

# **Arizona Telecommunications and Information Council (ATIC)**

## **Multitenant Building Telecommunications Access Study**

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# **Arizona Telecommunications and Information Council (ATIC)**

## **Multitenant Building Telecommunications Access Study**

This policy study was developed by the **Arizona Telecommunications and Information Council (ATIC)** to review and address issues relative to competitive telecommunications access to the multitenant building environment, sometimes known as the "last hundred feet." ATIC is an Infrastructure Foundation of the **Governor's Strategic Partnership for Economic Development (GSPED)** - <http://www.commerce.state.az.us/gsped.htm>) and Arizona's recognized and authoritative apolitical source of information and expertise on telecommunications and information technology infrastructure for enhanced economic development and quality of life. This report can be found online at <http://www.researchedge.com/mbtas/>. Please communicate your feedback, corrections, and further suggestions to us at the contact information below.

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## Multitenant Building Telecommunications Access Study

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# **Arizona Telecommunications and Information Council (ATIC)**

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### **Executive Summary**

The tide of telecommunications deregulation in the United States has turned markedly since the Telecommunications Act of 1996. Today we have an increasingly dynamic and competitive telecommunications environment, driven by both business and residential customer demand for broadband connectivity. Impelled by the Internet and its utilization, we are experiencing massive investments in new technologies and infrastructure, stimulating a remarkable worldwide economic expansion. As we continue to accomplish the deployment of more and faster high-capacity communications networks around our cities and across the nation, lack of access across the "last hundred feet" into the multitenant environment can still hinder the consumer's ability to take advantage of the wide range of service offerings being brought to market. Impediments to consumer access and choice can include: choices telecom providers make (or decline to make) for investing in local infrastructure and implementing their build-out; the need for interconnection and leasing agreements between providers; delays from licensing and regulatory processes and procedures; confusing or absent standards; incompatible technologies; and difficulty bridging the final distance from the telecom providers infrastructure to the multitenant building occupants' in-building equipment and networks.

As more and better telecommunications service choices proliferate, access to alternative competitive providers for both business and residential multitenant buildings tenants becomes an increasingly significant and critical issue. The **Arizona Telecommunications and Information Council (ATIC)**, an Infrastructure Foundation of the **Governor's Strategic Partnership for Economic Development (GSPED)**, has undertaken a review of the background and issues relative to multitenant building telecommunications access, performed a survey of the various stakeholders, and analyzed the underlying relationships and trends. This resultant study details the relevant issues, interests and positions of the stakeholders, anticipates the prospects for regional and national progress, and lays out recommendations for Arizona legislators and regulators, telecommunications service providers, building owners, and tenants. ATIC herein puts forth our recommendations to continue evolving public policies of open and nondiscriminatory access that provide for a more dynamic telecommunications market and significantly more consumer choice. However, it remains quite challenging and at times problematic to adequately balance the rights and revenue expectations of building managers and owners, the status and current arrangements of incumbent service providers, the opportunities and expectations of new competitive telecommunications entrants, as well as the needs and rights of tenants.

The Arizona Telecommunication and Information (ATIC) engaged **International Research Center** to write and produce this study under the direction of ATIC's Multitenant Building Access Committee. Together they have identified, researched, and considered the critical issues and concerns, mapped out the universe of stakeholders and concerned parties, ascertained key existing documents and resources, and gathered the working committee and stakeholders' input into the project design, methodology, and expected outcomes. It is hoped that this study will serve a broad public policy audience both within government, especially at the **Arizona State Legislature** and the **Arizona Corporation Commission (ACC)**, and in the commercial world of the involved stakeholder groups. It is further hoped that this report will serve as a resource guide for all the stakeholders as it details the existing literature, past government policy, stakeholder initiatives, relevant trade and consumer organizations, and an array of research sources to provide more information and monitor ongoing developments.

The three primary Stakeholder Groups in the multitenant building arena that have the strongest vested interests in competitive broadband and advanced telecommunications services are the Telecommunications Service Providers (TSPs), the Building Owners and Managers, and the Building Tenants, be they Business Tenants or Residential Tenants. These stakeholder groups need to be further segmented due to their differing starting points, concerns, and positions. The Telecommunication Service Providers group includes not only the Incumbent Local Exchange Carriers (ILECs) for different regions of the state who traditionally have legacy access to multitenant building at little or no cost, but also the new market entrants, be they wireline and wireless Competitive Local Exchange Carriers (CLECs), who must negotiate for access as a secondary tier, late-to-the-party entrant. Among CLECs, wireless providers have quite different building access requirements, mounting their antennas on walls and rooftops, and may receive different regulatory treatment from the Federal Communications Commission (FCC) among others. Internet Service Providers (ISPs) and Telecommunications Service Resellers will have somewhat different interests and needs as well. Building owners may have single properties and be local or have a variety of properties, possibly hundreds, nationally. They may serve residential apartments, Multiple Dwelling Units (MDUs), or provide rented office space and facilities to business or government enterprises.

This study seeks to characterize these various stakeholder groups and their varying points of view. Additionally, it deals with some issues such the undecided definition of the Point-of-Demarcation (POD) and the ownership of inside wiring that lead to uncertainty and delay in the marketplace while technology innovation continues to outpace the speed of regulatory change. Momentum is clearly on the side of open access across this and a number of other related telecommunications policy fronts. ATIC offers its recommendations as a regional economic development foundation concerned with Arizona's telecommunications infrastructure, the availability of advanced service to all its citizens, the technological underpinning of the New Economy, and their contribution to regional economic growth. ATIC believes that the public interest can best be served by the reduction of competitive barriers and the creation of an equitable and open marketplace. It is our hope that this report will serve as a resource to help frame the pertinent issues, identify the various viewpoints, point out market and societal trends, and make accessible an abundance of relevant resources. ATIC's recommended policy actions for the various stakeholder groups follow and it is hoped that they will help influence the opening of multitenant markets here in Arizona and through our example, throughout the nation.

How rapidly we reach a kind of dynamic, open environment depends, to a significant degree, on government policy. While the evolution of the underlying technologies that makes these innovative applications possible will continue regardless of government actions, public policy will play a role in determining the rate at which competition between media is introduced. The government has often acted in the past to slow or limit competition in order to maintain the distinctive roles of different media. In light of the inevitable digital convergence of previously separate media, the most appropriate role for the government is to “get out of the way” of the introduction of new technologies and support the growth of competition, while maintaining its traditional responsibility for protecting the public interest. And essential to advancing the public interest is to favor allowing the market to produce innovative services at the lowest cost.

From **The New Global Telecommunications Industry & Consumers:  
Projecting the Telecommunications Industry in 2009** by Richard Adler,  
**National Association of Regulatory Utility Commissioners (NARUC)**

# **Arizona Telecommunications and Information Council (ATIC)**

## **Multitenant Building Telecommunications Access Study**

### **Summary of Recommendations**

#### **Recommendations to the Arizona Corporation Commission (ACC):**

- 1) Undertake necessary staff review and study to propose and consider regulation to prohibit exclusive multitenant facility access agreements by building managers and owners with single or selected telecommunication providers, so as to preserve tenant choice. Such telecommunications regulation is strongly recommended by the Arizona Telecommunications and Information Council (ATIC).
- 2) Undertake necessary staff review and study to propose and consider regulation to better define the Point-of-Demarcation (POD) and ownership of internal wiring to help avoid disputes and litigation among stakeholders, while accelerating the deployment of competitive services. Such clarifications and any other necessary regulation to make the market more open, more orderly, and less litigious are strongly recommended by the Arizona Telecommunications and Information Council (ATIC).
- 3) Promote a competitive environment with licensing of additional Competitive Local Exchange Carriers (CLECs) and encourage leased access to ILECs' Unbundled Network Elements (UNEs), without providing unnecessary advantages to particular delivery technologies or business models. As the ILECs' local lines remain the most practical or perhaps the only access for competitive carriers to multitenant customers, the ACC should reconsider its previous actions that set the unbundled loop rate too high (\$22.65 per month) and the resale discount rate too low (18%) for leased access of an individual telephone circuit from US WEST. This crucial "last mile" ILEC connectivity must be more effectively shared and utilized. Arizona action on the recent FCC ruling requiring that the high-frequency portion of the ILEC's loop circuit be unbundled and leased separately on an incremental cost basis, should be accelerated with shared line access rates set significantly below \$10. per month.
- 4) The ACC should act to incorporate wireless telecommunications providers into the Arizona Universal Service Fund (USF) program and its subsidy mechanisms, especially so as to encourage wireless deployment in Arizona's underserved rural and tribal areas, helping extend telecom options to Arizona's more remote residents. The ACC should work with the FCC to support evolution of the national USF to redesign cost allocations, secure its long-term funding model, extend participation to wireless carriers, and institutionalizing E-rate subsidies for educational technology connectivity.
- 5) Accelerate handling of substantive telecommunications issues, particularly in dispute resolution contexts such as resolving collocation problems. Streamline regulatory review and approval process flow to better enable and respond to market forces. Benchmark other PUCs' best practices and develop metrics and reporting mechanisms to track ACC status and progress on telecom issues.

#### **Recommendations to the Arizona State Legislature:**

- 1) Undertake and enact legislation similar to that in place in several other states requiring fair, reasonable, and nondiscriminatory access for competitive telecommunication providers to business and residential occupants of multitenant buildings. Support as necessary with staff review and study. Such legislation is strongly recommended by the Arizona Telecommunications and Information Council (ATIC) as a necessary foundation to insure customer choice, competitive access options, and the speedy deployment of advanced broadband infrastructure.
- 2) If the Arizona Corporation Commission (ACC) is unsuccessful in developing and implementing rules to prohibit exclusive multitenant facility access agreements by building managers and owners

with single or selected telecommunication providers, the Legislature should enact laws that will preclude such anti-competitive practices and return choice to the tenant community. Such legislation should also define building owners who decline competitive access as a telecommunications provider themselves, thus subject to all appropriate rules, regulation, and oversight.

3) The Legislature should work with the Arizona Corporation Commission (ACC) to enable Arizona to deal with the substantive issues of telecommunications regulation and oversight in a speedier and more effective manner. Arizona has proved too slow and at times ineffectual in evolving both its legislative and regulatory policy to meet the needs of the competitive telecommunications arena.

### **Recommendations to Telecommunications Service Providers:**

1) Incumbent Local Exchange Carriers (ILECs) need to accept and integrate multiple telecommunication providers in the multitenant building environment, sharing the underground building access, equipment closets, and risers. Though they may collect reasonable compensation for the use of legacy facilities, ILECs must further deliver on the requirements and commitment to lease elements of their unbundled network to their competitors, aiding in their Telecom Act "271" competitive checklist acceptance and eventual authorization to provide long distance services.

2) ILECs and CLECs should both promote state legislation to require fair, reasonable, and nondiscriminatory access for all telecommunication providers to business and residential occupants of multitenant buildings. They should also both support PUC regulation to better define the Point-of-Demarcation (POD) and ownership of internal wiring to help avoid uncertainty and potential litigation among stakeholders and accelerate deployment of advanced telecom services. As new multitenant buildings are constructed, competitive carriers may, in some cases, be the primary telecommunications provider. ILECs may find their subsequent competitive access aided by such legislation and regulation.

### **Recommendations to Building Managers and Owners:**

1) There is a rising tide of telecommunication competition and advanced services expectations from business and residential tenants. Design new and retrofit existing properties to accommodate substantial upgrades of telecommunications access and internal infrastructure, providing underground pathways to the street(s), rooftop support and wiring access for wireless antennas, sizeable wiring closets, and risers with ample capacity to vertically traverse the floors of the building.

2) By actions and relationships that provide multitenant building environment with reasonable access to competitive providers, tenants will be attracted, especially desirable high-technology companies, and their retention will be higher. Abundant broadband telecommunications access and advanced internal wiring infrastructure will position multitenant properties as "Smart Buildings," with commensurately higher rental values, increased attractiveness, and yielding superior valuations.

3) The march of technology will begin to overcome the need for physical access from underground wiring or even rooftop antennas, delivering high-bandwidth wireless connectivity from satellites and terrestrial transmitters through building walls, directly to antennas in wiring closets and at workstations and portable devices, beyond the control of the building owner. Accept reduced telecommunications oversight over time and make telecommunications access an asset while still acting to insure in-building telecommunications infrastructure capacity, integrity, reliability, stability, and security. Negotiate in good faith to receive fair, equitable, and non-discriminatory compensation for competitive telecommunications access and avoid further regulation and/or litigation.

4) Building rooftops remain valuable commodities for wireless antenna placement and the wireless CLECs' Points-of-Presence (POPs) in urban cellular, point-to-point or point-to-multipoint metropolitan area networks (MANs). If building rooftop(s) are structurally capable and owners desire leasing

arrangements for general geographic wireless distribution (versus access to building tenants), work with engineering and market consultants to characterize your capabilities and promote them to potential wireless providers. Negotiate smart leases including possible participation in incremental revenues the primary antenna owner may accrue from co-location leases to other wireless providers.

### **Recommendations to Business Tenants:**

1) Negotiate initial or renewal leases that allow for sufficient tenant choices and options in selecting and accessing competitive telecom services. All telecommunication service providers (TSPs) should be able to reach your primary business equipment closet(s) and distribution point(s) with no-cost or low-cost physical access from their telecom infrastructure in the street and/or on the roof. Work with the building manager/owner to insure that buildings have sufficient internal telecommunications infrastructure and capacity, including underground conduit to the street(s), rooftop support and wiring access for wireless antennas, sizeable wiring closets, and risers with ample capacity.

2) Be a smart telecommunications consumer for your business enterprise, educating yourself as to various options and choices. Negotiate telecommunications service contracts that meet current performance requirements and are scaleable for future needs while extend for only a short term or that can be revisited for a "fresh look" as market conditions continue to evolve. Involve professional Information Technology (IT), system integration, and building industry personnel to design, install, and configure in-building communication networks optimized for your organizational effectiveness. Prime information resources and organizations to learn more about these technologies, markets, and issues are detailed in the Appendices below.

### **Recommendations to Residential Tenants:**

1) Be a smart residential telecommunications consumer educating yourself as to various options and choices. Incorporate personal telecommunications needs and expectations into the selection of your leased residential dwelling. If you need high-speed Internet access or desire to choose from the telecommunication offerings of multiple providers, insure these capabilities are already available or scheduled within the foreseeable future. Prime information resources and organizations to learn more about these technologies, markets, and issues are detailed in the Appendices below.

### **Recommendations to State and Local Government:**

1) Where municipalities, county and state government are themselves building owners who lease to multiple business tenants, they should adopt and follow the Federal model and guidelines for open and non-discriminatory access of telecommunication providers to their business tenants.

2) Position your municipality as a "Smart Community" by encouraging telecommunications providers to deploy new infrastructure and capabilities to serve the needs of the City and its citizens, while acting in and protecting the public interest. Economic development goals and citizens' access to alternative advanced communication capabilities will be best served by cultivating an open, effective, and cooperative environment between telecommunications providers, developers, and City authorities.

### **Recommendations to the Arizona Telecommunications and Information Council (ATIC):**

ATIC should continue to play an outreach and educational policy role within the Arizona community, promoting favorable regional policies and conditions, leading to broad and unfettered deployment of advanced telecommunications infrastructure to enhance economic development and the quality of life. ATIC should actively encourage and facilitate high level meetings between the multitenant telecom stakeholders to address these issues, help to make progress, and broker win-win solutions.



# Arizona Telecommunications and Information Council (ATIC)

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### The Multitenant Building Environment

Though an in-depth telecommunications tutorial is beyond the scope of this study, it is necessary to introduce and discuss some of the language and concepts of modern telecommunications technology, markets, and policy to enable the presentation of subsequent material and further dialog. Following are definitions and discussion of several special terms related to multitenant telecommunications access and what they mean. For more background on telecommunications technologies and markets, see the later section of this study, **The Evolving Telecommunications Landscape**.

#### **Telecommunications Service Providers (TSPs):**

The **Incumbent Local Exchange Carriers (ILECs)** have exclusive rights and responsibilities associated with their defined monopolistic position in providing local telephone service to the approximately 200 defined geographic areas nationally known as **Local Access and Transport Areas (LATAs)**. For most metropolitan areas the role of ILEC is served by one of the **Regional Bell Operating Companies (RBOCs)** formed from AT&T's "Baby Bells," such as US WEST for Phoenix, Tucson, and Flagstaff here in Arizona. Other ILECs may hold the same exclusive privileges for other less dense geographic areas as Citizens Utilities, GTE, and others do here in rural locales. ILECs are closely regulated by the state **Public Utility Commissions (PUCs)**, such as the **Arizona Corporation Commission (ACC)**, as are Competitive Local Exchange Carriers (CLECs) to a lesser degree.

#### **Competitive Local Exchange Carrier (CLEC or Certified Local Exchange Carrier):**

A term coined for the deregulated, competitive telecommunications environment envisioned by the Telecommunications Act of 1996. While the Act is under legal challenge, many of the state regulatory authorities have moved forward. The CLECs compete on a selective basis for local exchange service, as well as long distance, international, Internet access, and entertainment (e.g. Cable TV and Video on Demand). They will build or rebuild their own local loops, wired or wireless. They build or rebuild their own local loops, wired or wireless. They also lease local loops from the ILECs at wholesale rates for resale to end-users. CLECs include cellular/PCS providers, ISPs, IXC, CATV providers, CAPs, LMDS operators, and power utilities.

**Newton's Telecom Dictionary, 15<sup>th</sup> Edition (1999)**

**Competitive Local Exchange Carriers (CLECs)** are the prime competition for the Incumbent Local Exchange Carrier (ILEC), again US WEST in Arizona's urban markets and Citizens Utilities for most rural markets, supplying voice and data services. Approximately fifty CLECs have been authorized by the Arizona Corporation Commission (ACC) to date including wireline providers such as AT&T, Cox Communications, Electric Lightwave Inc. (ELI), GST Telecommunications, MCIWorldCom, Metropolitan Fiber Systems (MFS), Sprint, Teleport Communications Group (TCG, now a part of AT&T), and Qwest, as well as wireless providers such as A.R.T., Teligent, and WinStar among others. Other data only providers such as Covad and Rhythms are sometimes referred to as Data Local Exchange Carriers (DLECs) and specialize in xDSL services to business and residential customers.

CLECs may be **facilities-based**, developing and deploying their own **infrastructure**, wireline with fiber and wire in the ground or wireless with antenna systems. They would interconnect to U S WEST

and the **Public Switched Telephone Network (PSTN)** from their own **switching centers** or by co-locating equipment in U S WEST's **Central Offices (COs)**. CLECs most commonly build their own infrastructure in high-density business areas, seeking to capture volume business accounts. In the Phoenix area, such activity is concentrated in the Central Avenue Corridor (from 7<sup>th</sup> Street to 7<sup>th</sup> Avenue) and along the Camelback Corridor (from Central Ave. heading East), as well as in other selective Valley locations, such as around the State Capitol Mall and the Scottsdale Airpark. Alternatively, CLECs may be a **telecommunications service reseller** to end-users, leasing capacity and connectivity at wholesale rates from the ILEC or other CLECs for sale. The local ILEC and facilities-based CLECs will have various physical locations or **Points of Presence (POPs)** distributed throughout their service regions that contain the wiring connections and network access, as well as routers and/or switches for connection to **switched circuit** and dedicated (**leased line**) connections.

Increasingly **Telecommunications Service Providers (TSPs)** want to sell **advanced telecommunications capabilities** "defined, without regard to any transmission media or technology, as high-speed, switched, broadband telecommunications capability that enables users to originate and receive high-quality voice, data, graphics, and video telecommunications using any technology" (Section 706 of **The Telecommunications Act of 1996**). All kinds of voice, data, and video traffic will be digital and their data streams increasingly joined or **converged** for common transport over **Internet Protocol (IP)** across the high-speed cross-country **fiber backbones** of the RBOCs and their national competitors. The **Plain Old Telephone Service (POTS)** and **Public Switched Telephone Network (PSTN)** of today will increasingly give way to the hybrid wired and wireless converged IP traffic carried over the **New Public Networks**.

The **Telecommunications Act of 1996** defines the physical and functional elements of the telephone network infrastructure and requires that the Incumbent Local Exchange Carriers (ILECs) unbundle their network at seven points, known as **Unbundled Network Elements (UNEs)**, to be sold on an incremental cost basis to other TSPs. The particulars of ILECs leasing their lines and facilities are subject to negotiation with individual CLECs and closely regulated by the state Public Utility Commissions (PUC). The leased network elements can be interconnected, provisioned and used to provide communications services to customers. Leasing of the ILEC's legacy in-ground wire from a customer's location to the CLEC's or ILEC's nearest Point of Presence (POP) may be used to bypass the need to run new in-ground wiring, but may limit the services that can be delivered.

## **Multitenant Buildings or Multiple Dwelling Units (MDUs):**

**Multitenant buildings** are primarily comprised of office space leased to **business tenants** or living spaces, such as apartments or other **Multiple Dwelling Units (MDUs)**, leased to **residential tenants**. **Inside wiring** connects the tenant's individual points of service to **telecommunications equipment in equipment closets** around the premises or perhaps at a centralized location within the building. Larger business tenants may have their own private telephone switching system, a **Private Branch Exchange (PBX)** or other sophisticated **Customer Premises Equipment (CPE)**.

A crucial location for multitenant buildings and this policy study is the physical point where the tenant or building owner hands off control and responsibility, if not ownership, of the wiring to their selected Telecommunications Service Provider (TSP). This **Point-of-Demarcation (POD)** is often the primary wiring location within the building and the site of the major telecommunications interconnect equipment. The exact definition of the Point-of-Demarcation (POD) and the associated **Minimum Point of Entry (MPOE)**, as well as their attendant rights and stakeholder obligations, remain the subject of much discussion and debate as detailed throughout this report.

Distribution of signals through the multitenant building is primarily accomplished over the **inside wiring** but wireless technologies will play an increasingly common role. The primary wiring location or **equipment room** may also serve as a **riser closet** for access to vertical **conduits** or paths between floors of a building, known as **risers**. Individual buildings in a complex will usually have their own wiring closets. Separate voice telephony and data networking wiring and equipment are common, usually accomplished over **Unshielded Twisted Pair (UTP)** wire, the most common type today being **Category 5** or **Cat-5** eight conductor unshielded cable. It can deliver not only phone service but carry data traffic over the tenants' **Local Area Networks (LANs)** at rates from **10 Mbps** to **1 Gbps**, perhaps higher. Video and broadband analog signals are carried on **coaxial cable**. However, **fiber optic cable** is being increasingly deployed for interconnecting areas of the building or major equipment hubs to each other. A business tenant with multiple locations, perhaps dispersed nationally or internationally, will tie the individual LAN locations together into a **Wide Area Network (WAN)** over leased telecommunications circuits or over the **Internet** via a **Virtual Private Network (VPN)**.

### **Definitions of Demarcation Point or Point-of-Demarcation (POD):**

The **Demarcation Point** is the point of a demarcation and/or interconnection between telephone company communications facilities and terminal equipment, protective apparatus, or wiring at a subscriber's premises. Carrier-installed facilities at or constituting the demarcation point consist of a wire or a jack conforming to

**Newton's Telecom Dictionary, 15<sup>th</sup> Edition (1999)**

Keeping the **Demarcation Point** as set forth in Rule 25-4.0345, Florida Administrative Code, versus moving to the federal minimum point of entry (MPOE) is an issue that merits additional investigation by the FPSC. Moving to the MPOE may resolve some access issues by possibly giving the ALECs quicker access to the wiring; however, inhibiting the COLRs' ability to deliver service standards directly to the customer and potentially allowing an unregulated third party to become a factor in service may outweigh the benefits of moving to the MPOE.

**Florida Public Service Commission (FPSC) Study: Access by Telecommunications Companies to Customers in the Multitenant Environment, February, 1999**

### **Definition of Minimum Point of Entry (MPOE):**

The closest practical point to where the carrier facilities cross the property line or the closest practical point where the carrier cabling enters a multi-unit building or buildings.

**Newton's Telecom Dictionary, 15<sup>th</sup> Edition (1999)**

The building managers or owners may themselves become a Telecommunications Service Providers (TSPs) by investing in and installing telephone equipment so as to service business and residential tenants needs by operating that equipment over leased connections to the local ILEC and/or various CLECs. Larger apartment complexes may have their own PBXs supporting **multitenant sharing**. Adequate capacity in riser closets and risers as well as general communications capabilities must be considered in the initial design of new multitenant buildings or during their rebuilds and retrofits.

**Real estate** professionals classify business multitenant office building properties as:

**Class A:** Most prestigious buildings competing for premier office users with rents above average for the market. Buildings have high quality finishes, state of the art building systems, exceptional accessibility and a definite market presence.

**Class B:** Buildings competing for a wide range of users with rents in the average/mid-range for the market. Buildings finishes are fair to good for the markets and systems are adequate, but the building does not compete with Class A at the same price or for the same tenants.

**Class C:** Buildings competing for tenants requiring functional space at below average rents.



# Arizona Telecommunications and Information Council (ATIC)

## Multitenant Building Telecommunications Access Study

### Varying Points of View

Even though this study focuses on a somewhat narrow slice of the total telecommunications policy arena, it remains an issue that involves a great variety of stakeholders, interacts and is interdependent with other active telecommunications policy issues, and has an enormous effect on the marketplace, as well as on both business and residential multitenant building occupants. The primary stakeholders, for the purposes of this study, have been defined as the **Telecommunications Service Providers (TSPs)** in their various forms, the **Building Owners and Managers**, and the **Building Tenants**, be they **business** or **residential**. However, many other interested parties are involved from related market or service sectors of the economy, as well as economic development interests, and the various local, state, and federal government entities. A description of these stakeholders' principal interests and their likely opinions and positions follows.

#### **Telecommunications Service Providers (TSPs):**

In the local phone sector, we are starting to see the fruits of our pro-competitive policies. There are now at least twenty publicly traded CLECs with a total market capitalization of \$33 billion. That compares with only six CLECs with a market capitalization of \$1.3 billion at the time of the passage of the 1996 Act. In the first quarter of 1999 alone, almost a million CLEC access lines were installed.

**William E. Kennard, Chairman of the Federal Communications Commission**  
at a hearing before the House Commerce Committee's Subcommittee on  
Telecommunications, Trade and Consumer Protection on October 26, 1999

Since the enactment of **The Telecommunications Act of 1996**, market forces have been unleashed, driven on by technological innovations, to create an increasingly competitive telecommunications marketplace with progressively more consumer choice. Federal Communication Commission (FCC) actions require the Incumbent Local Exchange Carriers (ILECs) to unbundle and provide wholesale competitive access to elements of their established and evolving networks and this is beginning to be success. Competitive Local Exchange Carriers (CLECs) are increasingly leasing the "last mile" circuits and other network elements supported by collocating equipment in the ILEC's Central Offices (COs), as well as deploying in-ground cable, wireless Points-of-Presence (POPs), and switching centers of their own. With the new FCC ruling requiring leasing of the high-band above voice circuits separately at lower incremental rates, CLECs will become more active in delivering Digital Subscriber Line (DSL) and other advanced services.

ILECs are connected to and able to provide service to nearly every physical structure in their geographic service regions, usually through legacy switching centers and in-ground wiring or consistent expectations that they be included in the plans for any new buildings. Facilities-based CLECs are increasingly deploying their own fiber-optic or wireless backbones, especially in the urban core areas of the state, and entering into contracts with the ILECs for interconnection, equipment collocation, and leased last-mile connections to business and residential customers. Some may also own national fiber-optic backbones themselves or contract to back-haul their traffic to the Internet, across the country, and around the world.

Fixed wireless technologies, point-to-point and point-to-multipoint, will flourish, as will satellite systems. Both may continue to rely on outside antennas, preferably rooftop mounted, usually requiring line-of-sight to the nearest wireless Point-of-Presence (POP). However, pending mobile wireless upgrades to Third Generation (3G) technologies will allow moderate to high roaming data rates servicing mobile information appliances, but also penetrating building walls to connect to relatively fixed locations, accessing networks, PCs, and peripherals. And global space-based networks of satellites and stratospheric platforms will come on line offering new broadband options and pathways.

The ILEC have historically enjoyed virtually total access to multitenant building occupants for phone and data service. It often remains in their interest to delay the onslaught of CLEC access to their networks and facilities as best they can. But the deregulation of their monopolistic status requires that they increasingly provide this access. In most metropolitan areas, cable companies are still upgrading their Hybrid Fiber Coax (HFC) municipal infrastructure to offer data and voice services to consumers and can yet have holes in their service grid, where upgrades or service extension are yet to be made, where small communities are serviced by regional cable operators or where multiple dwelling units (MDUs) are provided with a satellite-based community feed by the building owner or a contract provider. Building owners may themselves become telecommunications providers by wholesaling connectivity from the ILEC or CLECs and installing a PBX and billing systems to manage tenant telephone access. CLECs, more recent to the scene, continue to struggle to be everywhere they want to be, to build out their metropolitan area networks (MANs) and get access to the volume business telecommunications purchasers, often located in leased multitenant space.

The CLECs call for "open access" so that they may more broadly and readily offer their competitive telecommunications services and achieve fair, reasonable, and nondiscriminatory access to potential consumers. They face significant "barriers to entry" and must either lease "last mile" network element connections from the ILEC or install an underground conduit/cable or rooftop antenna with access to the building interior to bridge the distance from the new customer's premises to the CLEC's existing regional network. The building owner or manager often serves as a gatekeeper between the two, service provider and consumer, and must be made a party to the process of successfully connecting them. The exterior to interior building access paths and often the risers or conduit themselves may be the owner's property not covered in the tenant lease, with access needing to be specifically negotiated for each new providers' connections at a Point-of-Demarcation (POD). Competitive providers find any substantial delays or significant costs, either to initiate and sustain service, can prove off-putting, with the CLEC perhaps moving on to more accessible and cooperative prospects.

The facilities-based wireless CLECs usually don't have to dig up the streets and "lay cable," which can help jump-start their deployment once they commit to a regional market. They then place one or more transmitters around the city, usually collocated on leased tower space, perhaps on existing high-rise buildings, for their Points-of-Presence (POPs) with broadband telecommunications access to a switching center and their master antenna(s). Then, each customer typically needs to mount an external fixed antenna, either on the side of the building or more commonly mounted on the rooftop, connected by cabling to their wiring closet or other nexus of telephone and data networking cable.

ILECs customarily have legacy building access for their connection to all building tenants at little or no charge, due to the essential nature of the utility service they provide and the generally expected pervasiveness of telephony service in the modern world. CLECs want solutions to ease and accelerate multitenant building access by more clearly defining the Point-of-Demarcation (POD), precluding exclusive contract relationships between building owners and providers for tenant access. They understand they may have to pay some fee or percentage of revenue to the building owner, but they want those fees and terms to be nondiscriminatory, so all ILECs and CLECs have equal opportunity.

CLECs' policy initiatives and political actions on this issue may include seeking legislative relief from the U.S. Congress or individual state legislatures, while also engaging in a regulatory reform initiative at both the FCC and before individual state Public Utility Commissions (PUCs). The Courts remain a favorite recourse for the ILECs and CLECs as they seek to advance or forestall their causes. This ATIC study does recommend various appropriate actions for the legislative and regulatory bodies, which are detailed elsewhere. In general, ATIC encourages government policies and actions to help make multitenant building access fair, equal, and nondiscriminatory, while encouraging markets to become more orderly and hopefully less contentious and litigious.

## **Building Managers and Owners:**

### **Smart Buildings: Facilities for the Information Age**

Where are all the employees complaining that the office is too hot or too cold or too hot and too cold? Where are the workers who used to wear baseball caps at their desks to cut down on the overhead glare? How about that guy with the surgical mask trying to avoid a case of sick building syndrome? Increasingly, these people are in "smart" buildings that can accommodate the latest products and system designs for everything from computers to lighting, heating, and security equipment.

But the newest push is for buildings that are smart enough to accommodate the growing array of telecommunications and computer equipment that's available today. The mantra real estate developers have chanted for years has been "**location, location, location.**" However, that is rapidly changing to "**location, bandwidth, location.**"

**Don Mooradian**, Plant Sites & Parks' (PS&P's) Location Strategies, January, 2000

Building owners and managers are just as caught up in the Information Age as their fellow citizens. By and large they recognize that there is a revolution in telecommunications services and markets, brought on by advancing technologies, deregulated marketplaces, enormous financial investments, converging industries, and relentless consumer demand. But they are in business to manage their investments in their multitenant properties for good a good return on investment and increase in valuation over time.

The value of owning the intervening property between the Telecommunications Service Providers (TSPs) and the business or residential tenants and acting in the role of gatekeeper may yield an initial payment arrangement from a new CLEC or perhaps ongoing revenue stream participation, especially if somewhat exclusive arrangements can be reached. Alternatively, owners may promote the increased attractiveness of "open access" property to contemporary tenants along with commensurate improvements in tenant attraction and retention (higher occupancy rates) and per annum rental rates. Or owners may themselves become TSPs, investing in switching systems to deliver and bill services. Additionally, telecommunications providers may become business tenants themselves by locating Points-of-Presence (POPs), switching centers, and cellular wireless towers in and/or on leased commercial facilities at competitive commercial rental rates.

Property owners may feel that competitive telecommunications access is already working well in the marketplace. Increasingly, some are responding to tenant desires for competitive access to advanced telecommunications services with flexible and noninterventionist policies. Other building owners and managers, if hard-pressed to revise their practices and expectations relative to competitive telecommunications providers and their access to tenants, will rise to resolutely defend their

Constitutionally protected property rights. Indeed, such rights remain a stalwart principle of Western democracy, though often mitigated by concerns for the public interest. Any perceived attempt to abrogate those rights will bring on a violation of property rights and "forced access" defense. However, there remain significant legal precedents for requiring access to essential facilities and infrastructure in the public interest. The language of "open access" vs. "forced access" seems to leave little middle ground, bringing tension to the stakeholder relationship, often stalling forward progress on negotiating access, and sometimes leading to judicial action or other possible government intervention. Solutions and an acceptable value proposition must be found for all the stakeholders and their interests.

A new type of high-rise is starting to dot the skylines of metropolitan areas, offering well-heeled city dwellers units with cyberviews. Just as many hotels are striving to give their guests high speed Internet access, developers are beginning to distinguish their properties with a similar amenity. Leveraging the economies of scale afforded by high-density housing, builders are deploying high speed data networks in apartment and condominium complexes along with the more traditional infrastructures for electricity, plumbing, heat and air conditioning, voice telephony, cable TV and garbage disposal. Homeowners and tenants can get a high-speed Internet dial tone at the flip of a switch, and for a fraction of the price they would pay if they were ordering the same bandwidth individually. Service providers can streamline operations by dealing with hundreds of customers at once. And buildings don't get punched with holes and decorated with cable spaghetti dripping down their sides.

#### **Cyber-Condominiums Are Wired for ADSL, Network World, March 30, 1998**

There is indeed a trend to Smart Buildings to serve the smart tenants of today. New building design and construction should certainly be carefully designed for multi-vendor telecommunications access from both the street and the rooftop. Internally, the capacity of wiring closets and risers should be sized to allow for future growth and the entire building structure pre-wired where practical to support distribution of advanced capabilities and services. Remodeling of existing structures should also incorporate these design features and perhaps innovatively reuse earlier internal pathways as communications conduits (i.e. - unused elevator shafts, mail chutes, and chimneys).

The building's infrastructure and network topology should anticipate and allow for flexible utilization and expansion capability. Expect continued evolution of technology and the carrying capacity of existing Unshielded Twisted Pair (UTP) wiring, usually Category-5 (CAT-5), which will evolve from Ethernet 10Base-T to 100Base-T to Gigabit per second data speeds and beyond. Additionally, in-building fiber optic cables can carry enormous capacity up to the Terabit per second range. Basement spaces may serve as valuable provider Points-of-Presence (POPs) for switching and routing equipment while cellular antenna systems on rooftops serving the surrounding geographic region may be leased with possible collocation revenue participation. There are however structural considerations and professional engineering reviews and evaluations that may be necessary before committing to use.

While the pace of technology development can be mind boggling, entire industries are rarely transformed overnight. Most (property) managers tend to overestimate the impact of technology in the short term and underestimate its long-term impacts.

**Peter Pike**, founder of the **Pikenet** (<http://www.pikenet.com/>) online directory of real estate services in the **Investment Property and Real Estate Capital Markets Report** (<http://www.ire-net.com/>)



## Tenants and Economic Development Interests:

Both business and residential tenants, for their part, have come to expect relatively unfettered access to a growing variety of telecommunications solutions and providers. Their broadband telecom mantra has become **more, better, faster, cheaper**. And they are beginning to experience the wealth of applications and benefits to the convergence of voice, data, and video services across simpler, faster networks based on Internet Protocol (IP). Business' workers are increasingly connected at their desktops to enterprise Local Area Networks (LANs) and peripherals, as well as across multiple locations of the company via their Wide Area Network (WAN), and to the Internet at large. Mobile and remote workers are still dialing in with phone line modems or connecting via a higher speed Internet connection to telework, but are increasingly operating from the field with emergent wireless technology for effective mobility. And at home, we're coming to expect to stay connected with the outside world with integrated information appliances, both wired and wireless, and high bandwidth Internet access. Our home will have an increasing proliferation of "smart" networked devices, computers, and peripherals all connected by residential LANs through wires or through the air.

Cities have a choice, to aggressively embrace information technology as a catalyst for transforming life and work in the 21<sup>st</sup> century, or be cut off from the mainstream of economic development.

**John Eger**, The World Foundation for Smart Communities  
in Government Technology, September 1997

There have been quite a number of high-profile Smart Buildings projects around the nation and across the world. Though undertakings such as New York's 55 Broad St. (<http://www.nyitc.com/>) garner much attention in the popular and trade press, more modest yet significant regional projects often go unnoticed. Here in Arizona, a local initiative, the Tech Oasis Project, in conjunction with the Arizona Software & Internet Association (AZSOFT.net) and the City of Tempe, seeks to create a regional geographic cluster for software and Internet businesses that will act as a catalyst to further those businesses, the regional economy, and the Phoenix area to the technology industry. The City has incorporated Smart Building and open telecommunications access expectations and requirements into the Infotech Center proposal for the redevelopment of a 3.5 acre parcel with Arizona State University (ASU). Excerpts from the draft RFP can be found in Appendix 5. Additionally the Tech Oasis Committee is collecting and organizing a Valley-wide inventory of tech friendly properties, producing a checklist for tenant telecom considerations, an online resource guide to regional telecommunications equipment and service vendors, and a comprehensive infrastructure map overlaying various vendors major network infrastructure investments and planned expansion.

Global networking is creating a fundamentally new kind of business model that is challenging the very basis of society and economics. The Internet and information network technologies are not only a means for communication and discourse, but a distribution mechanism for trade in goods and services, a business model that is driven by changes in consumer behavior, and a force that is spurring the creation of new savings, investment and industry structures. The horizontal, open and deregulated nature of the on-line environment is also transforming social structures and society overall. The redefinition of business, societies and the global economy as a whole is putting great pressure on private industry and governments to rapidly reform their policies and practices in order to become competitive within a rapidly changing global environment.

From the **Global Information Infrastructure Commission (GIIC) Call for Action**,  
12/03/99 (<http://www.gii.org/events/ann5call.html>)

Higher bandwidth is increasingly required to support today's e-business initiatives and to transport rich media and information flows. Though the business and residential tenants face somewhat different problems of access and of deciding what technologies are available and appropriate, they are both largely intolerant of barriers to competitive telecom access. They want the flexibility to perform tenant improvements (TIs) and to have the unfettered ability to negotiate for competitive services and implement evolving enterprise solutions. And the smart business tenants of today are considering their needs and telecommunications access in site selection, building lease negotiations, and in the architecture and design of their spaces.

### **How Workplace Trends Impact Office Design:**

**Knowledge sharing:** Less emphasis on private space and greater emphasis on shared spaces. Use of electronic whiteboards and other means of capturing and sharing knowledge.

**Collaborative work:** A variety of flexible, shared spaces, including pods, conference areas and social spaces. Modular furniture and walls on wheels. Intensive use of all vertical and horizontal surfaces.

**Flattened hierarchy:** Rank not reflected in physical surroundings. Space owned by groups, rather than individuals. Variety of spaces that accommodate all work modes: private, collaborative, video conferencing, and spontaneous social encounters.

**Rapidly evolving technology:** Persistence of technology inside and outside of the facility. Real-time access to corporate intranets and extranets. Plug-and-play furniture that docks to power sources in ceilings, walls, floors, columns, etc.

**Mobility:** The ability to plug in portable devices anywhere, any time.

**Churn:** Flexible environments in which furniture and technology can be rearranged spontaneously without the assistance of a facility manager.

All of the above trends point toward flexible, varied spaces within facilities that balance the need for privacy with the ability to collaborate and meet current technology needs while anticipating future trends.

### **The Anti-Office of the Future** by Marianne Cotter, Knowledge Management 01/2000

Even the residential tenant increasingly expects to set up a smart household with home networks to share access among family members to the Internet, files on different home PCs, printers, and other peripherals. Additionally, they will temporarily connect their mobile information appliances and laptops for in-home use and employ the same home networks for messaging, multimedia content distribution, environmental control, remote monitoring, and security. Embedded smarts within household appliances, audio/video equipment, and various microcomputer-enabled devices will all converse together over home networks and various wired and wireless pathways, changing the very nature of our dwellings.

Apartment and other Multitenant Dwelling Unit (MDU) residents can not afford to be disenfranchised from the wonders and benefits of the telecom transformation already underway. The needs of residential tenants may receive special legislative, regulatory, or judicial recognition, protection, and treatment. For example, the FCC's Over-the-Air Reception Rules prohibit restrictions that impair the installation, maintenance or use of antennas used to receive video programming less than one meter in size on property one owns, rents or over which one has exclusive use or control. Meanwhile an explosion of wireless technologies and data-centric telecom services will augment the increasingly inventive uses of wired infrastructure by the ILECs, CLECs, DLECs, and cable system operator, all reaching out to serve business and residential tenants.

## **The Other Open Access/Forced Access Issue - ISP over Cable:**

There is another active telecommunications policy struggle whose proponents couch their arguments in similar terms to the multitenant building access debate, "Open Access" versus "Forced Access." The cable television industry has invested heavily in upgrading their local Hybrid Fiber Coax (HFC) networks to deliver more and better video, while enabling the delivery of broadband Internet access and voice telephony services. Most cable television systems have entered into exclusive contracts with Excite@Home, Roadrunner, or other ISPs. for the next few years. AT&T as well as other cable operators have indicated that as these contracts expire, they will enter into agreements with other competitive ISPs to provide access and services to their cable subscribers over broadband connections.

Some call it open access. Some call it forced access. Sometimes it's just a pain in the access. The interesting, and encouraging, thing about this debate is that it is fundamentally a debate about means, not ends. Everyone I talk to about this issue - leaders in your industry, the ISP industry, franchising authorities - all embrace the concept of openness. Everyone seems to agree that openness and choice are what consumers want and will demand. This debate is really about how to get there. There are two choices: we can rely on the market to facilitate openness; or we can try to regulate our way there. For now, I'm putting my faith in the marketplace.

**William E. Kennard, Chairman, Federal Communications Commission**  
before the California Cable Television Association, December 16, 1999

The monopolistic nature of the ILECs structure and history have lead to special regulatory oversight and requirements to unbundle their network elements for lease to the CLECs. Cable systems, are usually the regional incumbent provider of video entertainment, now seeing increasing threats from the Direct Broadcast Satellite (DBS), Local Multipoint Distribution Services (LMDS), and even ILECs themselves in their core video offerings. As a recent entrant to the data and voice telephony markets, cable operators are themselves CLECs who will need to partner to deliver a full range of consumer services, but their networks, designed for shared video channels and bandwidth, will not be readily subdivided or separated out. As America On Line's (AOL) announced acquisition of Time-Warner proceeds, it will be interesting to observe possible shifts in AOL's original open access position. It seems likely they will become even a stronger force for competitive ISP access to cable systems as they still need ways to reach their subscribers in markets where they don't (yet) own the cable system.

**Economics, like thermodynamics, rests on three principles:**

**You get what you pay for;**

**You can't get something for nothing;**

**And if supply and demand can't be balanced  
by price adjustments, you get shortages.**

**Politics is the art of denying these principles.**

**Public policy is the science of implementing programs  
based on these denials until crisis arrives,**

**At which point dueling lobbyists work to shift blame to convenient villains.**

**Business is the craft of seeking profits in a market distorted  
by public policy without becoming a designated villain.**

**Bill Frezza, Columnist in Communications Week, November 15, 1996**

# Arizona Telecommunications and Information Council (ATIC)

## Multitenant Building Telecommunications Access Study

### The Evolving Telecommunications Landscape

The traditional distinctions between different media such as telephone, broadcasting and cable have already begun to break down. By 2009, they will have virtually disappeared. Instead, there will be a range of providers competing to transport users' bits along with a wide range of intelligent services. Given the fact that essentially all information is transmitted and stored in bits, all of the different media (telephone and cable, wired and wireless) will be competing with one another to see who can provide customers with the fastest, most useful, most efficient, most reliable and most affordable services. Companies will compete to handle the transport of all of a customer's bits that will carry voice, data and video. Many of the old, familiar content providers will still exist to provide information and entertainment, while new companies will emerge to provide innovative content and services.

From **The New Global Telecommunications Industry & Consumers**,  
 Projecting the Telecommunications Industry in 2009 by Richard Adler,  
 National Association of Regulatory Utility Commissioners (NARUC)

The communications industry has experienced dramatic growth and change during the last five years. Deregulation driven by **The Telecommunications Act of 1996** combined with continual advances in technology and market forces has started a massive convergence of telecommunications services and merging of providers. The mantra of today's telecommunications marketplace and consumers is for **"more, better, faster, cheaper."** While the telecommunications market remains driven by technological advances, consumer demand, massive infrastructure investments, and mega-mergers, it is further complicated and sometimes hindered by regulation, deregulation, litigation, confusion, and obfuscation. Deregulation shall continue to progress in fits and starts, but not without significant legal issues and challenges. All the time, the communications industry sector remains a significant and fast growing segment of the U.S. economy as detailed in the table that follows.

### Communications Sector of the U.S. Economy (in \$ Billions)

	1993	1994	1995	1996	1997	1998
Communications Equipment	-	60.8	75.7	94.2	106.4	120.4
Cable	29.6	30.3	33.9	38.5	43.7	*
Radio & TV	30.3	32.9	39.2	39.2	42.8	*
Wireless	10.2	14.2	18.6	25.9	33.0	*
Wireline	160.0	169.5	180.2	196.2	198.1	*
Total Communications Services	230.1	246.9	271.9	299.8	317.6	395.0

(Source: FCC Trends Report, Note: \* 1998 Communications Services Estimated)

# Basics of Telecommunications Connectivity:

## Plain Old Telephone Service (POTS):

Virtually all of us have grown up with **basic phone service**. You just pick up the receiver, listen for the dial tone, and call the number of the party you're seeking. The true complexity of the telephone network is largely hidden from us, but a lot of cable and facilities go into supporting what now seems like such a simple task. Except for some remote rural areas, an expansive **Public Switched Telephone Network (PSTN)** divided into 196 **Local Access and Transport Areas (LATAs)** covers the entire country with voice telephony services from **Local Exchange Carriers (LECs)**. Reaching well over 95% of U.S. households, basic voice telephony remains the lowest common denominator for personal communications services.

Federal and state **Universal Service Funds (USF)** and **State Public Utility Commissions (PUCs)** oversight keep residential rates low by allowing them to be subsidized by higher business rates and long distance surcharges. Additionally, rural areas are subsidized by the USFs to approximately equalize their cost with urban telephone line rates. Many homes now utilize multiple voice telephone lines to support personal and business voice use as well as analog modems and fax machines. **Local service** remains unmetered and its usage unlimited within a defined region. However, modem use has been driving call length averages higher, leading to some circuit management issues. **Long distance service** allows us to connect around the country and the world at an ever-decreasing cost, now as low as pennies per minute, with further declines expected with voice carried over Internet Protocol (IP).

**Fax machines** and fax-enabled computers use special protocols that can send or receive copies of several facsimile document pages per minute operating over standard phone lines, though they tie up the phone line while doing so. These same phone lines can also support **personal computers (PCs)** and larger computer systems connecting with modems at low speed for transferring data, running remote computer applications, and accessing the Internet. Today's most capable analog modems run at a maximum of 33.6 Kbps upstream (data you send) and 56 Kbps downstream (data you receive). These internal or external interface circuits commonly meet specifications known as the **International Telecommunication Union (ITU - <http://www.itu.int/>) V.34** and **V.90** standards, respond to an **AT command set** (from the Hayes ATtention command), support fax functions, and may integrate voice streams and special telephone line functions as well. The actual data speed achieved will vary significantly (YMMV - Your Mileage May Vary) and is dependent on the quality of local phone lines, the local loop, as well as the capabilities of the systems being connecting to. Phone modems provide the most common data connection at the lowest cost for most of today's web surfers, but also provides the lowest data speed. The travelling computer or information appliance remote user can almost always find a phone line (RJ-11 jack) to utilize and "connect" to.

## Integrated Services Digital Network (ISDN), Frame Relay, T1-T3, etc.:

Existing copper **unshielded twisted pair (UTP)** in the local phone loop may be used to carry a variety of higher-speed digital data services. **Frame relay** circuits provide 56 or 64 Kbps and more, but are mostly used for business locations. **T-1** (Trunk Level 1 or **DS-1** at 1.544 Mbps) and **T-3** (Trunk Level 3 or **DS-3** at 44.736 Mbps, equivalent to 28 T-1s) service offerings can also be provided over special leased circuits and are commonly used by enterprises to carry consolidated voice and data traffic, directly connect between remote facilities, and get their high-speed connection to the Internet.

**Integrated Services Digital Network (ISDN)** was the first attempt at a popular high data rate service that could serve businesses and residences, but its limited availability, high cost of service, and difficulty to install restricted its growth. An ISDN **Basic Rate Interface (BRI)** provides two data

channels of 64 Kbps each for 128 Kbps data rates along with a 16 Kbps data control channel (2B+D). A **Primary Rate Interface (PRI)** circuit provides multiple BRI channels (23B+D in North America at 1.544 Mbps or 30B+D in Europe and elsewhere at 2.048 Mbps) for telephone switching and voice processing applications. Though it is able to achieve medium speeds and is still used for some business and residential applications such as Internet access, videoconferencing, and retail Point of Sales (POS), it is being largely superseded on the phone network by high-speed Digital Subscriber Line services.

## **Digital Subscriber Line (xDSL):**

**Digital Subscriber Line (DSL)** technology allows for ever higher speed connections between a residence or workplace and the telephone company's **Central Office (CO)** or nearest **Point of Presence (POP)**, perhaps a remote **Digital Subscriber Line Access Multiplexer (DSLAM)**. From there the data traffic can be routed directly to another location across perhaps a number of carriers' backbones and networks or through an **Internet Service Provider (ISP)** to the **Internet** for worldwide net access. There are many flavors of DSL such as Asynchronous Digital Subscriber Line (**ADSL**), Rate Adaptive Digital Subscriber Line (**RADSL**), and Very high-speed or Video Digital Subscriber Line (**VDSL**), which is why the general abbreviation is commonly given as **xDSL**, with the **x** representing the many types available.

**US WEST Communications** (<http://www.uswest.com/>) had the first commercial rollout of DSL services anywhere in the world here in the Phoenix area in October 1997. Today they offer RADSL to over half the locations in the Valley with data rates from 256 Kbps each way all the way up to 1 Mbps upstream and 7 Mbps downstream at various price points. Since this service is not available in all areas due to distance from telephone facilities, line quality, and other factors, consumers must check with US WEST and competitive providers to determine if they are in an active service area and what packages and pricing are offered.

ILECs, like the cable companies, are deploying fiber optic cables to each neighborhood (**Fiber To The Neighborhood - FTTN**) to extend the capacity and reach of DSL services and to be able to deliver television programming over legacy last-mile copper wiring. Under the **Telecom Act of 1996**, which requires local phone companies to "unbundle" their local loop at some seven logical connection points. **Competitive Local Exchange Carriers (CLECs)** can also provide xDSL services by leasing lines to business and residential sites, provisioning them with DSL modems at each end often collocating equipment at the ILECs' Central Office (CO) switching centers or other Points of Presence (POPs). As ILECs further deploy DSL and gain experience with it, as unbundling lets competitors into their facilities and local loops, and as xDSL technologies standardize and mature, DSL will certainly prove a strong last-mile competitor for broadband and converged telecommunications services.

A new DSL standard known as **G.lite** will allow simpler and cheaper DSL connections, operating up to 1 Mbps. The end user will treat it more like a phone modem of today that can be self-installed or it will come already built into modern computers. In general, DSL service shares a single phone circuit with regular POTS voice service and make quite efficient use of existing telephone lines and resources. The FCC recently ruled that ILECs must further sub-divide their networks and give CLECs access to just the high-frequency portions of local loops on an incremental cost basis, turning the sub-loop into a new **Unbundled Network Element (UNE)**. The ability to provide voice telephony from the ILEC while leasing the high-frequency bandwidth will enable the CLECs and their customers to line-share carrying converged data services and applications. This will further accelerate the deployment and utilization of xDSL technology for last-mile solutions from an increasing diversity of **Telecommunications Service Providers (TSPs)**.

## **Cable Modems and Cable System Operators:**

Cable television companies have the only other relatively complete network of wire in the ground reaching residences and most business locations. Large cable companies with many urban markets are known as **Multiple System Operators (MSOs)** and have been trading or acquiring outright other providers' customers to build market size and number of subscribers in specific geographic regions or **Cluster Markets** that can be more cost effectively served. **Cox Communications** has created clusters serving the vast majority of the Phoenix (<http://www.cox.com/phoenix/>) and Tucson and Southern Arizona (<http://www.cox.com/tucson/>) area markets, thus reaching the majority of Arizona cable television consumers. An assortment of over a hundred local cable system operators serve small areas of the state or even single locations, such as mobile home parks and apartment complexes. These smaller cable companies receive licensed satellite or other television feeds, but may include only limited local content and usually carry much less breadth of channels and available television content. The smallest operators are not necessarily subject to the full range of regulation and scrutiny that the more major cable operators experience.

The cable operators' local **Hybrid Fiber Coax (HFC)** networks increasingly integrate fiber optic cabling and equipment along with their shielded coaxial last-mile cable. MSOs traditionally delivered only entertainment television programming, but with their enormous investments in upgrading their regional networks for broader bandwidth and bi-directional transmissions, the cable companies can now deliver high-speed Internet access over cable modems, with each neighborhood sharing a 10 Mbps (and soon to be 27 Mbps) connection. Since everyone isn't accessing the Internet at once, effective performance is usually from 1 to 3 Mbps download speed for each user. Cable operators monitor data traffic and can create neighborhood sub-loops or even multiple digital communication channels to relieve any data congestion. Upload speeds may be limited by network design or managed and price-tiered based on the providers' business and market models.

Cox Communications' (<http://www.cox.com/>) predecessor, Dimension Cable, developed and operated one of the first large-scale experiments globally of a **Metropolitan Area Network (MAN)** running on a HFC network here in Phoenix, AZ in the early 1990's, calling it ECnet or ValleyNet. They partnered with Arizona State University's (ASU) Goldwater Center for Manufacturing Excellence, Motorola, and Digital Equipment Corporation (DEC, now part of Compaq Computers) to upgrade portions of the regional cable distribution network and run telework and concurrent engineering trials with early, proprietary cable modems. Today, more high-speed Internet access in this country is delivered to consumers over similar cable modems and networks, than by any other means. As with DSL, you must check with your local telecommunication service provider(s) to determine if you can get high-speed data services today to your location or what the projected availability is scheduled to be.

Along with the new data services, the cable companies are also delivering enhanced digital television and competitive local and long-distance phone service. New standards will allow the next generation of cable modems meeting **Data Over Cable Service Interface Specification (DOCSIS)** standards (see **CableLabs** - <http://www.cablelabs.com/>) to be bought "off-the-shelf" at retail stores and installed and configured by end users. This will contribute to lower installation and operating costs leading to an even broader market adoption of such services. Additionally, this next generation of set-top boxes will add convergence-driven functionality for e-mail, web surfing, teleconferencing, and other advanced applications and content streams. Most MSOs have formed exclusive alliances with companies such as Excite@Home or RoadRunner to provide Internet services to their subscribers. Over the next few years, the cable modem market will likely open up to additional competitive **Internet Service Providers (ISPs)**, further influenced and impacted by the ongoing merger mania in

the telecom industry. For more information see the earlier section of this study, **The Other Open Access/Forced Access Issue - ISP over Cable.**

Cable system operators face significant challenges for market share and subscribers in their core competency arena of delivering entertainment television from competitive entrants such as **Satellite Master Antenna Television (SMATV)** providers, **Direct Broadcast Satellite (DBS)**, terrestrial fixed wireless broadband broadcasting (such as Peoples ChoiceTV over MMDS in Phoenix and Tucson), ILECs providing video over xDSL, and increasingly from rich content delivery on-demand or multicast over the Internet. Further, cable television providers must adapt, reengineer, and invest in ever-higher performance digital television standards, formats, and platforms, including **High Definition Television (HDTV)** and beyond. They must also develop and integrate new services such as **Video on Demand (VoD)** to constantly increase subscribers' television viewing choices and flexibility. Cable operators are also beginning to exploit their extensive metropolitan fiber rings and network to deliver volume data business services.

On top of that the FCC, acting in concert with other government entities, and in accordance with their mandates and the public interest, enforces "**must carry**" rules for cable concerning all local broadcast stations, mandates children and public interest programming, and maintains content rating systems. Cable television providers are then regulated by each municipality they serve under licenses or franchise agreements and renegotiate for taxes and fees, customer services, content selections, **Public Education Government (PEG) channels** production and distribution, and possible in-kind services in each contract cycle, usually from 5 to 15 years in duration. However, their newer voice and data services may fall outside current municipal agreements and cable companies' traditional regulatory oversight may be further fragmented across various jurisdictional entities, leading to a confusing and complex new era for cable system operators.

### **Fixed Wireless Access:**

**Local Multipoint Distribution Systems (LMDS)** at 27.5 - 31 GHz), **Multipoint Multichannel Distribution Services (MMDS)** - 2.5 - 2.7 GHz), and **Digital Microwave** (24 GHz, 28 GHz, 38 GHz), among other licensed and unlicensed spectrum can deliver wireless cable television content as well as high-speed data and Internet services. Wireless CLECs such as ART, NextLink, Teligent, and WinStar commonly utilize terrestrial point-to-point or point-to-multipoint microwave links to deliver broadband capabilities and a variety of services to volume business customers. Usually external antennas are mounted on rooftops or walls and pointed at a wireless providers' remote facility, though line-of-site may not be required due to system design or use of multi-path. Increasingly, transmissions will be able to penetrate buildings' exterior walls to reach fixed antenna inside wiring closets, at workstations, and as part of portable devices, likely beyond the control of building owners. Also, in-building and short-haul wireless **Local Area Networks (LANs)** will be more commonly deployed, enabling roaming and collaborative communications across the modern enterprise, be it in multitenant business environments or across corporate, educational, and government campuses and complexes. Even residential consumers will deploy wireless home LANs to connect their various computers and smart appliances.

**Peoples Choice TV's SpeedChoice** MMDS service covers most of the Phoenix and Tucson markets from just a few transmission towers. Consumers can access the Internet wirelessly with download speeds of 1 Mbps using a small eight-inch dish mounted on their homes and businesses. Though the return (upload) speeds had been limited to 33.6 Kbps by the need to use a conventional phone modem, the recent introduction of bi-directional wireless capabilities can free up the phone line and raise the upload speed significantly. With this technology, all areas within line-of-sight of the antenna sites can subscribe to these services, though terrain, landscaping, and buildings can block availability. Again,



consumers must check with the local providers regarding their location and have a site survey performed if necessary to confirm serviceability of their location.

Similar fixed wireless technologies known as **Wireless Local Loop (WLL)** can provide telephone and data services to residents, especially in rural and remote underserved areas. For example, Mountain Telecommunications Inc. (MTI) has a tower currently servicing the Salt River Pima-Maricopa Indian Community (SRP-MIC) from Scottsdale and plans to add additional facilities to serve other underserved Arizona communities before long. Additionally, an explosion of wireless investment in frequency allocations and facilities will make services such as these and others more widely available and increasingly competitive.

### **Mobile Wireless Access:**

Today, tens of millions of Americans enjoy the mobile connectivity of a **cellular and Personal Communications System (PCS)** wireless handset for voice telephony. These services rely on an extensive network of cellular radio antennas placed throughout urban areas and along highway routes. Geographic service coverage may vary significantly by provider and should be considered along with rate plans and options when selecting a service. In general, these networks can only be used for low-speed data connectivity for mobile devices such as handheld and laptop computers, while requiring special data interfaces and connections. With as many as eight service providers in each major market, fees for use have steadily declined and flat-rate subscription plans now bundle popular features and hundreds of air time minutes.

Over the next few years broadband mobile wireless services will be perfected and deployed. Today's cellular and PCS wireless networks will migrate their data access to higher-speed **Third Generation (3G)** performance levels, reaching 384 Kbps and faster. Consumers will increasingly access their e-mail and browse the web from smart mobile devices or information appliances, integrating standard voice telephony with data access capabilities. **Wireless Local Area Networks (WLANs)** will cover entire buildings, complexes, and campuses to enable roaming workplace access to resources. **Personal Area Networks (PANs)** will connect individuals and their personal information appliances to other individuals in close proximity and to nearby computer systems and peripherals. **Bluetooth** protocol devices, operating at 2.4 GHz in the ISM (Industrial, Scientific & Medical) Band and supported by a widespread industry coalition, will dynamically form impromptu networks between consumers, devices on their person, and any other similarly enabled nearby devices. **Home RF** (radio frequency) network technology will allow PCs, peripherals, cordless telephones, and other consumer electronic devices to share voice and data via a single mobile home network. Such short haul ad-hoc wireless connections will be made over standards such as **Wireless Application Protocol (WAP)**.

Other mobile wireless solutions include micro-cellular systems such as Metricom's Ricochet, already deployed at Sky Harbor Airport and aiming for Phoenix-wide availability. Thousands of street light mounted transmitters allow mobile data access at modest rates (up to 128 Kbps) for anytime anywhere connectivity with simple PC Cards or external wireless modems for portable access devices. In general, wireless systems are the easiest to introduce into existing markets because cables don't have to be buried everywhere. Look for an explosion of wireless options and competition in the years to come.

### **Satellite Access:**

The modern era of communications was truly begun with the launch of Sputnik in 1959. Today, thousands of satellites orbit the earth and many thousands more will be added in the next few years. **Geostationary satellites** sit in a fixed location above the equator and can be used by pointing a fixed antenna with appropriate support equipment at the "bird" in the sky. Services such as Hughes DirecPC

(& DirecDuo) offer high-speed Internet downlink (400 Kbps) across the country, even in rural areas, and can be combined with video entertainment services. But the return data uplink is by phone modem at their lower connect speed. Business subscribers may lease satellite transmission capacity to meet their global connectivity needs. **Direct Broadcast Satellite (DBS)** competes with cable system operators to provide video entertainment to subscribers but can also support paging, data multicast, digital radio broadcasts, and other applications. Due to the limited number of geostationary orbital "slots," they are an extremely valuable resource governed by countries and worldwide organizations. And satellite-based digital radio will soon be commonly transmitting multiple channels of audio content to broad regions of the world for reception by fixed and mobile receivers.

The first **constellation of satellites**, Motorola's **Iridium** project, now circles the globe in multiple polar orbits, with two or more satellites always within reach. They support mobile voice communications and low-speed data from anywhere on the planet, but at a high cost for the special phone and service costs. Additional satellite constellations and systems, such as Teledesic, Globalstar, and SkyBridge will soon launch with higher data performance capabilities and costs will begin to drop. Satellites function with equanimity, serving rural as well as urban areas, and knowing little geographic bounds. In the future, special stratospheric planes and aerial platforms working rotating airborne shifts will be developed and deployed to offer advanced wireless services with high data rates over footprints covering urban centers and surrounding areas.

### **More Fiber in the Diet:**

Originally the **Regional Bell Operating Companies (RBOCs)** built regional networks to connect the Central Offices (COs) around each area and to connect city to city. These networks would interconnect at their boundaries and carry voice traffic to its destination across the **Public Switched Telephone Network (PSTN)**. The advent of the Internet led to government sponsored data backbones dedicated to this new kind of traffic. Long distance providers also constructed sophisticated and far-reaching communications networks to interconnect their service areas and back-haul increasing portions of their signal traffic.

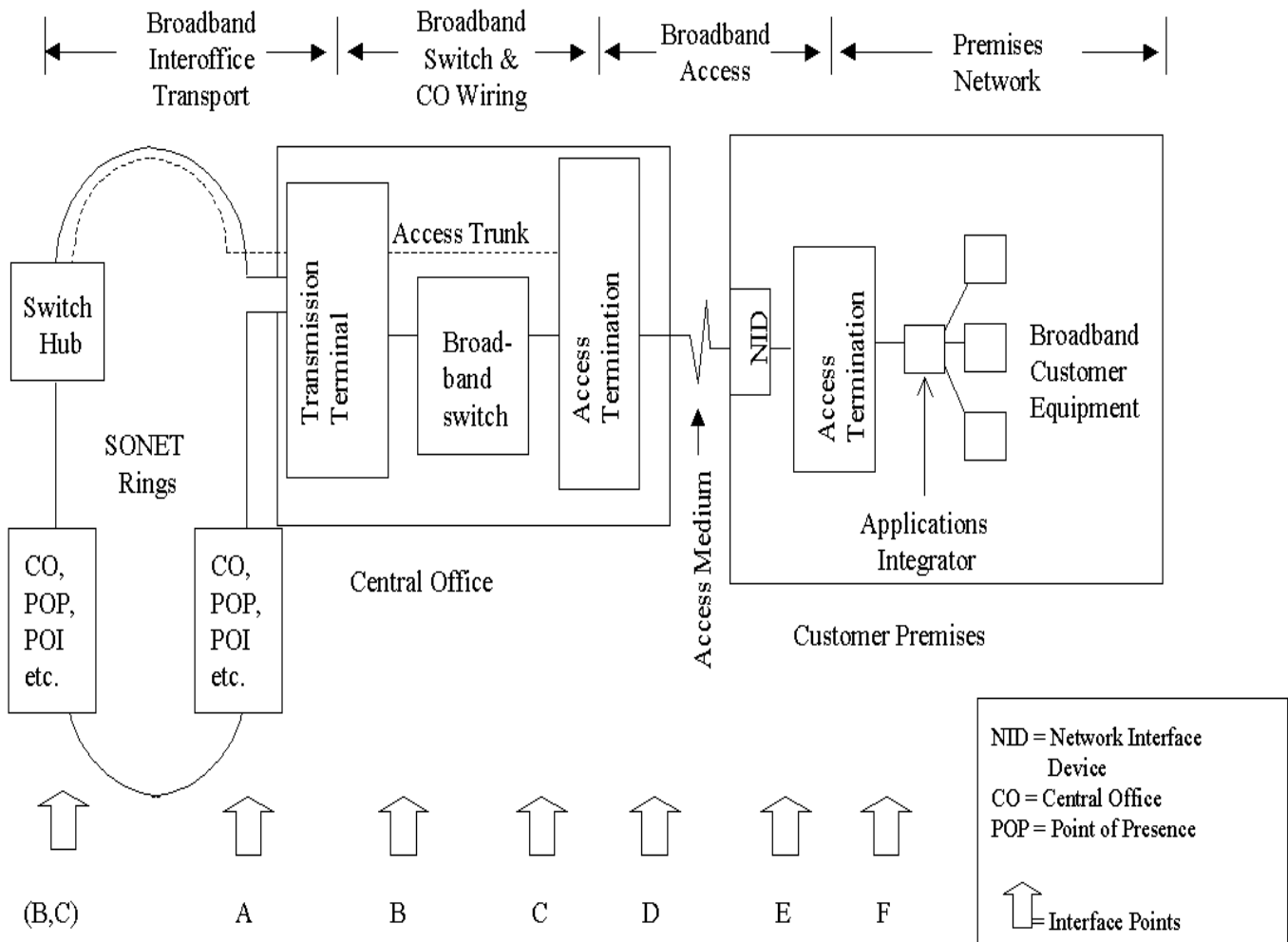
Fiber optics cable and its associated amplifiers and termination equipment are being increasingly deployed throughout municipal areas, across the nation, and around the world for long-haul backbones, as a connection between facilities and networks. It may even be utilized to deliver bulk bandwidth directly to customers, to connect buildings within a complex or campus, or even within buildings. Where past fiber optic systems usually utilized a single color of light to carry information, **Dense Wave Division Multiplexing (DWDM)**, with its multiple wavelengths of light, has much greater capacity carrying up to terabytes of digital information per second.

**SONET (Synchronous Optical Network)** is a family of fiber-optic transmission rates and protocols providing the optical interface standard that allows the internetworking of various data transmission products and transport of various high-speed data applications. It is commonly used in SONET fiber rings distributing reliable backbone data transport capabilities around metropolitan areas and for long haul carrying between urban centers. These high-speed data streams are customarily carried using **Asynchronous Transfer Mode (ATM)**, **Synchronous Digital Hierarchy (SDH)** and/or **Internet Protocol (IP)** technologies and protocols. Volume telecommunications customers may buy direct access to providers' SONET networks at high-speed **Optical Carrier (OC)** rates from **OC-1** (51.84 Mbps, equivalent to a T-3 or DS-3 circuit) to **OC-3** (155.52 Mbps), **OC-12** (622.08 Mbps), **OC-48** (2.488 Gbps), **OC-192** (9.953 Gbps), and beyond.

### **Photons have neither morals or visas.**

**David J. Farber**, 1996, FCC Chief Technologist (<http://www.cis.upenn.edu/~farber/>)

# Components of the Broadband Local Exchange Network



(Source: Association of Local Telecommunications Services - ALTS - <http://www.alts.org/>)

To have a truly competitive marketplace, we must have robust competition in each of these three components of the network. I envision a network of networks freely interconnecting to bring a wide range of services to the American public. Cable companies will compete with satellite systems, fixed wireless with telephone. It is an era when companies view their services differently, when local phone companies are not just phone companies, long-distance not just long-distance, when cable provides telephone service and wireless offers Internet access. Right now the seeds are being planted to grow this network of networks, so that one day firms will interconnect freely to bring a range of services to consumers. But we have a ways to go before that vision is fully realized, and it is our job to nurture those seeds and make sure they grow.

**William E. Kennard, Chairman, Federal Communications Commission**  
 before the Federal Communications Bar Association, December 9, 1999

## The Rise of the Internet and the Great Convergence:

In a space of fewer than five years, the great global network of computer networks called the Internet has blossomed from an arcane tool used primarily by academics and government researchers into a worldwide mass communications medium that is rapidly becoming a backbone of business-to-business communications, and is poised to become a leading carrier of communications and financial transactions within all segments of society.

The expansion of the World Wide Web -- the Internet's graphically-based subsystem -- has been even more spectacular. Barely four years old, it has grown at a rate that is unprecedented in the annals of communications technology, having already garnered an estimated 30 million-plus users worldwide, and has been or soon will be integrated into the marketing, information, and communications strategies of nearly every major corporation, educational institution, political and charitable organization, community, and government agency in the United States.

No previous telecommunications advance -- not the telephone, the television set, cable television, the VCR, the facsimile machine, nor the cellular telephone -- has penetrated public consciousness and secured widespread public adoption this quickly. The integration of the Internet and the World Wide Web into conventional social and economic processes is taking place so rapidly, in fact, that even many of those in the industry have a hard time keeping up. Yet almost all analysts agree that what we are witnessing is only the barest beginning of the "Internet explosion."

### **John Eger, CYBERSPACE and CYBERPLACE: Building the Smart Communities of Tomorrow**

Today's **Internet** dates back to at least 1973 when the **U.S. Defense Advanced Research Projects Agency (DARPA)** initiated research to interlink packet networks resulting in the development of two initial protocols, **Transmission Control Protocol (TCP)** and **Internet Protocol (IP)** which has become more commonly known as **TCP/IP**. The early national network was primarily used to connect researchers within military and higher education communities and to support e-mail communication as well as the sharing of high-power computer resources from remote locations. In 1986, the **U.S. National Science Foundation (NSF)** developed **NSFNET**, a 45 Mbps backbone that formed the basis, along with other domestic and international efforts, of a global Internet. Commercial carriers joined in, helping extend the reach, functionality, and robustness of these early efforts. The number of users remained modest, however, until the mid-1990s when the advent of graphical browsing and hyperlinked content lead to a virtual explosion in the popularity and use of the Internet.

Consumer, business, and government use of the Internet has grown enormously, along with the graphical and media rich character of the available content. Streaming audio and video, teleconferencing, groupware applications, graphic images, downloads of large files, electronic commerce, and other delivery of rich content sources and real time data streams all drive the need for backbone and "last mile" data capacity. Further, the Internet enabling of voice telephony (**Voice over Internet Protocol - VoIP**) and trends in **Computer Telephony Integration (CTI)** will drive the convergence of the traditional **Public Switched Telephone Network (PSTN)** increasingly with the **Internet** to form **Next Generation Networks (NGNs)** or a **New Public Network (NPN)**. Dispersed enterprises are increasingly moving their **Wide Area Network (WAN)** applications from leased telecommunications services to **Virtual Private Networks (VPNs)** operated over the Internet. Additionally, many new types of devices, **Personal Digital Assistants (PDAs)**, information appliances, next generation set-top television boxes, Internet-enabled fixed and wireless telephone instruments, will drive our use of and reliance on this burgeoning communications media.

The "need for speed" and the performance or mission critical nature of many of these new applications will further drive the large-scale deployment of fiber backbones and evolution of Internet protocols. An **Internet2** project, or **Next Generation Internet (NGI)**, is being funded by the U.S. government and led by over 150 research universities, including Arizona State University (ASU), to enable new, advanced network applications to meet emerging needs in research and education. The **Abilene Project**, the key subnetwork making up the Internet2 backbone, will consist of some 13,000 mile of fiber optic cabling operating at least 2.4 Gbps. Like the original Internet, this project will serve as a test bed from which significant innovation will occur. Technology transfer to the government and commercial vendors will enhance the generally available Internet and further drive the evolution of its capabilities and capacity.

Voice, data, and video will increasingly be merged into combined data streams and carried over the most cost-effective communications transport services. Enterprises will move forward with carrying their converged voice and data traffic together for simplicity, efficiency and cost reasons. Further, the variety of messages that individuals now receive, live voice interaction, voice messaging, paging, faxes, e-mail, media file attachments, shared documents, and more will be collected and managed from unified message mailboxes for personal convenience and effectiveness.

## Comparison of Individual Users' Internet Connections

	<b>Dial-Up Modem</b>	<b>ISDN</b>	<b>xDSL</b>	<b>Cable Modem</b>	<b>Terrestrial Wireless</b>	<b>Satellite Wireless</b>
<b>Downstream Data Rate</b>	<=56 Kbps	128 Kbps	256 Kbps to 7 Mbps	400 Kbps to 3 Mbps	9.6 Kbps to 1 Mbps	33.6 Kbps to 400 Kbps
<b>Upstream Data Rate</b>	<=33.6 Kbps	128 Kbps	64 Kbps to 1 Mbps	128 Kbps to 3 Mbps	33.6 Kbps via dial-up to 256 Kbps wireless	33.6 Kbps via dial-up - faster wireless later
<b>Initial Cost</b>	<\$50	\$150 to \$300	\$125 to \$300	\$50 to \$300	\$150 to \$250	\$200 to \$3000
<b>Monthly Cost</b>	free to \$20	\$40 to \$120	\$40 to \$200	\$40 to \$60	\$45 to \$65	\$30 to \$130
<b>Pros</b>	Easy & cheap; Widely available	First digital service; Reasonably broad availability; Used for POS and video conferencing	Low cost potential; Shares phone line with voice; Switched circuit dedicates connection;, Developing G.Lite standard to accelerate 1 Mbps rate availability	Low cost potential; Accelerating urban deployment; DOCSIS standard released; Cable modems to reach retail distribution shortly	Single antenna for large area; Quick to deploy with great regional coverage; Multi-path and multi-hop may help reach	Works anywhere; Additional systems to be launched; Higher data rates pending; Stratospheric platforms may fill the gap
<b>Cons</b>	Rates limited by phone quality; Ties up a phone line	Setup can be problematic; Availability limited by distance from telco office	Standardization pending; Availability limited by network upgrades and distance from telco office	Limited availability to business; HFC upgrades still in progress	Limited upstream data rates with telco return; Only available in some markets; Line of sight only	Expensive interface hardware and service costs; No broadband until 2002 or later

(Source: International Research Center - <http://www.researchedge.com/>)

## Telecommunication Markets at the End of the 20<sup>th</sup> Century:

Economists have long acknowledged that competition keeps prices down. The New Economy creates another critical reason for competition: competition drives innovation, and ultimately provides the greatest benefits to consumers and citizens. Of course, government must continue to provide commonsense health, safety, and environmental regulations. However, government should move away from regulating economic competition among firms and instead promote competition to achieve public interest goals of lower costs, new products and greater consumer choice. In the New Economy, technology is not just the province of Silicon Valley; it is the catalyst for profound change throughout the economy and society. Technological innovation has now become central to addressing a wide range of public policy goals, including better health care, environmental protection, a renewed defense base, improved education and training, and reinvented government.

Excerpt from **Rules of the Road: Governing Principles for the New Economy** from The Progressive Policy Institute's (PPI) Technology and New Economy Project

Recent progress in opening the traditional voice telephony market to competitive providers has proven to be fraught with difficulty and has only advanced in a limited and somewhat erratic manner. But there has simultaneously been significant progress in many other telecom service sectors and hopeful portents abound. While we wish dearly for more expedient regulatory reform, the slow pace of review, decision, and action is to some extent understandable due to the competing jurisdictional entities, as well as sheer complexity of the issues. Are they hindered by rapidly evolving technology advances and market forces, compounded (and confounded) by vested interests, and their continual legal challenges? Certainly. Are we better off than we were five years ago? Undoubtedly, yes!

Bells Labs and its progeny have proved themselves exceedingly capable of providing an ongoing renaissance of copper with its ability to carry increasingly complex and high-bandwidth telecom content streams. Dial-up modems have reached modest data rates (ITU V.90 at up to 33.6 Kbps upstream and 56 Kbps downstream) and have become ubiquitously attached to or incorporate into personal computers (PCs) and information appliances. Internet access is now nearly universally available, with more than 99 percent of American households able to reach an Internet Service Provider (ISP) with an unmetered local telephone call, up from 85 percent in 1996. More than 96 percent of them can choose from four or more ISPs and 85 percent from more than 21 ISPs.

Higher speed Digital Subscriber Line (xDSL) services are becoming increasingly available from ILECs, CLECs, and DLECs alike, especially in urban markets. Lack of standardization, quality of legacy lines, and distance from customer premises to Central Offices (COs) compound the difficulties encountered in the leasing and provisioning of lines, effectively limiting deployment to date. The recent FCC ruling mandating line sharing with sub-loop leasing of the high-frequency portion will further xDSL deployment and use. Consumer acceptance of digital subscriber line is accelerating, rising from just 77,000 customers in early 1999 to between 650,000 and 750,000 at the end of the year, with projections of 2 to 3 million by the end of 2000.

Cable operators have been aggressively upgrading their urban fiber and coaxial wiring and networks, rolling out a broad range of new services, including high-speed broadband data and Internet connectivity, voice telephony, and expanded digital television content and features. Cable modems are being standardized at higher rates (some 27 Mbps under DOCSIS) with new advanced functionality, and will soon be available for direct consumer purchase in retail distribution channels. Though cable television subscription prices have continued to rise, Local Multipoint Distribution Services (LMDS) and Direct Broadcast Satellite (DBS) are providing competitive video services to small dishes and may now add more local content, further strengthening their offerings. DBS delivers to a broad geographic footprint reaching many previously unserved residential consumers. The ILECs are also beginning to

extend their fiber systems closer to the consumer so as to better deliver competitive digital video offerings over legacy copper and may in time prove a significant competitor in the video content arena. And the Internet will deliver rich media content streams including multicast and on-demand video.

Adding up to five PCS carriers to the previous two cellular wireless providers has led to remarkable growth in the adoption of mobile phone instruments, while network coverage continues to expand, and systems go increasingly digital. Airtime rates have plummeted while service plans now offer large blocks of minutes and even single-rate cross-country dialing. Multi-protocol, frequency-agile, data-enabled mobile telephones will soon provide global coverage and roaming. Some consumers are using wireless providers as the carrier of last resort in certain geographic areas or choosing to "cut the cord," substituting wireless for wireline voice services. Low data rates (commonly 10-28 Kbps) for roaming connections will increase to perhaps 384 Kbps or more as Third Generation (3G) systems are implemented, supporting a wide range of mobile information appliances. These new generation portable devices are just now coming to market and will readily support messaging and browsing applications.

Fixed wireless systems of many different configurations are being developed and deployed, currently offering competitive choices for broadband access with aggregated voice traffic to business customers in most metropolitan and some rural areas. The market for broadband wireless services is estimated at some 500,000 access lines in 1999 with expected growth to more than 4.4 million access lines in 2004 (19 percent of the market for all broadband access lines). Additional geostationary and polar orbital satellites, as well as stratospheric platforms, will deliver ubiquitous global connectivity for voice and broadband data traffic to both mobile and fixed locations. Wireless local loop remains in a mostly experimental phase, but offers great promise for unserved and underserved areas, especially rural and tribal lands. However, it will also be increasingly utilized to overlay currently served target markets.

An explosion of long-haul fiber backbone is being deployed in metropolitan rings, across the nation, and around the world. From some 14 Internet backbone providers in 1996, there are more than 43 today with 19 companies having installed more than 200 points of presence each. Advanced in fiber optic transmission, such as multi-colored Dense Wave Division Multiplexing (DWDM), continue to increase carrying capacity to 10 Gbps and beyond for individual fibers. Meanwhile, the great convergence of voice, data, and video over Internet Protocol (IP) platforms continues unabated while American ingenuity continually invents new ways to transport and utilize ever-higher bandwidth capabilities and capacities. From only 13 CLECs in 1996, today there are some 333 and all 50 states have at least one competitor. Today's top 35 CLECs have a market capitalization of some \$86.4 billion versus 9 publicly traded competitive carriers in 1996 worth \$3.1 billion.

As the Internet moves into the 21st Century, it is beginning to undergo a dramatic transformation from a predominantly "narrowband" world of dial-up modems and slow connections, to a high-speed "broadband" world using an emerging array of new technologies. Although today many corporations and educational institutions access the Internet through fast dedicated phone lines, the Internet has become the dynamic and democratic medium that it is through widely-available and competitive dial-up connections provided by thousand of Internet Service Providers around the country.

At least four technologies are emerging as broadband alternatives to the dial-up modems. Operators of cable television systems have undertaken major overhauls of their coax-cable networks to enable the use of high-speed cable modems. Local telephone companies are rolling out the Digital Subscriber Line (DSL) technology that allows the transmission of high-speed digital data over ordinary copper telephone wires. Although less developed than cable modem or DSL service, terrestrial wireless and satellite technologies also offer the potential for high-speed Internet access. A number of legal and policy debates are swirling around the emergence of broadband technologies and the transformation of the Internet to a high-speed medium.

# **Arizona Telecommunications and Information Council (ATIC)**

## **Multitenant Building Telecommunications Access Study**

### **National Regulatory Precedents and Trends**

Government has little to do while private companies wire the country for high-speed Internet access... Congress approved the Telecommunications Deregulation Act in 1996 in the expectation it would ignite widespread competition. Now that time has come, and if government makes sure all the companies compete fairly, the spread of high-speed Internet connections will be an unambiguous good.

**Boston Globe Editorial**, March 24, 1999

### **United States Congress:**

The U.S. Congress has played an activist role in the telecommunications arena throughout the past century. Today, Congress continues to follow the developments in telecom technologies and markets, and periodically deal with market and regulatory issues through legislative initiatives, the associated deliberations, the resultant legislation, and its aftermath in the real world telecom marketplace. Congress is and will remain a substantial force in the reform and reengineering of the new regulatory environment for Telecommunications Service Providers (TSPs). Starting with the earliest common carrier decisions, the Mann-Elkins Act of 1910 and the subsequent Interstate Commerce Commission (ICC) rulings that established the initial framework for Federal regulation of the telecommunications industry, there have been debatably three watershed telecom regulatory events of the 20<sup>th</sup> Century.

### **The Communications Act of 1934:**

**The Communications Act of 1934** (<http://www.fcc.gov/Reports/1934new.pdf>) sought to "make available, so far as possible, to all the people of the United States a rapid, nation-wide, and world-wide wire and radio communications service with adequate facilities at reasonable charges." It established dual state and federal regulation of telecommunications services, but limited federal authority primarily to interstate and foreign communications. The 1934 Act provides for FCC regulatory authority over common carriers as to their pricing and classifications, while defining carriers' duties to:

- 1) furnish communications services upon reasonable request to any member of the public
- 2) interconnect with other carriers when in the public interest
- 3) make any charges, practices, classifications, and/or regulations reasonable and just
- 4) refrain from engaging in any unjust and unreasonable discrimination with respect to service
- 5) refrain from giving any undue or unreasonable preference or advantages to any particular person, class, or locality
- 6) file schedules of charges for itself and any connecting carriers with the FCC
- 7) only make agreements with intercarriers that are in the public interest and file them with the FCC
- 8) obtain a certificate of public convenience and necessity from the FCC before constructing lines
- 9) obtain prior FCC approval before discontinuing or reducing services

The Communications Act of 1934 was augmented by the Cable Communications Policy Act of 1984 and the Cable Television Consumer Protection and Competition Act of 1992 to bring cable television providers under federal communications regulation and further define their roles and responsibilities.



## **The Dissolution of AT&T in 1984:**

**Alexander Graham Bell** invented the telephone on March 10, 1876 and formed the **Bell Telephone Company** on July 9, 1877. Under the leadership of Theodore Newton Vail, they purchased the Western Electric Company in 1881 and renamed the parent company as **American Telephone and Telegraph (AT&T)** at the end of 1899. An early Justice Department suit resulted in the Kingsbury Commitment of 1913 to provide interconnection arrangements to all independents. AT&T won a Final Judgement in 1956 allowing it to retain Western Electric, but subsequently lost a series of suits to MCI Communications and others. A lengthy federal anti-trust lawsuit resulted in the Consent Decree of 1982 and the **Modified Final Judgement (MFJ) of 1984** by Judge Harold Greene (US District Court in Washington D.C.), mandating the dissolution of AT&T, the world's largest firm worth some \$136.8 billion, including the divestiture of its local telephone companies and various technical and equipment manufacturing operations. The existing 22 "**Baby Bells**" were consolidated into seven independent **Regional Bell Operating Companies (RBOCs** - originally Ameritech, Bell Atlantic, BellSouth, Nynex, Pacific Telesis, Southwestern Bell, and US West). This marked a major shift in the structure and regulation of the telecommunications industry, addressing predatory pricing and interconnection, as well as enabling the rise of competition in long distance telephony services. The Seventh Circuit's 1983 decision giving MCI Communications access to AT&T's network for long distance telephone service helped advance the anti-trust and monopoly legal view of the "**essential facilities doctrine.**"

In the 1990s, AT&T began to expand again with the 1994 purchase of the largest U.S. cellular service provider, McCaw Cellular Communications, as the foundation of its wireless network. In 1997, AT&T voluntarily split into three separate and independent companies: **Lucent Technologies** (formerly **Bell Labs**), NCR (computer consulting services), and AT&T for long distance and wireless telephony as well as Internet services. AT&T's acquisition of Media One Group makes it the largest U.S. cable operator with some 25% market share. And their active trials with Wireless Local Loop (WLL) may yet be widely deployed to help regain a direct access path into American homes and businesses.

## **The Telecommunications Act of 1996:**

After several years of effort, the U.S. Congress passed S.652, **The Telecommunications Act of 1996** (<http://www.fcc.gov/Reports/tcom1996.pdf>). Signed by President Clinton on February 8, 1996, it represents the most comprehensive update of U.S. communications laws and FCC policy in decades. An enormous number of issues for government, business, and consumers arise from it and its implementation. The outcome of many of them won't be clear for years to come. The FCC, state legislatures and public utility commissions, as well as county and municipal governments have been struggling to interpret and implement the tenets of the Act with varying success, at times resulting in court challenges. Technology advances and market forces often outpace the ability of regulatory and oversight agencies to respond. Some highlights of the act and related issues follow and the resources below point to more background and comprehensive treatments of these topics.

The Telecom Act of 1996 identifies various telecommunications service categories and seeks to open markets to participation by the cable industry, while enabling telephone companies to provide video programming, reduce broadcast service regulation, and allow RBOCs to provide long distance services and manufacture telecommunications equipment under certain conditions. All telecommunications service providers have a duty to interconnect with other carriers. Local Exchange Carriers (LECs) must negotiate in "good faith" and provide resale of their services on a nondiscriminatory and reasonable basis, provide for interconnection with requesting LECs at any technically feasible point, lease access to network elements on an unbundled basis, as well as provide access to their poles, ducts, conduits, rights-of-way (ROW), and facilities for collocation to competitive providers at reasonable and nondiscriminatory rates.

ILECs must also support number portability, dialing parity, and reciprocal compensation arrangements for the transport and termination of traffic between providers. Universal service contributions are required of all telecommunications providers outside some FCC determined exemptions while states may adopt regulations consistent with FCC rules to preserve and advance universal service. The Act also provides for disabled persons to have ready access to telecom services, regulates obscene, harassing or wrongful use of telecom facilities, and attempts to address the privacy of communications customer information. Further, the FCC is directed to streamline its practices and procedures, to refrain from implementing and enforcing provision of the Act as necessary to promote and enhance competition, and to consider provider petitions for forbearance. Some details of The Act follow.

### **Telephone Service and Equipment Manufacturing:**

All state restrictions on competition in local and long-distance telephone service are essentially overruled and the AT&T and GTE antitrust consent decrees are dismantled. Regional Bell Operating Companies (RBOCs) may provide long-distance service outside their regions immediately and inside their regions after entry barriers for local telephone competition are removed. The RBOCs may manufacture telephone equipment once their application to provide out-of-region long-distance service is approved. Universal service will continue to subsidize rural and low-income subscribers and be expanded to assist primary and secondary schools, libraries and other public institutions with discounts of from 10 to 90% on telecommunication equipment and services.

### **Cable Television:**

Rate regulation requirements on all but “basic tier” services will be removed where competition exists from comparable video services over telephone facilities or in smaller communities and no later than by March 31, 1999 for all providers. Telephone companies or cable companies (under conditions of competition) may offer cable television services or carry video programming via Open Video Systems (OVS), exempted from many “franchise-like” requirements. Other rules of the 1992 Cable Act are relaxed or repealed. Cable set-top boxes will be available unbundled through retail channels and the FCC may not set standards for set-top boxes or restrict computer network services equipment features. Cable franchise and license authority is retained by local government including the right of prior approval of a sale or transfer, but some provisions may override current contract language and terms, such as the definition of gross revenues on which franchise or license fees are calculated.

### **Radio, Television and Satellite Broadcasting:**

The Act relaxes, but does not eliminate, the FCC’s national media concentration rules and requires that the FCC consider changing ownership limits within communities. Television broadcasters are allowed “spectrum flexibility” to use additional frequencies for advanced television services (i.e. - high-definition television, data services), but must eventually return some frequencies for reassignment. Television equipment manufacturers must include V-chip technology to allow parental blocking of violent, sexually explicit, or indecent programming. Terms of broadcast licenses are extended and renewal procedures relaxed. The FCC has exclusive jurisdiction over Direct Broadcast Satellite (DBS) services including potential tariff and rate regulation.

### **Control of Public Rights-of-Way (ROW):**

The Act states that “No state or local statute or regulation or other State or local legal requirement, may prohibit or have the effect of prohibiting the ability of any entity to provide any interstate telecommunications service” and that the FCC shall preempt the enforcement of any such statute, regulation or legal requirement. Local governments retain the authority to “manage the public rights of way or to require fair and reasonable compensation from telecommunication providers on a

competitively neutral and nondiscriminatory basis for use of public rights of way on a nondiscriminatory basis, if compensation required is publicly disclosed.” Local authorities may still “police” and manage their ROW and generate revenues from ROW access from cable operators, local telephone providers, wireless providers, and other telecommunication entities.

### **Local Regulation, Taxation, and Zoning Authority:**

Local governments may continue to regulate the use of the public right-of-way by telecommunication providers within limits imposed by federal and state law, FCC and Public Utility Commission (PUC) regulation, and court decisions. Municipalities are prohibited from imposing any fee or tax on Direct Broadcast Satellite (DBS) providers, but may otherwise tax services as allowed by state and local law. Local governments retain the authority to regulate the placement, construction and modification of wireless service facilities, except as pertains to the environmental effects of radio frequency emissions. However, the FCC prohibits restrictions that impair a consumer’s ability to receive television programming from over-the-air local television broadcast stations, DBS services or Multichannel Multipoint Distribution Systems (MMDS), thus potentially preempting local zoning requirements and community Covenants, Conditions, and Restrictions (CC&Rs) concerning the placement of antennas and satellite dishes on rooftops and in yards for home owners and some multi-tenant residential renters.

### **Recent Federal Legislative Initiatives Specific to Multitenant Building Access:**

A House bill H.R. 3487 (**Competitive Broadband Telecommunications Rooftop Access Act**) was introduced in November, 1999 "to provide consumers in multitenant buildings with the benefits of competition among providers of telecommunications services by ensuring reasonable and nondiscriminatory access to rooftops of multitenant buildings by competitive telecommunications carriers, and promote the development of fixed wireless, local telephony, and broadband infrastructure, and for other purposes." The legislation requires that the owner of an occupied multitenant building permit a telecommunications carrier reasonable, standardized, and nondiscriminatory access within 15 days of the carrier's request if certain conditions, including a tenant request for services are met. It also provides that the multitenant building owner may demand and receive just compensation, as long as it is reasonable and assessed in a nondiscriminatory manner. It was referred to House subcommittee in December, 1999 and its prospects remain unclear. Such legislation would not only impact wireless competitive telecommunication providers rights to access new customers, but would likely set expectations and precedents applicable to competitive wireline access to multitenant spaces.

The **Competitive Access to Federal Buildings Act** (H.R. 2891 introduced 9/21/99 and S.1301 introduced 6/29/99) provide that buildings owned or leased by federal government provide nondiscriminatory building access to competitive telecommunications providers. The text acknowledges that several States, including Connecticut and Texas, have already enacted measures to promote non-discriminatory access by telecommunications carriers to rooftops, risers, conduits, utility spaces, and points of entry and demarcation in order to promote the competitive provision of telecommunications services and information services, directing the **National Telecommunications and Information Administration (NTIA)** to advise the FCC on the development of such policies for commercial property. The proposed legislation is currently referred to House and Senate Committees.

### **Current Federal Legislative Initiatives on Broadband Services:**

The **Internet Freedom and Broadband Deployment Act** (H.R. 2420) seeks to deregulate high-speed data services and Internet access by largely removing both the States' and FCC's authority to regulate them. ILECs would be able to deploy delivery networks, segment service offerings, and provide advanced services free of the obligation to unbundle network elements for competitive leased access and without regard for whether they have sufficiently opened their local telephony markets to qualify

for long distance market entry. This loophole to the Telecom Act of 1996 would tend to remove significant incentives for ILECs to meet their obligations in opening their local markets.

Other bills in the 106<sup>th</sup> Session include the Internet Growth and Development Act (H.R. 1685), the Internet Freedom Act (H.R. 1686), and the Broadband Internet Regulatory Relief Act (S. 877) also address unleashing the ILECs to offer advanced services and allowing them to compete in the long distance market before opening their monopoly local markets to competition, effectively removing any BOC incentive to cooperate with competitors, and undoing Section 271 of the Telecom Act.

However, Senator Hollings' Telecommunications Competition Enforcement Act (S. 1312) seems designed to foster competition in local markets as it would impose severe penalties on ILECs for non-compliance with the Telecommunications Act. By February 2001, they could face penalties of \$100,000. per day if they fail to meet the 14-point "competitive checklist" of section 271 of the Telecom Act in at least half of their regions. By February 2003, the FCC would be further required to order the monopolies to sell off their network facilities in states that are not in compliance.

### **Federal Legislative Directions for the Future:**

There will likely be hearings and further legislation on the structure and function of the FCC, perhaps limiting its role in merger and acquisition review and other matters. Universal Service Fund (USF) and E-rate programs will be reconsidered along with the allotment of their costs among various types of providers, as well as the role of wireless providers and other competitive entrants as both payees and USF recipients. Congress will likely be reviewing and perhaps acting on the FCC's wireless frequency allocations and sales, Digital Television (DTV) public interest obligations, direct broadcast satellite (DBS) local television content rules, the treatment of converged (voice, video, data) service providers and carriage, mega-mergers of major carriers and industry companies, etc. There are also a plethora of broad Internet and telecommunications related matters to consider including taxation, consumer privacy and protection, network security, computer crime, encryption technology for domestic use and export, law enforcement monitoring capabilities, domain name control and management, intellectual property issues, and others beyond the scope of this report to review and detail.

Finally, though the Supreme Court has recently reaffirmed the FCC's powers to carry out the Telecommunications Act of 1996 and issue guidelines to state regulators for wholesale leasing rates to local phone networks, Congress will be likely reconsider the limited success of deregulation under the Act and may choose to redefine the role and mandate of the FCC in regulation of the telecommunications industry with additional legislation.

It took a decade for Congress to approve legislation designed to open local markets to competition. It has taken over three years for the courts and the regulators to affirm Congress' landmark act. The worst thing Congress can do is to change the rules just after the U.S. Supreme Court has affirmed the principles of the Telecom Act, and the rules implementing the law have been put in place. Competitors are investing a billion dollars every month based on the soundness of Congress' decision in 1996. Those investments would likely stop if the rug is pulled out from under these competitors and the rules are changed. Equally troubling to anyone reading this, any such change in the law would likely mean that you, as consumers, would have fewer options for phone and Internet services and you would pay more for those services. We urge our former colleagues to stand with the many competitive communications companies and Internet service providers that are offering local data and voice services. The fundamental premise of the Telecom Act is sound - the Bells must open their local markets to competition before they can offer any kind of long distance services to their monopoly telephone subscribers. Congress must insist on enforcement of the pro-consumer Telecom Act. Congress should reject the request for special interest legislation.

**Former U.S. Congressmen Bill Paxon (R - New York) & Vic Fazio (D - California)**

From Nando's Time to Time (<http://www.nandotimes.com>), February 8, 2000

## **Federal Communications Commission (FCC):**

In General: The (Federal Communications) Commission and each State commission with regulatory jurisdiction over telecommunications services shall encourage the deployment on a reasonable and timely basis of advanced telecommunications capability to all Americans (including, in particular, elementary and secondary schools and classrooms) by utilizing, in a manner consistent with the public interest, convenience, and necessity, price cap regulation, regulatory forbearance, measures that promote competition in the local telecommunications market, or other regulating methods that remove barriers to infrastructure investment.

### **The Telecommunications Act of 1996** - Excerpt from the text of Section 706

The Federal Communications Commission (FCC), bound by the Telecom Act to encourage both competition and broadband investment, has as a matter of policy continued to ease conditions for CLECs to enter local exchange markets with the deployment of advanced networks. They have many complex and often interdependent issues to manage including: local and long distance phone competition, wireless auctions and the rapid evolution of offerings, mergers and acquisitions of vast telecom concerns, access charges and carrier interconnect, cross-subsidies, the Internet's popular use, IP carriage of varied media, cable systems becoming data and voice providers, satellite systems broadcasting video and providing ubiquitous two-way communication, national infrastructure reliability, universal service funding mechanisms and applications, the E-Rate, the Digital Divide between information "have" and "have nots," contention over jurisdiction and rulings, digital wiretapping, cryptography, civil liberties, the public interest, and consumer protection. Whew!

The FCC's **Common Carrier Bureau (CCB)** - (<http://www.fcc.gov/ccb/>) is responsible for administering policies concerning telephone companies that provide long distance and local service to consumers. These companies, called "common carriers" provide services such as voice, data, and other telecommunication transmission services to consumers. The Common Carrier Bureau is charged with ensuring that all consumers have rapid, efficient, nationwide and worldwide access to these services at reasonable rates. As competition grows and new technologies are introduced into the marketplace, the CCB seeks to eliminate unnecessary regulatory burdens on carriers while protecting the interests of consumers.

### **FCC Rulings Supporting High-Bandwidth Deployment:**

The FCC is an active policy maker as well as manager, "vigilantly monitoring the rollout of broadband access and encouraging competition in this market." They recently formed a **Federal-State Joint Conference on Advanced Services** (<http://www.fcc.gov/jointconference/>), appointing Federal and State members. In the meantime, the FCC has been busy with rule making procedures and actions intended to drive further progress in creating a broad, competitive telecommunications services marketplace. Their Advanced Services Collocation Order of March 1999 puts forth clear guidelines for collocation of CLECs' and Data Local Exchange Carriers' (DLECs) switching equipment, provides alternatives to traditional "caged" collocation, and allows for interim collocation prior to receiving certification or an interconnection agreement.

The FCC's Unbundled Network Element (UNE) Remand Order of November 1999 has key provisions regarding Digital Subscriber Line (DSL), how the local loop lines are conditioned, and provides for sub-loop unbundling as well as a review of UNEs. More recently the FCC ruled to require line sharing by which ILECs must give CLECs access to the high-frequency portions of local loops at favorable rates, turning the sub-loop into a new Unbundled Network Element (UNE). The ability to provide voice telephony from the ILEC, while leasing the high-frequency bandwidth to enable CLECs to line-

share, will unquestionably drive further deployment and utilization of Digital Subscriber Line (xDSL) and other advanced competitive applications and services. The first rate case has occurred in Minnesota setting US WEST's high-frequency line sharing lease rate at some \$6.00 per month.

In February 2000, the Commission adopted a Fourth Report and Order and Memorandum Opinion and Order (FCC 00-26) establishing criteria by which the Bell Operating Companies (BOCs) may request modifications to Local Access Transport Areas (LATAs) to deploy broadband services. A two-part test must determine that granting a LATA boundary modification is necessary to encourage deployment of advanced services on a reasonable and timely basis and would not materially affect the BOC's incentive to open its local markets to competition so as to obtain long distance authority.

America's stunning success in promoting the Internet revolution owes a major debt to determined regulatory action that encouraged all aspects of network openness and interconnection. All these innovations were possible because the FCC decided in the 1960s that the emerging world of data networking should not be treated like telecom services. Therefore, it exempted all forms of computer networking from much of telecom's regulatory baggage, including fees to fund various cross-subsidies for telephone services.

As a result it prevented telephone companies from dictating the architecture of data networks. Thanks to the enduring FCC policy of openness and competition, specialized networks and their users could unleash the Internet revolution. Open network policy assured the widest possible user choice and the greatest opportunities for users to interact with the myriad of emerging new entrants in all segments of the network. This steady policy set in motion, and sustained, a virtuous cycle of cumulative innovation, new services, infrastructure development, increasing network usage with evident economic benefits for the U.S. economy.

Open infrastructure policy fostered user-driven innovation. This meant that the principal sources of new ideas driving economic growth emerged from a long-term process of experimentation and learning, as business and consumer users interactively adopted and shaped application of information technology and E-commerce. Such user-centered innovation processes flourish when users are granted access to a wide range of choices of facilities, services, and network elements.

Excerpted from **Defending the Internet Revolution in the Broadband Era: When Doing Nothing is Doing Harm**, Berkeley Roundtable on the International Economy (BRIE), August 1999 (<http://e-economy.berkeley.edu/pubs/wp/ewp12.html>)

## **FCC Rulings on Over-the-Air Reception Devices:**

The Federal Communications Commission, as directed by Section 207 of the Telecommunications Act of 1996, adopted the Over-the-Air Reception Devices Rule (47 C.F.R. Section 1.4000) concerning governmental and non-governmental restrictions on viewers' ability to receive video programming signals from direct broadcast satellites (DBS), multichannel multipoint distribution (wireless cable) providers (MMDS), and television broadcast stations. It prohibits restrictions that impair the installation, maintenance or use of antennas used to receive video programming including video antennas such as direct-to-home satellite dishes that are less than one meter (39.37") in diameter (or of any size in Alaska), TV antennas, and wireless cable antennas.

Local governments, community associations, and landlords may not, other than for safety or historic preservation reasons, unreasonably delay or prevent installation, maintenance or use; unreasonably increase the cost of installation, maintenance or use; or preclude reception of an acceptable quality signal for viewers who place video antennas on property that they own, or that they rent and is within

their exclusive use or control. This includes rental property, condominium owners, and cooperative owners who have an area where they have exclusive use, such as a balcony or patio, in which to install the antenna. Under some circumstances, the availability of a central or common antenna can be used by a community association or landlord to restrict the installation of individual antennas.

## **E-Rate Impact on Telecommunications in Education:**

Traditionally, **Universal Service Fund (USF)** subsidies have been used to reduce rural telephone costs and provide discounted telephone rates to disadvantaged individuals. Congress greatly expanded this scope in the Telecommunications Act of 1996, providing for the extension of the Universal Service Fund (USF) to K-12 schools and libraries to promote the use of telecommunications with a new program, the **Education Rate (E-Rate)**, providing discounts of from 10 to 90% on educational telecommunications service and equipment costs. Federal Communications Commission rulings defined the new USF program including its funding mechanism, qualifying institutions, applicable discounts, and the specifics of applying for and accessing these new subsidies.

Interim authority for administering the fund nationally was assigned to the **National Exchange Carrier Association (NECA** - <http://www.neca.org/>), which in turn established the **Universal Service Administrative Company (USAC** - <http://www.universalservice.org/>) with its **Schools and Libraries Division (SLD** - <http://www.sl.universalservice.org/>) to directly oversee the program. The **Arizona Corporation Commission (ACC)** approved the federal Universal Service Fund provisions and discount matrix allowing Arizona to move forward and take advantage of these benefits. The State acts to approve technology plans and vendor arrangements while local districts, schools and libraries will assess their current status, plan their own technology investments and manage the acquisition and integration of technology into their learning environment. The USAC recently informed the FCC that the demand for E-rate discounts in Year Three is estimated to be some \$4.72 billion, more than the previous two funding years combined. Contention over who should contribute, how the funds should be administered, and how much should be collected and spent will continue and drive the plans evolution over time.

## **Fostering Competition in a Converging World:**

Multiple networks freely interconnecting is no distant dream. The forces of convergence are beginning to pry open markets that have been closed for decades. After years of monopolies, high prices, and stifled innovation, we are beginning to see the benefits of competition in many areas. We have an opportunity, not unlike the opportunity policymakers had at the turn of the century, to make these markets competitive. And I am determined not to miss it. I can promise you we are not going back to the large concentrations of old. We will not let anybody establish a monopoly in exchange for speculative promises of broadband and other perceived advantages. And make no mistake, robust competition is within reach.

Long distance providers, cable companies, wireless operators, incumbent and competitive local exchange providers: all are beginning to compete with one another. And we must make sure they continue competing. We must nurture these seeds of competition using all the tools at our disposal to give firms enough flexibility to compete in new markets while guarding competition where it already exists. Prying open markets, protecting markets that are already open, letting convergence take hold in the marketplace: this is our challenge. This is our opportunity. Let us seize it.

**William E. Kennard, Chairman, Federal Communications Commission**

before the Federal Communications Bar Association, December 9, 1999

## Federal Judicial Proceedings:

It would be gross understatement to say that the Telecommunications Act of 1996 is not a model of clarity. It is in many important respects a model of ambiguity or indeed even self-contradiction. That is most unfortunate for a piece of legislation that profoundly affects a crucial segment of the economy worth tens of billions of dollars. The 1996 Act can be read to grant (borrowing a phrase from incumbent GTE) "most promiscuous rights" to the FCC vis-à-vis the state commissions and to competing carriers vis-à-vis the incumbents – and the Commission has chosen in some instances to read it that way. But Congress is well aware that the ambiguities it chooses to produce in a statute will be resolved by the implementing agency.

**Justice Antonin Scalia** in a recent Supreme Court decision

The Federal Courts with their Constitutional privileges and obligations, remain a wild card, alternately advancing or forestalling progress towards open telecommunications access and a truly competitive marketplace. From 1984, with the Court mandated breakup of AT&T into the Regional Bell Operating Companies (RBOCs) and various other business enterprises, the U.S. Courts have played an activist role in the information technology, telecommunications, monopoly aggregation, intellectual property (IP), cyber liberties, and consumer protection arenas, often making policy either by their actions or refusal to act on specific issues and by their interpretation of jurisdictional issues. Just recently the U.S. Court of Appeals for the 9<sup>th</sup> Circuit ruled that the Telecom Act does not require carriers to use up all state level remedies before seeking federal court review of interconnection decisions by states.

## Summary of Selected Recent Federal Court Opinions

Federal Court Opinion	Description and Outcome
RT Communications, Inc., et al. v. FCC, --- F.3d --- (D.C. Cir. 2000) [No. 98-9541, January 13, 2000]	Petitioner challenged the FCC's decision to preempt a Wyoming statute that empowers certain incumbent local exchange carriers to preclude the provision of any competing local exchange service in the areas they serve. FCC Order affirmed.
Southwestern Bell Telephone Company, et al. v. FCC, (8th Cir. 1999) [No. 97-3389, December 27, 1999]	Petitioners challenged an order in which the FCC clarified the responsibilities of incumbent local exchange carriers under Section 251(c)(3) to provide unbundled access to interoffice transport facilities on a shared basis. The court issued a Published Order on Remand vacating and remanding those portions and provisions of the FCC's Third Order on Reconsideration which required the network element "shared transport" to be provided by incumbent carriers to new entrants on an "unbundled basis" because the Commission was reconsidering which network elements satisfied the "necessary" and "impair" standards of the statute. The court affirmed all other portions and provisions of the Third Order, specifically including those portions and provisions which determine "shared transport" to be a "network element."
Gulf Power Co., et al. v. FCC, 187 F.3d 1324 (11th Cir. 1999) [No. 98-2403, September 9, 1999]	Challenges to the constitutionality of the 1996 Telecommunications Act's amendments to the pole attachment provisions of the Communications Act. The 11th Circuit affirmed the district court's judgment in favor of the defendants by finding that this part of the 1996 Act is not "facially unconstitutional." Affirms mandatory access to utility poles and Rights-of-Way (ROW).
Texas Office of Public Utility Counsel, et al. v. FCC, 183 F.3d 393 (5th Cir. 1999) [No. 97-60421, July 30, 1999]	Challenges to Commission's Universal Service Order. Petitions for review granted in part and denied in part. FCC order affirmed in part, reversed in part and remanded.
U S West, Inc. v. FCC, 177 F.3d 1057 (D.C. Cir. 1999) [No. 98-1468, June 8, 1999]	Qwest's Section 271 Case concerning whether the BOCs had unlawfully "provided" interLATA service in violation of section 271 through their "teaming" arrangements with Qwest. Petitions for review are denied.



## Summary of Selected Recent Federal Court Opinions (Continued)

Southwestern Bell Telephone Co. v. FCC, 168 F.3d 1344 (D.C. Cir. 1999) [No. 93-1779, March 19, 1999]	Petitions for review of FCC orders involving tariffs for expanded interconnection through physical collocation for special access and switched transport. (FCC 93-493, 8 FCC Rcvd 8344; FCC 97-208, 12 FCC Rcvd 18730). Petitions for review dismissed in part and denied in part.
AT&T Corp. v. Iowa Utilities Board, 119 S.Ct. 721, 142 L.Ed.2d 835 (1999) [No. 97-826, Jan. 25, 1999]	Supreme Court review of court of appeals' decisions in Iowa Utilities Board v. FCC, 120 F.3d 753 (8th Cir. 1997), and People of the State of California v. FCC, 124 F.3d 934 (8th Cir. 1997) involving FCC implementation of the local competition provisions of the Telecommunications Act of 1996. Reversing in part, affirming in part, and remanding in part. Opinion for the Court by Justice Scalia. Separate opinions concurring in part and dissenting in part by Justices Souter, Thomas and Breyer.
SBC Communications, Inc. v. FCC, 154 F.3d 226 (5th Cir. 1998) [No. 98-10140, Sept. 4, 1998]	Appeal by FCC and United States from determination of U.S. District Court for the Northern District of Texas (981 F.Supp. 996) that §§ 271-75 of the Telecommunications Act of 1996, 47 U.S.C. §§ 271-75, are an unconstitutional bill of attainder. Finding the provisions at issue to be nonpunitive in character, the Fifth Circuit held the provisions not to be a bill of attainder as that term has been defined by the Supreme Court. The court of appeals also held that the provisions are consistent with the constitutional requirements of separation of powers, equal protection, and free speech. The judgment of the district court was reversed.
Southwestern Bell Telephone Co. v. FCC, 153 F.3d 597 (8th Cir. 1998) [No. 97-3389, Aug. 10, 1998]	Petitions for review of FCC designation of shared transport as a network element subject to unbundling under 47 U.S.C. 251(c)(3). [FCC 97-295, 12 FCC Rcvd 12460]. Petitions for review denied.
SBC Communications, Inc. v. FCC and United States, 981 F.Supp. 996 (N.D.Tx. 1997) [Civil Action No. 7:97-CV-163-X, Dec. 31, 1997]	Constitutional challenge to certain provisions of the Telecommunications Act of 1996, 47 U.S.C. 271-275. Statutory provisions held to constitute an unconstitutional bill of attainder.
Bell Atlantic Telephone Cos., et al. v. FCC, 131 F.3d 1044 (D.C. Circuit 1997) [No. 97-1432, Dec. 23, 1997]	Petition for review of FCC order concluding that under 47 U.S.C. 272 a Bell Operating Company may provide any services or facilities to its long distance affiliate that it is otherwise authorized to provide so long as it makes such services available to all carriers in a nondiscriminatory manner and fairly allocates their costs. [FCC 97-222, 12 FCC Rcvd 8653] FCC order affirmed.
Iowa Utilities Board v. FCC, 120 F.3d 753 (8th Cir. 1997), cert. granted, Nos. 97-826, 97-829, 97-830, 97-831, 97-1075, 97-1087, and 97-1099, 97-1141 (U.S. Jan. 26, 1998) [Nos. 96-3321, et al., July 18, 1997]	Petitions for review of First Report and Order, Implementation of the Local Competition Provisions in the Telecommunications Act of 1996, CC Docket No. 96-98, 11 FCC Rcvd 15499 (1996). FCC order affirmed in part and vacated in part.
Competitive Telecommunications Association v. FCC, 117 F.3d 1068 (8th Cir. 1997) [No. 96-3604, June 27, 1997]	Petitions for review of First Report and Order, Implementation of the Local Competition Provisions in the Telecommunications Act of 1996, CC Docket No. 96-98, 11 FCC Rcvd 15499 (1996). FCC order affirmed in principal part.
Time Warner Entertainment Co., L.P. v. FCC, 105 F.3d 723 (D.C. Circuit 1997) [No. 93-5349, Feb. 7, 1997]	Appeal of district court ruling involving challenges to the 1992 Cable Act. Denial of petitions for rehearing in banc. See original decisions at Daniels Cablevision, Inc. v. United States, 835 F.Supp. 1 (D.D.C. 1993), aff'd in part and rev'd in part, Time Warner Entertainment Co., L.P. v. FCC, 93 F.3d 957 (D.C. Circuit 1996)

(Source: FCC's Office of General Counsel - <http://www.fcc.gov/ogc/>)

Please also see the more extensive guide to Congressional, FCC, and Federal Court resources on the Internet appearing later in this study in **Appendix 1 - National Organizational Resources**.

# **Arizona Telecommunications and Information Council (ATIC)**

## **Multitenant Building Telecommunications Access Study**

### **State Regulatory Precedents and Trends**

#### **Principles for Telecommunication Regulation**

1. To the greatest degree possible, the Internet should be kept as free from government regulation as possible.
2. The state must take an active role in promoting high quality consumer choices, innovation, and broad availability regardless of geographic, socio-economic, or educational status
3. Degradation of services in non-metropolitan areas of the state must be guarded against.
4. The desired outcome of any regulation is a safe, fair, and competitive e-marketplace.
5. Questions of open access are likely to continue for some time and be difficult to resolve. Legal challenges are likely to parallel legislative ones. The state should keep in mind the goal of developing a world-class Internet infrastructure in Arizona and providing justice for those involved. Solutions should balance rights with responsibility.
6. The state should work to remove barriers that impede telecommunication competition.

#### **Arizona Joint Legislative Internet Study Committee (ISC) Report - 12/01/99**

#### **State Legislatures:**

State Legislatures play a significant role in the regulation of intrastate utility services. The U.S. Congress' Communications Act of 1934 established dual state and federal regulation of telecommunications services, while limiting federal authority primarily to interstate and foreign communications, and granting the FCC regulatory authority over common carriers as to their pricing and classifications. In such a complex environment, however, responsibility and authority regarding telecom issues and policies has often proved ambiguous resulting in jurisdictional disagreements and even conflicting actions from different government entities.

While local government primarily regulates, licenses, taxes, and polices the use of the public right-of-way (ROW) and protects community interests, State Legislatures have been actively engaged in passing legislation to remove barriers to competition, insure consumer choice, protect the public interest, advance regional economic development, and enable e-commerce and e-government growth. Meanwhile, the exponential growth of business-to-business (B2B) and business to consumer (B2C) Internet sales is threatening traditional regional sales tax revenues.

Regarding the multitenant building access issue, several states including Connecticut and Texas have instituted statutes requiring landlords to grant fair, reasonable, and nondiscriminatory access to the full range of telecommunications carriers from whom their tenants choose to take service. Other State Legislatures are actively considering similar actions including Arizona with a House bill being considered this session (HB 2634 Sec. F) requiring equal legal and physical access to multitenant properties at the same cost as existing telecom providers. Additionally, states have begun to deal with inside wiring ownership, the Point-of-Demarcation (POD), and contract exclusivity issues. A comprehensive summary of related legislative and regulatory actions can be found later in this section.

## State Public Utility Commissions (PUCs):

Traditionally, the main function of a state public utility commission was setting rates. As utility services become more competitive, however, there is a widely recognized need for state commissions to undergo a transformation process. But the key question here is: what is the goal or purpose of the transformation. National Association of Regulatory Utility (NARUC) Commissioners concluded that the new public utility environment should be consumer-driven. They also concluded that special attention should be given to market analyses so that state commissions can identify workably competitive markets, emerging competition, tight oligopolies, and residual monopoly markets or services. In addition, they concluded that core customer protection is a continuing responsibility of commissions. The Commissioners desire state utility regulation, to the extent feasible and practicable, to be reoriented so that there is consumer-driven provision of utility services. Customer choice should drive the market for utility services.

From **Market Analysis of Public Utilities: The Now and Future Role of State Commissions**, National Association of Regulatory Utility Commissioners (NARUC) July, 1999 (<http://www.nrri.ohio-state.edu/download/9914.pdf>)

As the primary state agency charged with oversight and regulation of various utility sectors and companies, State Public Utility Commissions (PUCs) wield enormous power in their regional arenas. Many specific responsibilities fall to them involving telecommunications including carrier regulation, rate and tariff setting, creation and management of state Universal Service Funds (USF), and overseeing the involved and complex local evolution to a more open, dynamic, and competitive telecom marketplace. Traditionally, they have been charged with encouraging access to basic communications services by all households and addressing any lack of availability and/or affordability of those services. Today, they must also participate in helping resolve the Digital Divide growing between information "haves" and "have-nots" and further seek to insure advanced telecommunications infrastructure reaches remote rural and tribal communities, not just the urban centers.

Because of the PUCs crucial role in implementing and localizing telecommunications deregulation guidelines and mechanisms, their policies, procedures, and decisions can greatly advance or hinder regional telecommunications investment and infrastructure deployment. Regarding the multitenant building access issue, a number of State PUCs have acted to define wiring ownership and the demarcation point, detail reimbursement and revenue guidelines, restrict exclusionary arrangements, and otherwise create and support a consumer-driven public utility environment. The Florida Public Service Commission (PSC) published their thorough **Report on Access by Telecommunications Companies to Customers in Multitenant Environments** in February 1999, which can be found at <http://www2.scri.net/psc/general/publications/MTEFINAL.PDF>. This report attempts to contribute a broader and more accessible examination of the issue and the various stakeholders interests and views.

### **Building Bandwidth, Access and Connectivity for All**

The old PSTN telecommunications regulatory infrastructure model is inappropriate to support the Internet computing and network infrastructure model, as demand for data transmission doubles every six to nine months, and convergence between data and voice accelerates. On-demand, ubiquitous access to the Internet is redefining teledensity to include access to computers, flat-rate local loop connectivity, and access to local content.

**Global Information Infrastructure Commission (GIIC) Call for Action**,  
12/03/99 (<http://www.gii.org/events/ann5call.html>)

## Arizona Telecommunications Regulatory Overview:

The approaching transformation of telecommunications and information infrastructure promises to bring many benefits to American society, delivering effects that will be felt locally, nationally and across the globe. As technology drives us toward a national information infrastructure, few segments of society will be as greatly affected as the business user of advanced telecommunications and information technologies. Today, businesses, small and large, realize that these technologies will dramatically reshape and redefine the work place and the methods by which business is conducted.

**The Importance of Telecommunications and Information Services for Businesses in Arizona**, From a report by the Advanced Information and Communications Infrastructure (AICI) Foundation (precursor to the Arizona Telecommunications and Information Council - ATIC) & the Morrison Institute for Public Policy, October 1994

The **Arizona Corporation Commission (ACC)**- (<http://www.cc.state.az.us/>) was created by the Arizona Constitution as one of only seven states with a constitutionally formed Commission and one of only thirteen states with elected Commissioners. In most states, the Commission is known as the Public Service Commission (PSC) or the Public Utility Commission (PUC). The **Arizona Revised Statutes (ARS)** define the role of the ACC to regulate public service corporations (ARS 40-322) and issue rules and regulations for furnishing services (ARS 40-323). Additionally in Arizona, the Commission with its three elected commissioners has regulatory responsibility for business incorporation, investment securities, railroad and pipeline safety, as well as utilities.

In the telecommunications arena, the ACC has jurisdiction over the quality of service and rates charged by public service utilities, which are defined by state law as regulated monopolies to be given the opportunity to earn a fair and reasonable return on their investments. Generally, the Commission tries to balance the customers' interest in affordable and reliable utility service with the utility's interest in earning a fair profit, though these matters remains open to debate in public rate hearings and other proceedings. The ACC's **Utilities Division** makes specific recommendations to the Commissioners to assist them in reaching decisions regarding public utility rates, utility finance and quality of service. The Utilities Division is also responsible for researching and developing utility issues, providing information and evidence in Commission proceedings dealing with utility applications, and monitoring the quality of utility service, as well as the rates approved by the Commissioners.

ARS R14-2-1113 directs the ACC to establish an intrastate **Universal Service Fund (USF)** so as to assure the continued availability of basic telephone service at reasonable rates. Arizona recently renewed their contract with **National Exchange Carrier Association's (NECA)** to administer the state universal service fund through December 2002. NECA collects approximately \$1million per year from more than 350 service providers in the state, supporting a program that helps local telcos with unusually high costs keep rates affordable for their customers.

State government remains a complex aggregation of agencies, functions and services. The technology infrastructure is aging and inefficient. However, information technology provides the resources to reduce the frustration a citizen feels when they attempt to do business with the State. In the pursuit of our objectives we must remain focused on one principle... government is a business and we do serve customers. Our customers are the citizens of Arizona.

**State of Arizona Strategic Plan For Information Technology  
Government Information Technology Agency (GITA)**  
(<http://gita.state.az.us/sitplan99/>)

Arizona's **Government Information Technology Agency (GITA** - <http://www.gita.state.az.us/>) is responsible for statewide information technology (IT) planning, coordinating and consulting. The GITA Director serves as the Chief Information Officer (CIO) for state government and has the responsibility to administer the state's Executive Branch IT resources. GITA's **Digital Government Working Group (Arizona@YourService** - <http://gita.state.az.us/digitalgov/>) seeks to create a digital government in order to support a digital economy and implement the Governor's "**No Wrong Door**" initiative for citizen services. They are identifying the types of transactions that can be moved to the Internet and the inhibitors to electronic transactions, so as to recommend action, such as policy changes and legislation including their proposals for this Arizona legislative session for an Electronic Transactions Act (HB2069), Electronic Notary Act (HB2622), State Agency Credit Card Acceptance (SB1259), and a Technology Licensing Account (SB1131).

Arizona State government has initiated a project, **Arizona Telecommunication System (ATS** - <http://www.ats.state.az.us/>), to aggregate the purchasing power of its over one hundred agencies in telecommunications services totaling some \$50 million annually. This large project will drive the commercial deployment of telecommunications infrastructure and services throughout the state, with state government acting as an anchor tenant. In time, other government entities such as counties, municipalities, and educational institutions will be able to share in this network, purchasing certain service offerings at favorable prices. Business users will also benefit from the availability of services.

**Governor Jane Dee Hull** recently announced the formation of the **Arizona Partnership for the New Economy (APNE** - <http://www.researchedge.com/apne/>), a 35 member public-private advisory board. The successful **Arizona Strategic Partnership for Economic Development (ASPED)** planning of the late 1980's and the **Governor's Strategic Partnership for Economic Development (GSPED** - <http://www.commerce.state.az.us/gsped.htm>) strategic initiatives and cluster model of the past 10 years will be revisited, renewed, and re-engaged for the new millennium and the New Economy. One of APNE's prime responsibilities is developing a legislative agenda for the next session of the State Legislature. The Governor's press release announcing the formation of APNE and its initial appointees can be found at <http://www.governor.state.az.us/news/releases/nov99/11-24-99nr.html>.

One of GSPED's infrastructure foundations, the **Arizona Telecommunications & Information Council (ATIC** - <http://www.researchedge.com/atic/>), is a statewide collaboration of business, government, and education. ATIC's mission is to support the development of local and statewide policies that will encourage investment in, deployment, and effective utilization of advanced telecommunications services. They develop and promote policy initiatives to advance Arizona's ability to connect and compete in the New Economy including an extensive monthly regional events calendar and policy briefs and studies, such as this report. **The Morrison Institute for Public Policy** and **Arizona State University (ASU)** has published **Arizona Policy Choices - The New Economy: A Guide for Arizona** (10/99 - <http://www.asu.edu/copp/morrison/public/apc99.htm>) on the status of the New Economy and Arizona's relationship to it, as well as a follow up publication **The New Economy: Policy Choices for Arizona** (01/2000 - <http://www.asu.edu/copp/morrison/public/nefollowup.htm>).

People who work in a worldwide business environment, use the latest technology tools, and think the fast lane is the only route have already been experiencing the new economy first hand. But, to the vast majority of people and public decision makers, the circumstances of the new economy are daunting. For better or worse, it really is a new world. In the case of the new economy, Arizona is - like it or not - in an enormously competitive arena. Arizona leaders have to make tough public policy choices in light of new economic realities. These decisions will lay the economic, education, and social foundations for the future and will in large part determine whether or not our state's people and places prosper.

**Arizona Policy Choices - The New Economy: A Guide for Arizona**

The Arizona Legislature's **Internet Study Committee (ISC)** is a sixteen-member committee convened in the fall of 1999 to hold a series of hearings and conduct investigations on crucial Internet-related issues affecting the state. The ISC produced their Final Report in December 1999 so as to help form future Arizona public policy in regards to the Internet. Though not a standing committee, they will continue hearings and deliberations for the foreseeable future. Further Information, webcasts and resources on the web at <http://www.azhousetv.org/internetcommittee/>.

## **Positioning Arizona to Achieve Maximum Benefit from the Information Economy - Key Principles:**

1. The Internet is a key element of the state's future economic, educational, health, safety, and government viability. The Internet infrastructure must be recognized as a fundamental component in the state's critical infrastructure.
2. A primary role of government is to protect citizens.
3. Electronic information should be made equal under law for the purposes of contract, evidence, or similar traditionally "paper based" uses. Arizona statutes should be revised as necessary to allow these electronic uses.
4. Though the private sector should exert primary leadership, government support for e-industry is essential for its success.
5. Government regulation should be employed when voluntary codes of conduct and industry self-regulation fail to provide an adequate remedy.
6. Providing special treatment to one sector of the economy, to the disadvantage of other competing sectors, does not make rational economic or tax policy. Government should provide uniform treatment for all. Requiring that sales and use taxes be collected on all like transactions is an equitable tax policy approach.
7. Alternative funding mechanisms are needed for the purpose of stimulating investment in less attractive communities and for early stage businesses.
8. e-Businesses (electronic businesses) have the ultimate power of choice as to where to locate. For Arizona to be successful in fostering e-industry development it must provide a political and economic climate that fosters continuing and increased investments in e-infrastructure (electronic infrastructure) and e-industry activities.
9. Arizona should tap all available external public and private funding sources earmarked for e-development to speed development during this critical infrastructure rollout phase.
10. The technology will certainly continue to evolve rapidly. What is true today, in terms of business alliances, market share, preferred method of transmission, and technical specifications, will likely not apply tomorrow. Any attempt to regulate e-industry must consider its evolutionary nature.
11. Until viable alternative revenue sources are identified, existing tax structures should not be dismantled

## **Arizona Legislative Internet Study Committee (ISC) Final Report**

(December 1, 1999 - <http://www.azhousetv.org/internetcommittee/contents/report.pdf>)

# Summary of State Legislative and Regulatory Actions Affecting Multitenant Building Access

Jurisdiction	Legislative or PUC Action	Description	Status
<b>Arizona</b>	HB 2634 Sec. F (2000)	Equal legal and physical access to the property at same cost as existing providers	Current AZ session; ATIC recommends this or similar legislation
	ACC Orders (09/1999) (T-01051B-99-0272 & T-01051B-00-99-0430)	Second order declines to preclude exclusionary agreements between property owners and US WEST, while still affirming the importance of consumer choice	ATIC recommends ACC reconsider and act to preclude exclusionary agreements
	Tariff Filing	US West filed a building access tariff to waive construction fees for entry into new buildings.	ATIC sponsors a building access study.
<b>California</b>	R.95-04-043, I.95-04-044	If ILECs have vacant space in entrance facilities for commercial buildings, it must be made available to CLECs, Carriers will not be allowed to enter into agreements with building owners that restrict other carriers' access, building owners retain their rights to supervise and coordinate on premise activity, but cannot abuse their discretion by discriminating against carriers requesting ROW access	
	AB 651	Legislature is considering whether to confirm the CPUC's authority to impose telecommunications access rules on building owners by requiring non-discriminatory access.  Legislation prevents public utilities from entering into exclusivity contracts with building owners or managers limiting the rights of other utilities to serve tenants.	Pending house bill  Enacted
<b>Connecticut</b>	C.G.S.A. § 16-2471, 16-333a	Owners of multiunit buildings must allow wiring for telecom services provided: 1) tenant requests such services; 2) cost assumed by provider; 3) telecom provider indemnifies and holds harmless rules and regs of PUC pertaining to wiring; 4) telecom provider complies with rules and regs of Department of Public Utility Control pertaining to such wiring. Contracts are between the tenants and TCPs.	There are no current dockets open at this time.
<b>District of Columbia</b>	D.C. Code Title 43 Chapter 18 @ 43-1844.1	Landlord can not charge tenant for TCP services or discriminate in rental charges for tenants with TCP services versus those without; can not charge TCP any fees except by approval of written request to government. TCP can't enter into agreement with owner. Landlord can not interfere with the installation of cable television facilities on property, but may require TCP facilities to conform with reasonable guidelines and may require TCP and/or tenant to bear the costs and be indemnified against damages.	

## Summary of State Legislative and Regulatory Actions Affecting Multitenant Building Access (Continued - Part 2)

<p><b>Florida</b></p>	<p>Report on Access by Telecommunications Companies to Customers in Multitenant Environments by Florida Public Service Commission (PSC), February 1999 to Legislature</p> <p>718.1232</p>	<p>Report recommends 1) tenants, landlords and telecom providers should try to negotiate access when tenants request services; 2) landlords may charge tenant or utility reasonable, nondiscriminatory costs of installation, easement, etc relating to providing service; 3) tenants are responsible for necessary easements; 4) landlords may impose conditions for security, safety and aesthetics; 5) landlords may not deny access to space or conduit previously dedicated to public facilities needed for access; 6) landlords may not deny access where space or conduit required for installation is not sufficient to accommodate the request or where the installation would harm the aesthetics of the building; and 7) landlords may not charge a fee solely for the privilege of providing telecom services in a multitenant environment.</p> <p>Residents shall not be denied access to TCPs; can not be required to pay anything of value to acquire services except charges normally paid for like services within the same area and except for installation charges as may be agreed upon between resident and TCP.</p>	<p>PUC has noted that it would be the appropriate authority to deal with building access issues.</p> <p>FL H.B. 1135 Provides telecom services access to multi-tenant environments</p> <p>Legislative initiative</p>
<p><b>Illinois</b></p>	<p>Illinois Commerce Commission Docket 98-0397</p> <p>Public Act 90-573 (1997 Regular Session).</p>	<p>Investigation of rates, terms and conditions for pole attachments, duct and conduit space, and rights of way are being considered.</p> <p>Landlord can not forbid or prevent tenants from receiving cable television services from any TCP; can not demand or accept payment from tenant as condition of installing, maintaining or operating TCP services; can not discriminate in charges for tenants with services versus tenants without. If more than 3 tenants request service, a cable TV antenna &amp; facilities may be installed by TCP throughout property to provide for all tenants without adding new cable facilities except within units occupied by requestees.</p>	<p>Status hearing on Docket in March 2000.</p>
<p><b>Kansas</b></p>	<p>Chapter 58 Article 25 K.S.A. @ 58-2553</p>	<p>The landlord shall not interfere with or refuse to allow access or service to a tenant by a communication or cable television service duly franchised by a municipality.</p>	
<p><b>Maine</b></p>	<p>Title 14 Part 7 Chapter 710-B 14 M.R.S. @ 6041 (1997)</p>	<p>Owner may refuse TCP installation for "good causes" only. If no written consent is given by owner, TCP may still provide service if it meets requirements. Owner may not discriminate against tenants with or without service, can not demand or accept payment for services from tenants. TCP must indemnify owner against damages; shall not interfere with rules of owner dealing with day-to-day operations of property; shall not enter into agreement with owner.</p>	



## Summary of State Legislative and Regulatory Actions Affecting Multitenant Building Access (Continued - Part 3)

<b>Massachusetts</b>	Title 940 Chapter 10.00 940 CMR 10.05	Owner shall not discriminate against tenants with service or without; may require compensation from TCP; can not prevent TCP from access to property if one or more tenants requests service; and may require reasonable conditions upon TCP to protect appearance function and safety of property. TCP can not enter agreement with owner; can not interfere with existing rights of tenants; shall not charge owner for installation; shall indemnify owner against damages; shall not interfere with the appearance, function, safety or use of property; and can not install without request of tenant. Superior court has exclusive original jurisdiction of all actions seeking injunctive relief to permit the construction, installation or repair of competitive telecom systems facilities.	
<b>Minnesota</b>	Chapter 237 Minn. Stat. @ 237.68 (1997)	Owner shall establish a single demarcation point for all utilities; is not precluded from entering into agreement for use of master antenna TV system by a TCP; may require TCP to provide plans for installation and post bond for cost of installation; may require TCP with written advance notice to relocate facilities at TCP's cost for rehabilitation, redecoration or maintenance of property. TCP is only responsible for providing services up to demarcation point and must conform to reasonable conditions and comply with applicable codes; must indemnify owner against damages; will compensate owner for any depreciation of property value. First installer must allow access to equipment to alternate TCPs and will be reimbursed by them for use of their equipment.	
<b>Nevada</b>	Title 58 Chapter 711 Nev. Rev. Stat. Ann. @ 711.255 (1997)	Landlord will not interfere with receipt of service by tenant; will not discriminate against tenants with or without services; demand or accept payment or charge fees for services. CTP must provide owner with 30 days' written notice of intent to provide service. Landlord may take reasonable steps to ensure appearance, function and safety of property and people upon property; is entitled to compensation for reasonable expenses incurred; may require CTP to bear all costs; and be indemnified against damages.	
<b>New Jersey</b>	Title 48 Chapter 5A NJ Stat. Ann. @ 711.255 (1997)	Owner may not prevent tenants from receiving cable television; may not demand payment in any form as a condition of receiving services; may not discriminate against tenants with or without services; may require all installation to conform to appearance, function, safety and value of property. CTP indemnifies owner against damages.	

## Summary of State Legislative and Regulatory Actions Affecting Multitenant Building Access (Continued - Part 4)

<b>New York</b>	Chapter 70 Sec. 228	Owner may not interfere with installation of services on premises, but may require that installation conform to reasonable conditions; may require CTP and/or tenant to pay for installation; requires CTP to indemnify owner against damages; Owner may not demand or accept payment for services; may not discriminate against tenants with or without services; and may not enter into agreement with CTP.	
<b>North Dakota</b>	PSC determination	Western Wireless Corp. will be eligible to receive federal universal service funds if it competes with U S WEST for local exchange service customers. The PUC did not determine whether the company would be eligible to receive support if it were to compete with rural telephone cooperatives.	December 16, 1999
<b>Ohio</b>	Case No. 98-328-TP-CSS  Section 4905.31 (E) Revised Code; and Case No. 95-845-TP-COI	At the OPUC, company filed complaint against Ameritech regarding its access policy to inside wires. Specifically, ICG argues that Ameritech requires that carriers submit a BFR for access to inside wire in a multi-tenant, multistory building. According to Ameritech inside wire can only be access pursuant to an interconnection agreement as a sub-loop element.  Inside Wire decision	Hearings have been delayed indefinitely pending settlement discussions.
<b>Pennsylvania</b>	Title 68 Chapter 8 68P.S. @ 250.502-B, .503-B, .504-B, .505-B, .506-B, .508-B, .509-B and .510-B (1997)	Landlord may not discriminate against tenants with or without services; may require reasonable compensation for permanent loss of property inflicted as a result of installation of services; may not prevent tenant from having TCP of their choice; may not prevent TCP from access to property; may not provide services without request from tenant; may require TCP to conform to reasonable restrictions to preserve appearance, function and safety of property; may provide tenants alternative TCP services provided none of the other regulations are violated. Tenant has right to request and receive services from landlord. TCP retains rights and ownership of all wiring and equipment installed; must notify landlord in writing of intent to provide requested service to tenant, providing proposal of work to be performed, including offer of compensation for loss in value of property and statement that TCP is responsible for damages incurred during installation, all of which landlord must approve.	

## Summary of State Legislative and Regulatory Actions Affecting Multitenant Building Access (Continued - Part 5)

<b>Rhode Island</b>	Title 39 Chapter 19 RI Gen. Laws @ 39-19-10 (1997)	TCP can not charge landlord for installation; must indemnify landlord against damages incurred; may not interfere with the appearance, function, safety or use of property; may not enter into agreement with landlord on behalf of tenants; must have consent of owner to affix facilities; must present plans and specifications prior to installation; must inspect property with owner after installation; is responsible for maintenance of services and equipment; shall be entitled to reasonable access to property; shall provide upon request to owner a certificate of insurance covering all TCP employees on property. Owner is entitled to compensation for installation and damages; can contract TCP for additional work besides tenant-requested installation; may not discriminate against tenants with service or without.	
<b>Texas</b>	Texas Utilities Code § 54.259 and 54.260, .261 (1998)	Gives CLECs the right to install facilities on private property when tenants request their services, but allows building owners to restrict access under certain circumstances such as demonstrated space constraints, charge reasonable compensation, and be indemnified from costs. Texas PUC is authorized to enforce the statute.	Texas PUC initiated Project 21400 for the purpose of developing rules on building access and held a workshop on October 26, 1999. Staff proposals and additional workshops pending.
<b>Washington</b>	WUTC Ruling  WUTC Denies Petition	Building owners that preclude entry to competitive telecom providers are deemed to be a telecom provider themselves, subject to regulation  Petition denied to adopt rule on "fresh look" for customers with long-term contracts but indicates that if there are specific instances in which long-term contracts are being used in discriminatory or anti-competitive ways, those contracts should be brought before it.	Petition denied 11/15/99
<b>West Virginia</b>	Chapter 5 Article 18A-2 through 18A-11	Tenants' Rights to Cable Services - Landlord may not interfere with installation, maintenance, operation or removal of services from property; may require installation to conform to reasonable conditions; may require TCP and/or tenant to bear costs; will be indemnified against damages incurred; may not demand or accept payment from tenants for allowing services; may not discriminate against tenants with or without services; may not enter into agreement with TCP on behalf of tenants; may not demand or accept compensation from TCPs except for just compensation or for damages. TCP retains all rights and ownership of services and equipment installed; has reasonable access to property to provide services with written notice to landlord and tenant	

## Summary of State Legislative and Regulatory Actions Affecting Multitenant Building Access (Continued - Part 6)

<b>Wisconsin</b>	Chapter 66 Wis. Stat. @ 66.085	Owner/landlord may not prevent TCP from providing services to tenant upon request. TCP must consult with owner prior to installation; shall install with minimal effect to aesthetics of property and may not impair public safety; TCP responsible for any required repairs	Enacted 12/19/97
<b>Wyoming</b>		On December 9, 1999 the Joint Appropriations Committee of the state legislature of Wyoming asked the state Wyoming Public Service Commission and telecommunications industry officials to support legislation to open the state's universal service fund to cellular companies.	
<b>Ottawa, Canada</b>	Telecom Decision CRTC 99-10, August 6, 1999	Location of Demarcation Point for Inside Wire in Multi-Dwelling Units and Associated Issues: Prohibits exclusive telephone service agreements to MDUs; Requires reasonable terms and conditions; Defines demarcation point and requires competitive access to wiring	

(Source: Joel Paisner, Ater Wynne LLP - <http://www.aterwynne.com/>, with additional material from International Research Center)

### Regulation of the Other Open Access/Forced Access Issue - ISP over Cable:

As detailed earlier, another Open Access/Forced Access issue rages over competitive ISP's direct access to cable modem customers, in partnership with the cable system operators. The FCC has recently reviewed the situation and declined to take action, preferring to "wait and see" while gauging the impact on consumers and the effect of market forces. So, at this time, the matter is being engaged in primarily at local and state jurisdictional levels. Several municipalities and counties are making this a subject of negotiation as cable television providers' existing video license and franchise agreements come up for renewal or transfer. For this state legislative season, open access bills have already been defeated in New Hampshire, Utah, and Virginia. Similar bills have been also been introduced this session in Illinois, Virginia, Maryland, Delaware, Vermont, Idaho, Kansas, Utah, and New Hampshire. Additionally, a bill introduced last session remains pending in the Michigan Senate.

I envision a broadband oasis, where anybody who wants to compete should be able to do so in an unregulated or a significantly deregulated environment.

#### William E. Kennard, Chairman of the Federal Communications Commission

A powerful global conversation has begun. Through the Internet, people are discovering and inventing new ways to share relevant knowledge with blinding speed. As a direct result, markets are getting smarter, and getting smarter faster than most companies.

From **The Cluetrain Manifesto** (<http://www.cluetrain.com/>)

Electric circuitry has overthrown the regime of "time" and "space" and pours upon us instantly and continuously the concerns of all other men. We now live in a global village.

**Marshall McLuhan**, 1967 (<http://www.beaulieuhome.com/McLuhan/>)

Change is the law of life. And those who look only to the past or present are certain to miss the future.

**President John F. Kennedy**, 1963 (<http://www.cs.umb.edu/jfklibrary/>)

**Arizona Telecommunications and Information Council (ATIC)**  
**Multitenant Building Telecommunications Access Study**

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(Note: This report and its Appendices are available  
on the web at <http://www.researchedge.com/mbtas/>)

# Arizona Telecommunications and Information Council (ATIC)

## Multitenant Building Telecommunications Access Study

### Appendix 1 - National Organizational Resources

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#### Telecommunications Providers Related Resources:

**Association of Local Telecommunications Services (ALTS)** - <http://www.alts.org/>

888 17th St. NW, Suite 900, Washington, DC 20006, (202) 969-2587, Fax: (202) 969-2581.

ALTS is the trade association that represents "facilities-based" CLECs, the builders of high-speed local communications. ALTS was founded to harness the shared energy and vitality of the new local competitors and to help ensure regulations for robust competition, spawned by the 1996 Act, are implemented and enforced.

Regulatory and Policy Section - <http://www.alts.org/frames/regpolicy.htm>

National Survey on Interstate Switched Access Charges -

<http://www.alts.org/Filings/112999AccessChargeSurvey.PDF>

(Spreadsheet Analysis - <http://www.alts.org/Filings/112999interstateaccess.xls>)

**Smart Buildings Policy Project** - <http://www.alts.org/smartbuildings/>

Promotes a consistent, pro-competitive framework in place to foster building technology upgrades in a way that balances the needs of customers with the concerns of property owners.

Believes that a legislative fix is required to establish the national framework necessary to meet the demand for Smart Buildings.

Congress Needs to Open the Door for Telecom Access, by William J. Rouhana, Jr., Chairman and CEO, WinStar Communications, The Tribune (Mesa, Arizona) Op Ed, 07/04/99 - <http://www.alts.org/smartbuildings/7499rouhaha.htm>

Summary of S.1301 - Competitive Access to Federal Buildings Act -

<http://www.alts.org/smartbuildings/7199releaseS1301.htm>

**Competitive Telecommunications (CompTel) Association** - <http://www.comptel.org/>

1900 M St. NW, Suite 800, Washington, DC 20036, (202) 296-6650, Fax: (202) 296-7585.

CompTel has more than 350 members and is the established, respected voice of the competitive telecommunications industry. The association represents companies of every size in every sector of the marketplace before Congress, the Federal Communications Commission, state regulators and legislators, industry technical groups and international communications forums. In early 1999, CompTel combined with America's Carriers Telecommunication Association (ACTA).

Regulatory and Policy - <http://www.comptel.org/policyfr.html>

**Telecommunications Industry Association (TIA)** - <http://www.tiaonline.org/>

2500 Wilson Blvd., Suite 300, Arlington, VA 22201, (703) 907-7700, Fax: (703) 907-7727. TIA is a national trade organization of companies that provide communications and information technology products, materials, systems, distribution services and professional services in the United States and around the world. TIA companies manufacture or supply virtually all of the products used in global communication networks. TIA represents the telecommunications industry with its subsidiary, the MultiMedia Telecommunications Association (MMTA - <http://www.mmta.org/>), in conjunction with the Electronic Industries Alliance (EIA - <http://www.eia.org/>).

Public Policy - <http://www.tiaonline.org/government/>

Public Policy Report and Agenda - [http://www.tiaonline.org/pubs/policy\\_report/](http://www.tiaonline.org/pubs/policy_report/)

User Premises Equipment Division (UPED) - <http://www.tiaonline.org/about/uped.cfm>

TR-41 User Premises Telecommunications Requirements -  
<http://www.tiaonline.org/standards/sfg/tr-41/>

TR-42 User Premises Telecommunications Infrastructure -  
<http://www.tiaonline.org/standards/sfg/tr-42/>

**Cellular Telecommunications Industry Association (CTIA)** - <http://www.wow-com.com/>

1250 Connecticut Ave. NW, Suite 800, Washington, DC 20036, (202) 785-0081. CTIA represents all wireless technologies, promoting legislative, regulatory and judicial decisions that further the success and availability of wireless telecommunications, and providing information on the latest technical & public policy developments in the wireless industry. CTIA periodically publishes the Wireless SourceBook, FactBook, MarketBook, and MemberBook, as well as other resource materials.

Law and Policy - <http://www.wow-com.com/lawpol/>

Antenna Siting Resources - <http://www.wow-com.com/lawpol/antenna/sitingindex.cfm>

Bill Tracking Report - <http://www.wow-com.com/lawpol/congress/billtracking.pdf>

Wireless Applications Microsite -  
<http://www.wow-com.com/techops/wirelessapps/wirelessappsindex.cfm>

Wireless Data Forum (WDF) - <http://www.wirelessdata.org/>

**Personal Communications Industry Association (PCIA)** - <http://www.pcia.com/>

500 Montgomery St., Suite 700, Alexandria, Virginia 22314, (703) 739-0300, Fax: (703) 836-1608. PCIA is the leading international trade association representing the personal communications services (PCS) industry and represents the chief providers of wireless voice and data communications to both consumers and businesses. PCIA's member companies include PCS licensees and those in the cellular, paging, ESMR, SMR, mobile data, cable, computer, manufacturing, and local and interexchange sectors of the industry, as well as technicians, wireless systems integrators, communications site owners, distributors and service professionals, and private corporate system users. PCIA develops regulatory policies, legislation, and technical standards in order to advance the interests of the PCS industry.

Wireless Resource Center - <http://www.pcia.com/wireres/>

Industry Information - <http://www.pcia.com/wireres/indinfo.htm>

Wireless Links - <http://www.pcia.com/wireres/wlinks.htm>

Wireless News - <http://www.pcia.com/wirenews/>

PCIA Advocacy - <http://www.pcia.com/advocacy/index.htm>

Agenda for a Wireless America - <http://www.pcia.com/advocacy/agenda.htm>

Filings & Public Documents - <http://www.pcia.com/advocacy/filings.htm>

Promotion of Competitive Networks in Local Telecommunications Markets,  
WT Docket No. 99-217 Reply - <http://www.pcia.com/advocacy/pdf/docket217.pdf>

White Paper: Bringing Telecommunications Competition To Tenants In Multi-Tenant  
Environments, May 10, 1999 - <http://www.pcia.com/advocacy/access.PDF>

Reply Comments of PCIA, WinStar, NextLink, Teligent and ALTS in the matter of  
Implementation of Section 207 of the Telecommunications Act of 1996, CS Docket #96-83,  
March 24, 1999 - <http://www.pcia.com/advocacy/secdoc.htm>

**Portable Computer and Communications Association (PCCA)** - <http://www.pcca.org/>

Administrative Offices, P.O. Box 680, Hood River, OR 97031, (541) 490-5140, Fax: (503) 471-0011.  
PCCA is a not-for-profit association to bring together individuals and companies interested in working  
together to help create a vital, thriving industry in mobile computing especially with Handheld  
Personal Computers (HPCs).

Standards and Architecture Committee - <http://www.pcca.org/standards-com/>

**Wireless Cable Association International (WCAI)** - <http://www.wirelesscabl.com/>

1140 Connecticut Ave., NW, Suite 810, Washington, DC 20036, (202) 452-7823, Fax: (202) 452-  
0041. WCAI represents the broadband wireless industry worldwide and seeks to advance the interests  
of the wireless systems that provide video, voice and data services on a subscription basis through  
land-based towers to fixed reception/transmit devices. Membership is comprised of fixed wireless  
system operators worldwide, as well as: equipment and service suppliers; video, software and other  
content providers; financial institutions; and engineers, attorneys and other consultants.

Government Affairs News - <http://www.wirelesscabl.com/government.htm>

FCC Filing on Competitive Networks - [http://www.wcai.com/PDFFiles/fcc\\_aug\\_27.pdf](http://www.wcai.com/PDFFiles/fcc_aug_27.pdf)

FCC Filing on Antenna Preemption - [http://www.wirelesscabl.com/PDFFiles/may\\_2699\\_fcc.pdf](http://www.wirelesscabl.com/PDFFiles/may_2699_fcc.pdf)

**Wireless Communications Alliance (WCA)** - <http://www.wca.org/>

WCA is a Silicon Valley Initiative for Radio and Optical Connectivity and a non-profit organization  
dedicated to the mutual benefit of companies and other organizations operating in Northern California  
that are associated with wireless communications.

Wireless Communications Web Sites on the World Wide Web - <http://www.wca.org/links.htm>

**Industrial Telecommunications Association (ITS)** - <http://www.ita-relay.com/>

1110 N. Glebe Rd., Suite 500, Arlington, VA 22201-5720, (703) 528-5113, Fax: (703) 524-1074.  
ITA is a FCC-certified frequency advisory committee and national trade association. ITA provides  
regulatory and legislative representations before the FCC and U.S. Congress as advocate for more  
than 3,000 private wireless radio licensees and 500 radio dealers. They also provide a variety of  
telecommunications services, including system engineering, licensing, FCC research, license data  
and refarming transition strategies.

Advocacy & Regulatory Headlines - <http://www.ita-relay.com/advocacy.html>

Council of Independent Communication Suppliers (CICS) - <http://www.ita-relay.com/cics.html>

U.S. Motorola Service Stations (USMSS) - <http://www.usmss.com/>



**Competitive Broadband Coalition (CBC)** - <http://www.competitivebroadband.org/>

The CBC was founded in early 1999 by several other trade organizations and individual competitive telecommunications companies in order to ensure that every American will be able to access the Internet through broadband technologies. They believe that the free enterprise system is the surest way to realize our national goal of fast broadband deployment with maximum consumer choice and superior services to Americans everywhere.

Issues & Resource Library - <http://www.competitivebroadband.org/issues/>

Broadband Deployment in US WEST States -  
<http://www.competitivebroadband.org/info/resources/USWestTimeline.pdf>

Breaking News: Legislative Overview - <http://www.competitivebroadband.org/info/>

**No Loopholes** - <http://www.noloopholes.org/>

Promotes consumer action regarding opening of ILEC network to competitive access.

**Wireless LAN Alliance (WLANA)** - <http://www.wlana.com/>

1114 Sherman Ave., St. Simons Island, GA 31522. WLANA is a non-profit consortium of wireless LAN vendors established to help educate the market place about wireless LANs and their uses. WLANA develops educational materials about wireless LAN users' experiences, applications and industry trends.

Guide to Wireless Local Area Technology Organizations -  
[http://www.wlana.com/guide\\_to\\_orgs.html](http://www.wlana.com/guide_to_orgs.html)

Resource Guide - <http://www.wlana.com/resource/>

Wireless LAN related sites - <http://www.wlana.com/resource/web.html>

Introduction to Wireless LANs - <http://www.wlana.com/intro/>

IEEE 802.11 Wireless LAN Standard - <http://www.wlana.com/intro/standard/>

**Telecommunications Resellers Association (TRA)** - <http://www.tra.org/>

1401 K St. NW, Suite 600, Washington, DC 20005, (202) 835-9898, Fax: (202) 835-9893. TRA represents hundreds of companies involved in the resale of telecommunications services, a multi billion-dollar industry lead by an estimated \$13 billion long distance resale segment. TRA has evolved into an association representing not only switched and switchless resellers of domestic and international long distance services but resellers of local network, wireless and enhanced services.

Legal & Regulatory (State & Federal) - <http://www.tra.org/admin/sfilisting.asp>

**United States Telecom Association (USTA)** - <http://www.usta.org/>

1401 H St. NW, Suite 600, Washington, DC 20005-2164, (202) 326-7300, Fax: (202) 326-7333. USTA is the premier trade association representing the nation's local exchange carrier industry with more than 1,200 small, mid-size and large company members worldwide. For more than 100 years, USTA has been providing a common ground where local phone companies of all sizes can unite to advance the industry's concerns.

Regulatory News - <http://www.usta.org/regnews.html>

On Capitol Hill - <http://www.usta.org/hill.html>

Legislative and Regulatory Report Card 1999 - <http://www.usta.org/scorecard.pdf>

**National Telephone Cooperative Association (NTCA)** - <http://www.ntca.org/>

4121 Wilson Blvd., Tenth Floor, Arlington, VA 22203, (703) 351-2000, Fax: (703) 351-2001. NCTA represents more than 500 small and rural independent local exchange carriers providing telecommunications services to interexchange carriers and subscribers throughout rural America.

Legislative and Regulatory - [http://www.ntca.org/leg\\_reg/](http://www.ntca.org/leg_reg/)

Legal & Regulatory Issues - [http://www.ntca.org/leg\\_reg/lrissues/](http://www.ntca.org/leg_reg/lrissues/)

Access Charge Reform - [http://www.ntca.org/leg\\_reg/access/](http://www.ntca.org/leg_reg/access/)

Telecommunications Act of 1996 - [http://www.ntca.org/leg\\_reg/telecomm/](http://www.ntca.org/leg_reg/telecomm/)

Universal Service - [http://www.ntca.org/leg\\_reg/universal/](http://www.ntca.org/leg_reg/universal/)

State Issues - [http://www.ntca.org/leg\\_reg/state/](http://www.ntca.org/leg_reg/state/)

**National Cable Television Association (NCTA)** - <http://www.ncta.com/home.html>

1724 Massachusetts Ave. N W, Washington, DC 20036, (202) 775\_3669. NCTA is the cable industry's major trade association representing cable systems and cable program networks. They provide their members with a strong national presence and a single, unified voice on issues affecting the cable industry before Congress, the executive branch, the courts and the American public.

The Future Is On Cable (Public Affairs) - <http://www.ncta.com/fioc.html>

CATABriefs (legal, regulatory, public affairs & competitive issues) - <http://www.ncta.com/cata/>

Cable Television Laboratories (CableLabs) - <http://www.cablelabs.com>

Society of Cable Telecommunications Engineers (SCTE) - <http://www.scte.org/>

**National Association of Broadcasters (NAB)** - <http://www.nab.org/>

1771 N Street NW, Washington, DC 20036, 202-429-5300, Help Desk: (202) 429-5490, Fax: 202-775-3520. NAB represents the radio and television industries in Washington before Congress, the FCC and federal agencies, the courts, and on the expanding international front. NAB seeks to maintain a favorable governmental, legal and technological climate for the constantly evolving and dynamic business of free over-the-air broadcasting.

Legal & Regulatory Affairs - <http://www.nab.org/legal/>

Science & Technology - <http://www.nab.org/SciTech/>

Information Resource Center (Digital Library) - <http://www.nab.org/irc/>

Research Round-up - <http://www.nab.org/Research/RIBriefs/roundup.asp>

Broadcast Public Service - <http://www.broadcastpublicservice.org/>

**Alliance for Telecommunications Industry Solutions (ATIS)** - <http://www.atis.org/>

1200 G St. NW, Suite 500, Washington, DC 20005, (202) 628-6380, Fax: (202) 393-5453. ATIS is a North American standards body that is leading the development of telecommunications standards, operating procedures, and guidelines through its sponsored committees and forums to make the interoperability of existing and emerging telecommunications products and services possible.

Key Industry Challenges - [http://www.atis.org/atis/key\\_challenges/challenges.htm](http://www.atis.org/atis/key_challenges/challenges.htm)

ATIS Document Center (telecom standards +) - <https://www.atis.org/atis/docstore/index.asp>

Carrier Liaison Committee (CLC) - <http://www.atis.org/atis/clc/clchom.htm>

Network and Services Integration Forum (NSIF) - <http://www.atis.org/atis/Sif/sifhom.htm>

Telecommunications Industry Forum (TCIF) - <http://www.atis.org/atis/tcif/index.htm>

Committee T1 (network interconnections & interoperability standards) - <http://www.t1.org/>

**TeleManagement Forum (TMF)** - <http://www.nmf.org/>

1201 Mt. Kemble Ave., Morristown, NJ 07960-6628, (973) 425-1900, Fax: (973) 425-1515. TMF provides successful real world solutions to many business and technology challenges born of global telecom deregulation. By helping solve communications management and OSS integration issues, TMF and its member companies collaboratively identify, create, develop, and implement real world solutions that automate and streamline telecom operations. Within the TM Forum, industry leaders tackle issues of interoperation and process automation that they could not address as cost-effectively or comprehensively on their own.

**Communications Workers of America (CWA), AFL-CIO, CLC.** - <http://www.cwa-union.org/>

501 3rd St., NW, Washington, DC 20001-2797, (202) 434-1100, Fax: (202) 434-1279. CWA represents North American workers in telecommunications, printing and news media, public service, health care, cable television, general manufacturing, electronics, gas and electric utilities, and other fields. Arizona is part of District 7 (AK, AZ, CO, ID, IA, MN, MT, NB, NM, ND, OR, SD, UT, WA, WY ), 8085 E. Prentice Ave., Englewood, CO 80111, (303) 770-2822, Fax: (303) 793-7927. There are 7 CWA Locals in Arizona, with the largest being Phoenix Local 7019 with 5,600 unionized workers.

**International Telecommunication Union (ITU)** - <http://www.itu.int/>

The ITU, headquartered in Geneva, Switzerland is an international organization within which governments and the private sector coordinate global telecom networks and services. The ITU is the leading publisher of telecommunication technology, regulatory and standards information.

International Mobile Telecommunications - 2000 (IMT-2000 - an ITU strategic priority to define third generation mobile systems) - <http://www.itu.int/imt/>

Selected Web Sites - <http://www.itu.int/Sites/>

**Coalition for Affordable Local and long-distance Service (CALLS)** - <http://www.phonepolicy.com/>

CALLS has asked the Federal Communications Commission to approve a plan that would replace per-minute subsidies built into what long-distance customers pay for calls with a more equitable per-line charge. CALLS members (AT&T, Bell Atlantic, BellSouth, GTE, SBC Corp. and Sprint) believe this change would lead to lower long-distance rates and guarantee stable and affordable local telephone service for all Americans well into the future.

**The Commercial Internet eXchange (CIX) Association** - <http://www.cix.org/>

1041 Sterling Rd., Suite 104A, Herndon, Virginia 20170, (703)709-8200. The CIX is a non-profit trade association of Public Data Internetwork service providers promoting and encouraging development of the public data communications internetworking services industry in both national and international markets. The CIX provides a neutral forum to exchange ideas, information, and experimental projects among suppliers of internetworking services and broadens the base of national and international cooperation and coordination among member networks.

CIX filings at the FCC - [http://www.cix.org/filings/filing\\_index.html](http://www.cix.org/filings/filing_index.html)

Related and Allied Organizations - <http://www.cix.org/orgs.html>

**US Internet Service Providers Alliance (USISPA)** - <http://www.usispa.org/>

1041 Sterling Road, Suite 104A, Herndon VA 20170, (703) 709-8200, Fax: (703) 709-5249. USISPA is a group of ISP trade associations and independent Internet Service Providers who are working together to stop the Bell Operating Companies, GTE, and other Incumbent Local Exchange Carriers (ILECs) from anti-competitive behaviors which are harming ISP's ability to access and serve their

customers. Their efforts are supported regionally by the **Arizona Internet Service Providers Association (AZIPA)** - <http://www.azipa.org/>).

Consumers Need ISP Choice white paper - <http://www.usispa.org/USISPA01.pdf>

**Internet Service Providers' Consortium (ISP/C)** - <http://www.ispc.org/>

William Sommers, President, 221 14th Street, San Francisco, CA 94103, (310) 827-8466, Fax: (603) 372-1539. ISP/C goal is to function as the lead international trade association of ISPs, representing all of its ISP members (defined as an organization providing network connectivity to the Internet) regardless of size, location or services rendered.

**Voice On the Net Coalition (VON)** - <http://www.von.org/>

The VON Coalition actively advocates the viewpoint that the IP Telephony industry should remain as free of governmental regulations as possible and educates consumers and the media on Internet communications technologies on behalf of telecommunications, internet services, software, and hardware companies.

Voice on the Net Conferences - <http://www.von.com/>

**Enterprise Computer Telephony Forum (ECTF)** - <http://www.ectf.org/ectf/home.htm>

ECTF is an open, non-profit, mutually beneficial corporation formed to provide the leadership and direction necessary to promote an open systems environment for Computer Telephony. The ECTF operates as a consensus forum led by its members including CT vendors, developers, VARs, end-users and other interested parties.

**United Telecom Council (UTC)** - <http://www.utc.org/>

1140 Connecticut Ave. NW, Suite 1140, Washington, DC 20036, (202) 872-0030, Fax: (202) 872-1331. UTC represents electric and gas utilities, water companies, energy pipelines, other critical infrastructure companies, plus their technology partners and other corporate telecom/IT users, all united in their commitment to ensuring the best, most reliable systems and networks critical to their core businesses and the customers they serve. UTC's mission is to create a favorable business, regulatory, and technical environment in which all our members and stakeholders will thrive through a variety of advocacy, regulatory, technological, information and education programs.

Public Policy Issues - <http://www.utc.org/pubpol/mainpp.htm>

**Computing Technology Industry Association (CompTIA)** - <http://www.comptia.com/>

450 East 22nd St., Suite 230, Lombard, IL 60148-6158, (630) 268-1818, Fax: (630) 268-1384. CompTIA represents over 7,500 computer hardware and software manufacturers, distributors, retailers, resellers, VARs, system integrators, training, service, telecommunications and Internet companies. In addition to providing a unified voice for the industry in the areas of public policy, workforce development and electronic commerce standards, CompTIA certifies information technology and service professionals with its widely adopted and vendor neutral certification programs.

Public Policy Positions - <http://www.comptia.com/pubpolicy/positions.htm>

Public Policy Links - <http://www.comptia.com/pubpolicy/links.htm>

**Telecommunications Information Resources on the Internet (University of Michigan)** - <http://china.si.umich.edu/telecom/telecom-info.html>

**The WWW Virtual Library (World Wide Web Consortium - W3C)** - <http://vlib.org/>

Communications & Telecommunications Virtual Library - <http://www.analysys.com/vlib/>

## **Telecommunications Contractors Related Resources:**

**Building Industry Consultants Service International (BICSI)** - <http://www.bicsi.org/>

8610 Hidden River Parkway, Tampa, FL 33637, (813) 979-1991, Toll-Free: (800) 242-7405, Fax: (813) 971-4311. BICSI is an international not-for-profit telecommunications association, was founded in 1974 to serve and support telephone company building industry consultants (BICs) responsible for the design and distribution of telecommunications wiring in commercial and multi-family buildings.

**National Association of Communications Contractors (NACC)** - <http://www.cabcert.com/>

1811 Ivy Rd., Oceanside, CA 92054, (760) 754-9129, Fax: (760) 754-9591. NACC is a professional organization serving as an unbiased platform to support the communications cabling industry. Membership includes individuals, contracting firms, and training organizations. NACC offers training courses and a Certified Communications Design Specialist (CCDS) program.

**National Systems Contractors Association (NSCA)** - <http://www.nasca.org/>

NSCA Headquarters, 419 First St. SE, Cedar Rapids, IA 52401, (800) 446-6722, Fax: (319) 366-4164. NSCA Satellite Office, 2857 West Firebrook Rd., Tucson, AZ 85741, (520) 888-9713, Fax: (520) 888-9715. NSCA is the leading association representing the commercial electronic systems industry (audio, video, intercom/paging, telecommunications, security/access control) and an advocate of all who work within the low-voltage industry, including systems contractors/integrators, consultants, product manufacturers, sales representatives, architects, specifying engineers and others.

Government Issues - <http://www.nasca.org/nscaweb/guest/resource/government/index.asp>

**Associated Builders & Contractors (ABC)** - <http://www.abc.org/>

1300 N. Seventeenth St., Suite 800, Rosslyn, VA 22209, (703) 812-2000. ABC is a national trade association representing over 21,000 contractors, subcontractors, material suppliers and related firms from across the country and from all specialties in the construction industry.

**Associated General Contractors (AGC) of America** - <http://www.agc.org/>

333 John Carlyle St., Suite 200, Alexandria, VA 22314, (703) 548-3118, Fax: (703) 548-3119. AGC is the nation's largest and oldest construction trade association and consists of qualified construction contractors and industry related companies. AGC works to improve the construction industry by educating the industry to employ the finest skills, promoting use of the latest technology, and advocating building the best quality projects for owners, both public and private.

**American Institute of Architects (AIA)** - <http://www.aiaonline.com/> or <http://www.e-architect.com/>

1735 New York Ave. NW, Washington, DC 20006, (202) 626-7300, Fax: (202) 626-7587. AIA represents the architectural profession, advancing the value of architects and architecture for more than 135 years through AIA member resources and as the collective voice of the profession.

Government and Industry Affairs - <http://www.e-architect.com/gov/govaffairs.htm>

Advanced Technology Facilities Design: 1997 Review -  
<http://www.e-architect.com/conted/advntech/>

American Architectural Foundation (AAF) - <http://www.aafpages.org/>

Construction Market Data (CMD) - <http://www.cmdonl.com/>

(ProFile on the Web) Listing of U.S. Architecture Firms - <http://www.cmdg.com/profile/>

Building Products Directory - <http://www.e-architect.com/products/pierpoint/>

**National Society of Professional Engineers (NSPE)** - <http://www.nspe.org/>

1420 King Street, Alexandria, VA 22314, (703) 684-2800, Fax: (703) 836-4875. NSPE is an engineering society that represents engineering professionals and licensed engineers (PEs) across all disciplines. NSPE strengthens the engineering profession by promoting engineering licensure and ethics, enhancing the engineer image, advocating and protecting PEs' legal rights at the national and state levels, publishing news of the profession, and providing continuing education opportunities.

Professional Engineers in Construction - <http://www.nspe.org/pracdiv/pd1-cact.asp>

**Association for Facilities Engineering (AFE)** - <http://www.afe.org/>

8180 Corporate Park Dr., Suite 305, Cincinnati, OH 45242, (888) 222-0155, Fax: (513) 247-7422. AFE is the premier network for engineers who want to find and exchange information and solutions for their facilities. The association is dedicated to teaching its members new technology and trends; positioning AFE as a leading authority in facility engineering; and influencing the industry to appreciate and use the value of facilities engineering.

Facilities Operations and Engineering Reference (Book) - <http://www.afe.org/rsmeans.htm>

**The Construction Specifications Institute** - <http://www.csinet.org/>

99 Canal Center Plaza, Suite 300, Alexandria, VA 22314, (703) 684-0300, Toll-Free: (800) 689-2900, Fax (703) 684-0465. CSI is a national professional association that provides technical information and products, continuing education, professional conferences, and product shows to enhance communication among all the nonresidential building design and construction industry's disciplines and meet the industry's need for a common system of organizing and presenting construction documents. CSI's nearly 18,000 members include architects, engineers, specifiers, contractors, building owners, facility managers, and product manufacturers.

Uniform Drawing System (UDS) - <http://www.csinet.org/technic/uds/uds.htm>

**National Institute of Building Sciences (NIBS)** - <http://www.nibs.org/>

1090 Vermont Ave., NW, Suite 700, Washington, DC 20005-4905, (202) 289-7800; Fax: (202) 289-1092. The National Institute of Building Sciences (NIBS) is a non-governmental, non-profit organization established by the Congress to serve the public interest by promoting a more rational regulatory environment for the building community, by facilitating the introduction of new and innovative technology, and disseminating nationally recognized technical information.

U.S. National CAD Standard - <http://www.nibs.org/ncs/ncs.htm>

**Building Officials and Code Administrators International (BOCAI)** - <http://www.bocai.org/>

4051 W. Flossmoor Rd., Country Club Hills, IL 60478, (708) 799-2300, Fax: (708) 799-4981. BOCAI is a nonprofit association whose members span the building community, from code enforcement officials to materials manufacturers and is dedicated to preserving the public health, safety and welfare in the built environment through the effective, efficient use and enforcement of Model Codes.

International Code Council (ICC - formerly CABO) - <http://www.intlcode.org/>

**Riser Management Systems** - <http://www.riser.com/>

200 Church Street, PO Box 1264, Burlington, VT 05402, (800) 747-3779 , Fax: (802) 860-0381. Riser Management Systems, is a leading provider of telecommunications engineering, consulting, and riser management services to the commercial real estate industry.

Riser Connections Newsletter Articles - <http://www.riser.com/inthepress/nwsltrs/>

(See Appendix 3 - Bibliography below for list of relevant articles)

Case Study: New York Information Technology Center - <http://www.riser.com/casestudies/>

New York Information Technology Center - <http://www.nyitc.com/>

## **Building Managers and Owners Related Resources:**

**Real Access Alliance** - <http://www.realaccess.org/>

1420 New York Ave. NW, Washington, DC 20005, (202) 639-8400. The Real Access Alliance was formed to encourage free market competition among telecommunications companies in providing quality telecom services to tenants in commercial and residential buildings and to safeguard the constitutional private property rights of America's real estate owners. The Alliance represents the interests of approximately 1 million members among 11 trade associations who support unrestricted, free market opportunities to negotiate with telecommunications providers for safe, dependable services in buildings on behalf of their tenants.

Legislative and Regulatory Updates - <http://www.realaccess.org/update.htm>

"Forced Access" Issue Background - <https://www.realaccess.org/background.htm>

Competitive Analysis Survey (Executive Summary) by the Charlton Research Company (<http://www.charltonresearch.com/>) 7-8/99 - <http://www.realaccess.org/library/finalsurvey.pdf>

Economic Analysis of the FCC's Proposed Policy of "Forced Access" for CLECs to Private Buildings by Strategic Policy Research Inc. (<http://www.spri.com/>) 8/29/99 - <http://www.realaccess.org/library/finaleconomic.pdf>

The Real Estate Roundtable (formerly the National Realty Committee) - <http://www.rer.org/>

**Building Owners and Managers Association (BOMA)** - <http://www.boma.org/>

1201 New York Ave. NW, Suite 300, Washington, DC 20005, (202) 408-2662, Fax: (202) 371-018. Founded in 1907, BOMA International is a dynamic international federation of over 101 local associations. The 17,000 members of BOMA International own or manage over 8.5 billion square feet of downtown and suburban commercial properties and facilities in North America and abroad. The mission of BOMA International is to advance the performance of commercial real estate through advocacy, professional competency, standards and research.

Government and Industry Affairs - <http://www.boma.org/gr1.htm>

Telecommunications & Forced Building Entry - <http://www.boma.org/force.htm>

FCC Comments and Data - <http://www.boma.org/download/govt/fcc/comments.htm>

FCC Forced Access Rulemaking Model Comments - <http://www.boma.org/modlcomm.htm>

Full Comments Submitted to the FCC on CC DOCKET NO. 96-98 - <http://www.boma.org/download/govt/fcc/fcccomments.pdf>

Utility Access And Use Rights In Real Property - <http://www.boma.org/download/govt/fcc/easementanalysis.pdf>

Executive Summary of CLEC (Competitive Local Exchange Carriers) Access Survey - <http://www.boma.org/download/govt/fcc/raasummary.pdf>

**Utility Access and Use Rights In Real Property** by Charles A. Hansen and Andrew N. Jacobson (white paper - <http://www.boma.org/download/govt/fcc/easementanalysis.pdf>)

**Wired for Profit: The Property Management Professional's Guide to Capturing Opportunities in the Telecommunications Market** (Book - 1998) - <http://www.boma.org/wired.htm>

**What Office Tenants Want: Building Features, Amenities and Services** (Book - 1999) with coverage including "smart" buildings and technologically advanced systems - <http://www.boma.org/bomauli.htm>

BOMA's Telecom/Technology Survey (Results expected 1Q/2000)

Survey Form for Building Owners (12/99) -

[http://www.boma.org/download/research/tel\\_survey\\_owners.pdf](http://www.boma.org/download/research/tel_survey_owners.pdf)

Survey Form for Tenants (12/99) -

[http://www.boma.org/download/research/tel\\_survey\\_tenants.pdf](http://www.boma.org/download/research/tel_survey_tenants.pdf)

Building Classifications - <http://www.boma.org/classes.htm>

Glossary of Real Estate Terms - <http://www.boma.org/glossary.htm>

**National Association of Industrial & Office Properties (NAIOP)** - <http://www.naiop.org/>

2201 Cooperative Way, Third Floor, Herndon, Virginia 20171, Toll-Free: (800) 666-6780, Fax: (703) 904-7942. NAIOP is a trade association with over 7,000 members who are developers, owners, investors and related professionals in industrial and office real estate in 47 Chapters across the U.S. and Canada. NAIOP offers its members business and networking opportunities, education programs, research on trends and innovations and strong legislative representation.

NAIOP Resources: Real Estate Links - <http://www.naiop.org/resources/links.htm>

**National Association of Realtors (NAR)** - <http://nar.realtor.com/> or <http://www.realtor.com/>

Phone: (800) 874-6500. The NAR is the "Voice for Real Estate," and the nation's largest professional association, representing more than 750,000 members. Founded in 1908, NAR is composed of residential and commercial realtors, who are brokers, salespeople, property managers, appraisers, counselors and others engaged in all aspects of the real estate industry. The association works to preserve the free enterprise system and the right to own, buy and sell real property.

Government Affairs - <http://nar.realtor.com/gov/home.htm>

**Institute of Real Estate Management (IREM)** - <http://www.irem.org/>

IREM educates real estate managers, certifies the competence and professionalism of individuals and organizations engaged in real estate management, serves as an advocate on issues affecting the industry, and enhances and supports its members' professional competence so they can better identify and meet the needs of those who use their services. IREM was established in 1933 and has 10,000 members across the country.

**Commercial Investment Real Estate Institute (CIRES)** - <http://www.ccim.com/>

430 N. Michigan Ave., 8th Floor, Chicago, IL 60611-4092, (800) 621-7027. CIRES confers the Certified Commercial Investment Member (CCIM) designation and is an affiliate of the NAR.

Government Affairs - <http://www.ccim.com/govt/>

Real Estate Net Links - <http://www.ccim.com/links/>

**National Multi-Housing Council (NMHC)** - <http://www.nmhc.org/>

1850 M St. NW, Suite 540, Washington, DC 20036-5803, (202) 974-2300, Fax: (202) 775-0112. NMHC and its affiliate, the American Seniors Housing Association (ASHA), represent the interests of the nation's larger and most prominent firms participating in the multifamily rental housing industry. NMHC and ASHA members are engaged in all aspects of the development and operation of multifamily housing, including ownership, construction, management, and finance of rental properties.

**National Apartment Association (NAA)** - <http://www.naahq.org/>

201 North Union Street, Suite 200, Alexandria, VA 22314, (703) 518-6141, Fax: (703) 518-6191. NAA is an industry-wide, nonprofit trade association devoted solely to the needs of the multihousing industry, representing multifamily developers, owners, managers, and suppliers. NMHC and NAA



unite under the auspices of the NMHC/NAA Joint Legislative Program to support legislative and regulatory policies that enable the nation's 25 million multifamily rental housing units to continue to provide high quality homes that remain accessible and affordable.

Government Affairs - <http://www.naahq.org/legislation.html>

**Multihousing.com** - <http://www.multihousing.com/>

Industry's leading provider of telecommunications and technology information for the multihousing professional, necessary to make strategic decisions about cable television, telephone, high-speed Internet, water submetering and utilities deregulation.

Legal & Regulatory Resources: Latest News - <http://www2.multihousing.com/legal/>

Legal & Regulatory Resources: Mandatory Access -  
<http://www2.multihousing.com/legal/mandatory/>

Multihousing Telecom & Technology Advisor Newsletter -  
<http://www2.multihousing.com/infocenter/news.html>

(Mandatory Access Monitor quarterly publication available)

Information Center: Cable Television -  
<http://www2.multihousing.com/infocenter/cabletelevision/>

Information Center: Telephone - <http://www2.multihousing.com/infocenter/telephone/>

High Speed Internet 101 - <http://www2.multihousing.com/infocenter/highspeedinternet/>

**International Development Research Council (IDRC)** - <http://www.idrc.org/>

35 Technology Pkwy., Suite 150, Norcross, GA 30092-2901, (770) 446-8955, Fax: (770) 263-8825. IDRC is the world's leading professional association for managers of corporate assets including corporate real estate, facilities, information technology, human resources, finance and other support units that define corporate infrastructure.

IDRC Foundation: Corporate Real Estate and Corporate Infrastructure Resource Management Research - [http://www.conway.com/idrc\\_research/](http://www.conway.com/idrc_research/)

**National Association of Corporate Real Estate Executives (NACORE)** - <http://www.nacore.com/>

440 Columbia Drive, Suite 100, West Palm Beach, FL 33409, (561) 683-8111, Fax: (561) 697-4853. NACORE International supports business leaders engaged in the strategic management of real estate for major corporations worldwide, offering professional networking, as well as education and certification through its Institute for Corporate Real Estate.

**International Facility Management Association (IFMA)** - <http://www.ifma.org/>

1 E. Greenway Plaza, Suite 1100, Houston, TX 77046-0194, (713) 623-4362, Fax: (713) 623-6124. IFMA is the professional association for facility managers who coordinate details relating to planning, designing, and managing complex facilities, including systems, equipment, furniture, and people.

**FacilitiesNet** (facility professionals issues and information) - <http://www.facilitiesnet.com/fn>

Building Operating Management Magazine - <http://www.facilitiesnet.com/bom/>

Maintenance Solutions Magazine - <http://www.facilitiesnet.com/ms/>

**FMForum** (facilities management discussion group) - <http://www.fmforum.org/>

**FMLink** (facilities and real property management resources) - <http://www.fmlink.com/>

**LoopNet** (commercial real estate marketplace & resource center) - <http://www.loopnet.com/>

## **Consumer Action and Advocacy Organizations:**

**American Civil Liberties Union (ACLU)** - <http://www.aclu.org/>

125 Broad Street, 18th Floor, New York, NY 10004-2400, (212) 549-2500. The ACLU is the nation's foremost advocate of individual rights; litigating, legislating, and educating the public on a broad array of issues affecting individual freedom in the United States. The ACLU is represented regionally by the **Arizona Civil Liberties Union (AzCLU)** - <http://www.primenet.com/~azclu/>).

The Year in Civil Liberties 1999 - <http://www.aclu.org/library/ycl99/>

Cyber-Liberties (censorship, privacy) - <http://www.aclu.org/issues/cyber/hmcl.html>

**Americans for Technology Leadership (ATL)** - <http://www.techleadership.org/>

1225 Eye St. NW, Suite 500, Washington, DC 20005, (202) 331-2130. ATL is a broad-based coalition of technology professionals, consumers and organizations dedicated to limiting government regulation of technology and fostering competitive market solutions to public policy issues affecting the technology industry. They believe that this approach will ensure that all Americans are able to take advantage of the benefits of the technologies that are shaping the new economy.

The Issues - <http://www.techleadership.org/issues.html>

**Association for Competitive Technology (ACT)** - <http://www.actonline.org/>

Issues & Policies - <http://www.actonline.org/issues/>

Broadband Access - <http://www.actonline.org/issues/access.asp>

**Consumer Alert** - <http://www.consumeralert.org/>

Consumer Alert is a free-market public interest group whose sole mission is to represent average consumers as purchasers of goods and services in a dynamic and competitive marketplace. Consumer Alert is concerned about the excessive growth of government regulation at the national and state levels and dedicated to informing the public about the consumer benefits of competitive enterprise.

**Consumer Federation of America (CFA)** - <http://www.consumerfed.org/>

1424 16th Street NW, Washington, DC 20036, (202) 387-6121, Fax: (202) 265-7989. The CFA provides consumers a well-reasoned and articulate voice in decisions that affect their lives and has a membership of more than 260 organizations from throughout the nation. CFA's professional staff gathers facts, analyzes issues, and disseminates information to the public, legislators, and regulators.

Open Access to Broadband Services (Cable Operators & Alternative ISPs) News and Resources - <http://www.consumerfed.org/internetaccess/>

Transforming the Information Superhighway into a Private Toll Road:

The Case Against Closed Access Broadband Internet Systems, September 20, 1999  
(<http://www.consumerfed.org/broadbandaccess.pdf>)

Keeping the Information Superhighway Open for the 21st Century, December 6, 1999  
(<http://www.consumerfed.org/internetaccess/keeping1299.pdf>)

**Consumer Project on Technology (CPT)** - <http://www.cptech.org/>

P.O. Box 19367, Washington, DC 20036, (202) 387-8030, Fax: (202) 234-5176. CPT is active in a number of issue areas, including intellectual property, telecommunications, privacy and electronic commerce, plus a variety of projects relating to antitrust enforcement and policy.

Telecommunications Regulation - <http://www.cptech.org/telecom/>

A Few Research Links - <http://www.cptech.org/research.html>

**Consumers Union** - <http://www.consumersunion.org/>

101 Truman Avenue, Yonkers, NY 10703-1057, (914) 378-2000. Consumers Union is the nonprofit publisher of Consumer Reports magazine. They provide a consumer advocacy web site with informative and educational materials on a variety of consumer issues.

Telecommunications & Utilities - <http://www.consumersunion.org/telecom/telecom.htm>

Consumer-related Web Links - <http://www.consumersunion.org/resources/links.htm>

**Consumers' Voice** - <http://www.consumersvoice.org/>

First Indiana Plaza, 135 North Pennsylvania St., Suite 2700, Indianapolis, IN 46204, (317) 684-5074, Fax: (317) 684-5173. Consumers' Voice is a watchdog and advocate for consumer interests, especially in rural areas, as the telecom industries continue to evolve. Their mission is to determine the practices that serve consumers best and work with their members and public officials to expand these throughout the industry.

**Hands Off The Internet** - <http://www.HandsOfftheInternet.org/>

Hands Off The Internet is a coalition of Net users united in the belief that the Internet's phenomenal growth stems from the ability of entrepreneurs to expand consumer choices and opportunities without worrying about government regulation, a "hands off" approach.

**iAdvance Coalition** - <http://www.iadvance.org/>

1300 I St. NW, Suite 522 West, Washington, DC 20005, (202) 414 6207. iAdvance is a Washington-based coalition of computer companies, public interest groups, high-tech organizations, Internet companies, telecommunications companies and others who see the overriding need to improve the quality and speed of the Internet by allowing ILECs to more readily enter the data and broadband service markets. They believe that fundamental principles such as choice, competition, and innovation in the high-tech marketplace must be embraced by policymakers if our nation and our communities are to remain connected and competitive in the rapidly expanding global economy.

A 21st Century Internet for All Americans by Matt Robison, December 2, 1999

(Executive Summary - <http://www.iadvance.org/background/execsum2.html>)

(Full Report - <http://www.iadvance.org/background/robinson.pdf>)

Breaking the Backbone: The Impact of Regulation on Internet Infrastructure Deployment by Erik R. Olbeter and Matt Robison, July 17, 1999

(Executive Summary - <http://www.iadvance.org/background/execsum.html>)

(Full Report - [http://www.iadvance.org/background/Olbeter\\_Robison\\_study.pdf](http://www.iadvance.org/background/Olbeter_Robison_study.pdf))

**Internet Telecom Project (ITP)** - <http://www.cybertelecom.org/>

2358 N Vernon St., Arlington, Virginia 22207. The Internet Telecommunications Project is a voluntary effort founded by Robert Cannon and dedicated to the dissemination and discussion of reliable telecommunications information. The Project is not involved in advocacy, lobbying, or representation.

FCC Regulatory Proceedings - <http://www.cybertelecom.org/regulat.htm>

Legislation Affecting the Internet - <http://www.cybertelecom.org/legis.htm>

Internet Communications Regulation Digest - <http://www.cybertelecom.org/notes/notes.htm>

Becoming a CLEC - <http://www.cybertelecom.org/clec.htm>

Wireless Communications Regulation - <http://www.cybertelecom.org/wireless.htm>

Broadband & Section 706 - <http://www.cybertelecom.org/706.htm>

Links Library - <http://www.cybertelecom.org/links.htm>

**NetAction** - <http://www.netaction.org/>

601 Van Ness Ave., #631, San Francisco, CA 94102, (415) 775-8674, Fax: (415) 673-3813.  
NetAction is a national nonprofit organization dedicated to promoting use of the Internet for effective grassroots citizen action campaigns, and to educating the public, policy makers, and the media about technology policy issues. NetAction is an affiliate of the **Electronic Policy Network (EPN** - <http://www.epn.org/>) and supports moves to promote price-dropping, service-improving initiatives in the telecommunications market.

NetAction's Perspective on the Cable "Access" Debate - <http://www.netaction.org/broadband/>  
Broadband Briefings Mailing List and Archives - <http://www.netaction.org/briefings/>

**National Association of State Utility Consumer Advocates (NASUCA)** - <http://www.nasuca.org/>

1133 15th Street NW, Suite 550, Washington, DC 20005, (202) 727-3908, Fax: (202) 727-3911.  
NASUCA is an association of 42 advocate offices in 39 states and the District of Columbia. Their members are designated by laws of their respective states to represent the interests of utility consumers before state and federal regulators and in the courts. Residential Utility Consumer Office (RUCO) is their advocate office for Arizona.

**openNET Coalition** - <http://www.opennetcoalition.org/>

The openNET Coalition consists of over 900 of the nation's leading providers of consumer Internet services and is dedicated to promoting the rights of all consumers to obtain affordable, high-speed access to the Internet from the provider of their choice. The Coalition believes that competition among Internet service providers over last mile broadband networks will lower prices, spur innovation, and advance the social and economic benefits of the Internet.

**Small Business Survival Committee (SBSC)** - <http://www.sbsc.org/>

1320 18th St. NW, Suite 200, Washington, DC 20036, (202) 785-0238, Fax: (202) 822-8118.  
SBSC and its experts regularly help lawmakers, the media and the general public decipher controversial and complex issues impacting small business and the economy. SBSC's Telecommunications Policy Committee (<http://www.sbsc.org/tcp/>) advances choice, innovative opportunities, and a competitive environment for entrepreneurs.

Why Telecommunications Deregulation Matters To All Small Businesses -  
<http://www.sbsc.org/tcp/deregulation.htm>

**Telecommunications Research & Action Center (TRAC)** - <http://www.trac.org/>

PO Box 27279, Washington, DC 20005, (202) 263-2950. TRAC is a non-profit, membership organization acting to promote the interests of residential telecommunications customers.

TeleTips Residential and Small Business Long Distance Charts -  
<http://www.trac.org/publications/>

**Utility Consumers' Action Network (UCAN)** - <http://www.ucan.org/>

1717 Kettner Blvd., Suite 105, San Diego, CA 92101, (619) 696-6966, Fax: (619) 696-7477.  
UCAN is Southern California's largest and most respected consumer organization formed to protect consumers and advance positive policy options.

Law & Policy: Telecom - [http://www.ucan.org/law\\_policy/telecom.html](http://www.ucan.org/law_policy/telecom.html)

**U.S. Federal Trade Commission (FTC) Office of Consumer Protection** -  
<http://www.ftc.gov/ftc/consumer.htm>

## **National High Technology Industry Organizations:**

**Association for Computing (ACM)** - <http://www.acm.org/>

1515 Broadway, New York, NY, 10036, (212) 626-0500, Toll-Free: (800) 342-6626. ACM is the world's first educational and scientific computing society with over 80,000 computing professionals and students members world-wide. ACM provides authoritative publications, pioneering conferences, and visionary leadership for the new millennium.

Computing and Public Policy - <http://www.acm.org/serving/>

ACM U.S. Public Policy Committee (USACM) - <http://www.acm.org/usacm/>

The ACM Washington Update (biweekly newsletter) - <http://www.acm.org/usacm/update/>

Science Policy Links - <http://www.acm.org/usacm/links.html>

Technical Standards Committee (TSC) - <http://www.acm.org/tsc/>

**Software & Information Industry Association (SIIA)** - <http://www.sii.net/>

1730 M St. NW, Suite 700, Washington, DC 20036-4510, (202) 452-1600, Fax: (202) 223-8756. The Software & Information Industry Association is the principal trade association for the software and digital content industry. SIIA provides global services in government relations, business development, corporate education and intellectual property protection to the leading companies that are setting the pace for the digital age.

Government Affairs - <http://www.sii.net/ga/>

Key Public Policy Positions - <http://www.sii.net/ga/issues.htm>

**Business Software Alliance (BSA)** - <http://www.bsa.org/>

1150 18th St. NW, Suite 700, Washington, DC 20036, (202) 872-5500. BSA has been the voice of the world's leading software developers before governments and with consumers in the international marketplace. Its members represent the fastest growing industry in the world. BSA educates computer users on software copyrights, advocates public policy that fosters innovation, expands trade opportunities, and fights software piracy.

Policy - <http://www.bsa.org/policy/>

CEO Forum (leading high tech CEOs discuss critical policy issues) - [http://www.bsa.org/ceoforum/intro\\_c.html](http://www.bsa.org/ceoforum/intro_c.html)

Forecasting a Robust Future: An Economic Study of the U.S. Software Industry - [http://www.bsa.org/statistics/us\\_econ\\_study99\\_c.html](http://www.bsa.org/statistics/us_econ_study99_c.html)

Telecommunications Deregulation Ensures Competition - [http://www.bsa.org/policy/telecom/intro\\_c.html](http://www.bsa.org/policy/telecom/intro_c.html)

**Information Technology Association of America (ITAA)** - <http://www.ita.org/>

1616 N. Ft. Myer Dr., Suite 1300, Arlington, VA 22209, (703) 522-5055, (703) 525-2279. ITAA is a trade association representing the broad spectrum of the world-leading U.S. IT industry, encompassing computers, software, telecommunications products and services, Internet and online services, systems integration, and professional services companies. Their public policy advocacy program lobbies and educates Members of Congress, their staffs, and the Executive Branch (including the President and Federal Agencies, such as the FCC and GSA) on issues of critical concern to the IT industry.

Government Affairs - <http://www.ita.org/govt/>

Public Policy Report - <http://www.ita.org/govt/pubs/ppr.htm>

State Legis-Link - <http://www.ita.org/govt/legact/legis.htm>

**Information Technology Industry (ITI) Council** - <http://www.itic.org/>

1250 Eye St. NW, Suite 200, Washington, DC 20005, (202) 737-8888, Fax: (202) 638-4922.  
ITI represents the leading U.S. providers of Information Technology (IT) products and services seeking to promote global competitiveness with open markets, free and open competition, market-based solutions, protection of Intellectual Property (IP), and the adoption of voluntary standards.

Issues & Policies - [http://www.itic.org/iss\\_pol/split.html](http://www.itic.org/iss_pol/split.html)

Telecommunications - [http://www.itic.org/iss\\_pol/telecom.html](http://www.itic.org/iss_pol/telecom.html)

Related Organizations - [http://www.itic.org/rel\\_orgs/](http://www.itic.org/rel_orgs/)

**The Information Technology & Telecommunications Association (TCA)** - <http://www.tca.org/>

74 New Montgomery, Suite 230, San Francisco, CA 94105, (415) 777-4647, Fax: (415) 777-5295.  
TCA is an industry resource for information technology and telecommunications professionals involved in transporting, connecting and integrating data, image, video and voice and provides industry assistance for regulatory issues, peer-to-peer networking, and education.

**Association for Interactive Media (AIM)** - <http://www.interactivehq.org/>

1301 Connecticut Ave. NW, 5th Floor, Washington, DC 20036, (202) 408-0008, Fax: (202) 408-0111.  
AIM serves businesses that use the Internet with support for their Internet ventures as well as protection and promotion essential to the health of their Internet projects, products, and services.

Political Activities - [http://www.interactivehq.org/html/aim\\_s\\_political\\_activities.htm](http://www.interactivehq.org/html/aim_s_political_activities.htm)

Bills & Regulations 1998-99 - [http://www.interactivehq.org/html/bills\\_regulations\\_98-99.htm](http://www.interactivehq.org/html/bills_regulations_98-99.htm)

Guide to Internet Organizations - <http://www.interactivehq.org/html/netgroups.htm>

**Interactive Digital Software Association (IDSA)** - <http://www.idsa.com/>

1775 Eye St. NW, Suite 420, Washington, DC 20006. IDSA offers services to entertainment and video game software publishers including a global anti-piracy program, government relations, business and consumer research, and First Amendment and intellectual property protection efforts.

Government Affairs - <http://www.idsa.com/govt.html>

**Association of Internet Professionals (AIP)** - <http://www.association.org/>

15 East 26th Street, Suite 1403, New York, NY 10010, (212) 689-7047, Toll-Free: (877) 247-0800.  
AIP is the premier professional association of the Internet industry and exists to unify, support and represent the global community of Internet professionals by serving as a forum for the ideas, people and issues shaping the future of the Internet industry.

**Computer and Communications Industry Association (CCIA)** - <http://www.ccianet.org/>

666 11th St. NW, Suite 600, Washington, DC 20001, (202) 783-0070. CCIA is an international, nonprofit association of computer and communications firms including equipment manufacturers, software developers, telecommunications and on-line service providers, re-sellers, systems integrators, third-party vendors and other related business ventures. CCIA seeks to be the leading industry advocate in promoting open, barrier-free competition in the offering of computer and communications products and services worldwide, leading to their motto "**Open Markets, Open Systems, Open Networks, and Full, Fair and Open Competition.**"

Public Policy Focus - <http://www.ccianet.org/policyfr.htm>

**The Institute of Electrical and Electronics Engineers (IEEE-USA)** - <http://www.ieeeusa.org/>

1828 L St. NW, Washington, DC 20036-5104, (202) 785-0017, Fax: (202) 785-0835. IEEE-USA represents U.S. electrical, electronics, and computer engineers. They develop position statements and communicate technology policy recommendations to Congress, the executive branch, the media and other opinion-makers in support of member priorities.

Public Policy Forum - <http://www.ieeeusa.org/forum/>

Public Policy Links - <http://www.ieeeusa.org/forum/govlinks.html>

Legislative Action Center - <http://congress.nw.dc.us/ieee/>

**International Communications Industries Association (ICIA)** - <http://www.icia.org/>

11242 Waples Mill Rd., Suite 200, Fairfax, VA 22030, (703) 273-7200, Toll-Free: (800) 659-7469, Fax: (703) 278-8082. ICIA represents for-profit individuals and organizations that derive revenue from the commercialization or utilization of communications and presentation technologies among the public, business, education and government. ICIA achieves this through education programs, workforce development activities, industry technology updates, publications, Internet presence, market research, industry certification programs, government relations and participation in national and international expositions.

**Sound, AV, Video Integrators Council (SAVVI)** - <http://www.icia.org/committees/savvi/>

**Electronic Messaging Association (EMA)** - <http://www.ema.org/>

1655 North Fort Myer Dr., Suite 500, Arlington, VA 22209, (703) 524-5550, Fax: (703) 524-5558. EMA, The E-Business Forum, is a non-profit trade association representing the e-business and messaging industries. EMA provides information, advocacy, education, and strategic forum discussions of technology best practices to promote innovation and solutions of today's most pressing e-business challenges.

Advocacy - <http://www.ema.org/content/advocacy/advocacy.htm>

Broadband - <http://www.ema.org/content/advocacy/broadband.htm>

**Internet Mail Consortium (IMC)** - <http://www.imc.org/>

127 Segre Place, Santa Cruz, CA 95060, (831) 426-9827, Fax: (831) 426-7301. IMC is an international organization focused on cooperatively managing and promoting the rapidly-expanding world of electronic mail on the Internet including greatly expanding the role of mail on the Internet into areas such as commerce and entertainment, advancing new Internet mail technologies, and making it easier for all Internet users to get the most out of this growing communications medium.

**International Telework Association & Council (ITAC)** - <http://www.telecommute.org/>

204 E. St. NE, Washington, DC 20002, (202) 547-6157. ITAC is a non-profit organization dedicated to promoting the economic, social and environmental benefits of teleworking by sharing information about the design and implementation of teleworking programs, the development of the U.S. telework sector and research, and hosting Telecommute America!

**US Distance Learning Association (USDLA)** - <http://www.usdla.org/>

PO Box 376, Watertown, MA 02471-0376, (800) 275-5162, Fax: (781) 453-2533. USDLA promotes the development and application of distance learning for education and training. Constituents include Pre-K through grade 12 education, higher education, home school education, continuing education, corporate training, military and government training, and telemedicine.

**American Electronics Association (AEA)** - <http://www.aeanet.org/>

601 Pennsylvania Ave. NW, North Building, Suite 600, Washington, DC 20004, (202) 682-9110, Fax: (202) 682-9111. AEA is the largest high tech trade group and the broad umbrella organization serving the spectrum of technology product segments, from semiconductors and software to mainframe computers and telecommunications systems. AEA is dedicated to strengthening the global competitive position of U.S. high tech companies through a broad range of member services and industry advocacy programs.

Public Policy - [http://www.aeanet.org/aeenet/public/public\\_policy/](http://www.aeanet.org/aeenet/public/public_policy/)

Research & Industry Statistics (Cyber Report Series) -  
<http://www.aeanet.org/aeenet/public/research/>

Small Business CyberCenter - [http://www.aeanet.org/aeenet/public/small\\_bus/](http://www.aeanet.org/aeenet/public/small_bus/)

**Electronic Industries Alliance (EIA)** - <http://www.eia.org/>

2500 Wilson Blvd., Arlington, VA 22201, (703) 907-7600. EIA is a federation of industry organizations committed to the growth and stability of the electronics industry. EIA serves the electronic industries by creating and stimulating domestic and foreign markets, by developing technical standards, by hosting forums for leadership and debate, and by providing a singular voice for a diverse industry and , includes industry groups such as:

Consumer Electronics Association (CEA) - <http://www.ce.org/>

Electronic Components, Assemblies, Equipment & Supplies Association (ECA) -  
<http://www.ce.org/index.cfm>

Telecommunications Industry Association (TIA) - <http://www.tiaonline.org/>

Public Policy/Government Relations Department Overview -  
<http://www.tiaonline.org/government/overview.cfm>

Electronic Information Group (EIG) - <http://www.eigroup.org/>

Government Electronics & Information Technology Association (GEIA) -  
<http://www.geia.org/>

JEDEC Solid State Technology Association - <http://www.jedec.org/>

Electronic Industries Foundation (EIF - philanthropy) - <http://www.eia.org/eif/>

**Consumer Electronics Association (CEA)** - <http://www.ce.org/>

2500 Wilson Blvd., Arlington, VA 22201-3834, (703) 907-7600, Fax: (703) 907-7601. CEA membership unites nearly 600 companies within the U.S. consumer technology industry and is the industry authority on market research and forecasts, consumer surveys, legislative and regulatory news, engineering standards, training resources, and more. Their annual **International Consumer Electronics Show (CES)** - <http://www.CESweb.org/>) is the biggest consumer technology show in the world, attracting retail buyers, distributors, manufacturers, market analysts, importers/exporters, and press from around the world.

Public Policy - [http://www.ce.org/index.cfm?area=public\\_policy](http://www.ce.org/index.cfm?area=public_policy)

Current Issues - [http://www.ce.org/index.cfm?area=public\\_policy&area2=issues](http://www.ce.org/index.cfm?area=public_policy&area2=issues)

Citizen Action Network -

[http://www.ce.org/index.cfm?area=public\\_policy&area2=citizen\\_action\\_network](http://www.ce.org/index.cfm?area=public_policy&area2=citizen_action_network)

Market Overview - [http://www.ce.org/index.cfm?area=market\\_overview](http://www.ce.org/index.cfm?area=market_overview)



**Semiconductor Equipment and Materials International (SEMI)** - <http://www.semi.org/>

805 E. Middlefield Rd., Mountain View, CA 94043, (650) 964-5111. SEMI is a global trade association that represents the semiconductor and flat panel display equipment and materials industries. The primary goal of SEMI is to help its members expand their global marketing opportunities and improve access to their customers and industry, government and civic leaders by providing up-to-date, industry-specific information and educational resources needed to manage their company and market their products more effectively.

Public Policy Home Page - <http://www.semi.org/web/winitatives.nsf/url/pphome>

**The Technology Network (TechNet)** - <http://www.technetwork.org/>

101 University Ave., Suite 240, Palo Alto, CA 94301, (650) 463-1510. TechNet is a network of senior executives of the nation's leading technology companies and a national political organization that builds bipartisan support for policies that strengthen America's leadership of the New Economy.

**The CEO Forum on Education and Technology** - <http://www.ceoforum.org/>

1341 G Street, NW, Suite 1100, Washington, DC 20005, (202) 393-2260. The CEO Forum on Education and Technology was founded to help ensure that America's schools effectively prepare all students to be contributing citizens and productive workers in the 21<sup>st</sup> Century. The Forum issues an annual assessment of the nation's progress toward integrating technology into American classrooms.

School Technology & Readiness (STaR) Charts - <http://www.ceoforum.org/starchart.cfm>

## **Policy and Economic Development Interests:**

**Alliance for Public Technology (APT)** - <http://www.apr.org/>

PO Box 27146, Washington DC 20038-7146, (202) 263-2970, Fax: (202) 263-2960. APT is a nonprofit membership organization open to all nonprofit organizations and individuals, not members of the affected industries, concerned with fostering access to affordable and useful information and communication services and technologies by all people. APT is composed of public interest groups and individuals, some of whom historically have been left out of the Information Age, including the elderly, minorities, low income groups and people with disabilities.

Public Policy - <http://www.apr.org/policy/index.html>

**American Planning Association (APA)** - <http://www.planning.org/>

122 South Michigan Ave., Suite 1600, Chicago, IL 60603, (312)431-9100, Fax: (312)431-9985. APA and its professional institute, the American Institute of Certified Planners (AICP), are organized to advance the art and science of planning and to foster the activity of planning, physical, economic, and social, at local, regional, state, and national levels. Their regional chapter, the Arizona Planning Association (APA) can be found on the web at <http://www.azplanning.org/>.

Legislative and Policy Issues - <http://www.planning.org/govt/govtaffr.html>

Growing Smart Legislative Guidebook -

<http://www.planning.org/plnginfo/GROWSMAR/guidebk.html>

**American Real Estate and Urban Economics Association (AREUEA)** - <http://www.areuea.org/>

Indiana University, Kelley School of Business, 1309 East Tenth St., Suite 738, Bloomington, IN 47405. AREUEA provides information and analysis in the fields of real estate development, planning,

and economics for academic, professional, and governmental people who are concerned with urban economics and real estate issues.

Real Estate Economics Journal - <http://www.areuea.org/reecon.htm>

Valuable Links - <http://www.areuea.org/links.htm>

**Benton Foundation Communications Policy & Practice** - <http://www.benton.org/cpphome.html>

1634 Eye St. NW, 11th Floor, Washington, DC 20006, (202) 638-5770, Fax: (202) 638-5771.

Benton's CPP program seeks to infuse the emerging communications environment with public interest values, and demonstrate the value of communications for solving social problems and strengthening social bonds.

Benton's Policy Page - <http://www.benton.org/Policy/>

Telecommunications Act of 1996 - <http://www.benton.org/Policy/96act/>

Digital Divide - <http://www.benton.org/Divide/>

U.S. Department of Commerce Closing the Digital Divide Website -  
<http://www.digitaldivide.gov/>

NTIA's Falling Through the Net -  
<http://www.ntia.doc.gov/ntiahome/digitaldivide/>

Defining the Digital Divide (7/99, revised 11/99) -  
<http://www.ntia.doc.gov/ntiahome/fttn99/contents.html>

Universal Service & Access Virtual Library - <http://www.benton.org/Policy/Uniserv/>

Education Technology - <http://www.benton.org/Ed-tech/>

Cyberpages: Education - <http://www.benton.org/Cyber/cp-education.html>

Communications-Related Headlines - <http://www.benton.org/News/>

Communications Legislation - <http://www.benton.org/Legislation/>

**Berkman Center for Internet & Society (BCIS)** - <http://cyber.law.harvard.edu/>

Pound Hall 511, 1563 Massachusetts Ave., Cambridge, MA 02138, (617) 495-7547, Fax: (617) 495-7641. The Center is based at Harvard Law School and is a research program founded to explore cyberspace, share in its study, and help pioneer its development. The Center is a network of teaching and research faculty from Harvard and elsewhere, as well as students, fellows, entrepreneurs, lawyers, and virtual architects working to identify and engage the challenges and opportunities of cyberspace.

Openlaw on Open Access - <http://eon.law.harvard.edu/openlaw/openaccess/>

Code and Other Laws of Cyberspace (Lawrence Lessig) - <http://www.code-is-law.org/>

**Center for Civic Networking (CCN)** - <http://civic.net/ccn.html>

CCN is a non-profit organization dedicated to applying information infrastructure to the broad public good, particularly by putting information infrastructure to work within local communities to improve delivery of local government services, improve access to information that people need in order to function as informed citizens, broaden citizen participation in governance, and stimulate economic and community development.

Municipal Telecommunications Strategies Program - <http://www.munitelecom.org/>

The Journal of Municipal Telecommunications - <http://munitelecom.org/jmt.html>

**The Center for Democracy and Technology (CDT)** - <http://www.cdt.org/>

1634 Eye Street NW, Suite 1100, Washington, DC 20006, (202) 637-9800, Fax: (202) 637-0968. CDT works to promote democratic values and constitutional liberties in the digital age. With expertise in law, technology, and policy, CDT seeks practical solutions to enhance free expression and privacy in global communications technologies. CDT is dedicated to building consensus among all parties interested in the future of the Internet and other new communications media.

Links to Other Web Sites and Resources - <http://www.cdt.org/links/>

**Center for Strategic and International Studies (CSIS)** - <http://www.csis.org/>

1800 K St. NW, Washington, DC 20006, (202) 887-0200, Fax: (202) 775-3199. CSIS is a public policy research institution dedicated to analysis and policy impact, covering key functional areas, such as international finance, U.S. trade and economic policy, national and international security issues, energy, and telecommunications.

International Communications Studies (ICS) Program - <http://www.csis.org/ics/>

Global Information Infrastructure Commission (GIIC) - <http://www.gii.org/>

Resources (publications and links) - <http://www.gii.org/resources/>

**Center for Urban Policy Research (CUPR)** - <http://www.policy.rutgers.edu/cupr/>

Civic Square, Suite 400, 33 Livingston Ave., New Brunswick, NJ 08901-1982, (732) 932-3133, Fax: (732) 932-2363. CUPR provides analysis of urban poverty, community development, economic development and forecasting, land use, housing, and environmental policy.

**Columbia Institute for Tele-Information's (CITI) Virtual Institute of Information (VII)** -

<http://www.vii.org/>. VII is an on-line research facility for independent research in telecommunications and mass media, run by the at Columbia Business School, is a site for communications and mass media research from an economic and policy perspective.

Industry Information - <http://www.vii.org/afindw.htm>

**Computer Professionals for Social Responsibility (CPSR)** - <http://www.cpsr.org/>

P.O. Box 717, Palo Alto, CA 94302, (650) 322-3778, Fax: (650) 322-4748. CPSR recognizes that computer technology affects society in many ways and emphasizes the importance of applying the same concerns for social responsibility in other domains in which computing technology is used.

Links to Other Organizations, Resources and Individuals - <http://www.cpsr.org/links/>

**Competition Policy Institute (CPI)** - <http://www.cpi.org/>

1156 15th St. NW, Suite 520, Washington DC 20005, (202) 835-0202, Fax: (202) 835-1132. CPI is a non-profit organization that advocates policies before state and federal policy-makers that will bring the benefits of competition to consumers of telecommunications and energy services.

**The Conference Board** - <http://www.conference-board.org/>

845 Third Ave., New York, NY 10022-6679, (212) 759 0900, Fax: (212) 980 7014. The Conference Board is a worldwide business membership organization and research network. They link executives from different companies, industries, and countries providing objective business and cross-industry knowledge, shared experiences and best practices from around the world.

Consumer Research Center (CRC) & Consumer Confidence Index - <http://www.conference-board.org/products/c-consumer.cfm>

Leading Economic and Business Cycle Indicators (BCI) - <http://www.conference-board.org/products/lei1.cfm>

**The Council on Competitiveness** - <http://www.compete.org/>

1500 K St. NW, Suite 850, Washington, DC 20005, (202) 682-4292, Fax: (202) 682-5150.  
The Council sets an action agenda to drive U.S. economic competitiveness and leadership in world markets in order to raise the standard of living for all Americans. They focus on strengthening U.S. innovation, upgrading the workforce, and benchmarking national economic performance.

Benchmarking U.S. Innovation - [http://www.compete.org/innovate/innovate\\_index.html](http://www.compete.org/innovate/innovate_index.html)

**Congressional Forum on Technology and Innovation** - <http://www.tech-forum.org/>

**Economic TeleDevelopment Forum (ETF)** - <http://www.geocities.com/dhdeans/>

The ETF web site is made available by David H. Deans of Phoenix, AZ as a global resource for TeleDevelopment policy and research. It provides a source of information, thought-provoking ideas, and commentary on the direct relationship between telecommunications infrastructure investment and sustainable community economic development.

**The Electronic Frontier Foundation (EFF)** - <http://www.eff.org/>

1550 Bryant St., Suite 725, San Francisco CA 94103-4832, (415) 436-9333, (415) 436-9993.  
EFF is a non-profit, non-partisan organization working in the public interest to protect fundamental civil liberties, including privacy and freedom of expression, in the arena of computers and the Internet.

Online Activism Quick Start and Resources - <http://www.eff.org/pub/EFF/activists.html>

TRUSTe (privacy policy initiative) - <http://www.truste.org/>

**Electronic Privacy Information Center (EPIC)** - <http://epic.org/>

666 Pennsylvania Ave. SE, Suite 301, Washington, DC 20003, (202) 544-9240, (202) 547-5482.  
EPIC is a public interest research center established to focus public attention on emerging civil liberties issues and to protect privacy, the First Amendment, and constitutional values.

Bill-Track (pending legislation on privacy and cyber-liberties) -  
[http://www.epic.org/privacy/bill\\_track.html](http://www.epic.org/privacy/bill_track.html)

Digital Infrastructure Issues - [http://www.cdt.org/digi\\_infra/](http://www.cdt.org/digi_infra/)

**Harvard University's Program on Information Resources Policy** - <http://www.pirp.harvard.edu/>

Maxwell Dworkin 125, 33 Oxford Street, Cambridge, Massachusetts 02138, (617) 495-4114.  
Fax: (617) 495-3338. The Program's purpose is to help policymakers, the general public, and their affiliates address problems brought on by changes in communications and information resources. They have worked with stakeholders since 1973 to clarify what is at stake, how, and for whom.

**Internet Alliance (IA)** - <http://www.internetalliance.org/>

1825 I Street, Suite 400, PO Box 65782, Washington, DC 20035-5782, (202) 955-8091, Fax: (202) 955-8081. IA is the leading association devoted to promoting and developing online and Internet services worldwide. Through public policy, advocacy, consumer outreach and strategic alliances, the IA is building the confidence and trust necessary for the Internet to become the global mass market medium of the 21st century.

Public Policy Advocacy - <http://www.internetalliance.org/policy/>

Related Resources - <http://www.internetalliance.org/policy/resources.html>

**Internet Policy Institute (IPI)** - <http://www.internetpolicy.org/>

601 Pennsylvania Ave. NW, North Building, Suite 250, Washington, DC 20004, (202) 628-3900, Fax: (202) 628-3922. The Internet Policy Institute (IPI) is the nation's first independent, nonprofit research and educational institute created to provide objective, high-quality analysis, research, education, and outreach on economic, social and policy issues affecting and affected by the global development and use of the Internet.

Briefing the President Project - <http://www.internetpolicy.org/briefing/>

Research Program - <http://www.internetpolicy.org/research/>

The Economic Payoff from the Internet Research Project -  
<http://www.internetpolicy.org/research/brookings.html>

**Internet Society (ISOC)** - <http://www.isoc.org/>

11150 Sunset Hills Road, Suite 100, Reston, VA 20190-5321, (703) 326-9880, Fax: (703) 326-9881. The Internet Society is a non-profit, non-governmental, international, professional membership organization focusing on standards, education, and policy issues. Its more than 150 organization and 8,600 individual members in over 170 nations worldwide represent a veritable who's who of the Internet community.

All About the Internet - <http://www.isoc.org/internet/>

Guide to Internet Law - <http://www.isoc.org/internet/law/>

Internet Engineering Task Force (IETF) - <http://www.ietf.org/>

Internet Architecture Board (IAB) - <http://www.iab.org/iab/>

Hobbes' Internet Timeline - <http://www.isoc.org/zakon/Internet/History/HIT.html>

**The Morino Institute** - <http://www.morino.org/Welcome2.asp>

11600 Sunrise Valley Dr., Suite 300, Reston, Virginia 20191, (703) 620-8971, Fax: (703) 620-4102. The Morino Institute is a nonprofit organization dedicated to empowering people and communities to achieve positive social and economic change through the use of the Internet. The Institute focuses its energies on netpreneurs, who are creating new Internet-related business and are the drivers of the New Economy, and youth in low income communities who at present lack the opportunity to fully participate in the New Economy.

**National Association of Development Organizations (NADO)** - <http://www.nado.org/>

400 North Capitol St. NW, Suite 390, Washington, DC 20001, (202) 624-7806, Fax (202) 624-8813. NADO provides training, information and representation for regional development organizations in small metropolitan and rural America. The association is the largest and leading advocate for a regional approach to community, economic and rural development.

**National Council for Urban Economic Development (CUED)** - <http://www.cued.org/>

1730 K St. NW, Suite 700, Washington, DC 20006, (202) 223-4735, Fax: (202) 223-4745. CUED is a membership organization committed to the economic revitalization of our nation's cities, offering a variety of services to economic development practitioners and other allied organizations. Their Economic Development Commentary is a magazine devoted exclusively to urban economic issues.

Hot Links - <http://www.cued.org/hotlinks/>

Data and Research Assistance - <http://www.cued.org/research/>

Economic Development Glossary - <http://www.cued.org/about/glossary.html>

**New Networks Institute (NNI)** - <http://www.newnetworks.com/>

826 Broadway, Suite 900, New York, NY 10003, (212) 777-5418. NNI was created to research and investigate, on an independent impartial basis, how the break-up of AT&T and the creation of Baby Bells had impacted subscribers in the hopes of creating changes that benefit the telephone customer.

The Unauthorized Bio of the Baby Bells & Info-Scandal -  
<http://www.newnetworks.com/bookinfo.html>

**Telecommunications and Information Policy Institute (TIPI)** - <http://www.utexas.edu/research/tipi/>

College of Communication, The University of Texas at Austin, Austin, Texas 78712, (512) 471-5826. TIPI explores the interaction of digital information technologies and emerging societies worldwide, talking to the leaders and citizens, surveying consumers and entrepreneurs, analyzing infrastructure and social capital, to address some of the most pressing questions of our time, such as universal service, rural telecommunications infrastructure, and societal impact of technology.

Telecommunications Infrastructure Development: The State and Local Role  
(11/99) - <http://www.utexas.edu/research/tipi/reports/Newcastle4.pdf>

Resources/Links - <http://www.utexas.edu/research/tipi/resources/links.htm>

**Telecommunications Industries Analysis Project (TIAP)** - <http://www.tiap.org/>

University of Florida, 121 Mount Vernon St., Boston, MA 02139, (617) 367-6909, Fax: (617) 367-7127. TIAP is a research consortium that conducts and reports impartial research in the areas where network planning, business financials, and public policy (regulation and legislation) intersect.

List of All TIAP Publications - <http://nersp.nerdc.ufl.edu/~tiapro/cgi-bin/tiap.cgi>

Public Utility Research Center (PURC) - <http://www.cba.ufl.edu/eco/purc/>

**The Urban Institute** - <http://www.urban.org/>

2100 M Street NW, Washington, DC 20037, (202) 857-8709. The Urban Institute is a nonprofit policy research organization that investigates the social and economic problems confronting the nation and government policies and public and private programs designed to alleviate them.

**The Urban Land Institute (ULI)** - <http://www.uli.org/>

1025 Thomas Jefferson St. NW, Suite 500 West, Washington, DC 20007, (202) 624-7000, Toll-free: (800) 321-5011, Fax: (202) 624-7140. ULI exists to research, analyze, or encourage responsible patterns for long-term urban growth and to conduct inquiries into what constitutes sound real estate development projects and practices.

SmartGrowth (Resource Center for Journalists and Researchers) - <http://www.smartgrowth.net/>

**World Foundation for Smart Communities** - <http://www.smartcommunities.org/>

2717 Caminito Prado, La Jolla, CA 92037, (619) 551-0051, Fax: (619) 551-0053. The World Foundation for Smart Communities is a non-profit educational organization founded by John Eger to promote the concept and facilitate the implementation of "smart communities" - communities using information technology as a catalyst for transforming life and work to meet the challenge of the new millennium.

Smart Communities Library - <http://www.smartcommunities.org/library.htm>

**World Wide Web Consortium (W3C)** - <http://www.w3.org/>

Massachusetts Institute of Technology, Laboratory for Computer Science, 545 Technology Square, Cambridge, MA 02139, (617) 253-2613, Fax: (617) 258-5999. Activities are organized in these domains: Architecture, Technology and Society, User Interface, and Web Accessibility Initiative.

The WWW Virtual Library - <http://vlib.org/>

W3C Activities - <http://www.w3.org/Consortium/Activities>

W3C Technical Reports and Publications - <http://www.w3.org/TR/>

## **Regulatory Agencies, Legislative Bodies, and Related Organizations:**

### **Regional Government-Related Organizations:**

**Center for Technology in Government** - <http://www.ctg.albany.edu/>

University at Albany, 1535 Western Ave., Albany, NY 12203, (518) 442-3892, Fax: (518) 442-3886. CTG is an applied research center devoted to improving government and public services through policy, management, and technology innovation.

**The Council of State Governments (CSG)** - <http://www.statesnews.org/>

2760 Research Park Dr., PO Box 11910, Lexington, KY 40578-1910, (606) 244-8000, Fax: (606) 244-8001. CSG helps states increase efficiency by identifying the best new and creative approaches to significant state problems, provides information products with useful and practical policy solutions and leadership training to help state officials enhance their skills in managing strategic change, and draws upon experts in the states marshalling them as consultants to help other states in need of services.

Policy Priorities - <http://www.statesnews.org/policy/>

States Information Center (SIC) - <http://www.statesnews.org/sic/sic.html>

State Archives and Research Service (STARS) - <http://www.statesnews.org/stars/>

**International City/County Management Association (ICMA)** - <http://www.icma.org/>

777 North Capitol St. NE, Suite 500, Washington, DC 20002-4201, Main: (202) 289-4262, Order Processing Center: (800) 745-8780, Fax: (202) 962-3500. ICMA is the professional and educational association for appointed administrators and assistant administrators serving cities, counties, other local governments, and regional entities around the world.

Telecommunications Resources -

[http://www.icma.org/othersites/listdetail.cfm?CATEGORY\\_ID=19](http://www.icma.org/othersites/listdetail.cfm?CATEGORY_ID=19)

Local Government Telecommunications Survey Results -

<http://www.icma.org/go.cfm?cid=2&gid=8&sid=15&did=527>

Association of Bay Area Governments (ABAG) Telecomm Network -

<http://www.abag.ca.gov/bayarea/telco/telecomm.html>

**Local Government Institute (LGI)** - <http://www.lgi.org/>

4009 Bridgeport Way West, Suite E, Tacoma, WA 98466-4326, (800) 277-6253, Fax: (253) 565-2575. LGI provides technical assistance to local governments, develops "how-to" and reference manuals and software, and provides services, information and advocacy which advances the quality, integrity and professionalism of local government based upon sound principles of public administration. Limited telecommunications content.

Links to Other Key Government Related Sites - <http://www.lgi.org/p10.htm>

**Municipal Code Corporation (MCC)** - <http://www.municode.com/>

PO Box 2235, Tallahassee, FL 32316-2235, (904) 576-3171, Fax: (904) 575-8852. Members have access to databases of local ordinances. MCC also contracts with municipalities to author codes and ordinances.

**The National Association of Attorneys General (NAAG)** - <http://www.naag.org/>

750 First St. NE, Suite 1100, Washington, DC 20002, (202) 326-6000, Fax: (202) 408-7014. NAAG fosters an environment of cooperative leadership, helping Attorneys General respond effectively, individually, and collectively to emerging state and federal issues.

Key Information for Consumers - <http://www.naag.org/key.htm>

**National Association of Counties (NACo)** - <http://www.naco.org/>

440 First Street, NW, Suite 800, Washington, DC 20001, (202) 393-6226, Fax: (202) 393-2630. NACo is the national voice for America's county governments with a membership that includes approximately two-thirds of the country's 3,072 county governments. Advocacy and resources for county governments.

Legislative Priorities - <http://www.naco.org/leg/priority.cfm>

Legislative Bulletin - <http://www.naco.org/leg/bulletin/index.cfm>

Legislative Action Center - <http://congress.nw.dc.us/naco/>

Website Links - <http://www.naco.org/links/index.cfm>

**National Association of Regional Councils (NARC)** - <http://www.narc.org/>

1700 K St. NW, Suite 1300, Washington, DC 20006, (202) 457-0710. NARC is a nonprofit, membership organization serving the interests of regional councils.

Economic Development - <http://www.narc.org/ed/>

Hot Links - <http://www.narc.org/links/>

**Association of Metropolitan Planning Organizations (AMPO)** -  
<http://narc.org/narc/ampo/index.html>

**National Association of Regulatory Utility Commissioners (NARUC)** - <http://www.naruc.org/>

1101 Vermont Ave. NW, Suite 200, Washington, DC 20005, (202) 898-2200, Fax: (202) 898-2213. NARUC is a national association composed of governmental agencies of the fifty States, the District of Columbia, Puerto Rico and the Virgin Islands engaged in the regulation of utilities and carriers.

NARUC Public Policy Positions - <http://www.naruc.org/Policy.htm>

Glossary of Regulation Terms - <http://www.naruc.org/glossary.htm>

Telecommunications Area - <http://www.naruc.org/Telecomm/telecommunications.htm>

The New Global Telecommunications Industry & Consumers Study (University of Pennsylvania's Institute for Information Policy-IIP) - <http://www.naruc.org/Pennindx.htm>

Industry and Private Organizations Links -  
[http://www.naruc.org/industry\\_and\\_private\\_organizatio.htm](http://www.naruc.org/industry_and_private_organizatio.htm)

State Public Utility Commission Web Sites - <http://www.naruc.org/Stateweb.htm>

National Regulatory Research Institute (NRRI) - <http://www.nrri.ohio-state.edu/>



**National Regulatory Research Institute (NRRI)** - <http://www.nrri.ohio-state.edu/>

1080 Carmack Road, Columbus, Ohio 43210, (614) 292-9404, Fax: (614) 292-7196. NRRI is the official research arm of NARUC (<http://www.naruc.org/>) and provides research and assistance designed to help public utility commissions accomplish their missions. Established by NARUC in 1976, the NRRI is a department of the College of Engineering at Ohio State University.

Telecommunications Area - <http://www.nrri.ohio-state.edu/telecom.htm>

Telecommunications Research Links - <http://www.nrri.ohio-state.edu/telelinks.htm>

State Telecommunications Update Report - <http://www.nrri.ohio-state.edu/teletbls.htm>

Market Analysis of Public Utilities: The Now and Future Role of State Commissions (Research Report 99-14, 07/99) - <http://www.nrri.ohio-state.edu/download/9914.pdf>

A Compilation of "Best Practices" to Implement the Telecommunications Act of 1996 (Research Report 99-07, 04/99) - <http://www.Nrri.Ohio-State.Edu/Download/9907.Pdf>

Evolving Market Structure, Conduct, and Policy in Local Telecommunications (Research Report 00-05) - <http://www.nrri.ohio-state.edu/download/0005.pdf>

A Critical Perspective on a Telecommunications Bill of Rights - (Research Report 99-09, 11/99) - <http://www.nrri.ohio-state.edu/download/9909.pdf>

**National Association of State Development Agencies (NASDA)** - <http://www.nasda.com/>

750 First St. NE, Suite 710, Washington, DC 20002, (202) 898-1302, Fax: (202) 898-1312. NASDA provides a forum for directors of state economic development agencies to exchange information, compare programs, and establish an organizational base from which to approach the federal government concerning issues of mutual interest.

**National Association of State Information Resource Executives (NASIRE)** - <http://www.nasire.org/>

167 West Main St., Suite 600, Lexington, KY 40507-1324, (606) 231-1971, Fax: (606) 231-1928. NASIRE represents state chief information officers and information resource executives and managers from the U. S. states and territories. Members are senior officials from any of the three branches of state government who have executive-level and statewide responsibility for information resource management.

State Information Technology Consortium (SITC) - <http://www.state-itc.org/>

National Electronic Commerce Coordinating Council (NECCC) - <http://www.nasire.org/hotIssues/ec/>

Sites of Interest - <http://www.nasire.org/links/>

**National Association of State Telecommunications Directors (NASTD)** - <http://www.nastd.org/>

PO Box 11910, 2760 Research Park Dr., Lexington, KY 40578-1910, (606) 244-8186, Fax: (606) 244-8015. NASTD is a member-driven organization whose purpose is to advance and promote the effective use of telecommunications technology and services to improve the operation of state government. State members are responsible for the provision and management of state government communications facilities and systems for state agencies and other public entities and may also play a strategic role in planning and shaping their states' telecommunications infrastructures and policies. Corporate members represent companies that provide telecommunications technology, services and equipment to state government.

Links - [http://www.nastd.org/Misc\\_pages/links.cfm](http://www.nastd.org/Misc_pages/links.cfm)

**National Association of Telecom Officers and Advisors (NATOA) - <http://www.natoa.org/>**

1595 Spring Hill Road, Suite 330, Tysons Corner, Vienna, VA 22182, (703) 506-3275, Fax: (703) 506-3266. NATOA represents cable television franchise authorities on matters of federal regulation of cable television and wireless tower placement issues. Their chapters form the foundation of the national organization.

Policy Statement on State and Local Rights-of-Way and Telecommunications Service Competition (06/27/97) - <http://www.fcc.gov/statelocal/recommendation1.html>

Notice of Proposed Rulemaking, Notice of Inquiry, and Third Further Notice of Proposed Rulemaking, WT Docket No. 99-217, CC Docket No. 96-98 (11/01/99, FCC government building telecom access proposals comments) - <http://www.natoa.org/arec19.html>

**The National Conference of Commissioners on Uniform State Laws - <http://www.nccusl.org/>**

211 E. Ontario St., Suite 1300, Chicago, Illinois 60611, (312) 915-0195. NCCUSL is comprised of more than 300 lawyers, judges, and law professors, appointed by the states as well as the District of Columbia, Puerto Rico, and the U.S. Virgin Islands, to draft proposals for uniform and model laws and work toward their enactment in legislatures. Drafts of Uniform and Model Acts are available at [http://www.law.upenn.edu/bll/ulc/ulc\\_frame.htm](http://www.law.upenn.edu/bll/ulc/ulc_frame.htm).

**National Conference of State Legislatures (NCSL) - <http://www.ncsl.org/>**

444 North Capitol St. NW, Suite 515, Washington, DC 20001, (202) 624-5400, Fax: (202) 737-1069. NCSL is a membership organization for State lawmakers and legislative staffers providing comprehensive information, research on critical state issues, informative publications, provocative meetings and seminars, an unparalleled legislative information database, a voice in Washington D.C., and an expert staff to assist legislators and staff in solving difficult problems.

Telecommunications & Information Technology - <http://www.ncsl.org/programs/lis/cip/ciphome.htm>

Internet Sites of the State Legislatures - <http://www.ncsl.org/public/sitesleg.htm>

States with Bill Text & Status Information on the Internet - <http://www.ncsl.org/programs/lis/cip/bills.htm>

**National District Attorneys Association (NDAА) - <http://www.ndaa.org/>**

99 Canal Center Plaza, Alexandria, VA 22314, (703) 549-9222, Fax: (703) 836-3195. NDAА influences public policy affecting the safety of America's communities by advocating prosecutorial views through contacts with the White House, Congress, U.S. Department of Justice and other government agencies. NDAА offers local prosecutors the opportunity to network with fellow prosecutors throughout the nation to enhance their knowledge, skills and influence.

American Prosecutors Research Institute (APRI) - <http://www.ndaa.org/apri/apri2.html>

**National Governors' Association (NGA) - <http://www.nga.org/>**

Hall of States, 444 North Capitol St., Washington, DC 20001-1512, (202) 624-5300. Through NGA, the nation's Governors identify priority issues and deal collectively with issues of public policy and governance at both the national and state levels. Their mission is to provide a forum for Governors to exchange views and experiences among themselves; assistance in solving state focused problems; information on state innovations and practices; and a bipartisan forum for Governors to establish, influence, and implement policy on national issues.

Key State Issues - <http://www.nga.org/StateIssues.htm>

Telecommunications and Information Services -

<http://www.nga.org/CBP/Activities/TelecomNInfoSvcs.asp>

Telecommunications Tax Policies: Implications For The Digital Age (February 2, 2000) -

<http://www.nga.org/Pubs/IssueBriefs/2000/Sum000202TeleCom.asp>

State Strategies for the New Economy (February 26, 2000) -

<http://www.nga.org/Pubs/IssueBriefs/2000/Strategies.asp>

The New Economy – Economic Development Strategies for the 21<sup>st</sup> Century/Links -

<http://www.nga.org/NewEconomy/Links.asp>

The New Economy: An Overview - <http://www.nga.org/NewEconomy/GovOverview.asp>

E-Quality (Internet taxation policy) - <http://www.nga.org/Internet/equality.asp>

NGA Center for Best Practices - <http://www.nga.org/CBP/Center.asp>

**National League of Cities (NLC)** - <http://www.nlc.org/>

1301 Pennsylvania Ave. NW, Washington, DC 20004-1763, (202) 626-3000, Fax: (202) 626-3043.

NLC is a membership organization of general-purpose local governments including more than 1,500 member cities. NLC is dedicated to advancing the public interest, building democracy and community, and improving the quality of life by strengthening the performance and capabilities of local governments and advocating the interests of local communities.

Legislative Priorities - <http://www.nlc.org/legislat.htm>

**Public Technology, Inc. (PTI)** - <http://pti.nw.dc.us/>

1301 Pennsylvania Ave. NW, Suite 800, Washington, DC 20004, (202) 626-2400, Toll-Free: (800) 852-4934, Fax: (202) 626-2498. PTI is the non-profit technology R&D organization of the National League of Cities (NLC), the National Association of Counties (NACo), and the International City/County Management Association (ICMA). PTI's mission is to bring technology to local and state governments through the collective R&D work of its membership and task forces.

Telecommunication & Information Task Force - [http://pti.nw.dc.us/task\\_forces/titf/](http://pti.nw.dc.us/task_forces/titf/)

**The United States Conference of Mayors (USCM)** - <http://www.usmayors.org/USCM/home.html>

1620 Eye St. NW, Washington, DC 20006, (202) 293-7330, Fax: (202) 293-2352. The United States Conference of Mayors (USCM) is the official nonpartisan organization of the about 1,100 U.S. cities with populations of 30,000 or more, represented by its chief elected official, the mayor.

Washington Update - [http://www.usmayors.org/uscm/wash\\_update/](http://www.usmayors.org/uscm/wash_update/)

Transportation, Infrastructure & Telecommunications -

[http://www.usmayors.org/uscm/wash\\_update/transp\\_infras\\_telco\\_index.html](http://www.usmayors.org/uscm/wash_update/transp_infras_telco_index.html)

Enhancing the Economic Growth of Cities: A Guidebook for Mayors on Leveraging the Workforce Investment Act (06/99) - <http://www.ncdaonline.org/cdti/guidebook.pdf>

**Urban & Regional Information Systems Association (URISA)** - <http://www.urisa.org/>

1460 Renaissance Dr., #305, Park Ridge, IL 60068, (847) 824-6300, Fax: (847) 824-6363.

URISA is an educational association of information technology professionals with specific emphasis on applications in state and local government; and the premier organization for the use and integration of spatial information technology to improve the quality of life in urban and regional environments.

Links - <http://www.urisa.org/links.htm>

Glossary of Spatial Information Technology Terms - <http://www.urisa.org/glossary.htm>

**The U.S. Chamber of Commerce** - <http://www.uschamber.com/>

1615 H St. NW, Washington DC 20062, (202) 659-3190, Fax: (202) 463-3190. The U.S. Chamber of Commerce is the world's largest business federation, representing nearly three million companies, 3,000 state and local chambers, 850 business associations and 87 American Chambers of Commerce abroad.

Policies and Issues - <http://www.uschamber.com/policy/>

### **Additional State Research Resources:**

**Full-Text State Statutes & Legislation Online** - <http://www.prairienet.org/~scruffy/f.htm>

**State and Local Government on the Net (Piper Resources)** -

<http://www.piperinfo.com/state/states.html>

**CCH Incorporated / TRI** - <http://www.cch.com/>

Public Utilities and Telecommunications - [http://business.cch.com/public\\_utilities/](http://business.cch.com/public_utilities/)

CCH Guide to State Telecommunications Law (Online or CD-ROM Subscription) -

<http://business.cch.com/pcapp/ProductDetail.asp?ProductID=468>

### **Federal Government-Related Organizations:**

**Federal Communications Commission (FCC)** - <http://www.fcc.gov/>

445 12th St. SW, Washington, DC 20554, (202) 418-0190. The Federal Communications Commission (FCC) is an independent United States government agency, directly responsible to Congress. The FCC was established by the Communications Act of 1934 and is charged with regulating interstate and international communications by radio, television, wire, satellite and cable. The FCC's jurisdiction covers the 50 states, the District of Columbia, and U.S. possessions.

Daily Digest - [http://www.fcc.gov/Daily\\_Releases/Daily\\_Digest/](http://www.fcc.gov/Daily_Releases/Daily_Digest/)

Telecommunications Act of 1996 - <http://www.fcc.gov/telecom.html>

Communications Act of 1934 - <http://www.fcc.gov/Reports/1934new.pdf>

Telecommunications Act of 1996 - <http://www.fcc.gov/Reports/tcom1996.pdf>

Summary of the Telecommunications Act of 1996 - <http://www.crblaw.com/96summ.htm>

Telecom Act Resources Nationwide (Association of Bay Area Governments - ABAG) -

<http://www.abag.ca.gov/bayarea/telco/other.html>

Federal-State Joint Conference on Advanced Services - <http://www.fcc.gov/jointconference/>

Focus on State and Local Government Issues - <http://www.fcc.gov/statelocal/>

Broadband Internet Access Resource Guide - <http://www.fcc.gov/broadband/>

Rural Initiatives - <http://www.fcc.gov/rural/>

Indian Initiatives - <http://www.fcc.gov/indians/>

E-rate - FCC's Education Page - <http://www.fcc.gov/learnnet/>

Disabilities Issues Task Force - <http://www.fcc.gov/df/>

Public Service Division Consumer Information Resources - <http://www.fcc.gov/Consumers/>

Market Sense - <http://www.fcc.gov/marketsense/>

A New FCC for the 21st Century (5 Year Strategic Plan) - [http://www.fcc.gov/21st\\_century/](http://www.fcc.gov/21st_century/)  
FCC Bureaus and Offices - <http://www.fcc.gov/bureaus.html>  
Cable Services Bureau (CSB) - <http://www.fcc.gov/csb/>  
Common Carrier Bureau (CCB) - <http://www.fcc.gov/ccb/>  
Local Competition - [http://www.fcc.gov/ccb/local\\_competition/](http://www.fcc.gov/ccb/local_competition/)  
Universal Service Issue & Resources - [http://www.fcc.gov/ccb/universal\\_service/](http://www.fcc.gov/ccb/universal_service/)  
FCC-State Link Web Site (Access to Reports & Data) - <http://www.fcc.gov/ccb/stats>  
Satellite Home Viewer Improvement Act Page - <http://www.fcc.gov/csb/shva/>  
Over-the-Air Reception Devices Rule Fact Sheet (June 1999 -  
Preemption of Restrictions on Placement of Direct Broadcast Satellite,  
Multichannel Multipoint Distribution Service, & Television Broadcast Antennas) -  
<http://www.fcc.gov/csb/facts/otard.html>  
Consumer Information Bureau (CIB) - <http://www.fcc.gov/cib/>  
Enforcement Bureau (EB) - <http://www.fcc.gov/eb/>  
International Bureau (IB including Satellite Communications) - <http://www.fcc.gov/ib/>  
Mass Media Bureau (MMB) - <http://www.fcc.gov/mmb/>  
Office of General Counsel (OGC) - <http://www.fcc.gov/ogc/>  
Legal Resources - <http://www.fcc.gov/ogc/legres.html>  
Recent (2000) Federal Court Opinions - <http://www.fcc.gov/ogc/recopin.html>  
1999 Federal Court Opinions - <http://www.fcc.gov/ogc/1999opin.html>  
1998 Federal Court Opinions - <http://www.fcc.gov/ogc/1999opin.html>  
1997 Federal Court Opinions - <http://www.fcc.gov/ogc/1999opin.html>  
1996 Federal Court Opinions - <http://www.fcc.gov/ogc/1999opin.html>  
Office of Engineering and Technology (OET) - <http://www.fcc.gov/oet/>  
FCC Radio Spectrum Home Page - <http://www.fcc.gov/oet/spectrum/>  
National Academy of Sciences' Committee on Radio Frequencies (CORF) -  
<http://www.nas.edu/bpa/corf/>  
Previous Tutorials and Downloads - <http://www.fcc.gov/oet/tutorial/tutorial.html>  
Wireless Telecommunications Bureau (WTB) - <http://www.fcc.gov/wtb/>  
Auctions Page (News, Schedules, Resources) - <http://www.fcc.gov/wtb/auctions/>  
Radio Spectrum Chart - <http://www.fcc.gov/oet/faqs/freqchart.html>  
Wireless Services Facilities Siting Issues - <http://www.fcc.gov/wtb/siting/>  
The Network Reliability and Interoperability Council (NRIC) - <http://www.nric.org/>  
Network Interoperability Homepage - <http://www.fcc.gov/oet/network/>  
Hypertext FCC Rules Project (Hallikainen and Friends) - <http://www.hallikainen.com/FccRules/>  
Telecom Information Resources on the Internet - <http://china.si.umich.edu/telecom/telecom-info.html>

**National Exchange Carrier Association (NECA)** - <http://www.neca.org/>

80 South Jefferson Rd., Whippany, NJ 07981, (800) 228-8597. NECA was formed in 1983 by the Federal Communications Commission (FCC) as a not-for-profit membership corporation to administer the FCC's access charge plan, ensuring that telephone service remains available and affordable in all parts of the country. NECA, directly and through its subsidiaries, also administers a number of other significant federal and state programs, each designed to keep the United States telecommunications system the most widely used in the world.

**Universal Service Administrative Company (USAC)** - <http://www.universalservice.org/>

**Schools and Libraries Division (SLD - E-rate program)** - <http://www.sl.universalservice.org/>

E-Rate Reference Area - <http://www.sl.universalservice.org/reference.asp>

**Federal Communications Bar Association (FCBA)** - <http://www.fcba.org/>

1020 19th St. NW, Suite 325, Washington, DC 20036-6101, (202) 293-4000, Fax: (202) 293-4317. FCBA is an organization of attorneys and other professionals, including engineers, consultants, economists and government officials, involved in the development, interpretation and practice of communications law and policy.

**Federal Communications Law Journal** (Indiana University & The Federal Communications Bar Association) - <http://www.law.indiana.edu/fclj/fclj.html> or <http://www.fcba.org/journal.html>

**National Association of Regulatory Utility Commissioners (NARUC)** - <http://www.naruc.org/>

NARUC is a national association composed of governmental agencies of the fifty States, the District of Columbia, Puerto Rico and the Virgin Islands engaged in the regulation of utilities and carriers. See expanded resource listing above in section on **Regional Government-Related Organizations**.

Telecommunications Area - <http://www.naruc.org/Telecomm/telecommunications.htm>

State Public Utility Commission Web Sites - <http://www.naruc.org/Stateweb.htm>

**National Regulatory Research Institute (NRRI)** - <http://www.nrri.ohio-state.edu/>

Telecommunications Area - <http://www.nrri.ohio-state.edu/telecom.htm>

**American Telecommunications Law Association (ATLAS)** -

<http://www.wcl.american.edu/pub/organizations/atlas/>. ATLAS devotes itself to increasing awareness of communications law issues and strengthening the Washington College of Law's program of studies in this important area of administrative law.

Telecommunications Links - <http://www.wcl.american.edu/pub/organizations/atlas/links.htm>

### **Other Federal Government Resources:**

**FedWorld U.S. Government Information Index** - <http://www.fedworld.gov/>

**GOVBOT Database of Government Web Sites** (Center for Intelligent Information Retrieval) - <http://ciir2.cs.umass.edu/Govbot/>

**Google Uncle Sam Search Engine** - <http://www.google.com/unclesam/>

**Webforia's Federal Resources for Business** -

<http://corporate.webforia.com/guides/federalresources/default.htm>

**Thomas (U.S. Congress on the Internet)** - <http://thomas.loc.gov/>

Library of Congress legislative information provides access to legislation, House and Senate directories, committee information, and the Congressional Record.

Congressional Internet Caucus Advisory Committee - <http://www.netcaucus.org/>

Internet Issues - <http://www.netcaucus.org/issues/issuesindex.html>

Broadband Overview - <http://www.netcaucus.org/issues/broadbandoverview.html>

Internet Legislation Chart - <http://www.netcaucus.org/issues/legislationchart.html>

Internet Statistics and Data - <http://www.netcaucus.org/statistics/>

U.S. House of Representatives - Internet Law Library - Communications Law - <http://law.house.gov/94.htm>

Global Legal Information Network (GLIN) - <http://lcweb2.loc.gov/law/GLINv1/GLIN.html>

### **U.S. Supreme Court and Federal Judiciary -**

Federal Judiciary Home Page - <http://www.uscourts.gov/>

U.S. District Court for the District of Arizona - <http://www.azd.uscourts.gov/>

U.S. Bankruptcy Court for the District of Arizona - <http://www.azb.uscourts.gov/>

Directory of Electronic Public Access Services - <http://pacer.psc.uscourts.gov/pubaccess.html>

The Federal Judicial Center - <http://www.fjc.gov/>

Cornell University's Legal Information Institute's Project Hermes electronic-dissemination project - <http://supct.law.cornell.edu/supct/>

FindLaw: U.S. Supreme Court Opinions - <http://www.findlaw.com/casecode/supreme.html>

Oyez Oyez Oyez: Supreme Court Multimedia Database - <http://oyez.nwu.edu/>

The New York Times Guide to the Supreme Court - <http://www.nytimes.com/library/politics/scotus/index-scotus.html>

### **National Telecommunications and Information Administration (NTIA)** - <http://www.ntia.doc.gov/>

U.S. Department of Commerce, 1401 Constitution Ave., NW, Washington, DC 20230, (202) 482-7002. NTIA is an agency of the U.S. Department of Commerce, is the Executive Branch's principal voice on domestic and international telecommunications and information technology issues. NTIA works to spur innovation, encourage competition, help create jobs, and provide consumers with more choices and better quality telecommunications products and services at lower prices.

Spectrum Newsletter - <http://www.ntia.doc.gov/osmhome/newsletr/spectrum.htm>

Links to Other Telecommunications and Information Sources - <http://www.ntia.doc.gov/infsites.html>

The Institute for Telecommunication Sciences - <http://www.its.blrdoc.gov/>

Federal Standard 1037C: Telecommunications: Glossary of Telecommunication Terms - <http://www.its.blrdoc.gov/pub/fs-1037/>

**U.S. National Information Infrastructure (NII) Virtual Library** - <http://nii.nist.gov/>

The NII Virtual Library is co-sponsored by the President's Information Infrastructure Task Force (<http://iitf.doc.gov/>) and the Council on Competitiveness (<http://www.compete.org/>). The web site is developed and maintained by the Information Technology Laboratory (<http://www.itl.nist.gov/>) of the National Institute of Standards and Technology (<http://www.nist.gov/>). The NII Virtual Library is the home of the U.S. component of the Global Inventory Project (GIP - <http://nii.nist.gov/g7/g7-gip.html>) and the home of the international registry for the G7 Global Marketplace Small and Medium Enterprises (SME) Testbeds ([http://nii.nist.gov/g7/10\\_global\\_mp/testbeds/registered.html](http://nii.nist.gov/g7/10_global_mp/testbeds/registered.html)).

**The President's Information Infrastructure Task Force (IITF)** - <http://www.iitf.nist.gov/>

The White House formed the Information Infrastructure Task Force (IITF) to articulate and implement the Administration's vision for the National Information Infrastructure (NII). The task force consists of high-level representatives of the Federal agencies that play a major role in the development and application of information and telecommunications technologies.

Electronic Commerce - [http://www.iitf.nist.gov/electronic\\_commerce.htm](http://www.iitf.nist.gov/electronic_commerce.htm)

Related Links - <http://www.iitf.nist.gov/other.html>

**Federal Trade Commission (FTC)** - <http://www.ftc.gov/>

600 Pennsylvania Ave. NW, Washington, DC 20580, General Information: (202) 326-2222, Personnel Locator for Individual Employees: (202) 326-2000, Consumer Response Center: (877) 382-4357. The FTC enforces a variety of federal antitrust and consumer protection laws while seeking to ensure that the nation's markets function competitively, vigorously, efficiently, and free of undue restrictions.

**Advisory Committee on Online Access and Security (ACOAS)** - <http://www.ftc.gov/acoas/Antitrust/Competition> - <http://www.ftc.gov/ftc/antitrust.htm>

Promoting Competition, Protecting Consumers - <http://www.ftc.gov/bc/compguide/Business Guidance> - <http://www.ftc.gov/ftc/business.htm>

How to Comply with the Children's Online Privacy Protection Rule - <http://www.ftc.gov/bcp/online/pubs/buspubs/coppa.htm>

Consumer Protection - <http://www.ftc.gov/ftc/consumer.htm>

Privacy Initiatives - <http://www.ftc.gov/privacy/>

Telemarketing - <http://www.ftc.gov/bcp/menu-tmark.htm>

Site-Seeing on the Internet: A Consumer's Guide to Travel in Cyberspace - <http://www.ftc.gov/bcp/online/pubs/online/sitesee/>

**Government Services Agency (GSA)** - <http://www.gsa.gov/>

**Office of Information Technology (OIT)** - <http://www.itpolicy.gsa.gov/>

The Virtual IT Library - <http://www.itpolicy.gsa.gov/library.htm>

**U.S. Office of Governmentwide Policy** - <http://policyworks.gov/>

**Internet 2 Project (Next Generation Internet)** - <http://www.internet2.edu/>

University Corporation for Advanced Internet Development (UCAID) - <http://www.ucaid.org/>

Very High Speed Backbone Network Service (vBNS - NSF & MCI) - <http://www.vbns.net/>

Next Generation Internet (NGI) Initiative - <http://www.ngi.gov/>



## **Additional Internet Resources on the Internet:**

**Internet Society (ISOC - Internet Standards & Evolution)** - <http://www.isoc.org/>

**Internet Architecture Board (IAB)** - <http://www.iab.org/iab/>

**Internet Engineering Task Force (IETF)** - <http://www.ietf.org/>

**Internet Research Task Force (IRTF)** - <http://www.irtf.org/>

**Internet Societal Task Force (ISTF)** - <http://www.istf.isoc.org/>

Links - <http://www.istf.isoc.org/links/index.shtml>

**Internet Assigned Numbers Authority (IANA)** - <http://www.iana.org/>

Country Code Top-Level Domains (CCTLDs) - <http://www.iana.org/cctld.html>

**American Registry for Internet Numbers (ARIN)** - <http://www.arin.net>

**Internet Corporation for Assigned Names and Numbers (ICANN)** - <http://www.icann.org/>

List of Accredited Registrars - <http://www.icann.org/registrars/accredited-list.html>

Internet Council of Registrars (CORE) - <http://www.corenic.org/>

World Intellectual Property Organization (WIPO) Internet Domain Name Process - <http://ecommerce.wipo.int/domains/process/eng/processhome.html>

**Network Solutions Inc. (NSI formerly InterNIC)** - <http://www.networksolutions.com/>  
(Primary domain name registrar and database manager for .com, .net, .org, and .edu extensions)

Whois Query - <http://www.networksolutions.com/cgi-bin/whois/whois>

NSI Registry (Services for accredited registrars) - <http://www.nsiregistry.com/>

Glossary of Terms - <http://www.nsiregistry.com/glossary/>

**Hobbes' Internet Timeline** - <http://www.isoc.org/zakon/Internet/History/HIT.html>

**LivingInternet.com** (information about the Internet) - <http://www.livinginternet.com/>

**The World Wide Web Consortium (W3C)** - <http://www.w3.org/>

Hypertext Transfer Protocol (HTTP) - <http://www.w3.org/Protocols/>

HyperText Markup Language Home Page - <http://www.w3.org/MarkUp/>

Extensible Markup Language (XML) - <http://www.w3.org/XML/>

Web Accessibility Initiative (WAI) - <http://www.w3.org/WAI/>

Platform for Internet Content Selection (PICS) - <http://www.w3.org/PICS/>

Platform for Privacy Preferences (P3P) Project - <http://www.w3.org/P3P/>

Electronic Commerce Interest Group - <http://www.w3.org/ECommerce/>

Security Resources - <http://www.w3.org/Security/>

Mobile Access (seamless Web access from mobile devices) - <http://www.w3.org/Mobile/>

Television and the Web - <http://www.w3.org/TV/>

W3C Technology and Society Domain - <http://www.w3.org/TandS/>

Public Policy Page - <http://www.w3.org/Policy/Overview.html>

**The World Wide Web Consortium (W3C)** - <http://www.w3.org/> (Continued)

**The WWW Virtual Library Home** - <http://vlib.org/>

Broadcasters Virtual Library - <http://archive.comlab.ox.ac.uk/publishers/broadcast.html>

Communications & Telecommunications Virtual Library -  
<http://www.analysys.com/vlib/>

Computing Virtual Library -  
<http://src.doc.ic.ac.uk/bySubject/Computing/Overview.html>

Mobile & Wireless Computing Virtual Library- <http://mosquionet.stanford.edu/mobile/>

Networking Virtual Library - <http://src.doc.ic.ac.uk/bySubject/Networking.html>

U.S. National Information Infrastructure Virtual Library (NIST) - <http://nii.nist.gov/>

**The World Intellectual Property Organization (WIPO)** - <http://www.wipo.int/eng/main.htm>

Intellectual Property - <http://www.wipo.int/eng/newindex/intellct.htm>

Internet Domain Study - <http://ecommerce.wipo.int/domains/process/eng/processhome.html>

International Classifications - <http://www.wipo.int/eng/main.htm>

**U.S. Department of Commerce's Patent and Trademark Office (USPTO)** - <http://www.uspto.gov/>

USPTO Web Trademark Database - <http://www.uspto.gov/tmdb/index.html>

Combined Marks Search - <http://trademarks.uspto.gov/access/search-mark.html>

**U.S. Library of Congress' Copyright Office** - <http://lcweb.loc.gov/copyright/>

## **Internet Survey and Market Research Sources:**

**Cyberatlas (Internet.com)** - <http://cyberatlas.internet.com/>

Internet statistics and market research for web marketers.

**eMarketer** - <http://www.emarketer.com/>

Analyzes important Internet trends for businesses online.

**eStats** - <http://www.emarketer.com/estats/welcome.html>

**eLinks** - <http://www.emarketer.com/elinks/welcome.html>

**The Internet Economy Indicators Report** - <http://www.internetindicators.com/>

**Jupiter Communications** - <http://www.jup.com/>

Research in consumer and industry Internet trends for businesses online.

**JupData** (Jupiter data library) - <http://www.jup.com/sps/data/jupdatahome.jsp>

**Media Metrix** - <http://www.relevantknowledge.com/>

Internet and digital media measurement service provides monthly ranking of the top-trafficked sites.

**Nielsen//NetRatings** - [http://www.nielsen-netratings.com/hot\\_off.htm](http://www.nielsen-netratings.com/hot_off.htm)

Weekly and monthly "Hot Off the Net" ratings and newsletter.

**NUA Internet Surveys** - <http://www.nua.ie/surveys/>

Internet usage statistics including market sectors, demographics and financial information.

**Top Rankings** - <http://www.relevantknowledge.com/TopRankings/TopRankings.html>

## **New Economy Documents and Sources:**

**Arizona Policy Choices - The New Economy: A Guide for Arizona** by the **Morrison Institute for Public Policy** at ASU, October 1999 - <http://www.asu.edu/copp/morrison/public/apc99.htm>

**The New Economy: Policy Choices for Arizona** by the **Morrison Institute for Public Policy** at ASU, January 2000 - <http://www.asu.edu/copp/morrison/public/ndefollowup.htm>

**America's High-Tech Economy: Growth, Development, and Risks for Metropolitan Areas**, by Ross DeVol, Perry Wong, John Catapano, and Greg Robitshek, **The Milken Institute**, July 13, 1999 - [http://www.milkeninstitute.org/mod30/ross\\_report.pdf](http://www.milkeninstitute.org/mod30/ross_report.pdf)

**The Cluetrain Manifesto** (<http://www.cluetrain.com/>) - 95 Theses on markets and the New Economy

**Technology and New Economy Project** from **The Progressive Policy Institute (PPI)** - <http://www.dlcpipi.org/tech.htm>

**The New Economy Index** - <http://www.neweconomyindex.org/>

**The State New Economy Index** - <http://www.neweconomyindex.org/states/>

**Rules of the Road: Governing Principles for the New Economy** - <http://www.dlcpipi.org/ppi/tech/rules.htm>

**University of California E-conomy Project** - <http://e-conomy.berkeley.edu/>

**E-conomy Project** Working Papers - <http://e-conomy.berkeley.edu/pubs/wp/>

**Defending the Internet Revolution in the Broadband Era: When Doing Nothing is Doing Harm**, Berkeley Roundtable on the International Economy (BRIE), August 1999 - <http://e-conomy.berkeley.edu/pubs/wp/ewp12.html>

**US Department of Commerce (DOC) Electronic Commerce Page** - <http://www.ecommerce.gov/>

**The New Economy: An Overview** - <http://www.nga.org/NewEconomy/GovOverview.asp>

**Understanding the Digital Economy** (May 1999 Conference) - <http://www.digitaleconomy.gov/>

**The Emerging Digital Economy II** (June 1999) - <http://www.ecommerce.gov/ede/>

**The Emerging Digital Economy** (April 1998) - <http://www.ecommerce.gov/emerging.htm>

**A Framework for Global Electronic Commerce** (July 1, 1997 - The White House) - <http://www.ecommerce.gov/framework.htm>

**Business America: Electronic Commerce** (January 1998 special issue) - <http://www.ecommerce.gov/bizamer1-98.htm>

**Towards Digital eQuality** (Annual Report, 1999) - <http://www.ecommerce.gov/annrpt.htm>

**Falling Through the Net II: New Data on the Digital Divide** (July 1998) - <http://www.ntia.doc.gov/ntiahome/net2/>

**U.S. Government Sites on Electronic Commerce Policy** - <http://www.ecommerce.gov/governme.htm>

**National Governors' Association (NGA)** - <http://www.nga.org/>

**State Strategies for the New Economy** (February 26, 2000) - <http://www.nga.org/Pubs/IssueBriefs/2000/Strategies.asp>

**The New Economy – Economic Development Strategies for the 21<sup>st</sup> Century/Links** - <http://www.nga.org/NewEconomy/Links.asp>

**The New Economy: An Overview** - <http://www.nga.org/NewEconomy/GovOverview.asp>

# Arizona Telecommunications and Information Council (ATIC)

## Multitenant Building Telecommunications Access Study

### Appendix 2 - Arizona Organizational Resources

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#### Telecommunications Providers Related Resources:

**Arizona Competitive Telecommunications Coalition (ACTC)** - <http://www.aztelecom.org/>  
John Badal, Executive Director, 1721 W. Weldon, Phoenix, AZ 85015, (602) 277-1490, Fax: (602) 277-8965. ACTC is an association of competitive providers of telecommunications services in Arizona who seeks to facilitate and encourage pro-competitive telecommunications policies for the benefit of its members and Arizona businesses and consumers.

**Arizona Cable Television Association (ACTA)** - <http://www.azcta.org/>  
Susan Bitter Smith, Executive Director, 3610 N 44<sup>th</sup> St., Suite 240, Phoenix, AZ, 85018, (602) 955-4122, Fax: (602) 955-4505, E-mail: [acta@netzone.com](mailto:acta@netzone.com). ACTA represents Arizona cable television companies providing publications and research as well as working with state and federal lawmakers, the Arizona Corporation Commission and municipal government to implement positive programs and resolve issues for the cable television industry.

Quick Find Directory - <http://www.azcta.org/guide.htm>

**Communications Workers of America (CWA)** - <http://www.cwa-union.org/>  
9224 N 5<sup>th</sup> St., Phoenix, AZ 85020, (602) 331-7019, Fax: (602) 861-4171. The CWA is a trade union that represents workers in several different fields. With the bulk of their members in the traditional telephone companies, they also represent workers in the printing industry, Maricopa Community College District, and Labor's Community Service Agency. There are 7 CWA Locals in Arizona, with the largest being Phoenix Local 7019 (<http://ourworld.compuserve.com/homepages/cwa7019/>) with 5,600 unionized workers. Arizona is part of District 7 (AK, AZ, CO, ID, IA, MN, MT, NB, NM, ND, OR, SD, UT, WA, WY), 8085 E. Prentice Ave., Englewood, CO 80111, (303) 770-2822, Fax: (303) 793-7927.

**Arizona Broadcasters Association (ABA) -**

3101 N Central Ave., Suite 550, Phoenix AZ, 85012-2639, (602) 274-1418, Fax: (602) 631-9853. The ABA is the official trade association serving all radio and television stations in Arizona with government relations support as well as acting as a clearing house of information for all FCC and National Association of Broadcasters departments.

**Arizona Newspapers Association (ANA) - <http://www.ananews.com/>**

1101 N Central Ave., Suite 670, Phoenix AZ 85004-1947, (602) 261-7655, Fax: (602) 261-7525. The ANA is a non-profit trade association representing daily, weekly and (bi-) monthly Arizona newspapers and publications. ANA maintains a weekly legislative alert on-line focused on Freedom of Information issues.

Arizona newspapers (American Journalism Review) - <http://ajr.newslink.org/aznews.html>

**The Center for Advanced Telesmatics (CAT) - <http://www.ece.arizona.edu/~hpdc/cat/>**

Salim Hariri, Director, University of Arizona (U of A), 1230 E. Speedway Blvd., Tucson, Arizona 85721, (520) 621-4378, Fax: (520) 621-8076. CAT is part of the High Performance Distributed Computing Laboratory (<http://www.ece.arizona.edu/~hpdc/>). CAT's goal is to help establish Next-Generation Network Centric Systems by developing innovative partnerships with existing industry and providing incubation facilities for start -up companies to help bring the information technologies resulting from this center to the marketplace.

CAT Research Plan - <http://www.ece.arizona.edu/~hpdc/cat/catprop2.pdf>

**Telecommunications Contractors Related Resources:**

**Association for Facilities Engineering (AFE) - <http://www.afe.org/>**

**Western Region VI - <http://www.afe6.org/>**

Phoenix Chapter (#51) - Ron Clanton, (602) 867-9473

Tucson Chapter (#160) - David Kelsven, (520) 791-9514

**National Society of Professional Engineers (NSPE) - <http://www.nspe.org/>**

**Arizona Society of Professional Engineers (ASPE) - <http://www.azspe.org/>**

Janice Burnett, Executive Director, 7207 N 19th Ave #7, Phoenix, AZ 85021-7977, (602) 995-2187, Fax: (602) 995-2218

**Arizona Consulting Engineers Association (ACEA) - <http://www.acea.org/>**

(800) 982-5986. Includes searchable database for Professional Engineers serving Arizona.

**Structural Engineers Association of Arizona (SEAoA) - <http://www.primenet.com/~seaoa/>**

PO Box 18078, Fountain Hills, Arizona 85269-8078, (602) 816-4797, Fax: (602) 816-4899.

**The Electric League of Arizona - <http://doors.cybertrails.com/electricleague-az/>**

727 E. Bethany Home Road, D122, Phoenix, AZ 85014, 602-263-9391, Fax: 602-277-9881.

The Electric League of Arizona is a statewide trade association representing approximately 400 companies committed to high standards of professionalism in the Electrical, HVACR, and Energy Management Industries.

**The Arizona Contractors Association (ACA)** - <http://azca.com/>

5701 N. Black Canyon Hwy., Phoenix, AZ 85015, (602) 246-8627, Toll-free: (800) 467-8627, Fax: (602) 242-2563. ACA is a regional trade association combining general contractors, specialty contractors, subcontractors, material suppliers and construction industry providers.

**Arizona Builders' Alliance (ABA)** - <http://www.azbuilders.org/>

(Regional alliance of Associated Builders & Contractors (ABC) and Associated General Contractors (AGC) of America building chapters)

**Arizona Registrar of Contractors** - <http://www.rc.state.az.us/>

Active Licensed Contractors Lists - [http://www.rc.state.az.us/active\\_list.htm](http://www.rc.state.az.us/active_list.htm)

**Arizona Builders' Zone** - <http://www.builderszone.com/>

(Directory of Arizona contractors, builders and construction related companies.)

**Arizona Homefront** - <http://www.arizonacontractors.com/>

(Arizona contractors, home builders, real estate agents, and more.)

### **Building Managers and Owners Related Resources:**

**Building Owners and Managers Association (BOMA) Phoenix** - <http://www.bomaphoenix.org>

Norma Files, 4745 N. 7th St., Suite 428, Phoenix, AZ 85014, (602) 200-3898, Fax: (602) 200-3899, E-mail: [norma@unidial.com](mailto:norma@unidial.com)

**Building Owners and Managers Association (BOMA) of Greater Tucson** -

Kathryn O. Niles, 3567 E. Sunrise Drive, Suite 225, Tucson, Arizona 85718, (520) 299-4956, Fax: (520) 529-3200, E-mail: [niles@flash.net](mailto:niles@flash.net)

**National Association of Industrial & Office Properties (NAIOP)** - <http://www.naiop.org/>

**Arizona Chapter** - Amanda Stewart, Chapter Executive, (602) 735-8089, Fax: (480) 857-7060, E-mail: [astewart\\_metro@email.msn.com](mailto:astewart_metro@email.msn.com)

**National Association of Realtors (NAR)** - <http://nar.realtor.com/> or <http://www.realtor.com/>

**Arizona Association of Realtors (AAR)** - <http://www.aaronline.com/>

**Institute of Real Estate Management (IREM)** - <http://www.irem.org/>

**Greater Phoenix IREM Chapter** - <http://www.iremphx.org/>

**Arizona Real Estate Center (AREC)** - <http://www.cob.asu.edu/seid/arec/>

College of Business, Arizona State University, Box 874406, Tempe, AZ 85287-4406, (480) 965-5440 Fax: (480) 965-5458. AREC serves as a focal point for research and educational projects of Arizona State University faculty members, both in real estate and in allied disciplines throughout Arizona. AREC acts to analyze and evaluate the Arizona real estate market on behalf of private, public, and governmental organizations; to conduct studies related to real estate, and to publish the results of those studies; and to assist in the development of real estate educational programs throughout Arizona that will enhance the professionalism and knowledge of those involved in the real estate industry.

**Arizona Department of Real Estate** - <http://www.re.state.az.us/>

Arizona Real Estate Law Book - <http://www.re.state.az.us/print.html>

## **Tenants and End-Users Related Resources:**

**Arizona Software & Internet Association (AZSoft.Net)** - <http://www.azsoft.net/>

Ed Denison, President, 1435 North Hayden Road, Scottsdale, AZ, 85257, (480) 941-8100, Fax: (480) 941-8118. AZSoft.Net is an association for Arizona software executives, entrepreneurs, and providers of professional services dedicated to promoting the growth, prosperity, and recognition of a world class software and Internet industry in Arizona. AZSoft.Net offers its members a wide variety of programs, special seminars and workshops, member services, networking opportunities and social events.

**Information Technology Association of Southern Arizona (ITASA)** - <http://www.itasa.com/itasa/>

1955 W. Grant Rd., Suite 230, Tucson, Arizona 85745, (520) 320-3645. ITASA is a non-profit professional organization whose mission is to promote the growth of the information technology industry in Tucson and southern Arizona. Its predecessor organization was the Center for Software Excellence (CSE).

**Arizona Internet Professionals Association (AZIPA)** - <http://www.azipa.org/>

AZIPA is the catalyst for people doing Internet related work in Arizona to get together, learn together, and work together. AZIPA's goal is to help bring the Arizona Internet community closer together to help create our own critical mass.

**Arizonans for Competition in Telephone Service (ACTS)** - <http://www.azacts.org/>

Jon Poston, Executive Director, 6733 E. Dale Lane, Cave Creek, AZ 85331-6561, (480) 473-3321. ACTS is a nonprofit, nonpartisan coalition of business and residential telephone customers who believe they would benefit from open market competition for US WEST. They strive to increase local competition, assure that local telephone rates remain affordable, and that local service improves.

**Arizona Telecommuting Advisory Council (AzTAC)** - <http://www.aztac.org/>

302 N. First Avenue, Suite 700, Phoenix, AZ 85003, (602) 534-1813, Fax: (602) 534-1939. AzTAC is a statewide telecommuting advocacy group and information resource center, dedicated to making telecommuting a recognized alternative to travel for a broad range of needs. The **International Telework Association and Council (ITAC)** is at URL: <http://www.telecommute.org/>.

Arizona Department of Administration (DOA) Telecommuting Zone -  
<http://www.telecommuting.state.az.us/>

**Regional Public Transportation Authority (RPTA) / Valley Metro** -

<http://www.valleymetro.maricopa.gov/>, 302 N. First Ave., Suite 700, Phoenix, AZ 85003, (602) 262-7242, Fax: 602-495-2002, TDD: 602-495-0936. RPTA is a political subdivision of the State of Arizona whose mission is to promote the social and economic well being of the community through an efficient and effective regional transit system as a valued and significant component of the transportation network. RPTA promotes telecommuting and telework throughout the State to allow people to work at a location other than their office while reducing vehicular traffic.

Telecommuting Resources - <http://www.valleymetro.maricopa.gov/telecommute.html>

1999 Telecommuting Research Report - <http://www.valleymetro.maricopa.gov/99-tele.html>

**AzTeC Computing** - <http://aztec.asu.edu/>

c/o Telecommunication Services, Arizona State University (ASU), Box 870201, Tempe, AZ 85287-0201, (602) 965-4156, Modem: (602) 965-4151. AzTAC Computing is a community free-net offering Internet accounts and e-mail with dial-in access to Arizona residents at no-cost. Though largely limited to text-based Internet access, over 20,000 individuals have active accounts and AzTeC Computing also hosts web sites for many non-profit groups.

**Arizona Library Association (AzLA)** - <http://azinfo.maricopa.gov/azla/>

14449 North 73rd St., Scottsdale AZ 85260-3133, (480) 998-1954, Fax: (480) 998-7838. AzLA is a statewide organization representing all types of Arizona libraries. AzLA seeks to advance the education advantages of the state through libraries and to promote general interest in library extension.

Arizona Business Information - <http://www.asu.edu/lib/hayden/ref/busi/azlabusweb.htm>

**Arizona Distance Learning Association (AZDLA)** - <http://azdla.org/>

AZDLA is a chapter of the **United States Distance Learning Association (USDLA** - <http://www.usdla.org/>) dedicated to the progress and expansion of distance learning in Arizona. By providing leadership, creating publications and partnerships, and serving as a source of accurate information about distance learning, among other things, the AZDLA is constantly striving to encourage access, equity and diversity in education.

**Arizona Small Business Association (ASBA)** - <http://www.asba.com/>

Tom Gunn, Executive Director, 1500 E. Bethany Home Rd., Suite 140, Phoenix, AZ 85014, (602) 265-4563, Fax: (602) 265-3681. ASBA is a statewide non-profit group of small business owners organized to provide the best benefits available to their membership; to provide a forum for networking their products and/or services; to increase their knowledge through informative workshops, seminars and classroom training; to actively represent them regarding legislation affecting small businesses at the state and federal levels of government in an effort to support and foster small business development, retention and growth in Arizona.

State and Federal Legislative Monitor - <http://www.asba.com/legisupdates.html>

**Arizona Association of Industries (AAI)** - <http://www.azind.org/>

Judith Allen, President & CEO, 1111 North Third St., Phoenix, Arizona 85004, (602) 252-9415, Fax: (602) 253-7137. AAI's primary objective is to increase the growth and competitiveness of Arizona's manufacturers through legislative, political, and regulatory advocacy and to provide those manufacturers with education and cost effective services.

AAI Capitol Connection (Legislative Issues) - <http://www.azind.org/legintro.html>

Arizona Legislative Bill Tracking - <http://www.azind.org/billtrack.html>

**U.S. Small Business Administration (SBA)** - <http://www.sba.gov/>

District Office: 2828 North Central Ave., Suite 800, Phoenix, AZ 85004-1093, (602) 745-7200, Fax: (602) 745-7210, Robert J. Blaney, District Director.

Arizona State Economic Profile - <http://www.sba.gov/regions/states/az/indexpro.html>

Office of Technology (Small Business for Innovation Research - SBIR) - <http://www.sba.gov/sbir/>

Government Information Locator Service (GILS) - <http://www.sba.gov/gils/>

U.S. Business Advisor - <http://www.business.gov/>



## **Consumer and Citizen Action Groups:**

### **Residential Utility Consumers Organization (RUCO) -**

2828 N. Central Ave., Suite 1200, Phoenix, AZ 85004, (602) 279-5659, Fax: (602) 285-0350. RUCO was established by Arizona State legislation and its Board is comprised of five members appointed by the Governor and confirmed by the Senate. RUCO represents utility ratepayers throughout Arizona in matters relating to rate making and rate design, as well as other matters involving public service corporations and is a member advocate office of the National Association of State Utility Consumer Advocates (NASUCA - <http://www.nasuca.org/>).

### **Arizona Consumers Council (ACC) -**

6841 North 15th Place, Phoenix, AZ 85014, (602) 265-9625, Fax: (602) 263-7465. ACC is a volunteer non-profit statewide consumer advocacy group that sponsors initiative measures, conducts surveys, holds workshops, lobbies before the legislature, and publishes a monthly newsletter and a consumer assistance directory.

### **Arizona Tenants Association -**

1818 S 16th St., Phoenix, AZ 85034, (602) 257-8987, Fax: (602) 257-9323. Provides information about tenant rights and has a legal assistance program.

### **Arizona Citizen Action - <http://www.azcitizen.org/>**

Jim Driscoll, Executive Director, (480) 839-6032 or [jdriscoll@azcitizen.org](mailto:jdriscoll@azcitizen.org). Arizona Citizen Action is Arizona's largest environmental and consumer watchdog.

US WEST Service Quality Report (12/17/98) - <http://www.azcitizen.org/uswest.htm>

### **Arizona Center for Law in the Public Interest (ACLPI) - <http://www.aclpi.org/>**

Timothy M. Hogan, Executive Director, 202 East McDowell Rd., Suite 153, Phoenix, AZ 85004, (602) 258-8850, Fax: (602) 258-8757 and 1840 East River Rd., Suite 207, Tucson, AZ 85718, (520) 529-1798, Fax: (520) 529-2927. The Center is a private, non-profit public interest law firm dedicated to representing the people of Arizona on issues including clean air and water, school finance reform, open government, consumer rights, campaign finance reform, and the protection of our public lands and natural resources.

### **Arizona Civil Liberties Union (AzCLU) - <http://www.primenet.com/~azclu/>**

Eleanor Eisenberg, Executive Director, 77 E. Columbus, Suite 205, Phoenix, AZ 85012, (602) 650-1967. The **Arizona Civil Liberties Union (AzCLU)** is the regional chapter of the American Civil Liberties Union (ACLU - <http://www.aclu.org/>).

## **Policy and Economic Development Interests:**

### **Arizona Department of Commerce (DOC) - <http://www.commerce.state.az.us/>**

(or <http://www.azcommerce.com/>) Jackie Vieh, Director, 3800 North Central Ave., Suite 1500, Phoenix, AZ 85012, (602) 280-1300, Fax: (602) 280-1302.

Business Services - <http://www.commerce.state.az.us/busserv.htm>

Business Development - [http://www.commerce.state.az.us/business\\_development.htm](http://www.commerce.state.az.us/business_development.htm)

High Technology Development - [http://www.commerce.state.az.us/high\\_technology.htm](http://www.commerce.state.az.us/high_technology.htm)  
(Governor's Science and High Technology Council, Arizona Space Commission)

Economic Development Directory - <http://www.commerce.state.az.us/ADOC/home.asp>

International Trade Division - <http://www.commerce.state.az.us/intrade.htm>

Community Services - <http://www.commerce.state.az.us/comserv.htm>

Community Assistance Division - <http://www.commerce.state.az.us/comasst.htm>

Community Profiles - [http://www.commerce.state.az.us/publications/community\\_profiles.htm](http://www.commerce.state.az.us/publications/community_profiles.htm)

Index - [http://www.commerce.state.az.us/publications/community\\_profile\\_index.htm](http://www.commerce.state.az.us/publications/community_profile_index.htm)

Map Version - [http://www.commerce.state.az.us/web\\_maps/htmlpage/communit.htm](http://www.commerce.state.az.us/web_maps/htmlpage/communit.htm)

Greater Arizona Development Authority (GADA) - <http://www.commerce.state.az.us/gada.htm>

Governor's Strategic Partnership for Economic Development (GSPED) -  
<http://www.commerce.state.az.us/gsped.htm>

### **Governor's Strategic Partnership for Economic Development (GSPED) -**

<http://www.commerce.state.az.us/gsped.htm>. Arizona Department of Commerce (DOC), 3800 North Central Ave., Suite 1500, Phoenix, AZ 85012, 602-280-1300, Fax: (602) 280-1302. GSPED is a public/private partnership that operates to enhance the competitiveness of the state's economy through export-driven industry clusters. GSPED was created to implement the Arizona Strategic Plan for Economic Development (ASPED), a statewide strategy to address economic growth and quality of life issues.

### **GSPED Clusters in Arizona:**

**Bioindustry Cluster:** Arizona Bioindustry Cluster - <http://www.azbiocluster.org/>

Industry Directory - <http://www.azbiocluster.org/html/directory.html>

**Environmental Technology Industry Cluster (ETIC) -**

<http://www.futurewest.com/economy/ETIC/index.htm>

**Food, Fiber & Natural Products:** Agri-Business Council of Arizona - <http://www.abcaz.org/>

**High Technology Industry Cluster (HTIC) -** <http://azhitechcluster.org/>

Company Directory - <http://azhitechcluster.org/directory/index.cfm>

**Minerals & Mining:** Arizona State Mine Inspector - <http://neptune.psn.net/~asmi/>

**Optics:** Arizona Optics Industry Association (AOIA) -

<http://www.futurewest.com/economy/optics.htm>

Member Directory - <http://www.futurewest.com/applications/aioamemdir/index.cfm>

**Plastics & Advanced Composite Materials**

**Senior Industries:** Arizona Department of Commerce Office of Senior Industries -

[http://www.commerce.state.az.us/gsped/senior\\_industries.htm](http://www.commerce.state.az.us/gsped/senior_industries.htm)

**Software & Information Industry:**

Arizona Software & Internet Association (AS&IA) - <http://www.azsoft.net/>

Information Technology Association of Southern Arizona (ITASA) -

<http://www.itasa.com/itasa/>

**Tourism:** Arizona Office of Tourism - <http://www.arizonaguide.com/>

**Transportation & Distribution:**

Arizona Department of Transportation - <http://www.dot.state.az.us/>

## **GSPED Infrastructure Foundations and Partnerships in Arizona:**

### **Capital**

### **Educational Technology:**

Arizona Learning Technology Partnership (ALTP) - <http://www.altp.org/>

**Human Resources:** Arizona Department of Commerce (DOC) School to Work Division - <http://www.commerce.state.az.us/stw2/stw.htm>

### **Information & Communications Infrastructure:**

Arizona Telecommunications & Information Council (ATIC) - <http://www.researchedge.com/atic/>

Government Information Technology Agency (GITA) - <http://www.gita.state.az.us/>

### **Physical Infrastructure**

### **Quality Of Life**

**Tax And Regulation:** Governor's Regulatory Review Council - <http://www.grrc.state.az.us/>

### **Technology:**

Arizona Technology Incubator (ATI) - <http://www.asu.edu/ia/economic/ati/>

Tucson Technology Incubator (TTI) - <http://www.tucsonincubator.org/>

**Arizona Partnership for the New Economy (APNE)** - <http://www.researchedge.com/apne/>

The Arizona Partnership for the New Economy (APNE) was recently formed by the Governor as a 35 member public/private partnership. APNE has undertaken a yearlong effort that will work to define the New Economy and its importance to Arizona, assess Arizona's current readiness and establish benchmarks for measuring progress, as well as to develop strategies for correcting any perceived deficiencies in responding to the opportunities presented by the New Economy.

Press Release: Governor Appoints New Economy Partnership (11/24/99) - <http://www.governor.state.az.us/news/releases/nov99/11-24-99nr.html>

**Arizona Telecommunications & Information Council (ATIC)** - <http://www.researchedge.com/atic/>

Oris Friesen, Chairman, PO Box 1119, Tempe, AZ 85280-1119, Voice & Fax: (602) 254-5887. ATIC is a statewide collaboration of business, government, and education under the Governor's Strategic Partnership for Economic Development (GSPED). Their mission is to support the development of local and statewide policies that will encourage investment in, deployment, and effective utilization of advanced telecommunications services.

Arizona Telecom Policy Briefs - <http://www.researchedge.com/atic/policy.html>

Multitenant Building Telecommunications Access Study (03/10/2000 - **this report**) - <http://www.researchedge.com/MBTAS/>

Arizona Telecommunications, Technology & Economic Development Events Calendar - <http://www.researchedge.com/atic/calendar.html>

Arizona Internet Resource Guide - <http://www.researchedge.com/aig/>

**Community Information & Telecommunications Alliance (CITA)** - <http://tucsonlink.rtd.com/>

Steve Peters, Executive Director, 3479 N. Nandina Lane, Tucson, AZ 85712, Phone & Fax: (520) 321-1309. CITA is a dynamic, county-wide, nonprofit organization in Tucson dedicated to "Building Tucson's Links to the Electronic Future." CITA promotes community collaboration to insure the availability of information and telecommunications services and resources throughout the Tucson region.

**Arizona Learning Technology Partnership (ALTP)** - <http://www.altp.org/>

Ted Kraver, Chairman, 225 West Orchid Lane, Phoenix, AZ 85021, (602) 944-8557, Fax: (602) 861-9150, E-mail: [tkraver@primenet.com](mailto:tkraver@primenet.com). ALTP is a stakeholder coalition organization under the umbrella of the Governor's Strategic Partnership for Economic Development (GSPED) that is dedicated to revitalizing learning throughout Arizona with advanced education technologies. ALTP's vision is that K-12 educational performance in Arizona public schools moves from the 4th to 1st quartile within the next 5 years with radical improvements in skills of both teachers and students.

**Maricopa Association of Governments (MAG) Telecommunications Advisory Group (TAG)** -

<http://www.mag.maricopa.gov/Newpages/MAGTAG-C.htm>. 302 North 1st Ave., Suite 300, Phoenix, AZ 85003, (602) 254-6300, Fax: (602) 254-6490. MAG is a Council of Governments that serves as the regional agency for the metropolitan Phoenix area and provides a regional forum for analysis, discussion and resolution of issues including areas of transportation, air quality, environment, regional development and social services. Their Telecommunications Advisory Group (TAG) encourages the development of telecommunication infrastructure and applications which increase government efficiency, improve access to public information, and expedite delivery of local government services in Maricopa County.

MAG Regional Videoconferencing System Project -  
<http://www.mag.maricopa.gov/Newpages/video.htm>

**City of Tucson Telecommunications Policy and Advisory Committee (TelePAC)** -

<http://www.ci.tucson.az.us/infotech/itelepac.html>. TelePAC assists the City of Tucson in developing and maintaining a comprehensive telecommunications infrastructure and policies consistent with the public interest. TelePAC focus areas are to stimulate deployment of advanced technologies, further public access to technology and community information, effectively manage public right-of-way, and use technology policy to build partnerships and achieve community goals.

Project Telecom White Paper - <http://www.ci.tucson.az.us/infotech/whitepr.html>

**Tech Oasis Committee** -

Contact: Dick Engel, President, Pragmatic Systems, (480) 922-8578, E-mail: [dick@pragmaticsys.com](mailto:dick@pragmaticsys.com) or Julia Rosen, Economic Development Office, City of Tempe, (480) 350-8812, E-mail: [julia\\_rosen@tempe.gov](mailto:julia_rosen@tempe.gov). The Tech Oasis Committee seeks to create a regional geographic cluster for software and Internet businesses that will act as a catalyst to further those businesses, the regional economy, and Phoenix area to the technology industry.

**American Planning Association (APA)** - <http://www.planning.org/>

**Arizona Planning Association (APA)** - <http://www.azplanning.org/>

10410 N. 31st Ave., Ste. 405 Phoenix, AZ 85051, (602) 866-7188, Fax: (602) 789-9126.

**Arizona Technology Incubator (ATI)** - <http://www.accessarizona.com/community/groups/ati/>  
1435 N. Hayden Rd., Scottsdale, AZ 85257, (480) 990-0400, Fax: (480) 970-6355. ATI is a community sponsored non-profit Arizona corporation dedicated to nurturing the growth of start-up and emerging high technology businesses in the Phoenix area is a member of the **National Business Incubation Association (NBIA)** - <http://www.nbia.org/>).

**Tucson Technology Incubator (TTI)** - <http://www.tucsonincubator.org/>

The University of Arizona, Science and Technology Park, 9040 South Rita Rd., Suite 1100, Tucson, AZ 85747, (520) 663-3597, Fax: (520) 663-3593. TTI is a nonprofit business incubator serving technology companies in the Tucson area, offering entrepreneurs, innovators and researchers a place where they can turn good ideas into new technology companies. TTI is a member of the **National Business Incubation Association (NBIA)** - <http://www.nbia.org/>).

### **Regional Research and Policy Organizations:**

**Center for Business Research (CBR)** - <http://www.cob.asu.edu/seid/cbr/>

College of Business, Arizona State University (ASU), Box 874406, Tempe, AZ 85287-4406, (480) 965-3961, Fax: (480) 965-5458. The Center is a public service research unit of the College of Business at Arizona State University (ASU) and specializes in applied research relating to the economics and demographics of Arizona and the metropolitan Phoenix area. The Center maintains up-to-date information on the health of the Arizona and metropolitan Phoenix economies through continuing analysis of local business conditions. The Center produces local business indicators and analyzes a variety of federal government statistics specific to Arizona.

**The Eller College of Business and Public Administration (BPA)** -

<http://www.bpa.arizona.edu/>. The Eller College of Business and Public Administration (BPA) is based at the University of Arizona (U of A) and a center for professional education as well as for frontier-advancing research.

**Economic and Business Research (EBR) Program** -

<http://www.bpa.arizona.edu/programs/ebr/ebr.html>

Arizona's Economy Issues - <http://www.bpa.arizona.edu/programs/ebr/AZecon/>

U of A Economic Outlook Forecast 1999-2000 -

[http://www.bpa.arizona.edu/programs/ebr/EconOutlook/99-00/outlook99\\_00.pdf](http://www.bpa.arizona.edu/programs/ebr/EconOutlook/99-00/outlook99_00.pdf)

Impact of High Technology Industry on the Arizona Economy (10/95) -

<http://ag.arizona.edu/AREC/pubs/hitech/Govpub.pdf>

**Morrison Institute for Public Policy** - <http://www.asu.edu/copp/morrison/>

School of Public Affairs, Arizona State University, PO Box 874405, Tempe, AZ 85287-4405, (480) 965-4525, Fax: (480) 965-9219. The Morrison Institute for Public Policy is an Arizona State University resource for objective policy analysis and expertise. The Morrison Institute researches public policy issues, informs policy makers and residents, and advises leaders on choices and actions.

Arizona Policy Choices - The New Economy: A Guide for Arizona, 10/99 -

<http://www.asu.edu/copp/morrison/public/apc99.htm>

The New Economy: Policy Choices for Arizona, 01/2000 -

<http://www.asu.edu/copp/morrison/public/nefollowup.htm>

What Matters in Greater Phoenix: Indicators of Our Quality of Life 1999 -

<http://www.asu.edu/copp/morrison/public/qofl99.htm>

**The Goldwater Institute for Public Policy Research** - <http://www.goldwaterinstitute.org/>

201 N. Central Ave., Phoenix, AZ 85004, (602) 256-7018, Fax: (602) 256-7045. The Goldwater Institute is an independent, nonpartisan, research and educational organization dedicated to the study of public policy. Through its research papers, editorials, and policy briefings, the Institute advocates public policy founded upon the principles of limited government, economic freedom and individual responsibility.

Center for Market-Based Education (Charter School Research) - <http://www.cmbe.org/>

Warne Center for Regulatory Accountability - <http://www.warnecenter.org/>

Witzeman Center for Privatization - <http://www.goldwaterinstitute.org/witzeman.htm>

**National Law Center for Inter-American Free Trade** - <http://www.natlaw.com/>

Two E. Congress St., Suite 500, Tucson, AZ 85701, (520) 622-1200, Fax: (520) 622-0957.

The Center is a non-profit research and educational institution which seeks to develop the legal infrastructure necessary to facilitate the movement of goods, services and investment capital in the Western Hemisphere. The Center conducts comparative legal and transactional studies of the disparate laws, practices and attitudes among countries of the Western Hemisphere desiring to participate in a free trade area. The Center's various projects serve to identify and eliminate the structural legal obstacles to free trade through the harmonization of commercial laws and practice and the standardization of legal documentation.

Links to Related Sites - <http://www.natlaw.com/links.htm>

**The Udall Center for Studies in Public Policy** - <http://udallcenter.arizona.edu/>

803/811 E. First St., Tucson, AZ 85719, (520) 884-4393, Fax: (520) 884-4702. The mission of the Udall Center, based at the University of Arizona (U of A), is to facilitate, analyze, and provide options for the solution of major policy issues through research, education, and public service. Program areas include: American Indian Policy, Environmental Conflict Resolution, Environmental Policy in the Southwest, and U.S.-Mexico Border Environment.

Links to Related Organizations - <http://udallcenter.arizona.edu/links.html>

## **Arizona Regional Economic Development Organizations:**

**Arizona Department of Commerce (DOC) -**

**Economic Development Directory** - <http://www.commerce.state.az.us/ADOC/home.asp>

**Chambers of Commerce and Arizona Economic Development Organizations -**

(The Arizona Republic) <http://www.abgnews.com/bizbook/chambers.shtml>

**Arizona Association for Economic Development (AAED)** - <http://www.aaed.com/>

4620 East Elwood St., Suite 13, Phoenix, Arizona 85040, (480) 921-9131, Toll-Free: (888) 567-8793, Fax: (480) 921-2674. AAED represents the collective views, interests and needs of those involved in Arizona's economic growth, and acts to improve business, employment, investment opportunities and the quality of life in the state.

**Arizona Planning Association (APA)** - <http://www.azplanning.org/>

10410 N. 31st Ave., Ste. 405 Phoenix, AZ 85051, (602) 866-7188, Fax: (602) 789-9126. APA is the regional chapter of the **American Planning Association (APA)** - <http://www.planning.org/>). APA is committed to improving the quality of the built environment and the preservation of the natural environment in the State of Arizona by supporting and advancing the virtues of responsible planning throughout the State, to function as the nucleus for the exchange of ideas and information and to provide the general membership and the public with information necessary to make informed responsible decisions on planning issues.

**Greater Phoenix Economic Council (GPEC)** - <http://www.gpec.org/>

Rick Weddle, Executive Director, Two North Central Ave., Suite 2500, Phoenix, Arizona 85004, (602) 256-7700, Toll-Free: (800) 421-4732, Fax: (602) 256-7744. GPEC provides the first point of contact for many growing companies, along with an array of services designed to assist in evaluating, planning and implementing a corporate relocation or expansion to the Greater Phoenix area. GPEC is a cooperative effort of Maricopa County, the 13 communities within it, and more than 150 private-sector business partners.

Regional Information - <http://www.gpec.org/regionalinfo/regionalinfo.html>

Greater Phoenix Fact Book - <http://www.gpec.org/regionalinfo/factbook.html>

**Greater Tucson Economic Council (GTEC)** - <http://www.futurewest.com/>

Robert L. Gonzales, President & CEO, 33 N. Stone, Suite 800, Tucson, AZ 85701, (520) 882-6079, Toll-Free: (800) 374-4769, Fax: (520) 622-6413. GTEC's mission is to attract and retain quality jobs for Greater Tucson. GTEC serves as the focal point for the public and private sectors to identify economic issues, and to coordinate and facilitate relevant economic development activities that are critical for the financial health of the community.

**Greater Flagstaff Economic Council (GFEC)** - <http://www.flagstaffguide.com/gfec/>

1300 S Milton Road, Suite 125, Flagstaff AZ 86001, (520) 779-7658, Toll-Free: (800) 595-7658, Fax: (520) 556-0940. GFEC is a nonprofit organization dedicated to building and preserving a strong local economy that promotes a quality lifestyle for all. They provide assistance in locating, relocating or expanding into the greater Flagstaff area and maintains a strong business retention and expansion program.

**League of Arizona Cities and Towns** - <http://www.azleague.org/>

Catherine F. Connolly, Executive Director, 1820 West Washington, Phoenix, AZ 85007, (602) 258-5786, Fax: (602) 253-3874. The League of Arizona Cities and Towns represents the collective interests of all of Arizona's 87 incorporated cities and towns at the state and federal levels of government in a variety of public policy issues and acts in their behalf in various negotiations and initiatives.

Arizona Legislative Information - [http://www.azleague.org/legislative\\_frame.htm](http://www.azleague.org/legislative_frame.htm)  
(or [http://www.azleague.org/leg\\_info.htm](http://www.azleague.org/leg_info.htm))

Bill Summaries - [http://www.azleague.org/bill\\_summary\\_frame.htm](http://www.azleague.org/bill_summary_frame.htm)

Voice at the Capitol (Arizona State Legislature contacts) - <http://www.azleague.org/voice.htm>

Useful Links (including AZ cities & towns) - [http://www.azleague.org/links\\_frame.htm](http://www.azleague.org/links_frame.htm)

## **Arizona Regional Chamber of Commerce Organizations:**

### **Chambers of Commerce and Arizona Economic Development Organizations -**

(The Arizona Republic) <http://www.abgnews.com/bizbook/chambers.shtml>

#### **Arizona Chamber of Commerce -** <http://www.azchamber.com/>

1221 East Osborn Rd., Suite 100, Phoenix, AZ 85014, (602) 248-9172, Toll-Free: (800) 498-6973, Fax: (602) 265-1262. The Arizona Chamber of Commerce is the Voice of Arizona Business and represents the broad interests of Arizona's diverse business community at the state capitol, with state regulators and with members of Arizona's congressional delegation. The mission of the Arizona Chamber is to promote a business climate that enhances economic vitality and improves the quality of life for all Arizonans.

#### **Greater Phoenix Chamber of Commerce (GPCoC) -** <http://www.phoenixchamber.com/>

201 North Central Ave., Suite 2700, Phoenix, AZ 85073, (602) 254-5521, Fax: (602) 495-8913. The Greater Phoenix Chamber of Commerce supports the growth and development of business and the quality of life of our community, champions the voice of business in government, and keeps businesses informed, connected and prosperous.

Economic Development - <http://www.phoenixchamber.com/econ/>

#### **Tucson Metropolitan Chamber of Commerce -** <http://www.tucsonchamber.org/>

465 W. St. Mary's Rd., PO Box 991, Tucson, AZ 85702, (520) 792-1212, Fax: (520) 882-5704.

#### **Flagstaff Chamber of Commerce -** <http://www.flagstaff.az.us/chamber.htm>

101 Rt. 66, Flagstaff, AZ 86001-5598, (520) 774-4505, Fax: (520) 779-1209.

## **State Regulatory Agencies, Legislative Bodies, and Related Organizations:**

### **State of Arizona Home Page -** <http://www.state.az.us/>

Governor's Office - <http://www.governor.state.az.us/>

Department of Commerce (DOC) - <http://www.azcommerce.com/>

### **Arizona Department of Administration (ADOA) -** <http://www.adoa.state.az.us/>

#### **Arizona Telecommunications System (ATS) -** <http://www.ats.state.az.us/>

ATS is the primary source for Wide Area Networking (WAN) services for all executive branch agencies. Agencies utilize their existing operational and project funds to acquire improved integrated services from ATS at a discount generated by the aggregate value of State business.

### **Government Information Technology Agency (GITA) -** <http://www.gita.state.az.us/>

John Kelly, Executive Director, 1102 W. Adams St., Phoenix, AZ 85007, (602) 340-8538, Fax: (602) 340-9044. GITA is responsible for statewide information technology (IT) planning, coordinating and consulting. The GITA Director serves as the Chief Information Officer (CIO) for state government. GITA has responsibility to administer the state's Executive Branch IT resources.

State of Arizona Strategic Plan For Information Technology - <http://gita.state.az.us/sitplan99/>

Digital Government Working Group(Arizona@YourService) - <http://gita.state.az.us/digitalgov/>

Information Technology Authorization Committee (ITAC) -

[http://gita.state.az.us/pij/pij/ITAC\\_Intro.htm](http://gita.state.az.us/pij/pij/ITAC_Intro.htm)

State of Arizona Year 2000 (Y2K) Website - <http://gita.state.az.us/y2k/index.html>



**Arizona Corporation Commission (ACC)** - <http://www.cc.state.az.us/>

Utilities Division, 1200 West Washington, Phoenix, AZ 85007-2996, (602) 542-4251, Toll-Free: (800) 222-7000 or 400 West Congress, Tucson, AZ 85701-1347, (520) 628-6550, Toll-Free: (800) 535-0148. The ACC was created by the Arizona Constitution as one of only 7 states with a constitutionally formed Commission and one of only 13 states with elected Commissioners. In most states, the Commission is known as the Public Service Commission (PSC) or the Public Utility Commission (PUC). In Arizona the Commission additionally has regulatory responsibility for incorporating businesses, Securities, Railroad and Pipeline Safety, as well as Utilities.

**Utility Division** - <http://www.cc.state.az.us/utility/index.htm>

Telephone Competition - <http://www.cc.state.az.us/utility/telephon/index.htm>

Competitive Telecommunications Service Rules -  
<http://www.cc.state.az.us/utility/telephon/rules.htm>

Arizona's New Area Codes - <http://www.cc.state.az.us/utility/newarea/index.htm>

Open Meetings - <http://www.cc.state.az.us/meetings/index.htm>

Helpful Links - <http://www.cc.state.az.us/links/index.htm>

**Arizona Legislative Information System (ALIS) Online** - <http://www.azleg.state.az.us/>

Arizona Legislative Computer Services, 1700 W. Washington, Phoenix, AZ 85007. ALIS Online is an information service of the Arizona Legislature, designed to promote increased public access to, and awareness of, the legislative process in Arizona.

**Department of Library, Archives and Public Records (DLAPR)** -  
<http://www.dlapr.lib.az.us/>

Research & Information Resources -  
<http://www.dlapr.lib.az.us/research/webguide/index.html>

Guide to State of Arizona Publications on the World Wide Web -  
<http://www.dlapr.lib.az.us/research/webguide/>

**Arizona Legislative Internet Study Committee (ISC)**- <http://www.azhousetv.org/internetcommittee/>

The sixteen member committee (5 Senators, 5 Representatives, 6 Appointed) has conducted hearings and investigations that will help form future Arizona public policy in regard to the Internet. Key areas of focus include: infrastructure, security, regulation, taxation, privacy and jurisdiction.

Resources - <http://www.azhousetv.org/internetcommittee/contents/resources.html>

Internet Infrastructure Working Paper -  
<http://www.azhousetv.org/internetcommittee/contents/infrastructure.pdf>

Final Report 12/1/99 - <http://www.azhousetv.org/internetcommittee/contents/report.pdf>

# **Arizona Telecommunications and Information Council (ATIC)**

## **Multitenant Building Telecommunications Access Study**

### **Appendix 3 - Bibliography of Articles and Publications**

#### **Media Coverage of ATIC's MBTAS:**

State Telecom Council Releases "Smart Building" Study by J. Craig Anderson, Technology column lead story, The Business Journal Phoenix (<http://www.amcity.com/phoenix/>), 2/21/2000 (<http://www.amcity.com/phoenix/stories/2000/02/21/newscolumn5.html>)

Get Smart: Tech Innovations Help Buildings Hook Up to the New Economy (Management, Flexibility as Key as Location) by J. Craig Anderson, Real Estate Insert, The Business Journal Phoenix (<http://www.amcity.com/phoenix/>), 2/21/2000, Quotes Mark Goldstein and mentions this study and its recommendations to Arizona lawmakers and regulators

Smart Buildings: Valley Office Buildings "Get Smart" by Mike Padgett, The Business Journal Phoenix (<http://www.amcity.com/phoenix/>), 12/24/99, quotes Mark Goldstein and discusses the Arizona Telecommunications and Information Council (ATIC) Multitenant Building Telecommunications Access Study (MBTAS) in reviewing issues with smart buildings and access to advanced services

#### **Miscellaneous Articles and Coverage in the Popular and Trade Press:**

Developers, Wireless Firms Feud Over Building Access by Kent Hoover, The Business Journal Phoenix (American City Business Journals - <http://www.amcity.com/>), 09/10/99

Congress Needs to Open the Door for Telecom Access, by William J. Rouhana, Jr., Chairman and CEO, Winstar Communications, The Tribune (Mesa, Arizona), 07/04/99 (<http://www.alts.org/smartbuildings/7499rouhaha.htm>)

Telecom Battle Erupts Deep Inside Buildings by Barbara Martinez, The Wall Street Journal (<http://www.wsj.com/>), 09/01/99

'Forced Entry' Draws Forceful Debate Before FCC, Communications Today (Phillips International, Inc.), 08/30/99

Regulation & Policy: Alternatives to the Local Phone Loop Stumble on Cost, Property Rights, and Slow PCs by Stephen N. Brown, Lightwave (<http://lw.pennwellnet.com/home/home.cfm>), 10/99

Telecommunications Spur Competition, The Florida Times Union, 04/28/99, covers Florida PSC study and pending state legislation

Let Tenants Shop for Phone Service, St. Petersburg Times, 03/29/99 (<http://www.alts.org/smartbuildings/stpetersburgarticleframe.htm>)

Mission: Internet access made easy by Margie Semilof, Computer Reseller News (CRN - <http://www.crn.com>), 12/13/99, Integrators team with real estate firms to provide in multitenant buildings

Transforming the Enterprise: Commercial Realtors Look for an Internet Jump Start by Joe Mullich, Internet Week, 12/13/99 (<http://www.internetwk.com/transform/transform.htm>)

Wiring the Skyscrapers: Companies like Allied Riser and Broadband Office are targeting a lucrative but volatile telecom market: Office buildings by Jason Krauseby, The Industry Standard, 03/13/2000, (<http://www.thestandard.com/article/display/0,1151,12740,00.html>)

Retro landmark gets avant-garde network: An old building can be given a new soul, but only after design and engineering are pushed to their limits by Herb Hauser, Lightwave, March 2000, ([http://lw.pennwellnet.com/home/articles.cfm?ARTICLE\\_ID=65910&VERSION\\_NUM=1&PUBLICATION\\_ID=13&Section=CurrentIssue](http://lw.pennwellnet.com/home/articles.cfm?ARTICLE_ID=65910&VERSION_NUM=1&PUBLICATION_ID=13&Section=CurrentIssue))

The Broadband Building by John Jainschigg and Bill Michael, Computer Telephony, January 2000 ([http://www.telecomlibrary.com/db\\_area/archives\\_rd/ComputerTelephony/2000/January/broadband.building-.html](http://www.telecomlibrary.com/db_area/archives_rd/ComputerTelephony/2000/January/broadband.building-.html))

Apartment Industry Testifies That Forced Telecommunications Access Legislation Stifles Competition, in Realty Times (<http://realtytimes.com/>), 05/19/99 ([http://realtytimes.com/rtnews/rtcpages/19990519\\_rubtelecom.htm](http://realtytimes.com/rtnews/rtcpages/19990519_rubtelecom.htm))

## **Network World Magazine:**

Wireless carriers want space on your roof: Wireless local loop carriers seek regulatory help to reach office building users by David Rohde, Network World, 06/07/99 (<http://www.nwfusion.com/news/1999/0607carrier.html>)

There's a rumble on the rooftop by David Rohde, Network World, 06/28/99 (<http://www.nwfusion.com/archive/1999b/0628rohde.html>)

Qwest-backed wireless data player (Advanced Radio Telecom) wins building access by David Rohde, Network World, 07/13/99 (<http://www.nwfusion.com/news/1999/0713qwestart.html>)

Realty group slams CLEC access plans by David Rohde, Network World, 09/20/99 (<http://www.nwfusion.com/news/1999/0920carrier.html>)

Cyber-condominiums are wired for ADSL, Network World, 03/30/98

## **State & Local Communications Report (Telecommunications Reports International):**

(<http://www.tr.com/newsletters/slcr/>)

Toned-Down Bill Directs Florida PSC to Study Rates, State & Local Communications Report, 05/08/98 (also reports on legislation requiring PSC to study and report on access to subscribers in multitenant environments)

Building Managers Seek More Cooperation by Brian D. Hammond, State & Local Communications Report, 05/22/98

California Bill Would Limit Carriers' Eminent Domain Rights, State & Local Communications Report, 03/05/99

CLECs: States Can't Solve Building-Access Problem, State & Local Communications Report, 05/21/99

Competitors Demand Access to ROW, Buildings, State & Local Communications Report, 06/18/99

## **Riser Management Systems - Riser Connections Newsletter Articles:**

(Relevant articles linked from <http://www.riser.com/inthepress/nwsltrs/>)

The FCC Demarcation Ruling Regarding Minimum Point of Entry, September 1997

FCC Wraps Up Major Portion of Inside Wiring Issue, September 1997

The Eyes of Texas are Upon Your Wires, December 1997

Smart-Wiring New York, Winter 1998

Telecom Planning 101: What's Up Your Sleeves?, Spring 1998

Renaissance Retrofit in Chicago, June 1998

Rooftop Revenue Review, December 1998

Fiber in the Sky, December 1998

Wired for Wireless: From Riser to Rooftop, December 1998

Mandatory Access, March 1999

State Mandatory Access Laws, March 1999

Highlights of Pending California Legislation, May 1999

California Legislature Confronts Mandatory Access, May 1999

Equipping Buildings for the Internet Age, November 1999

Ensuring Tenant Choice of Telecommunications, November 1999

Riser Leads Clients in Filing Comments with FCC, November 1999

## **Miscellaneous Related Publications:**

**Multitenant Building Telecommunications Access Study (MBTAS)**, published by the Arizona Telecommunications & Information Council (ATIC), written by Mark Goldstein, International Research Center, March 10, 2000 (**this report** - <http://www.researchedge.com/mbtas/>).

**Report on Access by Telecommunications Companies to Customers in Multitenant Environments**, Florida Public Service Commission (PSC), February 1999 (On the web not including Appendix A - Other State Statutes at <http://www2.scri.net/psc/general/publications/MTEFINAL.PDF>)

**The First 100 Feet: Options for Internet and Broadband Access** by Deborah Hurley and James H. Keller (eds.), The MIT Press (A Publication of the Harvard Information Infrastructure Project), 1999, ISBN 0-262-58160-4 (<http://mitpress.mit.edu/book-home.tcl?isbn=0262581604>); Recasts the "problem of the last 100 feet" as "the opportunity of the first 100 feet"

**Challenge Paper: Telecommunications Access to Highway Rights-of-Way**, from the Western Governors Association (WGA), (<http://www.westgov.org/wga/publicat/chall-2r.htm>)

**Defending the Internet Revolution in the Broadband Era: When Doing Nothing is Doing Harm**, Berkeley Roundtable on the International Economy (BRIE - <http://brie.berkeley.edu/~briewww/>), August 1999 (<http://e-conomy.berkeley.edu/pubs/wp/ewp12.html>)

**America's High-Tech Economy: Growth, Development, and Risks for Metropolitan Areas**, by Ross DeVol, Perry Wong, John Catapano, and Greg Robitshek, The Milken Institute, July 13, 1999 ([http://www.milkeninstitute.org/mod30/ross\\_report.pdf](http://www.milkeninstitute.org/mod30/ross_report.pdf))

**The Cluetrain Manifesto: The End of Business as Usual** (<http://www.cluetrain.com/book.html>) from The Cluetrain Manifesto (<http://www.cluetrain.com/>)

## **Real Estate Related Publications:**

**Wired for Profit: The Property Management Professional's Guide to Capturing Opportunities in the Telecommunications Market** by Michael Dworkin and Andrew Montrol, Published by Building Owners and Managers Association (BOMA) and National Apartment Association (NAA), 1998 (Information available at <http://www.boma.org/wired.htm>)

**What Office Tenants Want: Building Features, Amenities and Services**, Published by Building Owners and Managers Association (BOMA) and Urban Land Institute (ULI), 1999 with coverage including "smart" buildings and technologically advanced systems (Information available at <http://www.boma.org/bomauli.htm>)

**Doing Telecommunications Deals: Turning the Roof and Basement Into Cash Cows** including a Lease Clause Critique: Comparing Clauses From Three Different Telecommunications Deals, Leasing Professional (<http://www.leasingprofessional.com/>) Special Topics Report STR 1570

**Making a Smart Deal with the Wireless Service Company: The Second Wave of Wireless Hits the Landlord's Beach** with Lease Clause Critique: Excerpts From a Pro-Tenant Telecommunications Site Lease, Leasing Professional (<http://www.leasingprofessional.com/>) Special Topics Report STR 1520 (Note: M. P. Chemodurow, Scottsdale, AZ at Telephone: (480) 905-8554)

**Real Estate Aspects of New Telecommunications Laws** by Robert F. See, Jr. and C. Brian Cassidy of Locke Purnell Rain Harrell (A Professional Corporation, Austin, Texas) for the 30th Annual Mortgage Lending Institute, September 1996. ([http://www.lprh.com/r\\_telecm.htm](http://www.lprh.com/r_telecm.htm))

**A New Era in Telecommunications: Impositions and Opportunities for Owners and Managers of Real Estate** by Lawrence R. Freedman, Arter & Hadden Real Estate Trends, January 1999 (<http://www.arterhadden.com/realestate/real0199c.htm>)

**New Federal Communications Commission Limitations on Restrictions Governing the Placement of Video Receive Antennas on Rental Property** by Mark Van Bergh, Arter & Hadden Real Estate Trends, January 1999 (<http://www.arterhadden.com/RealEstate/real0199d.htm>)

**Checklist for Leasing Antenna Space to Third Parties** by Errol M. Stone, Arter & Hadden Real Estate Trends, April 1997 (<http://www.arterhadden.com/realestate/real0497a.htm>)

## **Building Telecommunications Cabling/Wiring Standards:**

### **Telecommunications Industry Association (TIA)/Electronic Industries Alliance (EIA):**

**TR-41 User Premises Telecommunications Requirements Standards Formulation Group** - <http://www.tiaonline.org/standards/sfg/tr-41/>

**TR-42 User Premises Telecommunications Infrastructure Standards Formulation Group** - <http://www.tiaonline.org/standards/sfg/tr-42/>

**TIA/EIA-568: Commercial Building Telecommunications Cabling Standard**, Global Engineering Documents (<http://global.ihs.com/>), February 1998

**TIA/EIA-569: Commercial Building Standard for Telecommunications Pathways and Spaces**, Global Engineering Documents (<http://global.ihs.com/>), February 1998

**TIA/EIA-606: The Administration Standard for the Telecommunications Infrastructure of Commercial Buildings**, Global Engineering Documents (<http://global.ihs.com/>), February 1993

**Telecommunications Act Accessibility Guidelines**, from the Architectural and Transportation Barriers Compliance Board (36 CFR Part 1193; RIN 3014-AA19), Published in the Federal Register 02/03/98 (<http://www.access-board.gov/rules/telfinal.htm>)  
(See also: <http://trace.wisc.edu/docs/telenprm/telenprm.htm>, 04/18/97)

## **Building Telecommunications Cabling/Wiring Books & Resources:**

**Telecommunications Wiring for Commercial Buildings: A Practical Guide** by Elliott M. Gilbert and John G. Nellist, Institute of Electrical and Electronic Engineers (IEEE) Press, 1996, ISBN: 0780311140

**Premises Cabling** by Donald J. Sterling, Jr., Delmar Publishing, October 1995, ISBN: 0827372442

**The Cabling Handbook** by John R. Vacca, Prentice Hall, September 1998, ISBN: 0130805319

**Telecommunication Wiring** by Clyde N. Herrick and C. Lee McKim, Prentice Hall, November 1998 (2nd edition) , ISBN: 0136328458

**Data, Voice, and Video Cabling** by James Hayes and Paul Rosenberg, Delmar Publishing, August 1999, ISBN: 0766809641

**Planning Telecommunication Networks** by Thomas G. Robertazzi, Institute of Electrical and Electronic Engineers (IEEE) Press, 1999, ISBN: 0780347021

**Electrical Design Guide for Commercial Buildings** by William H. Clark II, McGraw-Hill, July 1998, ISBN: 0766809641

**Power and Communication Cables: Theory and Application** by R. Bartnikas (Editor) and K.D. Srivastava (Editor), Institute of Electrical and Electronic Engineers (IEEE) Press, October 1999, ISBN: 0780311965

**Facilities Operations and Engineering Reference** produced by the Association for Facilities Engineering (AFE) and R.S. Means Company (<http://www.afe.org/rsmeans.htm>)

**Directory of Outside Plant Equipment and Services** from Broadband Guide (PennWell Media Online) - <http://www.broadband-guide.com/diroutside.html>

Contractors Directory - <http://www.broadband-guide.com/cc/>

OSP Engineering & Construction Magazine - <http://www.broadband-guide.com/cbl4man/>

## **Resources & Tutorials on Bandwidth and Premises Wiring:**

**Premises Networks Online** - <http://www.premisesnetworks.com/>

VerticalNet, Inc.'s virtual community and marketplace for professionals in the premises wiring and enterprise networking industry. News, marketplace, buyers guide, community support, and resources. Other VerticalNet (<http://www.verticalnet.com/>) vertical communities/portals of interest include:

Wireless Design Industry - <http://www.wirelessdesignonline.com/>

RF and Microwave Engineering Industry - <http://www.rfglobalnet.com/>

Wireless Networks Industry - <http://www.wirelessnetworksonline.com/>

Fiber Optics Industry - <http://www.fiberopticsonline.com/>

Digital Broadcasting Industry - <http://www.digitalbroadcasting.com/>

**International Engineering Consortium (IEC) Web ProForum Tutorials -**

[http://www.webproforum.com/wpf\\_all.html](http://www.webproforum.com/wpf_all.html)

Site has tutorials on many dozens of related topics covered in both HTML and sometimes PDF format. They include self-tests, glossaries and misc. resources. Individual tutorials are sponsored by industry companies but not specific to their product-offerings.

**Network Computing's Technology Center -** <http://www.networkcomputing.com/core/core.html>

Site is divided into nine main areas (Operating Systems & Network Services, Electronic Commerce, Messaging & Collaborative Applications, Wide Area Systems & Telephony, Infrastructure, Development, Network/Systems Management, Enterprise Security, Servers and Peripherals) with Product Testing articles, How-To and Tutorials, Industry Issue Analyses, and Opinion Pieces.

InternetSourceBook.Com (Gateway Publishing) - <http://www.internetsourcebook.com/>

**TechGuides -** <http://www.techguide.com/index1.html>

Site has over 70 Technology Guides free and online, as well as topical forums one can participate in. Again, individual guides are sponsored by industry companies but not geared towards their specific products.

**Data Communications Magazine Tech Tutorials -** <http://www.data.com/tutorials/>

These tech tutorials are written by the experts, and they supply the crucial details on all the inner workings of the protocols, standards, and transports used on corporate networks.

**ComputerWorld Technology QuickStudy -** <http://www.computerworld.com/res/quickstudy.html>

Site provides access to the magazine's archive of weekly short tutorials on dozens of computer and telecommunications technologies.

**CNET: Internet: Access & Bandwidth -**

<http://home.cnet.com/internet/0-3762.html?tag=st.cn.1fd2.dir.3762>

Site links to related articles on CNET and a wealth of external resource sites. Well-organized and presented.

**ZDNet (Ziff-Davis) AnchorDesk Briefing Center -** <http://www.zdnet.com/anchordesk/bcenter/>

Index of online briefings and subject-related resources on Hardware, Industry Issues, Internet, Networking, Operating Systems, Peripherals, and Software.

Telecommunications Briefing Center -

[http://www.zdnet.com/anchordesk/bcenter/bcenter\\_299.html](http://www.zdnet.com/anchordesk/bcenter/bcenter_299.html)

**CLEC-Planet -** <http://www.clec-planet.com/>

Internet.com's Competitive Local Exchange Carrier resource site for news, information and links.

**ISP-Planet -** <http://www.isp-planet.com/>

Internet.com's Internet Service Provider resource site for news, information and links.

The List (Definitive Buyer's Guide to ISPs) - <http://thelist.internet.com/>

## **Periodicals on Bandwidth and Premises Wiring:**

**Broadband Systems & Design (Cahners)** - <http://www.broadbandmag.com/>

Telephony and CATV design trade publication with news and resources.

**CED Magazine (Cahners)** - <http://www.cedmagazine.com/>

Communications Engineering and Design (CED) for broadband communications.

**Fiberoptic Product News (Cahners)** - <http://www.fpnmag.com/>

Fiber-optic communications technology trade publication with news and resources.

**Lightwave Magazine (Penton)** - <http://lw.pennwellnet.com/>

Fiber-optic communications technology trade publication with news and resources.

**Wired Magazine's IS/IT Infostructure** - <http://www.wired.com/news/infostructure/>

## **Periodicals on Wireless Technologies:**

**Wireless Week (Cahners)** - <http://www.wirelessweek.com/>

Wireless communications industry trade publication with news and resources.

**Wireless Design & Development (Cahners)** - <http://www.wirelessdesignmag.com/>

Wireless communications design trade publication with news and resources.

**The Wireless LANA Association (WLANA): Industry Magazines Links** -

[http://www.wlana.com/press/industry\\_magazines.html](http://www.wlana.com/press/industry_magazines.html)

**Wired Magazine's The Wireless World** - <http://www.wired.com/news/wireless/>

**Yahoo! News: Wireless Communications Devices** -

[http://fullcoverage.yahoo.com/fc/Tech/Wireless\\_Communications\\_Devices/](http://fullcoverage.yahoo.com/fc/Tech/Wireless_Communications_Devices/)

**PCS Systems & Technology (Cahners)** - <http://www.pcsmag.com/>

Advanced wireless communications technology trade publication with news and resources.

**PCS Data Knowledge Site** (also known as **GSM 1900**) - <http://www.pcsdata.com/>

**GSM Association** - <http://www.gsmworld.com/>

**GSM Data Knowledge Site** - <http://www.gsmdata.com/>

## **Miscellaneous Telecom Links:**

**Telecommunications Information Resources on the Internet (University of Michigan)** -

<http://china.si.umich.edu/telecom/telecom-info.html>

**The WWW Virtual Library (World Wide Web Consortium - W3C)** - <http://vlib.org/>

Communications & Telecommunications Virtual Library - <http://www.analysys.com/vlib/>

New Paradigm Resources Group Useful Telecom Web Sites - <http://www.alts.com/relatedsites.htm>



## **Periodicals on Information Technology & Telecom Policy/Regulation:**

**Administrative & Regulatory Law News (from ABA) -**  
<http://www.abanet.org/adminlaw/news/backpage.html>

**American Lawyer Media -** <http://www.amlaw.com/>

**The American Lawyer/Corporate Counsel -** <http://www.americanlawyer.com/>

**Law News Network -** <http://www.lawnewsnetwork.com/>

**Law Technology News -** <http://www.ljx.com/ltpn/> or <http://www.lawtechnews.com/>

**The National Law Journal -** <http://www.nlj.com/>

**FCW Government Technology Group -** <http://www.fcw.com/>

**Civic.com** (IT professionals in state & local government) - <http://www.civic.com/>

**Federal Computer Week -** <http://www.fcw.com/pubs/fcw/fcwhome.htm>

**Federal Communications Law Journal -** <http://www.law.indiana.edu/fclj/fclj.html>

**Government Technology Magazine -** <http://www.govtech.net/>

Resources - <http://www.govtech.net/resources/resources.shtm>

**Government Technology Reseller -** <http://www.gtreseller.com/>

**IT Law Journal (ITLJ - The Online Publishing Group) -** <http://www.itlawjournal.com/>

**International Journal of Communications Law and Policy -** <http://www.digital-law.net/IJCLP/>

**Internet Telecom Project (ITP) Links -** <http://www.cybertelecom.org/links.htm>

**Journal of Communications Law and Policy -** <http://www.acad.cua.edu/law/commlaw/Articles.htm>

**Journal of Municipal Telecommunications -** <http://munitelecom.org/jmt.html>

**Journal of Science & Technology Law -** [http://www.bu.edu/law/scitech/scitech\\_technology.html](http://www.bu.edu/law/scitech/scitech_technology.html)

**Law Journal Extra Communications -** <http://www.ljextra.com/practice/communications/>

**Law News Network -** <http://www.lawnewsnetwork.com/>

**Municipal Cable TV & Telecommunications News (Neil J. Lehto) -**  
<http://www.ameritech.net/users/nlehto/municable.htm>

Neil J. Lehto Home Page - <http://www.ameritech.net/users/nlehto/index.htm>

Hot Links - <http://www.ameritech.net/users/nlehto/hot.htm>

Public Right-of-Ways - <http://www.ameritech.net/users/nlehto/prow.htm>

Wireless Telephone Towers - <http://www.ameritech.net/users/nlehto/towers.htm>

**The New York Times CyberTimes Cyber Law Journal -**  
<http://www.nytimes.com/library/tech/reference/indexcyberlaw.html>

Cyber Law Links - <http://www.nytimes.com/library/tech/reference/linkscyberlaw.html>

**Post-Newsweek Business Information -**

**Government Computer News** - <http://www.gcn.com/>

**Washington Technology Online** (Government systems integrators) -  
<http://www.wtonline.com/>

**Public Utility Reports' Public Utilities Fortnightly Magazine** - <http://www.pur.com/>

**Telecommunications Reports International (TRI)** - <http://www.tr.com/>

**State & Local Communications Report** - <http://www.tr.com/newsletters/slcr/index.asp>

**TR Daily** - <http://www.tr.com/newsletters/trd/>

**TR's Last-Mile Telecom Report** - <http://www.tr.com/newsletters/lmtr/index.asp>

**TR's Wireless** - <http://www.tr.com/newsletters/trwn/>

**Yahoo! : Government : Law : Intellectual Property : Magazines** -

[http://dir.yahoo.com/Government/Law/Intellectual\\_Property/Magazines/](http://dir.yahoo.com/Government/Law/Intellectual_Property/Magazines/)

## **Twelve New Commandments of Telecom:**

- **Industry boundaries will crumble and reform**
- **New types of companies rapidly emerge, stimulating new technologies, but ultimately are absorbed by larger players**
- **Companies not previously thought of as competitors enter the market**
- **Customer segmentation grows in strategic importance**
- **Customer loyalty grows in strategic importance**
- **Prices generally drop, but not for all customer segments**
- **Elaborate new packaging and pricing schemes emerge**
- **Wide geographic scale and product/technology scope emerge as key weapons**
- **Service quality drops as costs are squeezed**
- **Companies struggle to maintain profitability at lower revenue levels**
- **Customer usage of all telecom services increases dramatically**
- **Unit prices fall, on average**

**(from America's Network, May 15, 1996)**

**Arizona Telecommunications and Information Council (ATIC)**  
**Multitenant Building Telecommunications Access Study**

**Appendix 4 - Submitted Position Statements**

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# **Association for Local Telecommunications Services (ALTS)**

## **Bringing Telecommunications Competition to**

## **Tenants in Multi-Tenant Environments**

### **White Paper - May 10, 1999 - Executive Summary**

Nondiscriminatory telecommunications carrier access to commercial and residential consumers in multi-tenant buildings is critical to the development of facilities-based local exchange competition. Currently, some landlords can and do prohibit CLEC access to their building tenants. Still other landlords impose such unreasonable conditions and demand such high rates for access that competitive telecommunications service to their buildings is rendered uneconomic. The tenants in these buildings often are without recourse and cannot obtain access to competitive telecommunications options.

State laws do not help these tenants. Only two States - Connecticut and Texas - have statutes that require landlords to grant nondiscriminatory access to the telecommunications carriers from whom their tenants choose to take service. Moreover, market imperfections eliminate the possibility of relying on the marketplace to resolve the problem. A federal solution is warranted.

The FCC possesses ample authority under the Communications Act to eliminate this nationwide barrier to competition. Most importantly, Section 2(a) provides the Commission's subject matter and in personam jurisdiction over all interstate and foreign communications by wire and radio, and to all persons engaged within the United States in such communication. The sweeping definitions of radio and wire communication in the Communications Act include even items and services incidental to interstate wire communication. The Commission has successfully exercised this expansive and flexible basis of authority in the past, and should do so again in the context of telecommunications carrier access to building tenants. To enable all tenants to receive the benefits of competition, the FCC should adopt federal nondiscriminatory building access rules and apply them in those States lacking nondiscriminatory building access statutes.

The FCC's rules should require that landlords grant telecommunications carriers reasonable, nondiscriminatory, and technologically neutral access to their buildings for the purpose of providing service to tenants within those buildings. Such access should expressly include access to rooftops, vertical and horizontal riser cables, utility closets/telephone equipment rooms (and the cross-connects therein) and to the intra-building wiring between the cross-connect and the customer's premises. The access should include both commercial and residential multi-tenant environments.

In addition, the Commission should prohibit exclusive access arrangements between a carrier and a landlord. The Commission should also prohibit the imposition by landlords of penalties or charges on tenants for exercising their choice in telecommunications carriers. Finally, landlords should not be permitted to condition access on the presence of actual customers within the building.

## **ALTS - Bringing Telecommunications Competition to Tenants in Multi-Tenant Environments (Continued)**

In exchange for access, landlords should be permitted to receive compensation that is reasonable, nondiscriminatory and technologically neutral. These rates should be related to costs. Moreover, landlords must not be permitted to impose revenue sharing arrangements on carriers as a condition of access (although carriers and landlords should be permitted to enter into voluntary agreements of this sort insofar as they do not impair access by competing telecommunications carriers).

Carriers should be required to assume installation and damage costs. Moreover, although space constraints remain a largely theoretical issue, the Commission should be prepared to address legitimate and demonstrable space constraints (and the concomitant need to deny access) if and when they arise.

Given the established need for relief from this competitive barrier, and the immediate and manifest growth in competition that will result from requiring nondiscriminatory telecommunications carrier access to multi-tenant buildings, the Commission should adopt and implement federal access rules promptly.

(Excerpted from document file available at <http://www.alts.org/uploads/PR.5.13.testimony.doc>)

# **Arizona Competitive Telecommunications Coalition (ACTC)**

## **Provider Access To Privately Owned Buildings**

### **Issue:**

Incumbent local exchange carriers and other utilities have physical space and access within multidwelling units and commercial buildings to provide service to customers within those privately owned buildings. New entrants that seek to provide local services to customers have encountered barriers as landlords either deny them the right to physically run their lines and/or demand unreasonable and discriminatory payments to do so. Building access is necessary for all telecommunications providers to deliver the services that our customers require.

Cities and states have begun to recognize that the lack of access by CLECs to privately owned buildings will impede local competition. Several state legislatures have already addressed this issue, providing examples from which Arizona may benefit.

### **What is needed:**

Competitive telecommunications providers seek legislation that would satisfy the following principles:

- Customers should be entitled to access to telecommunications service from any certificated telecommunications company; and landlord and telecommunications companies must reach reasonable accommodation for access to both the building – including roofs; risers (both vertical and horizontal); riser conduit and pathways -- and to all inside wiring on a nondiscriminatory basis.
- Timeframe for landlord and telecommunications providers to reach "accommodation" should be set by law (just as federal law sets time frame for interconnection negotiations). In the absence of an agreement, default for compensation should be whatever the landlord is charging the incumbent local exchange carrier; and the default for demarcation point should be the minimum point of entry (MPOE) as recognized in the FCC's orders.
- Costs and charges for building access should be:
  - standardized and technology-neutral;
  - no higher for later entrants than for the initial entrant ;
  - charges to the incumbent local exchange carrier should be the standard for all.
- Incumbent company's owned/controlled rooftops should be available as right of way (per Section 224 of the federal Act), or alternately as an unbundled element as part of an interconnection agreement.

Submitted by

**John Badal, Executive Director**

**Arizona Competitive Telecommunications Coalition (ACTC)**

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# **WinStar Communications**

## **Position Statement**

WinStar Communications, Inc. submits these comments to the Arizona Telecommunications Information Council (ATIC) on proposed modifications to state legislation and regulation to ensure that telecommunications carriers and cable television providers have nondiscriminatory access to utility poles, ducts, conduits and rights-of-way (ROW). We applaud ATIC's efforts to align Arizona state regulations with Section 224 of the federal Telecommunications Act of 1996 and to promote non-discriminatory access to utility rights-of-way (ROW). To ensure this stated objective is met, WinStar recommends that ATIC clarify that its proposal will apply to all utility rights-of-way, including rights-of-way located in multiple dwellings units (MDUs).

The success of new entrants in penetrating the local exchange market to compete with incumbent LECs is directly impacted by their ability to access existing rights-of-way (ROW) that are either owned or controlled by utilities. For example, fixed point-to-point wireless carriers need to place microwave transmission facilities on buildings' rooftops, among other structures. Traditional wireline carriers must lay their fiber optic cable across existing rights-of-way in order to create more efficient (and, correspondingly, more competitive) cost structures independent of the incumbent LEC. In the absence of a regulatory framework to make access to the current infrastructure available to new entrants, pro-competitive activities will be stalled, perhaps indefinitely.

With good reason, Congress amended the Communications Act of 1934 to provide new entrants nondiscriminatory access to utility rights-of-way (ROW). In conformance with this mandate, ATIC is now studying legislation or regulation to ensure that new entrants have nondiscriminatory access to utility rights-of-way in Arizona. To make certain that the amendment is truly effective and to avoid unnecessary disputes, ATIC should help the state clarify that all rights-of-way owned or controlled by, or available to, a utility will be made available to new entrants include in multiple tenant environment. In other states, regulation of access to rights-of-way has focused principally on so-called "outside plant," such as cable attachments to poles and conduits in public streets. Arizona should recognize that utility networks do not end at the walls of an MDU. Rather, to provide service to individual tenants in a MDU, a utility must extend its network into and throughout the building.

Historically, the incumbent LEC normally installed, owned and operated its own distribution facilities inside MDUs, including building entrance facilities (the connection of incumbent LEC outside plant to the "minimum point of entry," or MPOE, within the building), a common block where the building entrance facilities can be cross-connected to interior wiring, vertical riser cables to upper floors of the building, horizontal distribution wires connecting the risers to individual tenants' premises, and internal wiring closets and connector blocks (these facilities collectively are referred to below as "interior pathways"). Because it was in the building owners and/or managers' own interest to provide access to telephone services within the MDU, the incumbent LEC often was permitted to enter the building and install these facilities without any written easement, license, or other agreement. Nonetheless, the incumbent LEC necessarily had the express or implied permission of the property owner to install and operate these facilities, as a matter of course.

Section 224 of the Telecommunications Act requires a utility to provide access to "any pole, duct, conduit, or right-of-way owned or controlled" by it. A right to install wires, riser ducts, conduits, and other facilities into or within an MDU (regardless of the side of the demarcation point on which they may fall) is a "right-of-way" within the ambit of this statute. Therefore, to the extent that any

## **WinStar Communications - Position Statement (Continued - 2)**

easement, license, or agreement (written or unwritten) grants an incumbent LEC or other utility the right to place telecommunications facilities into or within an MDU, the incumbent LEC or utility in turn is required by Section 224 of the federal Act to allow other carriers to "piggyback" on those rights, so that the other carriers may place their facilities within any pathways, ducts, or conduits, including rooftops and riser conduits, subject to the conditions of Section 224 and the state's regulations implementing it.

We believe that any state regulation or legislation should require utilities to provide access to interior pathways. The utility controls, or at the very least "shares control" with the property owner. Since the incumbent LEC or utility uses or previously used the right-of-way to transmit telecommunications to tenants in the building, the right-of-way is used or useful for supporting or enclosing wires for the transmission of telecommunications. Thus, pursuant to the federal Act, any pathway, inside wire, house riser cable, and common spaces under the ownership or control of the utility that is used, or may be used, for transmission of communications must be made available similarly to a CLEC.

### **Call for State Action:**

In order to avoid potential confusion and future disputes, the State should clarify explicitly that rules will apply to interior pathways controlled by utilities within MDUs, in addition to poles, conduits, and other "outside plant" rights-of-way. Legislation or regulation is needed to help facilities-based carriers overcome significant hurdles that they face in deploying telecommunications services and providing consumers with a full range of choices in local telephone service providers. Currently, a significant sector of the public cannot access competitive telecommunications services due to a final "100 foot bottleneck" resulting from anti-competitive actions by incumbent LECs and/or property owners who impede or prevent access to building rooftops, risers (horizontal and vertical), inside wiring and related facilities. We urge ATIC to address critical barrier to competition and to adopt building access regulations. Until such access is mandated and nondiscriminatory guidelines are set and implemented, Arizona consumers will be denied the benefits of competitive telecommunications services.

Pursuant to Section 224(c)(2)(B) of the federal Act, the State is required to consider the interest of subscribers when regulating utility rights-of-way. Subscribers living or working in MDUs are being denied competitive telecommunications services. Section 224(f) requires that utilities provide access to interior pathways that they control within MDUs; however, this section says nothing about access in those instances where necessary interior pathways are controlled directly by the building owner rather than a utility, or where the building owner attempts to impede access to interior pathways, even where the incumbent LEC or other utility has otherwise been granted access. Accordingly, several state commissions have recognized that Section 224 is simply not enough to ensure that these consumers have competitive choice among telecommunications providers.

At least four states have adopted legislation and/or administrative regulations ensuring building access for MDUs, and other states are currently investigating the issue. The Ohio Public Utilities Department, in exercising its general jurisdiction over intrastate telecommunications, has prohibited any "person owning, leasing, controlling, or managing a multi-tenant building [to] forbid or unreasonably restrict any occupant, tenant, lessee, of such building from receiving telecommunications services from any provider of its choice." The Public Utility Commission (PUC) of Texas also has issued an enforcement policy implementing state statutory provisions prohibiting property owners from restricting tenants' access to certificated telephone companies. The Connecticut Legislature enacted a law that requires building owners to allow a telecommunications provider to wire the building and provide service



## **WinStar Communications - Position Statement (Continued - 3)**

so long as a tenant requests services from the provider. Finally, the California Public Utilities Commission (PUC) adopted specific rules governing access to poles, ducts, conduits, and rights-of-way, and prohibiting telecommunications carriers from entering into exclusive or discriminatory access arrangements with building and other private property owners. These state commissions and others have recognized that without regulations requiring property owners to allow CLECs access to their buildings, consumers will be denied the benefits of telecommunications competition.

### **Affirmative State Action Should Preclude Interference with the Consumer's Access to Competition Telecommunications Alternatives:**

Two entities stand between the tenant wishing to receive the benefits of competitive services and the carrier eager and able to provide such services: the incumbent LEC and/or other utility and the building owner. Many building owners have found that the lack of rules requiring building owners to permit access to their premises creates a windfall in their favor and access by CLECs and alternative video providers as a significant new revenue generating opportunity by presenting CLECs with discriminatory rate treatment or outright rejection. This is not fair to tenants, the intended beneficiaries of the federal Act. Numerous cases of abuse by building owners have been cited by CLECs attempting to gain access to serve tenants. Request for exorbitant access fees creates a deadlock between the competitive carrier and the building owner with the obvious loser being the tenant. Surely, the goals of the federal Act were to increase consumer choice and access to innovative technology, and not to provide property owners with a windfall. Ultimately, absent State action, the deployment of alternative and advanced broadband technology will be left to the whim of each building owner. Building owners must not be permitted to unilaterally mandate a tenant's telecommunications carrier. The choice of a telecommunications carrier belongs to each American as mandated by the federal Act. The State should adopt legislation or regulation to prevent continued abuses and to ensure that Arizona consumers receive the benefits of competition.

If the State intends to bring the promise of local competition to Arizona consumers in the foreseeable future, it must take action to assure that residential tenants in multiple dwelling unit developments and commercial tenants in multi-tenant commercial properties have access to the telecommunications service provider of their choice. The history of the telecommunications industry demonstrates that competition brings about technical advancements that improve the way we live and communicate and that in order to open a market mired in monopoly, regulatory agencies must affirmatively establish fair rules and guidelines to ensure the development and survival of competitors. An excellent example is competition in the long distance industry, where changes in laws and regulations released the long distance industry from the grip of monopoly and resulted in enhanced and ubiquitous long distance service, lower and flat rates, universal access, the development of debit/prepaid calling cards, competitive wireless services, and countless other advancements that benefit consumers.

Today, unequal building access is a primary obstacle to true local competition. Opening the bottleneck requires the State, among other things, to prohibit all exclusive building access arrangements and to mandate access to the last 100 feet. As discussed above, CLECs are effectively prohibited today from serving many MDU tenants that they are technically capable of reaching because of restrictions on building access or inside wire imposed by incumbent LECs, landlords, or both. Herein, we propose a number of concrete steps the State can take immediately to ensure that tenants can obtain service from the carrier of their choice, without interference from property owners or incumbent LECs.

# **WinStar Communications - Position Statement (Continued - 4)**

## **The State must ensure that:**

### **1. Competitive Carriers Have Access to Risers and Rooftops**

The State should act promptly to implement provisions that assure tenants in MDUs can obtain access to the services offered by fixed wireless and wireline carriers over their own facilities. These rules should encompass (1) placement of antennas on MDU rooftops for provisioning of the local loop, (2) access to riser conduits or other pathways connecting the rooftop antenna to the "common block," typically in the basement, at which outside telecommunications facilities are cross-connected to interior wiring, and (3) direct access to the end user where good engineering practices so dictate.

### **2. Exclusive Arrangements are Prohibited**

The State should issue a declaratory ruling prohibiting "preferred provider" and/or exclusive contracts between building owners and incumbent LECs. Such contracts are unlawful and completely contradict the competitive mandate of the federal Act, and must be banned. Section 224(c)(2)(B) of the federal Act directs the state to consider the interests of subscribers of utility services. Exclusive contracts discriminate against other carriers and prevent those subscribers from having access to more advantageous pricing, technology and services. Exclusive contracts between ILECs and building owners have been in use since before the federal Act was passed, and often contain burdensome penalties for canceling the contract. Moreover, in the post-Telecommunications Act environment, LECs have been aggressively using preferred provider and/or exclusive contracts anti-competitively. An incumbent LEC, utility or other carrier with an exclusive contract to serve an MDU has a captive audience and little or no incentive to provide competitive, advanced services. Exclusive contracts are contrary to the public interest and to the goals of the 1996 Act, and the State should expressly declare them unlawful and prohibit any party from attempting to enforce any such agreement.

### **3. The Demarcation Point is Established to Eliminate Incumbent LEC Abuse and to Facilitate Technical Access to End Users**

Incumbent LECs continue to maintain their strong hold on MDUs by making access difficult or impossible for competitive carriers who have been asked by tenants to provide their service within a multiple tenant building. State rules should require incumbent LECs to reconfigure MDU wiring to establish a single demarcation point at the minimum point of entry (MPOE), which should typically be the closest practical point to where the telephone company's wire crosses the property line, within a prescribed maximum provisioning time frame. Such reconfiguration will also enable competitive carriers to efficiently connect their equipment to the inside wiring via a cross connection at the network interface device (NID).

A clear and concise placement of a single demarcation point at the minimum point of entry in every MDU would facilitate the existence and growth of true end-to-end facilities-based competition. A single demarcation point would ensure that all carriers, incumbent LEC and CLECs, understand the characteristics of an multiple tenant building. A single demarcation point would also stop incumbent LEC actions from thwarting CLEC attempts to interconnect at the NID. Furthermore, such a configuration should assist all carriers in technically connecting individuals in an MDU. Without access to the inside wiring that connects the carrier to the customer, CLECs will never be true end-to-end competitors unless they are willing to and capable of undertaking the extraordinary expense and burden of rewiring every building they wish to serve. Moreover, if more than one CLEC wishes to provide its own local loop to a given building, multiple, duplicative rewiring of the entire building has to occur, as is frequently the case today. This outcome is not desirable for the new entrant nor for the

## **WinStar Communications - Position Statement (Continued - 5)**

property owner, and is economically wasteful. Establishment of a single demarcation point at the minimum point of entry for all MDUs would be consistent with the goals of the federal Act by facilitating competitive access to individual consumers in an MDU and ensuring the existence of true end-to-end alternative providers.

### **4. ILEC-Owned Facilities within MDUs are "Network Elements"**

Section 251(c)(3) of the federal Act requires incumbent LECs to offer "nondiscriminatory access to network elements on an unbundled basis" to competitive providers. The purpose of this requirement is to "permit new entrants to offer competing local services by purchasing from incumbents, at cost-based prices, access to elements which they do not already possess . . ." This purpose is being frustrated by incumbent LECs' refusal to offer access to facilities within MDUs on a meaningful, unbundled basis. CLECs cannot serve individual tenants without access to the house and riser cables owned by the incumbent LEC, even if the CLEC can provide its own facilities up to the entrance of the building.

As noted above, the incumbent LEC typically owns and operates a variety of facilities within an MDU used to distribute telecommunications services to tenants within the building. Depending on the age of the building and the practices of the particular incumbent LEC, some of these facilities are on the customer side of the demarcation point. However, these facilities are still owned and maintained by the incumbent LEC on a deregulated basis, and are used to provide telecommunications services to the tenants. These functions therefore fall within the definition of "network element" in Section 3(29) of the federal Act. The State should clearly mandate that all incumbent LEC owned or controlled inside wire, including house riser (both vertical and horizontal), riser conduit, and connector blocks, are immediately available as unbundled elements. At least one state commission has already implemented this level of unbundling, providing a model for other states to emulate. In New York, New York Telephone is required by the New York Public Service Commission to offer house and riser cable in multi-tenant buildings on an unbundled basis. This enables a CLEC to provide its own link to the entrance of a multi-tenant building and to purchase house and riser cable access within the building.

### **5. Non-discriminatory Access is Paramount**

Rules based on the principle of nondiscrimination will encourage competition and reward carriers for quality services, innovate offerings, and competitive rates, rather than rewarding a carrier for getting access. Moreover, the ability of all carriers to obtain nondiscriminatory access will guarantee that tenants have access to their telecommunications carrier of choice. Discriminatory terms, conditions and costs for installation of facilities will result in a de facto choice for tenants and, therefore, discriminatory rules that disadvantage one carrier over another will reduce the choices of available CLECs to tenants. For example, if the rules burden a wireless carrier from gaining reasonable access, then tenants are deprived of choosing a CLEC offering that type of innovative technology and the accompanying advanced services. Furthermore, if the rules permit a building owner to discriminate on compensation, many new entrants without financial resources may be prohibited from accessing the building and, therefore, the tenant is deprived of choosing that CLEC which may offer services that meet that tenant's needs. Therefore, to ensure that tenants realize the significant right to choose a CLEC, the State should design its rules to require access on a fair and nondiscriminatory basis.

Thus, WinStar Communications respectfully requests that ATIC and the State of Arizona adopt the modifications proposed herein to help ensure a robust regional telecommunications marketplace.

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# **Sprint Position Statement**

## **on Access to Multi-Dwelling Units**

### **Issue:**

Gaining access to multi-dwelling units for the provision of competitive telecommunications services is imperative. Issues that must be addressed from a policy perspective include: 1) cost, 2) physical access for the purposes of inspection, testing, installation and repair, 3) demarcation point, 4) exclusivity between building owner and carrier regarding access to the building and the provision of telecommunications service to tenants.

### **Telecom Act Requirements:**

The Telecom Act in Section 253 (a) states that no State or local statute or regulation, or other State or local legal requirement, may prohibit or have the effect of prohibiting the ability of any entity to provide any interstate or intrastate telecommunications service.

### **FCC Rules:**

There are no FCC rules addressing carrier access in multi-dwelling units other than defining the demarcation point 47 CFR Section 68.3.

### **Sprint Position:**

It is Sprint's position that there should be no cost to any carrier for access necessary to inspect, test, install, or repair facilities necessary to provide telecommunications services other than to return the building to its original condition. Nor should the owner of the facilities beyond the demarcation point charge any carrier for the use of existing facilities, e.g. cabling, connecting blocks, etc.

All carriers should be given timely access to all buildings, closets, risers, etc. necessary to inspect, test, install or maintain existing or its own facilities. If a security escort is required by the building owner, the cost of this escort should not be passed on to the carrier.

Sprint believes the demarcation point should be the Minimum Point of Entry (MPOE) as defined in FCC rules 47 CFR Section 68.3.

Exclusive agreements between landlords and telecommunications carriers that restrict access to the premises or the ability to provide telecommunications services to tenants to a single carrier or a select group of carriers that serves to restrict customer choice should be deemed presumptively anti-competitive and prohibited.

# **Arizona Cable Television Association (ACTA)**

## **Position Statement**

The Arizona Cable Telecommunications Association (ACTA) respects the right of private property and property ownership. ACTA also supports and encourages the growth and accessibility of competitive telecommunications services to all residents of Arizona. With that in mind, the members of ACTA encourage public policies that provide access to competitive services to as many Arizona residents as possible, while maintaining appropriate and reasonable protections to property owners that may include providing reasonable and equal compensation for access by telecommunications providers.

Submitted by

**Susan Bitter Smith, Executive Director**

**Arizona Cable Television Association (ACTA)**

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# Cox Communications Phoenix and Tucson

## Position Statement

At the dawn of the new millenium, the Valley of the Sun appears positioned to become the showcase for competition in the telecommunications industry. Many companies, large and small, recognize the attractive market that is Phoenix, a high technology oasis and one of the fastest growing metropolitan areas in the United States. Cox Communications is excited to be a part of this mix, bringing a variety of telecommunications, high-speed Internet access, and cable television services to the residential and business consumers served by its broadband network here. In the future, Cox will complete the necessary upgrades to its Tucson network, so that we can deliver our advanced communications services to the people of southern Arizona.

Our traditional core business and competencies have been in the delivery of television content to cable subscribers. In recent years, Cox has invested hundreds of millions of dollars in our Phoenix and Tucson area networks for upgrades that today enable us to offer digital television, voice telephone service, and fast Internet access to many of our customers. We continue to strive to extend the reach of these new services to all our Arizona customers as soon as possible. We are a new Competitive Local Exchange Carrier (CLEC) ourselves and a recent entrant to the traditional telephony marketplace through our affiliate, Cox Arizona Telcom. Cox remains keenly aware of the difficulties, be they costs, technical, market or regulatory issues, in deploying advanced infrastructure broadly around the region and establishing the necessary connections directly to customers and their premises.

Cox Arizona Telcom has chosen to transform itself into a full service telecommunications provider in this new competitive era and embraces open access for telephone service providers to multitenant businesses and residences, along with the removal of barriers to equal and nondiscriminatory access to customers requesting competitive service offerings. Certainly the property manager or owner must monitor and administer aspects of the underground or rooftop building entry and distribution pathways as a limited and valuable resource. And they should expect appropriate reimbursement for any installation or damage costs as well as fair and reasonable compensation that is consistent with existing arrangements with the ILEC or other CLECs.

But both business and residential consumers must be guaranteed nondiscriminatory access to competitive telecommunications services to the greatest extent practical. Contracts signed in an earlier monopolist telecommunications era should be allowed to be revisited or rebid in today's more open and competitive telecom environment to aid stakeholders otherwise locked into non-competitive long-term agreements. State government should also play a role in clarifying where the Point-of-Demarcation (POD) should be established in order to promote (or at least not impede) local exchange competition. Legislative and regulatory bodies need to act to make multitenant building access equal, nondiscriminatory, and more readily achievable, while encouraging markets to become more orderly and hopefully less contentious and litigious.

Cox Communications is committed to the Arizona market and confident that we can grow and flourish on such a level competitive landscape. Any and all competitors should be able to reach their clients' buildings and install their own communications wiring to reach the tenants' premises on fair, equitable, and nondiscriminatory terms.

Submitted by,

**Ivan Johnson, Vice President for Community Affairs and TeleVideo**

**Cox Communications Phoenix** (<http://www.cox.com/phoenix/>)

**Rodger Dougherty, Director of Public Affairs**

**Cox Communications Tucson** (<http://www.cox.com/tucson/>)

# **Arizonans for Competition in Telephone Service (ACTS)**

## **Position Statement**

The competition for our long distance dollars has been good for business and residential customers alike. We need look no further for proof than the five cent a minute calling offers from companies whose rates were once four and five times that amount.

Unfortunately, despite the best intentions of the Telecommunications Act of 1996, local telephone competition in Arizona is so elusive as to be invisible. US WEST has 99.5% of the telephone customers in its service territory, a monopoly stranglehold by any definition. Those who insist that there is competition are invited to apply the "Yellow Pages Test" suggested by the AARP. Put simply, pick up the Yellow Pages, look under "Telephone Service", and try to order what you have from a competitor. If you can do so, you have competition. If you can't, competition has yet to arrive.

This is especially the case in the residential market, where the monopoly on residential customers is being maintained by US WEST with the active help of Corporation Commissioners Jim Irvin and Carl Kunasek. US WEST residential basic service is \$13.43 a month for most customers. Yet these two commissioners voted to set line charges so high (\$21.98 a month) that competitors would lose \$8.50 every month on every residential customer. The result is a ridiculous scenario in which the wholesale rate is more than 50% higher than the US WEST retail rate.

Senator John McCain was shocked by this, and wrote a letter scolding commissioners for their decision. He noted that the ACC "set the resale discount at 18% for all services, except for residential, which was set at 12%". Senator McCain said the rates set by the Arizona Corporation Commission "for residential resale and unbundled loops differ dramatically from those established by the Federal Communications Commission and by many state commissions." He went on to tell commissioners the rates they set may effectively prevent competitive local telephone service in the state of Arizona. To our great misfortune, Sen. McCain has been absolutely correct.

The US WEST claim that would-be competitors have abandoned residential customers is totally without merit. Many companies have sought authorization to operate in Arizona. Few have followed through, simply because US WEST has received such favorable treatment from the corporation commission. This favorable treatment has resulted in a blockade of the residential market, and a slowdown in the growth of competition in the business market.

Arizona voters must protect their pocketbooks by paying careful attention to the candidates as the campaign for the powerful and important office of corporation commissioner gets under way in the year 2000. To strand residential customers, leaving them as cash cows to be milked by monopolists, is irresponsible public policy. To leave them at the mercy of a company with horrible customer service, when a simple dose of competition could provide such an immediate and effective cure, is worse than irresponsible. Arizonans for Competition in Telephone Service (ACTS) believes informed voters can, and should, put a succession of pro-competition commissioners in office. To do so will improve service and wring the fat out of the excessive charges being paid by US WEST business and residential customers alike.

Sincerely yours,

**Jon Poston, Consumer Coordinator**  
**Arizonans for Competition in Telephone Service (ACTS)**  
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# **United States Telecom Association (USTA)**

## **Summary Comments before the FCC 08/27/99 on Implementation of the Local Competition Provisions of the Telecommunications Act**

The United States Telephone Association (USTA) believes that the FCC should not and cannot mandate access to buildings and rooftops: (1) under Section 224: or (2) as an Unbundled Network Element (UNE). USTA also addresses nondiscriminatory access to facilities controlled by the premises owner and other building access issues.

The FCC is in error in characterizing incumbent local exchange carriers as having bottleneck control over interconnection." In this proceeding, the FCC seeks to address where it is appropriate, and whether it has the requisite jurisdiction to ensure that competitive telecommunications service providers will have reasonable and nondiscriminatory access to rights-of-way, buildings, rooftops, and facilities in multiple tenant environments (MTEs). Commission action to exert jurisdiction over building owners would be inappropriate and unlawful. Further, USTA believes the FCC previously reached the appropriate result when it declared that:

Access to inside wiring through the incumbent LEC's Network Interface Device (NID) does not entitle a competitor to deliver its loop facilities into a building without the permission of the building owner. Similarly, access to an incumbent LEC's NID does not entitle the competitor to the riser and lateral cables between the NID and individual units within the building, which may be owner or controller, for example, by the premises owner.

Section 224 does not give the FCC any authority, explicit or implicit, to exert jurisdiction over building owners. This is in contrast to section 255 of the 1996 Act, which gave the FCC specific and narrow authority to regulate manufacturers of telecommunications equipment or customer premises equipment to enable access by the disabled to the public switched telephone network. USTA believes, the FCC's ancillary or other plenary jurisdiction cannot and should not be asserted in the area of private property rights; and that the FCC lacks subject matter jurisdiction over premise/building owners. Consistently, USTA does not believe the FCC can exercise Title I jurisdiction over a building owner.

FCC Chairman Kennard apparently doesn't believe that section 224 confers sufficient authority on the FCC to treat private access to MTEs through riser cable and inside wire as public right-of-way. Chairman Kennard, publicly acknowledged that the agency does not have the requisite jurisdiction to address competitive telecommunications carrier access to MTEs (See "A New FCC for the 21<sup>st</sup> Century, August 12, 1999). Commissioners Ness, Furchtgott-Roth, and Powell also express concern about exerting jurisdiction over premises owners in this matter.

The American system of private property rights is the hallmark of a democratic and market-driven society. USTA believes the FCC should defer to the U.S. Congress or the states in matters governing private property rights. The FCC should not modify its current approaches to the demarcation point and sub-loop unbundling at the remote terminal or at other points within the incumbent LEC's network. As to whether the FCC rules governing access to cable inside wiring for a multichannel video programming distributor (MVPDs) should be extended so as to afford similar access to providers of telecommunications services and vice versa, the FCC should comprehensively examine convergence issues in another proceeding which is designed to solely focus upon convergence matters. If the FCC determines jurisdiction is appropriate and requires access to conduit or riser cable "owned" or "controlled" by an ILEC, USTA believes the FCC must consistently apply the same requirements it imposes on ILECs to CLECs, including government owned competitive telecommunication systems.



# **Real Access Alliance**

## **"Forced Access" Issue Background**

### **What's the "Forced Access" Issue?**

Forced access proposals at the federal and state levels seek government-mandated access for some telecommunications service providers that would allow them to install their equipment in private buildings at little or no cost. Building access costs are now freely negotiated between individual property owners and telecom providers for installing and maintaining cable, fiber-optic wiring, satellite antennas/dishes and wireless technologies. Under these proposals, a select group of telecommunications providers could be relieved of any obligation to compensate building owners for the use of their private property. These proposals could also undermine the ability of building owners to create or maintain a reliable and secure wiring infrastructure for all tenants.

Those who support these proposals claim that new telecommunications service providers merely want access to buildings on a "nondiscriminatory" basis. In this context, "nondiscriminatory access" is really code for government-mandated and regulated rates of access to private property.

### **What's at Stake?**

First, the ability of building owners to offer tenants the most advanced, cost-effective, quality telecommunications services from among a wide array of telecom providers.

Second, the constitutionally protected rights of property owners.

Third, higher costs for building owners to ensure telecom providers provide reliable, secure services for tenants over the long term.

### **What's Happening Now?**

#### **Federal Communications Commission (FCC):**

On July 7, 1999 the FCC issued a Notice of Proposed Rule Making (99-141) entitled "Promotion of Competitive Networks in Local Telecommunications Markets. " This proposed rulemaking asks for public comment as to whether the FCC should force building owners to provide access to all telecom providers under identical terms and conditions, regardless of the extent or nature of their proposed use of the property. In effect, this proposed rulemaking could force building owners to price building access at government-regulated rates (which are generally defined by what incumbent local exchange carriers [ILECs] currently pay). The notice also considers prohibiting exclusive access contracts between building owners and telecommunications providers. In addition, the FCC seeks comment on the experience of certain states that have already enacted forced access legislation. The comment deadline was August 27, 1999.

## **Real Access Alliance - "Forced Access" Issue Background (Continued - 2)**

### **Congress:**

In the Senate, a bill has been introduced by Senate Appropriations Committee Chairman Ted Stevens (R-AK) known as the Competitive Access to Federal Buildings Act (S. 1301). S. 1301 requires building owners to agree to a number of unprecedented conditions in order to be able to lease to, or renew existing leases with, any federal agency. Specifically, building owners would need to bind themselves contractually - via agreements with any and all telecommunications carriers seeking access or currently providing service to - their building. In those contracts, they must agree to:

commit to set access charges for all telecommunications providers, regardless of their impact on building space or ability to make capital improvements to the buildings, at an amount equal to or less than that charged to ILECs

relinquish their rights to due process - in fact, any recourse at all through the courts - with respect to disputes with any telecommunications company seeking access or currently providing service

allow telecommunications carriers whatever access they deem necessary while the dispute over the terms and conditions of that access is pending

In the House of Representatives, a hearing on building access issues was held on May 13, 1999 by the House Subcommittee on Telecommunications chaired by W. J. "Billy" Tauzin (R-LA). At that hearing, telecommunications service providers maintained that they were unfairly denied access to some private buildings and that at others the terms of access were unreasonable. On September 21, 1999 a companion bill to S. 1301 was introduced (H.R. 2891) and referred to the House Commerce Committee for consideration. A similar measure (H.R. 3487) was introduced on November 18, 1999 and also referred to the House Commerce Committee.

### **State Legislatures:**

Although forced access proposals have been defeated in various state legislatures (including Louisiana, Virginia, Indiana and Iowa), California remains a likely battleground for forced access legislation. Formal consideration of the bill in California (CA AB 651) is not expected until January 2000.

## **Why Should Forced Access Proposals be Rejected?**

### **Competitive telecommunications access is at work in the marketplace.**

An independent survey conducted by Charlton Research in July 1999 reveals that nearly two-thirds (65%) of all requests fielded by building owners and managers from telecommunications companies within the last year regarding potential telecom services either led to approval for building access or to contract negotiations

Standard office lease agreements take an average of 3 months to negotiate, while the terms and conditions of specialized telecommunications access to building infrastructure and rooftops average slightly less than 5 months to negotiate

## **Real Access Alliance - "Forced Access" Issue Background (Continued - 3)**

### **Property owners are operating in the best interests of their tenants.**

Tenants benefit when property owners negotiate contracts for the best possible price and level of service from qualified telecommunications service providers

82% of building owners/managers cite tenant-related reasons (choice, satisfaction, retention) and building marketability as their primary reasons for offering telecom services

Many building owners are already working in partnership with a variety of telecommunications providers to deliver even better, faster and cheaper services to tenants

### **Where access is denied, it's for valid business reasons, such as telecom providers':**

Refusal to meet standard contractual requirements agreed to by a great majority of other providers for building access

Failure to assume liability for the safety and security of the building's infrastructure

No business track record or limited company capitalization

Inability to meet relevant building codes

Insistence on exclusive access rights to a building

"Cherry picking" the most profitable markets while ignoring other, underserved markets

### **Forced building access may be unconstitutional.**

Telecommunications providers want what amounts to a federal subsidy to expand their business — and they want to do it on the backs of building owners

Any FCC action giving telecommunications providers access at non-market rates would amount to an unconstitutional "taking" of private property

(Available online at <http://www.realaccess.org/background.htm>)

# Arizona Consumers Council (ACC)

## Access to Multi-Dwelling Units Position Statement

The hallmark of our market economy is competition. Competition is defined as multiple buyers and multiple sellers seeking to come to agreement for products and services. These agreements should lead to the lowest price consistent with quality products and services.

For residents and businesses of Multi-dwelling units in the telecommunications area it means that providers must have access to multiple tenants. To restrict providers from access to buyers of telecommunications products and services in our fast moving, high-tech economy does a disservice to all participants.

The Telecommunications Act of 1996 mandated enhanced telecommunication products and services at affordable rates for **all**. In the Multi-dwelling market we can't determine the lowest rates for products and services unless there exists a competitive market. If providers are prohibited from offering end use consumers their products and services because of preferential treatment by building owners and managers we will have created monopoly pricing and its consequent, high prices and poor service for these consumers.

The argument that these buildings are private property and therefore owners and/or managers can restrict access to telecommunication companies fails in the face of other utilities providing service to customers in these buildings and to all the laws and ordinances placed upon building owners before certifying that a building is acceptable for habitation. Additionally, in the retail area, an owner of a store can not restrict access to any customer who wishes to enter the establishment, unless their is a violation of health or safety laws. Tenants who are retail customers can not purchase what they want if competitors do not exist.

Of course, building owners should be reasonably compensated if, in fact, there is a definable cost in allowing competitors access to buildings, the wiring system, and the installation of equipment. These companies should return the building to its original condition. This should be on an equal basis for all providers. The playing field must be level for all. This will give all tenants, business and residential, access to the competitive market which hopefully will insure high quality products at low prices for all who take telecommunication services.

Full competition, if and when it comes to residential and small business consumers is still dependent upon actions of US WEST, other incumbent local providers and the conditions the Arizona Corporation Commission (ACC) establishes to enable competitors to enter the market on a level playing field. Up until now local competition has been minimal. Only businesses in core business districts have some access. It has been non-existent in the residential market. Access to Multi-dwelling residential markets may help this situation somewhat. Competition will not occur until the residential market is open to all on an equal basis. If competitors can not obtain access to business and residential dwellings equal to the incumbents, competition will be non-existent. Present regulations and rates are keeping the system in a monopoly setting. The Commissions action of setting an unbundled rate almost twice the unbundled rate discourages any competitor from entering the market to provide local products or services.

# **Arizona Consumers Council (ACC)**

## **Access to Multi-Dwelling Units Position Statement (Continued)**

If owners and managers of Multi-dwelling units are permitted to exercise the same monopoly power by allowing only one supplier access or charging monopoly rents for access, then we will have an anti-competitive situation. The same situation that exists in the local residential and small business market. Only by encouraging and demanding open access will we have a telecommunications system that will benefit **all** segments of our community.

Submitted by

**Dr. Albert Sterman, Vice President**

**Arizona Consumers Council (ACC)**

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# **Arizona Department of Commerce (DOC)**

## **Telecommunications Access and Economic Development**

**SUMMARY: The expansion of the high-bandwidth telecommunications infrastructure in Arizona will aid the economic development of our state.**

**Insufficient telecommunications infrastructure, and the maps showing its existence, can force companies to locate elsewhere.** Starting in 1998, businesses considering expansion or relocation into Arizona began to include “broadband telecommunications access” as an additional factor used in the determination of their new facility’s location.

Many such companies routinely ask Arizona Department of Commerce Business Development Representatives for maps showing the location of fiber optics or US West central offices. Available land or buildings in Arizona offering access to sufficient telecommunications bandwidth then compete with sites in other states and regions. Insufficient access to telecommunications bandwidth by a site meeting all other necessary criteria can then cut that Arizona site from further consideration by the expanding or relocating company.

Though some of the bandwidth-dependent companies are call centers, the recent trend is increasingly software and Internet companies, as well as defense contractors. A large number of “dot coms” have chosen to locate in either the Scottsdale Airpark, Kierland (Phoenix), or downtown Phoenix due to the presence of fiber in the ground. There has also been an increase in requests for a choice of telecommunications providers. The more telecommunications choices available to these companies, the happier they are – not only choices between different providers in different locations, but a choice of providers at the same building. We can safely say that having more buildings in Arizona, that offer a choice of telecommunications providers to their tenants, the more attractive Arizona is to such companies. Having a large number of such buildings in Arizona can only benefit our economic development efforts to increase the number of high technology jobs, and specifically information technology jobs, in Arizona.

Submitted by

**Brad Trittle, Manager High Technology Business Development** (E-mail: [bradt@azcommerce.com](mailto:bradt@azcommerce.com))  
**and Sandra Watson, Director of Business Development** (E-mail: [sandraw@azcommerce.com](mailto:sandraw@azcommerce.com))  
**Arizona Department of Commerce (DOC)** (<http://www.commerce.state.az.us/>)

# Arizona Telemedicine Program (ATP)

## University of Arizona (U of A) Health Sciences Center

### Position Statement

The Arizona Telemedicine Program (ATP) utilizes telecommunications services from a number of carriers to support the delivery of telemedicine based clinical services and continuing medical education to medically underserved populations in rural Arizona. ATP operates the Arizona Rural Telemedicine Network (ARTN) which links urban and rural healthcare facilities and supports the provision of telemedicine services to several correctional facilities in the state. The ARTN interconnects with other telemedicine networks in the state and links 38 sites involving 32 separate organizations in 22 communities in Arizona. Last December, the ATP was one of two telemedicine programs in Arizona named among the "Top Ten" in the country. In building this network over the last four years we have gained a great deal of experience with telecommunications providers in both rural and urban settings. Our experience has not been entirely pleasant and it teaches us that the concept of telecommunications competition in Arizona remains just that - a concept. It is certainly not a reality. We have designed the topology of our network specifically to be able to take advantage of competition, yet continue to find our choices limited to a single provider in most areas of the state. This factor is detrimental to the cost-effective deployment of telemedicine and other information based services.

Our program, along with our partners, has demonstrated a strong business case for the use of telemedicine, especially for correctional settings and mental health. We have also documented significant cost benefits for the delivery of continuing medical education to rural health professionals. We envision a statewide, ubiquitous infrastructure linking all healthcare and health education providers in the state. We refer to this vision as "*eHealth@Arizona*". We believe that using *eHealth* we can reverse the abandonment of rural communities by HMO's, improve the access to specialty care and open up competition for healthcare services by eliminating geographical distance as a factor. Currently, one of the greatest obstacles to the realization of such a vision is the high cost and lack of availability of broadband telecommunications services capable of supporting diagnostic quality telehealth interactions. Policies that enhance competition and drive down the cost of such telecommunications services will benefit all the residents of Arizona.

Submitted by

**Kevin M. McNeill, Ph.D., Associate Director of Network Architecture**

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# **City of Scottsdale, Arizona**

## **Local Government Perspective on Multitenant Building Access**

The City of Scottsdale supports competitive access to multitenant buildings. As a licensor of cable TV, telecommunications, and fiber optics providers, we are involved in the location, placement, timing, and provision of these services in the best interest of our citizens and businesses.

The City of Scottsdale is committed to becoming a Smart Community by embracing and encouraging new technologies and digital services. The way to achieve that goal is to ensure that all of our citizens and businesses have equal access to the latest technologies available, thus enabling them to benefit from the choices available in a deregulated, competitive cable and telecommunications environment.

The licensed cable TV companies in Scottsdale (currently Cox Communications and US WEST) are mandated, through their cable TV licenses, to broadcast two public channels for education and government purposes. Satellite and satellite master antenna television (SMATV) providers that often serve multitenant buildings don't have the same local licensing obligations to carry local public channels, and therefore, many of our citizens and businesses don't have the capability to tune into local, community programming. In many cases, residents and tenants in multitenant facilities in Scottsdale don't have the option to watch city council and school board meetings, or to take advantage of distance learning offered over public television channels because they don't have the ability to choose their own cable or telecommunications provider.

Both Cox Communications and US WEST are currently in the process of upgrading their infrastructure to provide digital voice, video and data services to the residents and businesses of Scottsdale. Although these new digitally enhanced services will be available throughout the entire city geographically, they won't be equally available to the citizens and businesses in multitenant buildings that don't allow or provide for open access. Competition, open, and universal access is what's best for the citizens and businesses of Scottsdale.

Submitted by

**Jamie Oman-Saltmarsh, Telecommunications Policy Coordinator**

**City of Scottsdale, Arizona**

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# **Quodras Corporation**

## **Business Tenant View**

Since commercial buildings are private property, and since the status of the telecommunications facilities are subject to negotiation between tenant and landlord, we fail to see why the Arizona Legislature or the ACC has any standing at all. And, if one looks at the manifold failures of such regulation, one must wonder what any sane business person would expect from such intrusion into private business matters.

We suggest leaving the market alone, and not protecting any provider to the advantage of any other, then allow landlords to behave foolishly if they choose to. They won't do it for long in a free market.

Submitted by

**Will McLain, President, Quodras Corporation (Phoenix, AZ)**

(Note: <http://www.quodras.com/>; Will McLain is a former ATIC Board member)

# **Insignia/ESG Inc.**

## **Commercial Real Estate Views**

The issue of telecommunications access has recently become very high profile and important to our clients, both building owners and tenants. Clients find themselves in a wide variety of situations related to telecommunications access. We are aware building owners who have negotiated lucrative revenue sharing and stock participation agreements for telecommunications access to their properties, and other owners who are in serious disputes, sometimes legal, with tenants and telecommunications providers for access to their properties. We feel strongly that regulation of telecommunications access will ultimately hurt all involved parties. Free market competition will result in equitable agreements for telecommunications access between all parties; there certainly is no shortage of competition currently in the market. It would seem counterproductive to reverse a long trend towards deregulation, when consumers, businesses, and providers are benefiting. We feel that the current discrepancies and confusion in the marketplace is temporary, and will resolve itself as owners, tenants, and telecommunications providers become more educated about the issues effecting their interests.

In addition, we feel there is a strong need for physical maps showing the location of telecommunication networks. As we experience a rapid shift from an industrial-based economy to an information-based economy, the location of these networks will become increasingly important to real estate owners, developers, and tenants. Real estate has always been heavily dependent on access to facilities that were critical to the real estate users. This could have been rail service early in the century, freeway transportation and airports late in the century, or telecommunications access today. Publication of these network maps will assist real estate owners, developers, and tenants in making location decisions that will positively impact communities where they are located.

Submitted by,

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(Note: Insignia/ESG Inc. (<http://www.iesg.com/>) is the largest commercial management firm in the state and one of the largest worldwide)

# **Grubb & Ellis Company**

## **Commercial Real Estate Views**

Probably the most intriguing development we have witnessed in the commercial real estate field is the emergence of a new set of rules triggered by the increasing need for bandwidth and fiber capabilities. In the past the most important determining factor for tenants vacillated between location and cost per square foot. The old idiom of "location, location, location" was seen over and over again to be true as companies sought to find new or additional locations for their office or warehouse facilities.

Within the past 18 months, however, we have seen a real transformation in stipulations for new facilities from an owner/user perspective. The new paradigm seems to be "*location, bandwidth, location.*" What is being touted now as the primary determinant is no longer the actual location itself, but rather the bandwidth capability of that site. Once a company verifies that the sites or buildings in question meet their required specifications, they then move on to determining which location they prefer. This has caused a ripple effect forcing building owners, developers, investors, property managers, and brokers to respond or get left behind.

Comprehensive maps of both existing and future fiber routes would be immensely beneficial if somehow the issue of trade secret confidentiality could be successfully overcome. At this point, it seems that no one is quite sure of what is available where; and the maps that are available are either outdated or incomplete. As companies strive to determine where they will be able to accommodate their intensive bandwidth requirements, this information would be worth its weight in gold."

Submitted by,

**Jonathan A. Keyser, Senior Associate, High Tech Advisory Group**

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(Note: Grubb & Ellis Company (<http://www.grubb-ellis.com/>) is one of the largest and most respected full service commercial real estate firms in the world. Their high technology group specializes in working with technology & Internet related companies, helping them to deal proactively with their facilities as they grow and expand.)

***"Location, Bandwidth, Location."***

**Arizona Telecommunications and Information Council (ATIC)**  
**Multitenant Building Telecommunications Access Study**  
**Appendix 5 - Excerpts from Selected Resource Documents**

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# **Federal Communications Commission (FCC) Outlook**

Looking forward to 1999, the challenge before this Commission is clear: to promote competition, to foster new technologies, to protect consumers, and to ensure that all Americans have access to the wonders of the communications revolution. These goals are the will of the American people and of Congress, set forth in the Telecommunications Act of 1996. And we at the FCC will continue to work hard to bring these benefits to every American.

William Kennard, Chairman, Federal Communications Commission, January 1999

## **Chairman Kennard's Agenda for the FCC for 1999:**

### **Promote Competition**

*We will promote competition throughout the communications marketplace.*

- Ensure all communications markets are open.
- Reform access charges mechanisms to promote the development of competition and preserve affordable rates.
- Scrutinize merger proposals to ensure that they are pro-competitive and benefit consumers.
- Allow the Regional Bell Operating Companies into the long-distance market when they have opened their own local markets to competition, as required by law.
- Promote competition and choice in the video marketplace.
- Promote alternatives to wire line technology in the local telephone market.

### **Deregulate As Competition Develops**

*We will adapt the Commission, its rules, and procedures to the competitive future.*

- Aggressively continue our efforts to eliminate any unnecessary regulatory burdens.
- Reduce burden of reporting and accounting requirements where no longer necessary to further the public interest.
- Allow access pricing flexibility where competition has developed.
- Streamline rules for the certification of telephones and other equipment.
- Streamline our internal functioning so that we can issue licenses faster, resolve complaints quicker, and be more responsive to the competitors and consumers in the marketplace.

### **Protect Consumers**

*We will protect customers from unscrupulous competitors, and give customers the information they need to make wise choices in a robust and competitive marketplace.*

- Ensure consumer bills are truthful, clear and understandable.
- Show zero tolerance for perpetrators of consumer fraud such as slamming and cramming.
- Simplify the process for consumers to file complaints by phone or over the Internet.
- Cut our complaint resolution time in half.
- Remain vigilant in protecting customer privacy.

# **Chairman Kennard's Agenda for the FCC for 1999 (Continued)**

## **Ensure Broad Access to Communications Services and Technology**

*We will ensure that all Americans -- no matter where they live, what they look like, what their age, or what special needs they have -- have access to new technologies to take advantage of the enormous opportunity created by the communications revolution.*

- Complete Universal Service Reform to ensure affordable, available communications services nationwide.
- Ensure that the 54 million Americans with disabilities can use and have access to the communications network.
- Encourage the accessibility of emergency information via closed-captioning and video description.
- Assure reliable wireless compatibility with E911.
- Continue oversight of the Schools and Libraries and Rural Health Care universal service programs to ensure their efficient operation.
- Preserve free, over-the-air broadcast services and ensure satellite coverage in underserved areas.
- Open low-power radio frequencies for local use.
- Promote the participation of people of all backgrounds in broadcasting and other communications media.

## **Foster Innovation**

*We will work to ensure that America remains the world's leader in innovation.*

- Promote the development and deployment of high-speed Internet connections to all Americans.
- Promote compatibility of digital video technologies with existing equipment and services.
- Promote competitive alternatives to cable and broadcast TV.
- Clear regulatory hurdles so that innovations, and markets for them, can flourish.

## **Advance Competitive Goals Worldwide**

*We will serve as an example and advocate of telecommunications competition worldwide.*

- Encourage the development of international standards for global interconnectivity.
- Promote fair spectrum use through the WRC 2000.
- Aggressively work for the worldwide adoption of the WTO Agreement of Basic Telecommunications.
- Assist other nations in establishing conditions for deregulation, competition, and increased private investment in their telecommunications infrastructure so that they can share in the promise of the Information Age and become our trading partners.

# **United States Congress**

## **Internet Caucus Advisory Committee**

### **Broadband Overview**

As the Internet moves into the 21st Century, it is beginning to undergo a dramatic transformation from a predominantly "narrowband" world of dial-up modems and slow connections, to a high-speed "broadband" world using an emerging array of new technologies. Although today many corporations and educational institutions access the Internet through fast dedicated phone lines, the Internet has become the dynamic and democratic medium that it is through widely-available and competitive dial-up connections provided by thousand of Internet Service Providers around the country.

At least four technologies are emerging as broadband alternatives to the dial-up modems. Operators of cable television systems have undertaken major overhauls of their coax-cable networks to enable the use of high-speed cable modems. Local telephone companies are rolling out the Digital Subscriber Line (DSL) technology that allows the transmission of high-speed digital data over ordinary copper telephone wires. Although less developed than cable modem or DSL service, terrestrial wireless and satellite technologies also offer the potential for high-speed Internet access.

A number of legal and policy debates are swirling around the emergence of broadband technologies and the transformation of the Internet to a high-speed medium. Foremost among the issues is the contention by some market participants and advocacy groups that some governmental action is necessary to force cable operators to allow more than one Internet Service Provider (ISP) to offer Internet services over each cable network. Proponents of governmental action contend, among other points, that consumers and vibrancy of the Internet itself would be harmed if one or two ISPs can dominate the provision of Internet service over cable networks. Cable operators and other opponents of governmental action contend, among other points, that there are financial and technological reasons why the cable companies cannot connect to multiple ISPs, and that in any event sufficient competition is provided by other advanced services such as DSL technology.

A separate, but related, issue is how widely access to broadband services will be available. Some are concerned that the broadband market may not reach into inner city or rural locales. Moreover, certain of the broadband technologies have technical constraints that may prevent their wide deployment in rural communities. The Internet has been hailed by the Supreme Court as a uniquely democratic medium, and some assert that urban and rural communities might be left behind as the Internet moves to broadband.

(<http://www.netcaucus.org/issues/broadbandoverview.html>)

# U.S. Senate Committee on Commerce, Science, and Transportation

## Letter from Senator John McCain, Chairman, to the Arizona Corporation Commissioners, January 16, 1998

Dear (Arizona Corporation) Commissioners,

I am very concerned about the local rates established by the Arizona Corporation Commission (ACC) on Thursday, January 8, 1998, for local telephone resale and access to unbundled local loops. (See) **US WEST Rivals Drop Out, *The Arizona Republic***, Friday, January 9, 1998, (Section) A1. The resale discount appears so low, and the unbundled local loop rate so high, that they may effectively prevent competitive local telephone service in the State of Arizona.

The ACC set the resale discount at 18% for all services, except for residential, which was set at 12%. The unbundled loop rate was set at approximately \$22.65. The rates for residential resale and unbundled loops differ dramatically from those established by the Federal Communications Commission (FCC) and by many state commissions.

The FCC set the unbundled loop benchmark rate for Arizona at \$12.85 and established a discount range of between 17-25% for resale service. The New York PUC set the deaveraged interim unbundled rate at between \$12.29 and \$19.24 and established the resale discount at between 19.1% and 21.7%. The Texas PUC established an unbundled loop rate of \$14.15 and a resale discount for all services of 21.64%. Minnesota and Oregon, two states served by US WEST, have established interim loop rates of \$12.03 and \$17.20, respectively, and interim resale discounts of 21.50% and 21.00%, respectively.

Naturally, these prices will vary from state to state, because the incumbent telephone company's costs vary, and therefore one state's rates cannot definitively show what another state's rates should be. Nevertheless, the unbundled loop rates established by the FCC and by (other) state commissions are substantially lower and the resale discounts are substantially higher, than the rates and discounts established by the ACC. I am therefore concerned that the cost methodology and the assumptions made in Arizona will result in harming consumers by strangling competition before it can begin.

As you are aware, I have long supported giving state commissions greater authority to set rates, terms, and conditions for competitive entry into local telecommunications markets. I do believe, however, that state commissions must work to create an environment that promotes competition. Because the rates established by the ACC are dramatically out of line with those of the FCC and other states, it raises concern that the residents of Arizona may not see the benefits of local competition in the near future. Major potential competitors such as AT&T and MCI have already announced that they cannot hope to enter the local market in Arizona given the relatively high unbundled loop rate and the low resale discount for residential service.

I hope that the ACC will consider these concerns in its further efforts to promote competition

Sincerely,  
John McCain, Chairman

cc: Wayne Alcott, US WEST Vice President for Arizona

# **National Association of Regulatory Utility Commissioners (NARUC)**

## **Resolution Regarding Nondiscriminatory Access to Buildings for Telecommunications Carriers**

WHEREAS, Historically, local telephone service was provided by only one carrier in any given region; and

WHEREAS, In the historic one-carrier environment, owners of multi-unit buildings typically needed the local telephone company to provide telephone service throughout their buildings; and

WHEREAS, Historically, owners of multi-unit buildings granted the one local telephone company access to their buildings for the purpose of installing and maintaining facilities for the provision of local telephone service; and

WHEREAS, Competitive facilities-based providers of telecommunications services offer substantial benefits for consumers; and

WHEREAS, In order to serve tenants in multi-unit buildings, competitive facilities-based providers of telecommunications services require access to internal building facilities such as inside wiring, riser cables, telephone closets, and rooftops; and

WHEREAS, Facilities-based competitive local exchange carriers, including wireline and fixed wireless providers, have reported concerns regarding their ability to obtain access to multi-unit buildings at nondiscriminatory terms, conditions, and rates that would enable consumers within those buildings to enjoy many of the benefits of telecommunications competition that would otherwise be available; and

WHEREAS, All States and Territories, as well as the Federal Government, have embraced competition in the provision of local exchange and other telecommunications services as the preferred communications policy; and

WHEREAS, Connecticut, Ohio, and Texas already utilize statutes and rules that prohibit building owners from denying tenants in multi-unit buildings access to their telecommunications carrier of choice; and

WHEREAS, The President of NARUC testified before the Senate Judiciary Committee's Subcommittee on Antitrust, Business Rights, and Competition that "[f]or competition to develop, competitors have to have equal access. They have to be able to reach their customers and building access is one of the things that state commissions are looking at all across the country."; and

WHEREAS, The attributes of incumbent carriers such as free and easy building access should not determine the relative competitive positions of telecommunications carriers; and

WHEREAS, The property rights of building owners must be honored without fostering discrimination and unequal access; now, therefore, be it



## **NARUC Resolution Regarding Nondiscriminatory Access to Buildings for Telecommunications Carriers (Continued)**

RESOLVED, That the Executive Committee of the National Association of Regulatory Utility Commissioners (NARUC), convened at its 1998 Summer Meetings in Seattle, Washington, urges State and Territory regulators to closely evaluate the building access issues in their states and territories, because successful resolution of these issues is important to the development of local telecommunications competition; and be it further

RESOLVED, That the NARUC supports legislative and regulatory policies that allow customers to have a choice of access to properly certificated telecommunications service providers in multi-tenant buildings; and be it further

RESOLVED, That the NARUC supports legislative and regulatory policies that will allow all telecommunications service providers to access, at fair, nondiscriminatory and reasonable terms and conditions, public and private property in order to serve a customer that has requested service of the provider.

Sponsored by the Committee on Communications, Adopted July 29, 1998

(<http://63.67.198.182/Resolutions/summer98.htm>)

# National Association of Regulatory Utility Commissioners (NARUC)

## A Compilation of “Best Practices” to Implement the Telecommunications Act of 1996, 04/99 (NRRI 99-07)

**Submitted by:** David Turetsky, Vice President, Law and Regulatory,  
Teligent, Inc., Phone: (703) 762-5230

**Users:** Regulators

**Application:** Market entry

### Carrier Access to Office and Apartment Buildings

#### **Description:**

Tenants in multi-tenant environments (*i.e.*, office and apartment buildings) must be able to take telecommunications service from their carrier of choice. To this end, telecommunications carrier access to tenants in multi-tenant environments must be afforded by building owners and landlords on a reasonable and nondiscriminatory basis.

#### **Originator of Idea:**

The idea got started as a state statute (Section 54.259 and 54.260 of the PURA) and was implemented in a very pro-competitive manner by the Public Utilities Commission. Connecticut has adopted a similar statute; Ohio has accomplished a similar result through Commission decision; and NARUC adopted a similar resolution at its summer 1998 meeting. Simply put, building owners and managers may not exclude a telecommunications carrier from installing equipment and offering service within their buildings when a tenant seeks service from that carrier. Building owners/managers may not demand or accept unreasonable payment of any kind from the tenant or the telecommunications carrier. The building owner may impose certain conditions reasonably necessary to protect the safety, security, appearance and condition of the property and the safety and convenience of other persons (as well as the time at which a carrier may access the property). Moreover, if a building owner can demonstrate a space constraint, a limitation may be placed on the number of carriers permitted in the building. Recognizing that the building access market does not operate as a free market, the Legislature and the Texas PUC require that compensation to the landlord be reasonable and nondiscriminatory. That is, the same costs, methodology, and rates must be assessed on all carriers given access to the building. Exclusive access contracts are prohibited. However, existing service and compensation arrangements may remain in place until a second carrier invokes the nondiscrimination requirement, at which point the second carrier either receives the same terms as the incumbent, or the terms of the incumbent's arrangement must be altered to mirror those of the second carrier.

**Has It Been Implemented?** Yes.

#### **Why Is It an Improvement?**

This practice prevents building owners and landlords from refusing access altogether. It also facilitates negotiations between telecommunications carriers and building owners/managers by establishing reasonable parameters within which access negotiations must occur.

## **NARUC Compilation of “Best Practices” to Implement the Telecom Act of 1996 (Continued)**

### **Transferability:**

The practice is quite transferable to others. Indeed, Connecticut has a similar statute that has been equally effective. The Public Utilities Commission of Ohio accomplished a similar result without legislation and the California Public Utilities Commission has done the same.

### **Next Steps:**

Teligent suggests that public utility commissions recommend access statutes to their legislatures and consider the pro-competitive ways in which states such as Texas have implemented those statutes. In the absence of legislation, public utility commissions should explore the means by which Ohio and California have accomplished their objectives through regulatory action alone.

(<http://www.nrri.ohio-state.edu/download/9907.pdf>)

## **Demarcation Point for Multi-Unit Buildings**

### **Description:**

The demarcation point for all multi-unit buildings (commercial and residential, regardless of when internal wiring was installed) should be relocated to the minimum point of entry (MPOE), as defined in Section 68.3(b)(2) of the FCC's rules.

### **Originator of Idea:**

The FCC developed these rules in a 1990 Order, although FCC rules distinguish between pre-1990 buildings and post-1990 buildings (in any event, the demarcation point is established at the MPOE in all instances at the request of the building owner). California was a pioneer state in adopting the FCC's rules for itself and implementing them in a manner designed to foster competition through transferring ownership and responsibility for certain telephone cable and inside wire to property owners and allowing for accelerated depreciation to accomplish the same.

### **Why Is It an Improvement?**

The relocation of the demarcation point to the MPOE permits all telecommunications carriers -- ILECs and CLECs alike -- to connect with the facilities of the building at the same location. As a result, ILEC control over the in-building network cannot be employed to impair competition and extract the related benefits from consumers. Moreover, this equalizes costs for all carriers and avoids giving one carrier (*i.e.*, the ILEC) control over facilities that must be used by other carriers in order to reach end users in a multi-unit building. Moreover, it minimizes the disruption to building owners and tenants caused by the construction of multiple end runs within a building.

### **Transferability:**

The technical and practical feasibility of relocating the demarcation point is not in question; this practice is highly transferable to others. States such as California have long designated the MPOE as the inside wire demarcation point. Indeed, the FCC has already established relevant rules. Reference to the FCC Orders will guide state commissions in defining their demarcation.

(<http://www.nrri.ohio-state.edu/download/9907.pdf>)

# **Pending Legislation in the 106th U.S. Congress**

## **H. R. 3487 - Competitive Broadband Telecommunications Rooftop Access Act**

**In the House of Representatives, November 18, 1999:**

To provide consumers in multitenant buildings with the benefits of competition among providers of telecommunications services by ensuring reasonable and nondiscriminatory access to rooftops of multitenant buildings by competitive telecommunications carriers, and promote the development of fixed wireless, local telephony, and broadband infrastructure, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

### **SECTION 1. SHORT TITLE.**

This Act may be cited as the `Competitive Broadband Telecommunications Rooftop Access Act'.

### **SEC. 2. ACCESS TO ROOFTOPS OF MULTITENANT BUILDINGS FOR COMPETITIVE TELECOMMUNICATIONS SERVICES.**

Part I of title III of the Communications Act of 1934 (47 U.S.C. 301 et seq.) is amended by adding at the end the following new section:

### **`SEC. 338. ACCESS TO ROOFTOPS OF MULTITENANT BUILDINGS FOR COMPETITIVE TELECOMMUNICATIONS SERVICES.**

`(a) REQUIREMENT OF OWNERS TO PERMIT ACCESS-

`(1) ACCESS REQUIRED - Within 15 days of a telecommunications carrier request, the owner of an occupied multitenant building shall permit a telecommunications carrier reasonable, standardized, and nondiscriminatory access--

`(A) to install, maintain, and operate--

`(i) telecommunications transmission and reception antennas on top of a multitenant building; and

`(ii) related receiver equipment in mechanical rooms or closets; and

`(B) to vertical and horizontal building risers, in the manner necessary to provide telecommunications service or information service to a tenant or tenants in the occupied multitenant building.

`(2) NONDISCRIMINATORY CONDITIONS FOR ACCESS - An owner is required to permit a telecommunications carrier access under paragraph (1) only if--

`(A) a tenant in the occupied multitenant building requests services from that telecommunications carrier;

`(B) the cost of the installation of facilities is assumed by such telecommunications carrier;

## **H. R. 3487 - Competitive Broadband Telecom Rooftop Access Act (Continued - 2)**

- `(C) the telecommunications carrier agrees to indemnify the owner of the multitenant building for any damages caused by the installation or operation of such facilities and agrees not to hold the owner liable for any such damages;
  - `(D) the telecommunications carrier agrees to comply with all rules of the Commission and the State in which the multitenant building is located relating to such installation;
  - `(E) the telecommunications carrier has obtained a Federal or State certificate of public convenience and necessity for the provision of facilities-based services;
  - `(F) transmission antennae for which rooftop space is required are one meter or less in diameter; and
  - `(G) it is not technically infeasible for the owner of the multitenant building to provide space for the additional telecommunications carrier, but in any event not more than six separate systems.
- `(3) PERMISSIBLE CONDITIONS OF INSTALLATION - In the case of any access described in paragraph (1), the owner of an occupied multitenant building may--
  - `(A) reasonably and in a standardized, nondiscriminatory manner restrict the times during which installation may occur; and
  - `(B) impose reasonable, standardized, nondiscriminatory conditions on telecommunications carriers reasonably necessary to preserve the safety, security, and condition of the multitenant building and its tenants.
- `(b) LIMITATION ON COMPENSATION FOR ACCESS - The owner of an occupied multitenant building may not--
  - `(1) demand or accept payment or any thing of value, except as provided in subsection (c), for permitting a telecommunications carrier to have access described in subsection (a)(1) to the occupied multitenant building; or
  - `(2) discriminate against or otherwise penalize any tenant of the occupied multitenant building in the rental charges or provision of any services the owner provides or controls to such tenant because of the receipt by the tenant, or failure to receive, telecommunications services from any particular telecommunications carrier.
- `(c) COMPENSATION-
  - `(1) OWNERS MAY RECEIVE JUST COMPENSATION - The owner of an occupied multitenant building may demand and receive just compensation from a telecommunications carrier for the access necessary to permit the installation, operation, and maintenance of facilities and equipment described in subsection (a)(1). Such compensation shall be reasonable and shall be assessed in a nondiscriminatory manner.

## **H. R. 3487 - Competitive Broadband Telecom Rooftop Access Act (Continued - 3)**

- `(2) REGULATIONS REQUIRED - Within 180 days after the enactment of the Competitive Broadband Telecommunications Rooftop Access Act, the Commission shall promulgate regulations for determining the level of just compensation owed to an owner of an occupied multitenant building by a telecommunications carrier for the access described in subsection (a)(1) to be used in the event that such owner and telecommunications carrier are unable to mutually agree within 15 days upon the amount of just compensation. The final rule shall be made effective within 210 days after such date of enactment.
- `(3) FACILITIES INSTALLATION PENDING RESOLUTION OF COMPENSATION DISPUTE - Notwithstanding any other provision of law, the rules promulgated pursuant to paragraph (2) shall permit a telecommunications carrier to install, on the rooftop of any occupied multitenant building, facilities pursuant to subsection (a)(1) pending the resolution of any dispute regarding just compensation for any taking of property related to the installation.
- `(d) CIVIL PENALTIES - After issuance by the Commission of notice to any person that the Commission has determined that such person has failed to comply with any provision of subsection (a), (b), or (c), such person shall be liable for a forfeiture penalty under section 503 in the amount of \$1,000 for each violation or each day of a continuing violation.
- `(e) DEFINITIONS - For purposes of this section, the following definitions shall apply:
- `(1) JUST COMPENSATION - The term `just compensation' means reasonable fees that are based on the commercial rental value of the space actually used by the telecommunications carrier and that do not discriminate among State-certified telecommunications carriers. Rates paid for space primarily used to provide telecommunications services to those outside the occupied multitenant building shall not be considered in calculating commercial rental value of the space used by the telecommunications carrier.
- `(2) OCCUPIED MULTITENANT BUILDING- The term `occupied multitenant building' means a structure or part of a structure that is rented, leased, hired out, arranged or designed to be occupied, or is occupied--
- `(A) as a residence of ten or more families or individual persons living in separate dwelling units;
- `(B) as a place of business of three or more persons, firms, partnerships, associations, corporations, or other entities conducting business independently of each other; or
- `(C) by any combination of three or more such families, individual persons, firms, partnerships, associations, corporations, or entities.
- Such term includes office buildings, apartment buildings, condominiums, mixed-use buildings, and hospitals.
- `(3) OWNER - The term `owner' means, with respect to an occupied multitenant building, the owner or owners, the owners' agent, assign, or successor in interest, or the lessor.
- `(4) TENANT - The term `tenant' means, with respect to an occupied multitenant building, any person or entity having a legal right to occupy the building (or portion of a unit thereof).'

**(Link to the Bill Summary & Status - <http://thomas.loc.gov/cgi-bin/bdquery/z?d106:h.r.03487:> )**

# **Connecticut - Substitute House Bill No. 5421**

## **Public Act No. 94-106**

An act concerning occupied buildings and access to telecommunications providers, and wiring of multiunit residential buildings for community antenna television service.

Section 1. (NEW)

(a) As used in this section:

(1) "Occupied building" means a building or a part of a building which is rented, leased, hired out, arranged or designed to be occupied, or is occupied

(A) as the home or residence of three or more families living independently of each other,

(B) as the place of business of three or more persons, firms or corporations conducting business independently of each other, or

(C) by any combination of such families and such persons, firms or corporations totaling three or more, and includes trailer parks, mobile manufactured home parks, nursing homes, hospitals and condominium associations.

(2) "Telecommunications provider" means a person, firm or corporation certified to provide intrastate telecommunications services pursuant to sections 16-247f to 16-247h, inclusive, of the general statutes, as amended by sections 4 to 6, inclusive, of public act 93-330.

(b) No owner of an occupied building shall demand or accept payment, in any form, except as provided in subsection (f) of this section, in exchange for permitting a telecommunications provider on or within his property or premises, or discriminate in rental charges or the provision of service between tenants who receive such service and those who do not, or those who receive such service from different providers, provided such owner shall not be required to bear any cost for the installation or provision of such service.

(c) An owner of an occupied building shall permit wiring to provide telecommunications service by a telecommunications provider in such building provided: (1) A tenant of such building requests services from that telecommunications provider; (2) the entire cost of such wiring is assumed by that telecommunications provider; (3) the telecommunications provider indemnifies and holds harmless the owner for any damages caused by such wiring; and (4) the telecommunications provider complies with all rules and regulations of the department of public utility control pertaining to such wiring. The department shall adopt regulations, in accordance with the provisions of chapter 54, which shall set forth terms which may be included, and terms which shall not be included, in any contract to be entered into by an owner of an occupied building and a telecommunications provider concerning such wiring. No telecommunications provider shall present to an owner of an occupied building for review or for signature such a contract, which contains a term, prohibited from inclusion in such a contract by regulations adopted hereunder. The owner of an occupied building may require such wiring to be installed when the owner is present and may approve or deny the location at which such wiring enters such building.

(d) Prior to completion of construction of an occupied building, an owner of such a building in the process of construction shall permit prewiring to provide telecommunications services in such building provided that: (1) The telecommunications provider complies with all the provisions of subdivisions (2), (3) and (4) of subsection (c) of this section and subsection (f) of this section; and (2) all wiring

## **Connecticut - Substitute House Bill No. 5421 (Continued)**

other than that to be directly connected to the equipment of a telecommunications service customer shall be concealed within the walls of such building.

(e) No telecommunications provider may enter into any agreement with the owner or lessee of, or person controlling or managing, an occupied building serviced by such provider, or commit or permit any act, that would have the effect, directly or indirectly, of diminishing or interfering with existing rights of any tenant or other occupant of such building to use or avail himself of the services of other telecommunications providers.

(f) The department shall adopt regulations in accordance with the provisions of chapter 54 of the general statutes, authorizing telecommunications providers, upon application by the owner of an occupied building and approval by the department, to reasonably compensate the owner for any taking of property associated with the installation of wiring and ancillary facilities for the provision of telecommunications service. The regulations may include, without limitation: (1) Establishment of a procedure under which owners may petition the department for additional compensation; (2) Authorization for owners and telecommunications providers to negotiate settlement agreements regarding the amount of such compensation, which agreements shall be subject to the department's approval; (3) Establishment of criteria for determining any additional compensation that may be due; (4) Establishment of a schedule or schedules of such compensation under specified circumstances; and (5) Establishment of application fees, or a schedule of fees, for applications under this subsection.

(g) Nothing in subsection (f) of this section shall preclude a telecommunications provider from installing telecommunications equipment or facilities in an occupied building prior to the department's determination of reasonable compensation.

(h) Any determination by the department under subsection (f) regarding the amount of compensation to which an owner is entitled or approval of a settlement agreement may be appealed by an aggrieved party in accordance with the provisions of section 4-183 of the general statutes.

(i) Any person, firm or corporation which the department of public utility control determines, after notice and opportunity for a hearing as provided in section 16-41 of the general statutes, has failed to comply with any provision of subsections (b) to (e), inclusive, of this section shall pay to the state a civil penalty of not more than one thousand dollars for each day following the issuance of a final order by the department pursuant to section 16-41 of the general statutes that the person, firm or corporation fails to comply with said subsections. Sec. 2. Subsection (c) of section 16-333a of the general statutes, as amended by section 1 of public act 93-53, is repealed and the following is substituted in lieu thereof:

(c) An owner of a multiunit residential building in the process of construction shall prior to completion of construction of such building permit prewiring to provide community antenna television services in such building provided that: (1) The community antenna television company complies with all the provisions of subdivisions (2), (3) and (4) of subsection (b) of this section and subsection (e) of this section; and (2) all wiring other than that to be directly connected to the terminal of a community antenna television subscriber shall be concealed within the walls of such building.

The Department shall adopt regulations, in accordance with the provisions of Chapter 54, which shall set forth terms which may be included, and terms which shall not be included, in any contract to be entered into by the owner of a multiunit residential building and a community antenna television company concerning such wiring. No community antenna television company shall present to an owner of an occupied building for review or for signature such a contract, which contains a term prohibited from inclusion in such a contract by regulations adopted hereunder.



# **Public Utility Commission of Texas**

## **Building Access Project #21400**

This project is a rulemaking that addresses building access pursuant to PURA 54.259, 54.260, and 54.261. Summary from Texas PUC website:

### Sec. 54.259. DISCRIMINATION BY PROPERTY OWNER PROHIBITED.

(a) If a telecommunications utility holds a consent, franchise, or permit as determined to be the appropriate grants of authority by the municipality and holds a certificate if required by this title, a public or private property owner may not:

(1) prevent the utility from installing on the owner's property a telecommunications service facility a tenant requests;

(2) interfere with the utility's installation on the owner's property of a telecommunications service facility a tenant requests;

(3) discriminate against such a utility regarding installation, terms, or compensation of a telecommunications service facility to a tenant on the owner's property;

(4) demand or accept an unreasonable payment of any kind from a tenant or the utility for allowing the utility on or in the owner's property; or

(5) discriminate in favor of or against a tenant in any manner, including rental charge discrimination, because of the utility from which the tenant receives a telecommunications service.

(b) Subsection (a) does not apply to an institution of higher education. In this subsection, "institution of higher education" means:

(1) an institution of higher education as defined by Section 61.003, Education Code; or

(2) a private or independent institution of higher education as defined by Section 61.003, Education Code.

(c) Notwithstanding any other law, the commission has the jurisdiction to enforce this section.

(V.A.C.S. Art. 1446c-0, Secs. 3.2555(c), (e), (g).)

### Sec. 54.260. PROPERTY OWNER'S CONDITIONS.

(a) Notwithstanding Section 54.259, if a telecommunications utility holds a municipal consent, franchise, or permit as determined to be the appropriate grant of authority by the municipality and holds a certificate if required by this title, a public or private property owner may:

## **PUC of Texas - Building Access Project #21400 (Continued)**

(1) impose a condition on the utility that is reasonably necessary to protect:

(A) the safety, security, appearance, and condition of the property; and

(B) the safety and convenience of other persons;

(2) impose a reasonable limitation on the time at which the utility may have access to the property to install a telecommunications service facility;

(3) impose a reasonable limitation on the number of such utilities that have access to the owner's property, if the owner can demonstrate a space constraint that requires the limitation;

(4) require the utility to agree to indemnify the owner for damage caused installing, operating, or removing a facility;

(5) require the tenant or the utility to bear the entire cost of installing, operating, or removing a facility; and

(6) require the utility to pay compensation that is reasonable and nondiscriminatory among such telecommunications utilities.

(b) Notwithstanding any other law, the commission has the jurisdiction to enforce this section.

(V.A.C.S. Art. 1446c-0, Secs. 3.2555(d), (e).)

Sec. 54.261. SHARED TENANT SERVICES CONTRACT.

Sections 54.259 and 54.260 do not require a public or private property owner to enter into a contract with a telecommunications utility to provide shared tenant services on a property.

(V.A.C.S. Art. 1446c-0, Sec. 3.2555(I).)

(<http://www.puc.state.tx.us/rules/rulemake/21400/21400.cfm>)

Proposed Substantive Rule on Building Access -  
<http://www.puc.state.tx.us/rules/rulemake/21400/101999pr.pdf>

Note:

10/26/99 - Workshop

11/12/99 - Deadline for written comments (including proposed rule language)

2/1/00 - Workshop

# Before the Nebraska Public Service Commission

In the Matter of the Commission, ) Application No. C-1878/PI-23  
on its own motion, to determine )  
appropriate policy regarding )  
access to residents of multiple ) **ORDER ESTABLISHING STATEWIDE**  
dwelling units (MDUs) in Nebraska ) **POLICY FOR MDU ACCESS**  
by competitive local exchange )  
telecommunications providers. ) **Entered: March 2, 1999**

## APPEARANCES:

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## BY THE COMMISSION

On August 5, 1998, the Commission, on its own motion, opened this docket to determine appropriate policy regarding access to residents of multiple dwelling units (MDUs) in Nebraska by competitive local exchange telecommunications providers (CLECs). Notice of this docket was published in The Daily Record, Omaha, Nebraska, on August 10, 1998, pursuant to the rules of the Commission.

Cox Nebraska Telecom II, L.L.C. (Cox) previously filed a formal complaint (FC-1262) against US WEST Communications, Inc. (US WEST) with this Commission concerning access to residents of MDUs. Upon review of the complaint, the Commission was of the opinion that as competition developed further in Nebraska markets, it would be in the best interest of the public that the Commission develop a general overall policy regarding access to MDUs. Therefore, the Commission opened this docket and Cox withdrew its complaint against US WEST.

The Commission began its investigation by requesting that all interested persons submit comments on this issue by September 8, 1998. On September 14, 1998, the Commission held a hearing on these issues in the Commission Hearing Room in Lincoln, Nebraska, with the appearances as shown above.

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Carrington Phillip, vice president of Cox, testified as follows: Local exchange competition should not be something that is limited only to those who are fortunate enough to own their own homes. To resolve this issue, Cox believes that it is necessary to permit all certificated carriers who want to invest in serving tenants in MDUs the opportunity to efficiently do so. Cox suggested that the Commission develop a solution that removes artificial barriers related to historical network design and the incumbent's inherent monopoly power so that competition can flourish.

In facilitating implementation of competition in the provisioning of local exchange service, Cox suggested that its proposal would strike a regulatory balance between property rights of the incumbent local exchange carrier (ILEC) and the requirements established for state regulators in the Telecommunications Act of 1996 (Act).

Cox suggested that the ILEC should be ordered to establish a minimum point of entry (MPOE) as close to the edge of the MDU property line as possible. The ILEC could retain ownership of the cable, conduit, etc. between the demarcation point and the newly located MPOE, but should receive a reasonable one-time cost-based amount to move the MPOE to the property line. Furthermore, a CLEC should pay the ILEC a one-time fee equal to 25 percent of the replacement value of this cable, conduit, etc. for access. Replacement value should be defined as the new cost of the copper wire. Replacement cost should be estimated to be \$4.20 per cable foot, based on the cost of 600 pair cable.

Maintenance and repair of the facility should be accomplished by a third-party contractor approved by the ILEC and the current service provider. The maintenance and repair would be performed in accordance with mutually agreed upon national standards with the cost borne by the ILEC and CLEC on a percentage basis.

Mr. Alan Bergman, Director of State Market Strategies for US WEST in Nebraska, testified as follows: US WEST agrees strongly that the tenants in MDUs should have choice. However, Mr. Bergman emphasized that other carriers currently have an opportunity to provide MDU customers with a choice. All local exchange carriers, including US WEST, are required under the Act to make available for resale at wholesale rates their retail services. Furthermore, nothing is preventing CLECs such as Cox from constructing their own facilities up to the demarcation point as US WEST has done. Either of these methods would provide choice for MDU residents.

US WEST proposes that competitors should be able to use a portion of the unbundled loop and the so-called sub-loop unbundling in order to provide local service to an MDU resident. This would require that a competitor pay the cost, a one-time non-recurring charge, for the installation of a new cross-connect box at a point agreed to by the owner near the property line where the facility comes into the MDU property. Then, beyond that, the competitor would pay an average cost-based rate determined through the cost docket for the portion of the unbundled loop that it uses.

Mr. David Tews, representing the Community Associations Institute, testified as follows: The Commission should recognize the self-determinate process and the role the community associations play in maintaining, protecting and preserving the common areas, the values of the community or the value in an individually owned property within the development. To fulfill these duties, community associations must be able to control, manage, and otherwise protect their common property.

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### **OPINION AND FINDINGS**

After hearing testimony, reviewing briefs and other comments filed in this docket, the Commission believes that a statewide policy regarding CLEC access to residential MDUs is necessary to protect the rights of MDU residents. The primary purpose of this order is to create a uniform framework that parties throughout the state, incumbents and competitors alike, can utilize to serve residents of MDUs. Such a statewide policy should foster competition while simultaneously providing the residents of MDUs a realistic opportunity to select their preferred telecommunications provider.

The National Association of Regulatory Utility Commissioners (NARUC) explicitly recognized the problem in its "Resolution Regarding Nondiscriminatory Access to Buildings for Telecommunications", adopted July 29, 1998. In that resolution, the NARUC Committee noted that some states, including Connecticut, Ohio, and Texas, already require building owners and incumbent telephone companies to give tenants access to the telecommunications carrier of their choice. Nebraska is no different, and this Commission believes residents of Nebraska MDUs should have the same choice.

The intent behind the Telecommunications Act of 1996 was to open up the telecommunications market for competition. However, residents of MDUs have generally been unable to reap the benefits of this industry transformation. It is true that competition has brought many desirable changes to the telecommunications industry. However, the benefits of competition have not come without a certain amount of additional costs. MDU residents must be given the opportunity to take advantage of competition if they are to be expected to bear any increased costs associated therewith. As such, the Commission believes that residential MDU properties must be opened up to competition.

In order to develop a statewide framework for access to residential MDUs, the (Nebraska Public Utility) Commission finds the following:

Upon the request of a CLEC or any multi-tenant residential property owner (Owner), an ILEC shall provide a MPOE at the MDU property line or at a location mutually agreeable to all parties. The ILEC, or a mutually agreeable third party or CLEC, as identified in a pre-approved list of third-party contractors and CLECs, must complete the move of the MPOE in the most expeditious and cost effective manner possible. Nothing contained herein shall limit or prohibit access to MDU properties by any competitive carrier through any other technically feasible point of entry.

The CLEC or requesting Owner shall pay the full cost associated with said move. CLECs who connect to the MPOE within three years of the move's completion shall contribute on an equitable and nondiscriminatory pro-rata basis to the initial cost of said move based upon the number of CLECs desiring access to the MDU through such MPOE.

The demarcation point shall remain in its current position unless otherwise agreed to by the parties. If the demarcation point remains unmoved, then the ILEC shall retain ownership of any portion of the loop between the demarcation point and the newly moved MPOE as well as any existing campus wire (jointly referred to hereafter as "campus wire"). Said CLECs shall be authorized to use the ILEC's campus wire for a one-time fee of 25 percent of "current" construction charges of the portion of the loop between the demarcation point and the newly moved MPOE based upon an average cost per foot

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calculation. The average cost per foot shall be derived from a sample of recently completed ILEC construction work orders for MDUs, with the resulting calculation subject to periodic Commission review. CLECs which connect to the MPOE within three years of the move's completion shall contribute on an equitable and nondiscriminatory pro-rata basis to the one-time aggregate 25 percent charge for use of the ILEC's campus wire. The portion due from each carrier shall be based upon the number of CLECs desiring access to the MDU through such MPOE.

Maintenance of the campus wire and the MPOE itself shall be performed by the ILEC, or a mutually agreeable third party or CLEC, as identified in the pre-approved list of third-party contractors and CLECs. Such maintenance shall be completed in accordance with national standards and in the most expeditious and cost effective manner possible. Maintenance expenses shall be paid by all current users of such MPOE on a pro-rata basis based upon the percentage of current customers within the affected MDU building or property on the start date of maintenance.

Exclusionary contracts and marketing agreements between telecommunications companies and landlords are anti-competitive and are against public policy. Exclusionary contracts are barriers to entry and marketing agreements can have a discriminatory effect. Therefore, the Commission believes, with the following exception, that all such contracts and agreements should be prohibited.

The Commission is of the opinion that since condominiums, cooperatives and homeowners' associations are operated through a process where each owner has a vote in the entity's business dealings, the prohibitions against exclusionary contracts and marketing agreements should not apply to this type of entity.

### **ORDER**

IT IS THEREFORE ORDERED by the Nebraska Public Service Commission that this order hereby establishes a statewide policy for residential multiple dwelling unit access in the state of Nebraska.

IT IS FURTHER ORDERED that all telecommunications providers shall comply with all applicable foregoing Findings and Conclusions as set forth above.

IT IS FURTHER ORDERED that since condominiums, cooperatives and homeowners' associations are operated through a process where each owner has a vote in the entity's business dealings, the prohibitions against exclusionary contracts and marketing agreements shall not apply to this type of entity.

IT IS FINALLY ORDERED that should any court of competent jurisdiction determine any part of this order to be legally invalid, the remaining portions of this order shall remain in effect to the full extent possible.

MADE AND ENTERED at Lincoln, Nebraska, this 2nd day of March, 1999.

NEBRASKA PUBLIC SERVICE COMMISSION

COMMISSIONERS CONCURRING: Chairman

ATTEST: Executive Director

(<http://www.nol.org/home/NPSC/c-1878b.htm>)

# **Association for Local Telecommunications Services (ALTS)**

## **Summary of S.1301 - Competitive Access to Federal Buildings Act**

S.1301, "Competitive Access to Federal Buildings Act", was introduced on June 29<sup>th</sup>, 1999 by Senator Ted Stevens (R-AK) and cosponsored by Majority Leader Trent Lott (R-MS), and Senators Ernest Hollings (D-SC) and Byron Dorgan (D-ND). It was referred to the Senate Commerce Committee. The legislation requires the Federal government, as the nation's largest landlord, to promote nondiscriminatory access to competitive telecommunications carriers for services provided to tenants in buildings owned or leased by the Federal government.

"The Competitive Access to Federal Buildings Act" would do the following:

S.1301 will forbid Federal agencies from entering into rental or lease contracts unless the owner or operator permits nondiscriminatory access. The owner must either commit to provide such access to competitive carriers as a matter of contract or certify that they are already bound to provide such access under State law. The property owner may charge a reasonable fee for access based on commercial rental value of space actually used by the carrier, and may impose reasonable requirements necessary to protect the property and tenants. The costs of installation, maintenance and reimbursement for any damage caused to building facilities will be borne by the telecommunications carrier. And the National Telecommunications and Information Administration of the Department of Commerce is charged with implementing this legislation.

Legislation establishing such a policy is necessary because incumbent telecommunications carriers have historically enjoyed an advantage in accessing the rooftops, risers, telephone cabinets, conduits, points of entry or demarcation for internal wiring and utility spaces in all buildings. This advantage predates the new technologies developed by competitive carriers, such as fixed wireless or satellite services.

Passage of this bill will allow taxpayers to enjoy "the benefits and cost savings from the competitive provision of telecommunications services and information services by telecommunications carriers". The Federal government is leading by example - the establishment of this policy will encourage States to develop similar policies, which will promote telecommunications competition. Several states, including Texas and Connecticut, have already enacted similar measures.

(This ALTS Summary available at <http://www.alts.org/smartbuildings/7199releaseS1301.htm>)

(U.S. Government Thomas Link to the Bill Summary & Status for the 106th Congress - <http://thomas.loc.gov/cgi-bin/bdquery/z?d106:s.01301:>)

# **FCC Local and State Government Advisory Committee**

## **Advisory Recommendation Number 19**

### **Notice of Proposed Rulemaking, Notice of Inquiry, and Third Further Notice of Proposed Rulemaking, WT Docket No. 99-217, CC Docket No. 96-98**

1. The Local and State Government Advisory Committee ("LSGAC") submits this Recommendation in response to the Federal Communication Commission's ("Commission") Notice of Proposed Rulemaking ("NPRM"), Notice of Inquiry ("NOI"), and Third Further Notice of Proposed Rulemaking ("Third Notice") in WT Docket No. 99-217 and CC Docket No. 96-98. The LSGAC only addresses the issues raised in the NPRM in this Recommendation.

2. The LSGAC has three vital interests in the matters addressed by the NPRM.

a. First, state and local governments own, operate and lease many public buildings in their capacity as property owners. Every year, state and local governments spend billions of taxpayer dollars to construct, operate, maintain and repair public buildings. Therefore, state and local governments have a significant interest in any proposed rule that may increase the costs of constructing and maintaining their property, or increase the intensity of its use by telecommunications carriers.

b. Second, state and local governments are responsible for protecting the health and safety of the general public, as well as ensuring that structures in their jurisdictions are consistent with land use plans and policies. For example, local governments enforce local building codes to ensure that the placement of telecommunications facilities on buildings does not jeopardize the safety of the public. Local governments also balance the placement of telecommunications facilities with other competing community concerns, such as the intrusiveness of a facility into a particular neighborhood. Local governments have a vital interest in any proposal that would give priority to telecommunications facilities when other concerns may be of greater importance to the community.

c. Third, state and local governments own and operate unique property such as parks, public housing, emergency facilities, fire stations, police stations, transportation facilities, museums, airports, ports, hospitals, recreational facilities, historic buildings, correctional facilities, clinics, nursing homes, courts, universities, schools, and military facilities. Each of these types of property raises unique considerations. State and local governments have a vital interest in retaining control over the placement and installation of telecommunications facilities on these types of property.

3. The Commission seeks comment on whether building owners who allow access to their premises to any provider of telecommunications services must be forced to make comparable access to their premises available to all such providers under nondiscriminatory rates, terms and conditions. NPRM, ¶53. The Commission also proposes to require all utilities governed by Section 224 to make ducts, conduits, and rights-of-way inside buildings available to competing telecommunications providers. NPRM, ¶¶ 41, 42. The Commission does not exclude public building owners, such as state and local governments, from the scope of any proposed rule. The Commission's proposals, if implemented, would impose a forced physical access requirement on public building owners. The LSGAC disagrees with the Commission's proposals for four reasons.



## **FCC LSGAC - Advisory Recommendation Number 19 (Continued - 2)**

a. First, the LSGAC questions the Commission's authority to impose any forced physical access requirement on public building owners and their property. The Commission can only impose such a requirement if it can exercise jurisdiction over public building owners. However, public building owners do not fall within the Commission's statutorily granted jurisdiction. The Commission also lacks jurisdiction over the contractual obligations involving third parties, such as public building owners. *Regents of Univ. Sys. of Georgia v. Carroll*, 338 U.S. 586, 602 (1950). Further, the Commission's ancillary jurisdiction does not extend to public building owners.

b. Second, even if it is within the Commission's jurisdiction to impose such a forced physical access requirement, such a requirement would effect an unconstitutional taking of property under *Loretto v. Teleprompter Manhattan CATV Corp.*, 458 U.S. 419 (1982). Under relevant state law, states and cities own fee title to their buildings. The Fifth Amendment requires the United States to pay "just compensation" whenever it takes private property for public use. The Fifth Amendment applies with equal force to takings of state and local government property.

c. Third, property interests are created by state law, not federal law. *Board of Regents v. Roth*, 408 U.S. 564, 577 (1972). Any grant of access to public buildings and their premises by the Commission would reduce the property rights enjoyed by public building owners and expand the property rights of telecommunications providers. The Commission would be creating property rights and deciding the scope of these rights. But such matters are purely questions of state law, not federal administrative interpretation.

d. Fourth, forced physical access would create a dilemma for state and local governments. State and local governments have a duty to ensure the safety and security of certain property and facilities that they own and operate. Yet any forced physical access requirement would compel state and local governments to place telecommunications interests above any other interests-- even the safety and welfare of their citizens.

i. For example, state and local governments are responsible for operating correctional facilities, hospitals and schools. To protect their citizens, patients and students-- state and local governments impose severe restrictions, in some cases, on access to these facilities. State and local governments must be able to control physical access to these facilities. Compelling state and local correctional facilities to make their premises available to all providers of telecommunications services if they allow one such provider on their premises may jeopardize the safety of their citizens and employees.

ii. State governments are also responsible for operating military depots, national guard facilities and other sensitive military facilities. Again, state governments impose considerable barriers on access to these facilities. State governments must be able to protect sensitive facilities from access from outside parties including telecommunications carriers.

iii. Public building owners are responsible for ensuring compliance with fire, electrical, building, seismic and other safety codes. They are also responsible, under some circumstances, for the security of their buildings, and their tenants and visitors. They must coordinate the interests of tenants, visitors, and other parties who want access to a building. And they must address the problem of limited physical space. Public building owners must be able to control physical access to their property: how installation work is scheduled, how the work is done, and what equipment is installed.

## **FCC LSGAC - Advisory Recommendation Number 19 (Continued -3)**

iv. Local governments are responsible for emergency 911 services, and maintain buildings devoted to emergency dispatch services. Any forced physical access to these 911 dispatch centers may jeopardize the power of local governments to deliver emergency services to their citizens.

v. Local governments also operate airport facilities. Airport officials must be able to control where telecommunications facilities are located, and how they are installed. Airport officials must be able to ensure that the welfare of citizens and travelers is not jeopardized.

4. The Commission seeks comment on whether it can preempt any State or local law or regulation that impairs the installation, maintenance, or use of antennas used to receive telecommunications services, services delivered via telecommunications, and other fixed wireless services based on its preemption of video receive antennas under Section 207 of the Telecommunications Act of 1996. NPRM, ¶69.

a. By its very terms, section 207 applies only to certain types of video programming; it does not apply to telecommunications antennas. Here, the Commission has no statutory basis for asserting authority to preempt state and local police powers over telecommunications antennas.

b. Far from unmistakably preempting state and local police powers over telecommunications antennas, the 1996 Act preserves local authority over telecommunications antennas, except in specifically enumerated areas. Congress expressly reaffirmed in section 704 of the 1996 Act its intent to preserve state and local police powers such as zoning. 47 U.S.C. § 332(c)(7)(A).

RECOMMENDATION: For the reasons discussed above, the LSGAC recommends:

That should the Commission adopt any rule addressing access to third party property, the Commission should clarify that such a rule does not:

1) Force public building owners to allow providers of telecommunications services access to public buildings, premises or other property; or

2) Preempt any State or local law or regulation that impairs the installation, maintenance, or use of antennas used to receive telecommunications services, services delivered via telecommunications, and other fixed wireless services.

Adopted by the LSGAC on this \_\_\_\_ day of October, 1999.

Kenneth S. Fellman, Chairman

(<http://www.fcc.gov/statelocal/recommendation19.html>)

# City of Tempe, Arizona - Tech Oasis Project

## Infotech Center

### Draft Request for Proposal (RFP) Excerpt

The City is especially interested in seeking a software/internet focus for this mixed-use project. Tempe's Economic Development Office has identified this industry as one of the most desirable for the City. While the software/internet industry had been identified as a focus as early as 1997, beginning in January 1999 Tempe began a concerted effort to attract these companies. At the same time, the local industry groups (Arizona Software & Internet Association and Arizona Internet Professionals Association) identified geographic dispersion as the number one hindrance to the industry's growth. The industry groups began to search for one location in the State that would be the "Tech Oasis" of the Arizona software/internet industry. In October 1999 the City of Tempe, specifically the Downtown/Rio Salado area, was designated as the **Tempe Tech Oasis**. The City is interested in solidifying its position as the Tech Oasis, by working with developers to establish Arizona's only Network Access Point (NAP) and to "light up" Downtown Tempe and the nearby Rio Salado river district by using both wired and wireless technologies to attract technology companies from around the country to Tempe. In addition to the great interest on behalf of the City, Tempe was chosen by the software/internet industry for its excellent location, vibrant downtown area that appeals to software/internet workers, proximity to Arizona State University (ASU), high quality of life, and excellent office space inventory. This RFP seeks to further define Downtown Tempe as the Tech Oasis of Arizona.

It is a primary goal of this RFP to identify a developer to design and develop the Downtown's first Infotech Center. It is anticipated that the building would be the hub of the Downtown/Rio Salado Infotech District that maximizes Downtown Tempe's inherent amenities and promotes the growth and relocation of information technology businesses. Tempe, and in particular the Downtown/Rio Salado redevelopment area, is well positioned as a competitive location to sustain infotech industry growth by the following attributes:

Tempe is a regional, national and international corporate center characterized by intensive users of information technologies (i.e., financial services and manufacturing);

Tempe is home to world-class corporate and university research centers that produce skilled graduates, new technological knowledge and commercial innovations;

Tempe already has a flourishing number of infotech companies;

Tempe has a large, highly educated, creative and skilled workforce;

Tempe has an extensive freeway, bus, and air transportation network that make Tempe the transportation hub of the Phoenix metropolitan area;

Tempe has an excellent quality of life, including exceptional recreation, transportation, cultural and housing opportunities.

In order for this mixed-use building to serve as the hub of the Infotech District the building should contain a minimum of 100,000 square feet of infotech office space. Establishing a facility that is developed with the concerns and demands of infotech companies in mind will strengthen the attractiveness of the building.

## City of Tempe, AZ - Tech Oasis Project - Infotech Center (Continued)

The **Infotech Center** should provide for the following:

**24-Hour Access and Use:** To promote the building as a full-service activity center, the development should have 24-hour access to and from the building and security-coded access to individual suites. Due to long hours and electrical requirements associated with computer and telecommunications use, the building must supply electricity and HVAC to its tenants at all times.

**Disaster Recovery and Business Continuity:** The nature of high tech businesses and the 24-hour production schedule they often follow makes the existence of disaster recovery and business continuity provisions, including availability of emergency automated back-up power, HVAC, and water, accessibility to superior telecommunications and data services, essential for many prospective tenants. Identified plans and hardware, such as redundant and secure telecommunications access paths and "backup" connectivity plans, should be in place for retrieval and recovery, in case of emergency power outages and other crisis situations.

**Flexible Office Space:** The configuration of the internal office space should be adaptable to the potential users needs. Due to the heightened growth rate of infotech companies, a company may very early in the lease term quickly require more space. Open and flexible plans would support the reconfiguration of the office space to accommodate such growth.

**Non-traditional Office Space:** A number of infotech companies have identified the non-traditional character of the office space as a reason they moved into a facility. The culture of the infotech industry often fosters a casual environment which may be further enhances through the design of the office space.

**Common Office/General Use Space:** The building should be developed with a variety of common spaces for tenants. These common spaces may include kitchens, conference rooms, reception areas, lounges/game rooms, training facilities, classrooms and demonstration rooms. The provision of visual projection and other flexible presentation technology (including satellite communication) for use or rental would add to the attractiveness of these facilities. The common space provided will also foster other shared services such as receptionists, photocopy, fax and equipment and cleaning.

**Networking:** The networking should be pre-installed in the building consisting of telephone, fiber optic and wireless network capabilities.

**Telecommunications:** The telecommunications infrastructure should include five basic components:

- 1) Voice grade services
- 2) High speed (hypergrade) Internet access
- 3) Fiber-optic backbone for connectivity between point within the building.
- 4) Single-mode fiber compatible with in-coming industry-standard fiber lines.
- 5) Wireless within the building and area.

Tenants should have the option to choose between an array of affordable and broad bandwidth providers for their telecommunications and Internet access needs. Again the City seeks to make this building a hub for Internet Service Providers (ISPs) within the Downtown/Rio Salado District, the center of both wired and wireless technologies. It should be the goal that any tenant in the building should have access to the Internet at any industry-standard speed from redundant providers without having to pay to have the lines installed.

**Up-grading Flexibility:** The infotech industry is growing extensively with daily innovations to hardware, software and infrastructure. While this building will be fashioned with the most up-to-date technology available, plans should be created on how to keep the building on the cutting edge of the changing technology.