federal/state partnerships. None of these challenges are brand new. Federal and state governments have been thinking of ways to promote competition. We've been experimenting with ways to extend service to inner cities and rural Americans. And, we've been thinking about how to educate our youngsters and our communities for the jobs of the 21st century.

We will make greater progress on these issues, however, if we work together in generating ideas and implementing solutions. We all have limited resources, but with coordination we can make these resources go further and achieve greater results. States have served as the labs of innovative ideas and solutions. They can learn from each other by sharing their "best practices," and the federal government can learn from states about what has, and hasn't, worked.

For example, I am hopeful that the recent Supreme Court decision upholding the FCC's interconnection order will foster renewed cooperation. For the last three years, we have been living with uncertainty over what the Act requires and who has authority. Incumbent companies have been playing a game of stall ball, where the team with the lead late in the game keeps the ball away from the opponent.

The recent decision should put an end to this strategy and create greater certainty surrounding the jurisdiction and the Act's obligations. Such resolution should unleash new investment by competitors and incumbents alike. That's not to say, however, that the last three years of innovative thinking and policy-making by states should be ignored. The states have been laboratories of democracy and of technological innovation, and commissioners such as Bob Rowe, Julia Johnson, and Chairman Garcia can teach us a lot. I hope that when the FCC considers new pricing rules, it will look to the states for guidance and insight and will work with states to generate new policy.

Similarly, we can learn from each other about transitioning to an Information Economy. There is a wealth of programs throughout the country designed to train and prepare citizens for the high-tech future. Some states are already experimenting with tax credits to attract high-tech firms to their area. Other states are focusing on teaching high-tech skills to prepare today's students for tomorrow's jobs.

Tests are now showing, for example, that integrating computers in classes really can make a difference. But, teachers need to learn how to incorporate these new technologies in the curriculum. On the federal level, the Administration has allocated $75 million in its FY 1999 budget to help with teacher training efforts. Several grant programs - such as the Technology Innovation Challenge Grants and the Technology Literacy Challenge grants - are also assisting states and school districts that are incorporating new technologies in their curricula.

States are also generating a number of innovative programs in this area. Florida's legislature has put lottery funds to good use through technology grants for schools. Other states are also developing a variety of teacher training programs. These include a curriculum-focused training program for nearly 1,000 teachers in Rhode Island, and a web-based program for 15,000 teachers in Tennessee.

With this range of innovative programs, we should be learning from each others' experiences. NARUC has already come up with a useful method: it has been collecting information from states on their "best

practices" in implementing the 1996 Telecommunications Act. It plans to release the results of this survey at its Winter meeting next week so that states and Commissioners can hear about successes elsewhere. There is no reason that a "best practices" databank would not be equally useful in other areas: for teacher training programs, education technology efforts, or other state efforts to attract high-tech companies.

Coordinating Efforts to Connect Communities

Finally, we also need to coordinate efforts to ensure that all Americans have access to our telecommunications resources. The concept of universal service - that is, connecting all Americans - has been at the heart of our telecommunications policy for 60 years. The Telecommunications Act of 1996 has now made that goal explicit, and issued a clear mandate to states and the FCC to take necessary steps to meet that goal. Under Commissioner Johnson's excellent leadership as State Chair, the Federal-State Joint Board on Universal Service has made considerable progress in recommending mechanisms to connect all Americans.

Many states, including Florida, are also contributing to these efforts. I commend the Florida PSC for developing a Lifeline Assistance program, which will help low-income residents afford telephone service. And support for high-cost areas will help connect the rural, insular, and high-cost urban areas. If we successfully implement these programs, telephone service should be available and affordable to all households.

Today, however, we need to do more than provide basic telephone service; access to information services is also becoming critical. I started out by talking about new paradigms. Six years ago, 90% of the traffic over our nation's networks was voice traffic. Today, the traffic is half voice and half data. Four years from now, many predict it will be 80% voice and 20% data.

As Vice President Gore noted recently, "[with] 52,000 more Americans logging on for the first time every single day, the Internet is remaking the way we live, the way we learn, the way we work." Access to data services is now key to operating a business: Travel agents are going online to check ticket availability; car dealers are e-mailing their requests to the manufacturer; even cattle ranchers use the Internet to participate in virtual "cattle sales" and to check the cattle futures market to determine when to sell. This is not to mention the doors that are being opened through distance learning programs, telemedicine, online libraries, and online job banks. And who knows how much of our work, leisure activity, and information will rely on advanced services in the next century?

State and federal governments will need to grapple with the implications of our soaring data use. Do we regulate data traffic the same way? How do we spur innovation and investment? How do you avoid new monopolies?

Another critical issue is encouraging companies to build out broadband networks that can deliver this traffic at high speeds. The Clinton Administration has long believed that the most effective method to promote these investments is through competition. Competition has indeed produced results: we are seeing more fiber, more cable modems, and additional digital subscriber lines installed every day. Nevertheless, not all communities will have high-speed networks immediately. In the meantime, state and federal governments must develop ways to spur the deployment of broadband networks and to make information technology available to underserved communities.

Encouraging the rollout of broadband networks may require putting in place a new set of incentives. In the current 706 proceeding, the FCC is considering whether the Bell Operating Companies (BOCs) have the appropriate incentives to deploy digital subscriber lines. The BOCs have alleged that the current regulatory structure discourages this buildout because the BOCs would be required to share those lines. NTIA has filed comments proposing several modifications to the existing regulations that we believe will promote greater competition and lead to the more rapid deployment of high bandwidth services. In the same proceeding, we have also supported the FCC's proposal to create a federal model for collocation and local loop arrangements. We agree that such a model would create certainty and

therefore spur competition. NTIA has recommended, however, that the FCC look to the rich experiences of state Public Service Commissions and rely on the "best practices" in this field.

Another issue we are now considering is whether rural incumbent carriers will build high bandwidth services in rural areas. U.S.WEST, for example, has claimed that it is too expensive to build out service to rural areas within the existing LATA boundaries. This carrier has petitioned the FCC to either lift the ban on interLATA data carriage or redefine LATA boundaries to encompass broader territories.

We need to give serious thought to this proposal. At present, we have little evidence regarding service to rural areas. I am also concerned that the requested relief would undermine significant provisions of the 1996 Act. And, even if the FCC granted such relief, we have no guarantees that rural households - and not just businesses - would obtain data services. I therefore hope that federal and state governments will collaborate in considering whether such relief is necessary, or whether other types of incentives could achieve the same ends. We might consider, for example, whether low-cost loans in return for modernization -- akin to RUS's state modernization plans - would better meet rural needs.

I also hope to coordinate with states as we develop programs to bridge the gulf between the "information rich" and "information poor." As you know, the Clinton-Gore Administration has made it a priority to connect underserved communities to the nation's information infrastructure. One program we have fought hard to establish and protect is the education-rate, or "e-rate," program in the '96 Act. This program provides a discounted rate to schools and libraries for Internet access, telecommunications services, and equipment to connect to the Internet. This fiscal year, over $1 billion in discounts has already been committed to over 21,000 applicants. As a result, students across the nation are learning essential computer skills, and communities can access online information at their local libraries.

Another Administration program, administered by NTIA, is the Telecommunications and Information Infrastructure Assistance Program (TIIAP). TIIAP provides matching grants to non-profit and public entities using new technologies to reach underserved communities. This year, several TIIAP projects in Florida are providing valuable models to demonstrate the power of new technologies.

One project, coordinated by the state Department of Agriculture and Consumer Services, is helping fire officials fight fires through a computer mapping system. This system, once completed, will include weather information and a digital map of current fires, burn permits, and fire fighting resources. This information will help a fire official tell whether it is safe to grant a burn permit for a particular area, or whether fire fighting resources should be relocated. TIIAP is also funding a project to extend legal services to four large, rural counties in Central Florida. Low-income communities will be able to communicate with Florida Rural Legal Services through websites and video computers stationed in 18 public libraries around the counties.

These projects are extending the reach of data services to new communities. Obviously, many other state and federal programs are trying to attain the same goal. Some states, in fact, are now replicating TIIAP's grant program, or developing similar funding mechanisms to support yet more projects around the country. Other states, including Florida, are supporting efforts to connect schools and libraries. Florida's school districts have invested significant time and money to determine their technology needs and file grant applications. And who can forget the "barn-raising" efforts of Florida's citizens on Net Days to connect classrooms to the Internet?

Under Commissioner Johnson's leadership, Florida made significant strides in promoting universal access. We now look forward to working with Chairman Garcia to continue Florida's efforts to bridge the "digital divide."

Conclusion

As we strive to connect our communities, let's not forget what telecommunications and information technology is really all about. It's about more than commerce and finance, the number of items sold over the Net, or the creation of a new fortune. What it's really about is enriching the personal and cultural lives of Americans.

Thirty years ago, Robert Kennedy reminded us that:

> Too much and too long, we seem to have surrendered community excellence and community values in the mere accumulation of material things. Our gross national product, now, is over eight hundred billion dollars a year, but that GNP - if we should judge America by that - counts air pollution and cigarette advertising, and ambulances to clear our highways of carnage. . . .

Yet the gross national product does not allow for the health of our children, the quality of their education, or the joy of their play. It does not include the beauty of our poetry or the strength of our marriages; the intelligence of our public debate or the integrity of our public officials. It measures neither our wit nor our courage; neither our wisdom nor our learning; neither our compassion nor our devotion to our country; it measures everything, in short, except that which makes life worthwhile. And it can tell us everything about America except why we are proud to be Americans.

Bobby Kennedy got it right in '68, and we can get it right today. We know that it's important to connect communities so that they can get health care information. We know the excitement of schoolchildren when they see real-life depictions of the pyramids. We know that new technologies are about the ability to participate directly in a political poll or discussion, at the click of a mouse. None of these are part of electronic commerce or included in our GDP, but every one is reason why should be excited about the Information Revolution and what we are doing here today. These are the developments that go to the core of what makes America truly great.

I thank you for what you are doing on the state level, and look forward to coordinating our federal and state efforts in the future.

"Accomplishing the Objectives of the 1996 Act"
Remarks by Larry Irving
Assistant Secretary for Communications and Information
National Telecommunications and Information Administration
U.S. Department of Commerce
at the
Practising Law Institute (PLI)
Telecommunications Policy and Regulation Conference
Washington, D.C.
December 10, 1998

Good morning. It's a pleasure to be here at the 16th Annual PLI Conference, and I want to thank Henry Rivera, Dick Wiley, and Clark Wadlow for inviting me to join you this morning.

As I prepared to speak to this roomful of lawyers on telecommunications issues, I was a reminded of a joke:

> A surgeon, an architect an a lawyer are having a heated barroom discussion concerning which of their professions is actually the oldest profession.
>
> The surgeon says: "Surgery is the oldest profession. God took a rib from Adam to create Eve and you can't go back further than that."
>
> The architect says: "Hold on! In fact, God was the first architect when he created the world out of chaos in 7 days, and you can't go back any further than THAT!"
>
> The lawyer puffs his cigar and says: "Gentlemen, Gentlemen...who do you think created the CHAOS??!!"

When you think about the telecommunications market today, some would say this market also appears chaotic. I believe it is a good chaos, a creative chaos: companies in the same sector are competing against each other, and those in different sectors are offering competing services. Many lawyers, maybe even some of you here in this room, helped create that chaos.

Sadly, one of the key lawyers – perhaps *the* key lawyer -- who helped create this chaos died two weeks ago -- William Baxter. Bill Baxter, the former Assistant Attorney General for antitrust, was my former law professor and also was the antitrust professor for Anne Bingaman, his successor as head of the Antitrust Division. It was Baxter who presided over the break-up of the AT&T monopoly fourteen years ago. He insisted, despite the protests of the Secretary of Commerce, Secretary of Defense, and even

President Reagan, that long-distance competition would come about only by divesting the regional telephone monopolies from AT&T's long-distance monopoly. Thanks to his historic and landmark settlement with AT&T, we now have competition in the long-distance industry and independent regional Bells. Many of the issues we will be addressing at this conference today exist only because the framework he helped create.

It is therefore a great tragedy that, as one of the founding fathers of our current telecommunications framework, his death largely went unnoticed in this city. Nevertheless, he has left us a significant legacy through his passion for competition and open markets. It is even fair to say that the global revolution we have experienced would not have happened quite so quickly were it not for this legacy. Professor Baxter continually asked whether a combination or merger was anticompetitive, or whether it served the consumer. As the Administration develops telecommunications policy, and as my colleagues in the Administration consider mergers and combinations, our focus should continue to be on open markets and competition. These are the questions we should also be focusing on now, as we begin this two-day seminar.

Competition - Three Years Later

And how are we faring in creating an open market and competition nearly three years after the passage of the 1996 Telecommunications Act?

On the one hand, we have seen remarkable growth of the Internet and data-based services resulting from an open, unregulated approach. The vibrancy, the creativity, and the unparalleled energy that we have seen in this sector of the industry is testimony to the power of an unrestricted environment. Today, over 70 million Americans and nearly 150 million people worldwide are using the Internet. This will be the first "Internet Christmas" for many with a trebling or quadrupling of on-line sales expected from last year to this year. By some estimates, we will be purchasing $1 trillion of goods on-line in the next several years. We are listening to music through Real Audio, watching live footage on CNN.com or ABC.com, bidding against each other through on-line auction houses, and buying our stocks on-line. Three years ago, we would never have imagined that the Internet would have so profoundly changed our culture.

In the Clinton-Gore Administration, we believe that it is through an unfettered, open market that the greatest investment and innovation occurs. The Administration has forcefully advocated regulatory forbearance domestically and internationally as the Internet and new networks develop. For example, Internet (or IP) telephony now provides a cheaper option for making telephone calls. Had the U.S. government decided to regulate IP telephony, as some telephone representatives have requested, companies might not have been willing to make the millions of dollars of investments to improve voice service over the Net. By permitting companies to experiment in an unregulated environment, we are now beginning to see the fruits of their technological innovation in all areas of the Internet.

The Telecommunications Act was intended to create the same open, competitive environment in the telecommunications industry as well. In local telecommunications, however, competition has arrived more slowly. We don't have the level of competition that consumers deserve. In 1995, Bill Baxter wrote in a letter to Congress that "[w]e should not fall into the trap of thinking that just because local competition is imaginable, it is already here. It is not here. It is not even close." The same statement is still true today, even three years after the Act's passage.

We are indeed seeing an increasing number of competitive local exchange carriers (CLECs), many of whom are contributing to the buildout of advanced networks. That development is encouraging, and important. Nevertheless, CLECs still have not captured a significant share of the local, residential market. Incumbent LECs still control more than 95% of the local market today, as measured by total local service revenues. And, by some estimates, incumbents still control more than 97% of the local access lines.

As a result, while the Telecommunications Act was intended to create choice and lower prices for the consumer, it appears that the only person benefitting today is the high-end phone user and business customer. The average customer still doesn't have a choice in local provider or lower local telephone bills. And that simply is not acceptable.

The Stall Ball Approach

There are a number of reasons why we still have not felt the full benefits of the 1996 Telecommunications Act. First, for too long, many companies have been caught up in a game of stall ball. In the basketball world, the NCAA outlawed the stall ball strategy, where the team with the late lead in the game keeps the ball away from the opponent. In the local telecommunications market, on the other hand, that strategy still reigns. The BOC or ILEC that has monopolized the local telephone service market can still do so by refusing to engage with the opposing team. By making it difficult for a competing provider to interconnect, or to obtain the elements, services or the information it needs, the incumbents are maintaining the control of the game.

Local competition is critical if we want to reduce the costs of telecommunications for the average consumer. If a CLEC is beginning to offer advanced data services, you can bet that it's going to undercut the current price of those services offered by the incumbent. Competition is also critical if we want to spur providers to build out their networks to meet our country's growing data needs. These services, to date, have been largely provided by information technology (IT) companies. A recent report on *Marketing Telecoms to Small and Medium-Sized Businesses* found, for example, that IT companies, not the telephone providers, are successfully providing network services for this fast-growing sector. But, as long as the incumbents remain a monopoly, we will not see the level of innovation and investment in our networks that is so urgently needed.

Another factor that has stalled the successful implementation of the Telecommunications Act is litigation. Now, I love lawyers . . . . Some of my best friends are lawyers. But we've seen enough litigation. Companies have spent billions of dollars in legal fees challenging the interconnection agreements they have signed, FCC orders implementing provisions of the Act, or provisions of the Act itself. Over 150 interconnection agreements have been challenged in district court, by either the incumbent LEC or the competing carrier. At least twenty rulemakings or orders implementing the Act have been appealed. And various carriers have raised facial challenges against provisions of the Act, including a challenge to the constitutionality of the Act itself - by those who lobbied Congress to pass it to begin with! As a result, we are still waiting - nearly three years later -- for significant provisions of the Act to be interpreted by the courts. Meantime, companies faced with such uncertainty are often reluctant to move forward. And, investment capital is not deployed to the benefit of competitors or consumers.

These strategies of delay have made it difficult for competitors to even enter the game. As a Wizards fan, I've been upset by the NBA's lockout this season. But at least I can still watch the ABL or college basketball. In the telecommunications market, if there's a lockout, the consumer has no other options. Those companies that use their size and their political and legal muscle to block competition might be inhibiting those that are the fastest and most innovative, or those with the best strategy for developing networks or services of the future. Until the game is joined, we will never know who the stronger competitor is. And we are tired about watching folks argue over the rulebook.

Towards A New Approach

Fortunately, there are indications that the tide is turning. Some companies are recognizing that pro-active, creative steps and conciliatory action are necessary to foster the pro-competitive goals of the 1996 Act. We continue to believe that the 1996 Act got it right. We just need companies to comply with its terms. Less stalling, and more collaborative thinking, will help us reach these ends.

I am pleased to see that some companies are now thinking long and hard about whether the resources devoted to litigation could be better spent elsewhere. It is gratifying to note that companies realize that litigation may not be the most efficient or most productive way to achieve results. Let me take this opportunity to commend BellSouth on its decision two weeks ago to withdraw from the Fifth Circuit case on universal service. BellSouth recognized that regulatory developments had reduced the need to challenge the 1997 universal service order. The company also noted that it didn't want to be involved in a lawsuit that might damage a program providing discounted services to schools and libraries. Its withdrawal was a bold action, and one I hope other companies might consider.

We are also beginning to see more negotiation and collaboration in devising creative solutions. In the context of the 706 proceeding, for example, we have seen several companies negotiate agreements. In this proceeding, the FCC is considering how to promote the deployment of advanced network services by ILECs, and what type of access ILECs must provide competitors to these services. Promoting investment in broadband networks is critical if we want incumbents to invest in new technologies, and if we hope to connect more American homes and strengthen our economy.

Last month, we saw an ILEC -- Ameritech -- come together with a CLEC -- Northpoint -- and begin to find agreement on key issues. And this week, we all learned of a new proposal put forth by a coalition of other BOCs and several computer companies. The coalition negotiated a set of ten principles to accelerate the deployment and access to data services, such as DSL loops. In a letter to Chairman Kennard on Monday, the companies presented these principles as a potential resolution in the FCC's 706 proceeding.

We must look critically at this proposal to ensure that it complies with the key provisions of the 1996 Act. Without addressing the merits, I'd like to commend these parties on their strategy of coalition-building and negotiation. I only wish that the coalition had included all interested parties. The absence of the CLECs as parties was striking, and we are now beginning to hear the reasons why they did not sign on.

I should also note that, yesterday, a coalition of Silicon Valley companies wrote the Commission urging regulatory forbearance in regulating emerging broadband networks, particularly for companies competing against incumbent telcos. Their concern about the effects of overregulation on capital markets is fair and appropriate, but must be balanced against the need to ensure that no player is capable of distorting competition.

The approach of building a broad-based coalition is nevertheless a sound one. Often, the parties affected by an agreement are far better than those of us in Washington in determining what works, what doesn't work, and which incentives will encourage compliance with the law. If we can encourage more creative thinking and negotiation, within the current legal parameters, I believe that we can more readily fulfill the goals of the 1996 Act.

Review of Mergers

Having talked about industry's constructive actions in implementing the goals of the 1996 Act, I'd now like to turn to the role of government in this regard. Open markets and competition will be accomplished only if government plays an aggressive role in reviewing pending mergers. Bill Baxter certainly did not believe that mergers *per se* impeded competition, but he cautioned that government must look closely to ensure that a merger does not foreclose competition.

These words of advice serve us well as we examine the ever-increasing number of telecommunications mergers. When the Telecom Act was passed, there were seven BOCs and GTE. In a little over a year, we have already seen mergers between Bell Atlantic and NYNEX, AT&T and TCG, MCI and Worldcom, and SBC and Southern New England Telephone. This spate of merger activity has continued unabated. We are now faced with mergers between AT&T and TCI, SBC and Ameritech, and GTE and Bell Atlantic. If the pending SBC-Ameritech and GTE-Bell Atlantic mergers are approved, there will only be four major providers of local telephony, and the two newly merged entities would control approximately two-thirds of the nation's access lines.

We must be particularly vigilant as the number of major providers diminishes. Several of the merging companies have claimed that the combination is necessary so that they can compete globally. While I see the merits of this argument, I have to ask: At what point does such an argument no longer apply? When there are three BOCs, or two? Remember that, when the FCC issued its order on the Bell Atlantic-NYNEX merger, it cautioned that "further reductions in the number of Bell Companies or comparable incumbent LECs would present serious public interest concerns." We must carefully evaluate whether we have reached that point.

Our vigilance is necessary whether we are dealing with telecommunications mergers or mergers involving new technologies, such as the Internet. The Internet's chief virtue is its openness, its decentralized operations, and its democratic structure. The Net is open to anyone with access to PC and proper software. Anyone can be a publisher and put his or her own story on the Web, or sell a product to the world market. We therefore must guard against any merger consolidating ownership over part of Net in a way that could affect its openness or control the content.

I am pleased that the Department of Justice, the FCC, and key members of Congress are taking a serious look into these issues. The FCC is continuing its series of *en banc* panels next week, which will raise diverse perspectives on the mergers. Senators DeWine and Kohl have also been holding a series of hearings on the telecommunications mergers and have commissioned a GAO study to determine the level of competition in the industry. This the type of critical analysis that we need.

Conclusion

The upcoming panels today and tomorrow will continue to shed light on the issue of mergers and local competition. As we think about these issues, I encourage you to think about these issues as Bill Baxter would have done. Some of us look at a problem, and decide what principles we should draw from it. He always operated from principle and applied those principles to the practical problem. In his speech announcing the Modified Final Judgment, Professor Baxter spoke of the need to eliminate structural barriers to the emergence of effective competition.

As we explore various issues over the next two days, let's remember that the principles of open markets and competition should always be among our goals. These are the principles that have promoted new services, better technologies, and the buildout of our infrastructure. These are the principles that have built America into a great nation.. Let's make sure, as we review any action or inaction, that these principles endure.

Implementation of the Telecommunications Act of 1996

- Overview of the Telecommunications Act of 1996

For more than a decade, NTIA has advocated State and Federal action to introduce and to expand competition in all telecommunications and information services markets, particularly markets for local telecommunications services. The promotion of competition was also the centerpiece of the Administration's Agenda for Action: The National Information Infrastructure (September 1993). Greater competition will lead to lower prices and expanded choices for consumers, as well as faster deployment of advanced telecommunications networks and services.

The Telecommunications Act of 1996 embodies that same procompetitive philosophy. NTIA has been an active participant in proceedings before the Federal Communications Commission (FCC) to implement the 1996 Act. NTIA has also commented in related FCC proceedings to ensure that: (1) the level and structure of access charges are compatible with the competitive marketplace that the 1996 Act will create; (2) consumers have the information they need to make informed choices about the services and prices available to them; and (3) telecommunications service providers do not misuse personal information that they obtain from their customers. Finally, NTIA has worked to develop and to advocate universal service policies that will ensure that all Americans will have affordable access to competitively-provided telecommunications and information services.

NTIA Filings on Local Competition:

- *Ex Parte* Reply Comments to the FCC in CC Docket No. 96-98 concerning new standards for determining what network elements local telephone companies must make available to competitors on an unbundled basis.
- Letter to the FCC in CC Docket No. 98-170 expressing support for the FCC's Truth-in-Billing and Billing Format proceeding.
- Letter to the FCC in CC Docket No. 96-262 offering proposals for reforming access charges.
- Letter to the FCC in CC Docket No. 96-115 concerning telephone companies' use of customer proprietary network information (CPNI) and other customer information.
- Reply Comments to the FCC in CC Docket No. 96-115 concerning implementation of the local competition provisions to the Telecommunications Act of 1996.

Recent Speeches, Testimony, and Reports Concerning the Telecommunications Act of 1996 and Local Competition:

- Remarks by Larry Irving, And the Winner Is . . . at the First Annual Competitive Access Conference, March 22, 1999.
- Remarks by Larry Irving, Defining Government's Role in the New Telecommunications Landscape, at the Third Annual Florida Communications Policy Symposium, March 3, 1999.
- Remarks by Commerce Secretary William Daley on release of the Council of Economic Advisors

Progress Report: Growth and Competition in U.S. Telecommunications, 1993-1998, Feb. 8, 1999.

- Remarks by Larry Irving, Accomplishing the Objectives of the 1996 Act at the Practicing Law Institute (PLI) Telecommunications Policy and Regulation Conference, Dec. 10, 1998).
- Speech by Larry Irving, Bringing Competition to Local Telephone Markets at Comptel's 1998 Fall Business Conference, Oct. 6, 1998.
- Speech by Larry Irving, Voice on the Net: The Promise and the Challenge at the Fall '98 Voice on the Net (VON) Conference, Sept. 17, 1998).
- Speech by Larry Irving, The Next Waves in Wireless Technologies at RAWCON '98, the IEEE's Radio and Wireless Conference, Aug. 10, 1998).
- Speech by Larry Irving, The New Telecom Landscape: In Search of Consumer Benefits at the National Association of State Utility Consumer Advocates' Washington Telecommunications Conference, Feb. 10, 1998).
- Larry Irving's Opening Remarks, at NTIA's Wireless Local Loop Forum, Dec. 17, 1997.
- Speech of Larry Irving, Opportunities for Optimism , Dec. 12, 1997.

NTIA Hearings and Forums:

- Internet Telephony , Sept. 4, 1997. The forum focused on the use of the Internet to provide telephone service. Speakers offered their visions for providing competitive telephone service over the Internet. Participants debated the regulatory, technical, and economic issues and hurdles associated with this technology.
- Wireless Local Loop, Dec. 17, 1997. This forum examined the development of wireless technologies that can provide a competitive alternative to existing local telephone service. Wireless technology may provide an affordable alternative to wireline telephone service in rural and remote areas of the country whose residents frequently have limited or no service.
- New Directions in Telecom, Feb. 4, 1998. At the final Advanced Technology forum, NTIA Assistant Secretary Larry Irving chaired a roundtable discussion of the relative success of the Telecommunications Act of 1996, two years after enactment. Attendees included new entrants, incumbents providers, and regulators, who discussed new opportunities and choices in telecommunications created by the 1996 Act.

See Also:

- Other Useful Links

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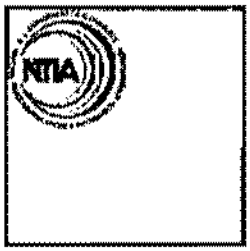

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COMMERCE SECRETARY MINETA RELEASES REPORT SAYING MAJORITY OF HISTORICALLY BLACK COLLEGES ARE WIRED, BUT MOST STUDENTS DO NOT HAVE READY ACCESS TO THE INTERNET

WASHINGTON- A majority of the nation's Historically Black Colleges and Universities (HBCUs) have networks that provide connectivity to the Internet and the World Wide Web, but most students do not have ready access to the campus networks, according to a report Commerce Secretary Norman Y. Mineta released today.

Secretary Mineta released the report at a press conference attended by Reps. Edolphus Towns (Democrat, New York) and Major Owens (Democrat, New York).

The study was conducted by the National Association for Equal Opportunity in Higher Education under a contract provided by the Technology Opportunities Program (TOP) of the Commerce Department's National Telecommunications and Information Administration (NTIA).

"The study serves as an important blueprint for support from the private sector and non-profit organizations for digital inclusion of a community of over 350,000 students and future leaders attending these institutions of higher education," Mineta said.

"It is clear from the report that a significant number of our nation's historically black educational institutions stand poised to make a digital leap into the 21st century," Secretary Mineta said. "But they cannot make that leap unless they continually upgrade the networks and connectivity so all students can have access to the technology that will prepare them for the new digital economy," Mineta added.

"This study provides an important insight into the challenges faced by our Historically Black Colleges and Universities in keeping pace with other institutions of higher learning in providing students with access to information technologies vital to their advancement and success," Gregory L. Rohde, assistant secretary of commerce for communications and information and NTIA administrator, said.

The study, *Historically Black Colleges and Universities: An Assessment of Networking and Connectivity*, assessed the computing resources, networking and connectivity of 80 of the 118 Historically Black Colleges and Universities in the United States. (Study is available in .pdf format, size=4.2MB) It represents the first comprehensive assessment of the technology needs of these post secondary institutions that were founded prior to the 1964 Civil Rights Act with the primary objective of educating African Americans.

On the lack of student accessibility to computer networks and resources, the study said computer networks in a majority of the colleges are concentrated in administrative buildings

rather than in classrooms and student dormitories. In addition, less than 25 percent of the students bring their own computers to school, compared to nearly 50 percent of non-HBCU students who own computers. Access to the campus networks and computer ownership among students are key to insuring networking and connectivity, the study said.

"Individual student 'on demand' access to campus networks is seriously deficient due to either the lack of student ownership of computers, lack of access from campus dormitories or concentration of resources in selected locations," the study said.

"Among the 80 HBCUs, the Technology Assessment Study found their overall status on the Information Superhighway as more positive than originally assumed," the study said. But it said an upgrading and improvement of HCBU computer networks was critical if the institutions are to be competitive with other institutions in providing research and promoting other educational endeavors.

While noting that the present degree of networking and connectivity at HBCUs was reassuring, the team that conducted the study raised concerns about a general lack of strategies to upgrade and improve network systems.

"During this era of continuous innovation and change, continual upgrading of networking and connectivity systems is critical if HBCUs are to continue to cross the digital divide and not fall victim to it," it said. "Failure to do so may result in what is a manageable digital divide today evolving into an unmanageable digital gulf tomorrow," the study declared.

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Note: The report can be accessed through the digital divide web site: www.digitaldivide.gov