

2004

**A State Legislators
Guide to Telecom
Policy**



**The Institute for Policy
Innovation (IPI)**

is a non-profit, non-partisan public policy “think tank” based in Lewisville, Texas. Founded in 1987, IPI conducts research, develops and promotes innovative and non-partisan solutions to today’s public policy problems. IPI focuses on approaches to governing that harness the strengths of individual liberty, limited government and free markets.

The telecommunications industry has undergone a revolution. Even the most recent federal law affecting the industry, the Telecommunications Act of 1996, failed to anticipate the widespread adoption of wireless telephone and new technologies like Instant Messaging and Voice over Internet Protocol (VoIP), let alone their substitution for traditional phone service. Never has there been a clearer example of the inability of law to keep pace with technology.

Now it is time for governments to substitute market-based competition for government-managed competition. Regulation stifles the investment necessary to stimulate economic growth and job creation. Market-based competition is the hallmark of a consumer-focused marketplace where providers compete for customers on the basis of innovation, quality, price and customer service.

Without doubt, the communications technologies that best deliver the products and services embraced by consumers are those operating in unregulated or lightly regulated environments. Deregulation would spur even more innovation, competition, and consumer satisfaction.

This Legislators' Guide explains in plain language the issues public policymakers face in considering the future of the U.S. telecommunications industry. It supplies legislators otherwise at the mercy of regulatory jargon with the tools to make intelligent, principled decisions. The Guide reflects a nonpartisan but distinctly free-market approach that will lead to investment, job creation, and new products and services for consumers.

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GUIDING PRINCIPLES



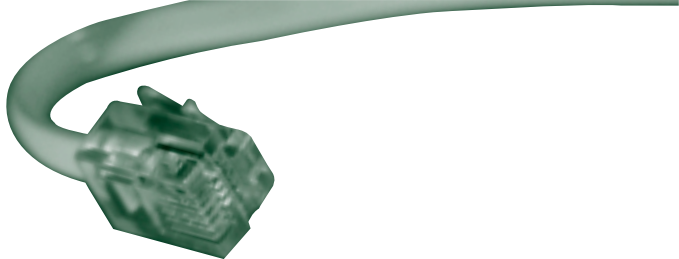
ELIMINATE ARTIFICIAL DISTINCTIONS

Public policy should be based on reality, and the reality of the digital world is that bits are bits, whether they store a live voice, an email, or an instant message. Companies that once carried one-way video now compete with companies that once carried only two-way voice traffic, a phenomenon called convergence.

Convergence makes old legal distinctions irrelevant. In the digital world, the distinction between local and long-distance phone service has no meaning. Regulations based on these invalid distinctions are bound to fail.

SUBSTITUTION IS COMPETITION

If consumers substitute one technology for another, this is competition. Wireless, cable telephony, VoIP and even email compete with traditional wireline phone service, just as public transportation competes with automobiles. Consumers choose between these media and substitute one for another. This is “intermodal” competition.



NEUTRALITY SHOULD BE THE GOAL

Tax and regulatory policy should be technologically neutral. Why should one method for accessing the Internet be highly taxed and regulated, while others are not? But neutrality should not be achieved by applying pervasive regulation to new technologies. Rather, incumbent technologies should be deregulated.

DON'T REGULATE WHAT CAN'T BE REGULATED

Policymakers are sometimes tempted to enact unenforceable rules as political gestures. For example, laws aimed at the Internet can be evaded by relocating a server offshore. One U.S. Senator threatened to “pull the plug on the Internet” if his proposed legislation couldn’t be enforced. Such empty threats result in a cynical attitude to all law.

DON'T REGULATE WHAT DOESN'T REQUIRE REGULATION

Free innovation drives increased productivity, faster growth, and higher personal incomes. If something doesn't need to be regulated, it shouldn't be regulated. Regulations designed in an age of monopoly are actually harmful in today's rapidly changing, competitive market. Regulations designed for old technologies should not be applied to new and emerging technologies.



LEGISLATION IS BETTER THAN REGULATION

The will of taxpayers is best reflected in the actions of their elected legislators, not in the decrees of a few appointed regulators. Legislation also creates a more predictable environment for business planning than discretionary regulatory oversight. Whenever possible, elected legislators should determine and implement telecommunications policy.

THE CONSUMER SHOULD BE KING

The legal ground rules for the telecom industry should respect consumer choice. If consumers want a bundle of services from a single provider, they should be allowed to have it.

Existing “consumer protection” rules often protect companies from their competitors, rather than protecting consumers. Consumer protection regulations should be directed at real harms like fraud, not some vague potential for harm.

A CLOSER LOOK AT THE ISSUES



LOCAL TELEPHONE COMPETITION

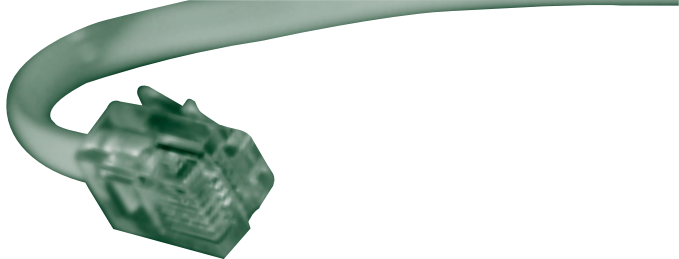
The Telecommunications Act of 1996 (The Act) provides a framework for efforts to bring competition to all local service markets. But rather than looking to cable, wireless, and others to build new networks to bypass aging copper facilities (facilities-based competition) regulators encouraged competitors to piggyback on the old networks through resale, interconnection, and unbundling. Who, then, will build new networks?

Interconnection

The Act requires all telephone companies to physically connect their networks to those of other carriers (wireless, long distance, or local), enabling subscribers of one service to call subscribers of another service.

What Price Interconnection? When a local carrier connects with a long distance carrier, the local company charges the long distance carrier fees known as “access charges.” When two local carriers interconnect, the fees are called “reciprocal compensation.” This distinction is outdated. Under both systems, the calling party’s network pays.

Access charges and reciprocal compensation prices



are regulated. The challenge for regulators is to move towards negotiated prices or to prices that better reflect costs, such as “bill and keep.” (Under “bill and keep” carriers bill only end users for the costs of connecting a call, not other carriers.)

Collocation: Collocation is the placement of a competitor’s equipment in the incumbent telco’s central switching office to enable interconnection.

Collocation raises concerns about the abuse of one company’s equipment by another’s employees. This is a consequence of rules that force the sharing of property. The best solution is to set ground rules that encourage the technical details of interconnection to be negotiated.

Unbundling

Under the 1996 Telecommunications Act, incumbent local exchange (phone) companies (ILECs) must offer the use of parts of their networks (unbundled network elements, or UNE’s) to competing local exchange carriers (CLECs) without which the CLECs would suffer “impairment.” The perennial question is, which elements, and at what price?

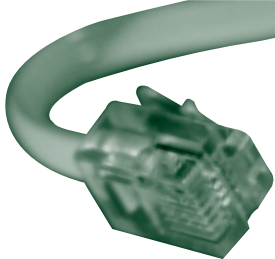
The FCC’s attempts to implement the unbundling requirements of the 1996 Act were hotly disputed almost since the Act was passed. Several aspects of the FCC’s most recent rules, the Triennial Review (Report and Order on Remand and Further Notice of Proposed Rulemaking in CC Docket Nos. 96-98, 98-147 and 01-338), were set aside by the D.C. Circuit Court of Appeals in March 2004 in *USTA v. FCC*, and the FCC is working on new rules. This was the third time that this same set of rules has been overturned by the courts.



Impairment: The FCC's early interpretations of impairment gave CLECs access to almost everything, giving them little reason to build their own facilities. The Supreme Court rejected this approach, saying that the FCC must consider whether CLECs could find the element they needed outside the ILEC's network (*AT&T Corp. v. Iowa Utilities Board*, 525 U.S. 366, 387-92 (1999)). The D.C. Circuit Court later reminded the FCC again not to discourage facilities-based competition by paying closer attention to real costs and particular markets.

In the Triennial Review, the FCC ruled that a CLEC would be impaired when lack of access to an element created a barrier to entry. These barriers might include economies of scale, sunk costs, first-mover advantages, and barriers controlled by an ILEC. The D.C. Circuit generally upheld this definition. But the court did direct the FCC to include special access services in its impairment analysis (and thus vacated the FCC's determination that wireless carriers were impaired without access to dedicated transport).

Which Network Elements? In the Triennial Review, the FCC determined that ILECs' broadband (fiber to the home) networks, hybrid loops with packet switching, and line-sharing need not be unbundled. (Line-sharing lets competitors use part of the local loop to carry data traffic, while the ILEC used another part to carry voice traffic.) The court upheld this, stating that without evidence that CLECs are impaired without those elements, forced sharing "would skew investment incentives in undesirable ways . . . [and] intermodal competition from



cable ensures the persistence of substantial competition in broadband.”

The FCC had delegated the decision about switching for mass-market customers (residential and small business) to state public utility commissions, giving them nine months to decide. The D.C. Circuit found such delegations unlawful, and requires the FCC to revisit this ruling. The court also vacated the FCC’s nationwide impairment determinations with respect to high-capacity voice-grade lines (also known as DS1 & D3) and dark fiber.

The Unbundled Network Elements-Platform

(UNE-P): UNE-P results from competitors putting together all UNEs into a single bundle. The DC Circuit struck down the rules that allow a CLEC access to every part of an incumbent’s network in one package, known as “unbundled network element platform” or UNE-P.

TELRIC Pricing: The FCC set the prices for unbundled elements using a formula called “total elemental long-run incremental cost” (TELRIC), the price based on the cost of a hypothetical, perfectly efficient future network. TELRIC is very low compared to actual costs—the perfect future network is assumed to be cheap, real networks aren’t—so CLECs are better off piggybacking on the old networks than building their own. The FCC’s data show that CLECs owned fewer access lines in 2002 than in 1999. TELRIC ultimately should be replaced by negotiated prices, and in the interim by some method that reflects current costs.



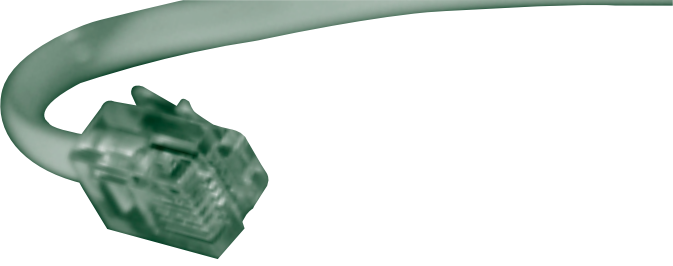
Performance Measures

Regulators use performance measures, such as counting the seconds it takes for an ILEC's computer to respond to a request for interconnection or the number of days the company takes to respond to a customer's request for service or repair, to assess customer service and progress towards competition. Performance measures may have their place, but have been misused. Sometimes, for example, an ILEC must purposely slow down its network to accommodate the inferior technology of its competitors. And some measures are impossible to comply with; for example, until recently Qwest was required to repair *all* phones within two days or pay an automatic annual fine of \$1 million.

Performance measures have proliferated to the point where literally millions of measurements must be tracked and reported. Performance measures have become a revenue-generator for regulators, and a means of harassment rather than guarantors of competition.

The costs of compliance and the fines generated by such a staggering number of measurements must be passed on to customers at both the wholesale and retail level.

The counterproductive expansion of performance measures is a prime example of the tendency of regulation to lose touch with reality and become an end in itself. Growing intermodal competition will best improve customer service.



Getting to Negotiated Agreements

The best way to end politicking over access to local phone networks is to encourage CLECs and ILECs to agree on access terms. The 1996 Act envisioned such agreements, but few negotiations took place. Most CLECs knew they could get a better deal from regulators. Since the D.C. Circuit struck down major parts of the FCC's Triennial Review, ILECs and CLECs have begun to negotiate agreements, such as that between SBC and Sage Telecom. To keep this trend alive, the new ground rules should not reward either party for resorting to regulation.

UNIVERSAL SERVICE

Federal and state universal service policies are intended to make telephone service available to all at uniformly low rates. The \$7 billion federal Universal Service Fund (USF) was established by the Telecommunications Act of 1996. The states determine eligibility to receive federal USF support. Most states have their own universal service programs for low-income residents, and half have programs for high-cost local phone companies.

The largest "explicit" federal USF programs are \$4.5 billion for carriers in high-cost areas, and \$2.25 billion to wire schools and libraries to the Internet. Programs targeted to low-income telephone subscribers account for \$673 million. The "non-rural" fund, which goes only to large carriers (SBC, Qwest, Bell South and Verizon), is about \$250 million. Federal universal service is funded by a line item on



customers' bills for interstate phone service. Many (not all) state programs are still funded by hidden ("implicit") charges on intrastate long distance and business revenue. Universal service programs grew up in an age of monopoly. In a competitive era, such policies have led to problems.

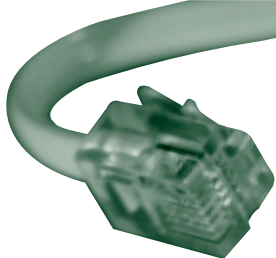
The problem most visible to consumers irate about the line items on their bills is the rapid growth of universal service costs. Everyone wants to take out of the pool, especially if they pay into it, and anyone who doesn't stake a claim will lose out to more aggressive competitors. Wireless companies face pressure from investors to qualify for the subsidies—and wireless providers pay much more into the fund than they take out. But the costs of wireless build-out are so low it is doubtful they need any subsidy.

Ways to cap the funds' rampant growth include:

Maintain Accountability: Make sure consumers can see universal service charges on their bills.

Let markets spread "advanced" services like broadband, so that more services do not become eligible for subsidies. Advanced services like VoIP should not be forced to pay into the fund, either. Neutrality is best served by funding universal service out of general tax revenues.

Legislative Caps: The political process is more effective than regulators in limiting costs. Colorado's fund grew from \$35 million to over \$60 million within a few years, enraging consumers. This ended when Colorado legislators capped the fund at \$60 million.



Make carriers compete for support: Auction the right to be the eligible carrier in a given region. Or, make the subsidies “portable,” so that when a carrier loses a customer, it loses part of the subsidy.

Give support to means-tested customers, not companies: While unpopular with small phone companies, this approach is fairest for consumers now paying to subsidize service to other consumers no worse off than they are.

ACCESS CHARGES

Access charges are payments made by long distance telephone carriers to local phone networks to carry long distance calls to their destination. The structure of access charges affects universal service, competition between phone companies, and the development of the Internet. Access charges cause many economic distortions.

Bringing Access Charges to Cost

Before 1984, when the Bell System was still one company, long distance prices were held high to keep local prices low. After the breakup, regulators created access charges, keeping long distance prices high to preserve this subsidy. But competition forced long distance prices down, so this system was untenable. The FCC began to bring interstate access charges down to cost. Many states, such as Texas, Minnesota, Maine, Ohio, Florida, and California seek to do the same with intrastate access charges. This may mean letting local rates rise, while long



distance rates fall; it is called rate rebalancing.

Fears that rate rebalancing would result in poor people giving up their phone service have proven unfounded. The demand for basic service remains strong. In Wyoming, basic residential rates went from \$14.64 in 1995 to \$23.10 in 2002, with no material effect on subscribership. Falling long distance prices help low-income consumers, especially in isolated areas. And letting local prices rise somewhat makes local residential service more attractive to potential competitors; no one wants to compete against a company whose prices are below market rates.

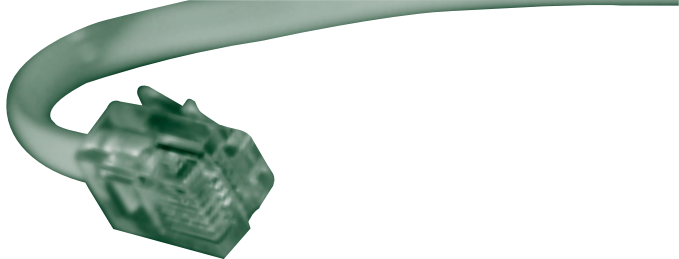
Although bringing access charges to cost is desirable, ultimately, freely negotiated charges should prevail.

Charges on ISPs

Since 1983, the FCC has exempted services other than pure transmission (“enhanced service providers”) from access charges. In 1997, the FCC ruled that this exemption covered Internet Service Providers. This created problems, because ISP carriers then take in much more money than they pay out to incumbent carriers. Again, the goal should be to allow carriers to move towards bill-and-keep or other negotiated arrangements.

INTERNET TELEPHONY (VOIP)

Voice-over-Internet Protocol (VoIP) uses software instead of traditional circuit switching to carry voice messages. Customers use VoIP to reduce



phone and fax costs and to support applications like unified messaging, in which voice, fax, and email are combined.

There are no federal regulations for VoIP. FCC Chairman Michael Powell believes the service does not need regulation. Although VoIP is inherently interstate, some states have tried to regulate VoIP. California and Wisconsin have decided that the service providers are subject to telephone regulation, while Minnesota exempted VoIP from telecom regulations. Nearly every telecom company calls for the FCC to refrain from regulation.

VoIP is a classic disruptive and transformational technology, which will bring productivity gains for business and lower prices for consumers—that is, unless the heavy hand of regulation slows its deployment and frustrates early adopters. As wireless service has shown, emerging technologies bring their benefits to the economy most quickly when they are not held back by pervasive regulation.

A few ground rules for VoIP may be necessary to protect 911 services, to allow law enforcement to intercept calls in criminal investigations, and so on. But many of the rules that apply to traditional telephony (access charges, for example) should not be applied to VoIP any more than to email or instant messaging. Applying old-style regulation to such new technologies will create stagnation.

Some services use a mix of traditional and Internet telephony. Some long distance carriers, for example, route calls over a packet-switched network at some



mid-point in the transmission. Where should old regulation end? At some point one must draw a line in the sand, perhaps by requiring that at least one end of the call be VoIP. If deregulation proceeds on the traditional side of the line, the problem should not persist for long.

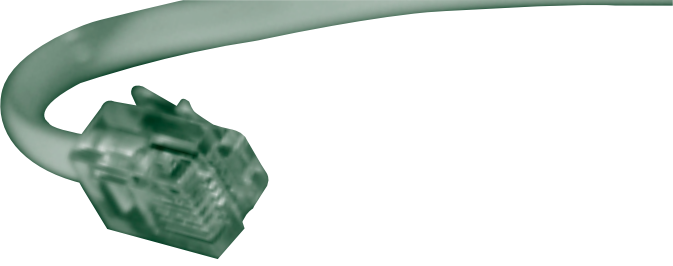
WIRELESS

The most familiar wireless services are cellular phone and PCS service. But wireless has many other uses. WiFi lets computer users access the Net in airports and coffee shops, and in an ever-widening host of other locations.

Wireless competes with traditional local phone service. More and more homes and small businesses use wireless instead of wireline. And competition within the wireless community is fierce. Some argue that wireless needs regulation. But this would only impede the spread of service to consumers and protect wireline service from competition.

Public Safety and Wireless

Federal policymakers are moving more of the radio spectrum into private hands through auctions and other reforms. This will speed the offering of wireless services to consumers. Traditionally, large swathes of spectrum have been reserved for governmental purposes, and are often used very inefficiently. Public safety groups are concerned that spectrum will no longer be reserved for them. But there is no reason that public safety organizations could not bid



for spectrum and communications services in the market the same way they buy fuel or typists. Keeping spectrum off the market will only exacerbate shortages.

BROADBAND

Roughly speaking, broadband means enough bandwidth to carry multiple voice, video or data channels simultaneously. Channels are separated by “guard bands” (empty spaces) to prevent interference. More technically, broadband transmits voice, data, and video simultaneously at rates of at least 1.5 Mbps (although existing networks more commonly offer about 500 Kbps). Sometimes, “broadband” refers to any high-speed, always-on Internet connection like DSL and cable. Wireless broadband systems are being rolled out, promising to bring low-cost broadband to remote areas.

The FCC has sought to classify broadband service as an “information service” instead of a “telecommunications service” and thereby keep broadband lightly regulated. But one court has rejected this classification.

Encouraging the Spread of Broadband

Wider broadband deployment, especially in rural areas, will be an important driver of economic growth. The FCC has recognized that broadband regulation would impede the investments needed to build out broadband networks. Imposing “open



access” rules requiring cable broadband networks to carry their competitors’ signals would reduce the incentives of those competitors to build their own networks, and it would deprive cable investors of the promise of good returns on their investment. The same is true of access requirements on DSL.

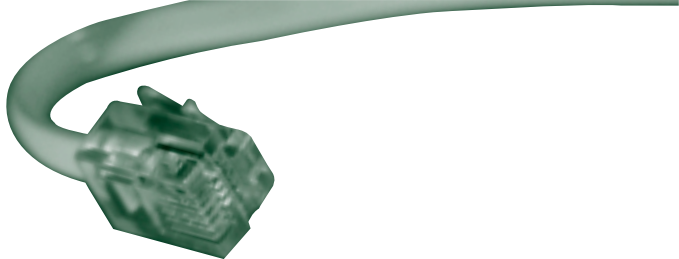
Broadband Over Power Lines

America’s power companies own significant rights of way along their power grids. If their power lines could be used for broadband, these companies would offer powerful competition against DSL and cable modem services. Power companies might bring broadband to areas not served by cable or DSL. Transmitting signals over power lines is problematic, but advances in chip technology have made it possible. But power companies and traditional broadband face growing competition from wireless broadband.

Power companies are still regulated by state commissions, some still using rate-of-return regulation. Power companies might be able to make broadband a profit center, but if regulation deprives them of a good return, they will not make the investment.

Municipal Broadband Networks

Frustrated with the slow pace of broadband rollout, some local governments are building their own broadband networks. These municipalities are exposing their taxpayers to the risks of investing in a young technology with uncertain consumer demand. Taxpayers should not be asked to fund technologies doomed for extinction, like the French Minitel system, a White Elephant built in the 1980s and then overtaken by the Internet. A 2002 study of municipi-



pal networks revealed customer enrollments far below projections, costs more than double projections, and operating losses extending indefinitely into the future. Higher taxes and political scandals are the hallmark of municipal networks. Local government's entry into the market will discourage more efficient private entrants like wireless broadband. Local governments would be wiser to encourage broadband deployment by making rights of way available and keeping taxes and regulation low.

CABLE

Cable television took off in the mid-70's as an alternative to broadcast television. Municipalities were generally the first regulators. First the FCC and then Congress in the 1984 Cable Act introduced federal regulation. At first, most cable franchises awarded monopolies, but the 1992 Cable Act generally requires local governments to allow competition. Meanwhile, cable companies expanded their offerings to include telephone service and broadband Internet service. They compete with phone companies in markets for voice messages and broadband, ISPs, and satellite video services.

Cable versus Satellite

Satellite services are chipping away at cable's market share in their core business area. Twenty-five percent of all subscription television service now comes through satellite reception. The huge satellite dishes of 20 years ago have yielded to 12-inch models small enough to fit on the terrace of an apartment.



In many states, cable companies have proposed that satellite customers pay broadcast service taxes to make up for the franchise fees that cable customers pay. This would make little sense, since satellite companies do not usually use local rights of way. It does make sense for local governments to keep franchise fees and taxes low.

Cable Channels a La Carte

Proposals have surfaced to require cable companies to offer their channels unbundled, so a subscriber could buy only one or two channels instead of an entire tier. Many subscribers would be likely to subscribe only to the most popular channels, such as the Discovery Channel and ESPN. But most cable revenue comes from just a few popular channels; the costs of developing and offering new and “niche” channels can only be recovered by bundling. The “a la carte” policy would decimate these new and niche channels. These channels, including educational channels like the Science channel, are privately funded and not dependent on government subsidies, as is PBS.

Glossary of Terms



Access Line: The circuit used to enter the communications network.

Access Network: The part of the carrier network that reaches the customer's premises. The access network is also referred to as the local drop, local loop, or last mile.

Asymmetric Digital Subscriber Line (ADSL): A data communications technology that can "piggyback" a standard voice telephone connection.

Backbone: The primary transmission path between network segments, or a major pathway within a network.

Bandwidth: (1) A measure of spectrum (frequency) use or capacity. For instance, a standard telephone conversation uses a bandwidth of about 3,000 cycles per second (3 KHz). A TV channel occupies a bandwidth of 6 million cycles per second (6 MHz). Cable systems occupy 50 to 300 MHz. (2) Also, the measure of capacity of a transmission channel.

Broadband: "True" broadband transmits voice, data, and video at rates of at least 1.5 Mbps (although today's networks commonly offer about 500 Kbps). Alternatively, "broadband" refers to any high-speed, always-on Internet connection.

Central Office (CO): A telephone company building in which end users' lines terminate at switching equipment that connects other end users to each other. Also known as End Office.

Circuit: A switched or dedicated communications path with a specified bandwidth (transmission speed/capacity).

Circuit Switched Network: This type of network carries information on a dedicated, end-to-end connection established by switches between two connected parties for the length of their call. The public switched telephone network (PSTN) uses circuit switching.

Customer Premises Equipment (CPE): Telephone terminal devices, such as handsets and private branch exchanges (PBXs), located on the customer's premises.

Dedicated Line: A communications circuit or channel provided for the exclusive use of a particular subscriber.

Digital Subscriber Line (DSL): Broadband technology that works over regular copper telephone cabling.

Facilities-Based Carrier (FBC): A carrier that builds and uses its own facilities to provide service, rather than using the facilities of others.

Incumbent Local Exchange Carrier (ILEC): The traditional local telephone companies such as the former Bell companies, or local exchange carriers designated as such by state Public Utility Commissions.

Integrated Services Digital Network (ISDN): A digital telephone line that can be used for voice, fax, and data communications like a regular telephone line, but can transport data five times faster (or more) than a 28.8 Kbps V.34 modem and allow you to talk on the phone to one person while sending data to another.

Interexchange Carrier (IXC): A long distance phone carrier, like AT&T, MCI, or Sprint, as well as ILECs that have qualified to provide long distance service.

Local Access and Transport Area (LATA): These regions were created by the antitrust decree that broke up the Bell System, and were used for regulatory purposes. Most states contain several LATAs.

Local Exchange Carrier (LEC): Telephone company lingo for your local telephone company. See also RBOC.

Local Loop: This part of the telecommunications network connects end users to the central office network facilities. Twisted pairs of copper wire form the traditional medium of the local loop. Also known as the subscriber loop, local line and access line.

Narrowband: This medium is capable of carrying voice, fax, paging, and relatively slow-speed data (not full video applications), typically at 64 Kbps or less.

Network Element: As defined in the Telecommunications Act of 1996, a facility or equipment used to provide telecommunications service.

Packet: A series of bits containing data and control information, including source and destination node addresses, formatted for transmission from one node to another.

Packet Switching: A transmission protocol in which data is divided into small blocks so that different packets could travel over different routes to avoid overloading a single facility. Paths are temporary and dynamic.

Packet-Switched Network (PSN): A PSN network carries information broken into digital “packets” that are transmitted

independently and then reassembled in the correct order at the destination.

Point of Presence (POP): The point where the inter-exchange carrier's responsibilities for the line begin and the local exchange carrier's responsibility ends.

Point-to-Point: A circuit connecting two nodes only, or a network requiring a separate physical connection between each pair of nodes.

Plain Old Telephone Service (POTS): This term often is used to refer to analog voice telephone services provided over the public switched telephone network.

Primary Interexchange Carrier (PIC): The PIC is the main long-distance carrier used for "1+dialing" through which all interstate long-distance toll calls are made.

Private Branch Exchange (PBX): A private switching device used by large organizations to bypass the telephone companies' central office switch, usually located on the customer's premises.

Private Line Service: Dedicated telecommunications channels provided between two points or switched among multiple points. Privately leased for high-volume voice, data, audio or video transmissions.

Public Switched Telephone Network (PSTN): The PSTN is the worldwide circuit-switched telephone network. Once only an analog system, these networks are digital, though most subscribers are connected via analog circuits.

Regional Bell Operating Company (RBOC): RBOCs comprise the U.S. local carriers created in the 1982 Consent Decree to break up AT&T. Seven were formed to serve as parent companies for the 22 then-existing Bell Operating Companies. Today, the remaining RBOCs are BellSouth, Qwest, SBC and Verizon.

Resale: A type of market entry competitors can use to access the ILECs' network. CLEC resell telecommunications services purchased wholesale from another carrier.

Resale Carrier: A carrier that does not own transmission facilities, but obtains communications services from another carrier for resale to the public for profit. Also known as a Reseller.

Slamming: The switching of a customer's long distance service from one company to another without the customer's permission.

Special Access Service: A transmission path directly connecting an InterExchange Carrier location in a LATA to an end user premise or another InterExchange Carrier location.

Subscriber Line Charge (SLC): A monthly fee paid by telephone subscribers to compensate the local telephone company for part of the cost of maintaining the telephone equipment linking private homes to the telephone network. The SLC was originated at the same time as access charges to help support universal service.

Switched Circuit: A communications path that allows the originator to specify a desired destination for each call.

Switched Circuit Network (SCN): Synonym for the Public Switched Telephone Network.

Switched Network: Any network in which switches are used to direct messages from the sender to the ultimate recipient.

Switched Services: All dial-up long distance services.

Switching Fee: A per-line fee (usually around \$5) to reprogram the telephone switching system to change a customer's default carrier. Subscribers must usually pay this fee when switching to a reseller.

Switchless Reseller: A reseller of long-distance services that does not use any of its own facilities (lines or switching equipment).

T-1: A type of high-speed digital data connection that operates at 1.5 Mbps and requires a two-pair (four-wire) connection between the telephone company Central Office and the customer premises.

Tariff: A statement by a communications company that sets forth the services offered by that company, and the rates, terms and conditions for the use of those services.

Trunk: An analog or digital connection from a circuit switch that carries user media content and may carry telephony signaling.

Twisted Pair: A pair of wires used in transmission circuits and twisted about one another to minimize coupling with other circuits.

Wideband: Wideband is a medium intermediate between narrowband and broadband. Wideband transmits at speeds between 64 Kbps and 1.5 Mbps.

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